

(No Model.)

2 Sheets—Sheet 1.

C. P. CORLISS.
STEM WINDING MECHANISM.

No. 585,025.

Patented June 22, 1897.

Fig. 1.

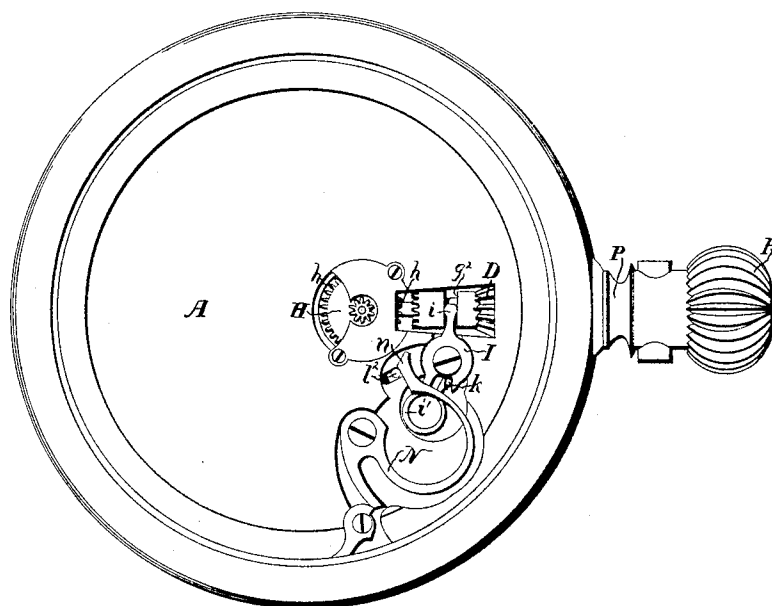


Fig. 2.

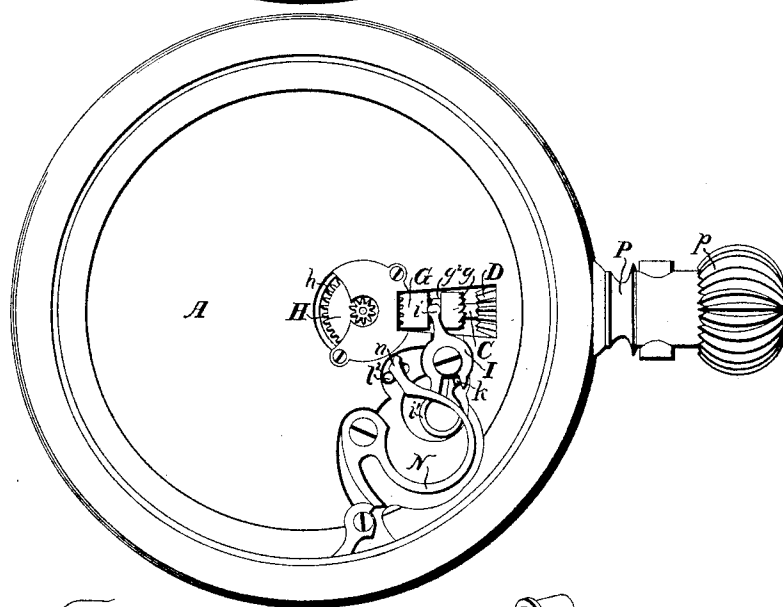
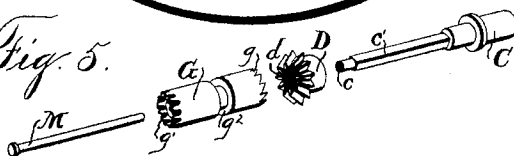


Fig. 5.



Witnesses.
Frank P. Prindle.
Henry C. Hazard

Inventor.
Chas. P. Corliss, by
Prindle and Russell, his Attys

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2 Sheets—Sheet 2.

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Fig. 3.

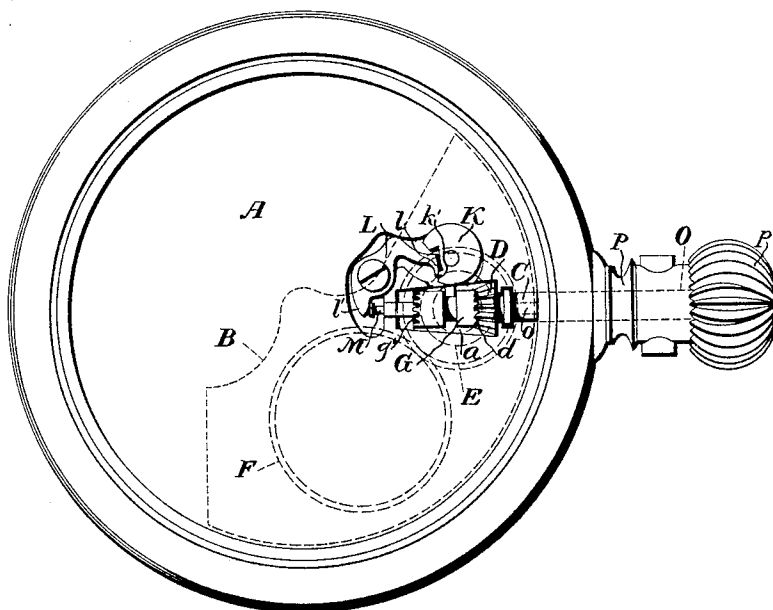


Fig. 4.

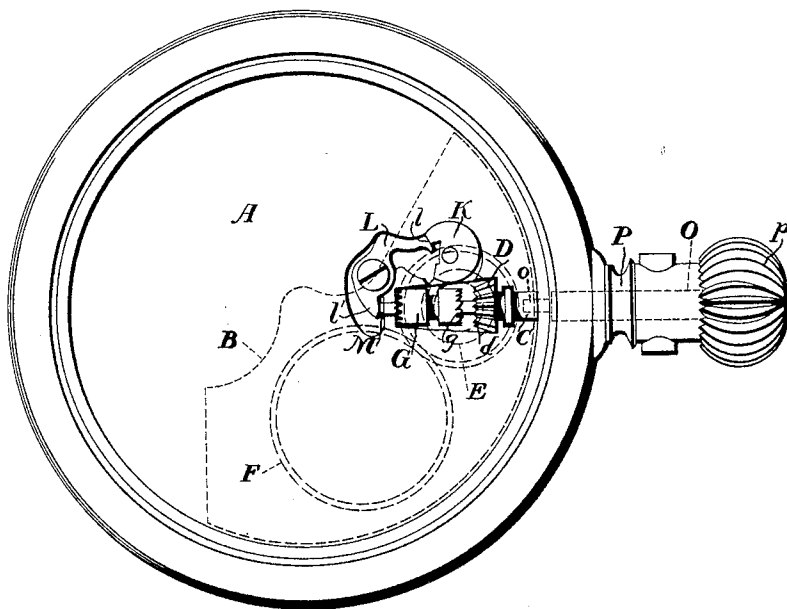
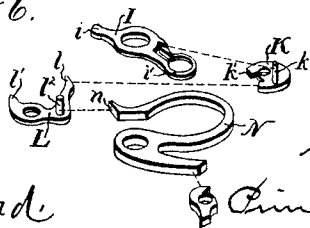


Fig. 6.



Witnesses:
Frank P. Prindle.
Henry L. Hazard.

Inventor.

Chas. P. Corliss, by
Prindle and Russell, his Attys.

UNITED STATES PATENT OFFICE.

CHARLES P. CORLISS, OF ELGIN, ILLINOIS, ASSIGNOR TO THE ELGIN
NATIONAL WATCH COMPANY, OF CHICAGO, ILLINOIS.

STEM-WINDING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 585,025, dated June 22, 1897.

Application filed September 21, 1896. Serial No. 606,505. (No model.)

To all whom it may concern:

Be it known that I, CHARLES P. CORLISS, of Elgin, in the county of Kane, and in the State of Illinois, have invented certain new and useful Improvements in Pendant-Setting Watches; 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—

Figures 1 and 2 are plan views from the front side of a watch-movement containing my improvements, the dial being removed and the parts being shown, respectively, in the winding and hands-setting positions. Figs. 3 and 4 are like views of the movement from the rear side, the back plate being removed and the parts arranged, respectively, in the positions shown in Figs. 1 and 2. Fig. 5 is a perspective view of the winding and setting arbor and the parts carried thereby, and Fig. 6 is a like view of the shifting levers and springs separated from each other.

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

My invention relates to a class of watches which is known as "pendant-setting;" and it consists in the construction of mechanism by which the winding and setting engagements are effected, substantially as and for the purpose hereinafter specified.

In the carrying of my invention into practice I journal between the front plate A and the back plate B of a watch-movement an arbor C, which is provided with an axial opening *c*, that extends entirely through the same and at its outer end is squared.

Journalled upon the arbor C, near the edge of the plate A and within a recess *a* in said plate, is a pinion D, which engages peripherally with an intermediate pinion E, that is in mesh with the winding-wheel F, so that by the rotation of said pinion D said winding-wheel will be caused to rotate and thereby the mainspring wound. Said pinion D is provided upon its inner end with teeth *d*, that are adapted to be engaged by similar teeth *g* upon one end of a sleeve G, which sleeve is provided with a square axial opening that fits over a correspondingly square portion *c'* of the arbor C and causes it to rotate therewith

and is adapted to slide longitudinally thereon, so as to enable its said teeth *g* to be engaged with or released from engagement with said teeth *d*.

The inner end of the sleeve G is also provided with teeth *g'*, which, by its longitudinal movement upon the arbor C, are adapted to be engaged with the teeth *h* of one of the dial-wheels H, the arrangement being such as to cause said sleeve to be moved into or out of engagement with either of said wheels D and H and when engaged with one to be simultaneously disengaged from the other.

The sleeve G is adapted to be reciprocated by means of a lever I, which is pivoted within the plate A and has one end *i* resting in and engaging with a peripheral groove *g''* in said sleeve, and at its opposite end has formed a C-shaped spring *i'*, that at its free end engages with a relatively fixed stud *k*.

The stud *k* is fixed upon a cam K, which is pivoted upon the inner face of the plate A and, projecting through an opening in said plate, has its end contained between the free end of the spring *i* and a contiguous portion of the lever I, so that by a slight movement of said cam upon its pivotal bearing said stud or fulcrum will be moved, and with it will move the said lever upon its pivotal bearing, so as to cause the sleeve or clutch G to be disengaged from the dial-wheel H and engaged with the wheel D.

The movements of the cam K are produced by means of an L-shaped lever L, which is pivoted upon the inner face of the plate A, with the end of its longer arm *l* adapted to engage said cam and its shorter arm *l'* in a line with the inner end of a pin M, that is contained within the axial opening *c* of the arbor C. A stud *l''*, projecting outward from said lever through an opening in the plate A, is engaged by the free end *n* of a spring N upon the outer face of said plate, and thereby said lever is held with a yielding pressure in engagement with said rod.

A stem-arbor O, having a squared inner end *o*, which is adapted to engage with the squared portion of the axial opening *c* of the arbor C, is journaled within the stem or pendant *p* of a watchcase-center P, and is adapted to be

rotated and to be moved longitudinally therein and to be locked with a yielding pressure at the limits of its longitudinal movement. If now the stem-arbor O is moved to the inner limit of its longitudinal motion, as shown in Figs. 2 and 4, its inner end will engage with the pin M and, moving it in the same direction, cause the lever L to turn upon its pivotal bearing and by the action of its arm l upon an inclined face k of the cam K cause said cam to turn so as to move the sleeve G inward into engagement with the winding-wheel F, after which, by a rotation of said stem-arbor, said wheel and its connecting wheels will be rotated so as to wind the mainspring of the watch.

When the movement is placed in a hunting-case, a certain amount of longitudinal motion of the stem-arbor O beyond such as is required for effecting the winding engagement is necessary in order to release the case-spring and permit the front cover of the case to open. Such extra movement is permitted without change of the shifting parts by forming the face k of the cam K at and beyond the point of its contact with the arm l of the lever L, when the parts are in winding engagement, upon a circular line, of which the pivotal bearing of said lever is the center. The angle of said face k² with reference to the arm l is such that the latter, when engaging the same, serves to hold or lock the cam from movement and thus keeps the stud k immovable against the pressure of the spring V.

When the stem-arbor O is drawn outward by the lever L, it is free to be moved by the spring N, and being so moved its arm l engages the cam K and, moving through it the lever I, causes the sleeve G to be moved longitudinally inward into engagement with the dial-wheel H and permits the latter to be rotated to set the hands of the watch by the rotation of said stem-arbor. When the parts are in setting position, the cam K has a rounded surface similar to the surface k², that is also engaged by the arm l to lock or hold the cam from movement.

In stem setting and winding watches as heretofore constructed winding engagement was produced by a spring which operated through a clutch-lever and setting was produced by a stronger spring, which, when permitted to act, overcame the winding-spring and forced a change in the positions of the parts. In the construction described the clutch-lever spring operates merely as a ratchet-spring when the movement is in winding engagement and its tension is never changed, while the other spring is independent and does not operate against the clutch-lever spring, so that each of such springs need possess only such strength as is necessary for its particular duty, and liability to breakage is reduced to a minimum.

Having thus described my invention, what I claim is—

1. As an improvement in stem winding and setting watches, the combination of a longitudinally-movable stem-arbor, a clutch adapted to alternately gear said arbor to the winding and setting trains, a lever engaging said clutch, a second lever whose movements are controlled by the stem-arbor, and a pivoted part interposed between the two levers, substantially as and for the purpose specified.

2. As an improvement in stem winding and setting watches, the combination of a longitudinally-movable stem-arbor, a clutch adapted to alternately gear said arbor to the winding and setting trains, a lever engaging said clutch, a second lever whose movements are controlled by the stem-arbor, and a cam adapted to cooperate with one of said levers and having a pin that engages the other lever, substantially as and for the purpose shown.

3. As an improvement in stem winding and setting watches, the combination of stem winding and setting mechanism, gearing adapted to alternately engage the same, comprising, in part, two toothed wheels, one of which is movable toward and from the other, a spring yieldingly holding said wheels in mesh, and means whereby said wheels may be disengaged without changing the tension of said spring, substantially as and for the purpose described.

4. As an improvement in stem winding and setting watches, the combination of a longitudinally-movable stem-arbor, a clutch adapted to alternately gear said arbor to the winding and setting trains, a lever engaging said clutch, a second lever adapted to be moved by the stem-arbor in one direction, a spring for moving it in the reverse direction, a cam having portions adapted to alternately engage the second-named lever, and a pin or stud on the cam engaging the clutch-lever, substantially as and for the purpose specified.

5. As an improvement in stem winding and setting watches, the combination of winding mechanism and setting mechanism, gearing adapted to alternately engage the same, a lever connected with such gearing having an attached spring that is movable bodily with the lever and a part for actuating said lever that engages said spring, substantially as and for the purpose described.

6. As an improvement in stem winding and setting watches, the combination of winding mechanism and setting mechanism, gearing adapted to alternately engage the same, a lever connected with such gearing having an attached spring that is movable bodily therewith, a cam for actuating said lever, having a part that engages said spring, and means for actuating said cam, substantially as and for the purpose set forth.

7. As an improvement in stem winding and setting watches, the combination of a longitudinally-movable stem-arbor, a clutch adapted to alternately gear said arbor to the winding and setting trains, a lever engaging said clutch

having an attached spring that is movable
bodily with the lever, a part engaging said
spring, a lever to move said part adapted to
be moved in one direction by the stem-arbor,
5 and a spring adapted to move said second-
named lever in the reverse direction, substan-
tially as and for the purpose shown.

In testimony that I claim the foregoing I
have hereunto set my hand this 27th day of
August, A. D. 1896.

CHARLES P. CORLISS.

Witnesses:

GEORGE E. HUNTER,
W. H. CLOUDMAN.