2 Sheets--Sheet 1.

C. S. MOSELEY.

Stem-Winding Watches.

No. 161,262. Patented March 23, 1875.

Fig. 1.

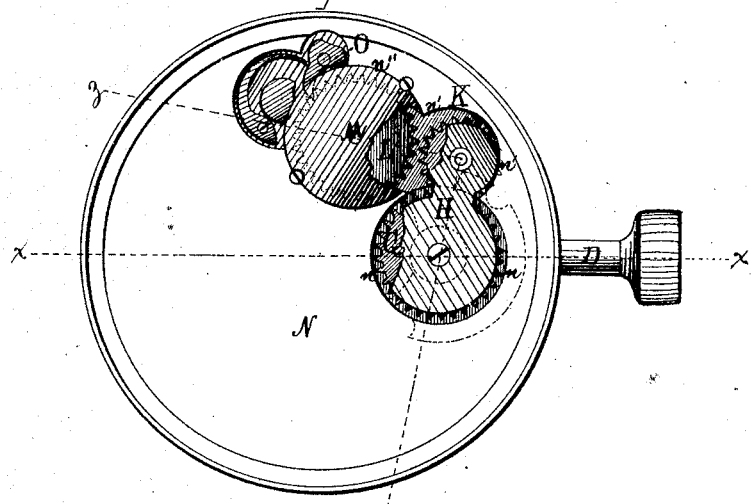
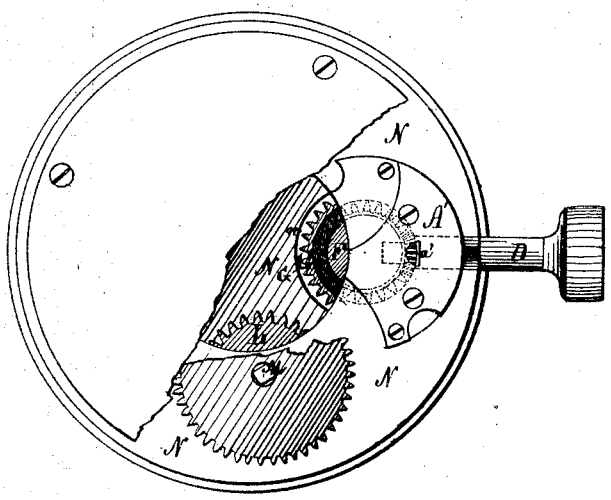


Fig. 2.



WITNESSES=

Jas. E. Hutchinson

John R. Young

INVENTOR.

Chas. S. Moseley, by

Prindle and Deane, his Attys

THE GRAPHIC CO. PHOTO-LITH. 39 & 41 PARK PLACE, N.Y.

2 Sheets--Sheet 2.

C. S. MOSELEY.

Stem-Winding Watches.

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Fig. 3.

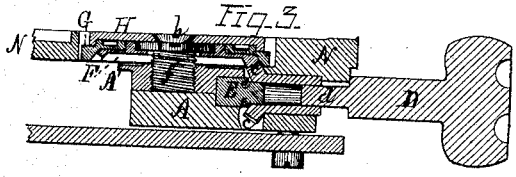


Fig. 4.

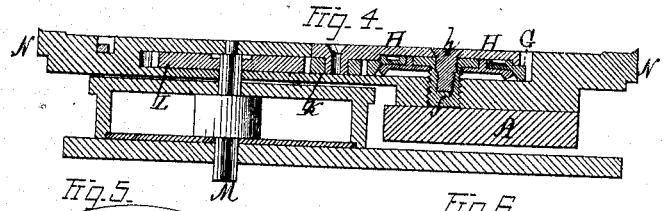


Fig. 5.

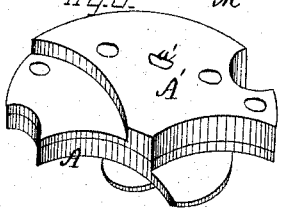


Fig. 6.

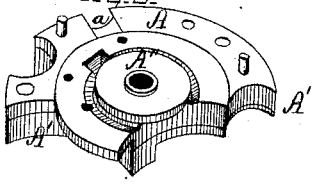


Fig. 7.

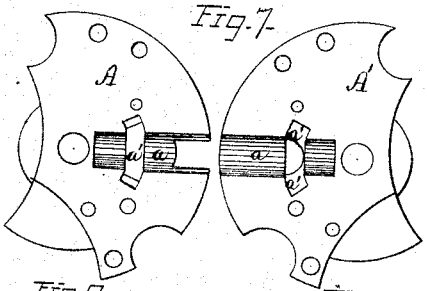


Fig. 8.

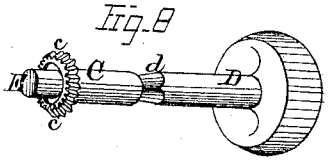


Fig. 12.

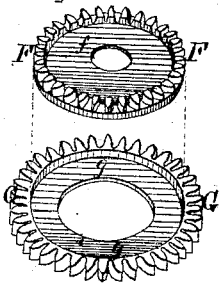


Fig. 9.

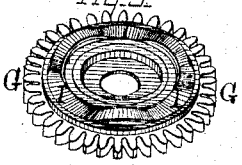


Fig. 10.

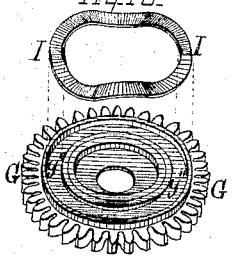


Fig. 11.

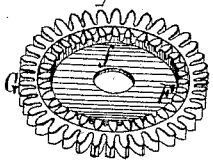


Fig. 13.

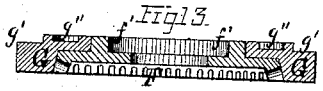
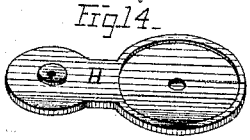


Fig. 14.



WITNESSES:

Jas. E. Hutchinson.

John R. Young

INVENTOR.

Chas. S. Moseley, by Prindle and Deane, his attorneys

THE GRAPHIC CO. PHOTO-LITH. 39 & 41 PARK PLACE, N.Y.

UNITED STATES PATENT OFFICE.

CHARLES S. MOSELEY, OF ELGIN, ILLINOIS, ASSIGNOR OF ONE-TENTH HIS RIGHT TO THE NATIONAL WATCH COMPANY, OF SAME PLACE.

IMPROVEMENT IN STEM-WINDING WATCHES.

Specification forming part of Letters Patent No. **161,262**, dated March 23, 1875; application filed April 18, 1874.

To all whom it may concern:

Be it known that I, CHAS. S. MOSELEY, of Elgin, in the county of Kane and in the State of Illinois, have invented certain new and useful Improvements in Stem-Winding Attachments for Watches; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a plan view of the face side of a watch-movement containing my improved winding mechanism. Fig. 2 is a like view of the opposite or back side of the same. Figs. 3 and 4 are sections upon lines *x x* and *z z*, respectively, of Fig. 1. Figs. 5 and 6 are perspective views of the upper and lower sides, respectively, of the bridge of the stem-winding train. Fig. 7 is a plan view of the inner faces of the sections which compose said bridge. Fig. 8 is a perspective view of the stem, its bevel-pinion, and the bearing for its inner end. Fig. 9 is a perspective view of the back side of the main gear, with the spring friction-ring in place. Fig. 10 is a like view of said parts separated from each other. Fig. 11 is a perspective view of the face side of said main gear. Fig. 12 is a like view of the same, with its central and outer portions separated. Fig. 13 is an enlarged central section of said gear, and Fig. 14 is a perspective view of the vibrating arm or bearing-plate of the intermediate pinion.

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

My invention is an improvement in a class of watches in which the mainspring is coiled or wound by the rotation of the stem; and it consists, principally, in the combined miter and spur wheels, constructed in the manner and for the purpose substantialy as is hereinafter specified. It consists, further, in the means employed for connecting the vibrating arm, which carries the intermediate pinion, to or with the main or driving gear, substantially as and for the purpose hereinafter shown. It consists, further, in the construction of the bridge which carries the winding-train, substantially as and for the purpose hereinafter set forth. It consists, further, in the construction of the driving-pinion, and its combination with the bridge and stem or push-pin, substantially as and for the purpose hereinafter shown and described.

In the annexed drawings, A and A′ represent the sections of a bridge, which have each a general semicircular shape, and are connected together by means of dowel-pins and screws, in the usual manner. Within the contiguous sides of the sections A and A′ is formed a cylindrical opening, *a*, that extends from the outer edge of the bridge inward to or near the center of the circle upon which said edge is formed, and at a suitable point between the ends of said opening is provided an enlargement, *a′*, that has such radial dimensions as to cause it to extend entirely through said sections. Within the opening or bearing *a* is placed a cannon-pinion, C, the barrel of which rests within and fills the outer portion of said opening, while the toothed portion *c*, at the inner end of said pinion, is contained within the enlargement *a′*. The opening within the outer portion of the pinion-barrel is square, and receives the correspondingly-shaped end *d* of a push-pin or stem, D, while within the opposite end of said pinion-barrel the opening is round, and contains one end of a pin, E, the opposite end of which fits into and closely fills the inner end of the bearing *a*. As thus arranged, the outer portion of the bearing *a* and the outer end of the pin E furnish bearings, within and upon which the pinion C revolves freely, while, by means of a shoulder, *e*, formed upon said pin E, against which the inner end of said pinion bears, and the contact of the outer side of the toothed portion *c* with the corresponding side of the enlargement *a′*, the longitudinal position of said pinion is insured. Upon the outer face of the section A is formed a round boss, A″, that corresponds to and fills a recess, *f*, that is provided within one face of a bevel-gear wheel, F, which wheel is pivoted thereon, and held in position by means of a screw, *f′*, that passes through its center into the center of said boss, so as to enable its teeth to mesh with the teeth of the pinion C.

A spur-gear wheel, G, having a larger diameter than the bevel-gear F, is provided within one face with a recess, *g*, that corresponds in size and shape to the outer face of the latter, so that when said gears are placed together, as seen in Figs. 4 and 11, said bevel-gear F is contained within said recess *g*, and its teeth are just flush with the face of said spur-gear. The gears F and G are fitted so closely together as to make them practically one, so that motion given to the first will be communicated through the second gear, as is hereinafter shown.

Upon the upper face of the spur-gear G is placed a plate, H, the lower face of which is recessed, as seen in Fig. 14, and its projecting edge fits into an annular rabbet, *g'*, that is formed within the contiguous portion of said gear. A screw, *h*, passing through said plate, and into a threaded opening in the center of the screw *f'*, confines the former in position, and forms a pivotal bearing for and upon which it turns. Just within the line of the rabbet *g'* an annular groove, *g''*, is formed in the upper face of the gear-wheel G, in which are placed two thin flat steel rings, I and I, that are corrugated, so as to occupy a space equal to several times their thickness, and are relatively arranged so as to cause the elevations of one ring to come opposite to the depressions in the other ring.

The office performed by the steel rings is the production of a friction connection between the gear-wheel G and the plate H, which causes the latter to be moved within certain limits by the rotation of said gear-wheel.

Upon the lower side of the plate H, near its outer end, is pivoted a spur-pinion, K, that meshes with and receives motion from the gear-wheel G, and operates as an intermediate between the same and a gear-wheel, L, that is secured upon one end of the winding-arbor M, as is hereinafter shown.

The gearing is combined with a watch-movement in the following manner: An opening, *n*, corresponding in size and shape to the gear G, is provided in and through the front plate N, the plate H is removed, and the bridge A secured upon the inner face of said plate, in such position as to bring said gear within said opening, and the stem D in proper position with relation to the movement. The plate H, with its pinion K, is now replaced upon the gear G, said pinion and the outer end of said plate being contained within a suitable recess, *n'*, that is formed in the plate N, and has such width as to permit the end of said plate to move laterally a distance somewhat greater than the depth of the teeth of said pinion. The spur-gear L, secured upon the winding-arbor M, is contained within a corresponding recess, *n''*, that is formed in the plate N, immediately adjoining the recess *n'*, so that when the outer end of the plate H is moved toward said gear the pinion K is thrown into engagement therewith, as shown by the dotted lines of Fig. 2, and enables said winding-arbor to be rotated by means of the stem D and the intermediate gearing, the arrangement of parts being such as to cause said pinion, through the friction attachment of the plate H, to be automatically thrown into engagement by a forward movement of the winding-train, and to be, in a like manner, removed from engagement whenever the motion of said train is reversed.

The gear-wheel L, in addition to the office described, operates as a ratchet-wheel to the winding-arbor, a pawl, O, being pivoted to the plate N in such position as to engage with the teeth of said gear, preventing motion in a backward direction.

To remove the winding-train, the vibrating plate or arm should be detached, when the bridge can be removed from the plate, three screws only being taken out to effect such result.

The advantages obtained by my mechanism are as follows: First, there is no ratchet-connection between the stem and winding-arbor, and when the former is moved backward the winding-train is entirely disconnected from said arbor, and revolves noiselessly. Second, the engagement and displacement of the winding-train with the winding-arbor are automatically effected by the usual forward and back motion of the stem, while the means employed for effecting such purposes are simple, durable, and less liable to derangement than those commonly employed. Third, the construction of the combined spur and miter gear wheel renders the same more perfect, and enables it to occupy less space than would be possible otherwise. Fourth, the construction of the bridge and its combination with the train and watch-plate enable said train to be attached to a watch without interference with or change of the movement; and, further, it permits of the easy removal or replacement of said parts.

Having thus fully set forth the nature and merits of my invention, what I claim as new is—

1. The combined miter and spur gears F and G, constructed in the manner and for the purpose substantially as specified.

2. The vibrating arm H, which carries the intermediate pinion K, pivoted to or upon the screw *f*, and having a friction connection with the gear G by means of the corrugated steel rings I and I, placed between their contiguous faces, said parts being constructed and combined in the manner and for the purpose substantially as shown.

3. The bridge for carrying the winding-train, consisting of the sections A and A', provided within their contiguous faces with the bearing *a* and recess *a'*, and combined with said winding-train and the plate of a watch, in the manner and for the purpose substantially as set forth.

4. The driving-pinion C, provided interiorly, at opposite ends, with the square and round openings, and combined with the bridge A and A′, push-pin or stem D, and bearing-pin E, in the manner and for the purpose substantially as shown and described.

In testimony that I claim the foregoing I have hereunto set my hand this 14th day of March, 1874.

CHAS. S. MOSELEY.

Witnesses:
P. S. BARTLETT,
GEO. HUNTER.