C. D. P. GIBSON.

STEM-WINDING WATCHES

No. 169,987. Patented Nov. 16, 1875.

Fig: 2.

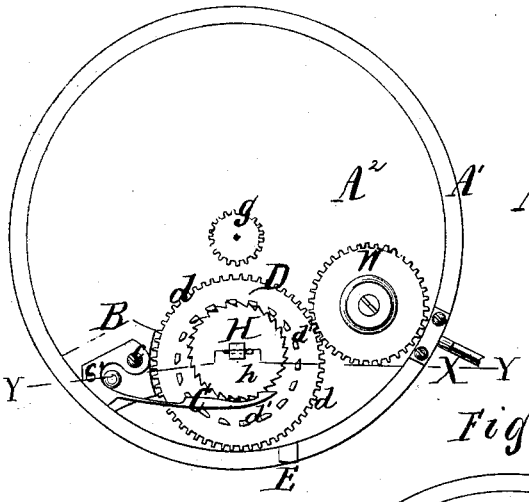


Fig: 1.

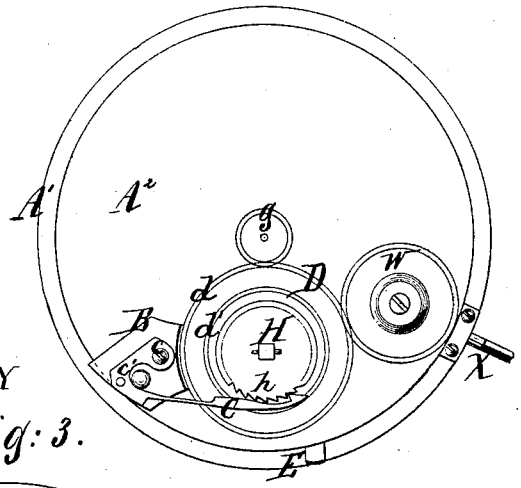


Fig: 3.

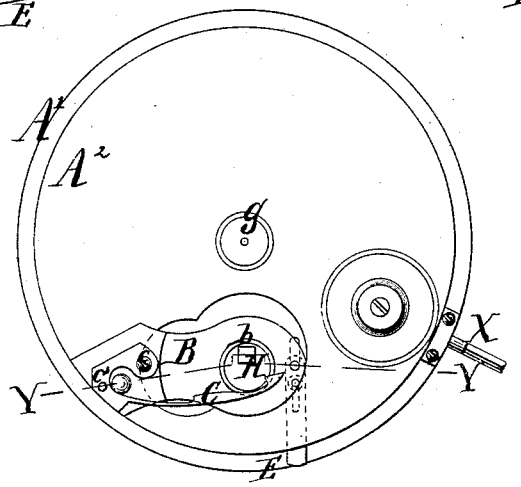
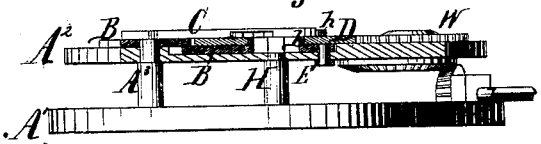


Fig: 4.



Witnesses: A.

Wm. C. Dey.

M. A. Van Hamel

Inventor:

Charles D. P. Gibson

by his attorney

J. L. Stetson

UNITED STATES PATENT OFFICE.

CHARLES D. P. GIBSON, OF NEW YORK, N. Y.

IMPROVEMENT IN STEM-WINDING WATCHES.

Specification forming part of Letters Patent No. **169,987**, dated November 16, 1875; application filed March 3, 1875.

To all whom it may concern:

Be it known that I, CHARLES D. P. GIBSON, of New York city, in the State of New York, have invented certain Improvements relating to Stem-Winding Watches, of which the following is a specification:

I have succeeded in simplifying the stem-winding and stem-setting mechanism, so that one simple and reliable spring serves for all the purposes connected therewith. The mechanism is composed of few parts, and is strong and durable.

The following is a description of what I consider the best means of carrying out the invention.

The accompanying drawings form a part of this specification.

Figure 1 is a back view, showing some of the principal parts when in position for setting the hands. Fig. 2 is a corresponding view, showing the parts when in position for winding. Fig. 3 is a view corresponding to the last, but with certain wheels removed. It shows the tubular center on the movable piece or lever, on which is mounted the movable wheel. The mainspring-shaft appears within the tube. Fig. 4 is, mainly, a section on the crooked line *y y* in Figs. 2 and 3, but with the spring, and the wheel which it works against, in elevation.

The figures show the novel parts with so much of the ordinary parts as is necessary to indicate their relations thereto.

Similar letters of reference indicate like parts in all the figures.

A^1 A^2 are the fixed frame-work of a watch, represented as somewhat more massive than is ordinarily employed in practice. A^3 is one of several pillars which connect them. This pillar A^3 is extended upward through the plate A^2, and forms a center for a swinging bridge, B, which, in connection with a spring-click or elastic hook-pawl, C, performs important functions. The swinging bridge B is formed with a large aperture, surrounded by a rim or short tube, *b*, which tube forms the center or bearing for a large wheel, D, which is provided with two sets of teeth. One set is plain spur-gear on its periphery, as indicated by *d*. The others, *d'*, project from the upper face, and are set at considerable distances apart, and beveled off on one edge, as indicated. The swinging bridge B is capable of being swung on the center A^3, carrying with it the wheel D. It is operated by the push-piece E, which extends to the side of the watch. The teeth *d* gear with the wheel W, which receives motion through beveled gears from the stem X, in the usual manner. When in the position shown in Fig. 1, the teeth *d* gear, also, with the wheel *g*, connected with the hands of the watch. When in the position shown in Figs. 2 and 3 the teeth *d* are out of engagement with the wheel *g*. H is the mainspring-arbor, having a proper bearing in the plates A^1 A^2, and extending up through the liberal space in the interior of the tube *b*, and carrying, near its upper end, a ratchet-wheel, *h*. The teeth of this wheel *h* receive the hook-pawl or spring-click C, and also engage with the face-teeth *d'*, as plainly shown in Fig. 2. The spring-click C is excavated where it bridges over the teeth *d'*, as shown in Fig. 4, and is widened, to give sufficient strength at that point, as shown in the other figures. The spring-click C presses constantly toward the mainspring-arbor H, tending, necessarily, to also impel the swinging bridge B, on which it is mounted, in the opposite direction. Both these parts, when in use, tend toward the position in which they are shown in Fig. 3. The spring-click C is fixed to the swinging bridge B by means of the screw *c* and pin *c'*.

To wind the watch, the stem X may be turned by the fingers and thumb alternately forward and backward, after the manner of the most approved stem-winding watches, thus giving corresponding partial revolutions forward and backward to the wheel D. The face-teeth *d'* being impelled into contact with the teeth of the ratchet *h* by the force of the spring-click C, the turning of the wheel D in one direction gives a corresponding motion to the ratchet *h*, and, consequently, turns the mainspring-arbor H, winding the watch. The spring-click C engages with the ratchet-wheel *h*, and holds all that is thus obtained. On the backward motion of the wheel D the teeth *d'* slide over the teeth of the ratchet *h*, being allowed to do so by a slight movement of the swinging bridge B in opposition to the force of the spring-click C. When the backward

motion is completed, and the forward motion is resumed, the force of the spring-click C draws the teeth *d'* into effective contact again with the teeth of the ratchet *h*, and thus the winding continues.

The open interior of the tube *b* must be sufficiently capacious to allow not only of this slight motion of the swinging bridge B and its connections, but also of the greater motion required when the push-piece E is operated, and the wheel D is thrown into gear with the wheel *g*.

Many modifications may be made in the details of the mechanism by any good mechanic, and many additions thereto may be useful. Thus, for example, the end of the push-piece E may be equipped with the ordinary cam-piece, to hold it more easily during the setting of the hands.

The large diameter of the bearing of the wheel D on the tube *b* induces considerable friction; but it will be observed that this is not in a working part of the watch. Its friction is only effective to resist the winding and the setting of the watch when there is always sufficient power to readily overcome it. The single spring C serves to engage the hook-pawl, which takes in the ratchet *h*, and also serves as a spring for the yielding during the back motion of the stem X, and as the spring which swings the entire bridge B for the important function of holding the mechanism out of gear with the hands. There should be considerable force in this spring C to hold the teeth *d'* properly engaged with the ratchet-wheel *h*; but it is easy to give such force to this spring, and it is nowise objectionable in the performance of its other functions. The beveling of the face-teeth *d'* facilitates the movement of these teeth over the inclined faces of the teeth of the ratchet *h*.

This stem-winding mechanism is well adapted to be applied in changing ordinary key-winding watches to stem-winders.

I claim as my improvement in stem-winding watches—

In combination with the swinging bridge B *b*, and with the wheel D *d d'*, the spring-click C, arranged to perform the double function of a hook-pawl for the ratchet *h*, and of a spring for the bridge B *b* and its connections, as herein specified.

In testimony whereof I have hereunto set my hand this 2d day of March, 1875, in the presence of two subscribing witnesses.

CHARLES D. P. GIBSON.

Witnesses:
HENRY C. BANKS,
A. E. GEORGI.