A. VON LOEHR.

Self-Winding Watch.

No. 211,280. Patented Jan. 7, 1879.

Fig. 3.

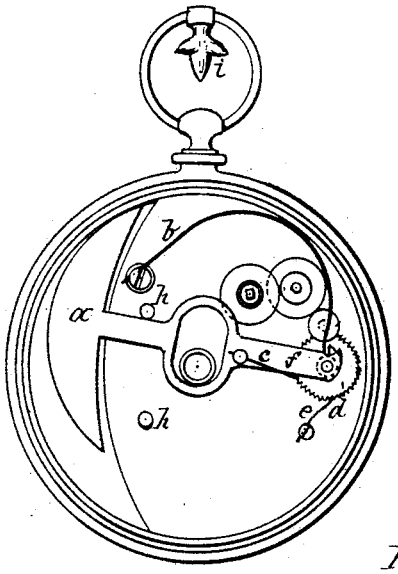


Fig. 1

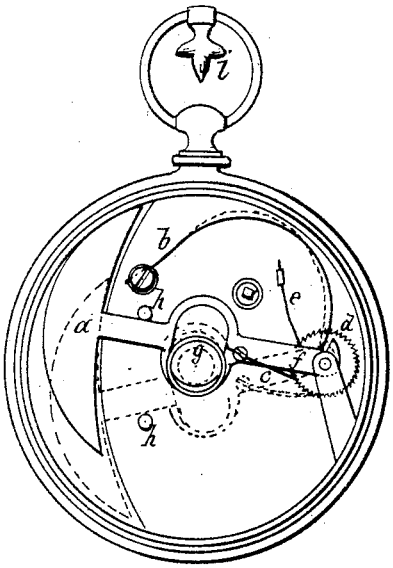
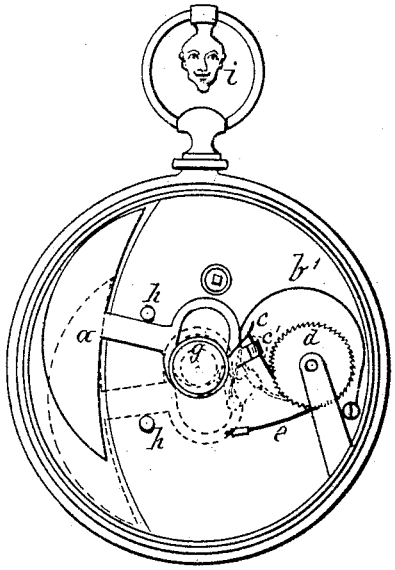


Fig. 2.



Witnesses

Alf. L. Leonard

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UNITED STATES PATENT OFFICE.

AUGUST VON LOEHR, OF VIENNA, AUSTRIA.

IMPROVEMENT IN SELF-WINDING WATCHES.

Specification forming part of Letters Patent No. **211,280**, dated January 7, 1879; application filed July 13, 1878.

To all whom it may concern:

Be it known that I, AUGUST VON LOEHR, of Vienna, in the Empire of Austria, have invented a certain new and useful Improvement in Watches, of which the following is a specification:

In a pocket-watch constructed according to the present invention, a vibrating pendulum or weight is so hung that when it is put in action by the shaking produced by the walking or other motion of the body of the wearer it will wind up the main watch-spring by means of an elastic pawl acting on a ratchet-wheel connected by a train of wheels and pinions to the said mainspring, and will do this in such a way that no special arrangements for preventing overwinding will be required.

In the accompanying drawings, Figures 1 and 2 show two modifications of the present invention, and Fig. 3 shows how the rotation of the ratchet-wheel is transmitted by intermediate gearing to the mainspring.

The pendulum or weight *a* is so arranged that when the watch is hung vertically and the wearer of it is walking, the said pendulum or weight will swing down by its own weight, and up by the counter-pressure of the spring, *b* or *b'*, connected to it.

A pawl, *c*, engages in a ratchet-wheel, having preferably very fine teeth, and each time the pendulum *a* vibrates it will, by means of the said spring *c* engaging in the teeth of the ratchet-wheel *d*, drive the ratchet-wheel partly around. A second pawl, *e*, prevents the ratchet-wheel from returning.

In order to obviate the danger of overwinding the mainspring, the vibrating pendulum or weight is preferably made not too heavy, and the toothing of the ratchet-wheel, as well as the gearing of the train of wheels, is preferably arranged so that, although a large number of vibrations of the pendulum will be required, only little power will be necessary for automatically winding up the watch. But an especial feature of this invention is, that the pawl *c* is made elastic, in order, by this elasticity, to take up any strain arising from any tendency of the pendulum to vibrate after the mainspring has been fully wound up. This elasticity may be obtained either by the said pawl being made of a fine spring, as shown in Fig. 1, or by its being arranged with one end pressing against a spring, *c'*, as shown in Fig. 2.

Instead of the flat spring, a spiral spring or other elastic equivalent may be used.

Instead of hanging the pendulum *a* on a pivot, *f*, as shown in Fig. 1, it may be hung directly to the spring *b'*, as shown in Fig. 2.

For setting the hands of the watch, a disk, *g*, may be fixed to the stem of the hands, and the setting effected by pressing a finger on the said disk and turning the same as required.

The stops *h h* serve to limit the distance traversed by the swinging pendulum.

The hook *i* serves to hang the watch from the side of the pocket, and so insure the vertical position of the watch when hung in use.

The ratchet-wheel may be provided with about one hundred and fifty teeth, and the gearing may be so arranged that about four hundred rotations of the ratchet-wheel will be necessary to wind up the mainspring completely.

As the pendulum at each full vibration will move the ratchet-wheel round about five teeth, about twelve thousand vibrations of the pendulum may be necessary for completely winding up the watch; but it is evident that these proportions may be varied without departing from the substance of this invention.

When the watch is not worn, and the pendulum is therefore not in motion, the mainspring may be wound up by any ordinary well-known means.

I prefer to make the mainspring of such a length that when the watch is fully wound up it will go for about forty-eight hours without requiring any motion of the pendulum.

I am aware that swinging pendulums have been used for measuring steps, and also for winding up watches, but in the latter case with special arrangements for stopping the motion of the pendulum when the watch has been wound up.

What I claim is—

In a self-winding watch, a vibrating pendulum carrying an elastic pawl, *c*, in com-

bination with the spring *b*, pawl *e*, ratchet-wheel *d*, and the mainspring of the watch, connected with said ratchet-wheel by means of a suitable train of intermediate gearing, substantially as shown and described, for the purpose set forth.

In witness that I claim the foregoing I have hereunto set my hand this 27th day of May, 1878.

AUGUST VON LOEHR.

Witnesses:
C. O. PAGET.
T. BARTA.