J. GARDNER, Jr.

INDICATOR FOR MAIN SPRING OF WATCHES.

No. 97,186. Patented Nov. 23, 1869.

Fig. 1.

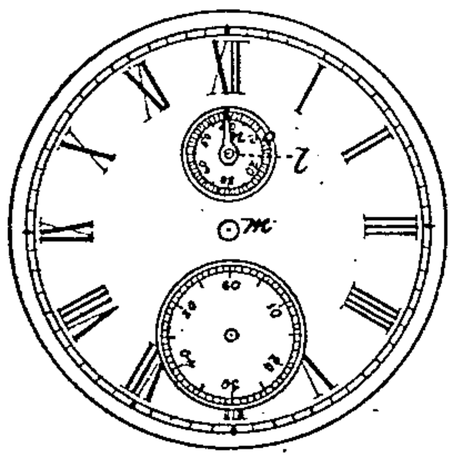


Fig. 2.

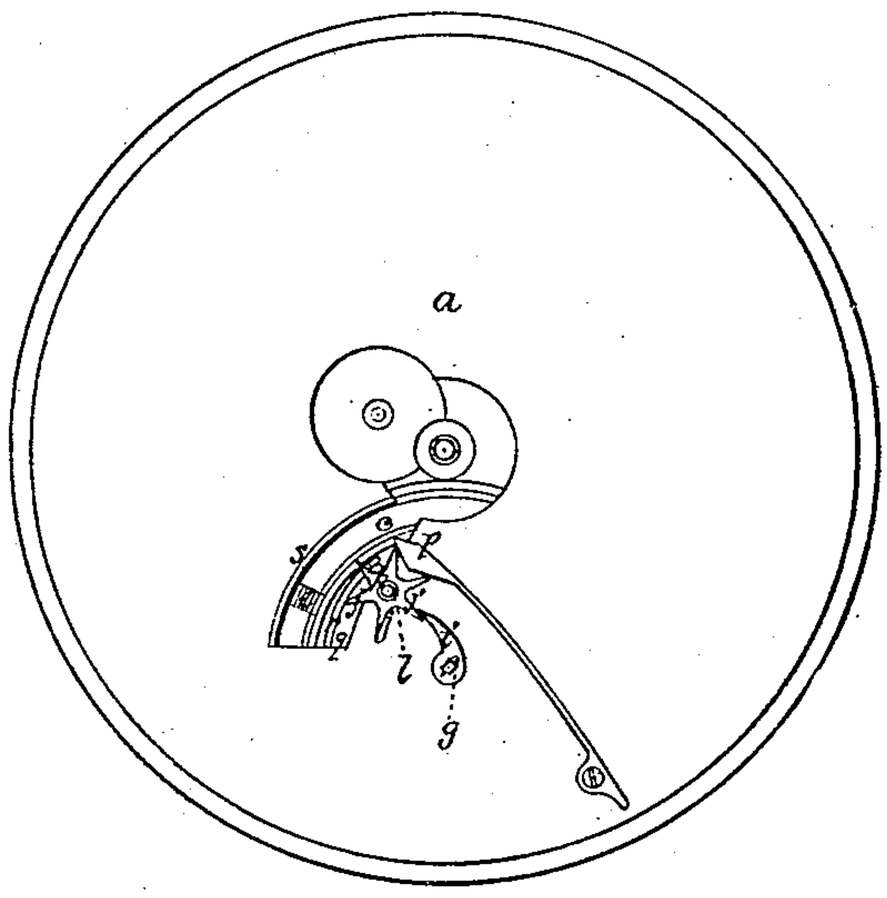
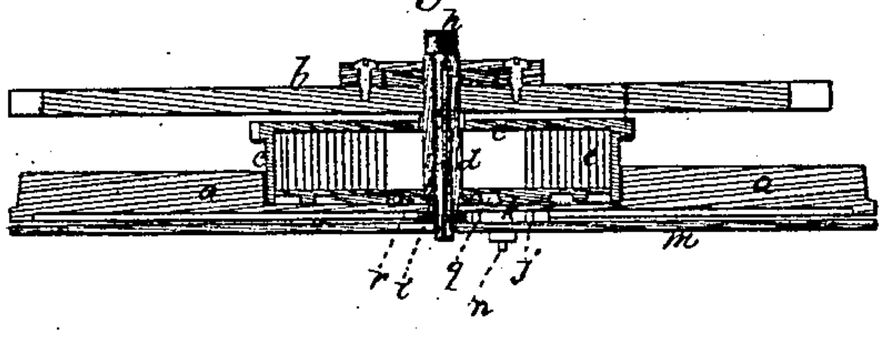


Fig. 3.



View of arbor & pin

Witnesses.
Edward Griffith.
Geo. A. Loring.

Joseph Gardner Jr.
by his Attorney
Frederick Curtis.

United States Patent Office.

JOSEPH GARDNER, JR., OF BOSTON, MASSACHUSETTS.

Letters Patent No. 97,186, *dated November* 23, 1869.

IMPROVEMENT IN INDICATOR FOR MAIN-SPRING OF WATCHES.

The Schedule referred to in these Letters Patent and making part of the same

To all to whom these presents shall come:

Be it known that I, JOSEPH GARDNER, Jr., of Boston, in the county of Suffolk, and Commonwealth of Massachusetts, have made an invention of a new and useful Improvement in Watches; and do hereby declare the following to be a full, clear, and exact description thereof, due reference being had to the accompanying drawings, making part of this specification, and in which—

Figure 1 is a face or dial-view of a watch, containing my invention;

Figure 2 being a like view of its face-plate, and

Figure 3, a vertical section of its winding-arbor, barrel, and adjuncts.

The invention herein described, and comprising the subject-matter of these Letters Patent, relates to means whereby persons may assure themselves instantly whether their watches be wound up or the contrary, or in what degree of tension, between each extreme, the spring may be at the time of observation.

My invention has reference to a class of watch-movements containing a "going-barrel," so called, in which the arbor is stationary, while the barrel and main gear revolve about it, and consists in providing such barrel and arbor with an index-pointer and scale, and an actuating-mechanism, so arranged, that upon winding up or contraction of the main-spring of the watch, the index-pointer shall stand at the beginning of the scale, which is impressed or printed upon the dial thereof, the subsequent running down or expansion of the spring causing the pointer to traverse the scale, as hereinafter explained.

In the drawings before alluded to as accompanying this specification, and which illustrate my invention—

a denotes the main bed or face-plate of a watch, and *b*, the stop-works plate, the barrel being shown at *c*, its arbor at *d*, and main-spring at *e*, such constituent parts being formed and arranged in manner similar to like parts in other watches of the class.

As my invention is confined to such parts, and has no local reference to other portions of the watch, further reference to its general organization is not considered pertinent to this specification.

In carrying out my object, I bore a hole, *f*, axially through the arbor *d*, and within the bore I insert loosely a rod, *g*, provided with a head, *h*, corresponding in size and form with that of the arbor against which it abuts, the two heads forming in union the winding-portion of such arbor.

The smaller extremity of the rod *g*, at its point of protrusion from the arbor and plate, has affixed to it a pawl, *i*, the parts being so arranged, that although at other times independent of the arbor, upon application and turning of the key, the pawl and its rod shall be forced to travel with such arbor, since the rotation of the key, in winding the arbor, must also wind the rod, as it covers the heads of both.

Such pawl *i* meshes into the teeth *j j*, &c., of a toothed wheel, *k*, the latter being mounted upon a short post or stud, *l*, which is affixed at its base to the plate *a*, and projecting outwardly through the dial *m* of the watch, where it is furnished with a hand or index-pointer, *n*, a circle of divisions or index-scale, *o*, being described concentrically about such post and upon the face of the dial.

A spring-stop, *p*, is affixed to the plate *a*, and alongside of the wheel *k*, and taking into its interstices, to prevent slipping and irregular rotation of the latter, and to insure proper presentation of its teeth to the action of the pawl.

Within a circular and concentric channel, *q*, cut within that face of the barrel-head next adjacent to the plate *a*, I dispose a spring-catch, *r*, the hook or spur of which takes into or impinges against the teeth of the wheel *k*; consequently, such spring-catch, travelling in a circular path of movement, in union with the barrel, will cause intermittent rotary movements of the wheel, a short segmental aperture, *s*, being cut through the plate *a*, to allow access to the wheel of the spring-catch, such catch, at other times, being depressed by impinging against the boundary of the aperture.

The above description embraces the mechanical construction and arrangement of parts constituting my invention, and will enable watchmakers or repairers of average acquirements to construct and apply them.

Upon applying the key, to wind the watch, care should be taken that it covers both the head of the rod and of the arbor.

The mechanism is so arranged, that although independent of the arbor, the action of the key, in winding the latter, shall of necessity produce a corresponding revolution of the rod and its pawl, with resulting intermittent partial rotations of the wheel and index-pointer or hand, the teeth of the wheel being graduated to the length and power of the spring, since the functions of the two should be so calculated and adjusted, that upon completion of the winding up of the spring, the pawl shall have effected nearly, but not quite a revolution of the index-pointer, which, at this time, should stand at the zero or starting-point of the divisionary scale.

Upon removing the key, the pawl, before forced by it to travel with the arbor, has no further action, and permits the barrel to travel without actuating it.

A relaxation of the spring, during the twenty-four hours, or the running-time of the watch, will, as a matter of course, under the last-mentioned condition of parts, produce a retrograde movement of the bar-

rel, and, by means of its spring-catch *r* and toothed wheel *k*, cause a partial rotation of the index-pointer, or one of sufficient extent to cause it to stand at or about at the end of its scale.

An inspection of the index-pointer will at once enable the observer to determine whether the watch is wound or not.

I am aware that an index-pointer has heretofore been applied, for a similar purpose to mine, directly to the arbor of a watch, in which a fusee and chain are employed, in which case the arbor travels.

The application of a device to effect this purpose, in a watch containing a going-barrel, necessitated a compact and delicate, though not complicated mechanism, such as is hereinbefore explained.

Having thus described the nature, as well as the purposes and advantage of my invention,

What I believe to be novel and original with myself, and desire to secure by Letters Patent of the United States, is as follows:

Claim.

I claim, as a means of determining the degree of tension of the main-spring of a time-piece, the organization and arrangement of the tubular arbor and the rod *g*, the pawl *i*, the toothed wheel *k*, spring-catch *r*, or its equivalent, and the index-pointer and scale, the stop-pawl being accessories to such parts, and the whole operating in manner and for the purposes herein shown and explained.

JOSEPH GARDNER, JR.

Witnesses:

FRED. CURTIS,

E. GRIFFITH.