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SELF WINDING WRISTLET WATCH

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Fig. 4

Fig. 5

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Art. 5.
The present invention relates to self-winding wristlet watches and has more particular reference to the type of said watches which are wound-up automatically by the respective movements of the wristlet or wristband relative to the watch.

The primary object of the invention is to provide a self-winding wristlet watch that does not depend for its winding-up power upon any intentional physical action of handling same by the wearer for example in the putting on or taking off the watch from the wrist.

A further object of the invention is to provide a self-winding wristlet watch adapted to utilize for its winding-up power any unintentional relative movements between the wristlet and watch case such as are caused by the normal expansion, contraction or distortion of the wearer's wrist during the time the watch is being worn whereby the winding-up of the watch motionwork is entirely automatic and independent from any wearer's volition as long as he carries the watch upon his wrist.

A still further object of the invention is to provide a self-winding wristlet watch whose winding mechanism requires but little energy, is entirely concealed, most durable in use and capable of being harmonized with the current style and requirements.

Still a further object of the invention is to provide a self-winding wristlet watch that only requires to be worn on the wrist in the usual or ordinary manner in order to wind itself without the assistance of any movable or oscillating momentum-creating part that is to say without any beats, while being automatically protected against over-winding.

With these and such other objects in view as will incidentally appear hereafter, the invention comprises the novel combination, construction and arrangement of parts illustrated in the accompanying diagrammatic drawings forming a part of the present disclosure, and while there is shown therein a preferred embodiment, it is to be understood that the same is susceptible of modification and change without departing from the spirit of the invention.

Referring to the drawings:

Figure 1 is a perspective view showing the watch case with the lid in opened out position, assuming the motionwork or movement of the watch to be omitted, this view illustrating the wristband or strap fragmentarily also the swivel connection between the watch case and one of the loops to which said band or strap is attached.

Figure 2 is a fragmentary top plan view of the structure shown in Figure 1.

Figure 3 is a fragmentary sectional view taken on the line III—III of Figure 2.

Figure 4 is a face view on an enlarged scale of the mechanisms according to the invention for winding-up the watch and precluding over-winding.

Figure 5 is a sectional view along the plane passing through the line V—V of Figure 4 but showing the winding-up mechanism, the retaining mechanism and the mainspring drum or barrel relatively spaced from their position of assembly.

Like reference characters designate like parts throughout the several views.

In the watch case 1 which may be of any approved stylish shape and design and adjacent one of its ends is arranged a revolving pivot pin a freely passing through the opposite side walls of said case and carrying externally two longitudinally projecting arms b substantially parallel to each other and connected together at their free ends to form a loop or buckle by a cross rod d around which the wristband or wristlet 5 (formed for instance by a strap of leather or fabric) is passed and attached, for example by stitches in the usual way. Intermediate to ends which are advantageously journailed in bearing blocks g the revolving pivot pin a carries rigidly a bifurcated lug c.

A reciprocatable rod 3 formed at its outwardly directed end with an enlargement 2 holding same in permanent engagement with the bifurcated lug c has its inwardly directed pointed end in engagement with a notch 4' formed in a lever 4 pivoted at 5 about the geometrical axis of the mainspring forming part of the motionwork or movement of usual construction, said motionwork not being shown as it forms no part of the invention.

The lower end of the lever 4 has a stud 6 engaging in a slot 7 formed in an underlying lever 8 which is pivoted at 9 to the lower arm or lobe of a three-armed or trilobed star member or spider 10 rotateable about the axis 5. The other two arms or lobes of this star member carry studs 11, 12 bearing against the periphery of a rotatable winding disk 13 having a central screw 14 (see Fig. 5) to which the arbor 15 of the mainspring (not shown) is attached. A projecting nose 16 on the underlying lever 8 is adapted to grip the periphery of said disk 13 upon clockwise angular motion of the lever 4 responsive to each longitudinal movement of the connecting rod 3 in the
The lever 4, caused by expansions and contractions of the wrist do not wind the main spring further, but merely cause the lever 8\textsuperscript{a} to swing between the stops 18 and 19 without permitting the nose 16 of lever 8 to move to a new place on the edge of the winding disc 13. Consequently overwinding of the main spring is obviated, since further winding thereof does not occur until it has run down sufficiently to permit the lever 8\textsuperscript{a} to strike the stop 18 and release the nose 16 from disc 13 before the lever 4 has finished its movement in the anti-clockwise direction.

It will be appreciated that the invention provides a wristlet watch the constructional system of which can be made rugged, durable and stylish and that is wound-up in an entirely automatic way without any volition of the wearer by the mere action due to the normal expansion, contraction and distortion of his wrist or fore-arm while he wears his watch, so that it is quite impossible for the watch to stop owing to not having been wound-up, whereby the going of said watch may be regarded as perpetual as long as it is worn.

Modifications of a constructional nature might of course be introduced without departing from the scope of the invention as defined by the appended claims.

What I claim is:

1. A self-winding wristlet watch comprising, in combination with the motionwork of usual construction contained in the watch case, a winding member engaging the mainspring arbor, a one-way pivotable clamp gripping the periphery of said member, a rocking lever pivotally connected to said clamp, reciprocable means connected to the wristlet and engaging said lever and swivelled in the watch case to transmit to the rocking lever spasmodic impulses due to the stresses imparted to the wristlet by the natural movements of the wearer's wrist, and a second one-way pivotable clamp gripping the winding member alternately to the first-named clamp during the return of the reciprocable means.

2. A self-winding wristlet watch comprising, in combination with the motionwork of usual construction contained in the watch case, a winding disc engaging the mainspring arbor, a one-way pivotable plate fitted with spaced studs contacting with the periphery of the disk, and a lever pivotted to said last-named plate and gripping the disk alternately to the first-named gripping lever during the return of the rocking lever and loop.

3. A self-winding wristlet watch comprising, in combination with the motionwork of usual construction contained in the watch case, a winding disk engaging the mainspring arbor, a one-way pivotable trilled plate having two of its lobes fitted with a stud contacting with the periphery of the disk, a spring-influenced lever pivotted to said plate and shaped at its inner end for grip-

5. A spring bow 17\textsuperscript{a} rigidly held at one end by a screw 20\textsuperscript{a} acts by its opposite or free end on the lever 8\textsuperscript{a}, which, together with its supporting star member 10\textsuperscript{a} is displacable between stops 18, 19 only when the mainspring of the motionwork sets up sufficient opposite thrust to overcome the pressure of the spring-influenced lever 17\textsuperscript{a}.

The operation is briefly as follows:

Any normal expansion, contraction or distortion of the wearer's wrist or fore-arm during the time the watch is being worn results in a swivelling motion of the loop c—d carrying the wristlet 8 with respect to the bearing blocks g and to the watch case 1. This swivelling motion is transmitted by the lug c to the rod 3 which is thus spasmodically reciprocated and causes a clockwise rotation of the lever 4 and of the winding-up disk 13 in the manner already described.

During this rotation, the disk 13 is free to turn between the studs 11\textsuperscript{a}, 12\textsuperscript{a} and nose 16\textsuperscript{a} of the retaining mechanism but immediately the rotation ceases and during the return of the winding-up mechanism, under the action of the spring bow 17\textsuperscript{a}, the nose 16\textsuperscript{a} wedges itself against the disk 13 to retain the latter. At this time, of course, the nose 16 of the lever 8 pertaining to the winding-up mechanism unlocks the grip, thus allowing said mechanism to return in readiness for the next clockwise winding-up rotation. The action is repeated each time a movement of the wearer's fore-arm or wrist results in a swivelling motion of the loop member c—d and in a longitudinal displacement of the connecting rod 3, whereby successive winding-up movements are automatically imparted to the mainspring of the motionwork of the watch.

It will be clear from the foregoing that the retaining mechanism is inoperative while the winding-up mechanism is in action, but is operative at all other times.

The bow spring 17\textsuperscript{a} keeps the lever 8\textsuperscript{a} pressed against the stop 18 when the main spring is only slightly wound up. Further winding of the main spring causes its increasing backward pressure to move the lever 8\textsuperscript{a} away from the stop 18 and compress the spring 17\textsuperscript{a}. The limit of compression of the spring 17\textsuperscript{a} occurs when the main spring has been wound to such an extent that the lever 8 strikes the stop 19. When this occurs
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5. In combination, a wrist watch, a wrist strap, and means responsive to movements of said strap due to expansions and contractions of the wrist for winding said watch.

6. In combination, a wrist watch, a wrist strap, winding means for said watch, and operating mechanism for said winding means interposed between one end of said strap and said winding means and responsive to the expansions and contractions of the wrist during normal use.

7. In a wrist watch, a wrist strap, and winding means for said watch to which said wrist strap is connected, said means comprising a member which is moved sufficiently, by changes in the size of a wrist during normal use, to operate said winding means.

8. In a wrist watch, a wrist strap, and winding means for said watch to which said wrist strap is connected, said means comprising a member which oscillates sufficiently, during changes in the size of the wrist in normal use, to operate said winding means.

10. In combination, a wrist watch, a wrist strap, and means responsive to variations in tension on said strap due to expansions and contractions of the wrist for winding said watch, and a spring to return said winding means.

11. In combination, a wrist watch, a wrist strap, and oscillatable spring winding means responsive to variations in tension on said strap due to expansions and contractions of the wrist for winding said watch, and a spring to return said winding means.

12. In combination, a wrist watch, a wrist strap, and means responsive to variations in the tension of said strap due to expansions and contractions of the wrist for winding said watch and a return spring for said winding mechanism.

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