

# UNITED STATES PATENT OFFICE.

HENRI SANDOZ, OF TARANNES, SWITZERLAND.

## WINDING AND SETTING MECHANISM FOR WATCHES.

No. 883,427.

Specification of Letters Patent.

Patented March 31, 1906.

Application filed October 1, 1906. Serial No. 336,862.

To all whom it may concern:

Be it known that I, HENRI SANDOZ, a citizen of the Swiss Republic, residing at Tarannes, canton of Bern, Switzerland, have invented certain new and useful Improvements in Winding and Setting Mechanism for Watches; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The accompanying drawing given by way of example, illustrates two forms of the winding and setting mechanism which constitutes the invention.

Figure 1 is an elevation partly in section of one form of the invention; Fig. 2 is a longitudinal section through A B in Fig. 1; and Fig. 3 is a longitudinal section of a modification.

This mechanism is of the kind in which a crown stem firmly connected with the watch case is supported in the pendant of this case by a spring and screw device termed a "sleeve bar". The square part of the winding stem *a* is fitted so that it can move freely in the longitudinal direction in a sleeve *b* which rotates in the plate *c* and a bridge or cock *d* where it is supported axially by a bearing *e*. In the square hole formed in the sleeve *b*, the lower end of the crown stem *f* engages which is furnished as stated above with the device termed a "sleeve bar" which supports it in the pendant, this device being well-known but not shown in the drawing. On a cylindrical bearing *g* of the sleeve *b* the winding pinion *h* is loosely mounted and is supported in a recess *i* in the plate *c*. On the lower part the pinion *h* is provided with the usual clutch teeth *k* with which similar teeth *l* on the sliding sleeve pinion *m* engage for effecting the winding, the sliding sleeve pinion having a free movement along the square part of the stem *a*. The lower end *n* of the rod *a* rests on the end *o* of a lever *p*, pivoted at *q*, the other end *r* of the lever bearing against a pin *s* fixed to an arm *t*, pivoted at *u* and engaging in the groove *v* of the sliding sleeve *m*. The lever *p* is placed on one side and the arm *t* on the other side of the plate *c* in which is a slot *x* through which the pin *s* of the arm *t* projects.

A U-shaped spring *y* placed in a recess *z* of the plate rests with one of its arms against the pin *s* and with the other arm, which is

stronger than the former against a pin *1* fixed at the end *r* of the lever *p* in such a manner that this spring tends to cause the said end *r* of the lever *p* to bear constantly against the pin *s*, and the end *o* of the same lever against the end *n* of the stem *a*. The spring *y* may if desired be anchored in the recess *z* by means such for instance as screws *z'*.

At 2 the intermediate wheel *3* is mounted with which the sliding sleeve pinion *m* for setting the hands engages.

When the stem *a* is pushed in by the crown stem *f*, the parts of the mechanism occupy the position indicated in the drawing, that is to say, that the sliding sleeve pinion *m* is out of engagement with the wheel *3* and is clutched to the winding pinion *h* through the teeth *k l* respectively of these two parts. In this position of the parts of the mechanism the winding is effected and it is to be observed that the disengaging and engaging of the sliding sleeve pinion *m* with the winding pinion *h* is assured by the spring *y* which, as will be seen later on, has a double action. It will also be observed that in this position there is still a longitudinal "play" of the stem sufficient for insuring, through this spring, the working of the secret spring which, in double cased watches known as "hunters", determines the opening of the bottom of the case that covers the dial and the glass. This longitudinal play is due to the free space between the end *n* of the rod and the bottom *4* in which it is adjusted. If the crown stem *f* be now pulled outward pressure of the stem *a* on the lever *p* is relieved and the spring *y* will cause this lever to oscillate, and the lever acting against the pin *s* of the arm *t* causes the arm to oscillate, so that *s* moves to the dotted position *s'* (Fig. 1), while the point *5* of the arm *t* moves to *5'*, thus putting the sliding sleeve pinion *m* in gear with the intermediate wheel *3* for setting the hands.

It will be observed that it is not the stem *f* or the stem *a* which as is generally the case, directly causes the sliding sleeve pinion to engage with the intermediate wheel but that this function is effectively performed by the spring *y* when the lever *p* is relieved of the pressure of the stems *f* and *a*. This arrangement effects the engagement of the sliding sleeve pinion *m* with the intermediate wheel *3* without shocks being transmitted to the hands.

The sleeve *b* may, if necessary, be replaced

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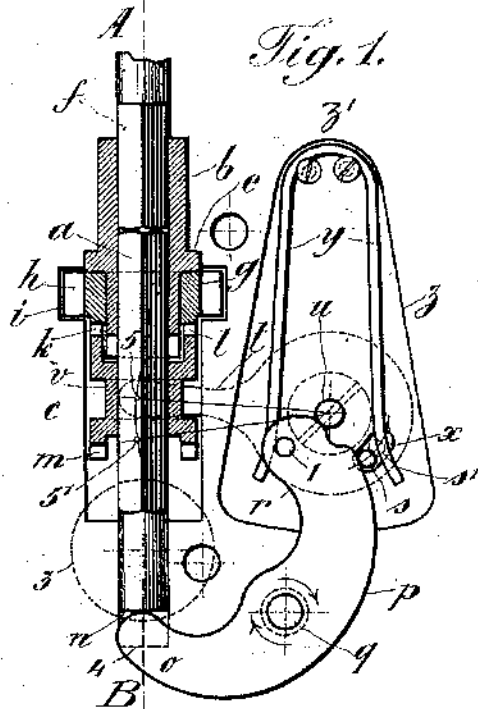


Fig. 2.

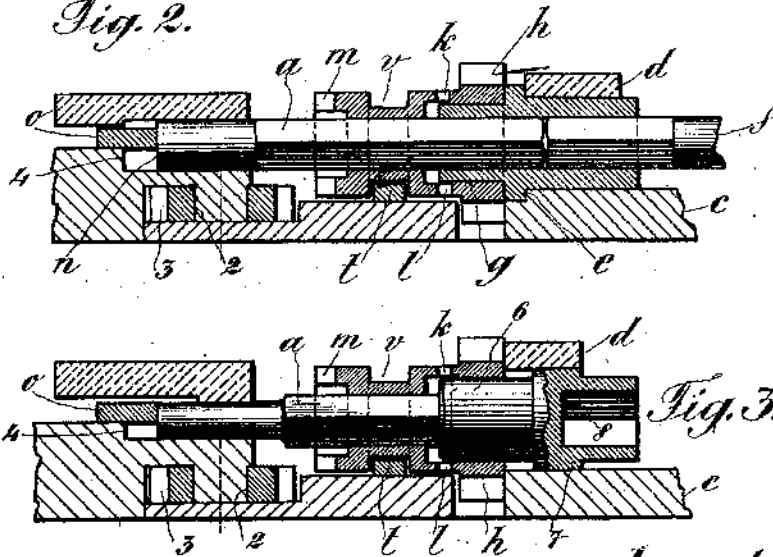


Fig. 3.

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by a corresponding enlargement in one piece with the winding stem, as shown in Fig. 3. In that case the winding pinion *h* is fitted loosely on the cylindrical part 6 of the stem *a* and the outer part 7 of this stem can rotate freely and move axially between the plate *c* and the bridge or cock *d*, this part 7 having a square hole 8 intended for the reception of the lower end of the crown stem similar to *f* (Fig. 2). In this modification all the other parts are similar to those in the form first described with reference to Figs. 1 and 2 and the working is the same. The forms and the dimensions of the parts may differ.

What I claim and desire to secure by Letters Patent is:—

1. A winding and setting mechanism of the negative type for watches, comprising a winding stem, a crown stem, means for supporting the crown stem in the watch pendant, a winding pinion on the winding stem, an intermediate hand setting wheel mounted near the winding stem, an axially movable sleeve on the winding stem having gear teeth at one end, clutch teeth at the other end and a circumferential groove, an arm pivoted at one end and arranged to engage with its free end in the groove, a pin on the pivoted end of the arm, a two-armed lever arranged with one end in contact with said pin and the other end in contact with the inner end of the winding stem, a pin on the end of the lever remote from the stem, a single U-shaped spring bearing against said pin on the lever, and against the pin on the pivoted arm aforesaid, and adapted to hold the lever and arm in operative connection and to act through the said arm on the axially movable sleeve to effect its engagement with the winding pinion or the hand setting wheel according to the position of the crown stem.

2. A winding and setting mechanism comprising in combination, a winding stem, a winding gear, a setting gear, an intermediate gear adapted to be shifted into operative relation with either said winding or setting gear, said intermediate gear being operated by said winding stem, a shifting member for said intermediate gear, a movable member operated by said winding stem, and yielding means having two portions engaging said shifting and movable members respectively and being normally under tension to act initially upon movement of said stem to yieldingly shift and hold said intermediate gear into operative relation with either said wind-

ing or setting gear, one of said portions having a greater tension than the other.

3. A winding and setting mechanism comprising in combination, a winding stem, a winding gear, a setting gear, an intermediate member adapted to be shifted into driving relation with either said winding or said setting gear and driven from said stem, a shifting member for said intermediate gear, a movable member actuated by said stem, and a single spring engaging said shifting and movable members and serving when said stem is operated to yieldingly shift and hold said intermediate member in driving relation with either said winding or said setting gear, said spring being tensioned to exert a greater pressure on the movable member than on the shifting member whereby said intermediate gear is normally held in driving relation with said winding gear.

4. A winding and setting mechanism comprising in combination, a winding stem, a winding gear, a setting gear, an intermediate gear adapted to be shifted into driving relation with said winding or setting gears and driven by said winding stem, a shifting member for said intermediate gear, a movable member actuated by said stem, and a spring engaging said shifting and movable members and acting initially when said stem is operated to yieldingly shift and hold said intermediate gear in driving relation with either said winding or said setting gear, said spring being tensioned to exert an unequal pressure on said movable and shifting members.

5. A winding and setting mechanism comprising in combination, a winding stem, a winding member, a setting member, an intermediate member adapted to be shifted into driving relation with either said winding or setting members, said intermediate member being driven from said stem, mechanism operatively associated with said stem and intermediate member, and yieldingly acting differential means operating on said mechanism and serving upon movement of said stem to initially shift and hold said intermediate member in driving relation with either said winding or said setting member.

In testimony whereof he has affixed his signature, in presence of two witnesses.

HENRI SANDOZ.

Witnesses:

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