Feb. 16, 1932. F. PIGUET 1,845,440

TIMEPIECE WINDING AND SETTING MECHANISM

Filed Oct. 8, 1928

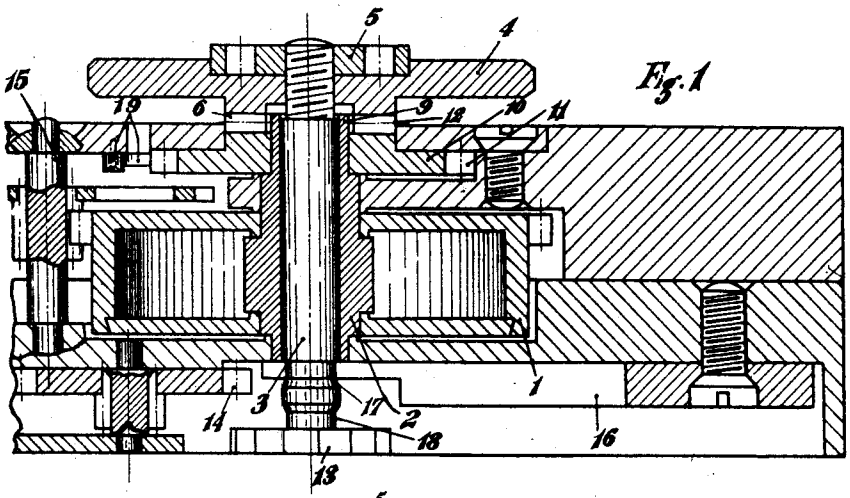


Fig. 1

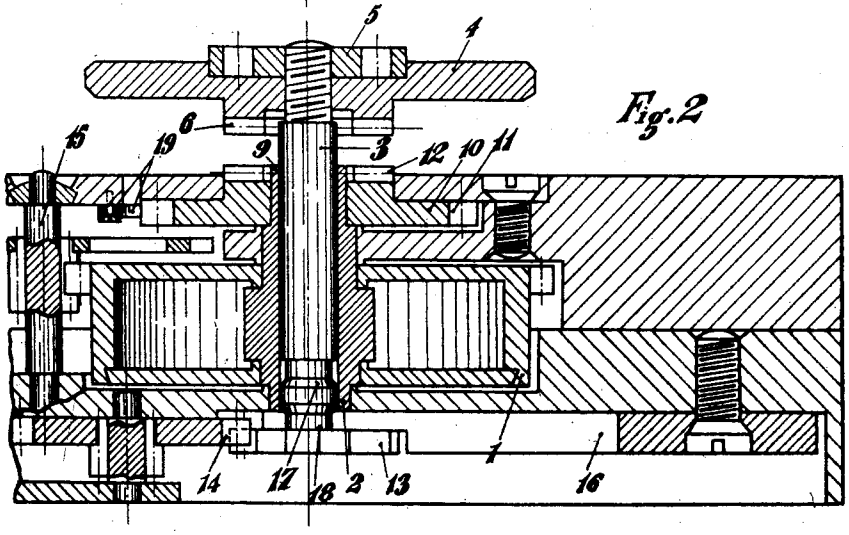


Fig. 2

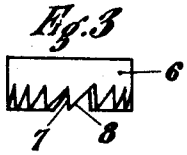


Fig. 3

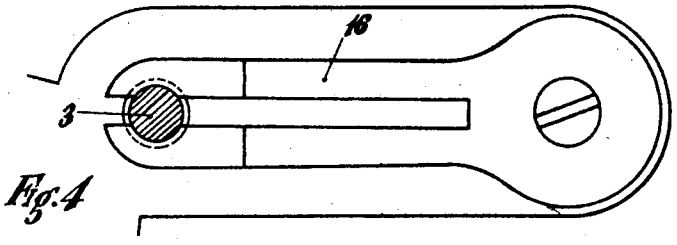


Fig. 4

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UNITED STATES PATENT OFFICE

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TIMEPIECE WINDING AND SETTING MECHANISM

Application filed October 8, 1928, Serial No. 311,144, and in Switzerland October 13, 1927.

This invention relates to a timepiece winding and setting mechanism which is particularly adapted for use in very thin clock movements wherein little space prevents the winding stem from being placed in the usual position, that is in a direction parallel with the dial plate of the timepiece.

It is an object of the invention to provide a winding and setting mechanism wherein the main spring drum of the time piece has a hollow shaft and the axially slidable winding and setting stem penetrates this hollow shaft. The details of construction and operation will be apparent from the accompanying drawings illustrating one embodiment of the invention.

The Figures 1 and 2 are two longitudinal sections through the winding and setting mechanism in two different working positions. The Figures 3 and 4 show detail parts thereof.

The spring drum is indicated at 1 and its shaft at 2. This shaft is hollow and traversed by the winding stem 3 which is axially displaceable and carries at one end the winder 4 fastened to the stem by means of the locknut 5. On its inner face the winder 4 carries a "Breguet" gear or crown wheel 6 (see Fig. 3) that means a gear in which each tooth is limited by a vertical plane 7 and inclined plane 8. To the square portion 9 of the shaft 2 is rigidly connected a wheel 10 provided with two gears 11 and 12. The gear 11 cooperates with a locking pawl 19 and the gear 12, which is also a Breguet gear and formed on the hub of the wheel 10, cooperates with the teeth 6 of the winder 4. The numeral 13 indicates a pinion fixed to the winding stem and adapted to cooperate with the dial wheel 14 meshing with a toothed wheel which is carried by the shaft 15 of the center wheel and is not illustrated. Figure 4 shows a forked spring 16 encircling the winding stem 3.

Figure 1 shows the mechanism in its normal or winding position. The pinion 13 is removed from the dial wheel 14, while the two Breguet gears are in mesh. To wind the timepiece it is sufficient to rotate the winder 4 alternately in one and in the other direction, as it is done with pocket watches. When it is turned in winding direction the vertical surfaces of the teeth of the two Breguet gears come in contact whereby the shaft of the spring drum is turned. When the winder is turned in the other direction, the inclined surfaces of the teeth of the two gears slide one over the other and the shaft of the spring drum is not turned. The spring 16 cooperating with the bevelled collar 17 of the winding stem yieldably maintains the gear 6 in engagement with the gear 12 and provides for a slight axial movement thereof when the teeth of the two gears 6 and 12 slide over each other.

To set the timepiece the winding stem is brought into the position shown in Figure 2, wherein it is maintained by the spring 16 engaging the groove 18 of the winding stem. In this position the two gears 6 and 12 are out of mesh, while the pinion 13 meshes with the dial wheel 14.

It will be understood that the invention is not limited to the exact structure shown and described. Particularly the two Breguet gears could be replaced by other clutch members, for example by a male square provided on the spring drum shaft cooperating with a female square on the winding member, but in this case, in order to wind the clockwork, the stem could be turned only in one direction.

I claim:

In a timepiece winding and setting mechanism, the combination of a spring drum having a hollow shaft, an axially movable winding and setting stem extending through said hollow shaft and having a reduced inner end, a pinion on said inner end of the stem, a winding member on the other end of the stem, a toothed wheel in rigid rotative connection on said hollow shaft, cooperating Breguet gears on said toothed wheel and on said winding member, said stem being provided with an annular groove and with a beveled collar between said groove and said reduced end of the stem, a dial wheel adapted to come in mesh with said pinion on the stem and to be rotated for setting the timepiece, and spring means normally engaging said annular groove in the stem to yieldably maintain said Bre-

guet gears in mesh with each other and coacting with said beveled collar to permit axial displacement of the stem, whereby said Breguet gears will come out of mesh with each other and said pinion on the stem will be brought in mesh with said dial wheel.

In testimony whereof I affix my signature.

FRÉDERIC PIGUET.