

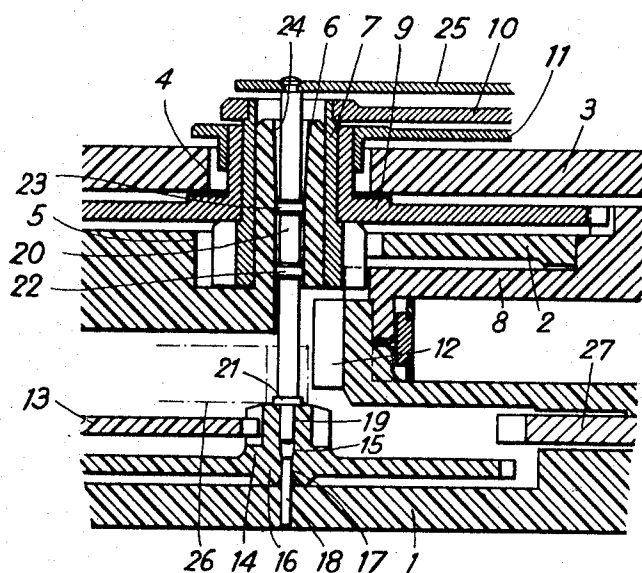
May 9, 1967

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3,318,088

MOBILE ORGAN OF THE GOING TRAIN OF A WATCH MOVEMENT

Filed Nov. 4, 1965



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MOBILE ORGAN OF THE GOING TRAIN OF A WATCH MOVEMENT

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Filed Nov. 4, 1965, Ser. No. 506,303

Claims priority, application Switzerland, Nov. 19, 1964, 14,914/64

5 Claims. (Cl. 58—139)

The present invention relates to a mobile organ of the going train of a watch movement comprising a shaft secured to a toothed member. It is well known that in the assembling of a watch movement the positioning of certain mobiles provided with a shaft of substantial length, such as for example the fourth- or seconds-wheel in the case where this is placed in the center of the movement presents some difficulties. Generally, the assembling of such a movement is effected by placing the different mobiles of the going train onto one of the frame elements, generally the bottom plate, in such a manner that the ends of the shafts pivoted on said plate are definitely engaged in their bearings, and in then mounting the opposite frame element. Now the wheels provided with shafts of great length cannot remain in a stable manner in a position coaxial to the bearing as long as the two frame elements, between which these wheels pivot, have not been put in place. It is therefore necessary to treat such wheels with long shafts particularly carefully and very often to guide them specially in order that their pivots engage the bearings associated thereto.

The present invention aims to avoid these difficulties in the assembling. To this end the mobile organ according to the present invention is characterized in that the shaft is removable and presents, at one of its ends, a securing element adapted to be connected with the toothed member, in a position coaxial with the latter, by simple axial displacement of the shaft in a direction towards said member.

Other features and advantages of the invention will become apparent from the description now to follow, of a preferred embodiment thereof, given by way of example only, and in which reference will be made to the accompanying drawing, the only figure of which illustrates a partial axial section through a watch movement equipped with a mobile organ according to the invention.

Referring to the drawing, the illustrated movement comprises a base plate 1 and an upper bridge 2, which form the two opposite elements of the movement frame. Above bridge 2 extends the dial 3 provided with a central circular opening 4. The bridge 2 has in its upper face an annular recess 5 situated in a line with the opening 4 which traverses the bridge 2 on a portion of the periphery thereof and from the center of which projects a cylindrical sleeve 6 secured to the bridge 2 and extending through the opening 4. On this sleeve pivots a cannon-pinion 7, the toothing of which meshes with a barrel 8 arranged between the frame elements 1 and 2. An hours-wheel is engaged on the cannon-pinion 7. The toothing of this hours-wheel extends between the bridge 2 and the dial 3. A minutes-hand and an hours-hand 11 are secured to the upper end of the cannon-pinion 7 and of the hours-wheel 9, respectively.

In addition to its toothing meshing with the cannon-pinion 7 the barrel 8 is provided with a toothed crown 12 meshing with the pinion of an excentered center wheel (not shown). This pinion drives the pinion of a third or "petite moyenne" wheel 13, which in turn drives the seconds-wheel fromed by a toothed member 14 and a shaft 20. The member 14 is formed of one piece of in-

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jected plastic material. It is axially traversed by a passage 15 the lower end of which presents a conical entry opening into a hub 16 formed in the center of the lower face of wheel 14.

Following the conical entry of passage 15 there is a cylindrical zone 17 forming a bearing and into which penetrates the upper end of a peg 18 formed by a cylindrical metallic rod secured to the base plate 1.

The upper end of passage 15 also is shaped to produce a cylindrical zone 19 which opens into the plane upper face of the pinion of member 14. The shaft 20 has at its lower end of a cylindrical step adapted to the dimensions of the opening 19, this step being limited by a collar 21. Approximately in the middle of its length the shaft 20 presents two collars 22 and 23 situated within a cylindrical portion of a passage 24 traversing the sleeve 6 in axial direction. As seen in the drawing the passage 24 is slightly widened out at its upper portion. A seconds-hand 25 is secured to the upper end of shaft 20.

The mounting of the collars 22 and 23 in passage 24, and of the housing 17 on the peg 18 affords free rotation of the mobile 14. The axial play of this mobile is confined on the one hand by the upper face of the base plate 1 and on the other hand by the lower face of a pallet-cock 26 extending above the pinion of mobile 14.

The assembling of the described movement is effected in the following manner: The different wheels of the going train are successively placed onto the base plate 1, the barrel 8 resting on a ratchet wheel 27, which itself is placed on the plate 1. During this operation the mobile 14 is positioned without its shaft 20. It is maintained in a stable position coaxial with respect to the movement owing to the peg 18 and to the hub 16.

Subsequent to the fixation of the pallet-cock 26 onto the plate 1, the mobile 14 is axially engaged between these two frame elements, whereupon the upper base 2 is placed and secured with its periphery to the plate 1. The cannon-pinion 7 and the hours-wheel 9 may be engaged on the central sleeve 6 whereafter the dial 3 and the minutes and hours hands may be mounted. All that has to be done then is to introduce shaft 20 through passage 24 and to exert an axial pressure to frictionally engage its step into the passage 19 whereby the collar 21 bears against the upper face of the pinion of mobile 14. Both elements of the fourth-wheel are thus connected with each other. The placing of the seconds-hand 25 may be effected afterwards or before the placing of the shaft 20. While the mobile described hereinbefore pivots on a stationary peg 18 it could of course in another embodiment present a pivot connected with the mobile 14 and projecting downwardly. The plate 1 would then be provided with a conventional bearing adapted to receive this pivot.

Moreover the fourth- or seconds-wheel described hereinabove could also in another embodiment be dimensioned so as to form a fourth wheel placed in a position excentered with respect to the movement.

It is obvious also that other mobiles in addition or instead of the described seconds mobile could be provided with an independent shaft adapted to be secured to the mobile after the assembling of the movement. Optionally, the independent shaft could also be placed on the side opposite the dial.

Owing to the fact that the described mobile organ comprises an independent shaft which may be positioned after the assembling of the movement, such assembling is highly facilitated since the seconds-wheel may be placed in a stable position coaxially with respect to its bearings and since it is not necessary any more to take particular care to this mobile during the positioning of the upper frame elements.

We claim:

1. A watch movement comprising a first frame member, a toothed member rotatably mounted adjacent said frame member, one of said members containing a bore receiving a pivot stem carried by the other, and one of said members providing an annular abutment engaging the other and coaxial with said stem, a second frame member spaced from said toothed member and disposed on the opposite side thereof relative to said first frame member, said second frame member having a wall defining an elongated passage aligned with said stem and open at both ends, and a shaft insertable and removable through said passage for engagement and disengagement respectively with said toothed member, said shaft extending beyond both sides of said second frame member and having a surface in bearing engagement with said wall.
2. A watch movement according to claim 1 wherein said shaft has a cylindrical end frictionally received by said toothed member, and an annular shoulder abutting said toothed member.

3. A watch movement according to claim 1 wherein said toothed member contains a bore, one end of which receives said stem and the other end of which receives said shaft.

4. A watch movement according to claim 1 wherein said shaft carries a collar engaging said wall, and an indicating element at its end remote from said toothed member.

5. A watch movement according to claim 4 wherein said toothed member included a pair of coaxially arranged tooth structures of different diameters and in relatively stepped relationship.

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