

W. H. EBELHARE.
 RATCHET MECHANISM FOR WATCH MOVEMENTS.
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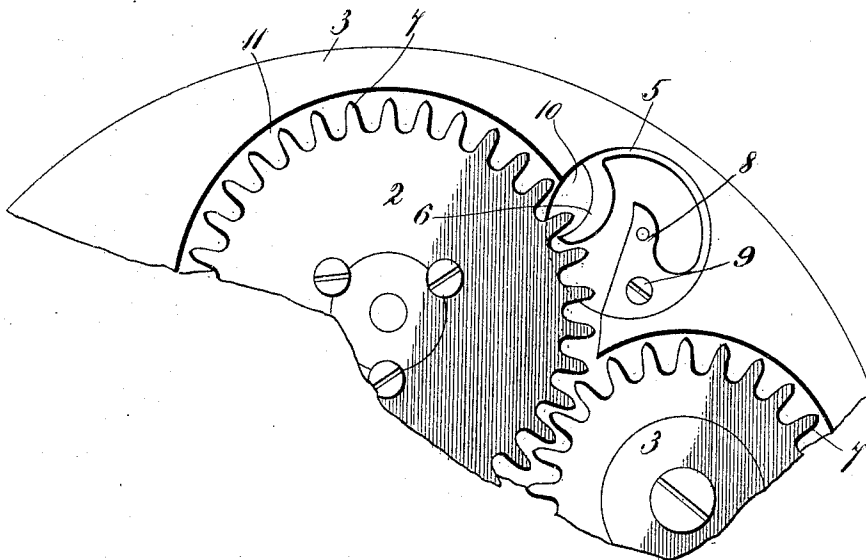


Fig. 1.

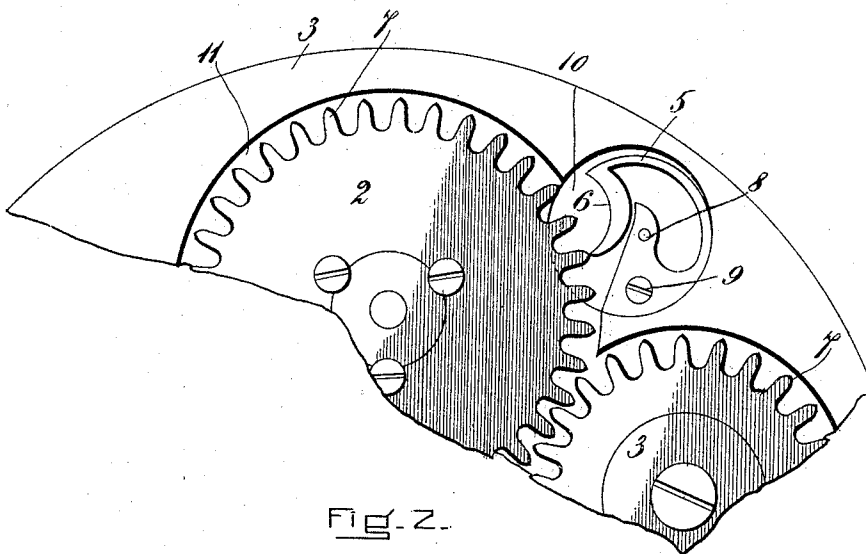


Fig. 2.

WITNESSES=

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UNITED STATES PATENT OFFICE.

WILLIAM HENRY EBELHARE, OF WALTHAM, MASSACHUSETTS, ASSIGNOR TO THE
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RATCHET MECHANISM FOR WATCH-MOVEMENTS.

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To all whom it may concern:

Be it known that I, WILLIAM H. EBELHARE, a citizen of the United States, and resident of Waltham, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Ratchet Mechanisms for Watch-Movements, of which the following is a specification.

My invention relates more particularly to the construction of the clicks or detents which are used in connection with the ratchet wheels of watch movements for the purpose of locking said wheels against backward movement, and is intended to provide a simple and effective click of this character which will be inexpensive in construction and will also operate in such manner that after the ratchet wheel has been turned in the proper direction to wind the watch a limited backward movement of said wheel under the influence of the main spring will be provided for, whereby the main spring will be relaxed slightly after having been wound up and it will consequently be impossible to leave it so tightly wound as to cause it to bind and thus become inoperative for its intended purpose.

A ratchet mechanism embodying my invention, as preferably constructed, is illustrated in the accompanying drawings, in which:

Figure 1 is a plan view of a portion of a watch movement, showing the click in position to slip over the teeth of the ratchet wheel; and Fig. 2 is a similar view showing the click in position to lock the ratchet wheel against backward movement.

In the drawings, 2 indicates the ratchet wheel of a watch movement and 3 indicates the supporting plate carrying the stud 4 on which the wheel 2 is journaled in the usual manner. Adjacent to the periphery of the wheel 2 is located a spring 5 which is fixed at one end to the plate 3 and has its free end formed into or otherwise provided with a detent 6 adapted to engage the teeth 7 of the wheel 2, the arrangement being such that the detent 6 is capable not only of moving inward and outward as the teeth 7 pass under it but also of moving bodily forward with the teeth of said wheel to a limited extent from its normal position. In the particular construction illustrated the spring

5 has substantially the form of a segment of a circle and is provided with an enlarged terminal portion 8 at its forward end, through which a screw 9 is passed into the plate 3, said spring being located in a substantially circular recess 10 formed in the plate 3 and opening at one side into the recess 11 which contains the ratchet wheel 2. From its fixed forward end the spring 5 extends around the periphery of the recess which contains it until it reaches a point adjacent to the teeth of the wheel 2, and from this point the detent 6 extends forward and inward, or toward the teeth of said wheel, with which it is always in contact.

As thus constructed, when the ratchet wheel 2 is rotated in a forward direction, that is to say, in the proper direction to wind the watch, the spring 5 offers sufficient resistance to the outward movement of the detent 6 to cause said detent to be drawn bodily forward by its engagement with the tooth 7 which is located next behind it until the resistance opposed by the spring to such movement has been increased to such an extent that it exceeds its resistance to the outward movement of the detent, the parts being then in the position shown in Fig. 1. During the continued forward movement of the wheel 2 the detent 6 rides over the teeth 7 in the usual manner, but as soon as the winding action ceases the reaction of the main spring causes the wheel 2 to move backward, whereupon the detent is engaged by the rear face of the tooth then next in front of it and is moved bodily backward until such movement is arrested by contact of the spring 5 with the periphery of the recess in which it is located, with the result that the detent is held against further backward movement and the ratchet wheel 2 is locked against backward movement by the detent in turn. The limited retrograde movement which has been imparted to the ratchet wheel, however, is sufficient to slightly relax the main spring and thus prevent it from becoming bound in case it has been wound up as tightly as possible.

It will be observed that the parts above described are exceedingly simple and inexpensive in construction, the combined spring and detent being conveniently made from a single piece of metal and the recess therefor being formed by a simple boring operation,

so that my invention provides a ratchet mechanism which is well adapted for watch movements of the less expensive sort and is also durable and efficient for its intended
5 purpose. Any desired amount of retrograde movement of the ratchet wheel may be provided for by suitably proportioning the length and normal tension of the spring 5, and various modifications may be made in
10 the construction and arrangement of the spring and detent without departing from my invention, as will be evident.

I claim as my invention:

15 In a watch movement, the combination with the ratchet wheel and the plate on which the same is journaled, of a spring having substantially the form of a segment

of a circle and located in a substantially circular recess formed in the plate adjacent to the periphery of the wheel, said spring 20 being fixed to the plate at its forward end and normally held in contact with the periphery of the recess by its own elasticity, and a detent carried by the rear end of the spring and arranged to engage the teeth of 25 said wheel and to be moved forward thereby into the open interior of said recess.

In testimony whereof, I have hereunto subscribed my name this 31st day of January, 1910.

WILLIAM HENRY EBELHARE.

Witnesses:

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W. B. MEHL.