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WATCH AND OTHER TIME INSTRUMENT

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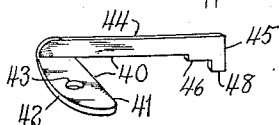
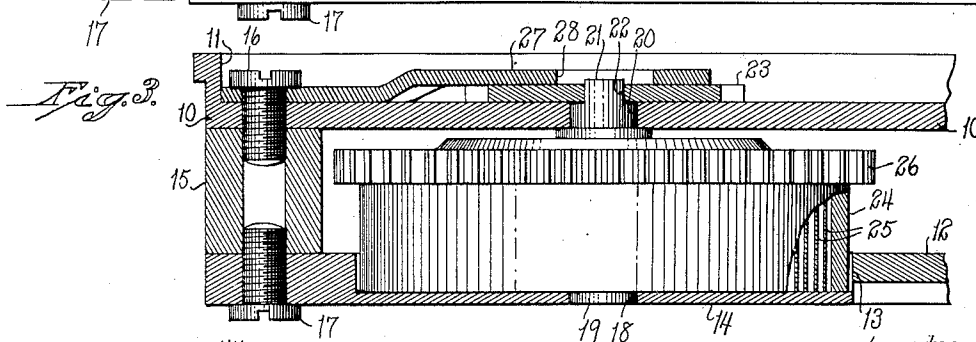
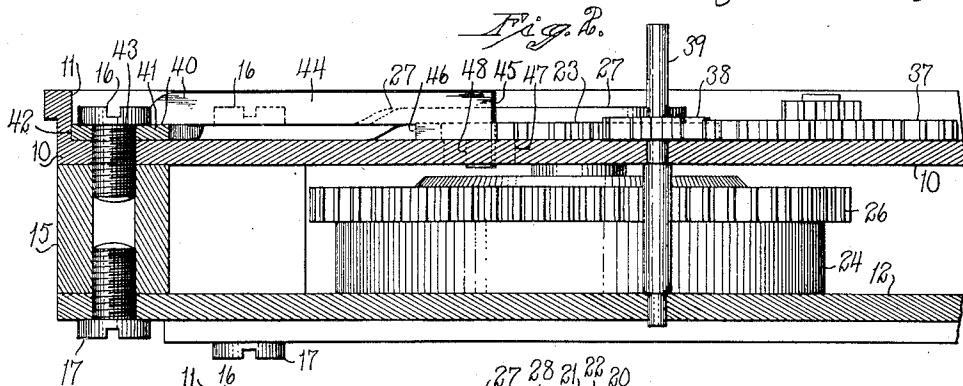
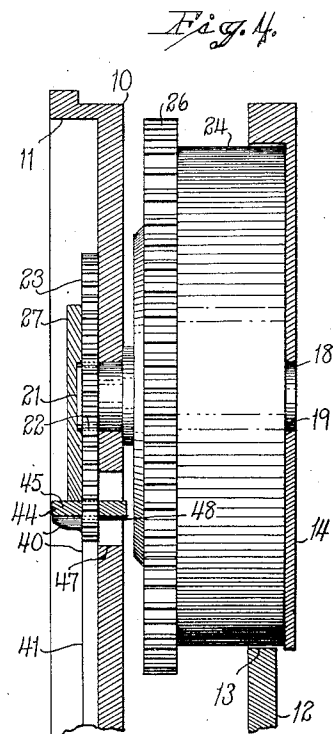
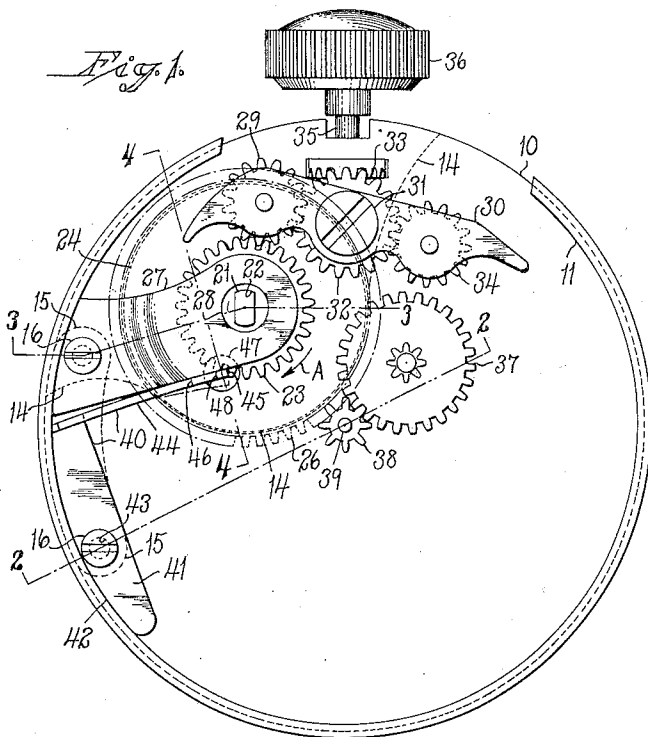


Fig. 5.

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WATCH AND OTHER TIME INSTRUMENT

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3 Claims. (Cl. 58—80)

This invention relates to an improvement in watches and other timepieces, and relates in particular to the mechanism and parts associated with the spring-drive of such instruments.

One of the objects of the present invention is to provide a superior construction and arrangement of parts to prevent the undesired reverse turning movement of the driving-spring of a watch or the like.

Another object is to provide a simple, reliable and effective pawl which may be produced at a low cost for manufacture.

A further object is to provide a time-instrument construction in which the driving-spring and associated parts may be assembled and disassembled with maximum convenience and minimum expenditure of time.

With the above and other objects in view as will appear to those skilled in the art from the following, considered in conjunction with the accompanying drawing and appended claims, the present invention includes all the improvements over the prior art disclosed therein.

In the accompanying drawing:

Fig. 1 is a view in front elevation of a watch embodying the present invention;

Fig. 2 is a broken sectional view taken on the line 2—2 of Fig. 1;

Fig. 3 is a similar view taken on the line 3—3 of Fig. 1;

Fig. 4 is a corresponding view taken on the line 4—4 of Fig. 1; and

Fig. 5 is a perspective view of the pawl, detached.

The particular watch herein chosen for the purpose of illustrating one embodiment of the present invention, includes a cup-shaped front movement-plate 10 having a forwardly and outwardly extending flange 11 and a rear movement-plate 12 having a cut-out portion 13 filled by a bridge-plate 14 of a shape corresponding to the said cut-out portion. Both the rear movement-plate 12 and the bridge-plate 14 are secured in spaced relationship rearwardly of the front movement-plate 10 by suitable pillars such as 15, each of which latter has threaded into its respective opposite ends screws 16 and 17.

The bridge-plate 14 is formed with a bearing-opening 18 receiving the reduced rear end of a main-spring arbor 19, the forward end of which latter bears in an opening 20 in the front movement-plate 10 and is provided with a polygonal front terminal 21 fitting into a correspondingly-shaped opening 22 in the main winding-wheel 23 of the watch resting against the front face of the

front movement-plate 10. The arbor 19 mounts a usual spring-barrel 24 housing a mainspring 25 and is provided with an annular series of teeth 26 constituting the main wheel of the watch movement.

The main winding-wheel 23 before referred to is retained in place against forward axial displacement by a sheet-metal retaining-plate 27 preferably made of spring stock and having an aperture 28 in its forwardly-offsetting inner portion for the clearance of the polygonal forward end 21 of the arbor 19. The edge of the outer end of the retaining-plate 27 is conformed in curvature to the curvature of the inner face of the flange 11 of the front movement-plate 10 and 15 is anchored in place by one of the screws 16 before referred to. By engaging the edge of the retaining-plate 27 with the flange 11 of the front movement-plate 10, as described, the same may be rigidly held against shifting movement in the 20 plane of the said plate by means of a single one of the screws 16 which passes through it.

The main winding-wheel 23 is normally meshed into by a winding-pinion 29 carried by an oscillating sheet-metal arm 30 pivotally secured by 25 means of a stud 31 to the front face of the front movement-plate 10. The stud 31 also mounts an intermediate pinion 32 meshing into the winding-pinion 29 just referred to and also into a stem-pinion 33 and into a setting-pinion 34, which latter is carried by the arm 30 with freedom for rotation with respect thereto.

The pinion 33 is carried in a manner usual in watches by a winding and setting stem 35 carrying at its outer end a knurled finger-button 36 35 by means of which the watch is both wound and set in the usual manner of such instruments. The sheet-metal arm 30 is oscillatable about its stud 31 in the usual manner of watches to disengage the winding-pinion 29 from the main winding-wheel 23 and to concurrently mesh the setting-pinion 34 with a dial-wheel 37 mounted upon the front face of the front movement-plate 10 and meshing in turn with the center-pinion 38 45 of the watch, which is mounted in the usual manner on the center-arbor 39 thereof.

To prevent the reverse turning movement of the main winding-wheel 23 under the urge of the mainspring 25, I employ a one-piece sheet-metal 50 pawl preferably of spring stock and generally designated by the numeral 40 and comprising a mounting-plate 41 having one of its edges curved as at 42 to conform to and snugly fit against the inner face of the flange 11 of the front move- 55

ment-plate 10. The mounting-plate 41 of the pawl 40 is formed about midway of its length with a perforation 43 through which one of the screws 16 extends to anchor the pawl against forward displacement with respect to the movement-plate 10, the mounting-plate being held against swinging movement in the plane of the said movement-plate by the conjoint action of the screw 16 passing through it and the engagement of its curved edge 42 with the flange 11 as described. Bent up from the mounting-plate 41 in a plane perpendicularly with respect thereto is a resilient pawl-arm 44, the extreme outer edge 45 of which is adapted to engage the teeth of the main winding-wheel 23 in such position as to prevent the movement of the said wheel in the direction of the arrow A (Fig. 1), i. e., the direction opposite to the direction in which the said wheel moves when being wound. The outer end of the arm 44 of the pawl 40 is stepped or shouldered as at 46, which step may ride upon the forward face of the front movement-plate 19 adjacent a clearance-opening 47 therein. The extreme outer end of the resilient pawl-arm 44 is further stepped inwardly toward the plate 10 as at 48 to insure a proper amount of edge-surface 45 for engagement with the wheel 23, despite slight variations in manufacture or slight distortion of the parts. The stepped or projecting portion 48 of the pawl-arm 44 extends rearwardly into the clearance-opening 47 in the movement-plate 10, as indicated in Fig. 4.

The pawl-arm 44 extends substantially parallel with the adjacent edge of the retaining-plate 27, which edge serves to assist in supporting the said pawl-arm against the strains imposed upon it by the constant effort of the main winding wheel 23 to reversely turn under the urge of the mainspring 25.

The invention may be carried out in other specific ways than that herein set forth without departing from the spirit and essential characteristics of the invention, and the present embodiment is, therefore, to be considered in all respects as illustrative and not restrictive, and all changes coming within the meaning and equivalency range of the appended claims are intended to be embraced therein.

I claim:

1. In a time instrument, the combination with a driving-spring thereof; of a movement-plate having a laterally-offsetting flange; a toothed wheel operatively connected to the said driving-spring and urged in one direction thereby; and a sheet-metal pawl having a mounting-plate abutting against the inner face of the laterally-offsetting flange of the said movement-plate, and also having a resilient arm formed integral with the said mounting-plate and bent therefrom into a plane perpendicular to the plane of the said mounting-plate, the said resilient arm engaging the said toothed wheel to guard against the turning movement thereof under the urge of the said driving-spring.

2. In a time instrument, the combination with a driving-spring thereof; of a movement-plate having a laterally-offsetting flange; a toothed wheel operatively connected to the said driving-spring and urged in one direction thereby; a retaining-member holding the said toothed wheel against axial displacement; and a sheet-metal pawl having a mounting-plate abutting against the inner face of the laterally-offsetting flange of the said movement-plate and having also a resilient arm formed integral with the said mounting-plate and bent therefrom into a plane perpendicular to the plane of the said mounting-plate, the said resilient arm engaging the said toothed wheel to guard against the turning movement thereof under the urge of the said driving-spring and also engaging the said retaining-member for being supported thereby.

3. In a time instrument, the combination with a driving-spring thereof; of a movement-plate having a laterally-offsetting flange and also having a clearance-opening; a toothed wheel operatively connected to the said driving-spring and urged in one direction thereby; and a sheet-metal pawl having a yielding arm engaging the said toothed wheel, and also having a portion abutting against the inner face of the laterally-offsetting flange of the said movement-plate, the said yielding arm of the said sheet-metal pawl having an offsetting projection entered into the clearance-opening in the said movement-plate.

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