

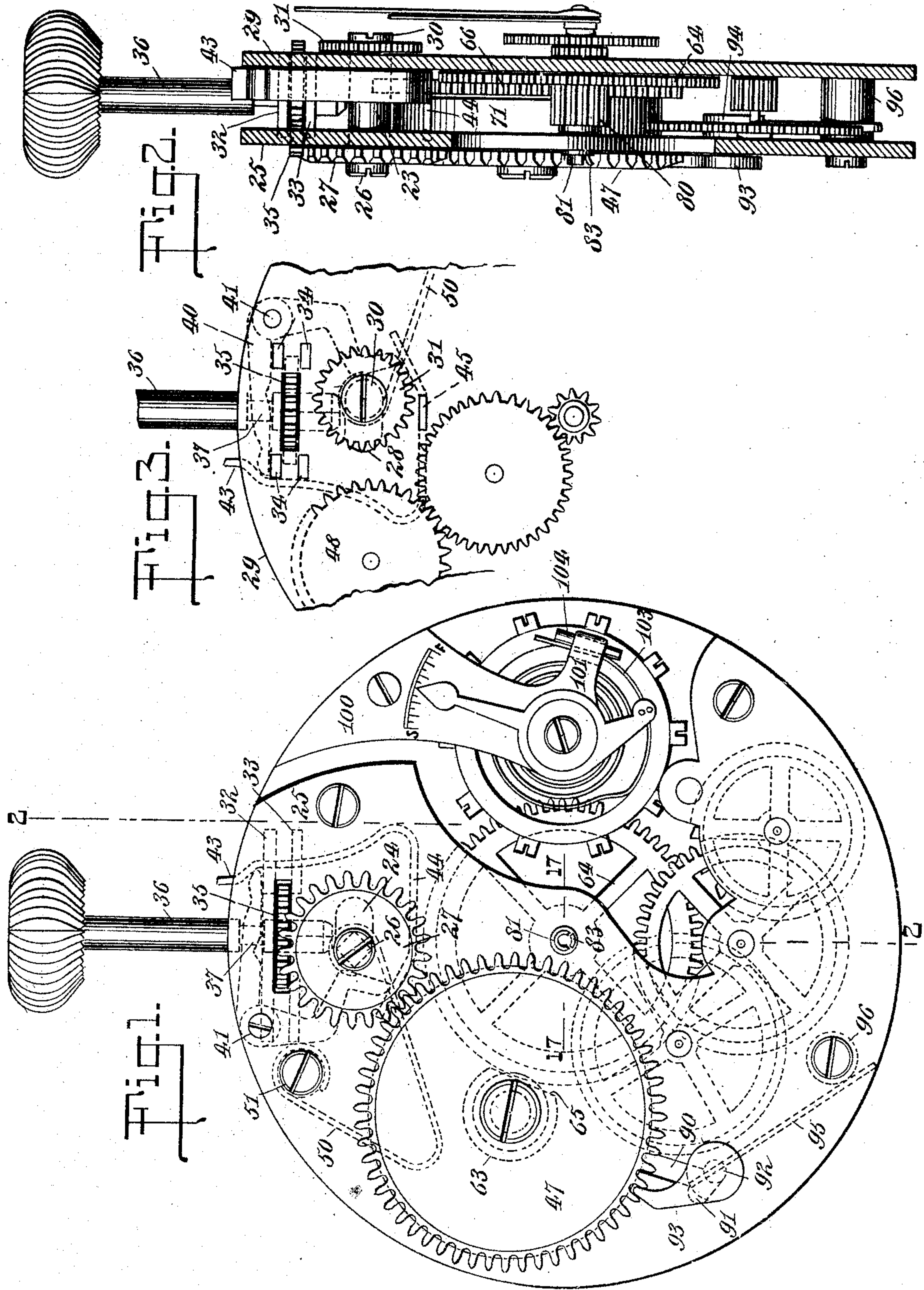
W. B. MEHL & W. H. EBELHARE.
WATCH.

APPLICATION FILED JUNE 10, 1909.

Patented Jan. 18, 1910.

2 SHEETS—SHEET 1.

946,906.



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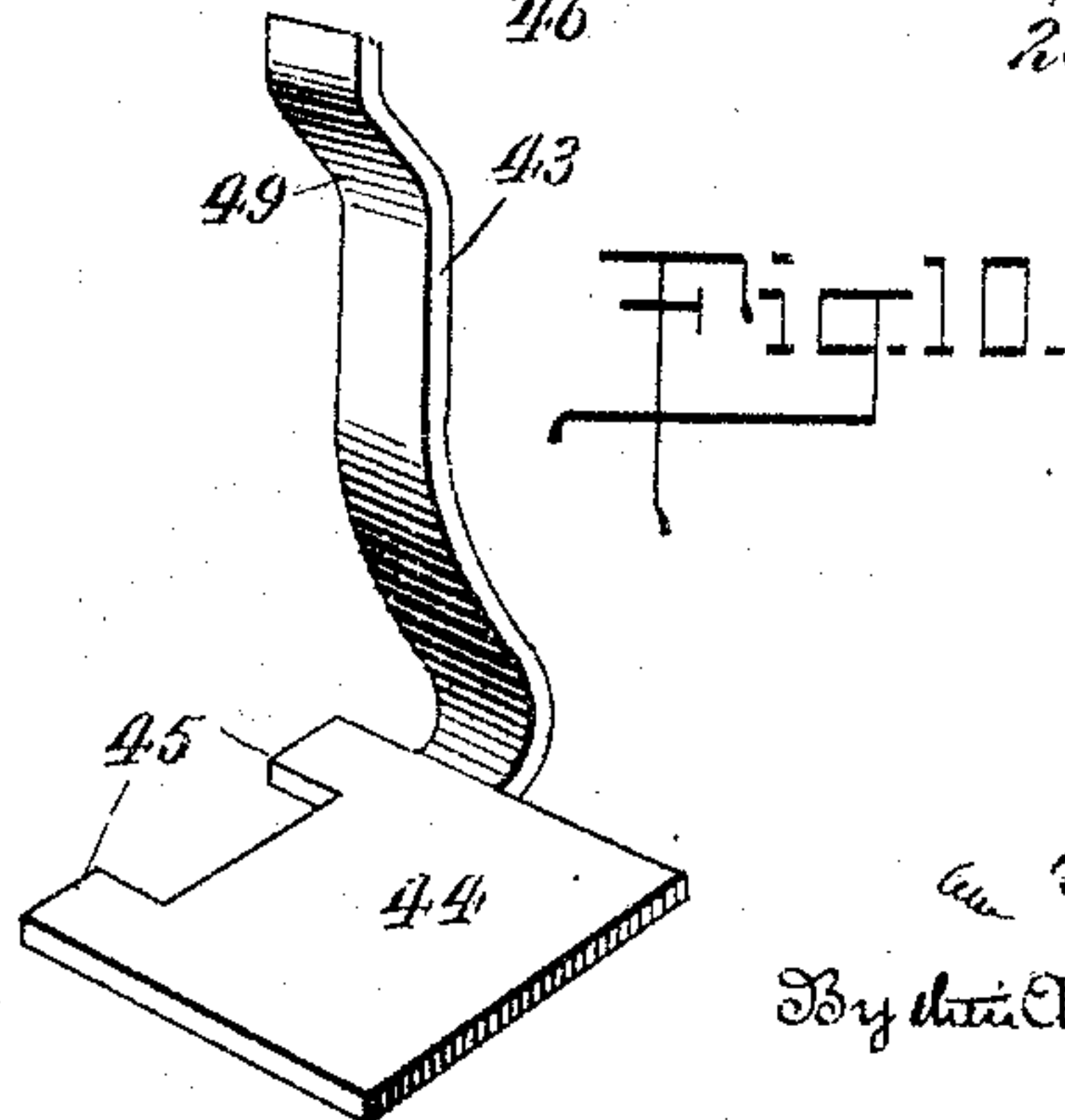
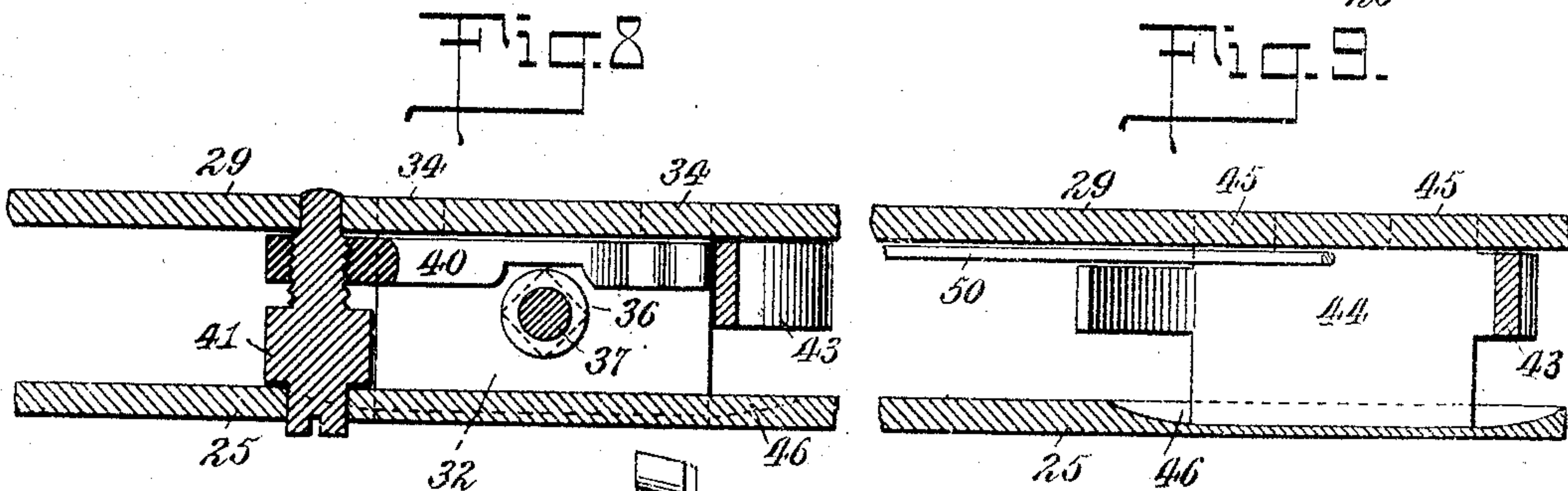
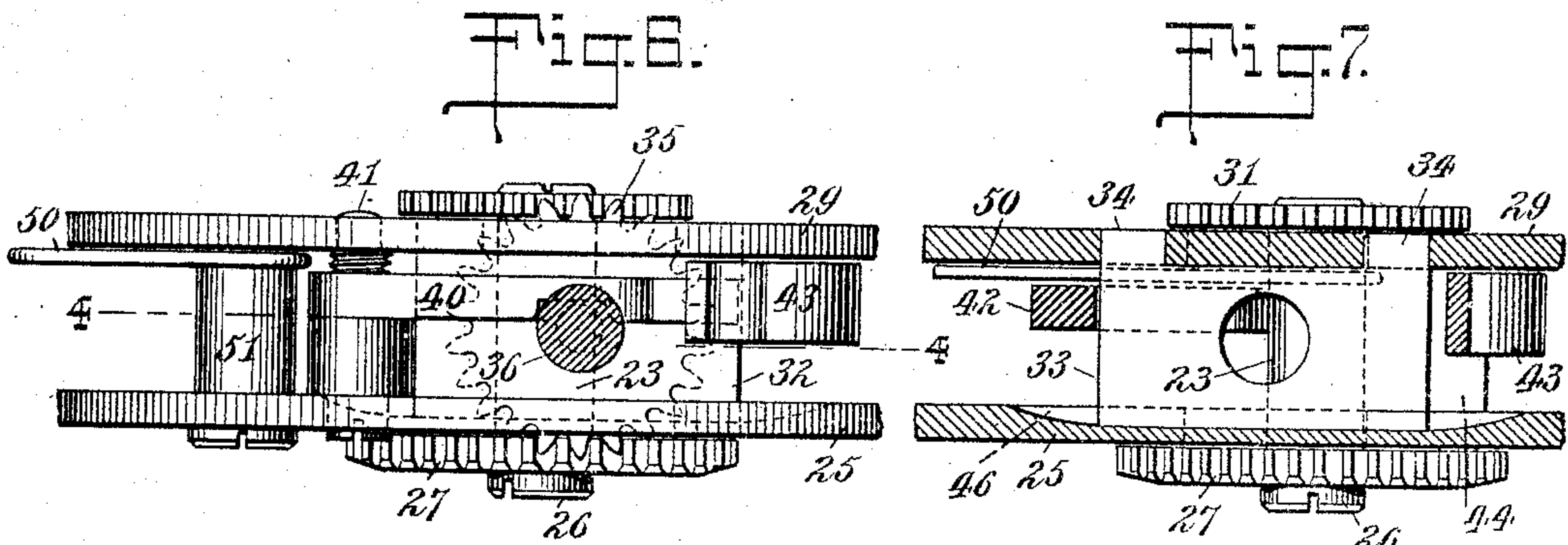
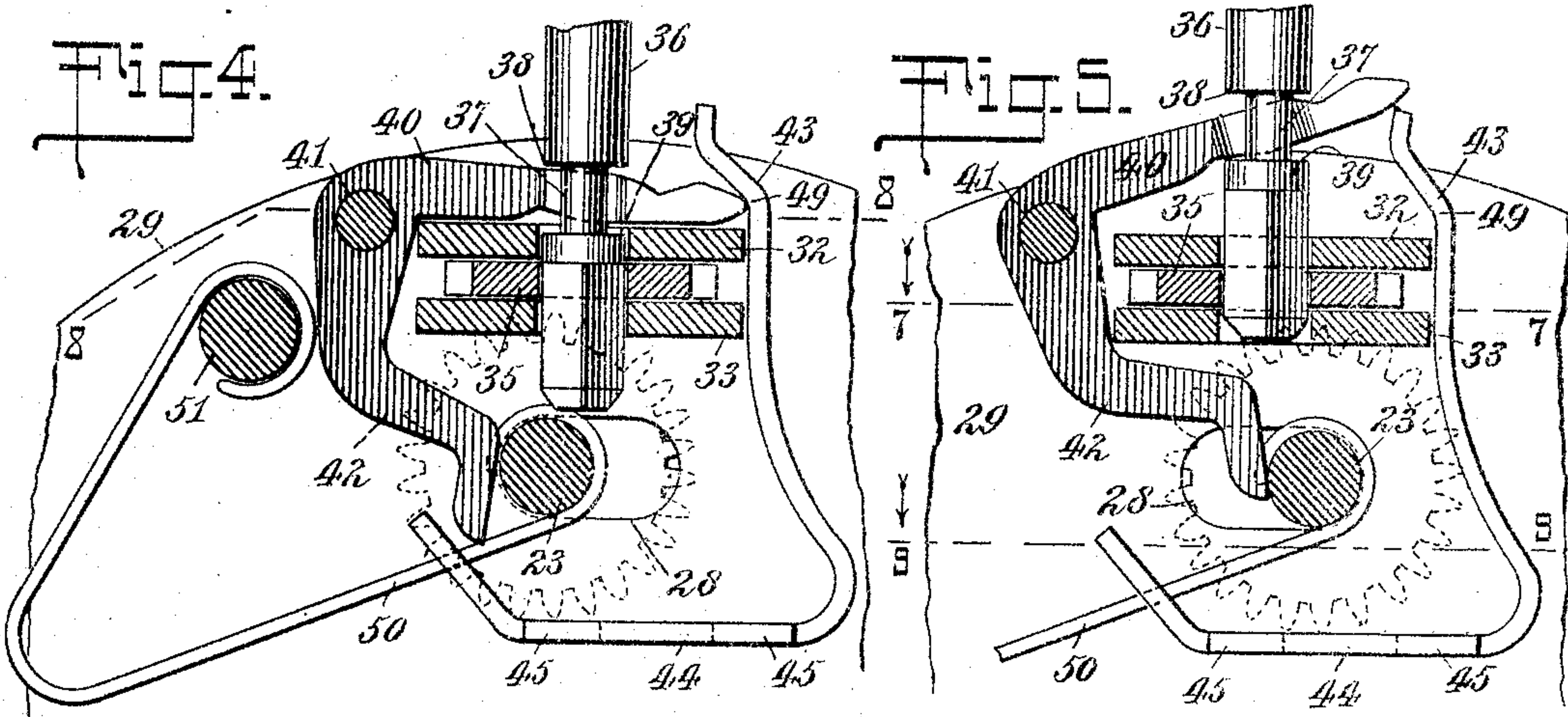
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2 SHEETS—SHEET 2.

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UNITED STATES PATENT OFFICE.

WALTER B. MEHL AND WILLIAM H. EBELHARE, OF WALTHAM, MASSACHUSETTS,
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WATCH.

946,906.

Specification of Letters Patent.

Patented Jan. 18, 1910.

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To all whom it may concern:

Be it known that we, WALTER B. MEHL and WILLIAM H. EBELHARE, citizens of the United States, and residents of Waltham, in the county of Middlesex and State of Massachusetts, have made and invented certain new and useful Improvements in Watches, of which the following is a specification.

Our invention relates to an improvement in watches, the object being to overcome certain difficulties heretofore experienced in the manufacture of watch movements, and more especially in the production of cheap or low grade movements, and further, to devise such improvements as will lend to the completed watch better time keeping qualities, without in any way adding to the cost of production, and in fact, materially decreasing such cost.

A further object of our invention is to give to a cheap watch all the appearances and advantages in time keeping qualities of a much higher grade and more costly movement, and with these and other ends in view, consists in certain novel features of construction and combinations of parts, as will be hereinafter fully described and pointed out in the claims.

In the accompanying drawings, Figure 1 is a plan view of a watch movement constructed in accordance with our invention, looking at the train side thereof. Fig. 2 is a sectional view taken on the line 2—2 of Fig. 1. Fig. 3 is a detached plan view of the pendant set mechanism looking at the dial side of the movement, and the parts in their winding positions. Fig. 4 is a sectional view of the pendant set mechanism in its winding position, and taken on the line 4—4 of Fig. 6. Fig. 5 is a similar view showing the parts in the hand-setting position. Fig. 6 is a top end view showing the mechanism illustrated in Figs. 4 and 5. Fig. 7 is a sectional view taken on the line 7—7 of Fig. 5, looking in the direction as indicated by the arrow. Fig. 8 is a sectional view taken on the line 8—8 of Fig. 4. Fig. 9 is a sectional view taken on the line 9—9 of Fig. 5, looking in the direction as indicated by the arrow. Fig. 10 is a detached perspective view of the setting lever spring.

Heretofore in the construction of the higher grade, or more expensive watches,

the winding and setting mechanism has been so constructed and assembled that when it is desired to set the hands, the winding arbor or stem is pulled outwardly and automatically locked or held in such adjustment, whereby the setting train or pinions are brought into engagement with the hand setting pinions. After the hands have been set, the winding stem or arbor is then pushed inwardly, bringing into proper relative positions the winding mechanism. In the cheaper watches, however, it has been the practice to so construct and assemble the mechanism that in order to set the hands, it is necessary to push inwardly the winding stem or arbor, and to manually hold it in such position while the hands are being set, the spring being employed to return the winding stem or arbor to its normal or winding position.

One object of our invention is to substitute for this characteristic feature of the cheap watch, mechanism which will operate in every way the same as that employed in the pull-out mechanism of the higher grade watch, and at a cost lower than that at which the cheaper mechanism has heretofore been produced, and in carrying out this feature of our invention, we employ a post 23, one end of which projects through an elongated slot 24 in the top plate 25, and has tightly secured thereto by means of the screw 26, the winding wheel 27, the opposite end of said post 23 projecting through the elongated slot 28 formed in the dial plate 29, and to which end is tightly secured by means of the screw 30, or otherwise, the setting wheel 31, the elongated slots 24 and 28 formed respectively in the top and dial plates, permitting of a certain lateral movement of said post and its attached wheels or pinions, for the purpose as hereinafter described. Within slots formed in the top plate 25, fit the edges of the two plates 32, 33, the opposite edges of said plates 32, 33, being formed with projecting lugs or ends 34 (Fig. 3), passing through openings formed in the dial plate 29, and between which plates is contained the winding pinion 35, the teeth of which extend through a slot in the top plate 25, and mesh with the teeth of the winding wheel 27, as illustrated in Figs. 1 and 2 of the drawings.

In the plates 32, 33, employed for the purpose of retaining in position the winding pinion 35, are formed openings through which the winding arbor or stem 36 passes, the latter also passing through a squared opening formed in the winding pinion 35, and thereby adapted to turn with said arbor when the latter is rotated, as in the act of winding the movement or setting the hands.

A portion of this winding arbor 36 is cut away, as illustrated at 37, (Figs. 4 and 5), forming the upper shoulder 38 and lower shoulder 39, and in this recess or cut-away portion, fits one arm 40 of a bell crank lever, fulcrumed on the stud 41, the extreme end of the other arm 42 bearing against the post 23. Engaging with the outer end of the arm 40 of the bell crank lever, is a spring 43, formed integral with or secured to the plate 44, as clearly illustrated in Fig. 10, this plate being formed with the projecting ends or lugs 45 frictioned in holes or openings formed in the dial plate 29 to receive them, as illustrated in Fig. 9 of the drawings, the opposite end of said plate 44 fitting in a recess 46 formed in the top plate 25, whereby said plate and integral spring are securely held in their proper positions.

From the foregoing it will be understood that when the winding stem or arbor 36 is pulled outwardly, the arm 40 of the bell crank lever will strike against the shoulder 39, thereby raising said arm 40, as illustrated in Fig. 5, and causing the end of the arm 42 bearing against the post 23, to force said post 23 to the opposite end of the elongated slot 28 formed in the dial plate 29, all as illustrated in Fig. 5. As the post 23 travels to the opposite end of the slots 28 and 24, it necessarily carries with it the winding wheel 27 and setting wheel 31 secured to said post, thereby taking the winding wheel 27 out of mesh with the ratchet wheel 47 and causing the setting wheel 31 to engage with the intermediate setting wheel 48. The parts are held in this hand-setting position by reason of the upper free end of the spring 43 snapping under the outer end of the arm 40 of the bell crank lever, the parts being so held until pressure is exerted on the winding stem or arbor 36 to force the same inwardly into the normal position, as illustrated in Fig. 4. As this winding stem or arbor 36 travels inwardly, the shoulder 38 resting against the arm 40 of the bell crank lever, carries said arm inwardly or downwardly, the curved outer end of said arm forcing the free end of the spring outwardly until the extreme end of said arm engages in the bend 49 thereof. At the same time the extreme end of the arm 42 of the bell crank lever travels outwardly, or in a direction away from the post 23, the latter being caused to assume its normal position at the ends of the slots 28, 24, by means of the spring 50, one

end of said spring being partially wrapped around said post 23 and the opposite end around a pillar 51, as illustrated in Fig. 6. It will therefore be plain that by means of these few parts, cheaply made and assembled, we have provided a movement with winding and setting devices of the type usually employed in high grade watches, and overcome the objections to that type of mechanism wherein it is necessary to force the winding stem or arbor inwardly in order to set the hands; furthermore, we have provided means whereby the winding stem or arbor is easily and readily attached to or detached from the movement. These means comprising the stud 41, one end of which, as illustrated in Figs. 6 and 8, is mounted in the dial plate 29, and on which stud is threaded the bell crank lever 41—42, the opposite end of said stud 41 being mounted in the top plate 25. If the stud be turned or rotated in the plates 25, 29, the bell crank lever is caused to travel toward the dial plate 29, as illustrated in Fig. 8, that is, away from the reduced portion 37 of the winding stem or arbor 36, permitting the shoulder 39 to clear the arm 40 of said lever, and said arbor to be removed or detached from the movement. When the winding stem or arbor has been inserted into place, the stud 41 may be turned or rotated in the opposite direction, thereby causing the bell crank lever 41—42 to be brought in contact with the shoulder or enlarged portion of the stud, and also bringing the arm 40 of the said lever into the groove or recess of the winding stem or arbor 36, as illustrated in Figs. 4, 5 and 6 of the drawings. It will thus be seen that by the manipulation of this one stud 41, the winding stem or arbor is easily and quickly inserted into or removed from place.

Having fully described our invention, what we claim as new and desire to secure by Letters Patent, is:—

1. In a watch movement, the combination with a dial plate and top plate, of a post laterally movable in elongated slots formed in said dial and top plates, and having the winding wheel secured at one end thereof and the setting wheel at the opposite end, a bell crank lever fulcrumed between said dial and top plates, a winding arbor provided with a recess in which fits one arm of said bell crank lever, the opposite end of said lever engaging said laterally moving post whereby when said winding arbor is pulled outwardly, said post with its attached wheels is caused to travel in one direction in said slots, a spring secured between said dial and top plates and engaging with said post whereby to return the latter to its normal position when said winding arbor is pushed inwardly, and a spring, one end of which engages the end of

one arm of said bell crank lever to hold the latter in its different positions, substantially as described.

2. In a watch movement, the combination with a top plate and dial plate formed with elongated slots, of a post movable in said slots and having secured thereto a winding wheel at one end and a setting wheel at the opposite end, a bell crank lever fulcrumed between said dial and top plates, a winding arbor provided with a recess in which fits one arm of said bell crank lever, the opposite end of said lever bearing against said post whereby when said winding arbor is pulled outwardly said post with its attached wheels will be moved in the slots formed in said dial and top plates, a spring, one end of which is secured between said dial and top plates and the opposite end of which engages said post, whereby to return the latter to its normal position when said winding arbor is pushed inwardly, a spring one end of which is secured between said top and dial plates and the opposite end of which is formed with a bend with which engages one end of said bell crank lever, and means for laterally moving said bell crank lever into and out of engagement with said winding arbor, substantially as described.

3. In a watch movement, the combination with a top plate and dial plate, of a winding arbor formed with a recess, a bell crank lever one arm of which fits in said recess formed in the winding arbor, and the opposite end of which engages the winding and setting mechanism, a stud mounted in said top and dial plates, said stud being threaded through said bell crank lever and acting as a fulcrum therefor, whereby when said stud is rotated, said bell crank lever

will be caused to travel into and out of engagement with said winding arbor, substantially as described.

4. In a watch movement, the combination with a top plate and dial plate, of a winding arbor formed with a recess, of a lever fulcrumed between said top and dial plates, one arm of which engages in the recess in said winding arbor, the opposite end engaging with the winding and setting mechanism, said lever being laterally movable on its fulcrum whereby the same may be engaged or disengaged from said winding arbor, substantially as described.

5. In a watch movement, the combination with a top plate and a dial plate, of a winding arbor formed with a recess and adapted to be moved inwardly and outwardly, a lever fulcrumed between said top and dial plates, one arm of which engages in said recess in the winding arbor, the opposite end engaging with and adapted to shift the winding and setting mechanism, and a spring secured between said top and dial plates, the free end of which is provided with a bend in which the extreme end of said lever fits when said winding arbor is pushed inwardly into its winding position, and over the end of which spring fits the extreme end of the lever when said winding arbor is pulled outwardly into its setting position, substantially as described.

Signed at Waltham, in the county of Middlesex and State of Massachusetts, this 2nd day of June, 1909.

WALTER B. MEHL.
WILLIAM H. EBELHARE.

Witnesses:

E. R. SNOW,
W. C. COOK.