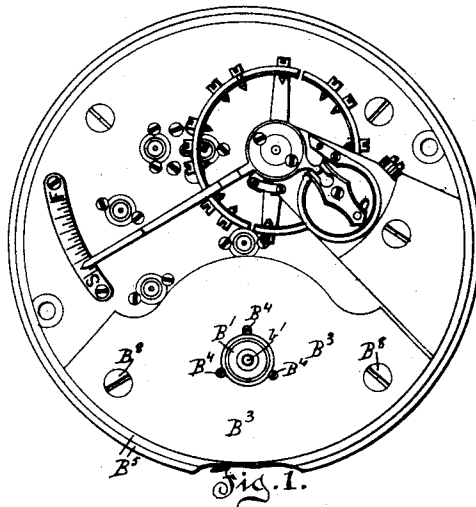
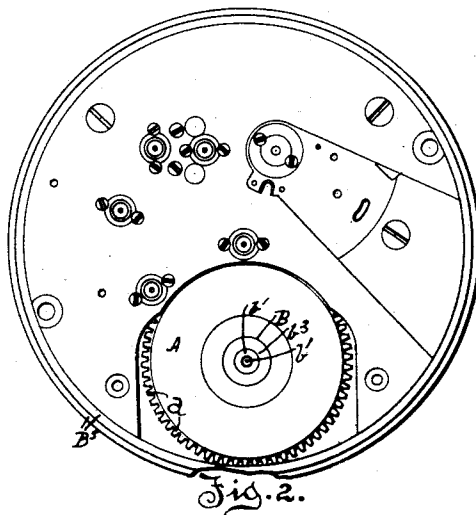
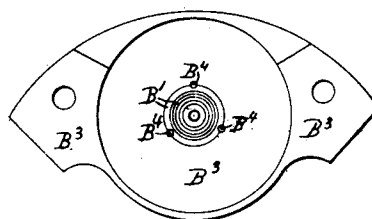


No. 832,672.

PATENTED OCT. 9, 1906.

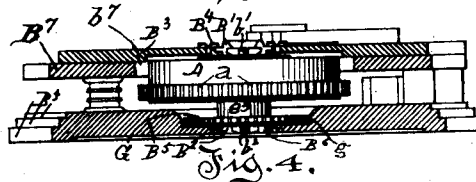
S. R. HOFFMEIER.
WATCH BARREL.
APPLICATION FILED OCT. 24, 1904.

4 SHEETS—SHEET 1.



Witnesses

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WATCH BARREL.

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4 SHEETS—SHEET 2.

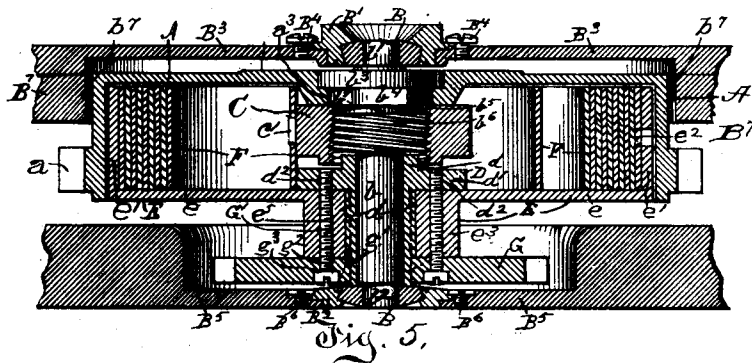
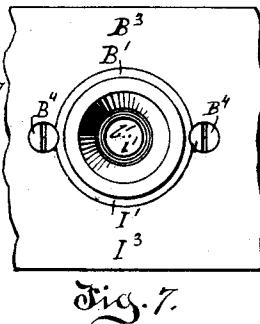
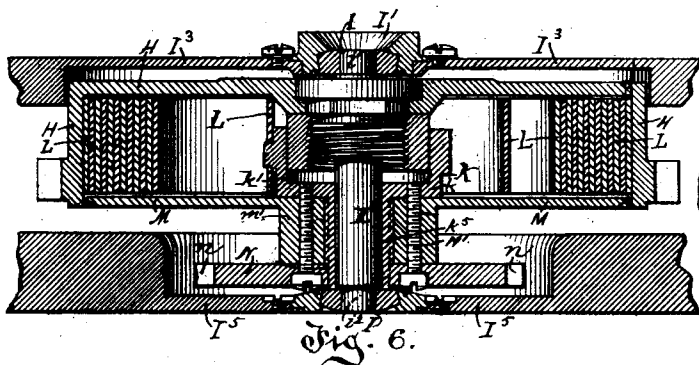
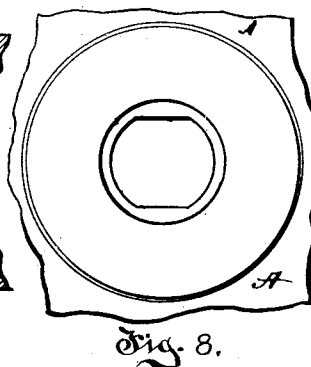
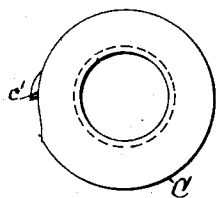
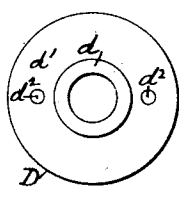
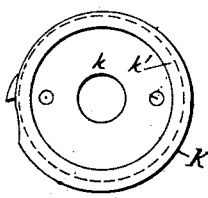
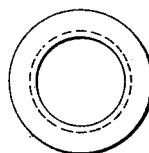
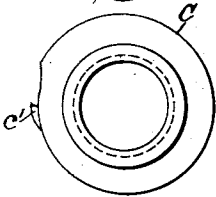
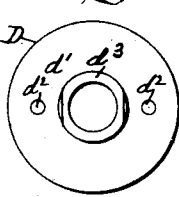
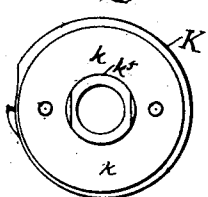
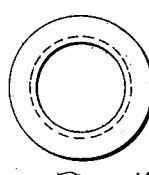


Fig. 9^a
Witnesses.

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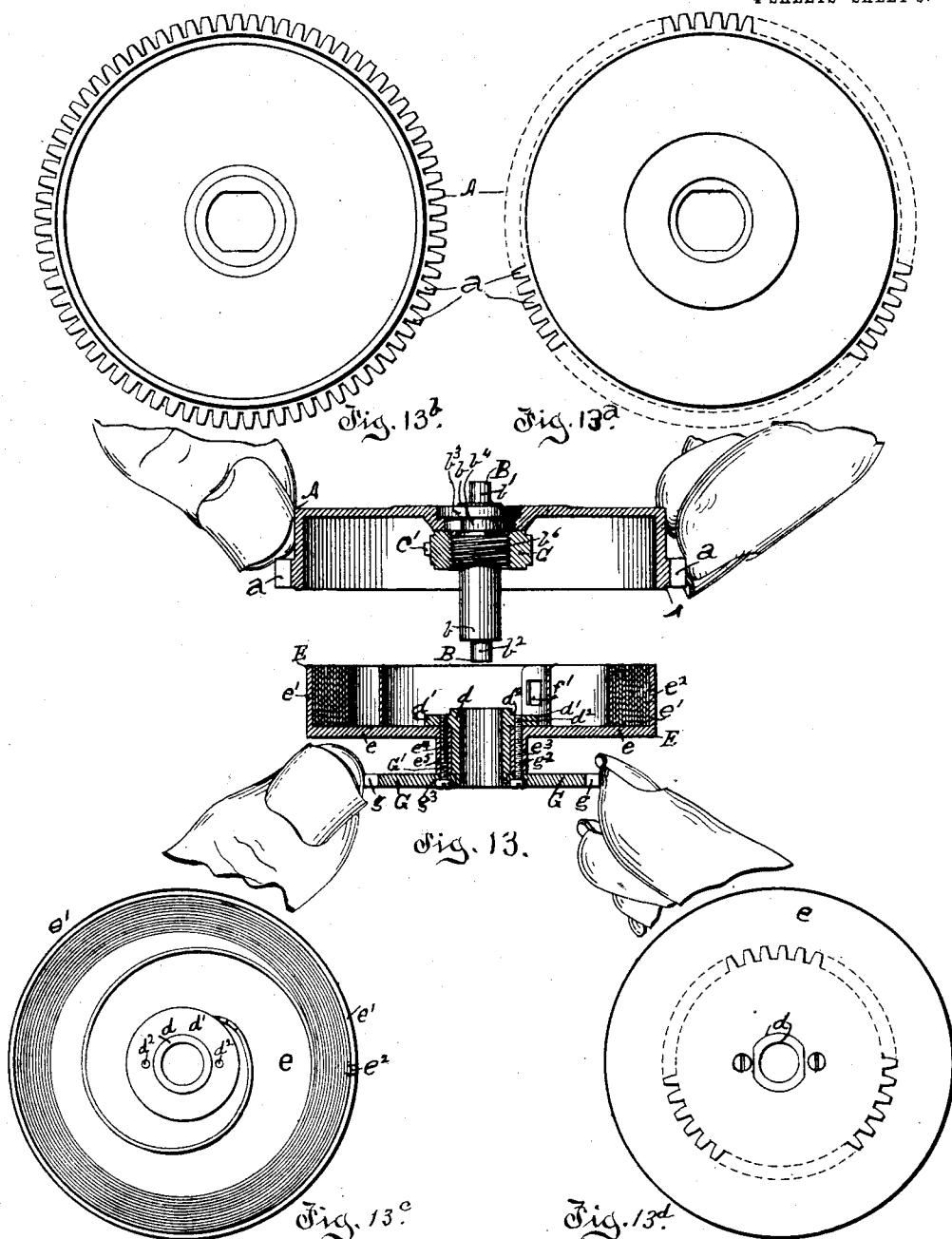
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WATCH BARREL.

APPLICATION FILED OCT. 24, 1904.

4 SHEETS—SHEET 3.



Witnesses.

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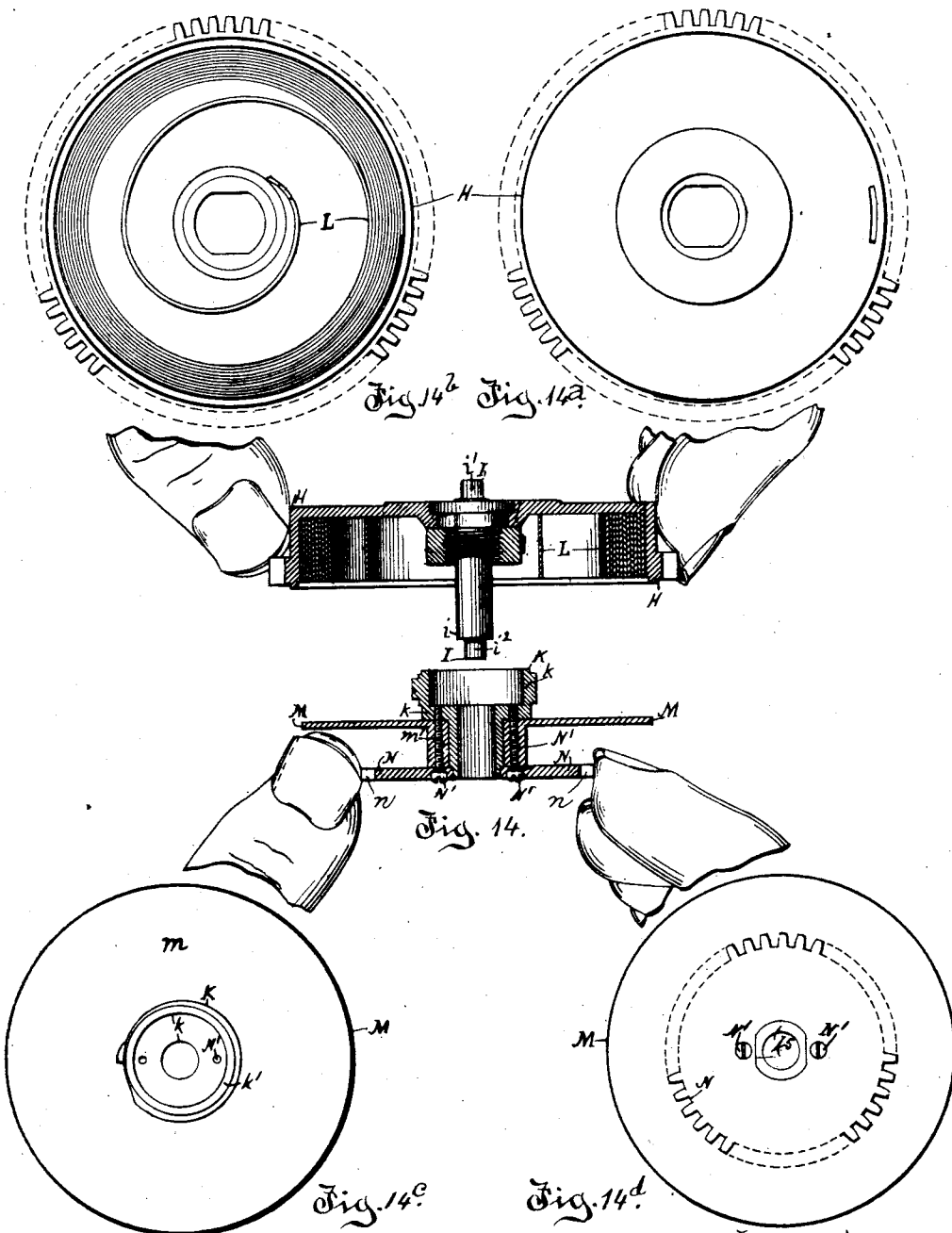
No. 832,672.

PATENTED OCT. 9, 1906.

S. R. HOFFMEIER.
WATCH BARREL.

APPLICATION FILED OCT. 24, 1904.

4 SHEETS—SHEET 4



Witnesses.

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Fred P. Munger

Inventor.

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UNITED STATES PATENT OFFICE.

SAMUEL R. HOFFMEIER, OF EAST HEMPFIELD TOWNSHIP, LANCASTER COUNTY, PENNSYLVANIA, ASSIGNOR TO HAMILTON WATCH COMPANY, OF LANCASTER, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

WATCH-BARREL.

No. 832,672.

Specification of Letters Patent.

Patented Oct. 9, 1906.

Application filed October 24, 1904. Serial No. 229,809.

To all whom it may concern:

Be it known that I, SAMUEL R. HOFFMEIER, a citizen of the United States, residing in East Hempfield township, in the county of Lancaster and State of Pennsylvania, have invented certain new and useful Improvements in Watch-Barrels; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The object of my invention is to enable watch-barrels of the type in which the main wheel is attached to and rotates with the arbor to be bodily removed from the movement intact and without any disturbance of the time-train, and more particularly to enable the main arbor to be jeweled, so that there need be no disturbance of the position of the jewels when it is desired to remove the barrel from the movement; and to these ends and others of less importance, but that will hereinafter appear, my invention consists in the construction and arrangement of parts, substantially as hereinafter specified and claimed.

In the accompanying drawings, Figure 1 is a top plan view of a watch-movement embodying my invention; Fig. 2, a similar view with the bridge of the main arbor removed for the removal of the barrel. Fig. 3 is a plan view of the under side of said bridge; Fig. 4, a section in a plane parallel with the main-arbor axis and passing through the jewel-bearings thereof. Fig. 5 is a similar section, on a larger scale, showing my invention adapted to a safety-barrel; Fig. 6, a view similar to Fig. 5, showing the invention embodied in a barrel of different type; Fig. 7, a detail plan view of the bridge jewel-bearing; Fig. 8, a detail plan view of the central portion of the main wheel. Figs. 9 and 9^a are respectively plan views from opposite ends of the main-wheel-clamping nut in the safety-barrel embodiment of my invention. Figs. 10 and 10^a are like views of the hub or arbor bushing to which the winding-wheel is attached in the safety-barrel embodiment of my invention. Figs. 11 and 11^a are plan views of opposite ends of the corresponding part in the embodiment of my invention shown in Fig. 6. Figs. 12 and 12^a are plan views of opposite ends of the main-wheel-

clamping nut illustrated in Fig. 6; Fig. 13, a detail view in section, showing the manner of disconnecting the main wheel and arbor from the other parts of the barrel in the safety-barrel embodiment of my invention. Figs. 13^a and 13^b are plan views from opposite sides of the main wheel alone. Figs. 13^c and 13^d are respectively plan views from opposite sides of the spring-containing drum or shell of the safety-barrel embodiment of my invention. Fig. 14 is a vertical section corresponding to Fig. 13 and illustrating the other embodiment of my invention shown in Fig. 6. Figs. 14^a and 14^b are respectively plan views from opposite sides of the main wheel illustrated in Fig. 14. Figs. 14^c and 14^d, respectively, are plan views from opposite sides of the lower portion of the structure shown in Fig. 14.

In the embodiment of my invention shown in Figs. 1 to 5 the main wheel A, in the form of a cup, has on its periphery spur-teeth *a*, and it is mounted upon a main rotatable arbor B, so as to rotate therewith, by being clamped at the center of its head between a flange *b*³ of the arbor seated in an annular recess in the outer side of the wheel and a nut C, engaging a threaded portion *b*⁴ of the arbor and abutting against the inner side of the wheel-head, the arbor having between its threaded portion and the flange *b*³ a portion *b*⁴, whose opposite sides are flattened, and which portion is engaged by a similarly-shaped opening in the main-wheel head. On its periphery the nut C has a hook *c*¹ of usual form to engage the end of the inner coil of the mainspring F, the end of the outer coil of said spring being engaged with the inner periphery of the safety drum or shell E, said drum or shell comprising a head *e* and ring *e*¹, that projects into the main wheel and has a hook or spur *e*² for engaging the mainspring and a hub *e*³. Interposed between the hub *e*³ of the safety drum or shell and the arbor B is a bushing *d*, that extends into the drum or shell, where it is enlarged or provided with a flange *d*¹ to overlap the head *e* on the inside, and encircling the opposite end of said bushing, where it projects beyond the hub *e*³, is a winding and ratchet wheel G. Screws *d*² pass through openings *g*² in said wheel, with their heads seated in enlargements *g*³ of such holes, and through holes *e*⁵ in the hub *e*³ and engage threaded holes *d*² in the flange or en-

largement d' of the bushing d . The portion of the bushing d engaged by the wheel has flattened sides, and the opening of the wheel G is similarly shaped. It will be seen that the wheel G and the drum or shell E are united together, and as the bushing d , which is virtually a hub of the wheel G , is free to revolve about the arbor B the wheel G may be turned, and with it the drum or shell, and thereby the mainspring wound.

The arbor B has its pivot b^2 at one end journaled in the jewel mounted, as shown, in a setting B^2 , secured by screws B^6 to a pillar-plate B^5 , and the pivot b' at the other end of the arbor B is journaled in a jewel mounted in a setting B' , secured by screws B^4 in a bridge-plate B^3 , that extends across an opening b' cut in the top plate B' to accommodate the barrel, said opening b' having such size as to permit the passage therethrough of the barrel, the bridge-plate being secured to the top plate B' by two screws B^8 . The wheel G , it is to be noted, lies between the pillar-plate B^5 and the main wheel, and as said wheel G and all the other parts of the barrel are carried by the main arbor B it will be seen that when the bridge-plate B^3 is removed the whole barrel, including all the parts carried by the arbor B , may be removed without any derangement of the parts of the time-train being necessary and with no disturbance of the position of either of the jewel-bearings, because that one carried by the bridge-plate B^3 is merely lifted off the arbor-pivot b' when the bridge-plate is lifted off and the arbor-pivot b^2 is simply lifted out of its jewel-bearing.

In the embodiment of my invention illustrated in Fig. 6 and Figs. 14 to 14^a the main wheel H and the arbor I are similar to the main wheel A and the arbor B , (illustrated in Fig. 5,) and the two are secured together in a similar manner, so that the main wheel revolves with the arbor. The inner coil of the mainspring L , however, is not attached to the clamping-nut J , but to an annular projection k from the bushing k^5 , corresponding to the bushing d , (shown in Fig. 5,) and which annular projection encircles the nut J . The outer coil of the mainspring in the construction illustrated in Fig. 5 is attached to the main wheel instead of to a ring or band corresponding to the ring or band e , (shown in Fig. 5,) there being employed in the construction illustrated in Fig. 6 instead of the shell or drum E a disk M , having a hub m' , similar to the hub e^3 , (shown in Fig. 5,) through which hub screws N' pass that secure a wheel N to the bushing-flange k , all precisely similar to the construction illustrated in Fig. 5. The pivots i' and i^2 , respectively, of the arbor I are journaled in jewel-bearings in the bridge I^3 and the pillar-plate I^5 , respectively, precisely as in the case of the construction illustrated in Fig. 5.

It will be understood that in cases of both constructions illustrated in Figs. 5 and 6 the wheel G or N , as the case may be, is the winding-wheel and the teeth g or n , as the case may be, are utilized for engagement by the usual pawl or ratchet. In the case of the construction illustrated in Fig. 5 the revolution of the winding-wheel G winds the spring through the connection of the band or ring e therewith, the power of the spring to revolve the main wheel being applied where its inner coil is attached to the nut C , while in the case of the construction illustrated in Fig. 6 the winding-wheel N operates to wind the spring through the connection of the annular projection k with the inner coil of the spring, and the power of the spring to revolve the main wheel is applied directly to the main wheel through the connection therewith of the outer coil of the mainspring. As has already been explained, as all the members or parts of the barrel are carried by the main arbor the whole barrel construction may be removed from the movement and replaced intact or in an assembled condition, with no disturbance of either of the jewel-bearings or the other parts of the watch mechanism beyond the removal of the bridge, and in addition to this when taken from the movement the barrel may be separated, as shown in Figs. 13 and 14, into what are virtually two members to give access to the mainspring.

Besides the very important advantage of avoiding any disturbance of the position of the jewels which is obtained from my construction, there is also the advantage that the jewels do not rotate in winding the mainspring, so that there is no friction on the jewels during the winding of the mainspring, the only friction on the jewels being when the main wheel is revolved by the action of the mainspring, and I have a good long bearing for the main wheel, so that the latter is firmly maintained in position.

While I have illustrated and described certain details of construction in the embodiments of my invention which I have selected for illustration, it of course is to be understood that the scope of my invention, broadly considered, is not restricted to such details, because variations in the details of construction may be resorted to which will involve no departure from the principle of my invention.

Having thus described my invention, what I claim is—

1. The combination of two movement-plates, one of which is cut away to provide an opening of a size to permit the passage of the main wheel therethrough, a bridge having but one arbor-bearing extending across said opening and removably attached to the plate having the same, a rotatable arbor, a jewel-bearing in the bridge for one end of the arbor, a jewel-bearing in the opposite plate for

the other end of the arbor, a main wheel fixed to and rotating with the arbor, a mainspring, and a winding-wheel lying between the bridge and said opposite movement-plate, 5 said arbor, main wheel, spring and winding-wheel being so connected together that all said parts may be removed intact through said plate-opening from the plate jewel-bearing when the bridge is removed.

10 2. The combination of a main wheel having a central circular recess in its head, and a non-circular recess, a main arbor having a flange fitting said circular recess, and a portion having flattened sides and situated in 15 said non-circular recess, and a nut on a threaded portion of the arbor contiguous to said flat-sided portion and clamping the main wheel against said flange.

20 3. The combination of the main wheel, the arbor having pivots at its opposite ends, a clamping-nut on the arbor within the main

wheel to secure the main wheel and the arbor, a bushing journaled on the arbor having an annular mainspring-engaging projection that encircles said nut, a winding-wheel, and 25 means connecting the winding-wheel and said bushing.

4. The combination of a main wheel, an arbor having pivots at its opposite ends, means connecting the main wheel and the 30 arbor so that they rotate together, a bushing journaled on the arbor, a winding-wheel, a disk having a hub encircling said bushing, and screws passing through said winding-wheel and said hub and entering the bush- 35 ing.

In testimony whereof I affix my signature in presence of two witnesses.

SAMUEL R. HOFFMEIER.

Witnesses:

CALVIN M. KENDIG,
HARVEY B. LUTZ.