J. MAZER.

WINDING INDICATOR.

APPLICATION FILED MAR. 1, 1913.

1,167,582.

Patented Jan. 11, 1916.

2 SHEETS—SHEET 1.

FIG. 1

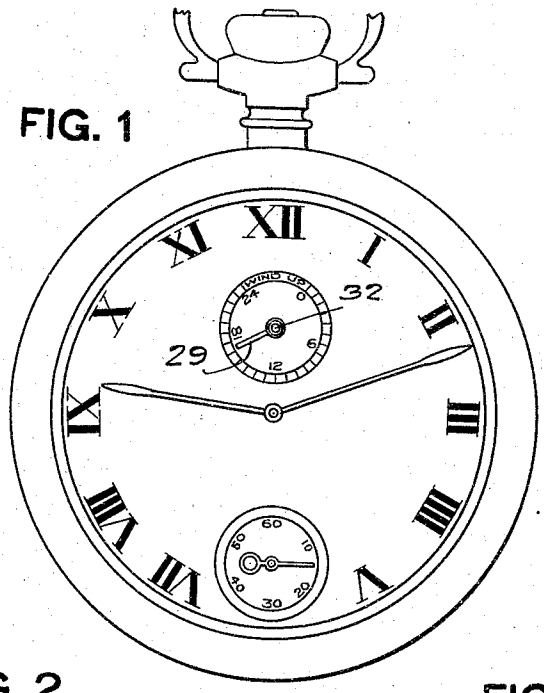


FIG. 2

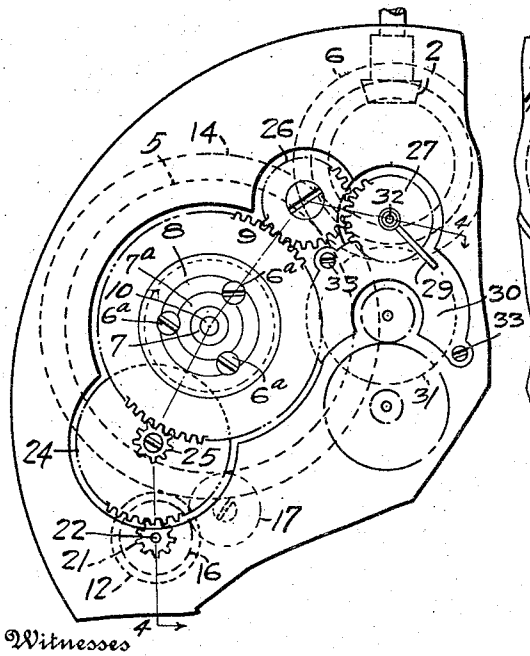
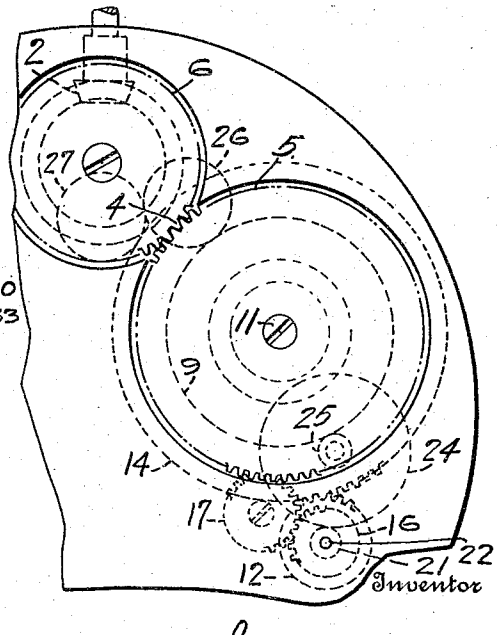


FIG. 3



Witnesses

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2 SHEETS—SHEET 2.

FIG. 4

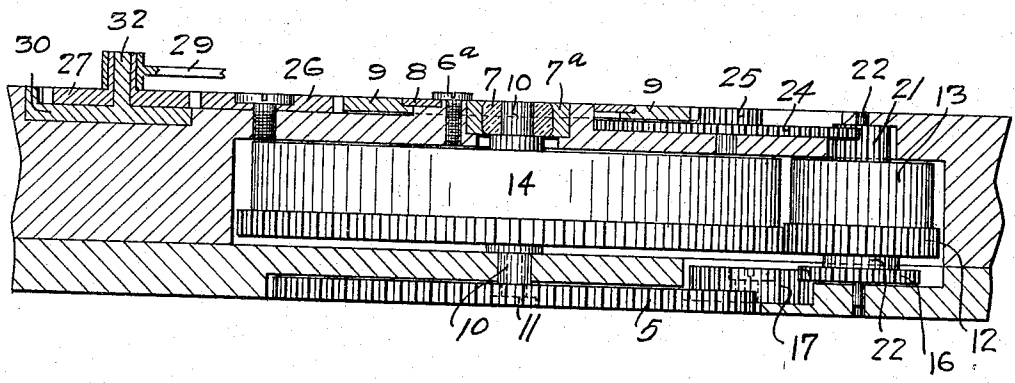


FIG. 5

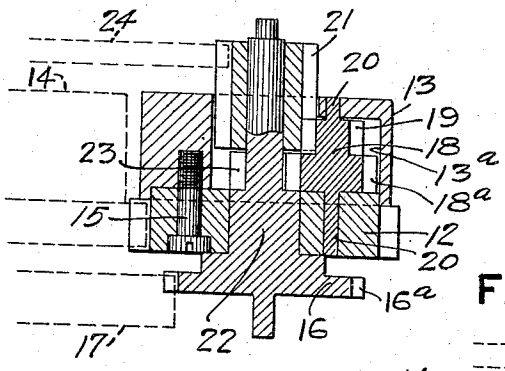


FIG. 6

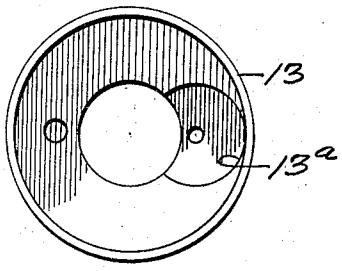
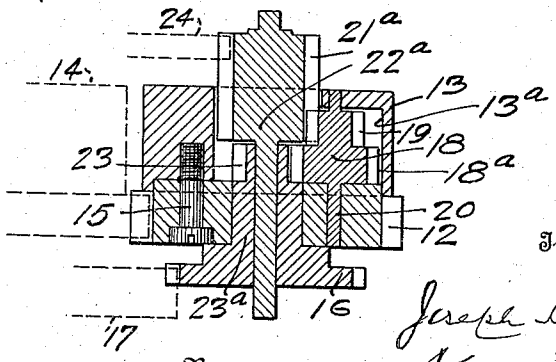


FIG. 7



Witnesses

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WINDING-INDICATOR.

1,167,582. Specification of Letters Patent. Patented Jan. 11, 1916.

Application filed March 1, 1913. Serial No. 751,471.

To all whom it may concern:

Be it known that I, JOSEPH MAZER, a citizen of the United States, and resident of McAlester, in the county of Pittsburg and State of Oklahoma, have invented a new and useful Improvement in Winding-Indicators; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to winding indicators for watches, graphophones or other devices, to indicate to what extent the device is run down and when it needs winding up.

The object of the invention is to provide a simple and effective form of mechanism for this purpose which can be located in the ordinary watch movement (where applied to a watch) without increasing the size of the space required for such movement and without the necessity of changing in any material degree the standard construction.

To these ends my invention comprises the novel features hereinafter set forth and claimed.

Referring to the drawings Figure 1 is a face view of a watch with my invention applied thereto; Fig. 2 shows an enlarged face view of a portion of the watch with the dial removed; Fig. 3 is the reverse side of Fig. 2 showing ratchet wheel and crown wheel; Fig. 4 is a cross section on the line 4—4 Fig. 2; Fig. 5 is an enlarged section of the planetary system; Fig. 6 is a side view of one-half of the casing containing the reversing mechanism; and Fig. 7 shows a modified form of my invention.

In the drawing the numeral 2 represents the bevel pinion of the winding stem, which meshes with the crown teeth of the crown wheel 6. The ratchet wheel 5 meshes with the teeth 4 of the crown wheel 6. The screw 11 holds down the ratchet wheel 5.

The numeral 10 designates the arbor of the main spring barrel 14.

The gear wheel 12 forms the lower part of the entire planetary system of which 13 is the upper part, the gear 12 meshing with the main spring barrel 14. A screw 15 holds the planetary parts 12 and 13 together and the part 13 hollowed out or recessed to form the cavity 13^a so that when the parts 12 and 13 are united they form a practically dust-proof receptacle for the planet gears. A bearing member 22 is mounted at its upper and lower ends in bearings in the watch plate and this bearing member comprises the double gear member 16 which has the teeth 23 and 16^a. This double gear member passes up through an opening in the planetary part 12 and the teeth 23 are in the cavity or chamber 13^a. The teeth 16^a mesh with the intermediate wheel 17 which in turn connects with the ratchet wheel 5.

The planet pinion 18 is composed of a large member 18^a and a small member 19 either made integral or united to rotate together and rigidly connected to the staff or arbor 20 which has its bearings in the members 12 and 13. The arbor 20 and the pinions 18^a and 19 revolve loosely within the practically dust-proof casing formed by 12 and 13 united by the screw 15.

The pinion 21 meshes with 19 and said pinion is mounted loosely on the bearing member 22. The gear wheel 24 meshes with the pinion 21. The wheel 24 carries the pinion 25 which meshes into the ring wheel 9. This ring wheel 9 is concentric with the arbor 10 of the main spring barrel and the jewel 7. The screws 6^a which hold down the ring 7^a inclosing the jewel also act to hold down the plate 8 which engages an annular seat in the ring wheel 9 and acting to hold said ring wheel 9 in place. By mounting the gear 9 concentric with the spring barrel arbor, I am enabled to connect the reversing mechanism and indicator hand without the necessity of changing in the least the standard location of other gears and spindles of the watch, besides the reduction in the number of gears used by employing the large gear. The location is convenient for the reason that it does not interfere with the removal of other gears. The intermediate gear wheel 26 meshes with the ring wheel 9 and the indicator hand wheel 27 meshes with said intermediate gear wheel 26. The indicator hand 29 is mounted on the indicator wheel 27. The plate 30 is employed to hold down the minute wheel 31 which belongs to the regular construction, and at the same time acts as a support for the indicator wheel 27. The post 32 on the plate 30 acts as a bearing for the indicator hand wheel 27. The screws 33 hold down the plate 30.

When the watch is being wound the wheel 12, which engages the main spring barrel 14, stands relatively still. Motion is imparted to the bevel pinion 2 which meshes with the crown teeth of the crown wheel 6 while the teeth 4 of said crown wheel mesh with the ratchet wheel 5 which turns the intermediate wheel 17 which imparts rotary motion to

the double gear 16 of the bearing member. The pinion 23 being integral with 16, turns the planet gear 18 by meshing with the teeth 18a. The pinion 19 actuates the pinion 21 mounted loosely on the bearing member. The pinion 21 actuates the wheel 24, the pinion 25 actuates the ring wheel 9 and said ring wheel 9 imparts motion to the intermediate wheel 26 which in turn moves the indicator wheel 27 and the hand 29.

When the watch is running the bearing member 22 remains still by virtue of its meshing indirectly with the ratchet wheel 5 held from rotation by the ordinary pawl. When the barrel 14 revolves, by reason of its meshing with the teeth of the member 12, and as 12 is connected with 13, the said members 12 and 13 revolve as a unit. The revolution of 12 and 13 as a unit carries the gear 18 with it and the part 19 rolls about the pinion 21 as a sun gear and imparts motion thereto, said pinion being mounted loosely on the bearing member 22. The pinion 21 imparts motion to the wheel 24 and through the connections before described, to the indicator hand.

By virtue of having the planet gear comprising pinions 18a and 19 rigid or integral with the arbor 20 rotating loosely in the members 12 and 13, I am enabled to reduce materially the amount of space required and also form a stronger construction.

By having the entire planetary system formed of a single unit, this system can be constructed irrespective of the watch and afterward fitted in as a whole. Furthermore, the planet gear being held between the parts 12 and 13 and in a cavity or chamber it is practically dust-proof. Furthermore, in taking the mechanism apart you have but to grasp one end of the bearing member and the pinion 21; and the whole is removable as a unit. The sections 12 and 13 containing the planet gear are removable at the same time. That portion of the double gear 16 passing through the opening in the member 12 forms a bearing for said member and centers it properly.

The intermediate wheel 17 is mounted upon the under side of the upper plate, the upper half of said wheel meshing with the ratchet wheel 5 and the lower part into 16a of the double gear member 16.

In Fig. 7 I have shown a modified form of my invention in which the bearing member 22a has the pinion 21a formed integral with said bearing member or rigid therewith, while the double gear 23a is loosely mounted on the bearing member. In other words the arrangement is just reversed of that shown in Fig. 5, in which the pinion 21 is loosely mounted on the bearing member. The operation, however, is the same as the construction shown in Fig. 5. In both cases the pinion and double gear are adapted to rotate independently of each other.

What I claim is:

1. In winding indicator mechanism, the combination of the main-spring barrel, winding mechanism including a ratchet-wheel, a bearing-member comprising a pinion and a double gear adapted to rotate independently of each other, a gear-member mounted on said bearing member interposed between the two sets of teeth of said double gear, a planet-gear supported by said gear-member, connections between said gear-member and said barrel, said planet-gear engaging one set of teeth of said double gear and said pinion, and connections between the other set of teeth of said double gear and said ratchet-wheel, an indicator-hand, and connections between said pinion and said indicator-hand.

2. In winding indicator mechanism, the combination of a main-spring barrel, winding mechanism including a ratchet-wheel, a bearing-member comprising a pinion and a double gear-member adapted to rotate independently of each other, a gear-member between the two sets of teeth of said double gear mounted loosely on the bearing-member and having a chamber therein, a planet-gear supported by said gear-member within said chamber, connections between said gear-member and said barrel, said planet-gear engaging one set of teeth of said double gear and said pinion, connections between the other set of teeth of said double gear and said ratchet-wheel, an indicator-hand, and connections between said pinion and said indicator-hand.

3. In winding indicator mechanism, the combination of a main-spring barrel, winding mechanism including a ratchet-wheel, a bearing-member comprising a pinion and a double gear-member adapted to rotate independently of each other, a gear-member mounted loosely on said bearing member composed of two parts forming a chamber, a planet-gear supported by said gear-member within said chamber, connections between said gear-member and said barrel, said planet-gear engaging one set of teeth of said double gear and said pinion, connections between the other set of teeth of said double gear and said ratchet, an indicator-hand, and connections between said pinion and said indicator-hand.

4. In winding indicator mechanism, the combination of a main-spring barrel, winding mechanism including a ratchet-wheel, a bearing-member comprising a pinion loosely mounted thereon and a double gear rigid therewith, a gear-member mounted on said double gear interposed between the two sets of teeth of said double gear, a planet gear supported by said gear-member, connections between said gear-member and said barrel,

said planet-gear engaging one set of teeth of said double-gear and said pinion, connections between the other set of teeth of said double gear and said ratchet-wheel, an indicator-hand, and connections between said pinion and said indicator hand.

5. In winding indicator mechanism, the combination of a main-spring barrel, winding mechanism including a ratchet-wheel, a bearing member comprising a pinion and a double gear-member adapted to rotate independently of each other, a gear-member mounted on said bearing member comprising two parts united to form a chamber, a planet-gear loosely mounted in said gear-chamber, said planet-gear comprising two pinions of different diameter, one of said pinions engaging said first named pinion, the other pinion engaging one set of teeth of said double gear member, connections between said gear-member and said barrel, connections between the other set of teeth of said double gear and said ratchet-wheel, an indicator hand, and connections between said first named pinion and said indicator hand.

6. In winding indicator mechanism, the combination of a main-spring barrel, winding mechanism including a ratchet-wheel, a bearing-member comprising a pinion and a double gear-member adapted to rotate independently of each other, a gear-member mounted on said bearing member comprising two parts, one of said parts having a recess formed therein, a screw uniting said parts, a planet-gear supported by said gear member within said recess, connections between said gear-member and said barrel, said planet-gear engaging one set of teeth of said double gear-member and said pinion, connections between the other set of teeth of said double gear and said ratchet-wheel, an indicator hand, and connections between said pinion and said indicator hand.

7. A planetary system for winding indicator mechanism comprising a bearing-member, a pinion and a double gear-member carried thereby adapted to rotate independently of each other, a gear-member loosely mounted on said bearing member interposed between the two sets of teeth of said double gear, and a planet-gear supported by said gear-member and meshing with one set of teeth of said double gear member and with said pinion.

8. In winding indicator mechanism, the combination of a main-spring barrel, winding mechanism including a ratchet-wheel, a bearing member comprising a pinion and a double gear-member adapted to rotate independently of each other, said double gear-member varying in diameter, a gear member mounted loosely on a shoulder on said double gear member between the two sets of teeth of said double gear, said gear-member having a chamber therein, a planet-gear supported by said gear-member within said chamber, connections between said gear-member and said barrel, said planet-gear engaging the teeth of said double gear extending up into said chamber and also engaging said pinion, connections between the teeth of said double gear outside said chamber and said ratchet wheel, an indicator hand, and connections between said pinion and said indicator hand.

9. In winding indicator mechanism, the combination with a supporting plate, of a main spring barrel, an arbor, a bearing on said arbor, a train of gears mounted on said plate, an indicator hand operated by said gears, one of said gears being concentric with the arbor, a holding ring for said gear, and means for holding down the ring and said bearing.

In testimony whereof, I the said JOSEPH MAZER have hereunto set my hand.

JOSEPH MAZER.

Witnesses:
ROBERT C. TOTTEN,
JOHN F. WILL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."