

W. E. E. MILZ.
KEYLESS CLOCK.

APPLICATION FILED MAR. 28, 1911.

1,009,773.

Patented Nov. 28, 1911.

2 SHEETS-SHEET 1.

Fig. 1.

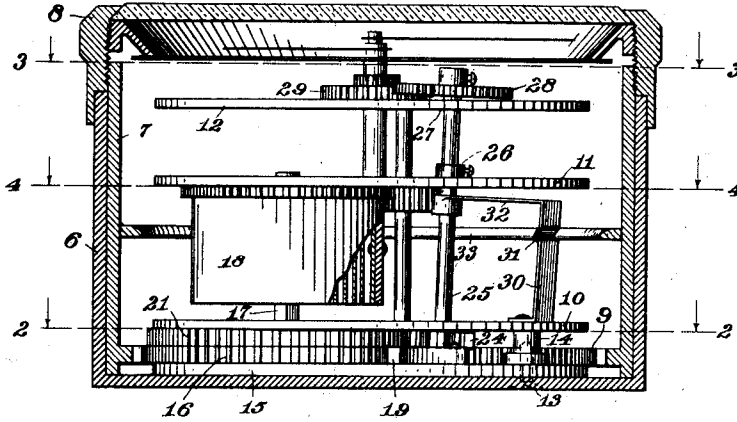


Fig. 5.

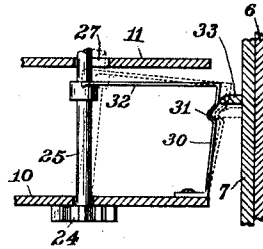
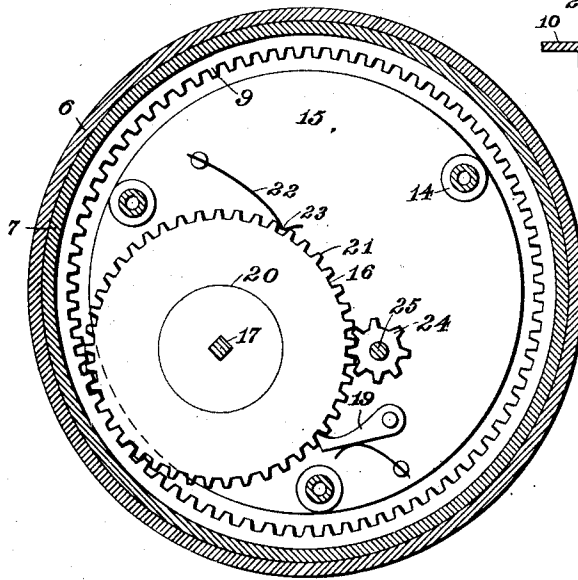


Fig. 2.



Witnesses

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2 SHEETS—SHEET 2.

Fig. 3.

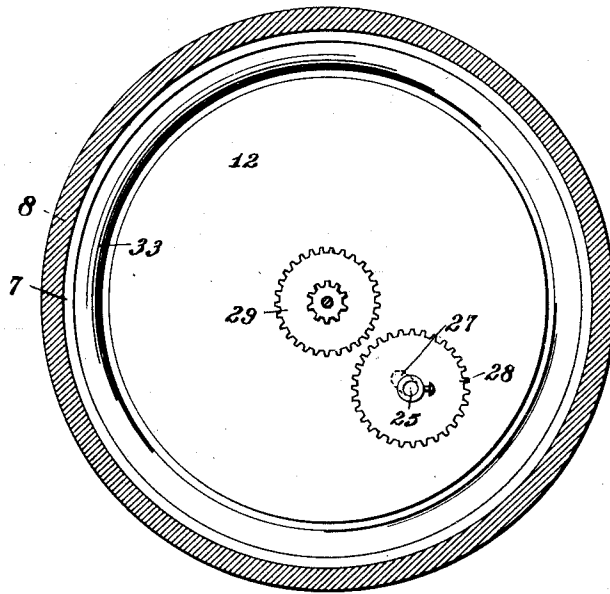
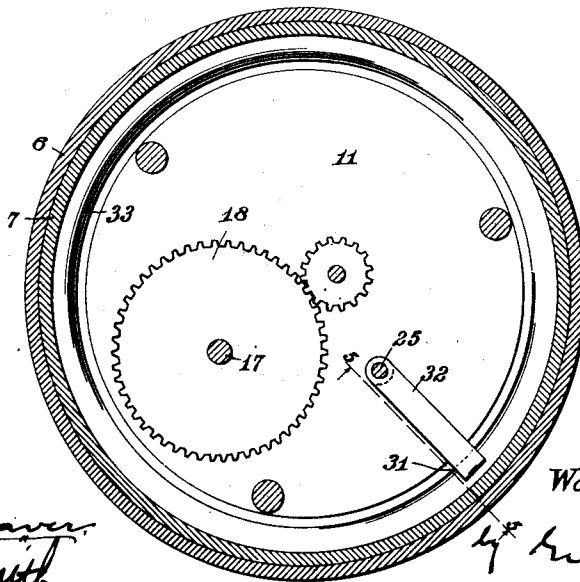


Fig. 4.



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UNITED STATES PATENT OFFICE.

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KEYLESS CLOCK.

1,009,773.

Specification of Letters Patent.

Patented Nov. 28, 1911.

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To all whom it may concern:

Be it known that I, WALTER E. E. MILZ, a subject of the Emperor of Germany, residing at New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Keyless Clocks, of which the following is a specification.

This invention relates to keyless clocks, and has for its object to provide a clock in which the spring can be wound and the hands can be set by rotation of a rim and casing, the latter inclosing the movement which is fixed to an outer casing or support.

In the present invention, the inner casing to which the rim is attached is rotatable and is provided at its inner or rear end with an internal annular gear which is normally in mesh with a gear mounted on the arbor of the spring, so that when the casing is turned the spring is wound. The casing is also slidable to a limited extent in and out, and when pulled out it is disengaged from the spring winding gear and is engaged with another gear which is operatively connected to the hand setting devices, for the purpose of setting the hands. Accordingly when the spring is to be wound the casing having the internal gear is pushed in, to its normal position. When the hands are to be set, the casing is pulled forwardly to engage its annular gear with the hand setting gear.

The invention is illustrated in the accompanying drawings in which—

Figure 1 is a side elevation, with the inner and outer casings in section. Fig. 2 is a section on the line 2—2 of Fig. 1. Fig. 3 is a section on the line 3—3 of Fig. 1. Fig. 4 is a section on the line 4—4 of Fig. 1. Fig. 5 is a section on line 5—5 of Fig. 4, showing the casing pulled out to engage the hand setting gear.

Referring specifically to the drawings, 6 indicates an outer cup shaped casing which may be mounted on any suitable base or support, and is relatively fixed. Fitting at a working fit within this casing is a cylindrical rotatable inner casing 7 which may be turned in the inner casing, and pulled in and out to a limited extent therein, by means of a rim 8 fastened to the front end of the casing, which rim has a lap joint with the front edge of the outer casing.

These parts are constructed in a manner somewhat similar to that shown in U. S. Patent No. 967428, to Phinney and Adams. The rim carries the glass and the usual reflector ring around the dial. At its inner or rear end the inner casing 7 has an internal ring gear 9, fixed thereto. The back plate of the movement is indicated at 10, the middle plate at 11, and the front plate at 12, and the movement may be of any suitable or desired construction, and requires no detailed description or illustration. The movement is fastened to the back of the outer casing 6 by means of screws 13 which take into pillars 14 projecting from the back plate. 15 indicates a plate which rests against the back of the outer casing 6 and which is held by the screws 13 and pillars 14.

In its normal position, that is when the casing 7 is pressed in to full extent, the ring gear 9 engages a spur gear 16 mounted on the spring arbor 17 which is connected to the spring in the barrel 18 in the usual manner, the spring barrel being geared to the clock movement as usual. When the inner casing 7 is turned in the proper direction the gear 16 and arbor 17 will be turned, and the spring wound. Back slip is prevented by a detent 19 pivoted to the plate 15 and engaging the gear 16.

The gear 16 has on the front side thereof a circular hub or extension 20 on which an annular spur gear 21 is free to turn. The spur gear 21 is the same diameter as the spur gear 16, and by grasping the rim 8 the inner casing 7 may be pulled out far enough to shift the annular gear 9 from engagement with the gear 16 to engagement with the gear 21. In order that this may be easily done it is desirable that the teeth of the two gears 16 and 21 be at all times registered with each other, so that the gear 9 may be slipped from one to the other. This could be done by manipulating the casing until the teeth of the gears register, but it is done easier by having a device which holds the teeth in registry. This device consists of a spring 22 with a V-projection 23 at the end thereof which is broad enough to engage the teeth of both gears, but will allow either to slip under pressure, serving merely to hold the teeth of both gears registered when they are idle. The spring 22 is fastened to the plate 15.

The spur gear 21 meshes with a pinion 24 on the rear end of an arbor 25 which extends through the plates of the movement and is held in suitable position by a collar 26 thereon. The plates 11 and 12 are slotted as at 27, where the arbor passes through, and the bearing in the plate 10 is sufficiently loose to allow the arbor 25 to swing to an extent sufficient to engage or disengage the gear 28, on the front end thereof, with a pinion 29 fastened to the cannon pinion which turns with the minute hand and is geared to the hour hand in the usual way, and when the gears 28 and 29 are engaged, and the arbor 25 is turned, the hands will be set to desired position.

When the inner casing 7 is pulled forwardly to the extent necessary to engage its ring gear 9 with the gear 21, and then turned, the motion is communicated through the gear 21, pinion 24, arbor 25 and gears 28 and 29 to the hands, and when the case 7 is so pulled out, its gear 9 is disengaged from the spring gear 16, as above explained.

It is necessary that the gears 28 and 29 be engaged when the hands are to be set, and it is also necessary that they be disengaged at other times, in order that the hands may be turned by the clock movement. Therefore the arbor 25 is shiftable, as above explained. It is normally shifted or swung outwardly, to disengage the gears, by means of a spring 30 which is fastened at its lower end to the back plate 10 and is connected at its upper end to the arbor 25 by means of a rod or piece 32 which has an opening through which the arbor extends.

The spring 30 presses outwardly, and by means of the connecting rod 32 normally swings the arbor 25 to disengage the gears 28 and 29. The spring 30 has a notch or corrugation 31 therein. Attached to the inside of the inner casing 7 is a ring 33 which is so located that it will engage in said notch when the casing 7 is pushed in. When said casing is pulled outwardly, to engage the gears 9 and 21, said ring 33 rides up the spring 30, and out of the notch 31 and acts as a wedge, pressing in the upper end of the spring 30 and consequently pushing over the rod 32 and the arbor 25 to an extent sufficient to engage the gears 28 and 29. When the casing is again pushed in, the ring 33 snaps into the notch 31 and the spring 30 acts to disengage said gears. Inasmuch as the ring extends completely around the casing 7 it remains in engagement with the notch 31 at all points of the rotation of the casing, and such engagement has the further function of holding the casing 7 against accidental movement outwardly, that is, it holds it yieldingly in the position shown in Fig. 1, with the ring gear 9 in mesh with the spur gear 16 on the spring arbor.

By the means described, the spring may

be wound by turning the rim and casing, and the hands may be set by pulling the casing 7 outwardly and then turning the same.

It will be noticed that when the hand setting gear is engaged the spring winding gear is disengaged from the casing 7, consequently said casing may turn in either direction to set the hands, the movement being entirely independent of the spring winding gearing.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:—

1. In a clock, the combination of spring winding devices, hand setting devices, and an operating member rotatable around the clock and shiftable in and out of engagement with either of said devices.

2. In a clock, the combination of spring winding devices, hand setting devices, and a ring rotatable around the clock movement and shiftable in a direction parallel to the axis of said movement to engage the ring with either of said devices.

3. In a clock, the combination of spring winding devices, hand setting devices, and a cylindrical casing inclosing the clock movement and rotatable around the same, said casing being shiftable in and out, parallel to its axis, to engage the same with either of said devices.

4. In a clock, the combination of spring winding devices, hand setting devices, each of said devices including a gear wheel, and a casing rotatable around the clock movement, and having a gear engageable with either of the said gears, said casing being shiftable axially to engage its gear with either of the said gears.

5. In a clock, the combination of spring winding devices, hand setting devices, each of said devices including a gear wheel, said gear wheels being located beside each other with their teeth in alinement, and a ring rotatable around the clock movement and having an internal gear, said ring being shiftable axially to engage said internal gear with either of the said gear wheels.

6. In a clock, the combination of spring winding devices, hand setting devices, each of said devices including a gear wheel, said gear wheels being located one upon the other with their teeth in circumferential alinement, and a casing rotatable around the clock movement, said casing having an internal gear and being shiftable axially to engage said gear with either of the said gear wheels.

7. In hand setting devices for a clock, the combination of a ring rotatable around the clock movement, and gearing between the ring and the hands, the ring being shiftable axially to engage or disengage the gearing.

8. In hand setting devices for a clock, the combination of a ring rotatable around

the clock movement, an internal gear on said ring, and gearing between said gear and the hands, the ring being shiftable axially to engage or disengage the ring gear from said gearing.

9. In hand setting devices for a clock, the combination of a ring rotatable around the clock movement, gearing between the ring and the hands, the ring being shiftable to engage or disengage said gearing, and said gearing including gear wheels movable into and out of mesh with each other, and means actuated by the shift of the ring to move said gears into and out of engagement with each other.

10. In hand setting devices for a clock, the combination of a casing rotatable around the clock movement and shiftable axially, an arbor movable laterally within the casing, gearing between said arbor and the hands, said gearing being engaged or disengaged by said lateral movement, and gearing between the casing and the arbor, said gearing being engaged or disengaged by axial shift of the casing, a spring connected to the arbor and tending to move the same to disengage the gearing between the same and the hands, and a projection carried by the casing and pressing against the spring and adapted to move the arbor in opposition to the spring when the casing is shifted in a direction to engage the gearing between the casing and the arbor.

11. In hand setting devices for a clock, the combination of a casing rotatable around the clock movement, an internal gear on said casing, a spur gear, the casing being shiftable axially to engage or disengage the ring gear with the spur gear, and gearing between the spur gear and the hands of the clock, said gearing including a gear wheel movable laterally into and out of engagement, means to move said gear into engagement when the casing is shifted to en-

gage the ring gear and the spur gear, and means to disengage said gear when the casing is shifted to disengage the ring gear and spur gear.

12. In hand setting devices for a clock, the combination of an arbor movable laterally in the clock movement, gearing between the arbor and the hands of the clock, said gearing being engageable or disengageable by lateral movement of the arbor, a spring connected to the arbor and normally holding said gears disengaged, said spring having a notch, a casing rotatable around the clock movement and geared to the arbor, said casing being shiftable in and out, and a ring carried by the casing and extending through said notch and adapted to press against the spring when the casing is shifted in one direction and move the arbor to engage the gearing between the same and the hands.

13. In hand setting devices for a clock, the combination of the shifting arbor, gearing engageable between said arbor and the hands, a spring connected to said arbor, said spring having a notch, a casing rotatable around the clock movement and having a ring normally engaging in said notch, the casing being shiftable in and out for the purpose described, and gearing between the casing and the arbor.

14. In a clock, the combination of spring winding gearing, hand setting gearing, and a casing rotatable around the clock movement and movable to engagement with either of said gearings and disengagement with the other, to operate the same respectively.

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

WALTER E. E. MILZ.

Witnesses:

WALTER R. BUNNELL,
FREDERICK PHINNEY.