

W. E. E. MILZ.

KEYLESS CLOCK.

APPLICATION FILED JULY 13, 1911.

1,031,804.

Patented July 9, 1912.

2 SHEETS—SHEET 1.

Fig. 1.

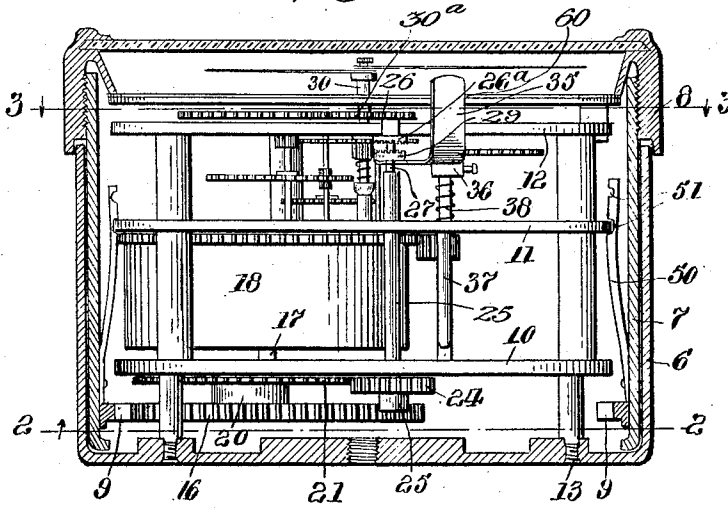
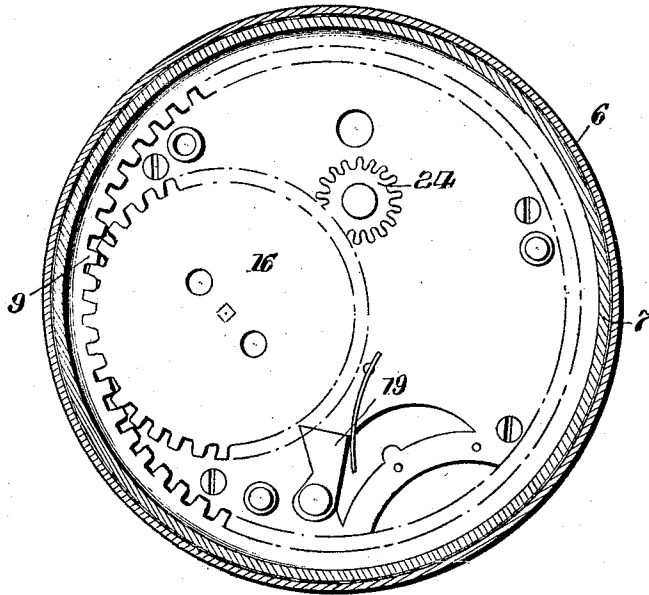


Fig. 2.



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2 SHEETS-SHEET 2.

Fig. 3.

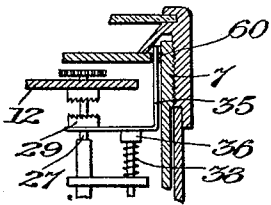
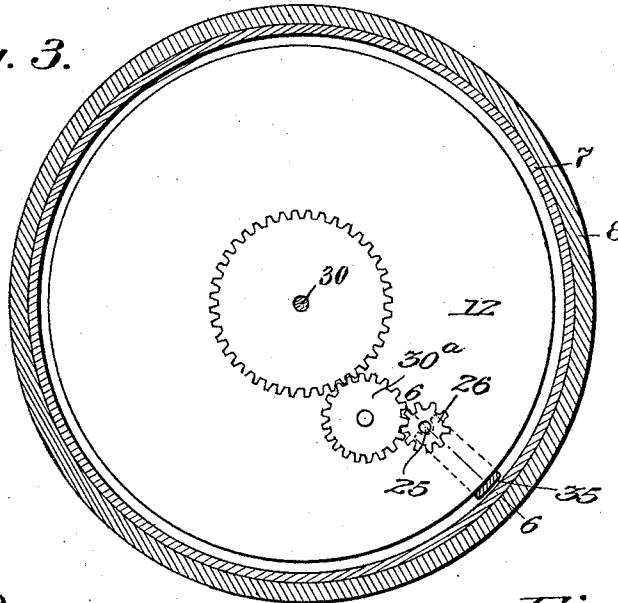


Fig. 6.

Fig. 5.

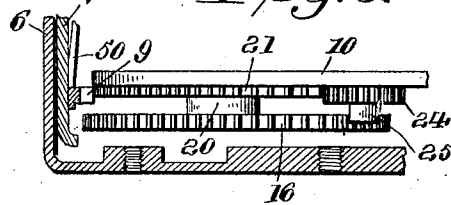
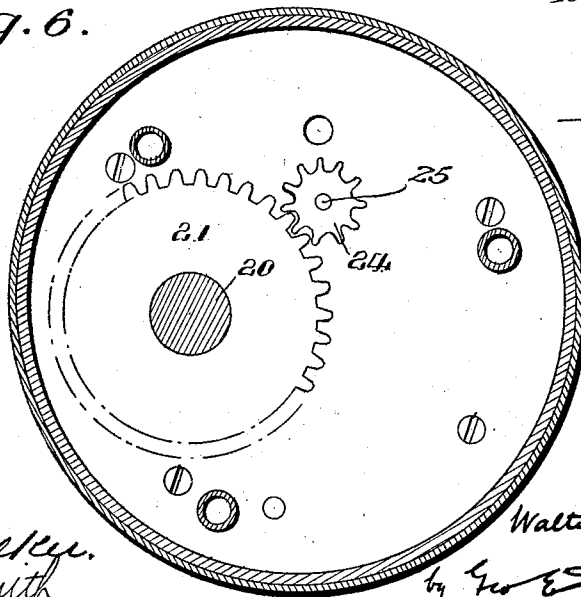


Fig. 4.



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UNITED STATES PATENT OFFICE.

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KEYLESS CLOCK.

1,031,804.

Specification of Letters Patent.

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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, 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 is an improvement on or modification of the invention shown and described in my Patent No. 1,009,773.

The object of the present invention is to provide improved means for setting the hands of the clock by means of a rotatable inner casing and rim. As in the former case, this casing is provided at its inner end with an 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 shiftable in and out to a limited extent, 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.

Instead of the swinging arbor shown in my former application, I provide a relatively stationary arbor, with gearing between the same and the cannon pinion which turns the hands in the usual way, said gearing including a gear which is slidable on the arbor, and devices are provided to slide the gear to engage the setting gears when the casing is pulled out, preparatory to setting the hands, said gearing being disengaged when the casing is pushed in to its normal position.

In the accompanying drawings—Figure 1 is a side elevation with the 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 similar to Fig. 2, but with the gears engaged. Fig. 5 is a detail of the sliding gear operating device. Fig. 6 is a detail in section showing the clutch shifter.

Referring specifically to the drawings, 6 indicates an outer cup shaped casing which may be mounted on any suitable base 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 outer casing and pulled in or 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. The rim carries the glass and the usual reflector ring around the dial. At its inner or rear end the inner casing 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. 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.

Fastened to the inside of the inner casing 7 are a pair of flat springs 50, having upper and lower notches 51, and these springs project so that opposite edges of the middle plate 11 of the casing will be engaged in the notches, the plate slipping from one notch to the other as the casing 7 is shifted in or out. The purpose of this is to hold the casing in the position to which it is shifted. When the case is pulled out the plate is engaged in the upper notch of each spring, and when it is pushed in it is engaged in the lower notch of each spring, the former being the setting position and the latter the normal or winding position.

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 back plate 10 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 or blind wheel 21 is free to turn. This wheel is the same diameter as the 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. The spur gear 21 meshes with a pinion 24 on the inner end of an arbor 25 which extends through the plates of the movement, and has at its front end a pinion

26 loose thereon. The hub of this pinion extends through a hole in the front plate, and at its front end, outside of or above the plate, it has spur teeth. At its inner end, 5 below the plate, it has crown teeth 26^a, forming one member of a clutch. The front end of the arbor 25 is squared below said pinion, as at 27, and on said squared part has a sliding clutch member 29 which has teeth en- 10 gageable with the teeth 26^a to transmit the rotation of the shaft to the loose pinion 26. The pinion 26 is geared by a wheel 30^a to the center pinion 30 fastened to the cannon pinion which turns with the minute hand 15 and is geared to the hour hand in the usual way, and when the clutch 29 is engaged and the arbor 25 is turned the hands will be set to desired position.

The invention is not limited to the exact 20 embodiment shown, but various modifications are possible within the scope thereof.

When the inner casing 7 is pulled forwardly to the extent necessary to engage its ring gear 9 with the gear 21, and then 25 turned, the motion is communicated through the gear 21, pinion 24, arbor 25, clutch 29, and gears 26, 30^a and 30 to the hands, and when the casing is so pulled out, its gear 9 is disengaged from the spring gear 16. The 30 clutch member 29 is carried by a shifter 35 which consists of a bent piece of metal having an inwardly projecting part at the end of which is an ordinary fork straddling the arbor under the member 29, and an out- 35 wardly and forwardly extending part which works through a notch at 60 in the dial plate of the movement. This shifter is fastened by a collar 36 and set screw to a sliding pin 37 which works through guide holes in the 40 front and middle plates of the movement. A spring 38 confined between the collar 36 and the middle plate 11 tends to press the shifter upwardly and outwardly and thereby engage the clutch members 29 and 26^a. 45 The outer end of the shifter 35 has a sliding contact with the rim 8 as shown in Fig. 6, so that it does not obstruct the turning of said rim, but merely acts to disengage the clutch when the inner casing and the rim 8 50 are pushed in. When the inner casing is pulled out as above described the spring 38 lifts the shifter and so engages the clutch, and consequently the rotation of the arbor 25 is communicated to the hands. When the 55 casing is pushed in the spring 38 is compressed and the shifter disengages the

clutch, permitting the usual winding operation to be effected, the arbor 25 in this instance rotating idly. When the hand setting gear is engaged the band may be set 60 by turning the rim in either direction.

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

1. In hand-setting devices for a clock, the 65 combination of a rotatable ring on the clock casing and shiftable with respect thereto, gearing between the rings and the hands of the clock, and operating to set the hands by turning the ring, said gearing including an 70 arbor and a gear wheel loosely mounted on the arbor, a clutch one member of which is connected to said gear wheel and the other member of which is shiftable on the arbor, a shifter connected to the movable clutch 75 member and projecting to contact with the ring, whereby the clutch will be opened when the ring is shifted in one direction, and a spring acting against the shifter and tending to close the clutch when the ring is 80 shifted in the other direction.

2. In a clock, the combination of spring winding gearing, hand setting gearing, a casing rotatable around the clock movement and shiftable to engagement with either of 85 said gearings to operate the same respectively, and means to hold the casing in either position to which it is shifted, comprising a spring attached to the casing and engaging a fixed part on the movement. 90

3. In hand-setting devices for a clock, the combination of a ring rotatable around the clock movement, and shiftable with respect to said movement, gearing between the ring and the hands and operating to set the hands 95 by turning the ring, said gearing including an arbor, a clutch mounted on the arbor, a gear wheel attached to one of the clutch members and carried on the arbor and forming part of said gearing, a slidable shifting device bearing 100 against the ring and operatively connected to the movable clutch member and acting to shift the same to open the clutch when the ring is shifted one way, and a spring bearing against the said device and 105 tending to close the clutch.

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

WALTER E. E. MILZ.

Witnesses:

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FREDERICK PHINNEY.