J. B. CONNOLLY.

ALARM WATCH.

APPLICATION FILED AUG. 30, 1909.

944,948. **Patented Dec. 28, 1909.**

Fig. 1

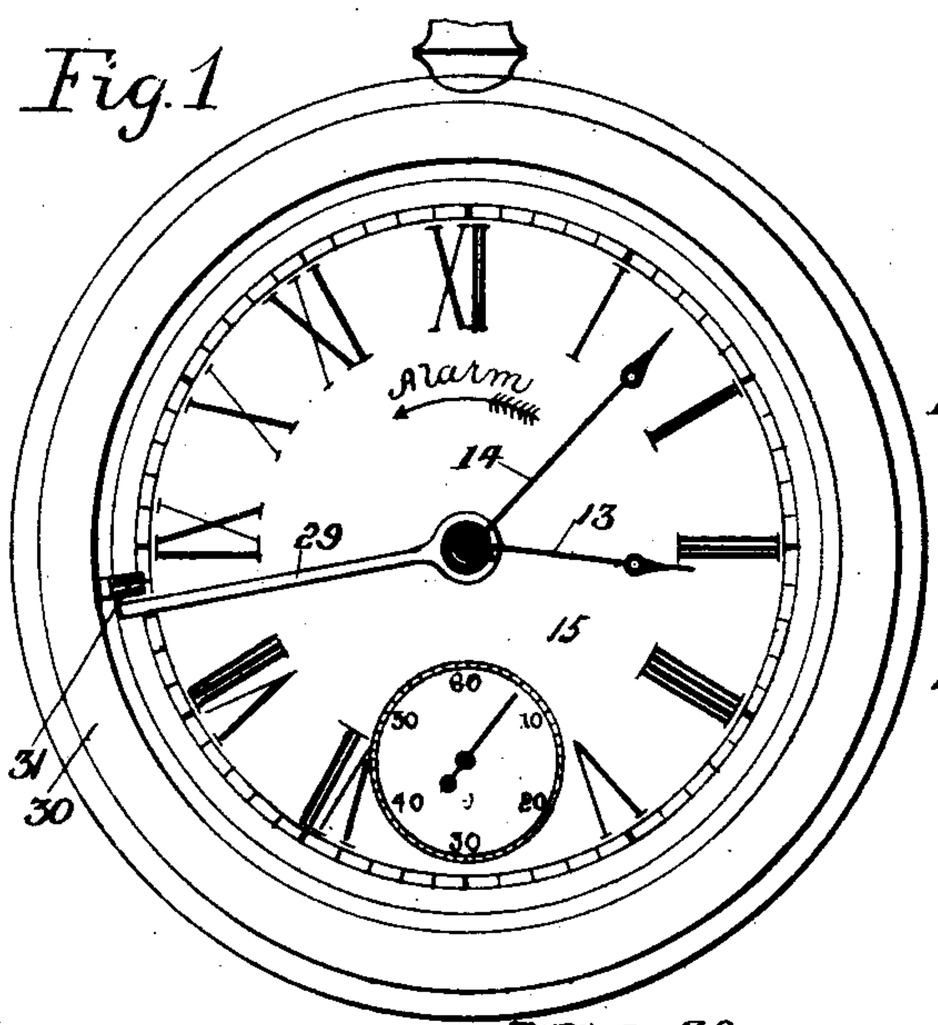


Fig. 2

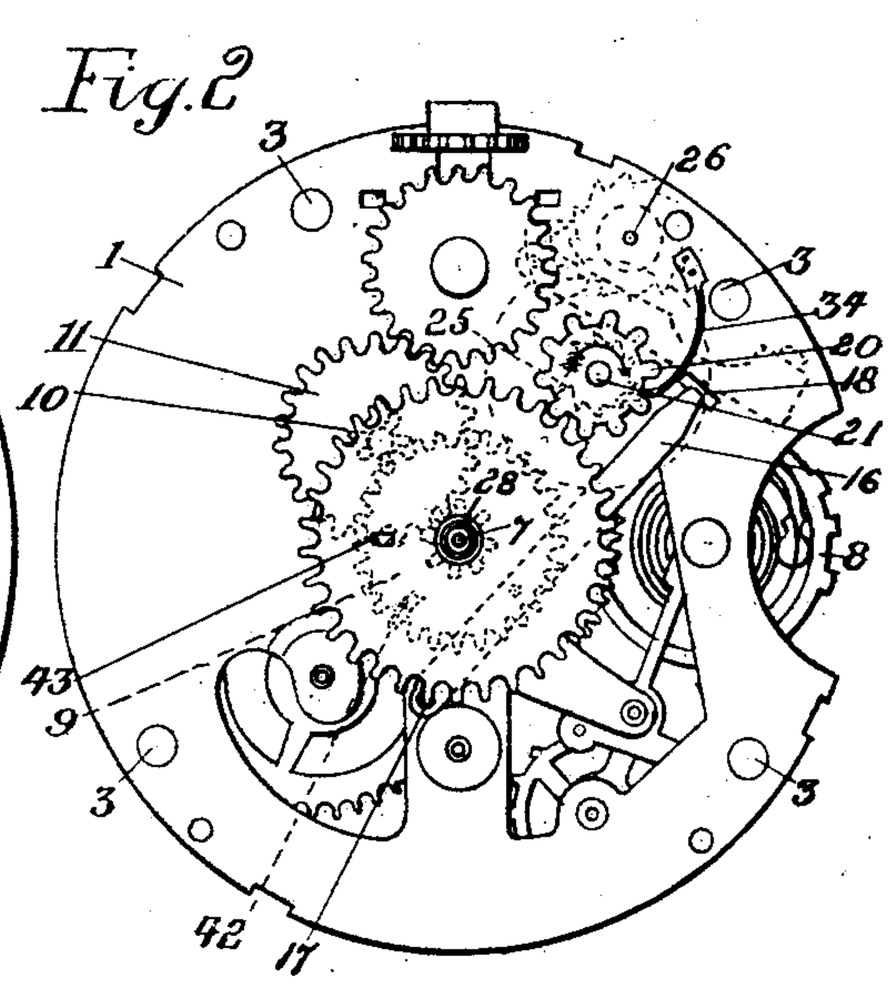


Fig. 3

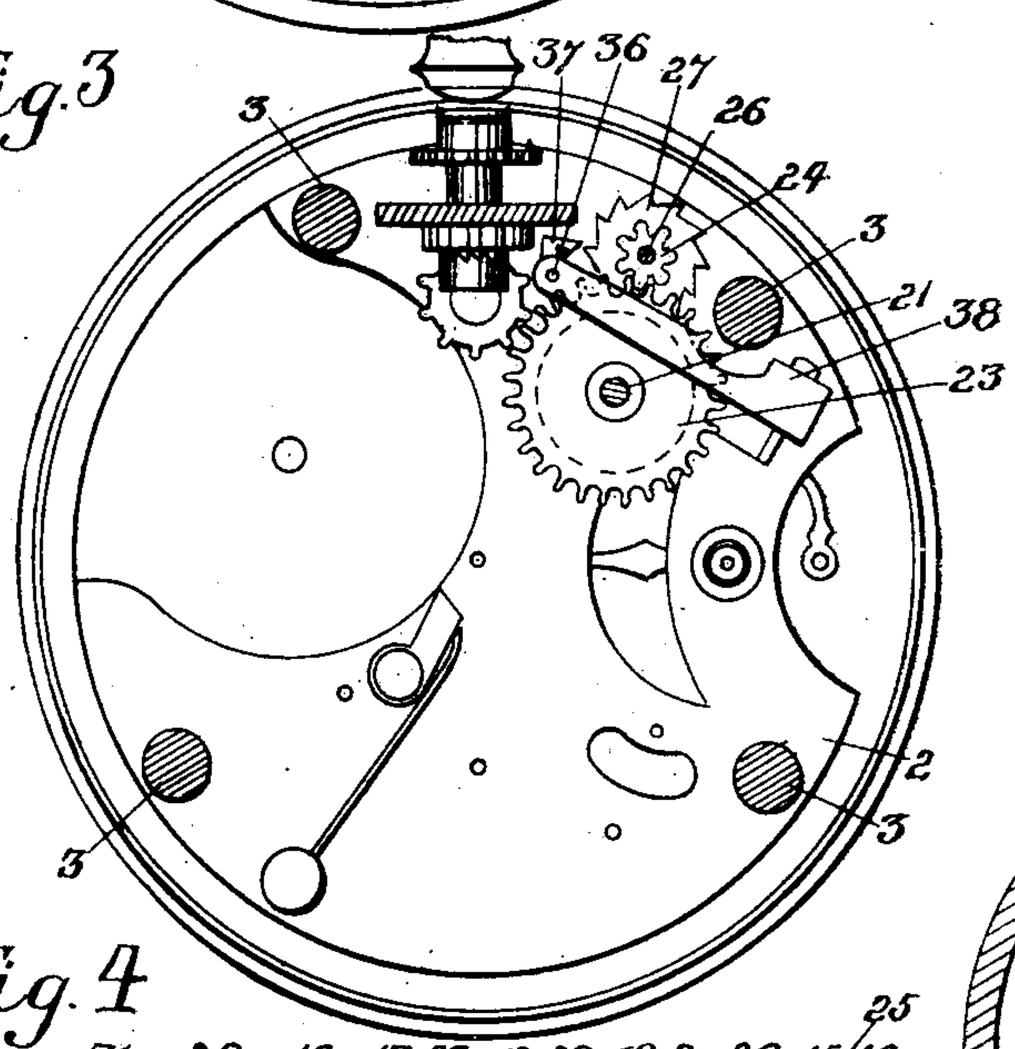


Fig. 5

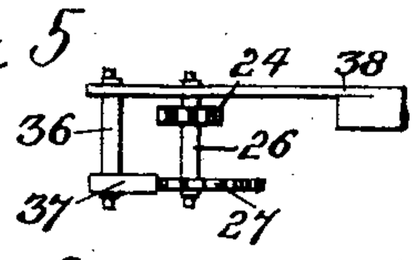


Fig. 6

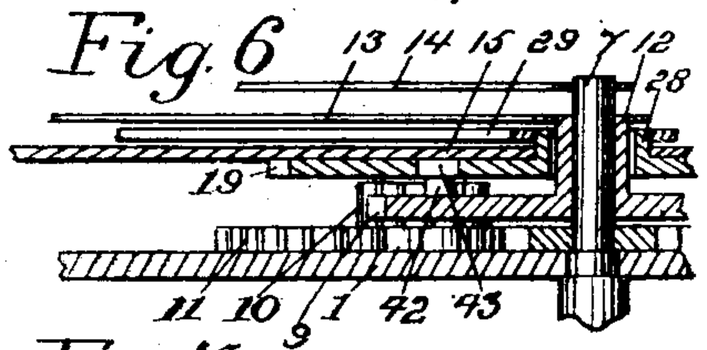


Fig. 7

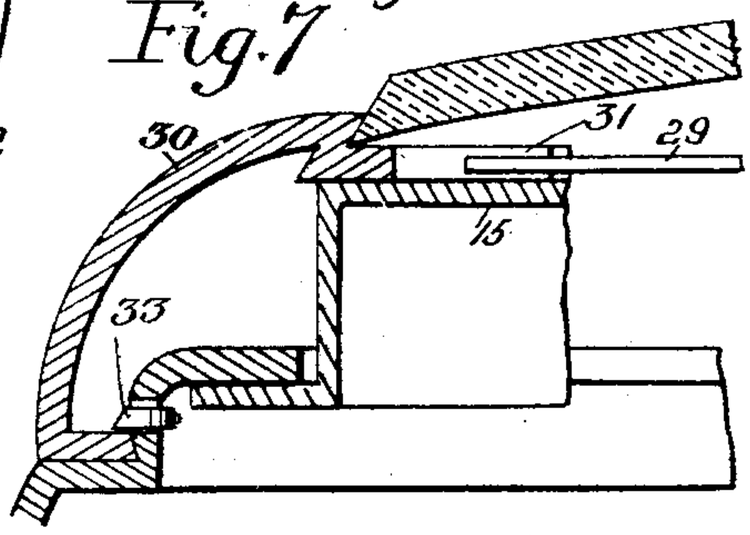
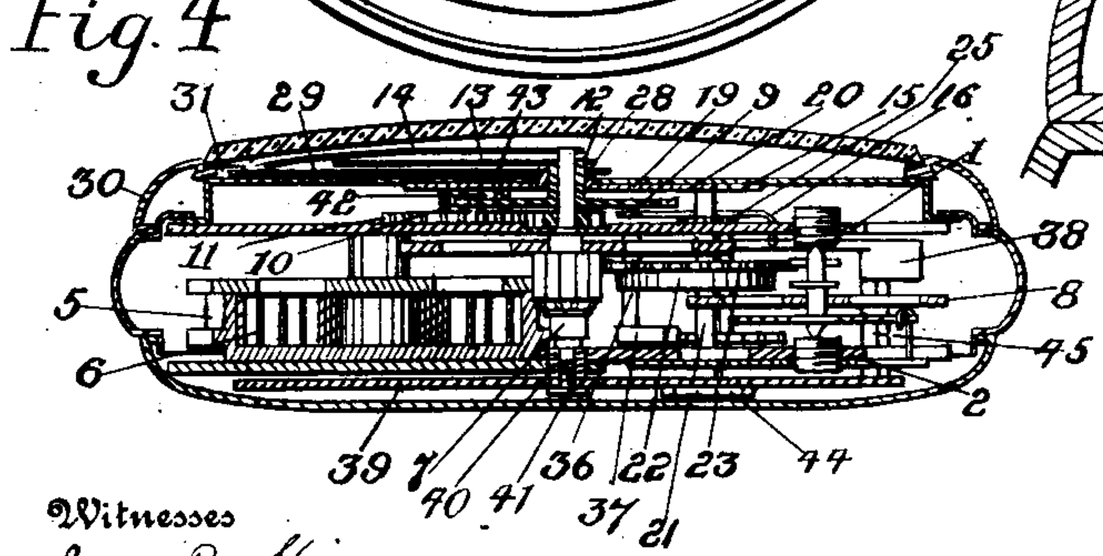


Fig. 4



Witnesses

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ALARM-WATCH.

944,948. Specification of Letters Patent. Patented Dec. 28, 1909.

Application filed August 30, 1909. Serial No. 515,301.

To all whom it may concern:

Be it known that I, JOSEPH B. CONNOLLY, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Alarm-Watches, of which the following is a specification.

This invention has relation to alarm watches and has for its object the provision of novel means whereby the alarm actuating and the alarm setting devices will be simultaneously operated by the movement of actuating parts operably connected to the alarm actuating and the alarm setting devices.

My improvements are illustrated on an enlarged scale in the accompanying drawing in which:

Figure 1 is a plan view of the watch looking at the dial thereof. Fig. 2 is a plan view of the movement looking at the top plate thereof. Fig. 3 is a transverse sectional view through the case with the time keeping mechanism removed to more clearly show the construction and arrangement of the alarm mechanism. Fig. 4 is a vertical sectional view taken through the case at right angles to the winding stem and showing the time keeping and alarm mechanism in position in the case. Fig. 5 is a detail view in elevation of a portion of the alarm mechanism. Fig. 6 is a sectional detail view on an enlarged scale of the central portion of the dial and top plate and appurtenant parts. Fig. 7 is a detail view in section and on an enlarged scale of a part of the bezel and case.

The time keeping mechanism of my improved alarm watch is of the ordinary and well known construction and need not be particularly described and I will therefore confine the description of the time keeping mechanism to such parts thereof as are necessary to a complete understanding of the present improvement.

Referring to the drawing, the top plate of the movement is designated 1, and the bottom plate 2, these plates being connected by standards 3.

The main spring barrel of the time keeping mechanism is designated 5 and contains the main spring 6, from which, by the usual train of wheels and pinions, motion is communicated to the center shaft 7 and the balance wheel 8. The center shaft 7 carries the hour wheel 9, that meshes with the minute wheel pinion 10 carried by the minute wheel 11, and upon the hollow shaft 12 of the hour wheel 9 is mounted the hour hand 13, the minute hand 14 being mounted as usual on the center shaft 7. The hour wheel 9 is, as usual, mounted loosely on the center shaft and in my improvement is movable lengthwise of the shaft and is impelled outwardly or toward the dial 15 by a flat spring 16 which is attached at 17 to the top plate 1, the opposite end of this spring being bent inwardly and extending through a slot 18 in the top plate, the inwardly bent end serving, as will be hereinafter explained, to normally hold the alarm mechanism stationary and to release the alarm mechanism when an alarm is to be sounded. A gear wheel 19 is mounted on the inner side of the dial 15 and this wheel meshes with a pinion 20 carried by the arbor 21 of the alarm actuating spring which is arranged within a barrel 22 that carries a driving gear wheel 23 that meshes with a pinion 24 carried by the shaft 26, which also carries the alarm escapement wheel 27.

The gear wheel 19 is carried by a hollow shaft 28 which surrounds the hollow shaft of the hour wheel 9 and extends through the dial, and upon the outside of the dial and fixed on the hollow shaft 28 is a hand or pointer 29 hereinafter called the alarm hand. The alarm hand, which is arranged to travel between the hour hand and the dial, extends nearly to the inner edge of the bezel 30, and into the path of a lug 31 carried by the bezel. The bezel is rotatably mounted on the case and for the purpose of maintaining the bezel in position on the case and to guard against accidental removal therefrom, the inner surface of the bezel and the opposing surface of the case are beveled in the usual manner and a spring catch 33 carried by the case at one side thereof, extends over the inwardly projecting edge of the bezel as shown in Fig. 7.

A spring click 34 engages a ratchet wheel 25 fast on arbor 21, so that the arbor can be moved in only one direction *i. e.*, in the direction indicated by the arrow on the face of the pinion 20. Adjacent to the shaft 26, which, as stated, carries the alarm escapement wheel 27, is arranged a shaft 36 which carries an alarm verge 37 and a hammer 38 which latter strikes, when in motion, an alarm bell 39. The alarm bell 39 is in the form of a flat plate and is mounted on a hollow boss 40 that is carried by the bottom plate 2 of the movement, the bell being secured in position by a screw 41 and having

a lug 45 that extends within striking range of the hammer 38, the sound thereby produced being practically the same as if the hammer struck the body of the bell. The letting off of the alarm at the predetermined time is effected by the movement of the spring 16, the inwardly extending end of which at the compressed position of the spring engages the hammer 38 and prevents the verge 37 from vibrating and at the relaxed position of the spring is disengaged from the hammer and permits the verge to vibrate under the action of the alarm escapement wheel and cause the hammer to strike the bell 39 a large number of rapidly succeeding blows.

The compression and relaxation of the release spring 16 is effected by the movement of the hour wheel 9, longitudinally of the center shaft 7, and to effect this movement at the proper time the wheel 19 is provided on its face with a step or hole 43, that at a certain relative position of these wheels receives a projection 42 on the hour wheel and permits the hour wheel to be moved outwardly or toward the back of the dial by the pressure of spring 16, the spring moving outwardly with the hour wheel 9, and this movement of spring 16 at the same time freeing the hammer from engagement with said spring 16, and permitting the alarm to sound.

The operation is as follows: To simultaneously wind and set the alarm, the bezel 30 is turned in the direction of the arrow on the face of the dial and the lug 31 contacting with the alarm hand 29 turns the same until the alarm hand points to the numeral on the face of the dial indicating the particular time at which the alarm is to be subsequently let off. The turning of the alarm hand by turning the bezel 30, turns the pinion 20 and the arbor 21 of the alarm actuating spring and winds the said spring. As the wheel 19 turns with the alarm hand the hole 43 will be adjacent the same numeral on the dial of the watch as the alarm hand is pointing to on the face of the dial. The hour hand of the watch being fixed in alinement with the projection 42 on the hour wheel, the progressive rotary movement of the hour wheel 9, will bring the projection 42 into register with the hole 43 when the hour hand arrives at the same point as is indicated by the alarm hand and at this time the projection 42 entering the hole 43 will permit the hour wheel to be projected toward the dial by the spring 16 and the inwardly extending end of the latter will release the hammer 38 which will be vibrated and caused to strike the bell 39 by the motion imparted to verge 37 from the alarm actuating spring, through the barrel 22, gear wheel 23, pinion 24 and alarm escapement wheel 27. The sounding of the alarm will continue until the actuating spring of the alarm mechanism has run down and thereafter the alarm is wound and set again, in the manner above described, preparatory to sounding an alarm at another period of time.

In order to provide means for simultaneously winding and setting the alarm mechanism without turning the bezel, the shaft 21 is extended through the bottom plate 2, and through a hole in the bell 39 and carries on its end a folding key 44 and by opening the back of the case and turning this key the shaft 21 will be rotated, thus winding the alarm spring contained in barrel 22 and simultaneously turning the alarm hand 29 to the desired point on the dial indicating the time at which the alarm is to be let off. The lug 31 on the bezel is beveled off on top from its front edge to its rear edge so that in setting the alarm hand 29 by means of key 44, the alarm hand will pass over the lug 31.

I claim:

1. In an alarm watch, the combination with alarm mechanism comprising alarm winding and setting devices, of an alarm winding and setting hand connected to the said alarm winding and alarm setting devices and a rotative bezel adapted to engage said hand and turn the same.

2. In an alarm watch, the combination with the alarm actuating spring, of a rotative bezel and mechanism connecting said bezel and spring whereby the spring may be wound by rotating the bezel.

3. In an alarm watch, the combination with time keeping mechanism and alarm mechanism adapted to be let off by said time keeping mechanism, of a gear wheel mounted within the dial of the watch, a pinion carried by the arbor of the alarm actuating spring and meshing with the said gear wheel, a hand connected to the shaft of said gear wheel and a rotative bezel engaging with said hand.

4. In an alarm watch, the combination with a rotative bezel, of a hand adapted to be engaged by the bezel, a shaft to which said hand is connected, a gear wheel connected to said shaft, said gear wheel being formed with a step or hole, connections between said gear wheel and the alarm actuating spring, adapted to effect the winding of said spring by the rotation of said gear wheel, an hour wheel having a projection adapted to enter said step or hole in said gear wheel and a spring bearing against the said hour wheel and normally engaging the alarm mechanism and adapted to be disengaged therefrom when said projection enters said step or hole.

5. In an alarm watch, the combination with the time keeping mechanism, of spring actuated alarm mechanisms and devices, an

hour wheel forming part of the time keeping mechanism, said hour wheel being mounted to move lengthwise of the center shaft of the time keeping mechanism, said hour wheel having a projection on its face, an alarm stopping device adapted to be let off by said hour wheel, a gear wheel arranged adjacent to said hour wheel and having a hole or step to receive said projection, an alarm indicating hand carried by said gear wheel, a dial arranged adjacent to said hand and a pinion carried by the arbor of the alarm actuating spring and meshing with said gear wheel.

6. In an alarm watch, the combination with the time keeping mechanism, of an alarm actuating spring, an arbor to which said spring is connected, an alarm train connected to said spring, a pinion carried by said arbor, an alarm indicating hand, a gear wheel to which said hand is connected, said gear wheel meshing with said pinion and being formed with a hole or step, an hour wheel having a projection adapted to enter the hole or step in the gear wheel and an alarm let off device operable by said hour wheel.

7. In an alarm watch, the combination with the top and bottom plates and alarm mechanism disposed between the top and bottom plates, of a bell arranged below the bottom plate and having a lug extending to a point between the top and bottom plates and within range of the hammer of the alarm mechanism.

8. In an alarm watch, the combination with alarm mechanism comprising an alarm actuating spring and winding and setting devices, of an alarm setting hand operatively connected to the alarm winding mechanism in such manner that the movement of said hand will wind the actuating spring of the alarm mechanism and arranged within the containing case of the watch.

9. In an alarm watch, the combination with alarm mechanism comprising winding and setting devices, of an alarm setting hand operatively connected to the alarm winding mechanism, and a key carried by the winding arbor of the alarm actuating spring whereby the alarm may be wound and set either by positively moving said hand or by directly turning the said key.

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

JOSEPH B. CONNOLLY.

Witnesses:

THOS. A. CONNOLLY,

CLYDE B. WEIKERT.