

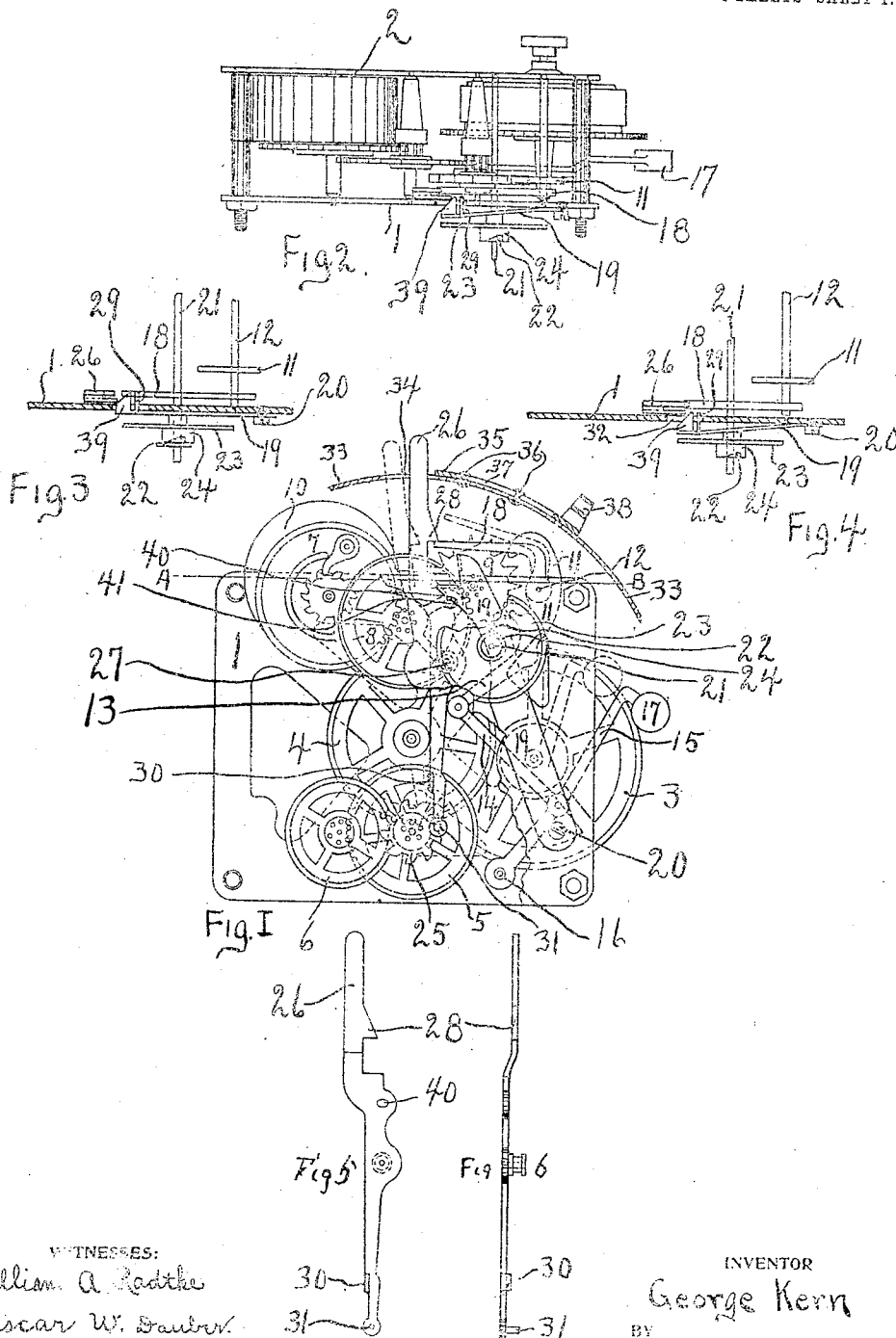
G. KERN.  
ALARM CLOCK.

APPLICATION FILED JULY 1, 1908.

904,333.

Patented Nov. 17, 1908.

3 SHEETS—SHEET 1.



WITNESSES:  
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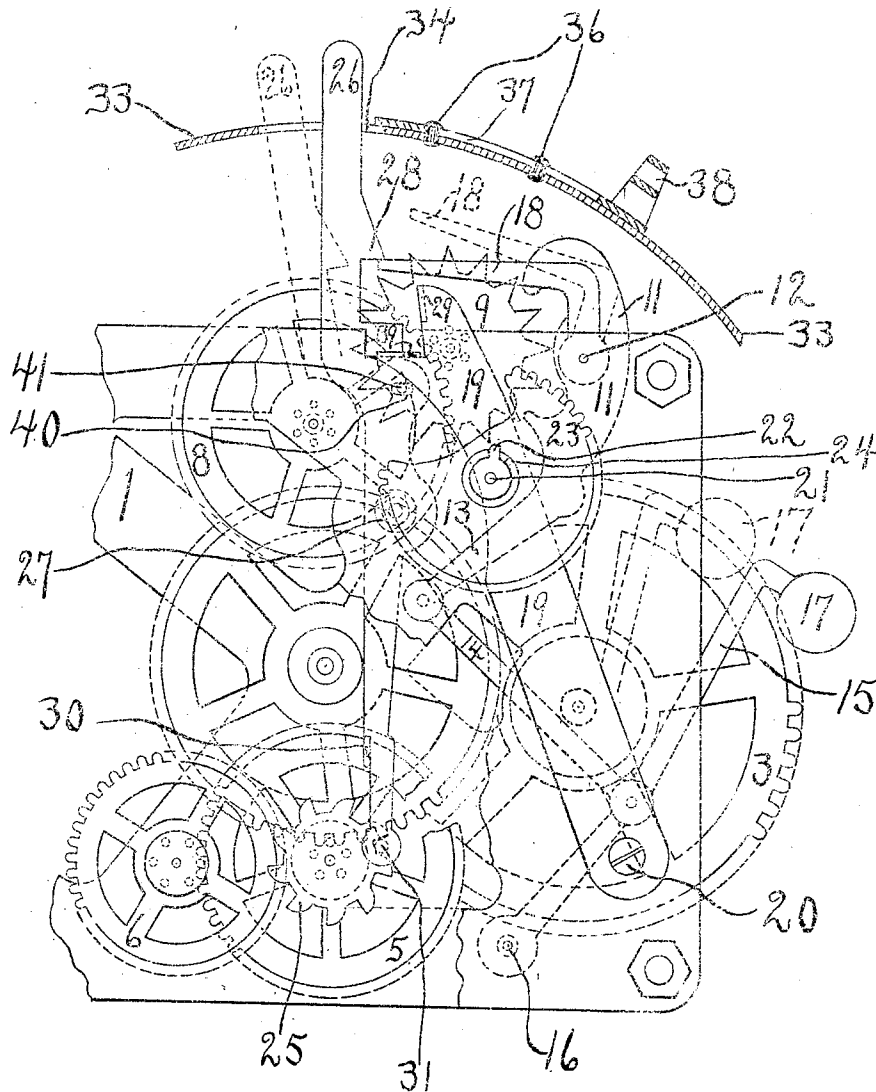


Fig. 7.

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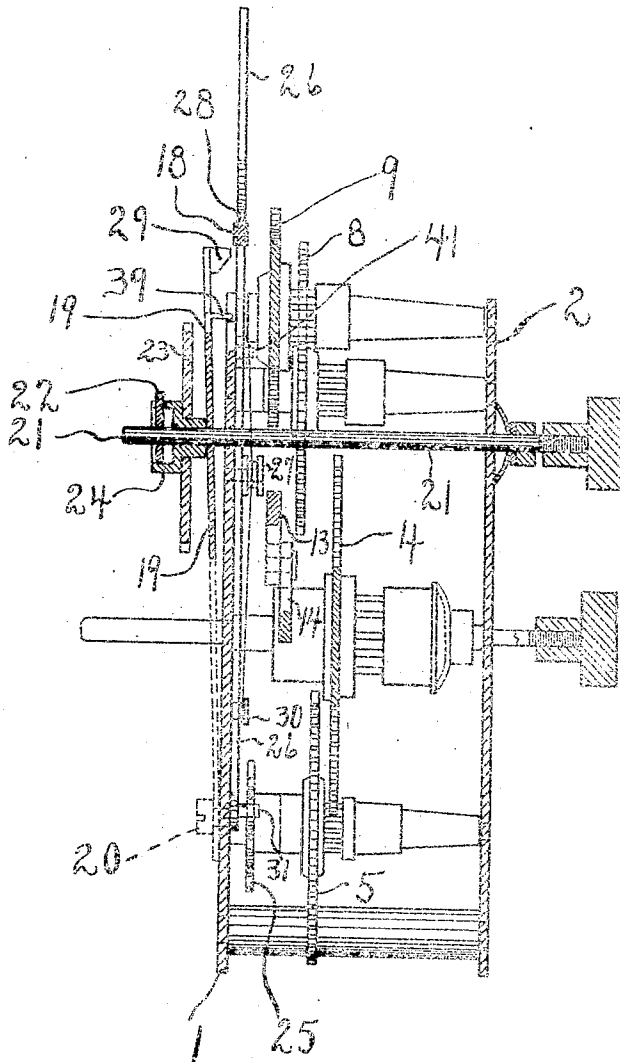
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2 SHEETS—SHEET 3.

Fig. 8.



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# UNITED STATES PATENT OFFICE.

GEORGE KERN, OF PERU, ILLINOIS, ASSIGNOR TO THE WESTERN CLOCK MANUFACTURING COMPANY, OF LA SALLE, ILLINOIS, A CORPORATION OF ILLINOIS.

## ALARM-CLOCK.

No. 904,333.

Specification of Letters Patent.

Patented Nov. 17, 1908.

Application filed July 1, 1908. Serial No. 441,367.

*To all whom it may concern:*

Be it known that I, GEORGE KERN, a subject of the Emperor of Germany, residing at Peru, in the county of LaSalle, State of Illinois, in the United States, have invented certain new and useful Improvements in Alarm-Clocks, of which the following is a specification.

My invention relates to improvements in alarm clocks in which the action of the alarm can be made to sound continuously for a long period of time, or can be made to sound intermittently, as may be found desirable.

It further consists in certain details of construction and combination of parts, for removing the usual frictional drag of the repeating mechanism from the time train of the clock, and has for its object the production of a simple and extremely reliable alarm mechanism, thereby producing an alarm clock of the class described which will keep accurate time.

In the drawings Figure 1 shows a front view of a clock movement having parts of the front plate cut away, showing my invention. Fig. 2 is a top view of said movement. Fig. 3 is a view with plate in section along a line A—B, showing the position of the repeating and manipulating lever when said lever is held out of engagement with the repeating wheel by the time movement. Fig. 4 is a view with plate in section along a line A—B showing the position of the repeating and manipulating lever when it is in engagement with the repeating wheel. Fig. 5 is a front view of the repeating and manipulating lever. Fig. 6 is a side view of the repeating and manipulating lever. Fig. 7 is an enlarged front view of a clock movement, partly cut away, more clearly showing my invention. Fig. 8 is a section at right angles to Fig. 7, along a line through the shaft 21.

In the drawings, 1 represents the front plate and 2 the back plate of a movement using my invention. Mounted between these plates on the shafts shown are the time main wheel 3, the center wheel 4, the third wheel 5, the fourth wheel 6, which form a part of the time train, and the alarm main wheel 7 with the alarm main spring 10, the intermediate wheel 8, and the alarm escape wheel 9, which comprise the alarm train of an ordinary alarm clock.

Mounted on a shaft 12 and engaging with the teeth of escape wheel 9 is the hammer verge 11. The hammer verge 11 has an arm 13 which is pivotally connected to one end of a link 14. The other end of link 14 is pivotally connected to the hammer lever 15, one of whose ends is journaled on a pin 16 fastened in the plates. The other end of said lever 15 carries the hammer 17. Mounted on shaft 12 is a stop lever 18 into whose path a projection 29 from the end of a spring 19 enters; the other end of said spring is fastened to the front plate at 20. Through apertures in said spring 19 and the movement plates 1 and 2, passes the handset arbor 21 having a cam with a projecting finger 22 fastened to it. Between said spring 19 and said cam with finger 22, is mounted the trip wheel 23 which carries the trip cam 24 on which said projecting finger 22 rides and causes said trip wheel 23 and spring 19 to move away from and toward the movement plate, and the end of said spring to move into and out of the path of said lever 18. (See Fig. 3 and Fig. 4 respectively.) What I have described above is similar to the mechanism used in all alarm clocks.

Mounted on the shaft of the third wheel 5 is a repeating wheel 25 whose teeth engage with the side projection 31 of a repeating lever 26. Said lever 26 is journaled on a pin 27 fastened in the front plate 1. The end of said repeating lever 26 has a side projection or pin 31 which engages the teeth of the repeating wheel 25 and a projection 28 near its upper end which engages and locks the stop lever 18 against further motion when said lever 26 is in the position shown in solid lines in Fig. 1, having its lower projection 31 between the teeth of the repeating wheel 25. As repeating wheel 25 rotates, the projection 31 rides one of the teeth and the lever 26 moves toward (but does not reach) the dotted position shown in Fig. 1 and releases the stop lever 18 so it is free to vibrate towards its dotted position shown in Fig. 1. When the lever is in the position shown in solid lines and as just described, the clock is a repeating alarm clock. Repeating lever 26 also has an elongated aperture 40, into which projects a pin 41 which limits the distance which said lever may travel.

The alarm releasing spring 19 above mentioned also has another projection 39 which has an inclined face which engages said re-

peating lever 26 and forces its lower end projection out of engagement with the teeth of the repeating wheel 25 whenever said spring 19 is moved toward the front plate as above described (see Fig. 1). Said repeating lever 26 is again brought into its previous position of engagement with the teeth of repeating wheel 25 whenever the spring 19 is moved away from the front plate. The time movement accomplishes this of itself, for as the trip wheel 23 is rotated by the train of the said time movement, the finger 22 presses the trip cam and spring toward the plate as above described, and the time train is free from the drag of repeating lever 26, which is held in engagement with the repeating wheel 25 by means of a spring which is fastened to the plate 1 and to projection 30 on said lever 26 and is not shown in the drawings. When the lever 26 is held in the position shown by the dotted lines in Fig. 1 by means which will be described below, the alarm will ring continuously or will be a "long alarm", as it is usually designated. The lever 26, when it is desired, can also be held in the dotted position shown in Fig. 1 by the following means, instead of those above described, which are actuated by the time mechanism.

The case 33 which incloses the movement described has an aperture 34 through which the repeating lever 26 projects. Concentrically to and slidably mounted over the aperture on said case is a member 35 having a handle 38, which member is fastened to said case by means of rivets 36 passing through a slot 37 in member 35. When member 35 is in its extreme right position as shown in Fig. 1, the clock is a repeating alarm clock as above described, and when member 35 is in its extreme left position (bringing the lever 26 to the position shown in the dotted lines in Fig. 1) the clock is a long alarm clock.

From the above description, it is evident that my alarm can be used as a long alarm or a repeating alarm clock, that it is a very simple and inexpensive mechanism, that the drag of the repeating lever is removed from the time train by the time movement itself, thus making a clock of this class capable of keeping accurate time. And further, that when it is set to be used for a long alarm clock, the drag of the repeating lever is also removed from the time train and that the entire result is accomplished by means of a single repeating lever.

I claim:

1. In an alarm clock, the combination of a repeating wheel mounted on an arbor of the time train, a pin fastened in the movement plate, a stop lever mounted on the hammer shaft of the alarm mechanism, an independent lever journaled on said pin, a projection on said lever which engages the teeth of the

repeating wheel, and a projection on said lever which enters the path of said stop lever and intermittently obstructs said path, and an alarm releasing spring actuated by the time train, a projection on said spring which enters the path of the stop lever, and another projection on said spring having an inclined face co-acting with said independent lever bringing it out of engagement with the teeth of the repeating wheel.

2. In an alarm clock, the combination of a time train and an alarm train, a repeating wheel mounted on a shaft of the time train, a stop lever mounted on the hammer shaft, an alarm releasing spring actuated by the time train, a pin fastened to the movement plate, a lever journaled on said pin, a projection on said lever which engages the teeth of said repeating wheel, another projection on said lever which enters the path of said stop lever and intermittently locks it against vibration, a projection on said spring which enters the path of said stop lever and another projection on said spring which has an inclined face co-acting with said lever, substantially as shown and described.

3. In an alarm clock, the combination of a time train and an alarm train, a repeating wheel mounted on a shaft of the time train, a stop lever mounted on the hammer shaft, an alarm releasing spring actuated by the time train, a pin fastened to the movement plate, a lever journaled on said pin, a projection on said lever which engages the teeth of said repeating wheel, another projection on said lever which enters the path of said stop lever and intermittently locks it against vibration, a projection on said spring which enters the path of said stop lever and another projection on said spring which has an inclined face co-acting with said lever, and means external to and independent of the movement for actuating said lever and maintaining it out of engagement with the repeating wheel.

4. In an alarm clock, the combination of a repeating wheel mounted on an arbor of the time train with an independent lever, capable of being manually operated externally to the case of said clock, a stop lever mounted on the hammer shaft of the alarm train, a projection on said independent lever which engages the teeth of the repeating wheel, another projection on said lever which enters the path of said stop lever, an alarm releasing spring actuated by the time train, said spring having one projection which enters the path of said stop lever and another projection having an inclined face co-acting with said independent lever.

5. In an alarm clock, the combination of a repeating wheel mounted on an arbor of the time train with an independent lever, capable of being manually operated and positioned externally to the case of said clock, a

stop lever mounted on the hammer shaft of the alarm train, a projection on said independent lever which engages the teeth of the repeating wheel, another projection on said lever which enters the path of said stop lever, an alarm releasing spring actuated by the time train, said spring having one projection which enters the path of said stop lever and another projection having an inclined face co-acting with said independent lever, substantially as shown and described.

6. In an alarm clock, a repeating wheel mounted on an arbor of the time train, a pin fastened to a movement plate, an independent lever, capable of being manually operated and positioned externally to the case of

said clock, journaled on said pin, a stop lever mounted on the hammer shaft of the alarm train, a projection on said independent lever which engages the teeth of the repeating wheel, another projection on said lever which enters the path of said stop lever intermittently locking it against vibration, an alarm releasing spring having a projection which enters the path of said stop lever and another projection having an inclined face co-acting with said lever.

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