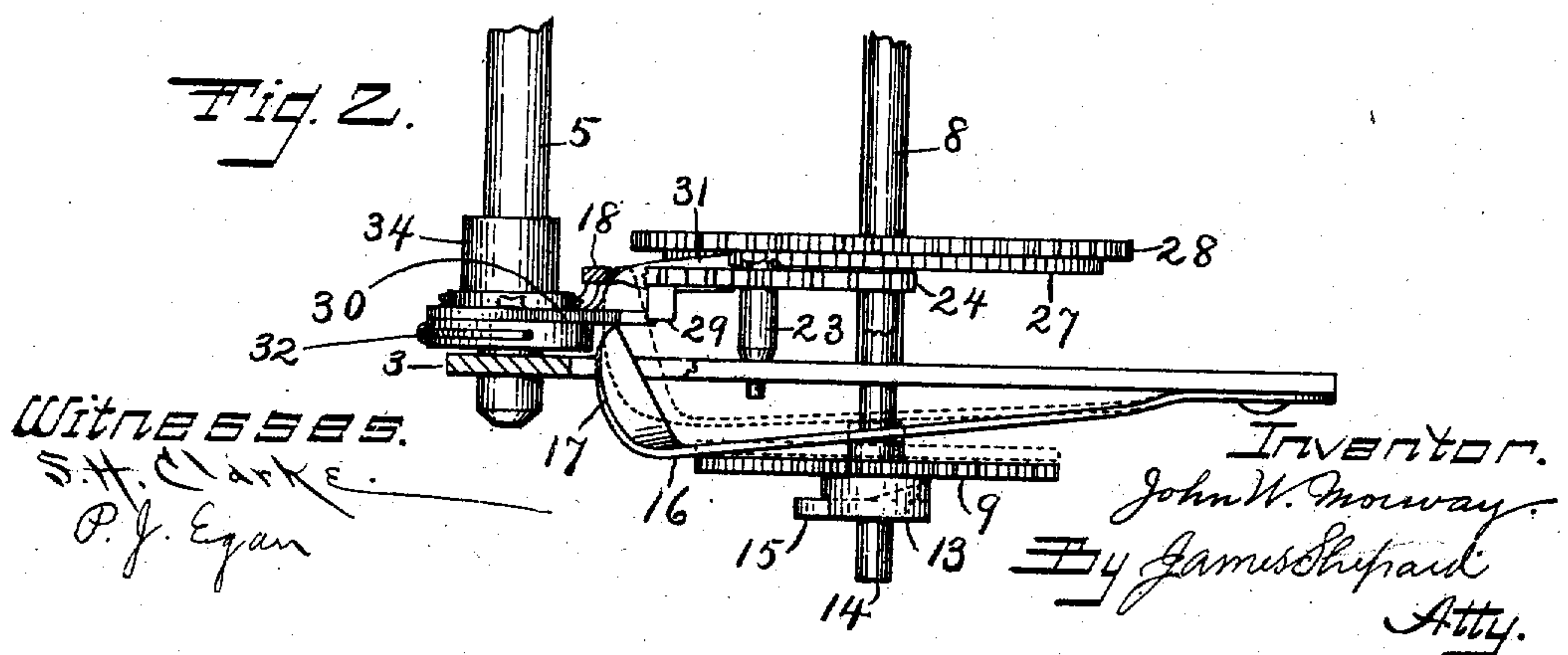
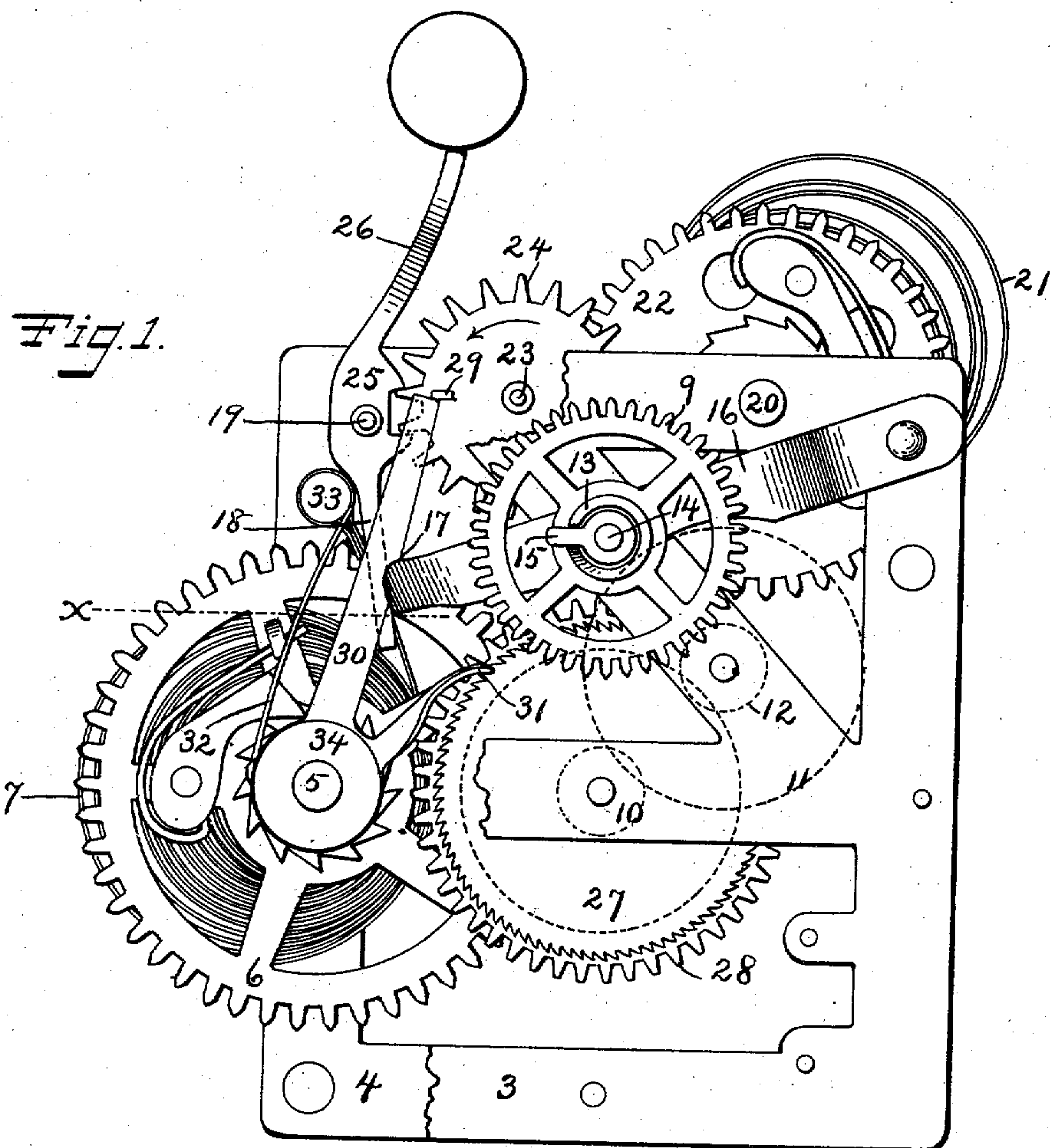


No. 885,359.

PATENTED APR. 21, 1908.

J. W. MORWAY.
REPEATING ALARM CLOCK.
APPLICATION FILED SEPT. 12, 1907.



UNITED STATES PATENT OFFICE.

JOHN W. MORWAY, OF PLAINVILLE, CONNECTICUT, ASSIGNOR TO SESSIONS CLOCK COMPANY,
OF FORESTVILLE, CONNECTICUT, A CORPORATION.

REPEATING ALARM-CLOCK.

No. 885,359.

Specification of Letters Patent.

Patented April 21, 1908.

Application filed September 12, 1907. Serial No. 392,556.

To all whom it may concern:

Be it known that I, JOHN W. MORWAY, a citizen of the United States, residing at Plainville, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Repeating Alarm-Clocks, of which the following is a specification.

My invention relates to improvements in repeating alarm clocks and the objects of my improvement are simplicity and economy in construction, and efficiency in operation.

In the accompanying drawing: Figure 1 is a broken out front elevation of my alarm, together with so much of an ordinary time train as is necessary to show its connection therewith. Fig. 2 is a sectional plan view of parts of the same, on the line *x* of Fig. 1.

The movement frame comprises a front plate 3 and rear plate 4 of any ordinary construction. Mounted between the plates is the ordinary main arbor 5, main wheel 6 and spring 7 of the time train, together with the ordinary center shaft 8, while on the front of the frame is an ordinary twelve hour cam wheel 9 that is driven from the center shaft 8 by the pinion 10, wheel 11, and pinion 12, the said wheel and pinions being indicated by broken circles in Fig. 1. The cam wheel 9 has a tubular hub on the front of which is formed the cam 13. The said cam wheel is loosely mounted on the setting shaft 14 so that it may move longitudinally to the said shaft, and on the front end of the setting shaft the setting arm 15 is rigidly mounted in position to engage the said cam. A setting or shut off spring 16 is mounted on the frame with its middle portion constantly bearing on the back of the cam wheel 9 with a constant tendency to move the said wheel and its cam forwardly on the setting shaft. The free end of the setting or shut off spring carries a rearward projection 17 for engaging the vibrating arm 18 of the hammer shaft 19 of the alarm movement. The main arbor 20, spring 21 and main wheel 22 of the alarm train drives the escapement arbor 23 and its wheel 24 which escapement wheel acts upon the pallet member 25 on the hammer shaft to vibrate the hammer 26 all substantially as in ordinary alarm clocks and for which any ordinary alarm and its shut off and setting devices may be substituted. As shown the vibrating arm 18, pallet member 25, and hammer 26, are all formed in one piece of

metal, but this is not essential to my invention.

On the center shaft 8 is a repeating wheel 27 having any desired number of teeth which are preferably beveled like ratchet teeth to cause a sudden let off or drop of the repeating lever. In some alarms the center wheel 28 is used as the repeating wheel and I might do so, but I prefer the special wheel 27 placed on the center shaft by the side of the wheel 28 as shown. The escapement arbor 23 is provided with some kind of a rotary stop or projection, and I prefer to form this stop of a plate or pin 29 mounted in the body of the escapement wheel 24 and projecting therefrom in a direction parallel to the axis of the said wheel. Between the repeating wheel and the stop of the escapement arbor, I employ a two armed repeating lever pivoted upon a fixed axis with its stop arm 30 in position to have its end face engage and disengage the pin 29, while its repeating arm 31 engages the teeth of the repeating wheel 27. A light spring 32 is also affixed to the repeating lever with one end bearing on a fixed part of the frame, for example the post 33, so that the spring has a constant tendency to move the repeating lever in the direction for moving the stop arm 30 radially into the path of the pin 29, and the repeating arm 31 against the teeth of the repeating wheel. This repeating lever is best formed by cutting it out by dies in one piece of sheet metal and then staking it on a suitable hub 34. As shown, the hub 34 of this lever is loosely mounted on the main arbor 5 of the time train in front of the ratchet of the main wheel.

The vibrating arm 18 of the hammer shaft extends downwardly to one side of the setting shaft 14, and the stop arm 30 of the repeating lever extends upwardly in front of the said stop arm and crosses the same as shown in Fig. 1. The rearward projection 17 of the shut off spring 16 is located near the point where these two parts cross each other, whereby when the shut off spring is held rearwardly by the cam 13 and setting arm 15, as indicated by the broken line in Fig. 2, the said projection, not only engages the vibrating arm of the hammer shaft to hold the alarm in reserve in the ordinary manner, but it also engages the stop arm 30 of the repeating lever and pushes the said arm back out of the way of the pin 29 on the escapement

wheel, and as the repeating arm is rigid with the stop arm, the repeating arm is also lifted out of contact with the repeating wheel so that there is no friction on the time train
5 such as would be caused by a constant drag of the spring pressed repeating lever on the repeating wheel.

When the shoulder of the cam 13 passes under the setting arm 15 to liberate the shut
10 off spring the ordinary manner of letting off an alarm, the repeating lever is also released to the force of its spring. If the repeating arm of the said lever falls to the bottom of the space between two teeth of the repeating
15 wheel as shown in Fig. 1, then the alarm will be held out of action by the pin 29 coming into engagement with the upper end face of the stop arm of the repeating lever as shown in the said Fig. 1. As the time train moves
20 on, the repeating lever is gradually forced back by the rotation of the repeating wheel. As soon as it is forced back sufficiently to carry the end face of the stop arm 30 out from under the pin 29, the alarm will start
25 and continue until the tooth of the wheel 27 that engaged the end of the repeating arm passes the end of the said arm so as to let the said arm drop into the succeeding space between two teeth of the said repeating wheel
30 and again stop the alarm as before described. The parts can be so arranged that the change from inaction to action will occur when the end of the repeating arm is about half way up the incline of a tooth and thereby the inter-
35 vals of silence and alarm sounding will be about equal.

It may be noted that the center arbor on which the repeating wheel is mounted is the second arbor from the source of power, so
40 that it moves slowly and with such force that the drag on the said wheel, for the short time that the alarm is in operation, does not materially affect the time movement, and even the little drag that there is on the said wheel
45 is always shut off when the alarm is held out of action by the usual cam and shut off. By stopping the alarm through the escapement shaft or arbor, the vibration of the hammer may partly die out and is stopped with less
50 jar or shock than it would be if the stop acted upon a vibrating member of the hammer shaft. The arrangement of the escapement wheel above the center with the repeating wheel on the center arbor and the repeating
55 lever on the main arbor by the side of the

center wheel, enables me to construct the alarm cheaply and to have the parts work smoothly and efficiently. This arrangement of the parts also facilitates making the usual shut off spring do the double duty of its ordi- 60 nary work and at the same time prevent the repeating lever from dragging on the time train when the alarm is shut off by the shut off spring.

I claim as my invention: 65

1. In a repeating alarm clock, the combination of a repeating wheel carried by the time train with a two armed repeating lever pivoted upon a fixed axis in position to have its repeating arm engage and disengage the
70 said repeating wheel and its stop arm, engage and disengage a stop carried by the alarm train, a vibrating hammer shaft actuated by the alarm train, a vibrating arm of the said hammer shaft extended along by one side of
75 the said stop arm of the repeating lever, and a shut off for the said alarm movement that is released by the running of the time train, the said shut off having one projection arranged in relation to the said stop arm of the
80 repeating lever and the said vibrating arm of the hammer shaft for having that one projection perform the double function of doing its ordinary work and of acting on the stop arm of the repeating lever to release its re-
85 peating arm from the repeating wheel whenever the said projection is in engagement with the said vibrating arm of the hammer shaft.

2. In a repeating alarm clock, the combination of a repeating wheel carried by the
90 time train with a repeating lever actuated in one direction by the said wheel, an alarm movement controlled by the said repeating lever and wheel, and a cut off spring for said alarm movement that is released by the said
95 time train, the said cut off spring having a lateral projection with its end portion adapted to engage and disengage a part of the alarm movement to cut off and let on the alarm, while a portion of said projection be-
100 tween the point of engagement with the alarm movement and the body of the said cut off spring, is arranged for engaging the said repeating lever for holding it out of action.

JOHN W. MORWAY.

Witnesses:

GEO. W. WHITTEMORE,
GEO. C. DOHERTY.