No. 775,010. PATENTED NOV. 15, 1904.

A. M. LANE.

INTERMITTENT ALARM CLOCK.

APPLICATION FILED JUNE 7, 1904.

NO MODEL. 3 SHEETS—SHEET 1.

Fig. 1.

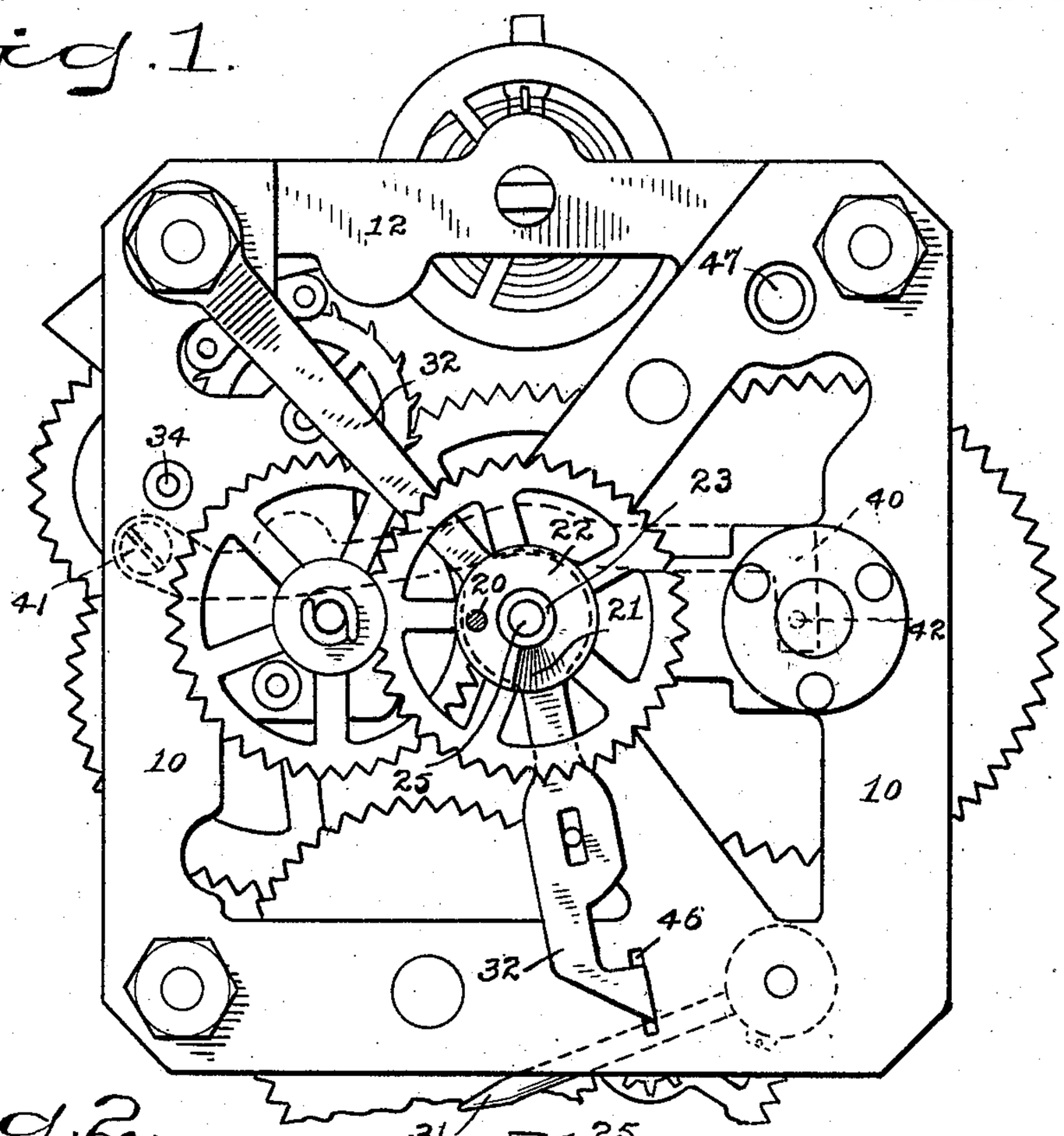
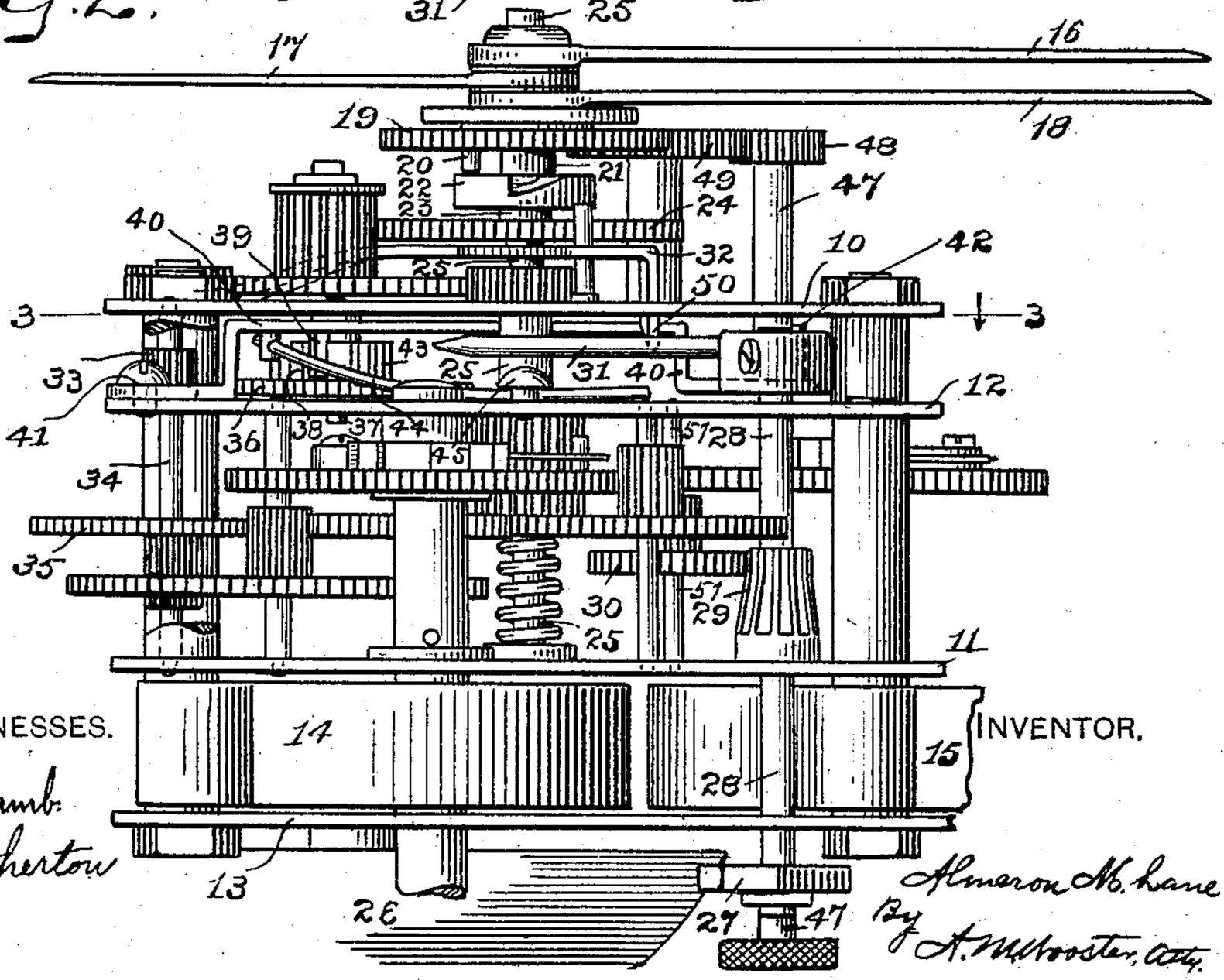


Fig. 2.



WITNESSES.

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NO MODEL. 3 SHEETS—SHEET 2.

Fig. 3.

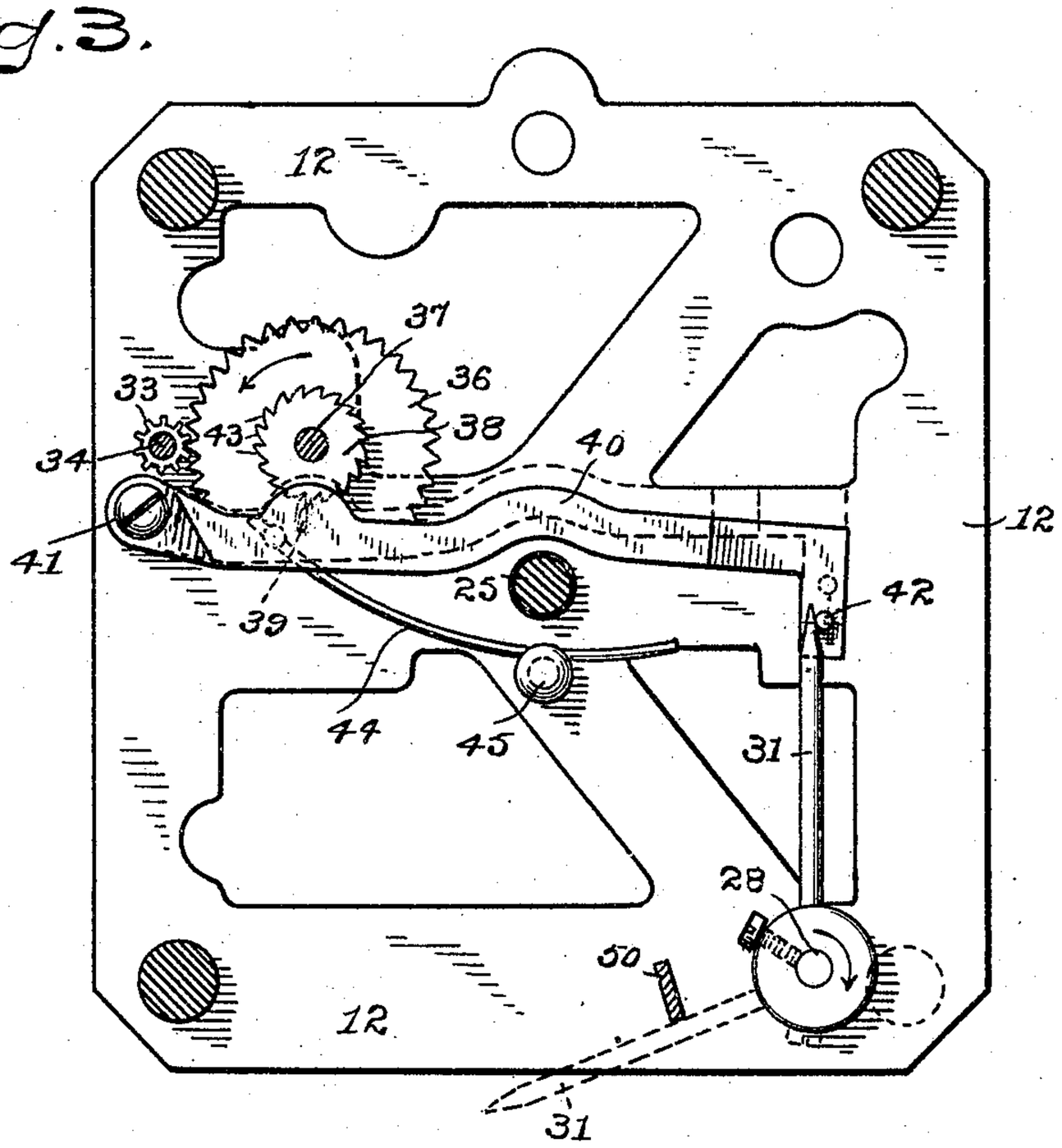
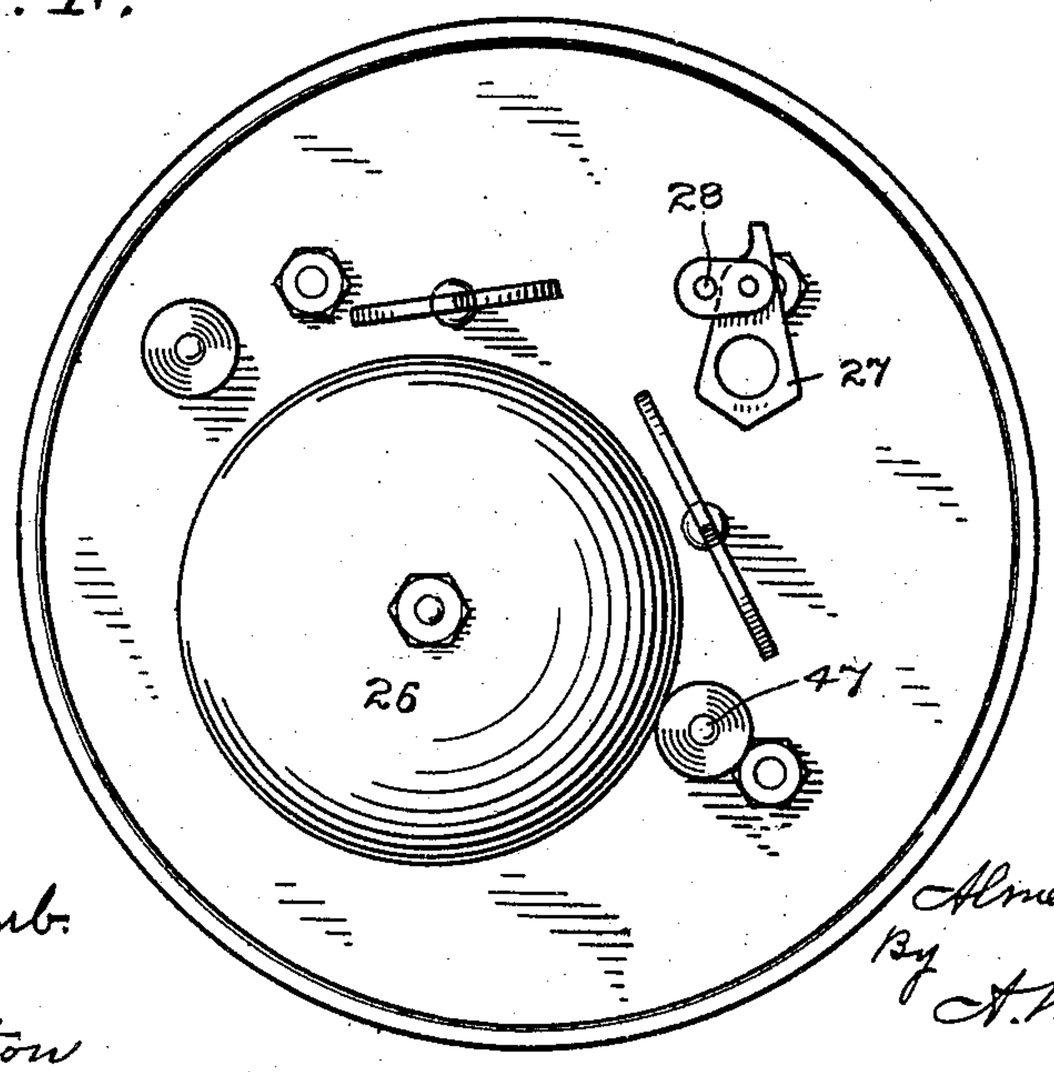


Fig. 4.



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NO MODEL. 3 SHEETS—SHEET 3.

Fig. 5.

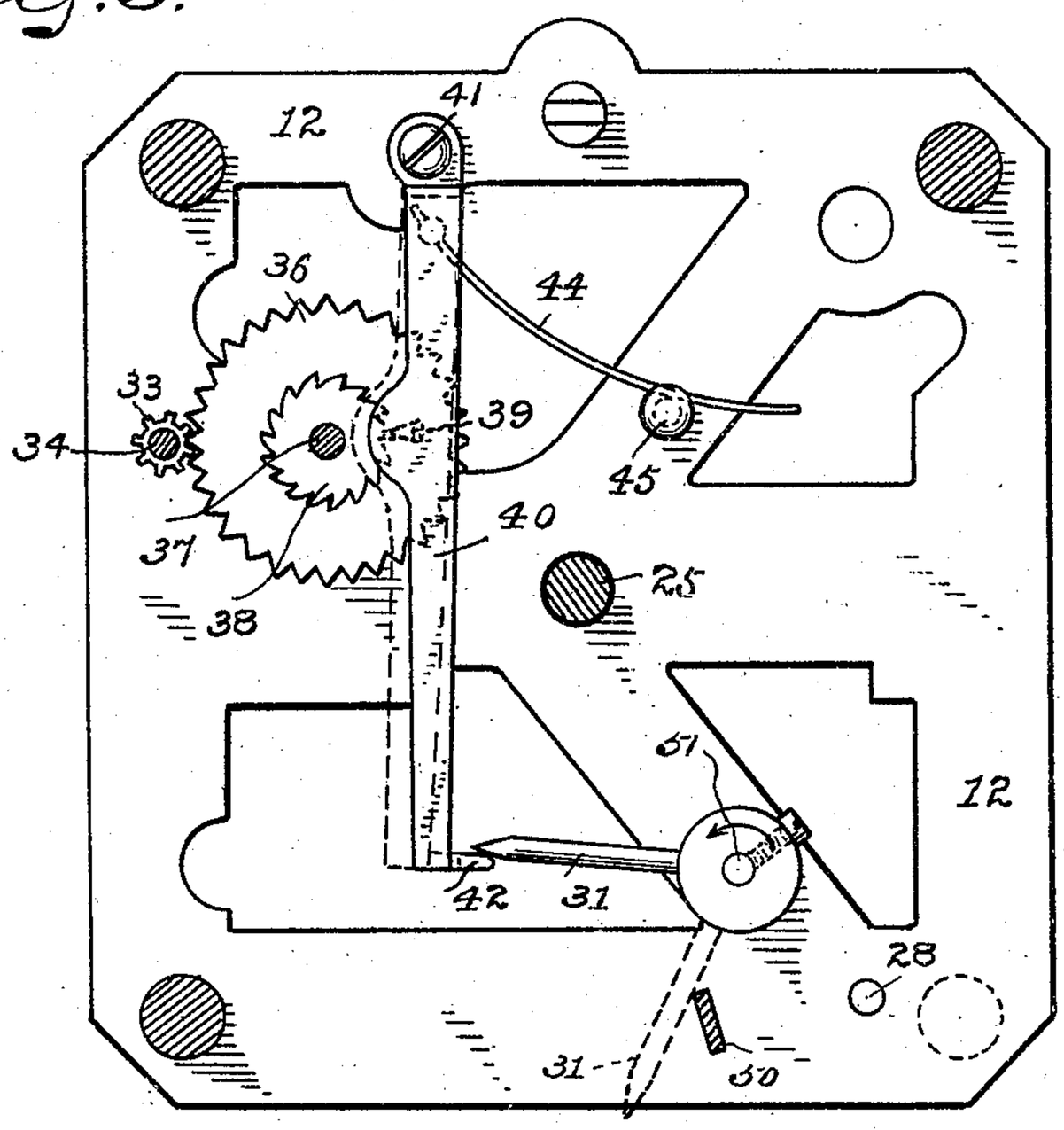
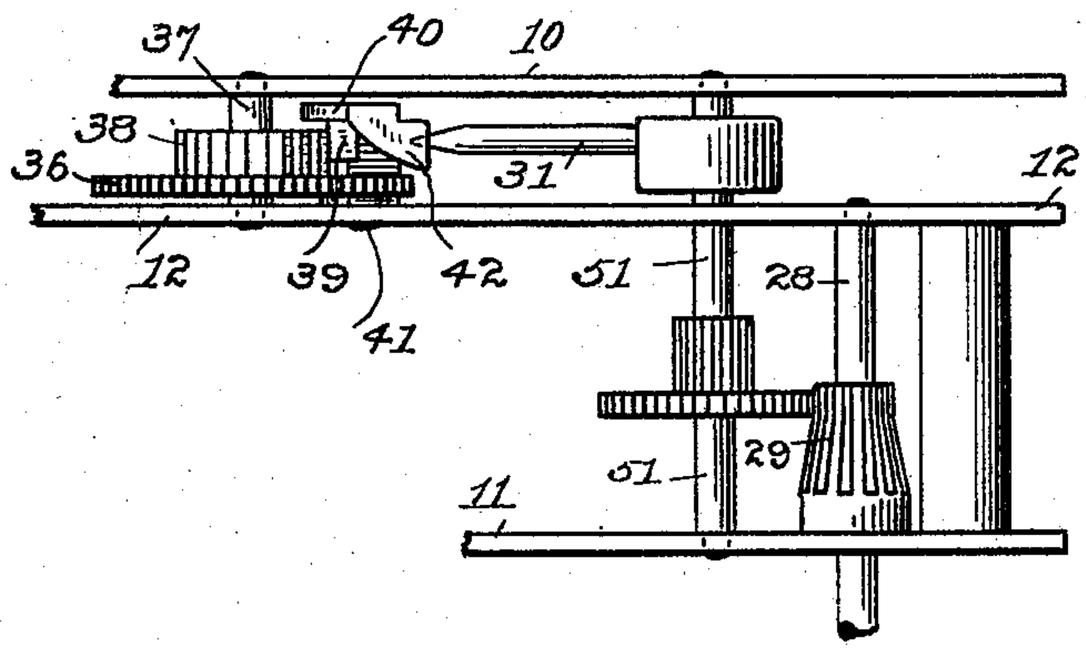


Fig. 6.



WITNESSES.

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No. 775,010. Patented November 15, 1904.

UNITED STATES PATENT OFFICE.

ALMERON M. LANE, OF MERIDEN, CONNECTICUT.

INTERMITTENT-ALARM CLOCK.

SPECIFICATION forming part of Letters Patent No. 775,010, dated November 15, 1904.

Application filed June 7, 1904. Serial No. 211,498. (No model.)

To all whom it may concern:

Be it known that I, ALMERON M. LANE, a citizen of the United States, residing at Meriden, county of New Haven, State of Connecticut, have invented a new and useful Intermittent-Alarm Clock, of which the following is a specification.

My invention relates to alarm-clocks of the rotary-hammer type for which Letters Patent No. 436,922 were granted to me September 23, 1890; and my present invention has for its object to provide a rotary-hammer alarm-clock in which the ringing of the alarm shall be intermittent.

My present invention is, therefore, an improvement upon and carrying forward of the principle of my said former invention—in other words, an adaptation of the intermittent-alarm principle to the rotary-hammer type of alarm-clocks.

In my present clock I provide controlling mechanism the action of which is to intermittently interpose an obstruction or stop to the action of the alarm mechanism, so that after the alarm has commenced to ring and until the alarm-spring has run down there will be alternate periods of ringing and silence.

With this end in view I have devised the novel mechanism for alternately stopping and releasing a staff of the alarm mechanism, which I will now describe, referring to the accompanying drawings, forming a part of this specification, and using reference characters to indicate the several parts.

Figure 1 is a front elevation, on an enlarged scale, showing the time and alarm trains of an alarm-clock and the application thereto of my novel stopping and releasing mechanism, the stopping-arm being attached to the hammer-staff; Fig. 2, a plan view corresponding therewith; Fig. 3, a section on the line 3 3 in Fig. 2 looking toward the rear movement-plate; Fig. 4, a rear elevation of a rotary-hammer alarm-clock actual size; Fig. 5, a view corresponding with Fig. 3, illustrating a modified form in which the stopping-arm is attached to the staff of the third alarm-wheel, which is extended for that purpose; and Fig. 6 is a detail plan view corresponding with Fig. 2, but changed to illustrate the modification.

In view of the fact that both the time and alarm trains to which I have shown my invention applied are those commonly used in the well-known Parker alarm-clock I have not deemed it necessary to illustrate either the time or alarm mechanisms in detail, but have only illustrated so much of these mechanisms as is necessary to make clear the construction and application of my novel stopping and releasing mechanism and shall only refer to and describe such elements and portions of the time and alarm trains as is necessary in describing my present invention.

10 denotes the upper movement-plate; 11, the lower movement-plate; 12, an intermediate plate; 13, the back plate of the clock-case; 14, the spring of the alarm-train; 15, the mainspring; 16, the minute-hand; 17, the hour-hand; 18, the alarm-hand, and 19 the alarm-setting wheel, which carries a setting-pin 20. This pin is adapted to coöperate with a notch 21, having an abrupt and an inclined wall, which is formed in a collet 22. This collet is rigidly secured to hour-socket 23, which also carries the hour-wheel 24, said socket, collet, and hour-wheel being adapted to rotate on center staff 25 and to move longitudinally thereon to release the spring alarm-latch in the usual manner in the Parker type of alarm-clocks the instant the setting-pin registers with the notch in the collet. The alarm-setting wheel and the alarm-hand are actuated in the usual manner to set the alarm by means of alarm-setting staff 47, which carries a pinion 48, meshing with an idler 49, which in turn meshes with the alarm-setting wheel.

26 denotes the bell; 27, the rotating hammer, and 28 the hammer-staff, which carries a pinion 29, meshing with the third or last wheel of the alarm-train, which is indicated by 30, and the staff, by which it is carried, is indicated by 51.

The above parts as enumerated are with the exception of the intermediate plate in common use in the Parker rotary-hammer alarm-clock. It should be understood, how-

ever, that my invention is in no way limited to the special details of the construction illustrated or to any exact construction and arrangement of the elements enumerated; but, on the other hand, my invention is applicable to any rotary-hammer alarm-clock without change of principle, no matter how greatly the details of construction may vary from those illustrated in the drawings of my present application.

In carrying out my present invention I produce the new result of an intermittent rotary-hammer alarm by providing one of the staffs of the alarm-train, preferably the hammer-staff, as illustrated in Figs. 1 to 4, inclusive, or, if preferred, one of the other staffs of the alarm-train—for example, the staff of the third or last wheel, as illustrated in Figs. 5 and 6—with an outwardly-extending stopping-arm 31, providing a lever that will serve as an obstruction or stop to the rotation of said arm and the staff by which it is carried, and providing mechanism operated by the time-train that will act after said arm has been released by the spring alarm-latch to oscillate said lever and cause it to alternately stop and release said arm, and thus cause the alarm to ring intermittently until the alarm-spring has run down. The spring alarm-latch is indicated by 32, and the operative end thereof, which passes through a slot 46 in upper movement-plate 10 and constitutes a primary stop for the arm 31, (see Figs. 1 and 2,) is indicated by 50.

33 denotes a pinion on the fourth wheel-staff of the time-train, which is indicated by 34. (See also Fig. 2, in which the fourth wheel is indicated by 35.) Pinion 33 (see Fig. 3) meshes with a wheel 36 on a staff 37, journaled in plates 10 and 12, as shown in Fig. 6. Staff 37 also carries a wheel 38, whose periphery consists of a series of cams, (specifically indicated by 43.) These cams, as the wheel rotates, successively engage a projection 39, in the present instance an angular pin, which extends from a controlling-lever 40, pivoted on intermediate plate 12, as at 41. Near the free end of lever 40 is a projection 42, in the present instance a circular pin, which serves as an obstruction or secondary stop and is adapted to be moved into and out of the path of rotation of stopping-arm 31 to alternately stop and release said arm, the hammer-staff, and the rotating hammer after the primary stop or latch 50 has released said arm, thereby making the action of the alarm intermittent, as will be more fully explained. Wheel 36 and the cam-wheel, through the engagement of wheel 36 with pinion 33, rotate in the direction of the arrow in Fig. 3. Projection 39 on controlling-lever 40 is held in engagement with the cams 43 on wheel 38 by means of a spring 44, which is rigidly secured to lever 40 and the other end of which bears against an abutment 45, which projects from intermediate plate 12. (See Figs. 2 and 3.)

In practice the pressure of projection 39 on the cams of wheel 38 while continuous is light, and the Parker time-movement is free—*i. e.*, strong running—so that the slight drag of the alarm-controlling mechanism on the time-train does not affect its time-keeping qualities to the slightest extent. Moreover, the stopping-arm is so proportioned and its point of engagement with the controlling-lever so arranged that the leverage is so slight as not to appreciably affect the time-keeping qualities of the clock. My present construction therefore makes it unnecessary to complicate the mechanism and provide additional parts for the purpose of relieving this slight drag on the time-train.

The modified form illustrated in Figs. 5 and 6 differs from the form illustrated in Figs. 1 to 4, inclusive, only in that the staff 51 of the third alarm-wheel is extended through intermediate plate 12 and is journaled in both movement-plates, and the stopping-arm instead of being carried by the hammer-staff is carried by said third alarm-wheel staff.

The operation of my invention is as follows: It will of course be understood that in all alarm-clocks of this type setting-pin 20 in setting-wheel 19 is placed in such relation to alarm-hand 18 that when the alarm-hand registers with any hour-numeral upon the dial the setting-pin will drop into notch 21 in collet 22. The mode of setting the alarm need not be described, as it is the same as in all alarm-clocks. In use the instant the setting-pin registers with the notch in the collet the hour-wheel, socket, and collet will move forward on the center staff, releasing spring alarm-latch 32, and the lower end 50 of said latch, which passes through slot 46 in the upper plate and serves as the primary stop or holder for the stopping-arm 31, as clearly shown in Fig. 2 and as indicated by the dotted position of said arm in Figs. 3 and 5, will move out of the path of said arm, thereby releasing the staff by which it is carried and causing the alarm to ring through the action of the alarm-spring in the usual manner—that is, the alarm will immediately ring if the secondary stop 42 is then out of the path of movement of the arm 31, carried by the rotary alarm-staff 28. If stop 42 is in the path of movement of arm 39, the hammer-staff 28 will not make a complete rotation; but in a few seconds the stop 42 will move away and the alarm will ring. The alarm will continue to ring so long as projection 39 on the controlling-lever is in engagement with the inner end of either of the cams 43. When, however, the rotation of the cam-wheel has proceeded far enough, so that said projection 39 will have ridden approximately half-way up the incline of one of the cams, the controlling-lever will have been swung from the

dotted position in Figs. 3 and 5 toward the full-line position in said figures far enough to throw the secondary stop or projection 42 on said lever into the path of stopping-arm 31, as clearly shown in said figures, which will stop the rotation of the hammer-staff and hammer and of course stop the alarm. The alarm will remain silent while projection 39 is traveling along the outer end of the incline of the cam. As soon, however, as projection 39 passes off from a cam and drops down upon the base of the incline of the next cam spring 44 will instantly act to move the controlling-lever from the full-line position in Figs. 3 and 5 to the dotted position in said figures, which will move projection or stop 42 from the full-line position in said figures to the dotted position and will release the stopping-arm and permit the hammer-staff to rotate and the hammer to again strike the bell through the action of the alarm-spring. This oscillation of the controlling-lever and alternate ringing and stopping of the alarm will continue until the alarm-spring has run down. It will be noted that projection 42 is circular and that stopping-arm 31 is pointed. The purpose of this construction is to prevent the possibility of the alarm stopping in such a position that arm 31 would engage projection 42 and hold the controlling-lever at the raised position, and thus interfere with the action of the time-train.

Having thus described my invention, I claim—

1. An alarm-clock including in its construction a rotary staff having an arm extending therefrom, a hammer actuated by said rotary staff, a primary stop and a secondary stop for said arm, and means for independently moving said stops into and out of the path of rotation of said arm.

2. In an alarm-clock, the combination with a time-train and a rotary-hammer staff having an arm extending therefrom, of a primary stop and a secondary stop for said arm, and mechanism actuated by the time-train whereby after the alarm commences to ring said secondary stop is alternately moved into and out of the path of rotation of said arm and the action of the alarm is made intermittent.

3. In a clock, the combination with a time-train and an alarm mechanism having a rotary alarm-staff provided with a stopping-arm extending therefrom, of a primary stop for said arm and a controlling-lever having a projection adapted to engage the same arm, and mechanism actuated by the time-train whereby after the alarm commences to ring said projection is alternately moved into and out of the path of rotation of the stopping-arm and the action of the alarm is made intermittent.

4. In a rotary-hammer alarm-clock, the combination with a time-train, a spring alarm-latch, an alarm mechanism having a rotary-hammer staff and a stopping-arm extending from said staff and normally directly engaged by the spring alarm-latch, of an obstruction operated by the time-train which after the stopping-arm has been released by the spring alarm-latch is alternately moved into and out of the path of rotation of said stopping-arm.

5. In a rotary-hammer alarm-clock, the combination with a time-train, a spring alarm-latch, an alarm mechanism having a rotary-hammer staff and a stopping-arm extending from said staff and normally directly engaged by the spring alarm-latch, of an oscillating lever carrying an obstruction adapted to engage the stopping-arm and mechanism actuated by the time-train whereby after said arm has been released by the spring alarm-latch said obstruction is alternately moved into and out of the path of rotation of the stopping-arm.

6. In a rotary-hammer alarm-clock, the combination with a time-train and an alarm mechanism having a rotary-hammer staff and a stopping-arm extending therefrom, of a primary stop for said arm, a lever having a projection 42 adapted to engage the stopping-arm and a projection 39, a wheel actuated by the time-train and having upon its periphery a series of cams and a spring acting to retain projection 39 in engagement with the cams, whereby after the alarm commences to ring said lever is oscillated by said cams and projection 42 is alternately moved into and out of the path of rotation of the stopping-arm.

7. In a rotary-hammer alarm-clock, the combination with a time-train and an alarm mechanism having a rotary-hammer staff and a stopping-arm extending therefrom, of a primary stop for said arm, a controlling-lever having a projection adapted to engage the stopping-arm and a projection 39, a staff 37 actuated by the time-train and carrying a wheel 38 having upon its periphery a series of cams and a spring acting to retain projection 39 in engagement with the cams.

8. In a rotary-hammer alarm-clock, the combination with a fourth wheel-staff carrying a pinion 33 and an alarm mechanism having a rotary-hammer staff and a stopping-arm extending therefrom, of a primary stop for said arm, a staff 37 carrying a wheel engaging said pinion and a wheel 38 having upon its periphery a series of cams, and a spring-controlled lever adapted to engage the stopping-arm and having a projection 39 engaging the cams, whereby after the alarm commences to ring said lever is oscillated and is moved into and out of the path of rotation of the stopping-arm.

9. In an alarm-clock, the combination with upper and lower movement-plates, an intermediate plate, a time-train and an alarm mechanism having a rotary-hammer staff provided with an arm extending therefrom, of a primary stop for said arm, a staff 37 journaled in the top and intermediate plates and carrying

a wheel driven by the time-train and a wheel 38 having on its periphery a series of cams and a lever adapted to engage the hammer-staff arm and having a projection adapted to engage the cams, substantially as shown, for the purpose specified.

10. In a rotary-hammer alarm-clock, the combination with a time-train and an alarm mechanism having a rotary-hammer staff and a stopping-arm extending therefrom, of a primary stop for said arm and a controlling-lever and mechanism actuated by the time-train for moving said lever into and out of the path of rotation of the stopping-arm.

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

ALMERON M. LANE.

Witnesses:

JUNIUS S. NORTON, JR.,

C. H. WOOD.