

(No Model.)

W. E. PORTER.
REPEATING ALARM CLOCK.

No. 580,056.

Patented Apr. 6, 1897.

Fig 4

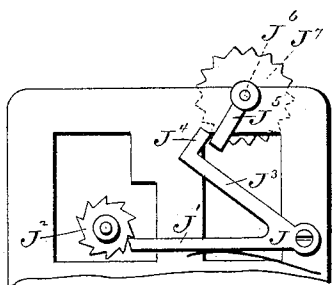


Fig. 3

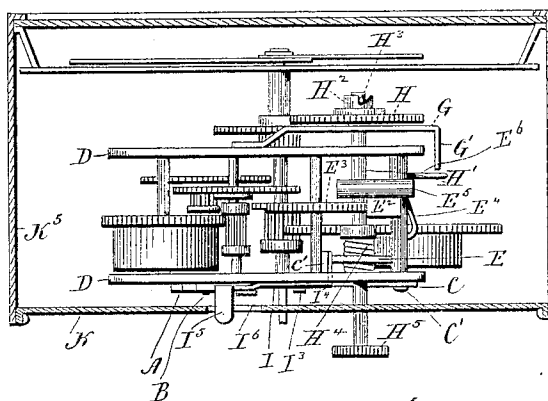


Fig. 5

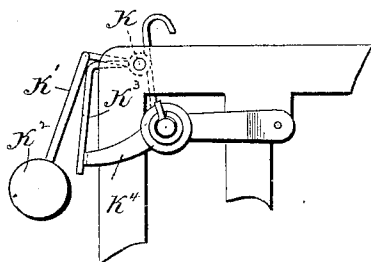


Fig. 2

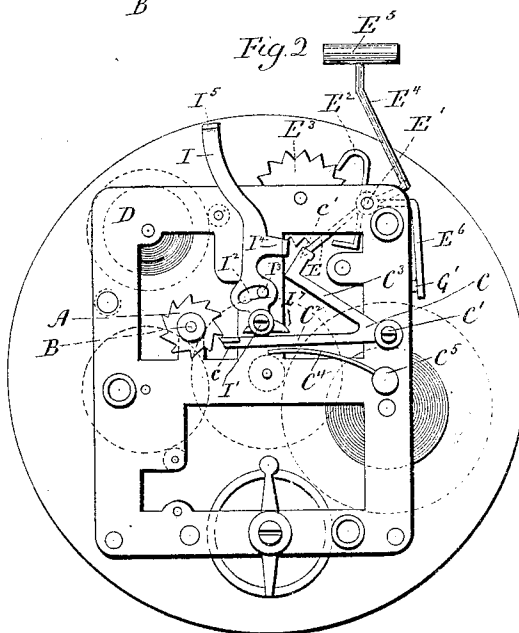
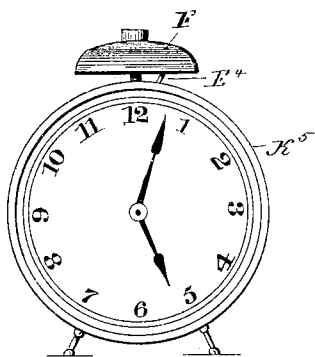


Fig. 1



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UNITED STATES PATENT OFFICE.

WILSON E. PORTER, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO THE
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REPEATING ALARM-CLOCK.

SPECIFICATION forming part of Letters Patent No. 580,056, dated April 6, 1897.

Application filed February 17, 1896. Serial No. 579,599. (No model.)

To all whom it may concern:

Be it known that I, WILSON E. PORTER, of New Haven, in the county of New Haven and State of Connecticut, have invented a new
5 Improvement in Alarm-Clocks; and I do hereby declare the following, when taken in connection with the accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of
10 the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a view in front elevation of one form which an alarm-clock containing my improvement may assume; Fig. 2, a view in rear
15 elevation of the movement of the said clock, showing also a rear view of the dial thereof; Fig. 3, a plan view of the clock, the case being shown in horizontal section; Fig. 4, a detail view of one of the modified forms which
20 my improvement may assume, showing the repeating alarm-wheel and repeating alarm-lever; Fig. 5, a similar view showing the alarm-spring.

My invention relates to an improvement in
25 alarm-clocks of that class which are known to the trade as "repeating alarms," for the reason that after the alarm is let off it repeats at short intervals until shut off, for which purpose the person who would sleep on must
30 rise from his bed.

With these ends in view my invention consists in a repeating alarm-clock having certain details of construction and combinations of parts, as will be hereinafter described, and
35 pointed out in the claims.

In carrying out my invention, as shown in Figs. 1, 2, and 3 of the drawings, I locate a ratchet-like wheel A, which I shall hereinafter call the "repeating alarm-wheel," upon
40 the staff B of one of the wheels of the time-train of the clock. As shown, the staff B carries the third wheel of the time-train; but I do not limit myself to combining the repeating alarm-wheel with any particular wheel of the train. The said repeating alarm-wheel
45 coacts with a repeating alarm-lever C, hung upon the back movement-plate D on a screw C¹, the arm C² of this lever being constructed at its outer end with a finger c, which is engaged by the teeth of the repeating alarm-wheel A, while the arm C³ of the lever, which

is a bent arm, is turned inward to form a stop-finger c', coacting with the short secondary stop-wire E, rigidly secured to and extending
inward from the escapement-arbor E', carrying the verge E², coacting with the escapement-wheel E³ of the alarm-train, which may be
55 of any approved construction. A repeating alarm-spring C⁴, mounted in a stud C⁵, secured to the back movement-plate D, engages
60 with the arm C² of the lever C and exerts a constant effort to cause the said arm to drop off the teeth of the repeating alarm-wheel A and to cause the finger c' of the lever to engage
65 with the secondary stop-wire E. The escapement-arbor E' aforesaid is also furnished with an upwardly-extending hammer-wire E⁴, carrying a hammer E⁵, arranged to strike a bell
F, located above the clock-case, as shown in
70 Fig. 1; but, if desired, the bell may be located below the case, or even within the case, calling for a different location and arrangement of the hammer-wire and hammer. The escapement-arbor is further furnished with
75 a primary stop-wire E⁶, which coacts with alarm-letting-off mechanism of any approved construction, and, as herein shown, comprising an alarm-spring G, having its outer end
bent rearward to form a finger G', which engages with the said primary stop-wire E⁶.
80 The said spring is moved laterally inward to bring its said finger G' into the path of the said primary stop-wire by means of the longitudinal movement of the alarm-wheel II upon the alarm-set shaft II', the said wheel
85 being driven from the dial-work of the time mechanism in the usual manner, the said dial-work being located in front of the front movement-plate D'. This wheel is provided
90 also in the usual manner with a cam II², coacting with a pin II³, extending transversely through the alarm-set shaft II', which does not normally rotate, but is held against rotation by means of the spring II⁴. A button
95 II⁵, secured to the inner end of the shaft, is provided for rotating it in one direction or the other against the tension of the spring II⁴ for setting the alarm in the usual manner.

Under ordinary conditions the alarm will be kept from sounding by the engagement of
100 the finger G' of the alarm-spring G with the primary stop-wire E⁶ of the alarm mechanism.

When, however, the rotation of the wheel II by the dial-work of the clock has brought the drop or great step of the cam II² into line with the pin II³, the alarm-spring G springs forward and disengages its arm G' from the stop-wire, whereby the alarm-train is released, so far as the primary stop-wire is concerned, and the alarm will now be sounded unless the secondary stop-wire E is at this time in engagement with the stop-finger c' of the alarm-lever C. If it happens, however, that at the time the alarm is released from the restraining influence of the primary stop-wire the secondary stop-wire E is engaged with the finger c' of the arm C³ of the alarm-lever, the sounding of the alarm will be delayed a short time, but only a very short time, inasmuch as the alarm-lever is actuated at frequent intervals through the medium of the repeating alarm-wheel A, which is in constant motion. Then when the said wheel moves the lever C against the tension of the spring C⁴ the secondary stop-wire will be released and the alarm will be sounded until the finger C' of the alarm-lever drops off the point of one of the teeth of the repeating alarm-wheel, when the alarm-lever spring C⁴ will immediately swing the lever so as to carry its finger c' into the path of the secondary stop-wire, whereby the alarm-train will be arrested, but only for the length of time required for the repeating alarm-wheel to move the alarm-lever against the tension of the alarm-lever spring C⁴ for a sufficient distance to clear the stop-finger c' of the lever from the secondary stop-wire E, permitting the alarm to be sounded again.

It will thus be seen that the alarm will be sounded at frequent regular intervals, which will be separated in time by the length of time required for the teeth of the repeating alarm-wheel to swing the alarm-lever sufficiently to release the alarm-train, and this will go on until the spring of the alarm-train runs entirely down, unless the person who would sleep gets out of bed and shuts the alarm off by moving the cut-off lever I, whereby the alarm-lever is cut out of engagement with the repeating alarm-wheel and one end of the verge locked into the crown-wheel. This lever, it may be remarked, must be thrown into its retired position before the alarm mechanism can be operated again. The said lever I is swung by its inner end upon a screw-stud I', mounted in the rear movement-plate and is formed with a segmental slot I², receiving a stop-pin I³, which limits the movement of the lever in either direction. It is constructed with a stop-finger I⁴, which engages with the secondary stop-wire for locking the verge into the escapement-wheel, as stated. Its outer end is furnished with an operating-finger I⁵, bent outwardly and extended through a slot I⁶, formed in the plate K, closing the back of the case K', as shown in Fig. 3, the projecting outer end of the finger I⁵ being engaged for throwing the stop-lever in one direction or the other

to cut off the repeating alarm or bring it into operation.

For cutting the alarm-lever out of engagement with the alarm-wheel A, as stated, the said lever is constructed at its inner end with a nose I', which engages with the arm C² of the said lever when the cut-off lever is swung into its cutting-off position, whereby the lever is swung downward against the tension of its spring C⁴, so that the finger c of its arm C² will be cleared from engagement with the wheel, whereby the wear of the lever and wheel is minimized and drag upon the time-movement prevented during the time when the alarm mechanism is cut out of action.

It will be seen from the foregoing that an alarm-clock constructed in accordance with my invention does not sound a continuous alarm until the alarm-spring is run down or for a long period, but that it sounds an intermittent repeating alarm until cut off by the manual interference of the person using the alarm.

It is apparent that in carrying out my invention changes from the particular construction shown and described may be made. Thus under the construction shown in Figs. 4 and 5 of the drawings the alarm-lever J is formed with a lifting-arm J', actuated by the repeating alarm-wheel J², and with a stop-arm J³, having a finger J⁴ coacting with a stop-finger J⁵, secured to one end of the arbor J⁶, on which the escapement-wheel J⁷ of the alarm-train is mounted. In this construction the verge-arbor K carries the hammer-wire K' and hammer K² and also the primary stop-wire K³, which coacts with the alarm-spring K⁴, corresponding to the alarm-spring of ordinary alarm mechanisms. Under this construction, as under the construction before described, the alarm is primarily let off through the medium of the alarm-spring K⁴ and after that intermittently sounded through the medium of the repeating alarm-wheel J². I would therefore have it understood that I do not limit myself to the exact construction herein shown and described, but hold myself at liberty to make such changes and alterations as fairly fall within the spirit and scope of my invention.

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

1. In a repeating alarm-clock, the combination with the time-train thereof, of an alarm-train periodically released thereby, an alarm-setting mechanism, an alarm-wheel connected with the time-train and driven thereby, an alarm-lever intermittently operated by the said alarm-wheel and coacting with the alarm-train to intermittently stop the same, and a manual stop coacting with the alarm-train and with the alarm-lever to cut them both out of action without recourse to the alarm-setting mechanism.

2. In a repeating alarm-clock, the combination with the time-train thereof, of an alarm-

train periodically released thereby, an alarm-setting mechanism, means for interrupting the alarm-train for sounding an intermittent alarm, and a manual stop for shutting off the alarm by stopping the alarm-train without recourse to the alarm mechanism, and consisting of a lever pivotally secured by its inner end to the rear movement-plate, adapted to coact with a member of the alarm-train for blocking the action thereof, and constructed at its outer end to be engaged for manual operation.

3. In a repeating alarm-clock, the combination with the time-train thereof, of an alarm-train periodically released thereby, an alarm-setting mechanism, an alarm-wheel connected with the time-train and driven thereby, an alarm-lever intermittently operated by the

said wheel, and coacting with the said alarm-train to intermittently stop the same, and a manual stop-lever pivotally connected at its inner end with the rear movement-plate, adapted at its outer end to be engaged for manual operation, and provided with a stop-finger for coacting with the alarm-train, and with a nose which engages with the alarm-lever for clearing the same from the alarm-wheel, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

WILSON E. PORTER.

Witnesses:

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J. H. SHUMWAY.