No. 809,133. PATENTED JAN. 2, 1906.

W. E. PORTER.

REPEATING ALARM CLOCK.

APPLICATION FILED APR. 17, 1902.

2 SHEETS—SHEET 1.

Fig. 1.

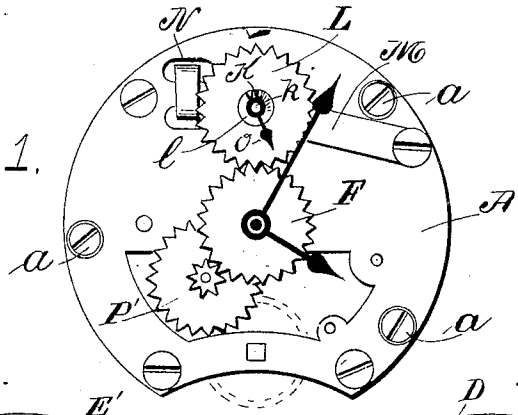


Fig. 2.

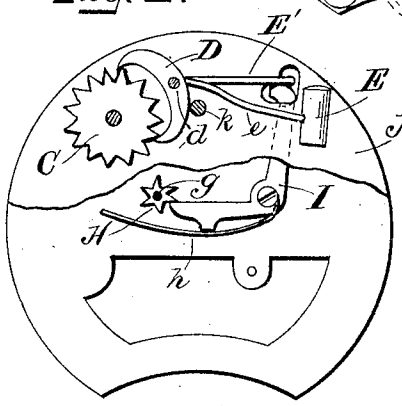


Fig. 3.

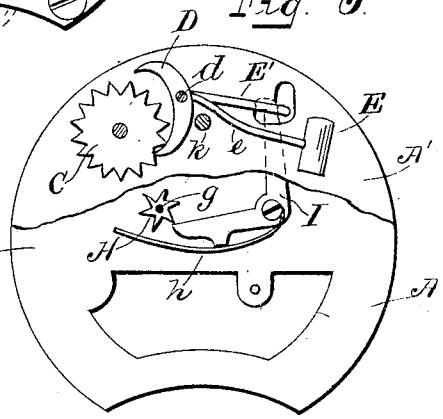


Fig. 4.

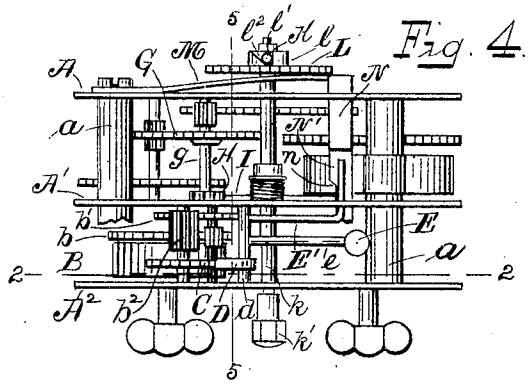
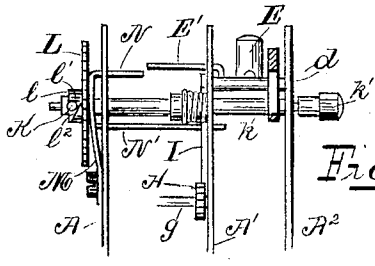


Fig. 5.



WITNESSES:

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ATTORNEYS

No. 809,133. PATENTED JAN. 2, 1906.

W. E. PORTER.

REPEATING ALARM CLOCK.

APPLICATION FILED APR. 17, 1902.

2 SHEETS—SHEET 2.

Fig. 6

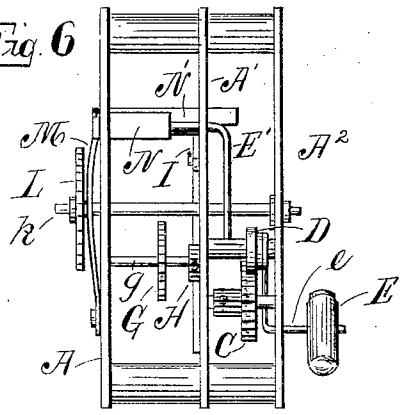


Fig. 7

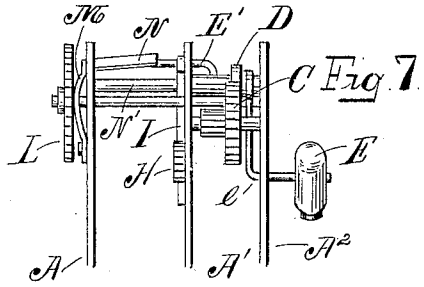


Fig. 8

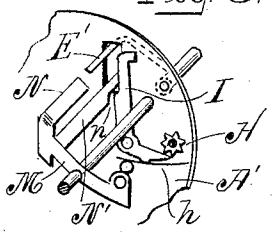


Fig. 9

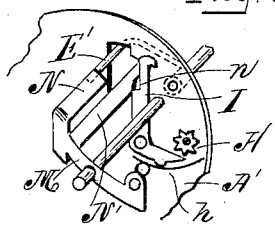
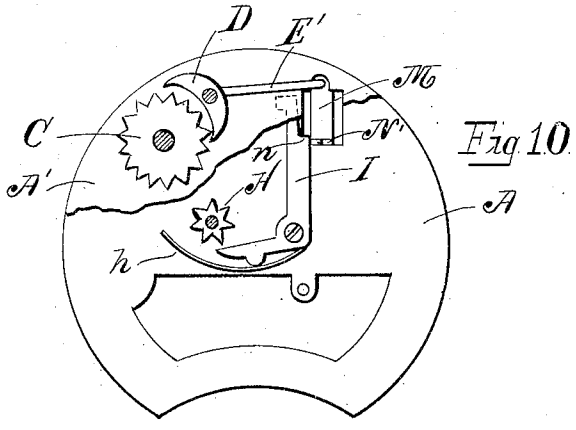


Fig. 10



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UNITED STATES PATENT OFFICE.

WILSON E. PORTER, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO THE NEW HAVEN CLOCK COMPANY, OF NEW HAVEN, CONNECTICUT, A CORPORATION OF CONNECTICUT.

REPEATING ALARM-CLOCK.

No. 809,133. Specification of Letters Patent. Patented Jan. 2, 1906.

Application filed April 17, 1902. Serial No. 103,381.

To all whom it may concern:

Be it known that I, WILSON E. PORTER, of the city and county of New Haven, State of Connecticut, have invented a new and useful Improvement in Repeating Alarm-Clocks, of which the following is a full, clear, and exact description when taken in connection with the accompanying drawings, which form a part thereof, and in which—

Figure 1 represents a front view of a clock embodying my invention, the dial-plate and case having been removed; Figs. 2 and 3, vertical sections on line 2 2 of Fig. 4, the parts being shown in different positions; Fig. 4, a plan view; Fig. 5, a transverse vertical section on line 5 5 of Fig. 4; Figs. 6 and 7, corresponding views to Figs. 4 and 5 of the spring alarm-lever and associated parts in different positions; Figs. 8 and 9, perspective detail views of the spring alarm-lever engaging and disengaging the checking-lever and repeating alarm-lever, respectively; and Fig. 10, a similar view to Fig. 2 with the parts in different positions.

In all figures similar letters of reference represent like parts.

This invention relates to alarm-clocks, and more particularly to that class in which the alarm is sounded intermittently or repeated at intervals. In this class of alarm-clocks the alarm is sounded, then checked for a certain regulated period, and then is sounded again, the operation being repeated until the alarm runs down or is positively shut off, which latter requires some action on the part of the person for whom it is sounded. The intermittent checking is accomplished by mechanism operated by the time-train, and it is one of the objects of the present invention to disengage the checking mechanism from the time-train except during the time when the alarm is otherwise released to sound.

The invention consists of the several improvements and combinations of parts set forth hereinafter.

The alarm mechanism is substantially that shown in the former United States patent granted to me on the 6th day of April, 1897, and numbered 580,056, to which patent reference may be made for a more detailed description of the operation of the alarm mechanism described herein.

Referring to the drawings for a more particular description, the parts designated by the letters A, A′, and A^2 represent the plates upon which the movement is mounted, and *a* pillars connecting the same.

B represents the spring for the alarm, and *b*, *b′*, and b^2 the train of wheels driven thereby.

C is an escapement-wheel mounted on the shaft of gear b^2, and D is a verge coacting therewith. The verge D is mounted on a rotary shaft *d*, on which are also mounted a wire *e*, carrying the hammer E, and the checking-lever E′.

A detailed description of the time-train is omitted, as it may embody any suitable construction. It is only necessary to refer particularly to the dial-wheels, which are designated by F and F′, and to one of the wheels (herein shown as the third wheel) of the time-train marked G, on the shaft *g* of which is a ratchet H.

I is a repeating alarm-lever, shown mounted on the plate A′ and having one end normally pressed into engagement with the ratchet H by a spring *h*. The lever I when rocked on its pivot by the successive projecting teeth of the ratchet H alternately engages and disengages the checking-lever E′ of the alarm.

k is a rotatable shaft, on which is loosely mounted a gear L meshing with the dial or hour wheel F. The shaft *k* is provided with a lateral pin K, against which a cam-shoulder *l* on the face of the gear L is held in contact by a spring alarm-lever M. In the cam *l* is a notch *l′* and on one side of the notch an inclined surface l^2, so that upon the rotation of the gear L and cam *l* when the pin K comes opposite to the notch *l′* the gear L and alarm-lever M will be moved by the resiliency of the lever M outward from the movement-plate A, while upon the further rotation of the cam *l* when the pin K travels upon the inclined surface l^2 the gear L and spring alarm-lever M will be forced inward toward the movement-plate A.

The checking-lever E′ is adapted to be engaged by an arm N on the spring alarm-lever

M when the latter is in its inward position, (see Figs. 6, 7, 9, and 10,) and is disengaged upon the outward movement of the lever M and its arm N, Figs. 4, 5, and 8, so that the checking-lever and hammer may vibrate under the action of the verge. A second arm N′ on the alarm-lever M is provided with a chamfered surface *n*, which upon the inward movement of the arm with the alarm-lever M bears upon the repeating alarm-lever I to force it from engagement with the ratchet H. (See Figs. 6, 7, 9, and 10.) As the movement of both arms N and N′ are simultaneous, the ratchet H and time-train are relieved from acting upon the lever I, except at such times as the alarm is free to sound by the disengagement of the checking-lever E′ from the arm N. On the reverse movement the arm N′ is drawn away from the repeating alarm-lever I, so that the surface *n* will not bear on the lever, but the latter will be free to swing against the ratchet H and vibrate under its impetus, Figs. 4, 5, and 8.

The operation of the device is as follows: The shaft *k* is turned, by means of a button *k*′ or other means, until its indicator or hand O points to the desired hour for sounding the alarm. Until this time is reached the pin K of the shaft *k* rides upon the even surface or edge of the cam *l* as the latter is rotated by the hour-wheel, when (at the appointed hour) the notch *l*′ is brought into alinement with the pin K, the spring alarm-lever is allowed to move outward to release the checking-lever E′ and the repeating alarm-lever I from engagement by the arms N and N′, respectively. Upon the release of the repeating alarm-lever I the spring *h* forces it into engagement with the ratchet H. The alarm is sounded except when by the rotation of the ratchet H the repeating alarm-lever I intermittently engages and disengages the checking-lever E′. This continues until the alarm runs down or is shut off. The continued rotation of the gear L brings the pin K against the inclined surface *l*² of the cam *l*, when the spring alarm-lever M is forced inward, so that one arm N engages the checking-lever to prevent the further sounding of the alarm, and the other arm N′ engages the repeating alarm-lever I to swing it out of engagement with the ratchet H.

Having now described my invention, (which may vary in its details without departing from the spirit thereof,) what I claim, and desire to secure by Letters Patent, is—

1. In a repeating alarm-clock, the combination with the time-train; of an alarm-train; an alarm-checking lever; a repeating alarm-lever normally yieldingly engaging said alarm-checking lever; a device operated by the time-train to intermittently release said repeating alarm-lever from engagement with said alarm-checking lever; and mechanism operated by the time-train to disengage said repeating alarm-lever from said releasing device, substantially as described.

2. In a repeating alarm-clock, the combination with the time-train; of an alarm-train; an alarm-checking lever; a repeating alarm-lever normally yieldingly engaging said alarm-checking lever; a device operated by the time-train to intermittently release said repeating alarm-lever from engagement with said alarm-checking lever; and mechanism for simultaneously disengaging the repeating alarm-lever from said releasing device, and engaging said alarm-checking lever to check the alarm-train, substantially as described.

3. In a repeating alarm-clock, the combination with the time-train; of an alarm-train; an alarm-checking lever; a repeating alarm-lever normally yieldingly engaging said alarm-checking lever; a device operated by the time-train to intermittently release said repeating alarm-lever from engagement with said alarm-checking lever; and mechanism operated by the time-train for disengaging the repeating alarm-lever from said releasing device except when the alarm-train is released, substantially as described.

4. In a repeating alarm-clock, the combination with the time-train; of an alarm-train; an alarm-checking lever; an alarm-lever adapted to engage said alarm-checking lever and operated by the time-train to periodically release the alarm-checking lever; a repeating alarm-lever normally yieldingly engaging said alarm-checking lever; a device operated by the time-train to intermittently release said repeating alarm-lever from engagement with said alarm-checking lever, said repeating alarm-lever being disengaged from said releasing device by said alarm-lever when the latter is in engagement with said alarm-checking lever, substantially as described.

5. In a repeating alarm-clock, the combination with the time-train; of an alarm-train; an alarm-checking lever; a repeating alarm-lever normally yieldingly engaging said alarm-checking lever; a device operated by the time-train to intermittently release said repeating alarm-lever from engagement with said checking-lever; and an alarm-lever adapted to simultaneously engage said alarm-checking lever to check the same and said repeating alarm-lever to disengage the latter from said releasing device, said alarm-lever being operated by the time-train periodically to simultaneously release said alarm-checking lever and said repeating alarm-lever, substantially as described.

6. In a repeating alarm-clock, the combination with the time-train; of an alarm-train; an alarm-checking lever; a repeating alarm-lever normally yieldingly engaging said alarm-checking lever; a device operated by the time-train to intermittently release said repeating alarm-lever from engagement with

said alarm-checking lever; and mechanism operated by the time-train for simultaneously disengaging said repeating alarm-lever from said releasing device and engaging said alarm-lever, substantially as described.

7. In a repeating alarm-clock, the combination with the time-train; of an alarm-train; an alarm-checking lever; a repeating alarm-lever normally yieldingly engaging said alarm-checking lever; a device operated by the time-train to intermittently release said repeating alarm-lever from engagement with said alarm-checking lever; a lever operated by the time-train adapted to disengage said repeating alarm-lever from said releasing device, and to periodically release said repeating alarm-lever, substantially as described.

8. In a clock-movement, the combination with a time-train; of a lever rocked by said time-train; mechanism adapted to disengage said lever from said time-train and operated by said train to periodically release said lever, substantially as described.

9. In a repeating alarm-clock, the combination with the time-train; of an alarm-train; an alarm-checking lever; a repeating alarm-lever normally yieldingly engaging said alarm-checking lever; a ratchet-wheel operated by the time-train to intermittently release said repeating alarm-lever from engagement with said alarm-checking lever; and a lever operated by the time-train to disengage said repeating alarm-lever from said ratchet, substantially as described.

In witness whereof I have hereunto set my hand on the 8th day of April, 1902.

WILSON E. PORTER.

Witnesses:

EUGENE CARTIER,

GEORGIE NOLIN.