(No Model.)

2 Sheets—Sheet 1.

J. A. J. REDIER.

REPEATING CLOCK.

No. 260,787. Patented July 11, 1882.

Fig. 3.

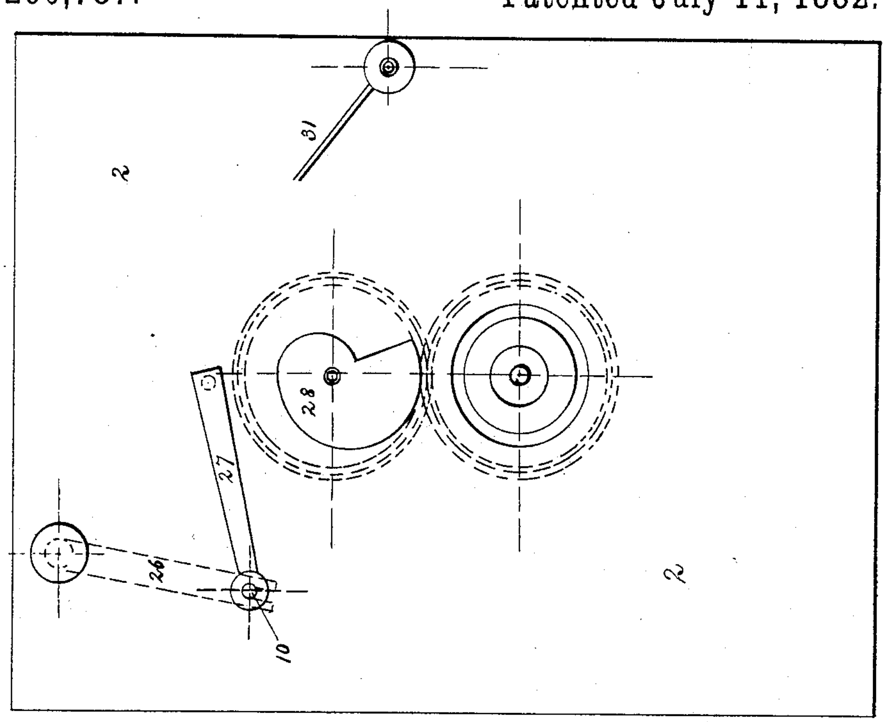
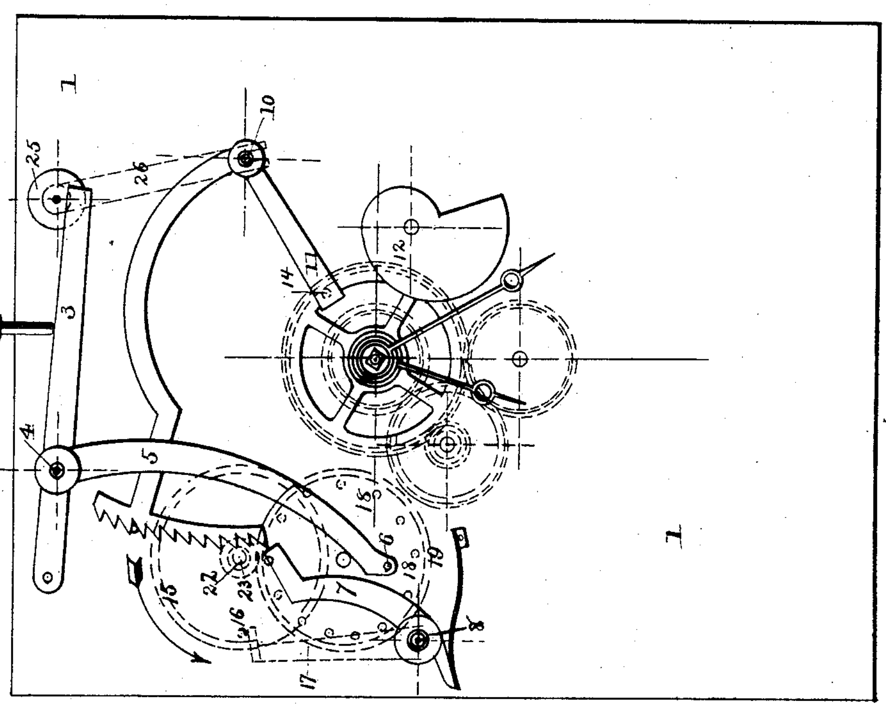


Fig. 1.



Witnesses.
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(No Model.)

2 Sheets—Sheet 2.

J. A. J. REDIER.

REPEATING CLOCK.

No. 260,787. Patented July 11, 1882.

Fig. 4.

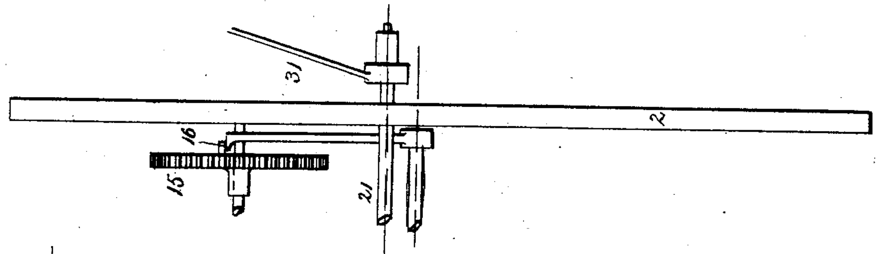


Fig. 2.

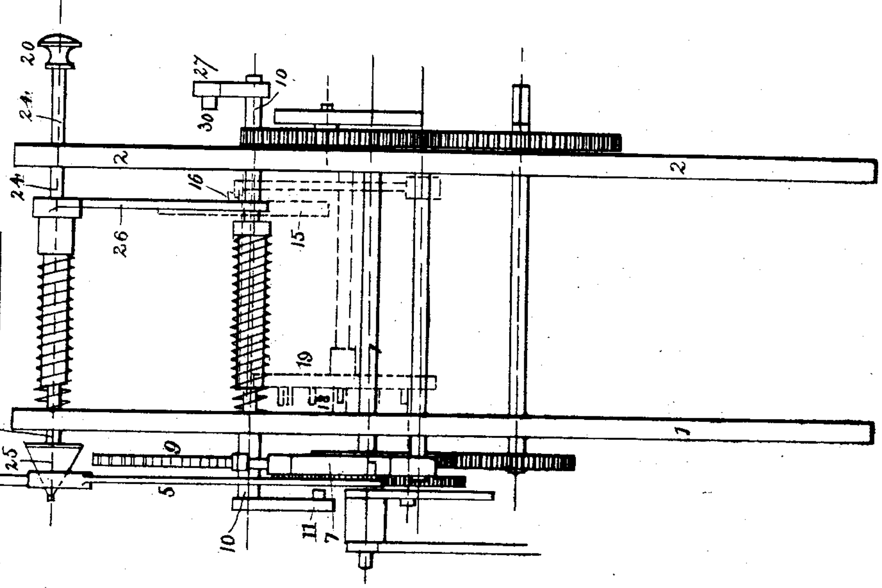
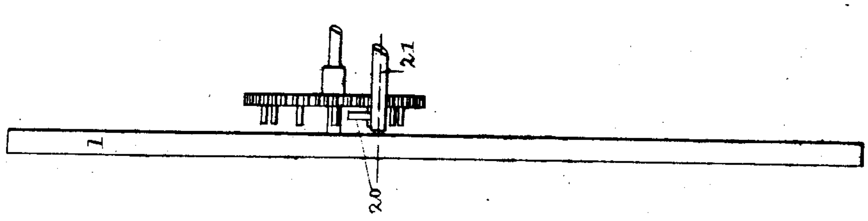


Fig. 5.



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UNITED STATES PATENT OFFICE.

JOSEPH ANTOINE JEAN REDIER, OF PARIS, FRANCE.

REPEATING-CLOCK.

SPECIFICATION forming part of Letters Patent No. 260,787, dated July 11, 1882.

Application filed March 22, 1882. (No model.) Patented in France August 21, 1880, No. 138,362.

To all whom it may concern:

Be it known that I, JOSEPH ANTOINE JEAN REDIER, watch-maker, of No. 8 Cour des Petites Ecuries, Paris, in the Republic of France, have invented certain new and useful Improvements in Clocks; and I hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

The object of this invention is to cause an ordinary striking-clock, which repeats the hours and half-hours, to repeat also the minutes, this result being obtained by a supplementary mechanism which forms a part of the works of the time-piece, and which is actuated by pressing on a button protruding outside of the case of the clock. In order to simplify this mechanism, it does not repeat all the minutes individually which have lapsed since the last hour or half-hour struck, but collectively it makes one strike for every five minutes lapsed.

In order that my invention may be clearly understood, I will describe the same conjointly with the five figures of the accompanying drawings, in which I have represented my supplementary mechanism applied to an ordinary clock that strikes the hours and half-hours and repeats the former only, such parts only of this clock being shown as are necessary for comprehending my mechanism which is attached thereto.

Figure 1 is a front view of the clock with the dial and its plate removed; Fig. 2, a lateral view of the same; Fig. 3, a rear view of the same; Fig. 4, a fractional lateral view, showing back plate with certain parts attached thereto; Fig. 5, a similar view, showing front plate with certain parts attached thereto.

The mechanism for repeating the hours is lodged mainly between the front and back plates, 1 and 2, and consists specially in a horizontal lever, 3, hung at 4 on the front plate, and provided with an arm, 5, projecting downward with a salient pin, 6, at its lower extremity, for contacting with an edge of an upright pawl or arm, 7, pivoted at 8, which serves as a support for a segmental rack, 9, pivoted at 10 when the striking-gear is at rest. On this axis 10 is also rigidly attached an arm, 11, which, when the repeating takes place, determines the number of sounds struck by its contact with a scroll-cam, 12, rotated by the hour mechanism. The action of this mechanism is as follows: By pressing on a button, 13, protruding from the upper part of the clock-case, the lever 3 is depressed, whereby its projecting arm 5 pushes back the upright lever 7 away from the rack 9, liberating thereby the latter, which falls until a stud, 14, on the extremity of the arm 11 rests on the periphery of the cam 12, the position of which corresponds with the hour indicated by the clock. When the lever 3 has thus fallen and rested on the cam the striking mechanism comes into action, being actuated by a barrel-spring, in the usual manner, by the rotation of the gear 15 in the direction indicated by the arrow, Fig. 1. Prior to this change of position the said gear was maintained stationary by the contact of its stud 16 against the upright lever-stop 17, which is keyed on the same axle as the upright pawl or arm 7. The striking is the result of the concussion of a hammer adapted at the extremity of the arm 31, and which strikes an appropriate bell, the said hammer deriving its motion from the stud 18 on gear 19 depressing the short arm 20, Fig. 5, protruding from the striker shaft or axle 21.

On the axis 22 of the gear 15, outside of the plate 1, is situated the pallet 23, which at each rotation raises one tooth of the segmental rack 9, and if the latter has merely fallen one tooth, thereby indicating that one o'clock was the last hour struck, it is merely raised one tooth, upon which the upper extremity of the upright lever 7 presents itself under the rack, as seen in Fig. 1, bringing the mechanism to a state of rest and ready to repeat again the same hour. If several hours have elasped, the rack 9, as above described, will have fallen a corresponding number of teeth, necessitating a corresponding number of rotations of the pallet 23 and blows struck on the bell before the apparatus assumes once more its position of rest.

This description is a preliminary necessary to

explain how the minutes are repeated by means of additional parts annexed to those above described.

This additional mechanism consists, first, in a horizontal shaft or axis, 24, provided outside of the front plate, 1, with a cam, 25, and inside the plates 1 and 2 with an arm, 26, the lower forked end of which embraces the axle 10 of the rack 9; secondly, in an arm, 27, fixed on the axle 10 of the rack 9, outside of the back plate 10 and in a scroll-cam, 28, fixed on the spindle of the minute-hand, outside of the back plate 2.

The action of this mechanism conjointly with the one usually employed in repeating-clocks, as above described, is as follows: By pressing in the button 29 toward the left, Fig. 2, the horizontal lever 3 is depressed (in a similar manner as by the button 13) by the angular action of the cone 25 against the outer extremity of the said lever 3. At the same time the fork 26 displaces the axle 10 for the left, Fig. 2, in such a manner that the stud or pin 14 on arm 11 will no longer be brought in contact with the scroll-cam 12 of the hour and half-hour repeating mechanism, while, on the contrary, the pin 30 on the arm 27, projecting on the face of the back plate 2, is brought immediately over the scroll-cam 28 on the minute-axle.

I claim as my invention—

1. The shifting axis 10, carrying at one end an arm, 11, and at the other end an arm, 27, and which is actuated by a vertical arm, 26, as above described, and for the purposes set forth.

2. The movable axis 24, or its equivalent, carrying at one end a button, 29, for operating the same, and at the other end a cone, 25, which depresses the lever 3, thereby liberating the rack 9 conjointly with a vertical arm, 26, which imparts its motion to the shifting axis 10, as above described, and for the purposes set forth.

3. The combination of the lever 3, arm 5, pawl or arm 7, rack 9, and arm 11, which cause the clock to strike the hours and half-hours, with the upper axis, 24, cone 25, arm 26, shiftable axis 10, and arm 27, for causing the same to strike once for every five minutes elapsed, as above described and set forth.

4. The combination of the button 29, shaft or axis 24, cone 25, arm 26, shiftable axis 10, and arm 27 with a striking apparatus, and whereby by pressing upon the button a clock may be made to strike once for every five minutes elapsed.

JOSEPH ANTOINE JEAN REDIER.

Witnesses:
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CARL FOCKE.