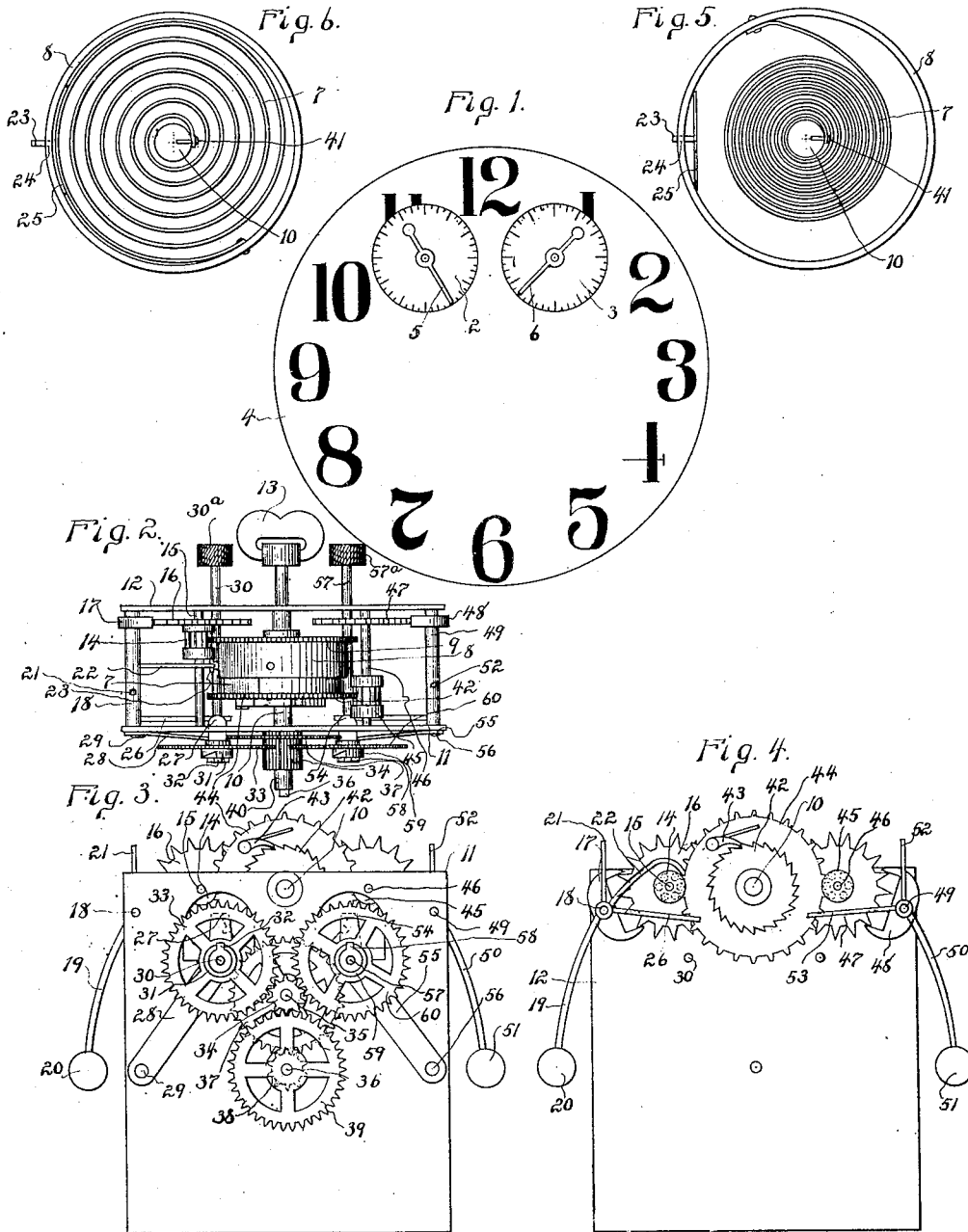


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DOUBLE ALARM CLOCK.
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DOUBLE-ALARM CLOCK.

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To all whom it may concern:

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

Figure 1 a view in front elevation of the dial of a double-alarm clock constructed in accordance with my invention. Fig. 2 a plan view of the movement of my improved double-alarm clock. Fig. 3 a view of the movement in front elevation. Fig. 4 a corresponding view with the front movement-plate removed. Fig. 5 a detached view in front elevation on an enlarged scale of the alarm-spring barrel and alarm-spring with the latter shown as wound to permit the detent-spring to retract the detent from the detent-arm of the left-hand alarm-mechanism. Fig. 6 a corresponding view showing the alarm-spring as unwound for the projection of the barrel stop into the path of the barrel stop arm of the left hand alarm-mechanism.

My invention relates to an improvement in double-alarm clocks, the object being to produce a simple, convenient and reliable clock having two alarm mechanisms adapted to be set to be operated in succession so that after one alarm has been sounded, the other alarm may be sounded without any interference with the clock between the sounding of the two alarms.

With these ends in view my invention consists in a double-alarm clock having two alarm-set dials and two alarm-mechanisms.

My invention further consists in a double-alarm clock having certain details of construction and combinations of parts as will be hereinafter described and pointed out in the claims.

In carrying out my invention as herein

shown, I locate two corresponding alarm-set dials 2 and 3 side by side in the same horizontal plane on the upper portion of an ordinary clock-dial 4, the left hand alarm-set dial 2 being swept by a pointer 5 and the right hand alarm-set dial 3 being swept by a pointer 6. These two alarm-set dials provide for setting the two alarm mechanisms which are set in the same way as the alarm-mechanism of an ordinary single-alarm clock.

As shown, the alarm-spring 7 is secured at its outer end to an alarm-spring barrel 8 carried by a barrel-wheel 9 loosely mounted upon the alarm-spring winding arbor 10 the respective ends of which are journaled in the front and rear movement-plates 11 and 12, its rear end projecting through the plate 12 and furnished with a winding key 13, as shown in Fig. 2. The said barrel-wheel 9 meshes into a pinion 14 on the arbor 15 of an escapement-wheel 16 engaged by a verge 17 on a verge-arbor 18 furnished with a hammer wire 19 carrying a bell-hammer 20. The said verge-arbor 18 also carries a wire shut-off arm 21 co-acting with an alarm-shut off, not shown, but understood to be mounted in the clock-case, also not shown. The said verge-arbor 18 also carries an inwardly extending detent-wire 22 the inner end of which is bent downward to co-act with a T-shaped radially movable barrel stop 23 extending outward through a narrow slot 24 in the spring-barrel 8 aforesaid, the inner end of the said stop 23 being riveted to a barrel stop-spring 25 placed tangentially within the periphery of the said barrel 8 and operated by the outer coil of the alarm-spring 7 when the same begins to uncoil in the sounding of the alarm, as will be described later on. It will be noted that the barrel-stop 23 and barrel-stop spring 25 are mounted in, and rotate with the spring-barrel 8. The said arbor 18 also carries a wire alarm-tripping arm 26 extending inward for engagement with the inwardly turned tripping-finger 27 of an ordinary flat sheet-metal alarm-trip spring 28 secured to the outer face of the front

movement-plate 11 by the rivet 29 and formed with a perforation (not shown) for the passage through it of the left-hand alarm-set arbor 30 upon the projecting forward end of which an alarm-cam 31 is mounted so as to move back and forth as well as to revolve, the said alarm-cam 31 co-acting with an ordinary alarm-cam button 32 fixed upon the arbor 30 the projecting rear end of which is provided with a knurled alarm-set button 30^a. An alarm-cam wheel 33 mounted upon the said cam 31 meshes into a dial pinion 34 loosely mounted upon a dial-stud 35 located directly above the projecting forward end of the center-arbor 36 of the time-movement. A dial-wheel 37 mounted upon the said dial-pinion 34 meshes in the usual manner into a cannon-pinion 38 on the center-arbor 36. The said dial-pinion 34 is meshed into also in the usual manner, by a socket-wheel 39 carried by a socket 40 on which the hour-hand (not shown) is mounted.

The left-hand alarm train, just described; is normally restrained by the engagement of the wire tripping-arm 26 with the finger 27 of the spring 28 which latter is normally held inward in its operative or alarm-restraining position by the alarm-cam 31 and the alarm-cam button 32 until the alarm-cam wheel 33 driven by the time-movement as described, brings the high point of the cam 31 into position to drop off the button 32 when the spring 28 asserts itself and not only pushes the cam 31 forward on the arbor 30, but also retracts its finger 27 from engagement with the arm 26 which being left free to vibrate releases the left hand alarm-train to the driving-action of the alarm-spring 7. The above described operation of the time-movement in releasing the alarm mechanism is common in alarm-clocks, as I may here state.

For the operation of the right-hand alarm mechanism, which is set by means of the figures on the right-hand alarm-dial 3, the inner end of the alarm-spring 7 is engaged with a hook 41 mounted in the said alarm-winding-arbor 10 upon the forward end of which I mount a ratchet-wheel 42 the teeth of which are engaged by a spring-actuated pawl 43 carried by the main alarm-wheel 44 of the left-hand alarm-mechanism, the said wheel 44 corresponding in size and function to the barrel-wheel 9 aforesaid, and meshing into a pinion 45 on an arbor 46 the rear end of which carries a crown-wheel 47 co-acting with a verge 48 on a verge-arbor 49 carrying a hammer-tail 50, a hammer 51, a wire shut-off arm 52, and a wire tripping-arm 53 the inner end of which co-acts with a tripping-finger 54 bent inward at a right angle from the upper end of a flat sheet-metal alarm-trip spring 55 secured

by a rivet 56 passing through its lower end to the front movement-plate 11. The right-hand alarm-set arbor 57 passes forward through the said spring 55 toward the upper end thereof and is furnished at its forward end with an alarm-cam button 58 co-acting with an alarm-cam 59 turning loosely upon the said arbor 57, movable longitudinally thereupon, and carrying an alarm-wheel 60 meshing into the pinion 34 already described, whereby the alarm-cam 59 is driven by the time-movement for the purpose of releasing the left-hand alarm-mechanism to the driving-action of the alarm-spring 7, the same as described for the right-hand alarm-mechanism. The said arbor 57 is furnished at its rear end with a knurled alarm-setting button 57^a. It will thus be seen that my double-alarm clock is provided with two alarm-set dials, and two alarm-trains, both driven by the spring 7 and let off one after the other, by the same time-mechanism. Under the construction herein shown and described, it is, of course, necessary to let the left-hand alarm-mechanism off first for the reason that it is automatically cut out by the initial uncoiling of the alarm-spring 7. In any case the alarm mechanism automatically cut out by the initial uncoiling of the alarm-spring must be the first mechanism to be let off whether connected with one end of the spring or the other.

To illustrate the use of my improved double-alarm clock, let it be supposed that two persons sleeping in the same room desire to be awakened at five o'clock and seven-thirty o'clock respectively. The left-hand alarm-mechanism is therefore set by the left-hand alarm-set dial 2 to go off at five o'clock, while the right-hand alarm-mechanism is set by the right-hand alarm-set dial 3 to go off at seven-thirty o'clock. The alarm-spring 7 on being wound in the usual manner by its key 13, clears the tangentially arranged barrel stop-spring 25 as shown in Fig. 5, allowing the same to retract the barrel stop 23 so as to clear the downwardly bent inner end of the wire barrel stop-arm 22. Now when the left-hand alarm-mechanism is let off by the action of the time-train at "five o'clock in the morning," the left-hand alarm-mechanism will start running with the revolution of the alarm-spring barrel 9 from left to right and keep running until the uncoiling of the alarm-spring has progressed sufficiently far for the outer coil thereof to press against the barrel stop-spring 25 with the effect of pushing the same outward and hence projecting the barrel stop 23 into the path of the barrel stop-arm 22 the end of which will then be engaged with the barrel stop 23 and the revolution of the barrel 8 arrested.

Ordinarily the left-hand alarm-mechanism will be automatically stopped running after the alarm-spring barrel 8 has made three or four revolutions as may be determined in the construction of the clock. The alarm-spring 7 has, however, only partly run down so that at seven-thirty o'clock, when the operation of the time-mechanism lets off the right-hand alarm-mechanism, the barrel 8 will be held against rotation by the barrel stop 23 and barrel stop arm 22, while the alarm-spring wheel 44 will be rotated by power taken from the inner end of the alarm-spring 7 until the same has run entirely down. It will be seen that one alarm will be sounded after the other, by power derived from the same alarm-spring without touching the clock itself. After both alarms have been sounded, it is only necessary to wind the one alarm spring to have them repeat the performance the next morning. Of course the two alarm-mechanisms may be set to go off at the same time if there were any object in that: ordinarily they will probably be set to go off within one or two hours of each other. When the alarm-spring 7 is wound its outer coil will, as shown in Fig. 5, be entirely cleared from the barrel stop spring 25 which will then resume its normal position and thus retract the barrel stop 23 so as to clear the barrel stop arm 22, and leave the way open for the running of the left-hand alarm mechanism, when the same is released, by the action of the time-movement.

As herein shown, the barrel-stop 23 is the means employed for conserving a portion of the power of the alarm-spring for the purpose of driving the alarm-mechanism last to be let off. The means for conserving a portion of the power of the alarm-spring as thus described would take another form if the alarm-mechanism connected with the alarm-spring arbor were the mechanism chosen to be first let off, but in any event the initial uncoiling of the spring will be utilized to automatically operate the spring-conserving means whatever form they take.

I claim:—

1. In a double-alarm clock, the combination with a time-dial provided with two alarm-set dials, of two independent alarm-mechanisms connected with the respective alarm-set dials, an alarm-spring operatively connected with both of the said mechanisms for driving the same, and means for automatically letting off the said alarm-mechanisms one after the other at intervals determined at the time the said mechanisms are respectively set by the said alarm-set dials.

2. In a double-alarm clock, the combination with a time-dial provided with two alarm-set dials, of two independent alarm-

mechanisms connected with the respective alarm-set dials, a single alarm-spring the opposite ends of which are operatively connected with the said alarm-mechanisms, means for automatically letting off the said alarm-mechanisms one after the other at intervals determined at the time they are respectively set by the said alarm-set dials, and means for automatically stopping the alarm-mechanism operated by the initial uncoiling of the alarm-spring, for the purpose of conserving a portion of the power of the said spring for the subsequent operation of the other alarm-mechanism when the same is released.

3. In a double-alarm clock, the combination with a time-dial provided with two alarm-set dials, of two independent alarm-mechanisms connected with the respective alarm-set dials, a single alarm-spring the opposite ends of which are connected with the respective alarm-mechanisms, a barrel for the said spring the outer end of which is connected with it, and means mounted in the said barrel and rotating therewith for automatically stopping the rotation of the barrel and hence the alarm mechanism connected with the outer end of the spring.

4. In a double-alarm clock, the combination with a time-dial provided with two alarm-set dials, of a time-movement having a dial pinion, two independent alarm-mechanisms each including an alarm-cam driven by the said dial pinion, whereby the respective alarm-mechanisms are prepared to be automatically let off, a single alarm-spring the opposite ends of which are connected with the respective alarm-mechanisms for actuating the same when they are automatically let off, and means for automatically stopping the alarm-mechanism first let off, for conserving a portion of the power of the spring to actuate the alarm-mechanism last let off.

5. In a double-alarm clock, the combination with a time-dial provided with two alarm-set dials, of two independent alarm-mechanisms connected with the respective alarm-set dials, a single alarm-spring having its opposite ends respectively connected with a spring-barrel, and with a spring-arbor, which are respectively connected with the two alarm-mechanisms for driving the same, and a barrel-stop mounted in the said barrel, rotating therewith and operated by the alarm-spring for stopping the barrel to conserve a portion of the power of the spring for the operation of the alarm-mechanism connected with the said arbor.

6. In an alarm-mechanism, the combination with a barrel-stop arm, of an alarm-spring, a barrel therefor, a radially movable barrel-stop mounted in the said barrel and rotating therewith for engagement with the

said barrel-stop arm, and a barrel-stop spring located within and rotating with the said barrel and engaged by a coil of the said alarm-spring for being operated thereby in projecting the said barrel-stop into position to be engaged by the said barrel-stop arm.

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

WILSON E. PORTER.

Witnesses:

CLARA L. WEED,
GEORGE DUDLEY SEYMOUR.