

P. LUX.
ALARM CLOCK.
APPLICATION FILED AUG. 31, 1911.

1,029,305.

Patented June 11, 1912.
2 SHEETS—SHEET 1.

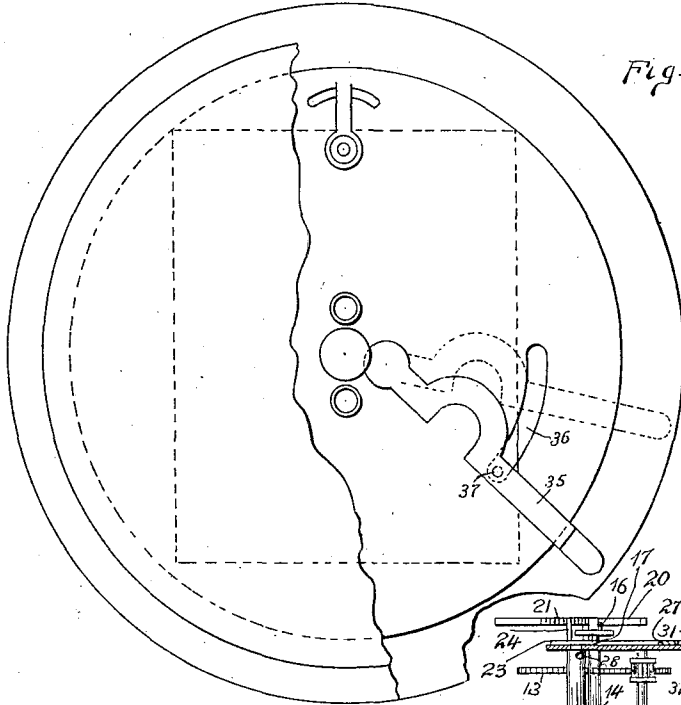


Fig. 1.

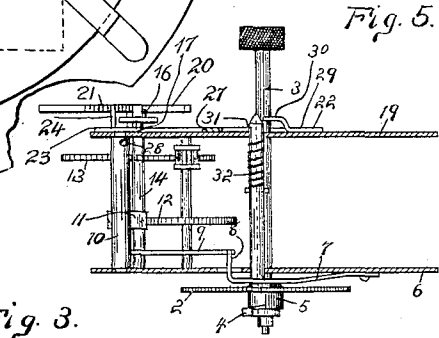


Fig. 5.

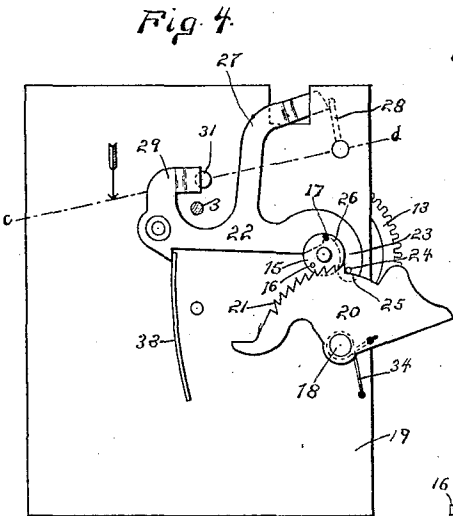


Fig. 4.

Fig. 3.

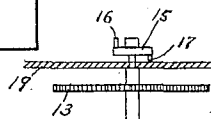
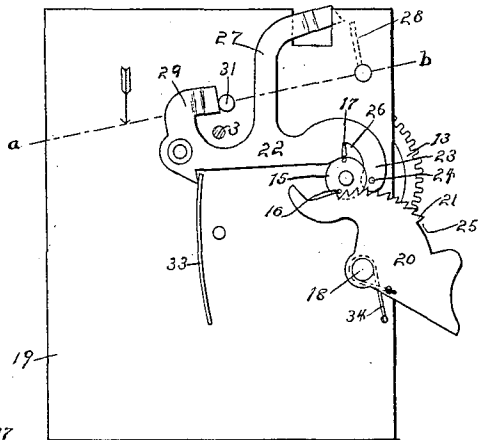


Fig. 7.

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2 SHEETS-SHEET 2.

Fig. 2

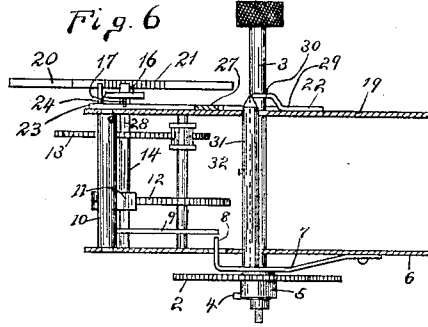
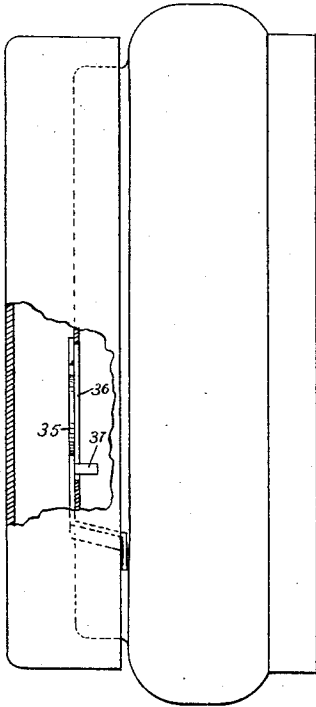


Fig. 8.

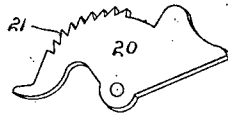


Fig. 10.

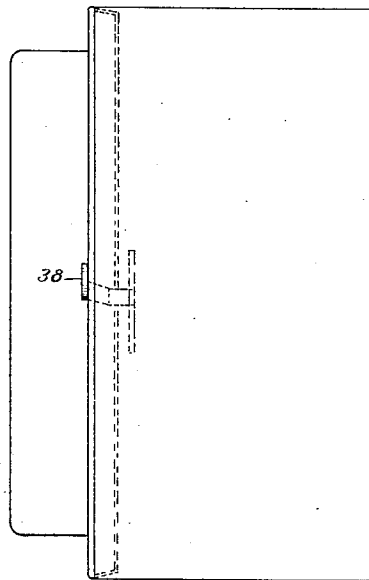


Fig. 9.

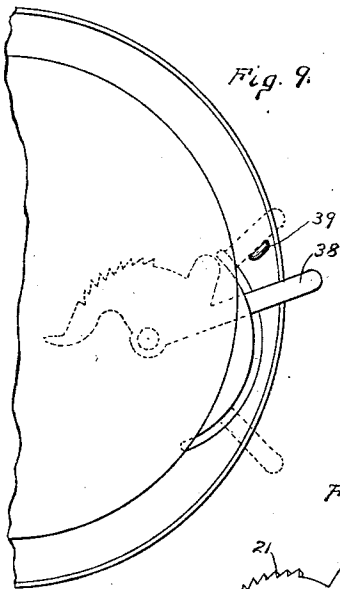
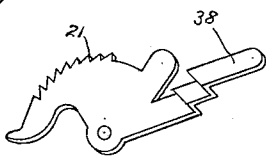


Fig. 11.



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UNITED STATES PATENT OFFICE.

PAUL LUX, OF WATERBURY, CONNECTICUT, ASSIGNOR TO THE WATERBURY CLOCK CO., OF WATERBURY, CONNECTICUT, A CORPORATION.

ALARM-CLOCK.

1,029,305.

Specification of Letters Patent. Patented June 11, 1912.

Application filed August 31, 1911. Serial No. 647,123.

To all whom it may concern:

Be it known that I, PAUL LUX, a citizen of the United States, residing at Waterbury, in the county of New Haven and State of Connecticut, have invented a new and useful Alarm-Clock; 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 the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1. rear view of an alarm clock constructed in accordance with my invention, with a portion of the bell broken away. Fig. 2. a side view with a portion of the bell and case broken away. Fig. 3. rear view of the movement, showing the alarm controlling mechanism in its normal position. Fig. 4. same view with the parts in position just after the alarm has been operated. Fig. 5. sectional view in line *a—b* of Fig. 3. Fig. 6. sectional view in line *c—d* of Fig. 4. Fig. 7. side view of the rack operating hub. Fig. 8. perspective view of the alarm rack detached. Fig. 9. broken rear view of the clock illustrating a modified form of alarm rack. Fig. 10. side view of same. Fig. 11. perspective view of the modified rack.

This invention relates to an improvement in alarm clocks and particularly to alarms applied to eight day clocks which will sound once in twenty-four hours, the object being to arrange the mechanism in close relation to the time mechanism and to provide means for arresting the operation of the alarm mechanism after a predetermined interval and also to provide means for stopping the alarm after it has started or to entirely cut it out of operation; and the invention consists in the construction hereinafter described and particularly recited in the claims.

In connection with an eight-day movement or movement to run two or more days without rewinding, I employ an alarm cam wheel 2 combined with the time mechanism to make a complete revolution once in twenty-four hours. Extending through this cam-wheel is an alarm set shaft 3 carrying a lug 4 which co-acts with the cam 5 on the alarm cam wheel 2. Secured to the front plate 6 of the movement is an alarm set spring 7

which extends back of the alarm cam wheel and terminates in a finger 8 which may extend into the path of a hammer tail 9 mounted in the alarm hammer shaft 10 which carries the usual verge 11 operating with a verge wheel 12 driven by the second wheel 13 of the alarm train. Mounted on the shaft 14 of the second wheel 13 of the alarm train is a hub 15 carrying an outwardly extending pin 16 and an inwardly extending pin 17. Pivotaly mounted on a stud 18 in the rear plate 19 of the movement is a rack 20, the teeth 21 of which are in position to be engaged by the pin 16 so that the rack may be lifted step-by-step thereby. Pivotaly mounted on the said back plate 19 is a three-arm lever 22 one arm 23 of which carries a stop finger 24 adapted to successively engage with the teeth 21 of the rack and hold it while the hub 15 is rotated and adapted when the alarm has run for a predetermined time to drop into a notch 25 formed in the rack. This stop finger 24 is lifted by the engagement of the pin 17 with the edge of the arm 23 which is also provided with a clearance notch 26 to receive the pin 17 when the stop finger 24 enters the notch 25. The entrance of the pin 17 into the notch 26 allows the three-arm lever to drop and so as to interpose its middle arm 27 in the path of a pin 28 carried by the hammer shaft 10, and thus arrest the movement of the hammer shaft and hence stop the alarm movement. It may be explained, in this connection, that the pins 16 and 17 in the hub 15 are so spaced in their relations to each other and to the stop-finger 24 mounted in the outer end of the arm 23 of the lever 22, that the pin 16 is reengaged with a tooth 21 of the rack 20 before the pin 17 has entirely lifted the stop-arm 24 out of engagement with the rack which will therefore not be left free during the gathering operation, to be swung back into its normal position by the spring 34. It may also be explained that the notch 25 of the rack 20 is a trifle deeper than the notches between the teeth 21 of the rack, the notch 25 being deep enough to permit the stop-finger 24 to fall far enough to permit the pin 17 to enter the notch 26, while the notches between the teeth 21 are not deep enough to allow the above described operation to take place. The third arm 29 of the three-arm lever 22 has a cam finger 30 extending into the path of the pointed

rear end of a spring-operated longitudinally movable lever-lifting shaft 31 arranged above and parallel with the alarm set shaft 3. This spring operated shaft 31 extends through the forward movement plate and bears against the alarm set spring 7 by which it is forced rearward, being moved forward by a spiral spring 32. The three-arm lever is moved into operative position by a spring 33, and the rack 20 is returned to its normal position by a spring 34 on the stud 18 on which the rack is mounted.

It will be understood from the foregoing that the function of the shaft 31 is to lift the three-armed lever pivotally mounted upon the back of the rear movement-plate of the clock so as to clear the finger 27 of the lever from the arm 28 of the verge-arbor and so as to raise the stop-finger 24 sufficiently above the teeth of the rack 20 to permit the rack 20 to fall, in which gravity is assisted by the spring 34, the said shaft 31 being moved longitudinally from front to rear for lifting the three-armed lever, as described, by the engagement with its flat forward end of the alarm-set spring 7 which is moved from front to rear by the lateral movement from front to rear of the alarm-cam wheel 2.

To provide for limiting the duration of the alarm, I mount an alarm-stopping lever 35 on the rear wall of the case which is formed with a segmental slot 36 to receive a pin 37 carried by the stop lever 35 which pin 37 is adapted to engage with the lower edge of the rack 20 so as to lift the same and permit the stop finger 24 to enter the notch 25 which, as before described, will stop the operation of the alarm mechanism. The stop lever 35 may also be turned to arrest the downward movement of the rack at any desired point when the alarm is set off so as to regulate the duration of the alarm. Sufficient friction may be applied to the stop lever 35 to hold it in the desired position and so that the alarm mechanism may be entirely cut out or limited as to the length of time during which the alarm shall sound. Instead of employing a stop lever, however, the rack may be formed with an arm 38 as shown in Figs. 9 and 11 and so that the rack may be directly operated in the same way as though the stop lever were employed, and if desired, a projection 39 may be thrown out of the rear wall of the case with which the arm 38 may engage so as to lock the alarm mechanism out of operation. The alarm will be set to ring at any predetermined time during twenty-four hours by the turning of the alarm shaft so as to locate the lug 4 in the proper position. When the cam 5 has reached the proper position with respect to the lug 4, the alarm cam wheel will move outward allowing the finger 8 of the alarm set spring 7 to move out

of the path of the hammer tail 9 thus releasing the alarm mechanism, and when the alarm mechanism is released the second wheel of the alarm train turns the hub 15 and this hub will continue to turn until the stop finger 24 enters the notch 25. Instead of waiting for the rack to be turned by the pin carried by the hub 15 the rack may be lifted so as to allow the stop finger to enter the notch 25 and thus stop the alarm train. As before stated, when the stop finger enters the notch 25 the three-arm lever is turned so as to bring the finger 27 into the path of the pin 28 on the alarm hammer shaft so as to temporarily lock the alarm train and hold it locked until the finger 8 of the alarm spring 7 is crowded rearward into the path of the hammer tail 9 by the inward movement of the alarm cam wheel. This inward movement of the alarm set spring crowds the spring shaft 31 rearward, forcing the pointed rear end thereof against the finger 30 of the arm 29. This rocks the three-arm lever and lifts the arm 27 out of the path of the arm 28 so that the alarm mechanism is free to operate when the alarm set spring is again out of the path of the hammer tail 9. When the alarm set spring moves forward at the time of releasing the alarm the spring 32 acts to crowd the spring operated shaft forward.

I claim—

1. In an alarm-clock, the combination with a time-movement running a plurality of days without re-winding, of an alarm-mechanism organized with the time-movement and including an alarm-cam located at the front of the said time-movement, and a lifting lever, a gathering hub, and a rack, all located upon the back of the rear movement plate of the said time-movement; means for automatically releasing the alarm-mechanism once in twenty-four hours and automatically stopping it after an alarm has been sounded for a predetermined length of time, and a manual stop for manually stopping the alarm-movement at any point within its predetermined period of operation without interfering with its regular automatic operation for its full period the next time the alarm is sounded.

2. In an alarm-clock, the combination with a time-movement running a plurality of days without re-winding, of an alarm-mechanism organized with the said time-movement and including an alarm-cam, and a longitudinally movable lifting-shaft operated in one direction by a spring, and in the opposite direction by the said alarm-cam and coacting with the alarm-mechanism to prepare the same for the re-sounding of the alarm.

3. In an alarm-clock, the combination with a time-movement running a plurality of days without re-winding, of an alarm-

mechanism organized with the time-movement and comprising a lifting-lever, a gathering-hub and a rack all located upon the back of the rear movement-plate and an alarm-cam located at the front of the said time-movement, and a longitudinally movable lifting-shaft operated by the said alarm-cam and co-acting at its rear end with the said lifting-lever to lift the same for releasing the alarm-train and the said rack.

4. In an alarm-clock, the combination with a time-movement running a plurality of days without re-winding, of an alarm-mechanism organized with the time-movement and including a three-armed lever, a gathering-hub and a rack, and an alarm-cam, and a longitudinally movable lifting-shaft automatically moved from front to rear by the said alarm-cam and co-acting at its rear end with an arm of the said lever for lifting the same.

5. In an alarm-clock, the combination with a time-movement running a plurality

of days without re-winding, of an alarm-mechanism organized with the time-movement and including a three-armed lever; a gathering hub, and a rack all located upon the back of the rear movement-plate, and an alarm-cam located in front of the front movement-plate, a longitudinally movable lifting-shaft automatically moved from front to rear by the said alarm-cam, co-acting at its rear end with the said lever, and a manual stop co-acting with the said rack for manually stopping the alarm at any point within the limit of its sounding without interfering with its full automatic operation at the next succeeding cycle in the operation of the alarm-mechanism.

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

PAUL LUX.

Witnesses:

C. W. SHADER,
WILLIAM J. LARKIN, Jr.