P. LUX.

EIGHT DAY ALARM CLOCK.

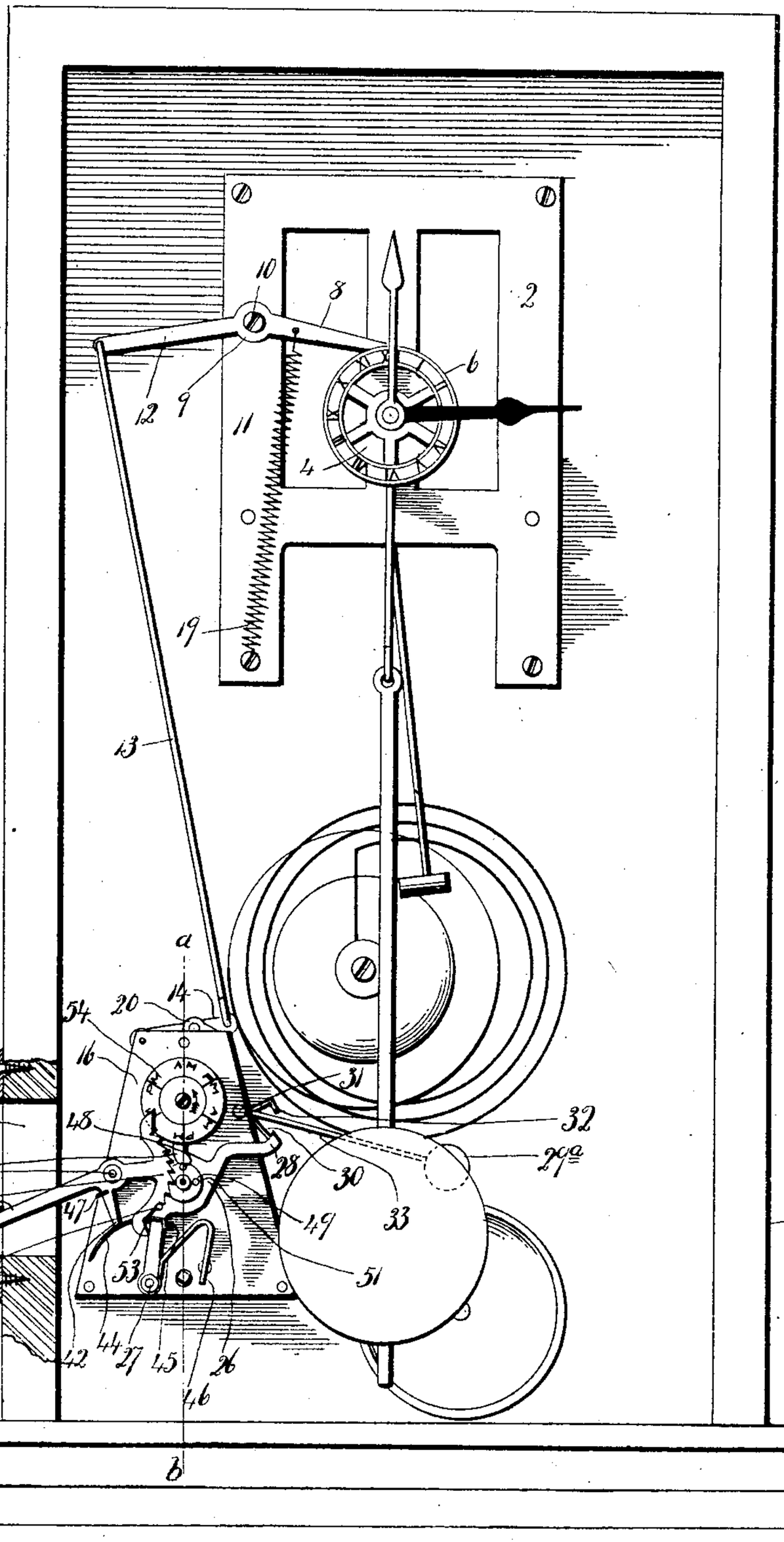
APPLICATION FILED JUNE 9, 1909.

943,312.

Patented Dec. 14, 1909.

2 SHEETS—SHEET 1.

Fig 1



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2 SHEETS—SHEET 2.

Fig. 2

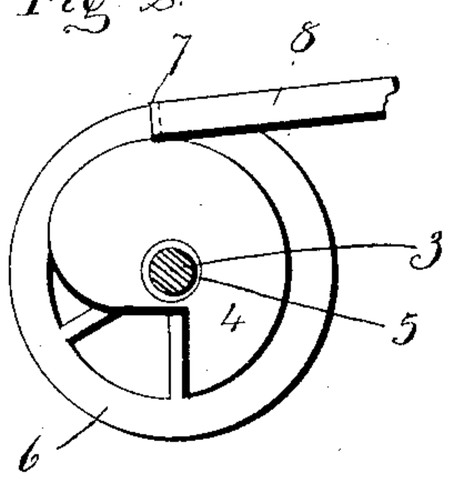


Fig 3

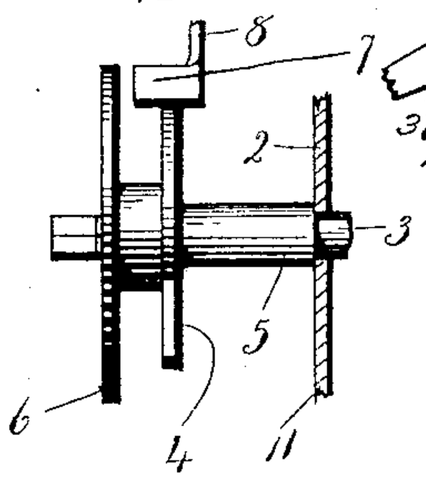


Fig. 8.

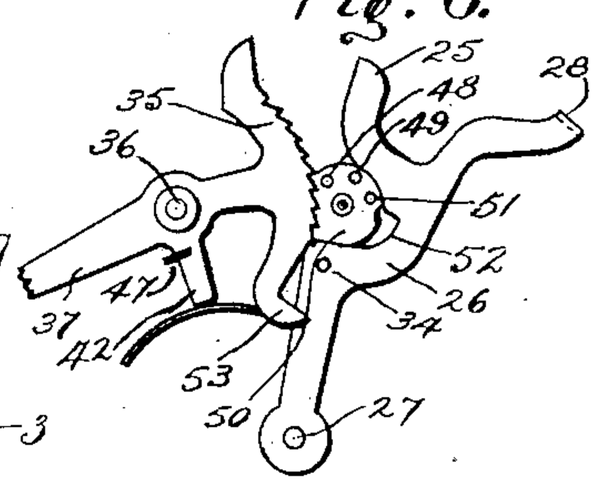


Fig 6

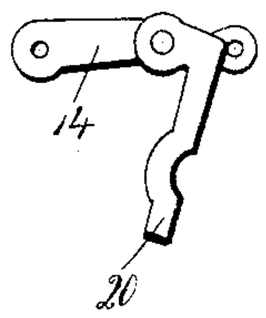


Fig 4

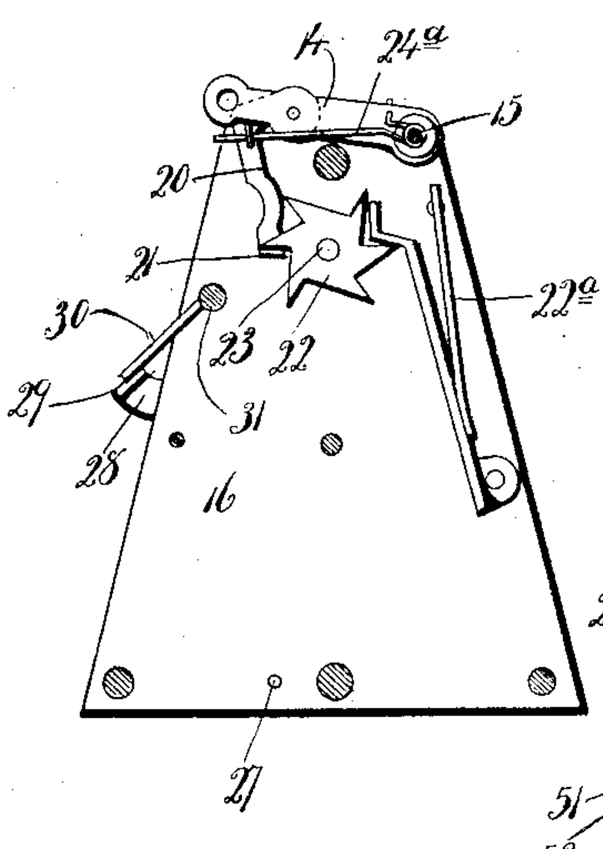


Fig 5

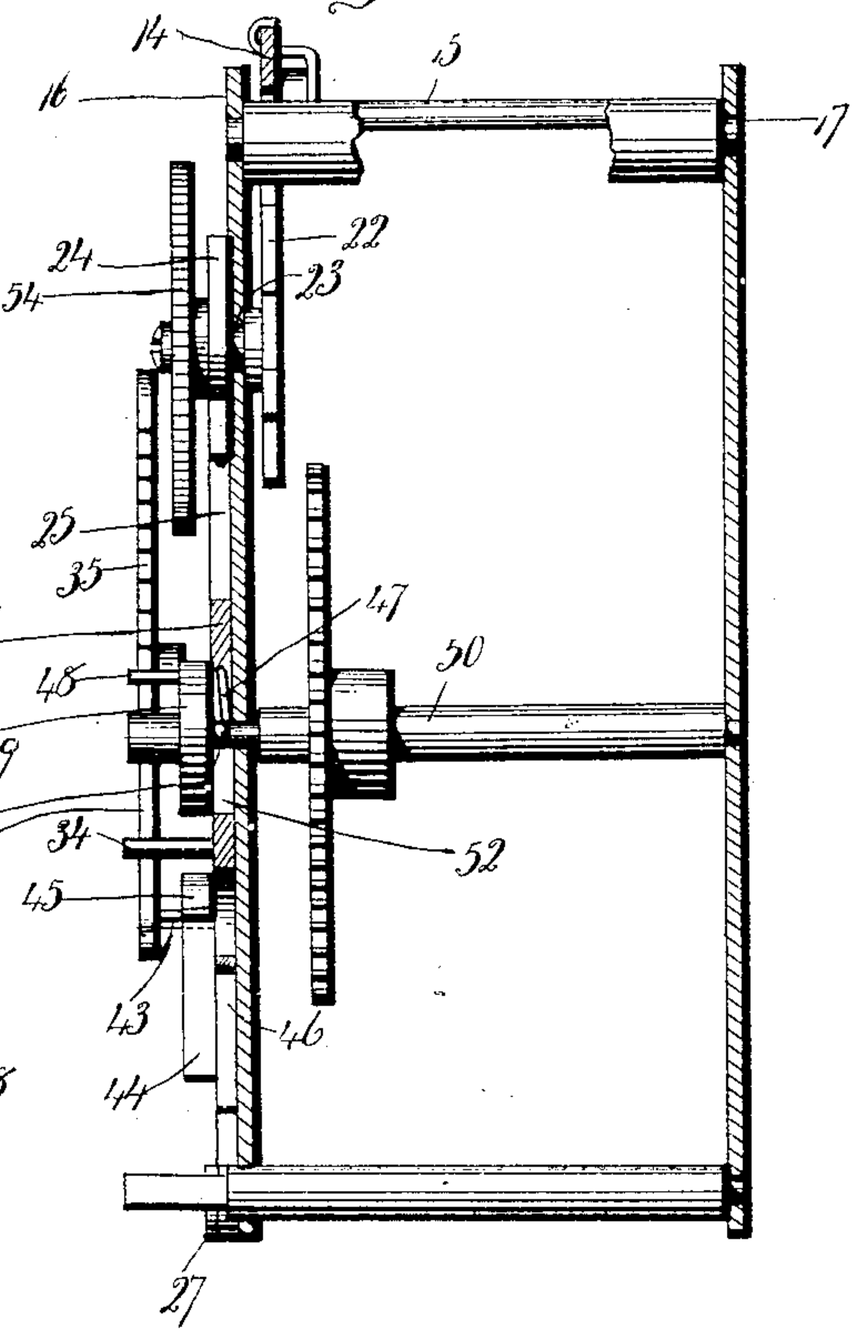
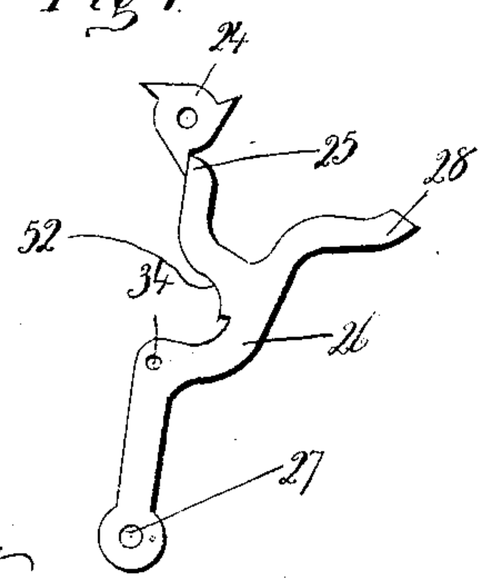


Fig 7



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UNITED STATES PATENT OFFICE.

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

EIGHT-DAY ALARM-CLOCK.

943,312. Specification of Letters Patent. Patented Dec. 14, 1909.

Application filed June 9, 1909. Serial No. 501,032.

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 Eight-Day Alarm-Clock; and I do hereby declare the following, when taken in connection with the accompanying drawings and the numerals 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 a view in front elevation of an eight-day alarm clock constructed in accordance with my invention, the front of the case and the dial being removed and one side of the case being broken away to show the slot formed in it for the outward extension through it of the operating-lever of the rack of the alarm-mechanism. Fig. 2 a view in inside elevation of the twelve-hour alarm-cam and the twelve-hour alarm-set wheel, which are frictionally mounted upon the center-arbor of the time-movement, this view also showing one end of the action-lever. Fig. 3 a view of the same parts in side elevation. Fig. 4 a view in inside elevation of the front movement-plate of the alarm-mechanism, the pillars of which are shown in section. Fig. 5 a view of the alarm-mechanism in vertical section on the line *a*—*b* of Fig. 1, this view being on an enlarged scale. Fig. 6 a detached view of the lifting-lever and pawl of the alarm mechanism. Fig. 7 a detached view of the locking-lever and action-cam of the alarm mechanism. Fig. 8 a detached view of the locking-lever, the rack and the gathering-hub, the operating-arm of the rack being partly broken away and the parts being shown with the safety-pin carried by the gathering-hub engaged with the safety-cam formed on the locking-lever to prevent the rack from stopping the time-train until after the revolution of the hub has carried the gathering-pin clear of the teeth of the rack.

My invention relates to an improvement in eight day alarm clocks of that class in which the alarm-mechanism proper is organized independently of the time-movement and located in another part of the clock-case but connected with the time-movement for being let off thereby, the object of my present invention being to produce an eight-day alarm-clock of the character described in which the alarm will be sounded once in twenty-four hours every day for eight days, with provision for shutting off the alarm while it is sounding without interfering with its automatic sounding the next day at the same hour, so that although the alarm may be shut off any day, it does not have to be reset in order to have it sounded the next day.

With these ends in view, my invention consists in an eight-day 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 employ an eight-day movement 2 which may be of any approved construction. Upon the center-arbor 3 of this movement, I locate a twelve-hour alarm-set cam 4 fixed upon the inner end of a hub 5 frictioned on the said arbor 3 and provided upon its outer end with an alarm-set dial 6. By grasping the edge of the dial 6 the same may be set with respect to the hour-hand of the clock and left in its set position. Upon the edge of the cam 2 rides a finger 7 bent forward from the end of the inner arm 8 of an action-lever 9 hung on a stud 10 in the front movement-plate 11 of the time-movement 2, the outer arm 12 of the said action-lever having attached to it the upper end of an action-lever wire 13 the lower end of which is connected with the outer end of a lifting-lever 14 mounted upon an arbor 15 journaled between the plates 16 and 17 of the alarm-mechanism which is, so to speak, an independently organized self-contained mechanism situated as shown in the lower left hand corner of the clock-case 18. A spring 19 attached to the inner arm 8 of the action-lever 9 and to the movement-plate 11 exerts a constant effort to keep the finger 7 in engagement with the alarm-set cam 4.

The lifting lever 14 has pivotally suspended from it a pawl 20 having a tooth 21 which coacts with the teeth of a star-wheel 22 fixed to the inner end of a short shaft 23 journaled in the front alarm movement-plate 16. A spring 24^a connected with the pawl 20 exerts a constant effort to swing the same inward to insure its engagement with the teeth of the star-wheel 22. The outer end of the shaft 23 carries an action-cam 24 having three teeth and therefore only half as many as the star-wheel 22 the action of which is controlled by a spring 22^a. The

teeth of the said action-cam 24 coact with the arm 25 of a locking-lever 26 hung upon a stud 27 in the plate 16 and having a locking-arm 28 turned inward at its end to form a finger 29 (Fig. 4) which coacts with a stop-wire 30 mounted in the verge-arbor 31 also carrying a verge 32 and the tail 33 of the alarm-hammer 29ª. The locking-lever 26 carries a locking-pin 34 coacting with the teeth of a rack 35 hung on a stud 36 and having a long operating-arm 37 extending outward through a slot 38 in the clock-case 18, the said slot 38 being furnished with a plate 39 formed with a vertical slot 40 offset at its lower end to form a notch 41 into which the arm 37 is laterally deflected so as to shut off the alarm altogether when desired. The rack 35 is also formed with an arm 42 turned inward to form a finger 43 (Fig. 5) engaging with a locking-spring 44 bent at its outer end to produce a shoulder 45 for coaction with the locking-pin 34, whereby the locking-lever 26 is held against being moved from right to left by its spring 46 before the rack has had a chance to fall under the influence of its spring 47. The teeth of the rack 35 are engaged for lifting the rack 35 step-by-step, by a gathering pin 48 in a gathering-hub 49 mounted upon the projecting forward end of the staff 50 of the second wheel of the alarm-mechanism.

In order that the pin 48 may be entirely cleared from the teeth of the rack 35 so as to permit the rack to fall at the end of the sounding of the alarm, I provide the gathering-hub with a safety-pin 51 coacting with a safety-cam 52 and a notch 53 formed in the locking-lever 26, the said cam 52 and notch 53 being constructed and arranged so that the locking-lever 26 will be held temporarily and the stopping of the alarm-train suspended, until the same can run long enough to entirely clear the pin 48 from the teeth of the rack 35 before the locking-lever 26 is allowed to move into the notch 53 formed below the bottom tooth of the rack. If it were not for the safety-pin 51 and the cam 52 and the notch 53, the locking-pin 34 would move into the notch 53 before the gathering-pin 48 had been carried beyond the range of the teeth of the rack. In other words, the safety-pin 51 insures a little additional running of the alarm-mechanism for the purpose of clearing the gathering pin 48 from the rack 35. The alarm-set cam 4 operates the action-lever 9 in lifting the lifting-lever 14 and pawl 20 once in twelve hours. Therefore the star-wheel 22 is moved through the distance represented by one of its teeth once in twelve hours. Every time the star-wheel 22 is turned, the cam 24 is turned a corresponding distance, but as the cam 24 has only three teeth where the star wheel 22 has six teeth, the effective movement of the cam 24 is only half as great as the movement of the star-wheel 22, so that although the cam 24 is moved once in twelve hours, it operates upon the arm 25 of the locking-lever 26 only once in twenty-four hours. In other words, the cam 24 must be moved twice in order to operate the locking-lever 26 once. Every intermediate movement of the cam 24 is without effect.

In order to advise the user of the clock of the position of the action-cam 24 at any time with respect to the locking-lever 26, I employ a tell-tale dial 54 secured to the outer end of the shaft 22, this dial being divided into six spaces corresponding in number to the teeth of the star-wheel 22, and these spaces being alternately designated A. M., and P. M., for morning and evening. This dial 54 indicates to the user just how the alarm stands at any given time. If the clock should run down, leaving any P. M. on the dial 54 uppermost, the user would grasp the dial by its knurled edge and turn it to leave an A. M. uppermost in order to insure the sounding of the alarm the next morning. Except for this dial 54 the user would not know in case the clock ran down, whether the cam 24 would operate the locking-lever 26 on its next movement or on the movement after the next.

I claim:—

1. In an eight-day alarm-clock, the combination with the time-movement thereof, of an independently organized alarm-mechanism connected therewith for operation thereby once in twenty-four hours for eight days, the said alarm-mechanism including a rack provided with means for manually stopping the sounding of the alarm without shutting off the alarm-mechanism from further automatic action.

2. In an eight-day alarm clock, the combination with the time-movement thereof, of an independently organized alarm-mechanism connected therewith for operation thereby once in twenty-four hours for eight days, the said alarm-mechanism including a rack formed with an operating-lever for manually stopping the sounding of the alarm without shutting off the alarm from further automatic action.

3. In an eight-day alarm clock, the combination with the time-movement thereof, of an independently organized alarm-mechanism connected therewith for operation thereby once in twenty-four hours for eight days, the said alarm-mechanism including a rack provided with an operating-lever extending through the clock-case for manually stopping the sounding of the alarm, and means for engagement by the said lever, whereby the alarm is cut off altogether.

4. In an eight-day alarm clock, the combination with the time-movement thereof, of a twelve-hour alarm-set dial frictionally

mounted upon the center-arbor of the said time-movement and furnished with a twelve-hour alarm-cam, and a separately organized alarm-mechanism operated every twelve hours through the medium of the said cam but effectively operated only once in twenty-four hours and including two wheels of which one has half as many teeth or operating members as the other.

5. In an eight-day alarm clock, the combination with the time-movement thereof, of a twelve-hour alarm-set dial and a twelve-hour alarm-cam frictionally mounted upon the center-arbor of the said time-movement, and a separately organized alarm-mechanism, including a lifting-lever, a pawl suspended therefrom, a star-wheel, an action-cam having half the number of teeth of the said wheel, a locking-lever operated by the said action-cam, a locking-pin carried by the said locking-lever, a rack, a gathering-hub coacting with the said rack with which the said locking-pin also coacts, and connection between the alarm-cam of the time-movement and the lifting-lever of the alarm-mechanism.

6. In an eight-day alarm clock, the combination with the time-movement thereof, of a twelve-hour alarm-set dial and a twelve-hour alarm-cam frictionally mounted upon the center-arbor of the said time-movement, and a separately organized alarm-mechanism including a locking-lever, a locking-pin carried thereby, a gathering-hub, a rack operated thereby, and a locking-spring coacting with the locking-pin from which it is disengaged by the rack; and means for periodically operating the alarm-mechanism through the twelve-hour alarm-cam driven thereby.

7. In an eight-day alarm clock, the combination with the time-movement thereof, of an independently organized alarm-mechanism including a locking-lever, a locking-pin carried thereby, a rack coacting with the gathering-pin and with the locking pin, and a safety pin mounted in the gathering hub and coacting with the locking-lever for preventing the stopping of the alarm-train until the gathering-hub has been fuly removed from the teeth of the rack in falling.

8. In an eight-day alarm-clock, the combination with the time-movement thereof, of an independently organized alarm-mechanism including two wheels of which one has half as many teeth or operating members as the other and a tell-tale dial forming a part of the alarm-mechanism and made rigid with the said wheels which are rotated by it and enabling the alarm-mechanism to be set at any time independently of the time-movement.

9. In an eight-day alarm-clock, the combination with the time-movement thereof, of an independently organized alarm-mechanism periodically operated by the time-movement and including a star wheel, an action cam having half as many teeth as the star wheel, and a tell-tale dial, the said star-wheel, action-cam and tell-tale dial being rigidly connected together for rotation upon a common axis.

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

PAUL LUX.

Witnesses:
C. W. Shader,
C. I. Griggs.