(No Model.)

3 Sheets—Sheet 1.

A. M. LANE.

CALENDAR CLOCK.

No. 473,424. Patented Apr. 19, 1892.

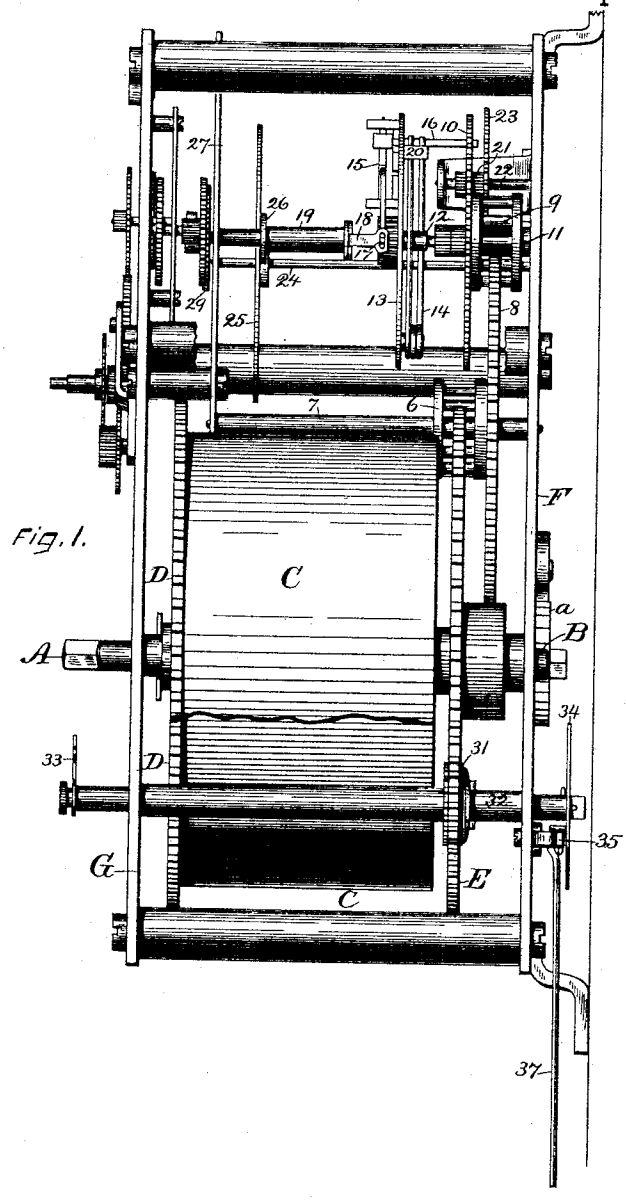

Fig. 1.

Witnesses.
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Hilmer Swanson

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(No Model.) 3 Sheets—Sheet 2.

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CALENDAR CLOCK.

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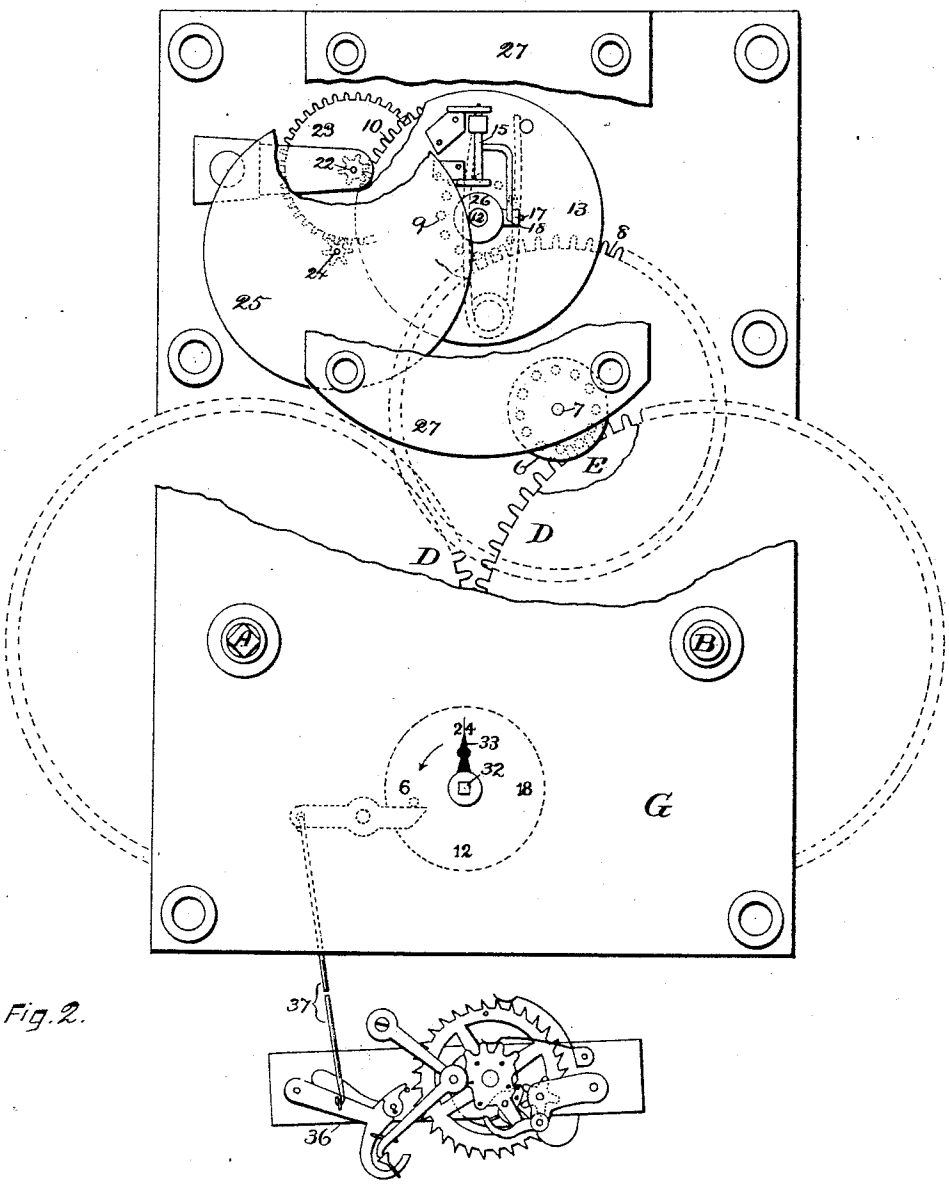

Fig. 2.

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(No Model.) 3 Sheets—Sheet 3.

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CALENDAR CLOCK.

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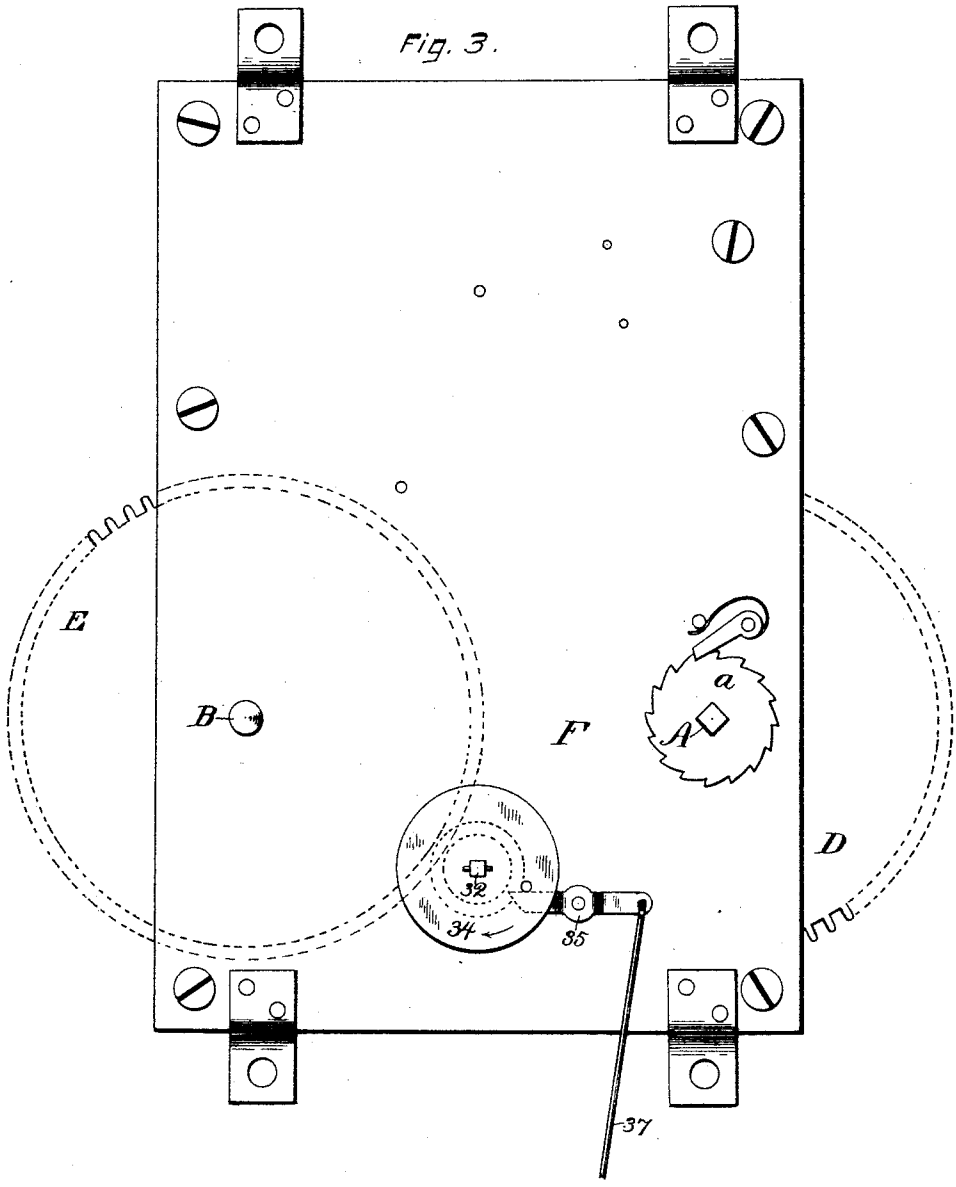
Fig. 3.



Witnesses.
John Edwards Jr.
Hilmer Swenson

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UNITED STATES PATENT OFFICE.

ALMERON M. LANE, OF MERIDEN, CONNECTICUT.

CALENDAR-CLOCK.

SPECIFICATION forming part of Letters Patent No. 473,424, dated April 19, 1892.

Application filed July 15, 1891. Serial No. 399,660. (No model.)

To all whom it may concern:

Be it known that I, ALMERON M. LANE, a citizen of the United States, residing at Meriden, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Calendar-Clocks, of which the following is a specification.

My invention relates to improvements in calendar-clocks; and the chief object of my improvement is to prevent the calendar mechanism from having any effect on the power imparted to the escapement, whereby I may make a calendar-clock to run a long time—as, for instance, a year-clock.

In the accompanying drawings, Figure 1 is a side elevation of the main portion of my clock-movement and parts for operating the calendar. Fig. 2 is a front view of the motor-train of the equalizing-movement, together with a calendar mechanism; and Fig. 3 is a rear elevation of my clock-movement and parts for driving the calendar mechanism.

I drive the escapement of my clock by an equalizing motor-train and connect the calendar mechanism so that it is driven by the principal spring of said motor-train, whereby it is separated and in a sense cut off from the escapement and pointer by the lesser spring in said equalizing-motor.

I have herein illustrated my calendar as applied to the four-hundred-day clock shown and described in my application, Serial No. 335,276, filed December 28, 1890; but it may, if desired, be applied to an eight-day or any other clock having an equalizing motor-train. I prefer to employ the equalizing-train that is shown and described in Letters Patent No. 328,724, dated October 20, 1885, to David Shive; but other trains of this class may be substituted therefor. I have also illustrated the calendar mechanism shown and described in the patent of William A. Terry, No. 99,258, dated January 25, 1870; but other calendar mechanism may be substituted therefor.

A B designates the main shaft, having a spring-barrel C rigidly secured to and moving with the engaging-wheels D D. The springs within the spring-barrels (not shown) are connected by one end to said barrels and by the other end to the respective shafts A D, the winding-shaft A being provided with the ordinary ratchet *a*. This arrangement of the springs and wheels is not of my invention. The force of the spring in both barrels is exerted upon the shaft B for driving what I may term the "main wheel" E. Instead of putting one wide spring in each spring-barrel, I prefer to employ double or triple springs in each barrel, so as to secure greater length without any increase of strength, the connection of such springs within a spring-barrel being a matter of common knowledge, and therefore requires no description.

The main wheel E engages a lantern-pinion 6 on the shaft 7, which shaft carries the wheel 8, that drives the pinion 9 of the wheel 10, which revolves on a stationary shaft or stud 11. In axial alignment with said stud 11 is a revolving shaft 12, carrying upon it a plate or disk 13, upon which disk is mounted the equalizing-spring 14 (indicated by broken lines in Fig. 2) and bell-crank lever 15. One arm 16 of said lever projects rearwardly into an opening in the wheel 10, while its other arm 17 enters an opening in the arm 18 of the sliding sleeve 19 on the shaft 12. One arm of the spring 14 bears against a stud 20 on the disk 13 and the other arm bears against the arm 16 of the angle-lever 15. The wheel 10 engages a pinion 21 on the shaft 22, and thereby drives the wheel 23, that engages a pinion on the shaft 24, and thereby drives the friction-disk 25, that is mounted on said shaft, all substantially as shown and described in said Shive patent.

The operation of the parts is to equalize the force of the mainsprings and from time to time wind up the lesser spring 14, so that the latter alone exerts its force in propelling the shaft 12. Whenever the power of the springs exerted upon the main wheel E is greater upon the wheel 10 than that required for driving the shaft 12, said wheel 10 moves faster than the disk 13 and operates the angle-lever to impinge the flange 26 of the sleeve 19 upon the friction-disk 25, thereby either stopping the movement of said friction disk and wheel 10 or holding them in check while they move slowly, thereby exerting just power enough to keep the lesser spring properly wound, the surplus force being lost by friction, all substantially as shown and described in said Shive patent.

In front of the supplemental movement-

plate 27 on the shaft 12 is a wheel 29, that drives the escapement-train and dial-wheels, said train being in a separate frame 30, like that of an ordinary watch-movement, less the spring, excepting that the shaft of the main wheel is made long enough to project for connection with the wheel 29. I consider it unnecessary to describe in detail the dial-wheels and escapement, because they are fully described in my aforesaid application and because they may be changed at pleasure without departing from the spirit of my invention so long as they are driven only by the lesser spring of the equalizing-motor.

By the side of the main wheel E is a pinion 31, frictionally mounted on the shaft 32 in any ordinary manner—as, for instance, by a spring-washer—so that said pinion will drive said shaft and attached parts, while at the same time the shaft may be turned within said pinion by the application of the requisite force. The lower portion of one of the wheels D and one spring-barrel C is broken away in Fig. 1, in order to show this shaft 32. The pinion 31 in this figure is partly hidden from view by the main wheel E. This pinion is also indicated bybroken lines in Fig. 3. At the front end of said shaft and in front of the front plate G, I secure to said shaft a suitable index 33 and small twenty-four-hour dial, said pinion and main wheel being so related to each other and the clock that said pinion and shaft will revolve once every twenty-four hours. The twenty-four dial, with whole or part of the figures indicating the twenty-four hours of a day, may be on the lower part of the main dial or on the front movement-plate and a hole left in the main dial or other provision be made for inspecting said twenty-four-hour dial when desired.

At the rear of the rear movement-plate F, I rigidly secure to the shaft 32 a pin-disk or cam 34 for acting upon a lever 35 for actuating the calendar mechanism 36 through the connecting-rod 37, as in ordinary calendar-clocks, so far as the construction of cam, lever, connecting-rod, and calendar mechanism are concerned when considered by themselves.

Heretofore in calendar-clocks the cam or pin-disk for operating the calendar mechanism has been geared from the center shaft, so that turning the pointers to set the clock will also turn said cam or pin-disk. This enabled the position of the cam to be determined by turning the pointers so that the calendar could be set to change at midnight. The power for operating the calendar mechanism also necessarily affected more or less the power imparted to the escapement.

In my clock there is no connected gearing that unites the calendar-operating disk or cam and the pointers, and hence setting the pointers does not set said disk or cam. The power imparted to the escapement is always the same whether the power on that part of the train which is driven by the principal spring or springs be greater or less, and consequently the power necessary to operate the calendar mechanism in no way affects the power imparted to the escapement.

In order to set my calendar so that it will change at midnight, it is only necessary to set the clock-pointers in the ordinary way and then turn the shaft 32 and its cam to bring the index 33 to the proper hour on the twenty-four-hour dial relatively to the time of setting the clock and midnight. For example, if the calendar be set at nine o'cock in the morning the index 33 will be set on the figure "9." If set at nine o'clock in the evening, then the index will be set at "21." Of course the pin-disk or cam 34 is so attached to the shaft that the lever 35 is let off when the index 33 stands at "24."

I claim as my invention—

1. A calendar-clock consisting of an equalizing-movement having principal and lesser springs, a calendar mechanism, and calendar-operating devices connected with the principal motive part of said movement and disconnected from that part thereof which is driven directly by the lesser spring, substantially as described, and for the purpose specified.

2. The combination of an equalizing-movement, a calendar mechanism, calendar-operating devices connected with the principal motive part of said equalizing-movement and disconnected from the time-pointers, and a device for setting said calendar-operating devices, substantially as described, and for the purpose specified.

ALMERON M. LANE.

Witnesses:
JAMES SHEPARD,
HILMER SVENSON.