MOZART, BEACH & HUBBELL.

2 Sheets—Sheet 1.

Calendar Clock.

No. 41,122.

Patented Jan. 5, 1864.

Fig. 1.

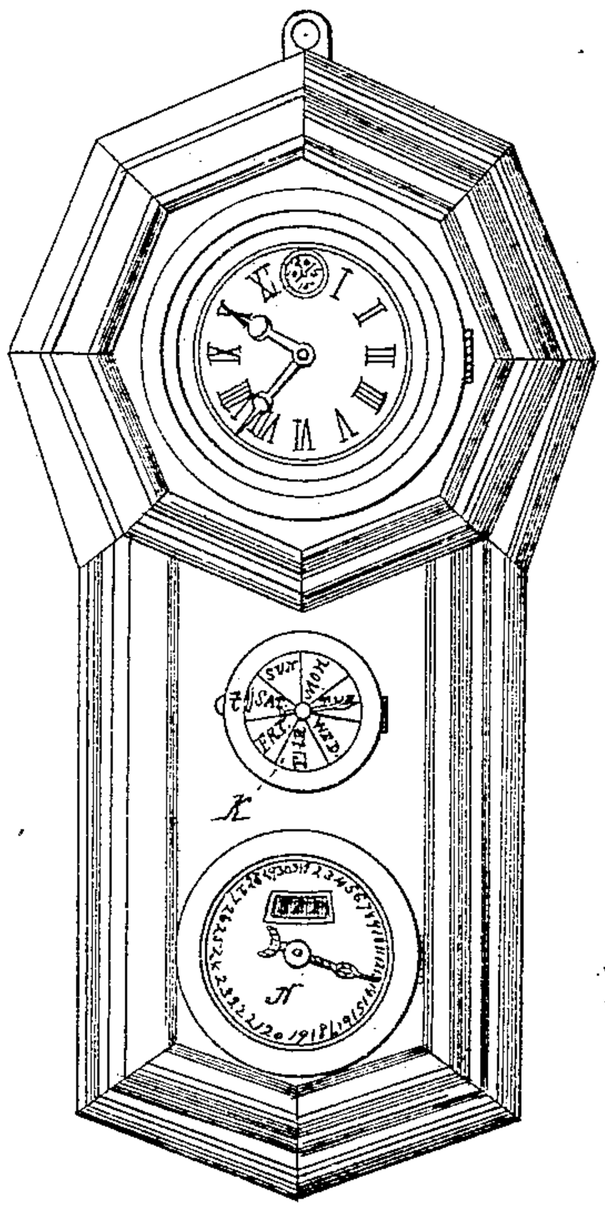


Fig. 2.

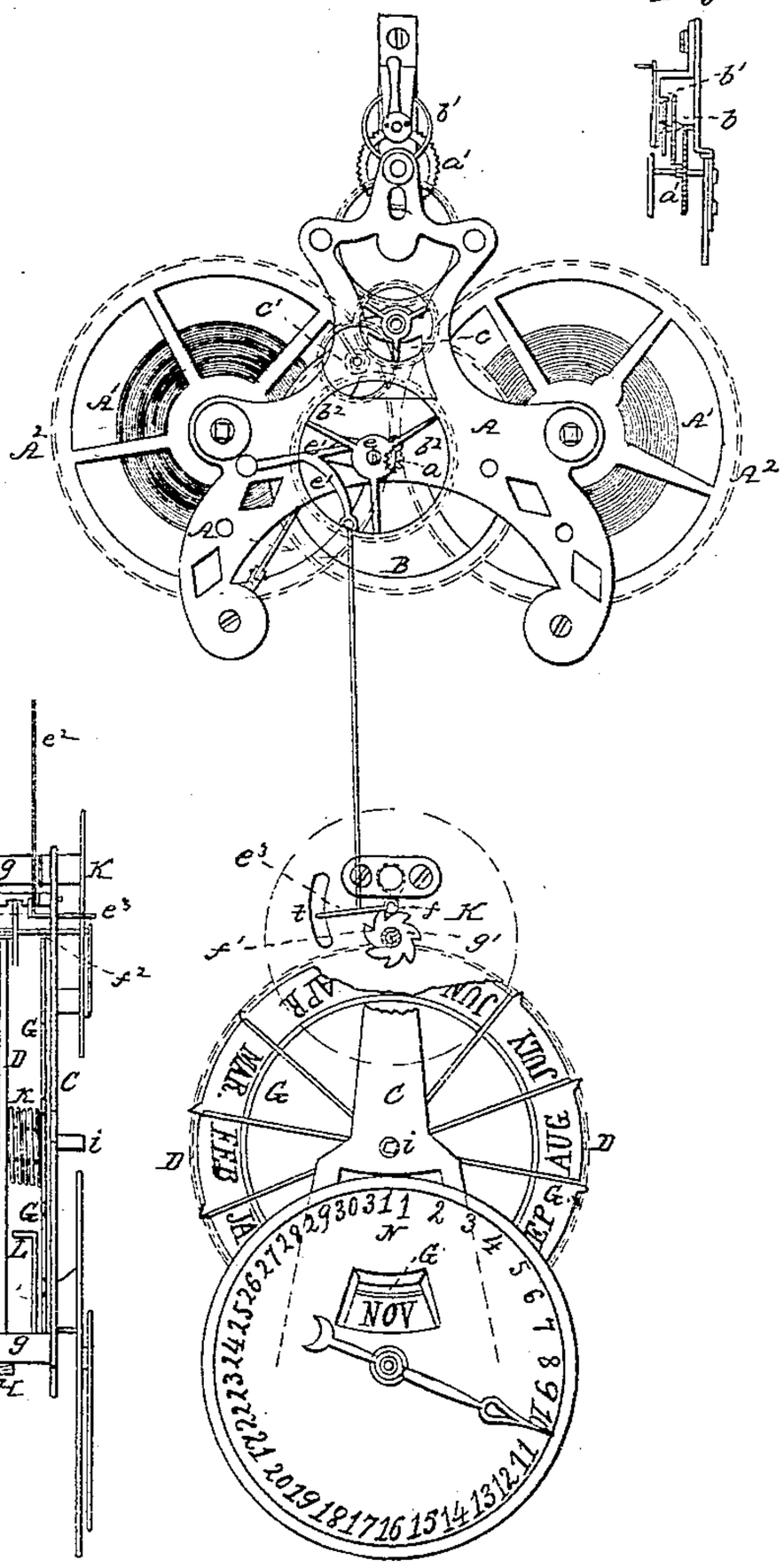


Fig. 3.

Fig. 4.

Fig. 5.

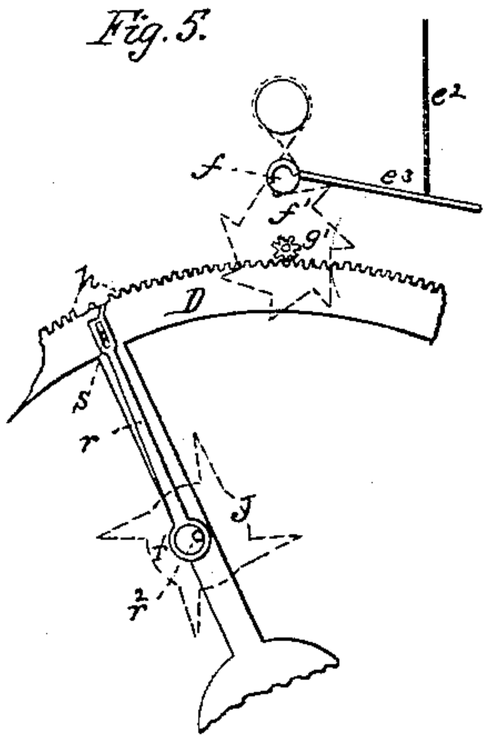
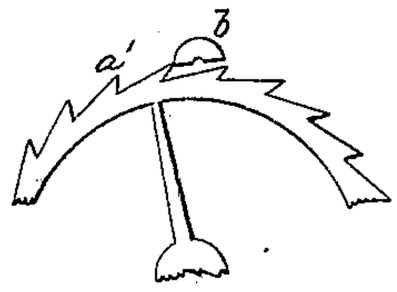


Fig. 6.



Witnesses:

R. T. Campbell.

O. Schofer

Inventors:

Don J. Mozart.

Levi Beach.

Laporte Hubbell

by their Attys

Wason Renwick & Lawrence

2 Sheets—Sheet 2.

MOZART, BEACH & HUBBELL.

Calendar Clock.

No. 41,122. Patented Jan. 5, 1864.

Fig. 7.

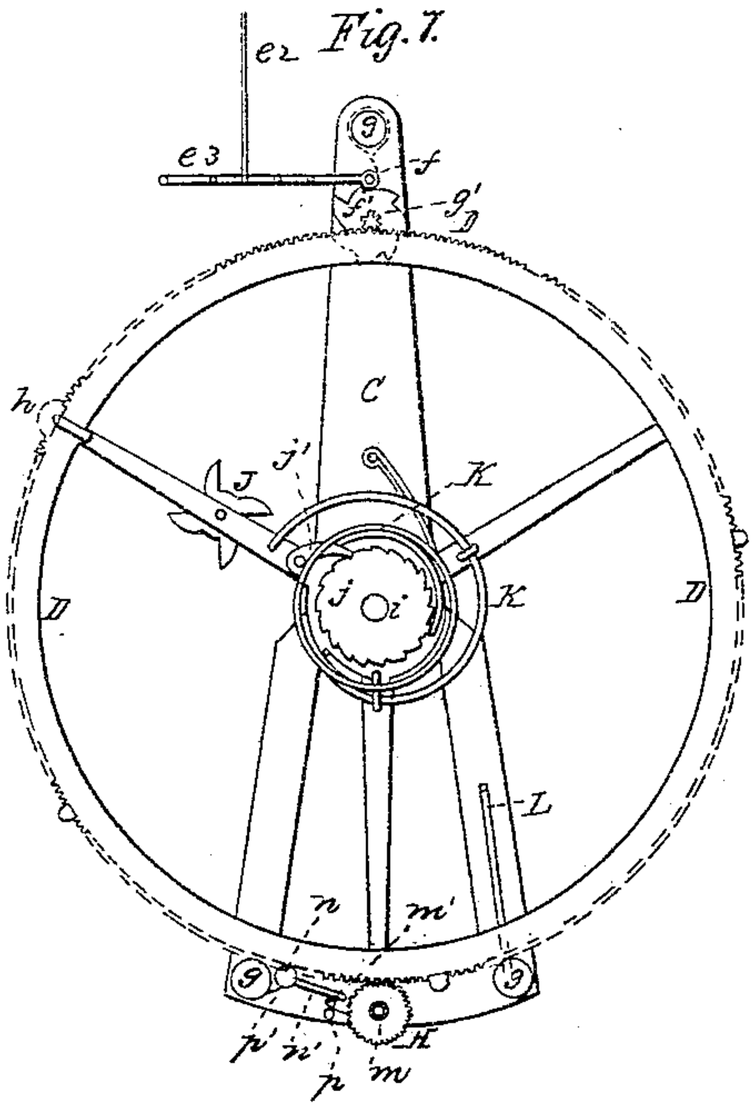


Fig. 8.

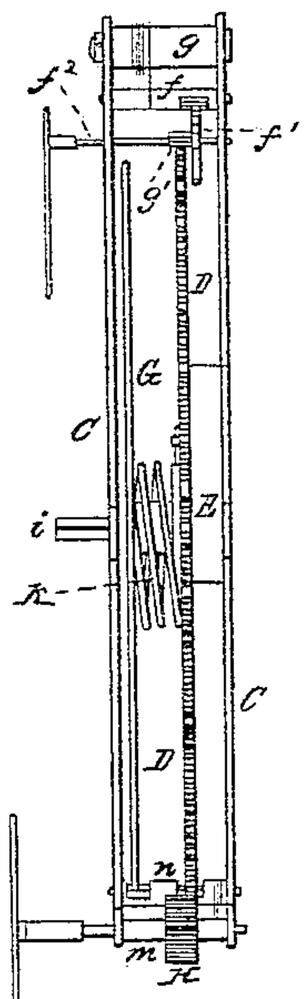


Fig. 9.

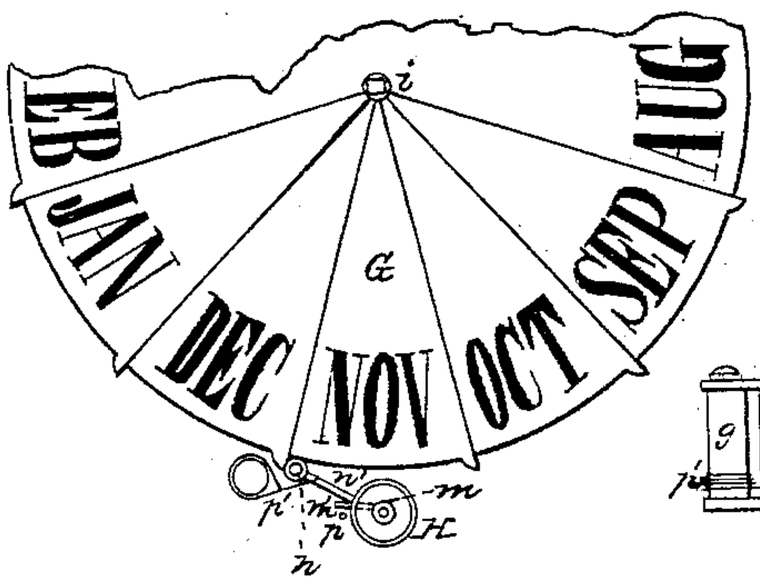


Fig. 11.

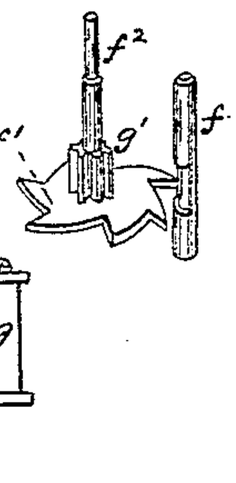
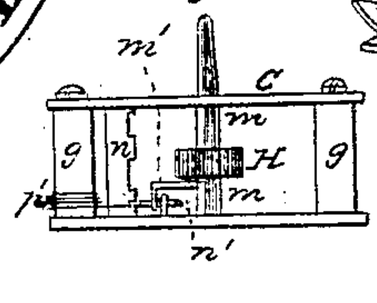


Fig. 10.



Witnesses:
R. T. Campbell
P. Schafer

Inventors:
Don L. Mozart.
Levi Beach.
Laporte Hubbell
by their Attys
Mason Fenwick & Lawrence

UNITED STATES PATENT OFFICE.

DON J. MOZART, OF NEW YORK, N. Y., LEVI BEACH, OF FARMINGTON, AND LAPORTE HUBBELL, OF BRISTOL, CONNECTICUT.

IMPROVEMENT IN CALENDAR-CLOCKS.

Specification forming part of Letters Patent No. **41,122**, dated January 5, 1864.

To all whom it may concern:

Be it known that we, DON J. MOZART, of the city, county, and State of New York, LEVI BEACH, of Farmington, in the county of Hartford and State of Connecticut, and LAPORTE HUBBELL, of Bristol, county of Hartford, State of Connecticut, have invented certain new and useful Improvements in Calendar-Movements for Clocks, &c.; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompany drawings, making a part of this specification, in which—

Figure 1 is a front or face view of our improved calendar-clock. Fig. 2 is an enlarged front view showing the clock-movements, and also the month and day-of-the-month dials, a portion of the former of which dials is broken away to show the escapement. Fig. 3 is a side view in detail of the clock-escapement. Fig. 4 is a side view of the calendar-works. Fig. 5 is a view in detail of the seven-leaf pinion day-of-the-week escapement, showing also a portion of the year-wheel and the leap-year tooth of this wheel. Fig. 6 is a view in detail of the verge of the balance-wheel of the clock and a portion of the scape-wheel enlarged. Fig. 7, Sheet 2, is a front view of the calendar-movements seen by removing the three dial-plates and one of the plates of the frame. Fig. 8, Sheet 2, is an enlarged end view of the calendar-works with the day-of-the-week and day-of-the-month dial-plates removed. Fig. 9 shows the month dial-plate escapement and a portion of this dail-plate. Fig. 10 is an end elevation of Fig. 9, showing the month-pinion and escapement-staff of the month dial. Fig. 11 is a perspective view of the seven-leaf scape-wheel, day-pinion, and staff.

Similar letters of reference indicate corresponding parts in the several figures.

Our invention relates to certain novel improvements in mechanism for registering the months, days of the month, days of the week, and leap-years in regular order, and also in clocks for operating said mechanism, whereby we are enabled to simplify and to render very compact the calendar-movements, and to operate the same without giving any additional force to the mainsprings of the clock. We are also enabled by our improvements to provide for registering leap-years, and to construct the clock to run a year at one winding, all of which will be hereinafter described.

To enable others skilled in the art to make and use our invention, we will proceed to described its construction and operation.

The clock-movements are constructed with a view to diminish as much as possible the friction on the pivot-bearings and other moving parts which impinge upon each other, and also with a view to obtain strength, with a certainty in the operation of the parts, and a good clock which will not require to be wound up but once a year. To these ends we employ for the frame to contain and support the movements three pillar-plates, which are made strong, light, and of such form that they may be cut from a sheet of metal to advantage in the saving of metal.

We use two mainsprings, A′ A′, which may be applied to operate upon their respective arbors in any suitable manner. The arbors around which the mainsprings A′ A′ are wound have the great toothed wheels A^2 A^2 applied to them by means of clicks and ratchets, in the usual manner, to enable the springs to be wound up by turning the arbors with a key, as in winding up any clock. These two toothed wheels, A^2 A^2, engage with the central pinion, *a*, which is indicated in red in Fig. 2, and thus an equality of force is communicated to each side of this pinion, which has the effect of balancing its staff and removing a large amount of friction which would necessarily occur if only one main wheel acted upon one side of the pinion.

The staff of the pinion *a* carries a large toothed wheel, B, which transmits motion to the usual train of wheel-work. (Shown in Fig. 2.)

The scape-wheel *a′* acts upon and is acted upon in its turn by the verge or staff *b* of the balance-wheel *b*, if a pendulum is not used instead of this wheel. This verge *b* is constructed with a view to obtain simplicity and a direct or positive application of a common ratchet-wheel to it, and for this purpose it is prepared with a circular tool having a beveled edge, and also an annular tongue on its edge. This tool forms a vertically-curved depression and two beveled surfaces, terminating in the center of the staff in a circular cavity, as clearly shown in the enlarged Fig 6, and fully

[redacted]

tooth of the month dial-plate G and retains the next succeeding tooth until the month-pinion again makes a revolution.

The year-wheel D in its revolution thus continually winds up the spring *k* and keeps the same always ready for giving to the dial-plate the twelfth of a revolution when it is released by the arms *m' n'* at each revolution of the month-pinion H.

It is necessary to introduce a tooth in the year-wheel D once in every four years and thus register leap-year, by adding one day to the month of February. This we do automatically by a supplemental tooth, which is formed on the outer edge of a narrow plate or rod, *r*. This rod has a circular hoop, *r'*, formed on its opposite end, which receives an eccentric, r^2, as shown in Fig. 5, Sheet 1. The eccentric r^2 is keyed to a four-pointed star or cam, J, through the axis of which passes a stud, which attaches this cam to the spoke of the year-wheel D. The cam J at every revolution thrusts out the tooth in the space *h* and causes this tooth to engage with the seven-leaf day-pinion *g'*.

The plate *r*, carrying the supplemental tooth, is slotted lengthwise, and kept in place by means of a pin, *s*, which passes through this slot and into the year-wheel rim. This pin *s* directs the tooth properly, so that it will register the extra day as it passes the day-pinion *g*. The four-pointed, cam J, which gives motion to the extra tooth, is acted upon by the perpendicular end of a stationary arm, L, which is fixed to one of the pillars of the frame plates C C, (shown in Fig. 7,) and which gives a quarter-revolution to the cam-wheel at each complete revolution of the year-wheel. Thus at every fourth revolution of the year-wheel D the extra tooth is moved out into position for registering twenty-nine days in the month of February, after which the tooth retreats, and is brought into operation again when another leap-year rolls round.

The dial-plate K, having the days of the week regularly indicated and spaced off on its face, is secured to the frame C C so that the end of the staff f^2 of the day-of-the-week pinion *g'* will pass through its center, and on the end of this shaft f^2 a hand or pointer is placed spring-tight. This hand points to the days of the week. A circular slot, *t*, is made through this dial K, concentric with the axis of the cylinder *f*, and through this slot projects the end of the vibrating arm e^3. By means of this projecting end of the arm e^3 the hands on the dial-plates can be set off so as to indicate any desired day of the week, or day of the month, or month, and this can be done without removing the dial-plate K. Below this dial-plate K is a larger dial-plate, N, having the numbers corresponding to the days of a month regularly spaced off on its face. This dial-plate is fixed to the plates C C, over the axis of the month-pinion H, and the staff of this pinion carries on its end a hand for pointing to the numbers on this dial. An opening is made through the fixed dial-plate N to expose one at a time the months as the month dial-plate revolves.

The calender-movements, thus constructed and arranged, are secured to the back-board of the clock-frame, just below the clock-movements, and the only connection between the clock and calendar is a fine wire, which lifts up the arm e^3 of the prime escapement of the calendar, as above described. Thus there will be no strain on the clock-movements in consequence of the application thereto of the improved calendar.

The operation is as follows: The number of teeth in the large trip-wheel b^2 are so regulated that this wheel makes one revolution in twenty-four hours, and at every revolution the day-of-the-week pinion *g'* is allowed to escape one tooth, which registers one day on the dial-plate K. When the day-pinion has thus escaped thirty times, if the month has only thirty days in it, a space in year-wheel D will pass the day-pinion, equal in width to one tooth. Simultaneously with this movement the arm *m'* on the month-pinion staff will trip the cylinder *n* and allow the month (corresponding to the thirty days) which it is desired to bring opposite the space in the dial-plate N to come within this space. At the same time the month-wheel will move the distance of two teeth, and its hand will jump from number 30 to number 1, thus indicating the first day of the new month. Then at every subsequent movement of the day-pinion *g'* the month-pinion will indicate or point to the days of the month on dial-plate N. Both the day and month pinions and their respective hands move simultaneously. When the February-space *h* passes the day-pinion, the month having only twenty-eight days, the month-hand will jump from number 28, on dial N, to number 1, the first day of the next month.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The application of a mainspring, E, to operate the year-wheel of the calender-movements independently of the mainspring, of the clock, substantially as described.

2. The arm e^3, in combination with the tripping-wheel b^2, when said arm extends through the face of the calendar, substantially as and for the purpose described.

3. The vibrating arm e^3, cylinder *f*, or its equivalent, and ratchet scape-wheel *f'*, for registering the revolutions of the wheel b^2, substantially as described.

4. As an element of a calendar-clock, the year-wheel D, constructed, applied, and operating substantially as and for the purposes described.

5. The manner specified of combining the year-wheel D and seven-leaf pinion *g'*, for the purpose set forth.

6. The supplemental or leap-year tooth, combined with year-wheel D, and operated

by an eccentric, r^2, cam-wheel J, and arm L, substantially as described.

7. The toothed month-dial G, applied to the arbor *i* of the year-wheel D, and operated by said wheel through the medium of a spring, K, substantially as described.

8. In combination therewith, the cylinder escapement *n*, operating substantially as described.

9. The month-pinion H, in combination with the year-wheel D, constructed substantially as described.

10. The specified manner of applying the month and day pinions g' and H to the year-wheel D, for the purpose set forth.

11. The arrangement of the three dial-plates, K G N, for registering months, days of the month, and days of the week, substantially as described.

DON J. MOZART.
LEVI BEACH.
LAPORTE HUBBELL.

Witnesses:
B. C. BRIGGS,
S. P. NEWELL.