(Model.) 3 Sheets—Sheet 1.

M. L. JACQUEMIN.

CALENDAR CLOCK.

No. 268,902. Patented Dec. 12, 1882.

Fig. 1

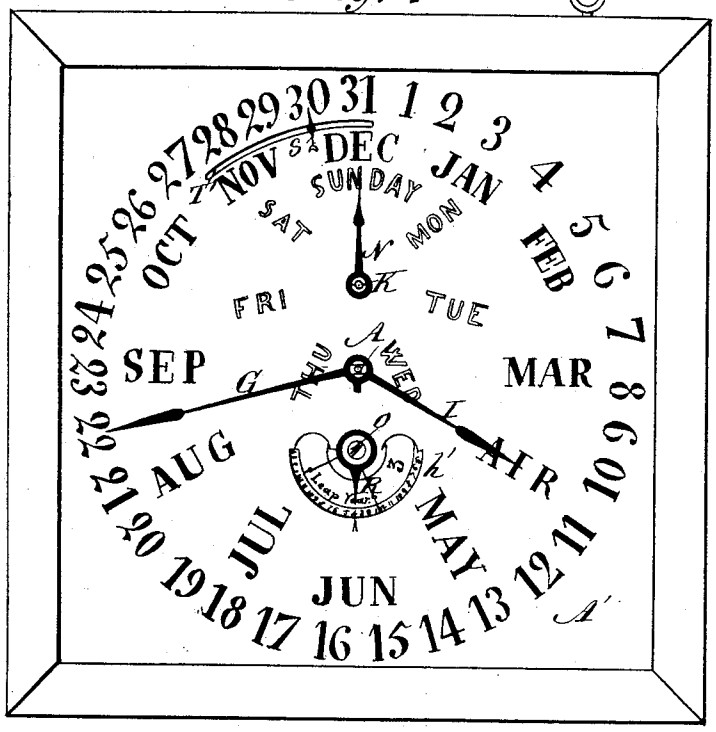


Fig. 2

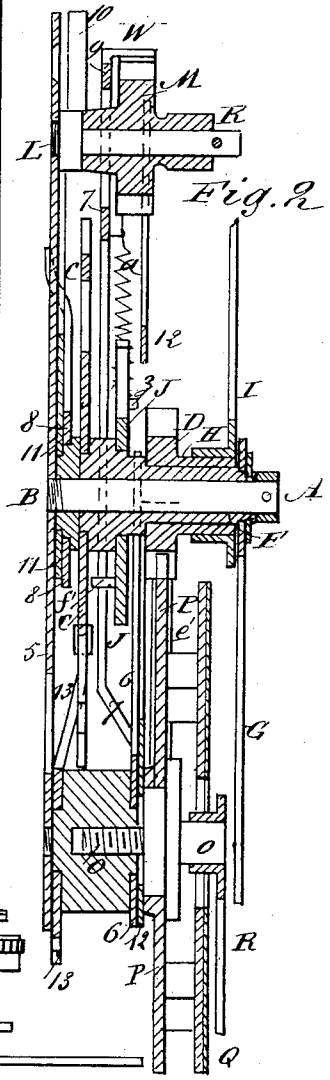
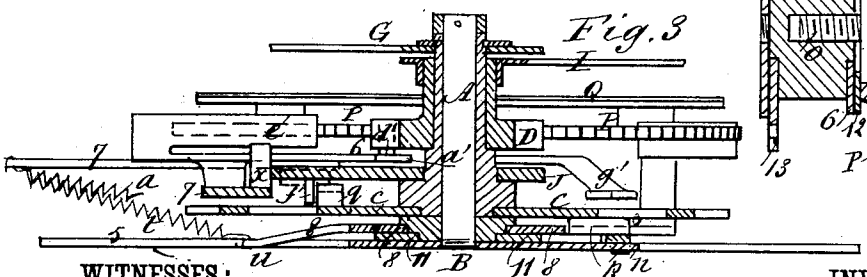


Fig. 3



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C. Sedgwick

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ATTORNEYS.

(Model.)

3 Sheets—Sheet 2.

M. L. JACQUEMIN.

CALENDAR CLOCK.

No. 268,902. Patented Dec. 12, 1882.

Fig. 4

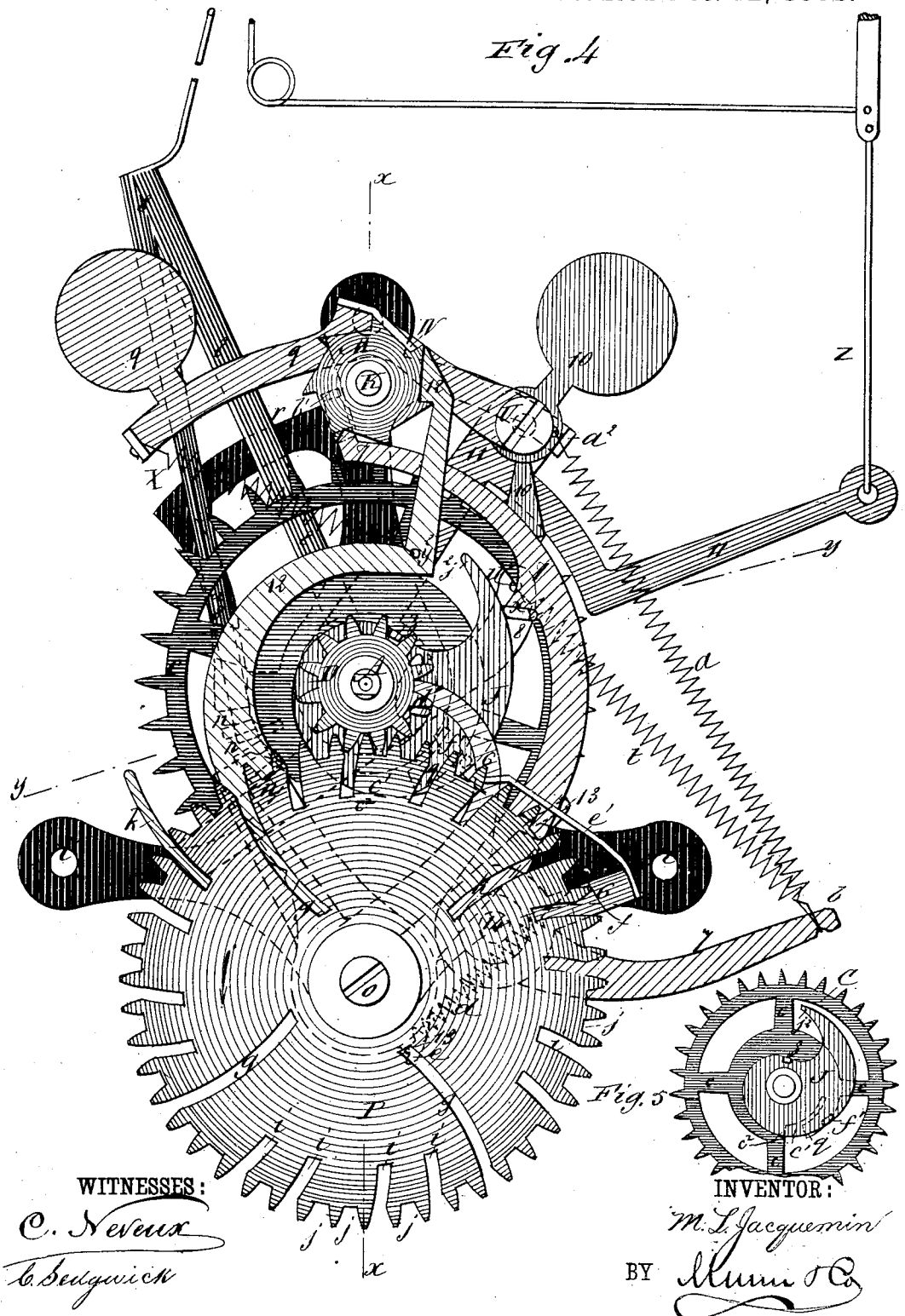

Fig. 5

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CALENDAR CLOCK.

No. 268,902. Patented Dec. 12, 1882.

Fig. 6.

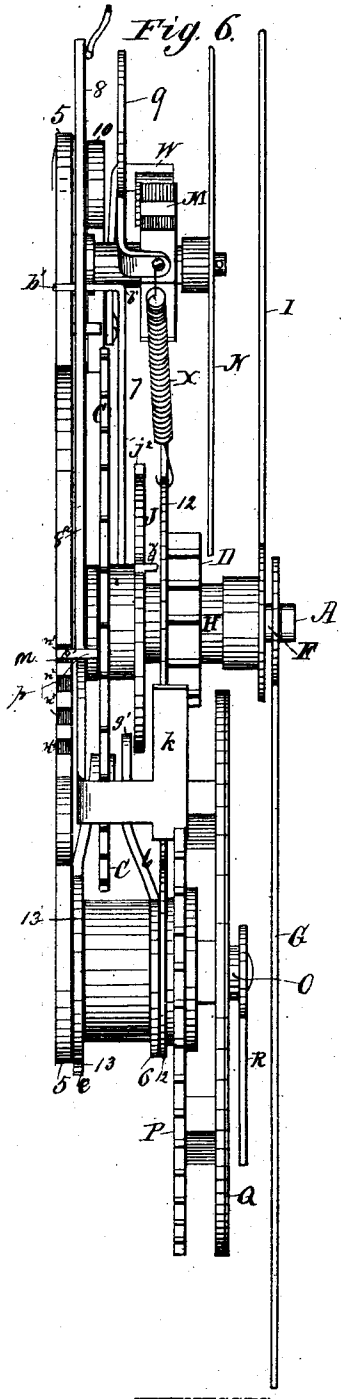


Fig. 8

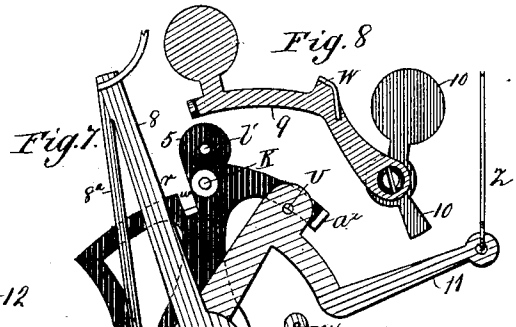


Fig. 7.

Fig. 9.

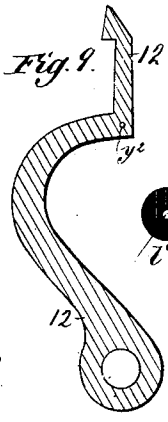


Fig. 10.

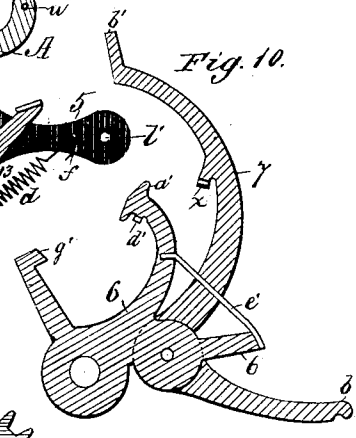


Fig. 11.

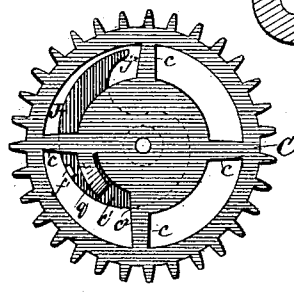


Fig. 12.

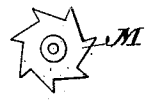


Fig. 13.

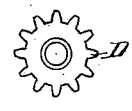
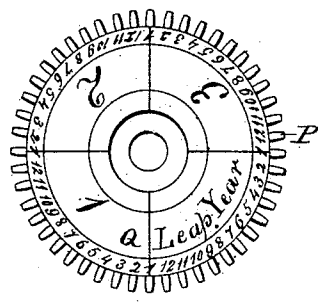


Fig. 14.



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UNITED STATES PATENT OFFICE.

MATHIAS L. JACQUEMIN, OF COUNCIL BLUFFS, IOWA.

CALENDAR-CLOCK.

SPECIFICATION forming part of Letters Patent No. 268,902, dated December 12, 1882.

Application filed May 6, 1882. (Model.)

To all whom it may concern:

Be it known that I, M. L. JACQUEMIN, of Council Bluffs, in the county of Pottawattamie and State of Iowa, have invented certain new and useful Improvements in Perpetual Calendars; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification.

This invention relates to improvements in perpetual calendars adapted to be operated by clock mechanism, or, on a smaller scale, by watches, or by any kind of time-keeper, whereby an efficient and reliable calendar is provided for automatically making the weekly and monthly changes, for showing the names and numbers of the months, for making the changes for the different numbers of days in the months and the leap-year changes, and for showing the number of the quadrennial year; and the nature of the invention consists in the employment of mechanism substantially as hereinafter fully described.

In the accompanying drawings, Figure 1 is a front elevation of the dial of the calendar. Fig. 2 is an enlarged vertical section of my calendar. Fig. 3 is a horizontal section, and Fig. 4 is an enlarged plan view with the dial removed. Fig. 5 is a detailed plan view of the date-wheel and its cam. Fig. 6 is a side elevation of my calendar, also with the dial removed. Fig. 7 is a side view of the date-wheel and the day or week ratchet-pawl-operating lever, the index-carrier, and the frame or support upon which they are supported. Fig. 8 is a side view of the combined day or week ratchet and date-wheel operating pawls. Fig. 9 is also a side view of the week-ratchet-holding pawl. Fig. 10 is a similar view of the combined rider and carrier, having the quadrennial-wheel-operating pawl. Fig. 11 is an inverted plan view of the date-wheel and its cam. Figs. 12, 13, and 14 are detail views of the day or week ratchet, the month-pinion, and the quadrennial wheel and dial, respectively.

In carrying out my invention I employ a frame, 5, suitably fastened at l' to a back plate, L, itself fastened to a frame inclosing the several parts of my calendar, and having arranged therein the dial A'. Upon this dial are arranged in a circle the numerals from 1 to 31, indicative of the number of days in one of the longest months; and within this circle is disposed in a lesser circle the names or abbreviations of the months in a year, preferably arranged to coincide with the arrangement of the numerals denoting the hours of a day, marked on the clock, watch, or other time-keeper dial. The names or abbreviations of the days of the week are arranged on the dial in a circle eccentric to and within and near the top of the circle of the names of the months of the year. The frame 5 has preferably secured to it at B the shaft A, upon which is sleeved, as at F, the date pointer or index G; and upon the sleeve E of the pointer or index G is sleeved, as at H, the month-pinion D, while upon the sleeve H of the month-pinion is sleeved, so as to turn with it, the month pointer or index I.

C is the toothed date-wheel, secured upon a hub of the date-pointer sleeve F. The date-wheel C has spokes c radiating from a disk whose diameter is greater than that of the drum of the sleeve F, to which it is secured, said disk having a portion of its surface removed or notched, as at c', causing the extension inward of one side of one of its spokes, as at c^2, while from this notch the said disk is provided with a downward-inclined tongue or cam, q, all being disposed within the diameter of the said disk.

Upon and at the opposite end of the hub of the wheel C is affixed a cam, J, the face of which describes the curve or segment of a circle that increases in diameter as it recedes from said hub to the point of said cam or segment, the purpose of which will be explained hereinafter. The cam J is provided upon opposite sides with the projections or studs f' z, one arranged contiguous to the month-pinion D, and the other, f'', at a point where it will conditionally arrest further movement of the carrier, presently described, when the projection z shall have pushed the toe of the carrier, with its projection, out of engagement with the month-pinion.

7 is the rider, which consists of a curved bar having a right-angled projection, b', at its upper end, which rides up on the upper surface of a segmental arm of the frame 5, said

rider having in its concavity and projecting from its opposite side a projection or stud, *x*, and being pivoted at its lower end to the carrier 6, eccentrically to the pivotal point of the carrier. The rider has an arm, *b*, at its lower end, to which are connected the lower ends of two springs, *a t*, the opposite end of spring *a* being connected to the combined day or week ratchet and date-wheel operating pawls 9 and 10, and that of the spring *t* to the index or pointer-carrier 8 at *u*. The carrier 6 carries a spring-pawl, *e'*, which engages with and moves the quadrennial toothed wheel P. It also has two arms, one being provided with a projection, *g'*, and the other provided with a toe, *a'*, and close to the latter, with a projection, *d'*, the function of which will be apparent hereinafter. The projection *b'* of the rider 7 is adapted to enter the slot or notch *w* of frame 5, and to strike the index-carrier 8 at *r*, as will be seen in connection with the operation of my invention.

11 is a third-class lever pivoted upon the central shaft, A, and connected by the rod Z, or other suitable medium, to the operating mechanism of the clock, watch, or other time-keeper. The upper end of the elbow of the lever 11 is guided against the frame 5, and limited in its forward stroke or movement, as against the action of the spring *a*, by the stop a^2 of said frame. The lever 11 is connected at U to the pawl 9, which has a tooth, W, engaging with the day or week ratchet M, suitably hung upon an axis, K, fixed to the plate 5. The outer or free end of the pawl 9 has a weight to hold it by gravity in engagement with the ratchet M. At the same point where the lever 11 is connected to the pawl 9 it (the latter) is connected to a gravity or weighted pawl, 10, which engages with and operates the date-wheel C.

13 is a pawl sleeved upon the quadrennial wheel stud O, which is acted upon by a spring, *d*, connected to a stud, *e*, thereof, and to the frame 5 at *f*, said pawl or detent engaging with and preventing the reaction of the date-wheel C.

8 is the index or pointer carrier for registering the number of days in each month, sleeved upon the shaft A, and having attached thereto at *u*, as before intimated, a spring, *t*. The upper end of the carrier 8 has attached to it a pointer or index, S, arranged to move on the face of the dial A', the means connecting the pointer or index to the carrier being permitted to pass through and move in a curved slot, T, in the dial, said slot coinciding with the segment of the circle of dates of the month from and including the number 28 to 31. The carrier 8 has a rearward downward-projecting spring-pawl or detent, 8^a, and an arm arranged on the same side thereof and carrying a curved tooth, *k*, the former having at its extreme lower end two projections or studs, *p p'*, arranged on opposite sides thereof and adapted, one, *p'*, to enter any one of a series of notches, *n*, made in the rear edge of the frame 5, and designated individually n' n^2 n^3 n^4, while the projection *p* will, when the projection *p'* is sprung out of its notch *n*, enter the notch or opening *c'* of the date-wheel C, as more clearly hereinafter pointed out. The curved tooth *k* is designed to enter notches or slots in the quadrennial wheel P, as hereinafter described.

P is the toothed quadrennial wheel, turning or sleeved upon the stud O of the plate or frame 5, and having upon its face a calendar, Q, as seen more fully in Fig. 14. This calendar has upon its face a circle of figures which is divided into four subdivisions or sections, indicated by the numerals 1, 2, and 3, and the words "leap year," each subdivision of said circle of figures containing the figures 1 to 12, and covering a registration of twelve months, or one year, and the four sections covering, of course, four years. For each month indicated on the calendar Q the wheel is provided with a coincident notch or slot on its periphery, said notches or slots being gaged in depth according to their respective functions. Those notches or slots which stand for the months having thirty days are designated by the letter *i*, and those for the months having thirty-one days are designated by the letter *j*, while those slots which stand for each of the three Februaries of the quadrennial period having twenty-eight days are denoted by the letter *g*, and that for the February of leap-year, or the one having twenty-nine days, is denoted by the letter *h*.

Fixed to the quadrennial wheel stud O is a pointer or index, R, registering with the number or figures on the quadrennial wheel-calendar Q.

I will now give a description of the operation of my invention.

Assuming that the pointer or stud G of the date-wheel C stands at the number 31 on the dial A', indicating the last day of the present month, the next movement of the pawls 9 and 10, actuated by the time-keeper mechanism, will cause the day-ratchet pinion M to move, as they will also the date-wheel C, causing the movement of the hands G N, whereby one will register with the day of the week and the other with the ordinal 1 on said dial, indicating jointly the day and the date. Simultaneously with the aforesaid operation of parts the month-pinion is moved to denote the incoming month, as are also the pointer or index S, indicating the number of days in said month, and the quadrennial wheel P, registering the number of the month and indicating leap-year when it occurs. The movement of the hand or pointer I of the month-pinion D and the pointer S of the carrier 8 and the quadrennial wheel P, its pointer R being stationary, is effected as follows: The date-wheel cam J having been brought around, during the sundry movements made by the date-wheel C during the thirty or thirty-one days of the past month, against and caused the outward movement of the rider 7, the notch c^2 of the wheel C, which

has been brought opposite the stud *p* of the index-carrier spring-pawl 8ª, will permit the stud or tooth *p'* of the said pawl to spring out of its notch *n'* of the series of notches *n* in the frame 5. After the retraction of the tooth *p'* of the pawl 8ª of the carrier 8 from its notch in the frame 5, and the projection or springing of its stud *p* into the notch *c'* of the wheel C, the cam J of the latter will escape from the projection *x* of the rider 7, the right-angled projection *b'* of the rider having in the meantime arrived opposite the notch *w* in the frame 5. At this juncture the projection *z* of the cam J will move in contact with and operate the toe *a'* of the carrier 6, so as to retract its tooth *d'* from the teeth of the month-pinion D, when the said pinion will be permitted to revolve by the action of the wheel P, as presently described, effecting the movement of its hand I, which will indicate the month on the dial A'. After the pinion D, with its pointer or hand, has performed its said function the tooth *d'* will again spring into the teeth of the pinion D by the action of the spring *a*. Simultaneously with the movement of the toe *a'* of the carrier 6, previous and preparatory to retracting its tooth *d'* from the pinion D, the projection *b'* will be caused to descend the slot *w* of the frame 5, opposite which it had previously arrived, as before stated, to allow the forward movement of the index-carrier 8, with its pawl 8ª, under the forwardly-pulling action of the spring *t*, to enable its pointer S to register with the required figure on the row of figures at T on the dial A'. This movement of the pointer S indicates the number of days in the current month. When the projection *z* of the cam J has escaped from the toe *a'* of the carrier 6, and upon the tooth *d'* re-entering the teeth of the pinion D, the projection *b'* of the rider 7 will spring out of the slot *w* of the frame 5 under the action of the spring *a*. This action of the projection *b'* will bring it into contact with and cause it to bear against the index-carrier 8 at *r* until another similar movement as the aforesaid is made. With the retraction of the tooth *d'* of the carrier 6 from the month-pinion D the pawl *e'* will, by the movement thus imparted to the carrier 6, to which said pawl *e'* is connected, be disposed in proper relation to the teeth of the quadrennial wheel P; and, as the said tooth *d'* is again dropped into the teeth of the wheel D, cause the movement of the said wheel one tooth, which will impart a like movement to the month-pinion, as and for the purpose above stated, as relates to the month-pinion. With the movement of the toe *a'* of the carrier 6, caused by the action of the projection *z* of the cam J, the tooth *k* of the spring-pawl 8ª of the index-carrier 8 will be lifted out of its slot or notch in the wheel P; and upon the return of the tooth *d'* of said toe of the said carrier to the pinion D, the wheel P being moved in the meantime, as above set forth, to present the succeeding notch or slot of said wheel to said tooth *k*, the said tooth *k* will again fall into the succeeding slot or notch of the wheel P, whereby, simultaneously with the indication of the day of the week, the date and name of the month, and the number of days in the month, will be registered the number of the month and when leap-year occurs in the forty-eight months designated upon the calendar Q by the pointer R of the quadrennial-wheel P.

It will have been observed that with the lifting of the tooth *k* out of its coincident slot or notch of the wheel P the tooth *p'* of the pawl 8ª is permitted to spring out of its coincident notch in the plate 5, the notch *c'* of the wheel C being brought opposite the said tooth *p'* and the stud *p* of the pawl 8ª at that instant, and that after the tooth *k* of the pawl 8ª has been again projected into another or succeeding slot or notch of the wheel P the tongue *q* of the disk of the wheel C will press the tooth *p'* into one of the notches *n* of the frame 5, and, with the imperforate or unnotched surface of the disk of the wheel C, hold it in said notch until the tooth *k*, with the tooth *p'*, is to be again retracted from their coincident notches or slots in the wheel P and the frame 5.

It will be further observed that the projection *f'* of the cam J is designed to engage with the projection *g'* on the carrier 6 when the operative mechanism shall fail to operate, to hold the carrier 6 as against further movement.

The foregoing construction and arrangement of parts is such as to permit setting the indicator-hands by turning them forward, in substantially similar manner to the setting of an ordinary clock, thus affording conveniences of immediate adjustment of the calendar to proper day and date after any possible stoppage of the actuating time piece mechanism connected to lever 11 by rod V.

Having thus fully described my invention, I claim and desire to secure by Letters Patent—

1. The combination of the month-pinion D and its pointer G, week-ratchet M and its pointer N, click-lever 11, and clicks 9 and 10, substantially as specified.

2. The combination, with the month-pinion D and its pointer G, week-ratchet M and its pointer N, click-lever 11, and clicks 9 and 10, of the dial A', having the month-day numbers and the week-day characters arranged substantially as specified.

3. The combination, in a perpetual calendar, of the monthly index, weekly index, and the index-register 8, substantially as specified.

4. The index-register 8, carrying pointer S, and mechanism for actuating the index, substantially in the manner described, in combination with the monthly and weekly index, substantially as specified.

5. The combination of index-register 8, having catch *k*, and studs *p p'* with month-pinion D, cam J, notches *n*, and month and year wheel P, substantially as specified.

6. The combination of rider 7, carrier 6, wheel C, cam J, and index-register 8, substantially as specified.

7. The wheel C, having cam J, curved lip *q*,

and gap c', in combination with index-register S and carrier 6, substantially as specified.

8. The cam J, having stud z and stud f', in combination with wheel C and carrier 6, said carrier having toe a' and click-arm g', substantially as specified.

9. The combination of carrier 6, having pawl e' and stud d', with date-wheel C and month-pinion D, substantially as specified.

10. The rider 7, in combination with carrier 6 and register-index S, substantially as specified.

11. The carrier 6, pivoted to center O, and rider 7, pivoted on carrier 6, in combination with register-index S, wheel C, and cam J, substantially as specified.

12. The index-register S, pivoted on center A, and provided with catch k and studs p p', in combination with rider 7, having catch b', frame 5, having notch w, spring t, wheel C, cam J, and wheel P, substantially as specified.

13. The index-register S, in combination with spring t, rider 7, wheels C and P, and a pointer, S, connected with index S through a slot in the dial, and relatively arranged with the month-dial, substantially as specified.

14. The combination of register index S with the quadrennial wheel P, substantially as specified.

15. The quadrennial wheel P, constructed substantially as described, with register-index S, wheel C, cam J, carrier 6, and rider 7, substantially as specified.

16. The quadrennial wheel P, constructed substantially as described, in combination with register-index S and month-pinion D, substantially as specified.

17. The quadrennial wheel P, constructed substantially as specified, in combination with register-pointer S, month-pinion D, and wheel C, substantially as specified.

18. The combination of quadrennial wheel P, quadrennial calendar Q, and the stationary pointer R, substantially as specified.

19. The quadrennial dial Q and fixed pointer R, in combination with the month, week, and day dial A′, the said dial Q being located behind dial A′ and seen through an opening in it, substantially as specified.

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