

E. PRICHARD.

Calendar Clock.

No. 28,603.

Patented June 5, 1860.

Fig. 2,

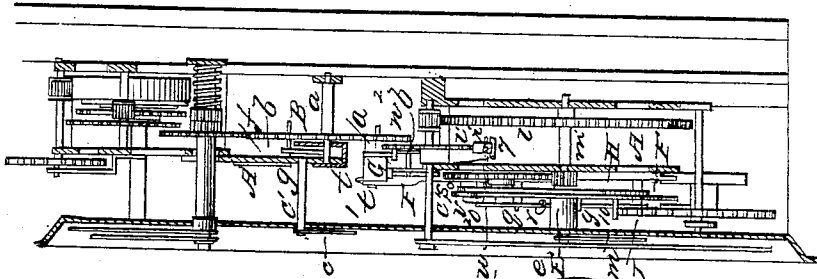


Fig. 4,



Fig. 3,

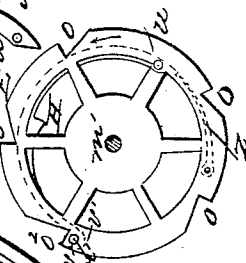
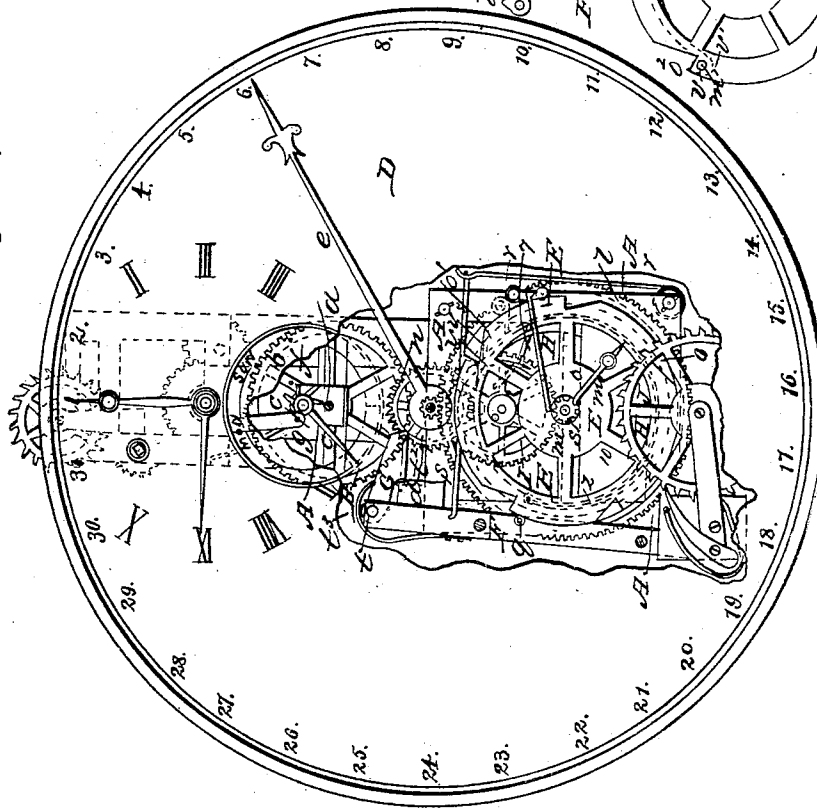


Fig. 1,



WITNESSES:

W. Kellogg
Calvin H. Baxter

INVENTOR:

Edw. Prichard.

UNITED STATES PATENT OFFICE.

EBEN PRICHARD, OF WATERBURY, CONNECTICUT.

CALENDAR-CLOCK.

Specification of Letters Patent No. 28,603, dated June 5, 1860.

To all whom it may concern:

Be it known that I, EBEN PRICHARD, of Waterbury, in the county of New Haven and State of Connecticut, have invented a new and useful Improvement in Calendar-Clocks; 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 part of this specification, in which—

Figure 1 is a front view of a calendar clock, with my improvement having the dial broken away to show the calendar movement. Fig. 2, is a central vertical section of the same. Fig. 3, is a face view of a cam which constitutes part of the calendar movement. Fig. 4, is a separate view of what I call the extension piece attached to said cam.

Similar characters of reference indicate corresponding parts in both figures.

My invention consists in a certain novel and very simple and sure means of effecting the completion of the revolution of the month wheel at the termination of the months of less than thirty one days, throughout every quadrennial period.

To enable others skilled in the art to make and use my invention I will proceed to describe its construction and operation.

A represents the framing in which the several parts of the calendar movement are supported, arranged below the clock movement. B is the wheel, which drives the calendar movement, attached to an arbor *a'*, which works in bearings in the frame A, and deriving motion from the clock movement in such manner that it completes its movement every twenty-four hours. This wheel carries two pins *a*, and *b*, the latter of which moves the index *c*, which indicates the names of the days of the week on the dial D, and the former the index *e*, which indicates the days of the month upon the dial.

The day of the week index C, is carried by an arbor *c'* which works in bearings in the framing A, above the arbor *j*, of the wheel B, and to which is secured a wheel *f*, having seven ratchet like teeth upon one of which the pin *b*, of the twenty four hour wheel A, acts once during every revolution of the wheel B to produce one seventh part of a revolution of the index C, which is always arrested in proper position, at the end of every such portion of a revolution, by means of a spring pawl *g*, which is attached

to the framing A, and which enters the spaces between the teeth of the wheel *f*.

The day of the month index *e*, is carried by the arbor *e'*, of the month wheel *d*, said arbor being arranged to rotate in bearings in the framing A, above the arbor *j*, of the wheel B, and said wheel *d*, having thirty one teeth, upon one of which the pin *a* acts at the end of every day to produce the thirty-first portion of a revolution of the said wheel in the direction of the arrow shown upon it in Fig. 1. The said wheel *d*, is arrested in proper position, at the end of every such portion of a revolution by means of a pawl *i* which is attached to the framing A, and has applied to it a spring *z*, which causes it to enter the spaces between the teeth of the said wheel, such teeth being beveled on one side to allow them to pass the pawl when the wheel is moved by the pin *a*. The arbor *e'*, of the month wheel *e*, also carries a pinion *k*, which gears with and imparts an annual revolution to a wheel *l*, having twelve times the number of teeth, on the arbor *m'*, of the index *m*, which points to the names of the month on the dial D. This arbor *m'* which works in bearings below the month wheel *d*, carries a cam E of peculiar construction which governs the operation of a lever F and attached dog G, by the latter of which a pin *n* attached to the month wheel is acted upon to give the said wheel the necessary movement to complete its revolution at the end of every month of less than thirty one days.

The lever F is fitted to work upon a fixed fulcrum, *t*, and the dog G, is attached to the lever F by a pin *t'*, and has applied to it a spring *t''*, which tends to press it downward, and keep its lower edge in contact with a stationary guide pin *t'''*.

The cam E of which Fig. 3, is a face view is of nearly circular form, but has in its circumference five notches *o*, *o*, *o*, *o*, *o'*, each having one side radial to the axis of the cam, and the other side formed with a gradual level or curve, the edges of such radial sides being at those points of the circumference where the thirtieth days of the months of thirty days and the twenty-eighth day of February would terminate if the cam were divided by radial lines into twelve equal parts representing the months and those divisions were subdivided each into thirty one parts, representing days.

All the notches are of the same depth, but that o' , representing the last day of February, which is deeper. The increased depth of the latter notch is formed by making the cam fuller on the radial side of the said notch as shown at p , in Figs. 1 and 3. The portions of the periphery of the cam between the notches, except the more prominent part p , form arcs of the same circle concentric to the axis of its arbor m' . This cam being secured to the arbor m' , completes its revolution in the direction of the arrow shown upon it in Figs. 1 and 3, once in a year, and as it rotates, a pin q which is secured in the lever F, and which may be furnished with an antifriction roller, is caused to bear upon its circumference by the action of a spring r , which is connected with the said lever by a rod s . Every time the edge of the radial side of one of the notches passes the said pin q , the said pin q , drops suddenly into a notch, and as the cam continues its rotation, the pin is moved outward from the center of the cam by the action of the inclined side of the notch, till it arrives on the top of one of the arc formed portions.

The operation of the cam, the lever F, and dog G, are as follows. As a month of thirty one days passes by, the pin a , on the wheel B operates upon one tooth of the month wheel, and gives it the same movement on the last day of such month, as upon any other day of the year, and the pin n after lifting up the dog G, and passing by it, is prevented being acted upon by the said dog in consequence of the lever F, being at the time held back by the pin q resting on one of the arc formed portions of the cam E; but at or just before the end of the last day of a month of thirty days, the pin n , having just passed the dog G, the edge of one of the four shallower notches o , passes the pin q , and allows the said pin to fall into the notch, and so permits the spring n , to draw the lever F, suddenly toward the center of the cam, far enough to make the dog, by its end coming against the pin n , give the month wheel d , a movement equal to one-thirty-first portion of a revolution, so making its monthly revolution complete. This action of the dog takes place just before the pin a , effects its daily operation, on the said wheel to move the index e , to the first day of the month marked upon the dial. A similar action takes place at the end of the month of February, when—except in February of leap years, which has twenty nine days, for which a special provision, to be presently described, is made,—the pin q , falls over the deeper notch o' , and the dog G, by its action, on the pin n , makes the month wheel d , perform three thirty-first parts of a revolution, to make its monthly revolution complete. The dog is always prevented moving the wheel d , farther than is necessary to com-

plete its monthly revolution, by the lever F, coming in contact with the guide pin t^2 .

The change in the operation of the calendar which becomes necessary at the end of February of leap year is effected by means of what I call the extension piece H, of which a separate view is given in Fig. 4, but which is shown in its place attached to the cam E, in Figs. 1, 2 and 3, and the four year wheel I shown in Figs. 1 and 2. The extension piece consists of a curved strip of metal plate, having near one end a notch or jog o^2 , of a depth about or nearly equal to the depth of the notch o' , of the cam E, and of a similar form to the said notch. It is attached to the cam E, at a point almost diametrically opposite the notch o^2 , by means of a pin u upon which it is capable of vibrating freely as far as permitted by a pin v , secured in it near the jog o^2 , and passing through a short slot V' , in the cam, the arrangement of the said pins u , and v , being such that the part y of the extension piece above the jog o^2 , may be made to form a continuation of the prominent part r of the cam, on which the pin q , rests during the month of February, beyond the edge of the notch o' , a distance equal to one three hundred and sixty-fifth part of the circumference of the cam as shown in Fig. 3. It is however only during the approach of and until just after the last day of February in leap years, that the said part, y , of the extension piece is permitted to project beyond the edge of the notch o' , the said piece being held back from the said notch as shown in Fig. 1, at all other times, by means of a spring z , applied between it and the cam.

As the end of February approaches the extension piece is brought into the position shown in Fig. 3, by the action on its inner curve y' , of a pin w , attached to the four year calendar wheel I, which is fast on a horizontal arbor 5, working in bearings between the arbors e' , and m' , and which gears with and derives a quadrennial revolution from a pinion 6, with one-fourth the number of teeth, on the arbor m' , of the annually revolving cam m' . The extension piece when brought to this position prevents the pin q , falling into the notch o' , at the end of the twenty-eighth day of February, but permits it to fall thereinto, at the end of the twenty-ninth day, and thus at that time permits the dog G to act upon the pin n , to complete the revolution of the month wheel.

In order to prevent the month wheel being carried beyond the proper position by the momentum imparted to it by the action of the dog G an extra pressure is brought upon its pawl i , at the time of the action of the said dog, by the action of a pin 9, carried by the cam E, upon a lever-like spring 7, which works upon a fixed fulcrum, 8, and which is caused by the said pin 9, to press

forcibly against the said pawl, which is relieved of this extra pressure, again by the said pin passing the spring after the month wheel has been stopped. The cam E carries another pin 10, which, once in its annual revolution, acts upon a tooth of a wheel J, which carries the index of the dates of the years.

What I claim as my invention and desire to secure by Letters Patent, is—

1. The combination of the notched annually revolving cam E, and the movable extension piece H, applied substantially as herein described, in combination with the quadrennially revolving wheel I, to control the action of a spring upon a dog G, or its

equivalent for the purpose of completing the revolution of the month wheel, and day of the month index, at the end of the months of less than thirty-one days throughout every quadrennial period.

2. The combination of the pin 9, on the annually revolving cam, or its equivalent and the lever like spring 7, applied to operate upon the stop pawl 2, of the month wheel substantially as and for the purpose herein specified.

EBEN PRICHARD.

Witnesses:

CALVIN H. CARTER,
J. W. KELLOGG.