

J. K. SEEM.
Clock Calendars.

No. 134,319.

Patented Dec. 24, 1872.

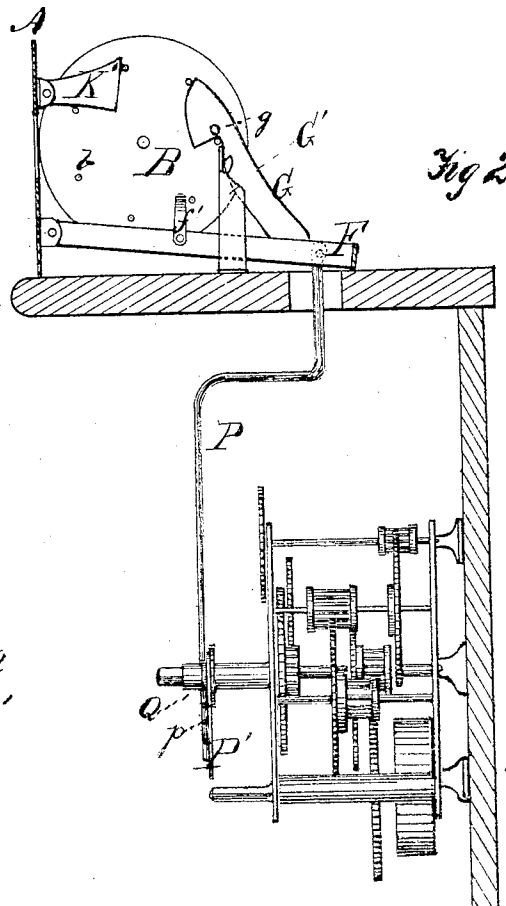
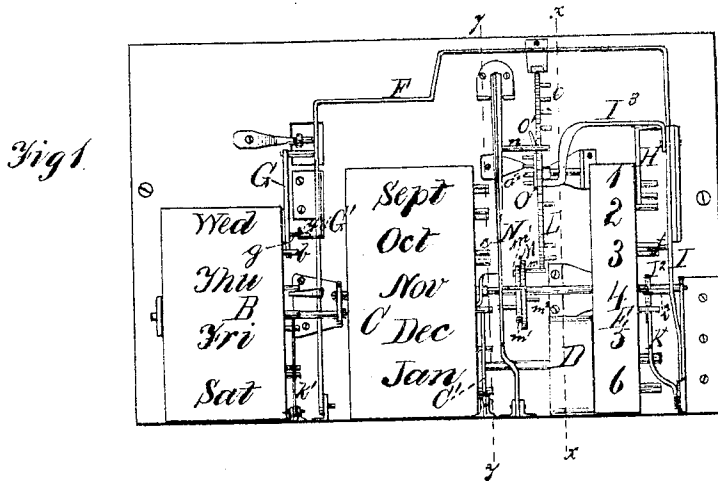
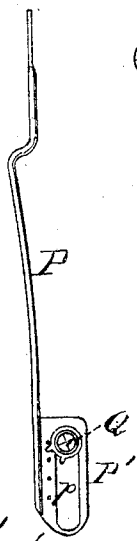


Fig 3



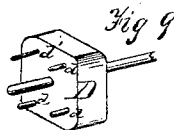
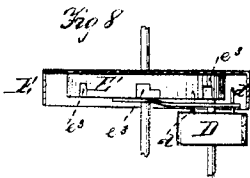
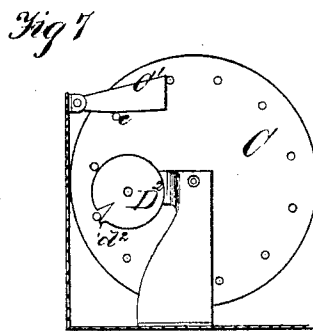
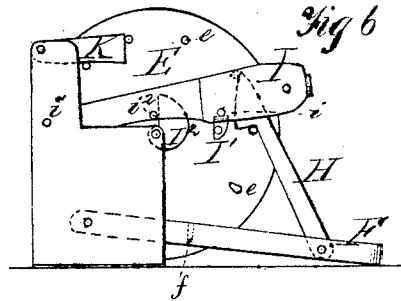
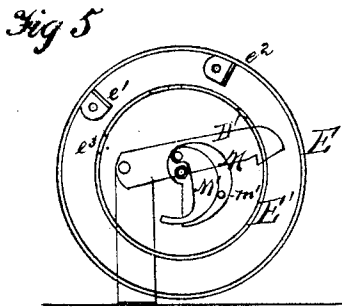
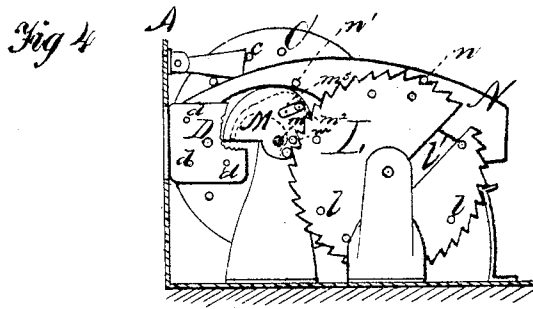
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UNITED STATES PATENT OFFICE.

JOSIAH K. SEEM, OF MACOMB, ILLINOIS.

IMPROVEMENT IN CLOCK-CALENDARS.

Specification forming part of Letters Patent No. 134,319, dated December 24, 1872.

To all whom it may concern:

Be it known that I, JOSIAH K. SEEM, residing at Macomb, in the county of McDonough and State of Illinois, have invented certain Improvements in Clock-Calendar, of which the following is a specification:

The nature of my invention consists in certain novel combinations in the mechanism of a perpetual calendar for all descriptions of clocks, which are so fully explained in the following description and so specifically designated in the claims as to require no detailed preliminary statement.

Figure 1 is a plan view of my improved perpetual calendar, the inclosing-case having been removed to expose the mechanism. Fig. 2 is a vertical section of the calendar, showing its attachment to a clock. Fig. 3 is a front elevation of the connecting-rod between the clock-work and the calendar, showing the rack and sectoral pinion by which it is operated. Fig. 4 is a vertical transverse section of the calendar in a plane indicated by dotted line *x x* in Fig. 1. Fig. 5 is an elevation of the unit-wheel and the cam which operates the drop acting in conjunction with the year-wheel. Fig. 6 is an end elevation of the calendar, seen from the end where the unit-wheel is located. Fig. 7 is a vertical transverse section taken in a plane indicated by dotted line *y y* in Fig. 1. Fig. 8 is a sectional plan view of the unit and decimal wheels. Fig. 9 is a perspective view of the decimal-wheel.

The same letters of reference are employed in all the figures in the designation of identical parts.

The mechanism of the calendar is inclosed in a suitable case, the face-plate A of which is provided with three slots or windows, behind which the several wheels for indicating the dates are arranged. The names of the week-days are printed upon the rim of the wheel B, those of the months upon the rim of the wheel C, and for the numerical designation of the days of the months a decimal-wheel, D, and a unit-wheel, E, are employed, the former being divided into four equal spaces upon its surface, one of which is left blank, while the others contain, respectively, the numerals 1 2 3. The surface of the unit-wheel is divided into eleven equal spaces, designated by the numerals 1 1 2 3 4 5 6 7 8

9 0, two 1s being used to enable it to register the 1st of a month after having, in connection with the decimal-wheel, indicated the 31st. The calendar is set in motion by a drop, F, which is in turn operated by means intermediate between it and the clock-work, which will be hereafter described. The drop F, having the bent form, best seen in Fig. 1, is pivoted by its legs to some stationary parts of the frame-work near the face-plate A, and carries on the leg adjacent to the day-wheel B a pivoted hook, G, and upon the leg contiguous to the unit-wheel E a hook, H. The day-wheel B is constructed with seven laterally-projecting studs, *b*, and the unit-wheel E has eleven similar laterally-projecting studs, *e*. These studs *b* and *e* are successively engaged by the hooks G and H of the drop F, and through them the wheels B and E are operated, in unison, at midnight of each day. As the unit-wheel is provided with two 1s in succession, it becomes necessary to advance it the distance of two spaces—namely, from the 0 to the second 1—once during each revolution, except at the end of every month having thirty-one days, at which times the wheel is advanced regularly from the 0 to the first 1. The skipping of the first numeral 1 is accomplished at the end of every tenth day, with the exceptions alluded to, by means of a drop, I, and a projection, I¹, on the unit-wheel, a stud, *i*, on the former coming in contact with the said projection I¹ (at the time when the main drop is elevated and just before it falls to advance the day and unit wheels) during its descent, causing the advance of the unit-wheel the distance of one space independent of the action of the main drop F. The drop I is pivoted, at *i*¹, on the frame-work, and is supported upon the shaft of the unit-wheel when in a position of rest. It is elevated by means of a cam, I², which is fast upon the spindle of the unit-wheel and revolves in the path of the stud *i*² on the drop once during each revolution of said wheel, the cam having substantially the form illustrated in Fig. 6, and being so arranged that its point shall escape from under the stud *i*² the moment the main drop F completes the advancement of the unit-wheel, so as to expose the 0 thereon. The stud *i* of the drop I, which at once descends, will come in contact with the projec-

tion I^1 on the unit-wheel, but the wheel, being locked by the stop f on the main drop F , standing directly before one of the studs b of the wheel, will not be turned until the main drop has been elevated to nearly its highest position. This movement elevates the stop f above the stud b , unlocking the wheel, which at once, yielding to the weight of the drop I , turns on its axis so as to bring the first numeral 1 into view. Shortly after this action the main drop F falls, advancing the wheel another step, so as to expose the second numeral 1. The stud b next succeeding the one standing before the stop f is made flat, as shown in Fig. 6, so that it shall come in contact with the stop f as the wheel turns, preventing its being carried too far, however. At the highest elevation of the main drop F the stop f will be above the flattened stud, so as to permit of the proper advancement of the unit-wheel by the main drop. Pivoted latches K and K' are employed to prevent the rotation of the unit and day wheels in the wrong direction; and a fixed stop, f' , on the leg of the main drop adjacent to the day-wheel, locks the latter after each advancement in manner like the stop f does the unit-wheel. The decimal-wheel D is actuated by the unit-wheel through the medium of one long projection, e^1 , and one short projection, e^2 , on the latter, and three short studs, d , and one long stud, d^1 , on the former. The long projection e^1 comes in contact with one of the short studs d at the end of every ninth, nineteenth, and twenty-ninth day of every month, and the unit-wheel in passing forward one step turns the decimal-wheel one-quarter of a revolution, successively bringing into view its numerals 1 2 3. At the end of every month, and during the time the unit-wheel advances from the first to the second numeral 1, the short projection e^2 comes in contact with the long stud d^1 and gives the fourth quarter of a revolution to the decimal-wheel, bringing into view its blank space. The studs d and d^1 project beyond an annular ring, E' , on the unit-wheel, and the decimal-wheel, turning upon an axis eccentric to that of the unit-wheel, the studs d and d^1 come, successively, in contact with the annular ring E' upon its exterior side, and the latter thus constitutes a lock against the rotation of the decimal-wheel except at the proper times for its rotation, when slots e^3 in the ring E' are brought opposite to the stud which was locked at the time, through which the stud passes as the decimal-wheel is turned. This slotted ring E' forms a lock against the rotation of the decimal-wheel in one direction. A pivoted latch, D^1 , engages with its studs, and prevents it from turning in the opposite direction. The spindle of the decimal-wheel extends to within close proximity of the month-wheel C , and carries on this end a small disk, D^2 , so disposed that its periphery travels between some two studs, c , twelve of which project laterally from the month-wheel C . Thus arranged, the disk D^2 forms a complete lock against the independent rotation of the month-

wheel. A latch, C' , is, however, employed in addition to prevent rotation in one direction. The disk D^2 has a spur, d^2 , which at the end of every month comes in contact with one of the studs c and advances the month-wheel the one-twelfth of a revolution during the advancement of the unit-wheel from the first to the second numeral 1, there being a notch of suitable depth in the edge of the disk D^2 , in advance of the spur d^2 , which notch receives the respective stud on the month-wheel and permits its advance. At the end of every month having thirty-one days it becomes necessary to suspend the action of the drop I upon the unit-wheel. This is effected by studs l on the index or year wheel L passing under a crooked arm, I^3 , on the drop I , after it has been elevated by the cam I^2 , and supporting the said drop in its elevated position until the end of the tenth day of the following month, at which time the stud l escapes from under the arm of the drop and permits it to act as heretofore described. The wheel L makes one revolution each year, and receives thirty-six impulses to make it, from a finger or cog, m , on the cam M , which is fastened upon the spindle of the unit-wheel. Its projecting studs l are properly disposed so that one shall be in position for the support of the arm I^3 of the drop I at the end of every month having thirty-one days. At the end of February of every year other than leap-years the wheels D and E must be advanced from the 28th to the 1st during one operation of the main drop F . This result is obtained by means of a drop, N , the stud n of which ordinarily engages the teeth of the year-wheel, but on the 28th of February of each year comes opposite to a deep slot, n' , in the year-wheel, so as to permit the outer end of the drop to descend a sufficient distance to cause it to turn the unit-wheel the distance of two spaces by coming in contact with a projecting stud, m^1 , on the cam M on the spindle of said unit-wheel. At the completion of this advancement of the unit-wheel the cam I^2 escapes from under the drop I , and the latter performs its usual office of advancing the unit-wheel the distance of another space. The decimal-wheel, of course, turns with the unit-wheel, as usual, during these operations. The cam M , turning with the spindle of the unit-wheel, revolves under the stud n' of the drop N , and, slightly raising the latter, holds it in an elevated position while the year-wheel is advanced by the cog m on said cam. The periodical escapements of the point of the cam M from under the stud n' are so arranged that one such escapement will take place on the end of the last day of each February, ordinarily at the conclusion of the 28th day, but in leap-years on the 29th day. To sustain the drop in its elevated position during the 29th day of February in leap-years, an arm, M' , is pivoted to the cam M , which arm is projected the proper distance beyond the point of the cam during the month of February in each leap-year by means of the arm O^1 on the leap-year wheel.

O. The latter is hung upon a stud on the face of the year-wheel L, and has four laterally-projecting pins, *o*. The leap-year wheel receives one-quarter of a revolution during each revolution of the year-wheel by its pins *o* coming successively in contact with a fixed arm or standard, O². The arm M' is loosely pivoted to the cam, and it is so disposed that when the point of the cam has reached its highest elevation it shall not project beyond said point, except when its pin *m*² is brought into contact with the arm O¹ of the leap-year wheel. The pin *m*² plays in the slot *m*³ of the cam, which limits the movements of the arm. The main drop F is elevated to cause its hooks G and H to advance to the succeeding pins or studs on the day and unit wheels by means of a rod, P, which is pivoted at one end to the main drop F, and carries at its other end a loop, P', embracing the spindle of the hour-wheel of the clock. A sectoral pinion, Q, on said spindle engages with the rack *p* on the loop of the rod P, near the end of every revolution of the hour-wheel, or between eleven and twelve o'clock at noon and between eleven and twelve o'clock at night. By the revolution of the sectoral pinion Q, completed at noon, the main drop F is elevated about half way, and a stud, *g*, on the hook G falls at this time into a notch or hook, *g'*, on a fixed standard, G', to hold the drop F suspended until the cogs of the sectoral pinion come around again at night and elevate the main drop to its highest position. The hook G is so arranged that during the latter operation its stud *g* will fall behind the standard G', so as to offer no obstruction to the descent of the main drop F, which takes place the moment the cogs of the sectoral pinion become disengaged from the rack *p*, exactly at twelve o'clock at night.

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

1. In a calendar, a unit-wheel divided into eleven equal-numbered spaces, two successive ones of which are marked by the numeral 1,

in combination with a decimal-wheel divided into four equal spaces, respectively, left blank, and numbered 1 2 3, operating substantially as specified.

2. The combination of the unit-wheel E, projections *e*¹ and *e*² thereon, decimal-wheel D, and studs *d* and *d*¹ thereon, substantially as and for the purpose specified.

3. The combination, with the studs *d* and *d*¹ on the decimal-wheel D, of the slotted annular ring E' *e*³ on the unit-wheel E, substantially as and for the purpose specified.

4. The combination of the disk D² having a radial spur, *d*², and a notch in advance thereof in its edge, with the studs *c* on the month-wheel C, substantially as and for the purposes specified.

5. The combination of the unit-wheel E, projection I¹ thereon, cam I², and drop I *i* *i*², substantially as specified.

6. The elements enumerated in the last-preceding claim, in combination with the studs *l* on the year-wheel L and crooked arm I³ on the drop I, substantially as specified.

7. The combination of the drop N *n*¹, slot *l'* in the year-wheel L, and stud *m*¹ on the cam M, operating substantially as specified.

8. The elements enumerated in the last-preceding claim, in combination with the arm M' *m*², and arm O¹ of the leap-year wheel O, operating substantially as specified.

9. The combination of the drop F, rod P P', and sectoral pinion Q, substantially as specified.

10. The elements enumerated in the last-preceding claim, in combination with the stud *g* on the hook G and hook *g'* on the standard G', substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

JOSIAH K. SEEM.

Witnesses:

A. ROWE,
S. H. HAMILTON,
L. A. SIMMONS.