M. J. WHITMORE.

Calendar Clock.

No. 16,418. Patented Jan. 13, 1857.

Fig. 3

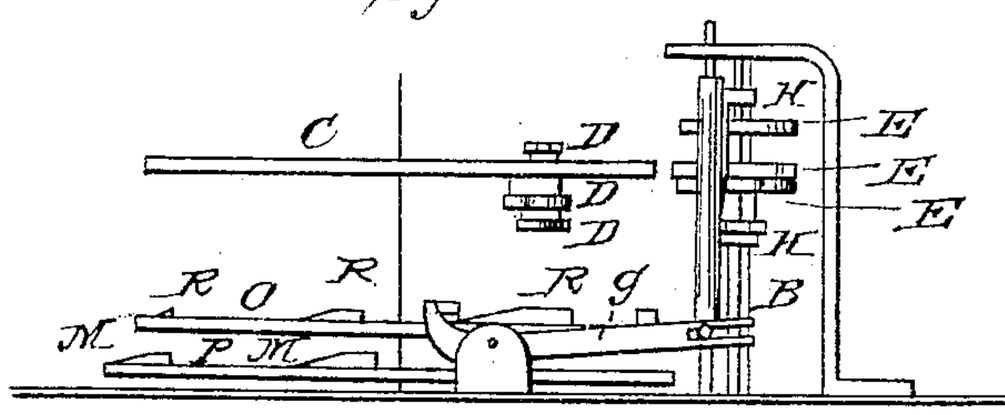


Fig. 2

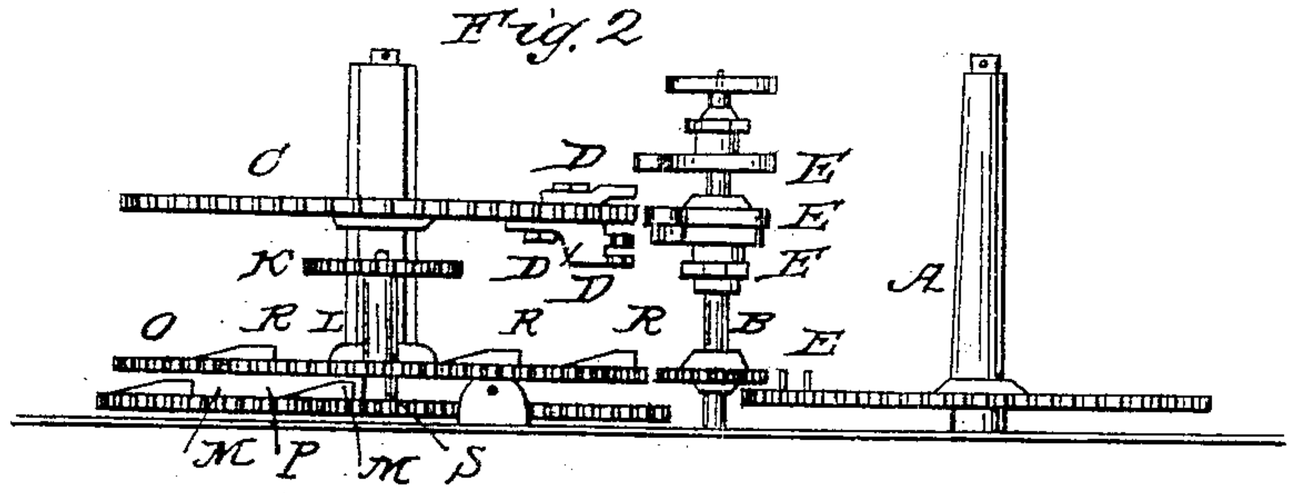
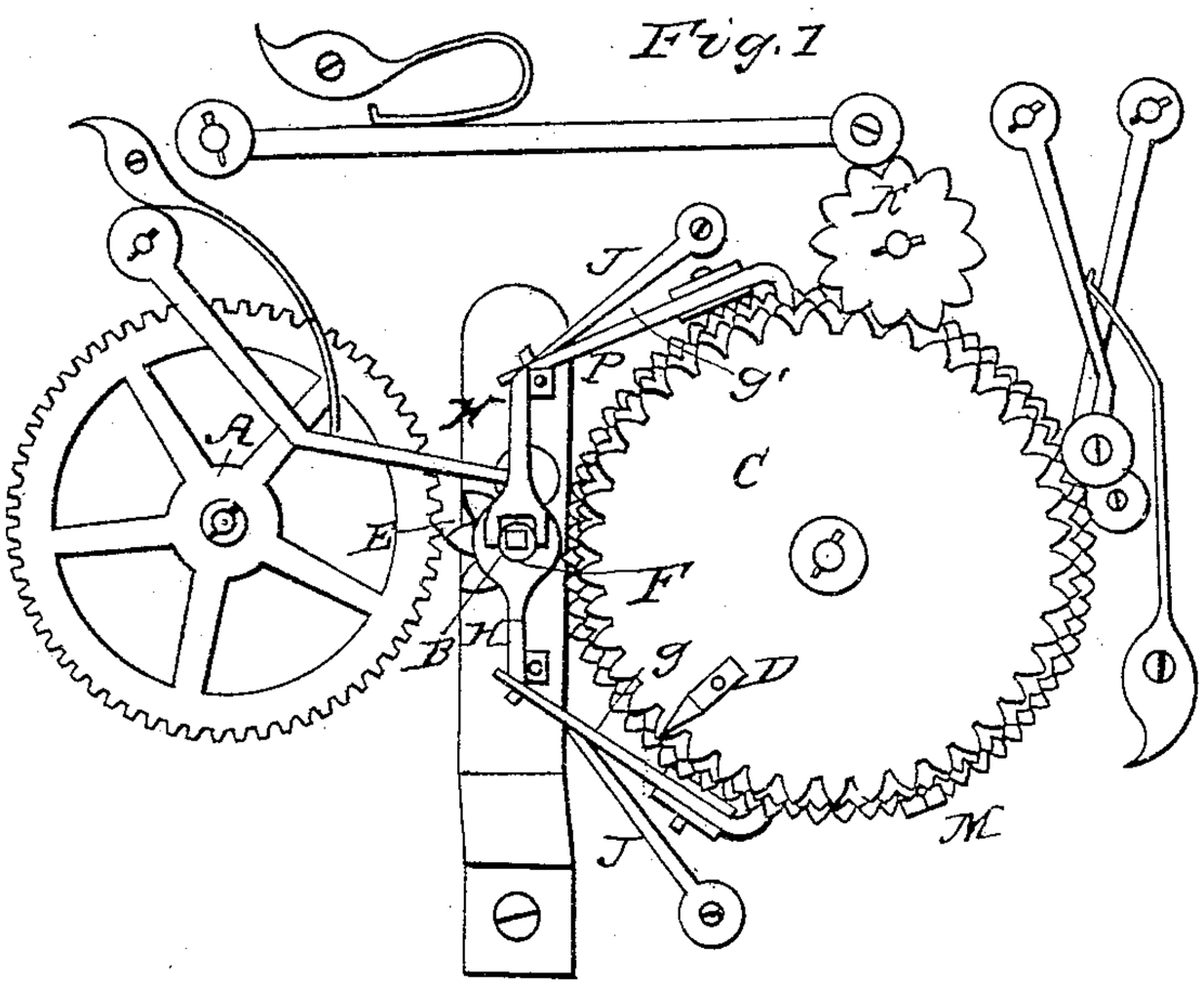


Fig. 1



UNITED STATES PATENT OFFICE.

M. J. WHITMORE, OF POTSDAM, NEW YORK, ASSIGNOR TO HIMSELF AND F. G. JOHNSON.

CALENDAR-CLOCK.

Specification of Letters Patent No. 16,418, dated January 13, 1857.

To all whom it may concern:

Be it known that I, M. J. WHITMORE, of Potsdam, in the county of St. Lawrence, in the State of New York, have invented a new and useful Improvement in the method of Constructing Calendar Clocks and Watches; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon.

It is well known that calendar clocks, as heretofore constructed, are very complicated and expensive, and therefore impracticable for common use; and their trains are too cumbersome to be applied to watches.

To simplify and diminish the number of parts necessary to produce the several motions of a calendar clock, so as to render them feasibly and practicably applicable to watches and the cheaper class of clocks, constitutes the object of my improvements.

As the *modus operandi* of a clock or watch, and the parts necessary for changing the day of the week, and the month of the year are common and well understood it is not necessary to describe them here, these not being claimed.

Figures 1, 2 and 3 are several representations of my improvements—like letters referring to like parts.

The power necessary to operate the calendar wheel is derived from the hour wheel of the clock or watch.

A A represents the hour wheel with three pins or cogs upon its upper or lower face represented by the dots; B B B is a pivot shaft that carries the pinions E E which turn with the pivot shaft. Two of these pinions are free (the upper and lower) to slide up and down on the shaft, it being square. The center pinion is fastened stationary to the shaft.

F is a stationary pinion upon the same pivot, of six or more teeth, which receives the motion, by means of the pins or cogs upon the face of the hour wheel A. The upper and center pinions have but one cog or wing, the lower one having three, and all together are so arranged that, in circumference, they form one half a pinion. These cogs and pinions, for convenience, I will denominate intermittents.

C is a wheel with thirty one or more teeth with one cog, D D, upon its upper side and two placed below each other immediately under the upper one, so that the last of the lower ends will be in line with the upper. This wheel, C, turns upon a stud. The wheel O O is one with any number of teeth convenient to be divided by twelve without remainder, and on its upper face are placed inclines R R, to designate the months of thirty days in the order as they occur in the twelve months.

P P is a wheel under the wheel O, running upon the same stud, having any number of teeth that can be divided, without remainder, by twelve; and upon its upper face are placed four inclines, M M, to make the changes for the four Februarys which occur in four years—one for leap year being higher than the other three.

K L and S are three pinions arranged upon one pipe of collet, running upon a stud and arranged so as to be of suitable distance from each other so that they will come in line with the wheels C O and P, K, at the lower intermittent, at D. L meshes into O and S into P, their proportions being such that twelve turns of the wheel C will transmit, through the wheel K, one turn to the wheel O and one fourth of a turn to the wheel P, making their revolutions all complete once in every four years.

H H are clutches or forks that work in and carry the upper and lower pinions, E E, up and down upon the pivot B as required; *g g′* are two levers working upon a fulcrum, one end being attached to the slides that carry the forks, H H, these levers being held in their proper place or position by springs J J. One end of each of these levers, *g g′* projects over the wheels O and P so as to pass over the inclines M M and R R: The lever that carries the upper fork H projecting over the inclines R R of the wheel O, and the lever carrying the lower fork projecting upon the inclines, M, of the wheel P.

The operation is as follows: The wheel A revolves twice in 24 hours, consequently turns the pinion B by the pinion F one half a turn to each revolution of the wheel A, the last half revolution being between 12 and 2 o'clock a. m. The revolving of the pivot B brings the wing or cog of the center pinion, E, in contact with a cog of the wheel C and turns it forward one cog, or one day; and so continuing to turn it forward one cog each day until the whole 31 or more have passed. In the revolving of the wheel C the lower tier of the intermittent cogs, D,

are brought in contact with the pinion K, so as to revolve the wheel O 1/12 and the wheel P 1/48 of a turn. When a month of 30 days is to occur or is passing, one of the inclines, R, will be brought under the lever g' forcing down the upper H, so as to bring the upper pinion, E, in contact or level with the cog D placed upon the upper face of the wheel C, so that when the 30 days have passed, the cog of the center pinion E, will move forward one cog of the wheel C and the cog of the upper pinion will move the wheel forward by being in contact with the cog D, so as to indicate the first day of the month, that is shortening or moving two days in one. When February should occur one of the inclines, M of the wheel P is brought under the end of the lever g so as to press down the lower pinion E and bring its three cogs in contact with the three cogs D in succession after the cog of the center pinion E, on the night or separation of the 28th day or division, shortening the month four days or passing forward four divisions when it ordinarily does but one. When the fourth February should be indicated, or leap year, the highest of the four inclines, M, is brought under the lever, g, so as to depress the pinion E and bring it in line with the lower tier of cogs D, two in number, consequently permitting the wheel to pass on to the close of the 29th previous to its coming in contact with the pinion E. Hence, the months are presented in the order in which they occur correctly and perpetually.

The principle of making the changes by intermitting cogs placed upon a wheel and operated upon by sliding intermittent pinions does not necessarily require a wheel of 31, or any particular number of cogs; it may be a wheel whose cogs can be divided by 31 without remainder. A wheel of 372 cogs, for instance, may be employed, divided into 12 divisions, with intermittent cogs placed upon its upper face in order as the months of 30 and 28 days occur. The February of leap year may be accomplished by one of the cogs being withdrawn by means of a cam that shall revolve once in four years; or, the pinion may be raised up so as to come in line with another tier of cogs. By an incline the calendar-pointer may be placed upon the collet of the wheel, or detached and worked by a pinion or pinions meshing into the wheel C.

The different wheels are held in their proper position, when at rest, by brakes and springs in the common manner.

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

The placing of the intermittent cogs, D, upon the upper and lower faces of the calendar wheel, C, and the giving of said cogs the necessary movements for accomplishing the intended purpose, by means of the sliding and stationary and intermitting pinions, E E E, on the shaft B; all being combined together and operated in the manner and for the purposes as herein set forth.

M. J. WHITMORE.

Witnesses:

WILLIAM H. WALLACE,

RUFUS WASHBURN.