

J. WILLIAMS.
Calandar Clock.

No. 11,713.

Patented Sept. 19, 1854.

Fig. 3,

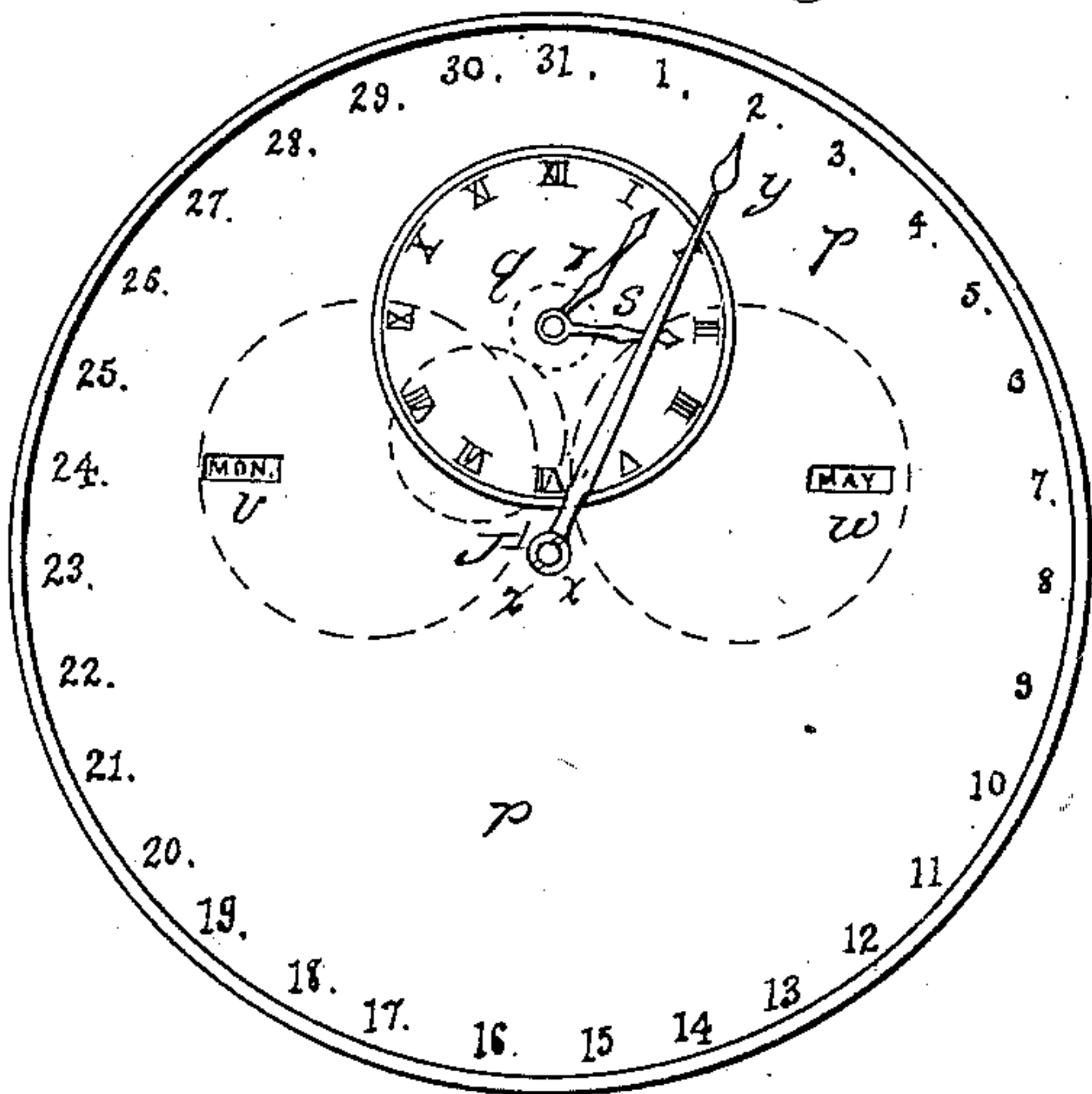


Fig 2.

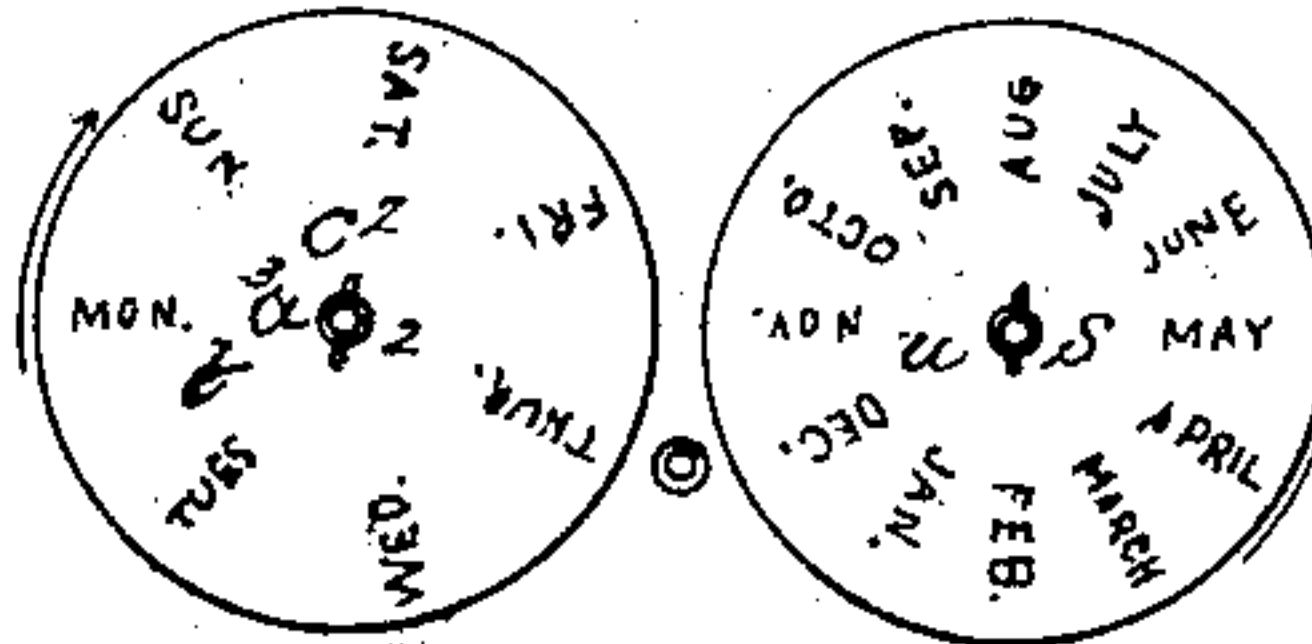


Fig. 1,

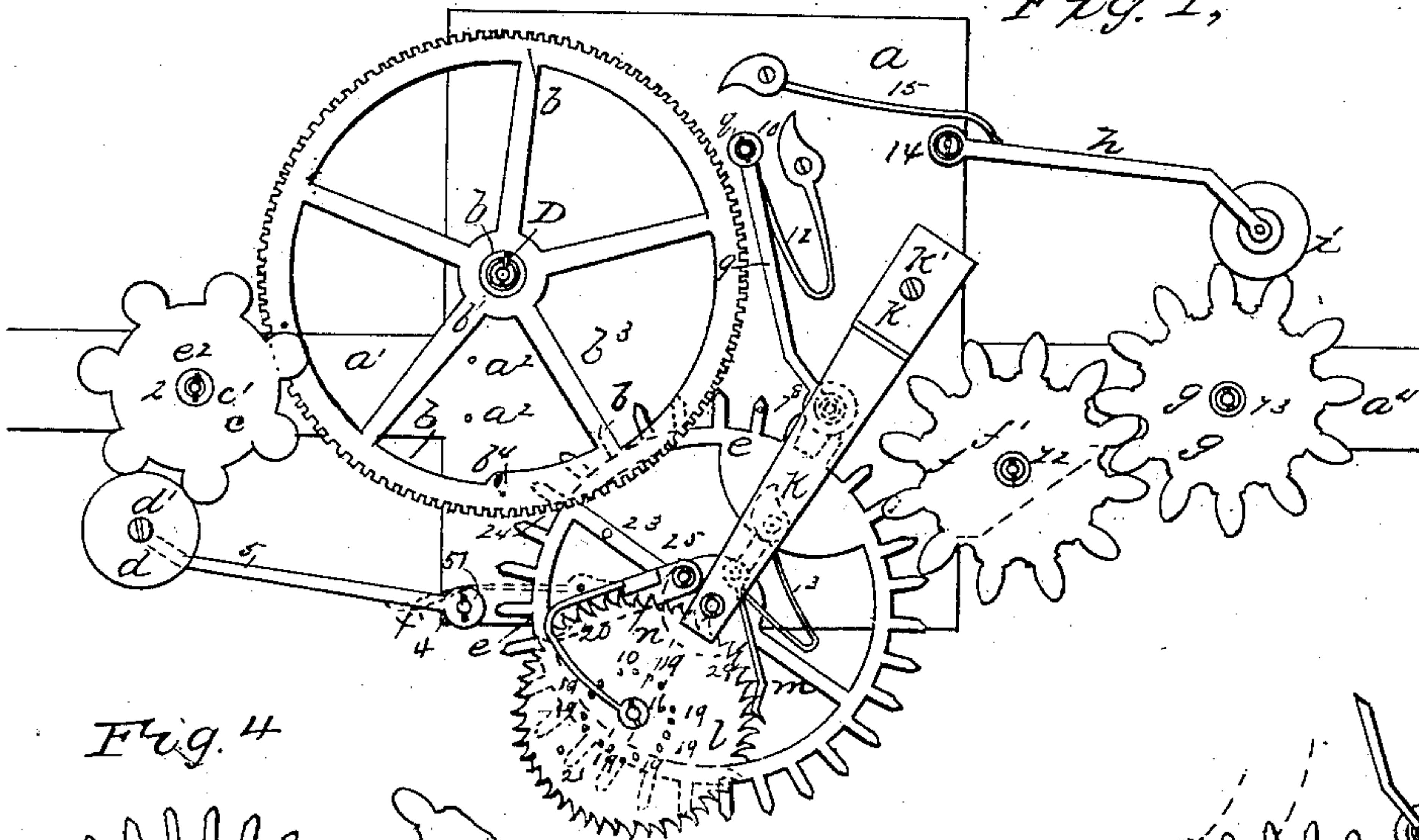


Fig. 4

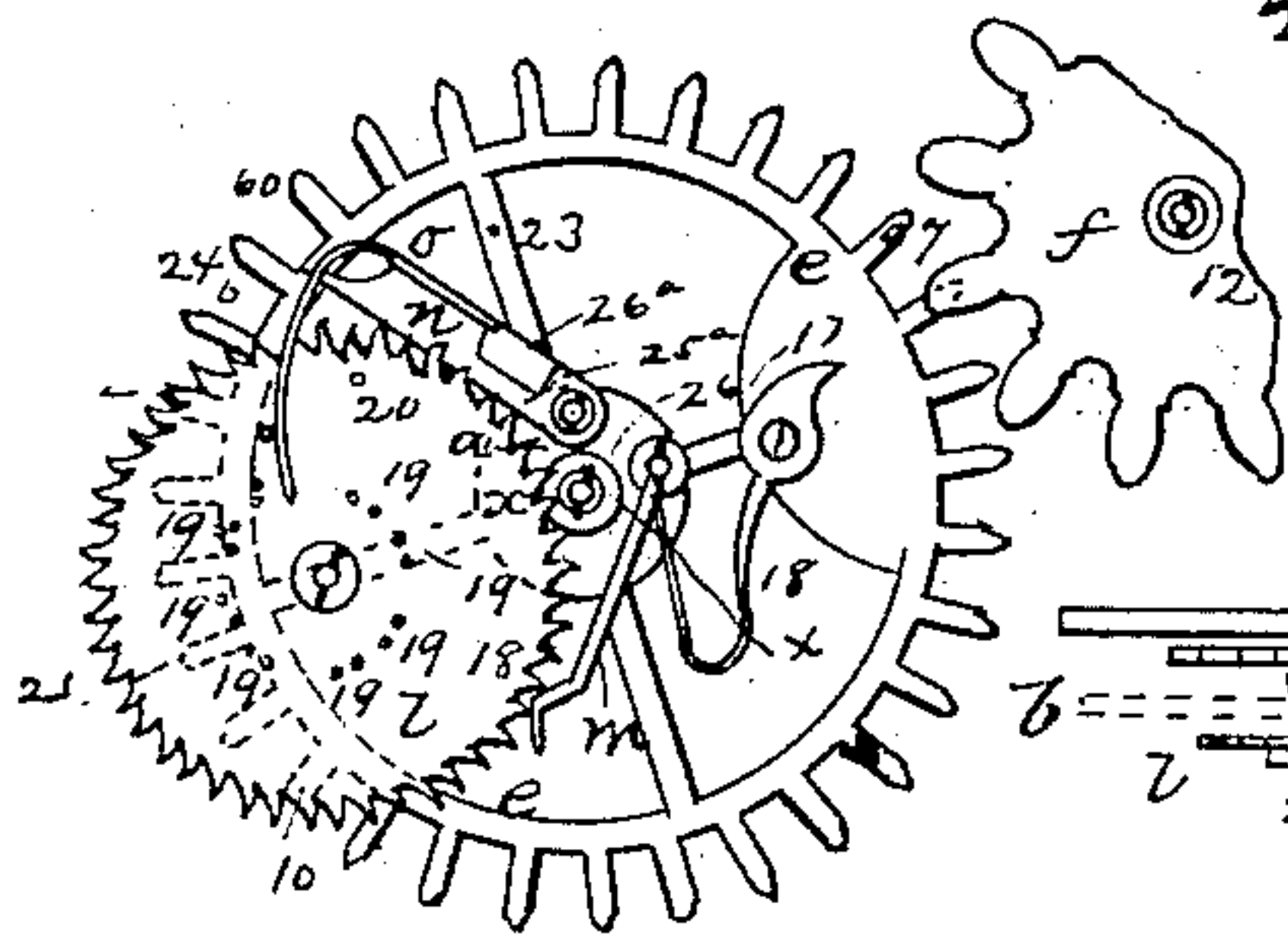


Fig. 6

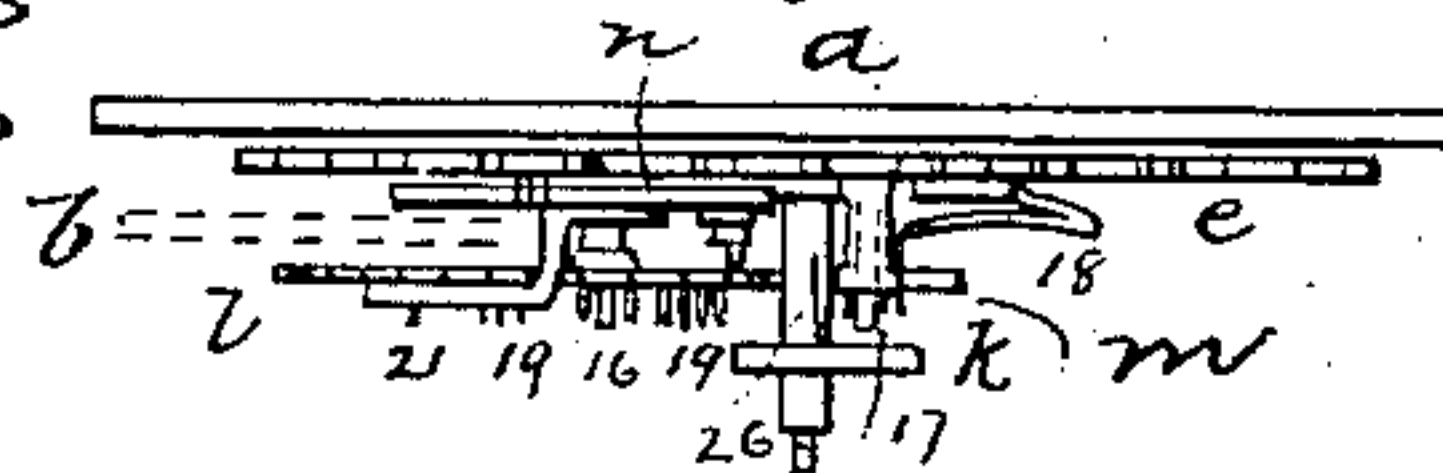
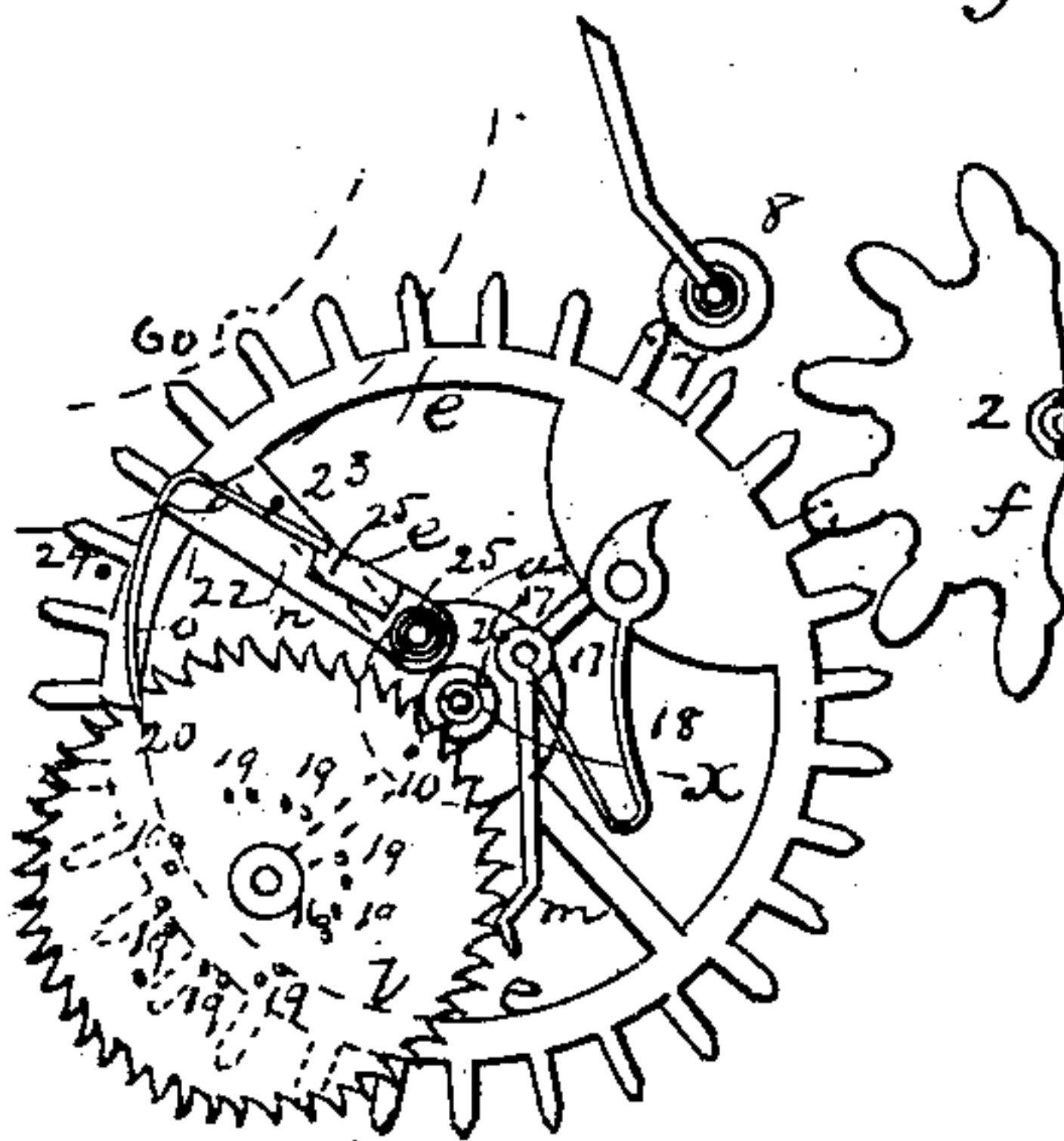


Fig. 5



UNITED STATES PATENT OFFICE.

JOHN WILLIAMS, OF HARTFORD, CONNECTICUT, ASSIGNOR TO F. CURTIS & CO.

CALENDAR-CLOCK.

Specification of Letters Patent No. 11,713, dated September 19, 1854.

To all whom it may concern:

Be it known that I, JOHN WILLIAMS, of the city of Hartford, in the State of Connecticut, have invented a new and useful
5 Improvement in Calendar-Clocks, which may be connected with any clock-movement and by the arrangement thereof will show the several days of the week, the several
10 months of the year, and the several days of each month, with the changes incident to and for the month of February and leap-year, operating for four years continuously; and I do hereby declare that the following
15 is a full and exact description of the manner of constructing the same, reference being had to the accompanying drawing, wherein—

Figure 1, is a top view of the calendar complete ready for use; Fig. 2, shows two
20 dials, viz: one with the days of a week, and the second with the months of a year; Fig. 3 is a dial showing the days of a month from the first day to the thirty first day of the month, with a pointer to indicate each day:
25 an opening within dotted lines for the day of the week, and the letters Mon. in the opening to indicate Monday; on the right side and opposite to the dotted lines for the day of the week an opening with like
30 dotted lines for the month, and the letters May in the opening for the month of May; also a time dial, with the hours marked from I to XII, with hour hand and minute hand; Fig. 4 is the center wheel or wheel
35 (e) which shows the operation of the pin (19) for a thirty day month, and the pin or wiper (7) to change the month; Fig. 5, shows the operation of the center wheel or wheel (e,) on the pin (20) for the twenty
40 eight day movement in February; and also the pin or wiper (7) in the act of passing the roller (8), previous to shifting the month wheel (f); Fig. 6, is a view of the calendar when in place, and the observer
45 is standing under and looking upward.

The same letters and figures refer to like parts.

To enable others skilled in the art of clock making to construct and put in operation
50 my improvement, I use a plate of brass (a,) or any solid metal; I prefer brass as the best suited to the purpose; upon this plate is secured all the working parts of the improvement; an opening is made in the
55 plate (a,) to admit the stud or shaft (1,) the opening is not shown in the drawing;

into this opening is screwed the stud which passes through the plate, and is kept in place by the screw which is cut upon the end of the stud; the plate (a) being tapped
60 for that purpose. Upon the stud or shaft which is intended to be about $\frac{5}{8}$ ths. of an inch in length, the diameter not being material, is secured; a wheel (b,) which is intended to be and is four inches in diameter
65 with a collet or hub (b²) to keep the wheel steady as it revolves, and which is secured by the pin (b¹); upon the periphery of the wheel (b,) there are 144 cogs or teeth, to correspond with the hour wheel which con-
70 tains 72 teeth, or half the number in the wheel (b,) as shown in Fig. 3, and for a purpose which will be mentioned hereafter. Upon the rim of the wheel (b,) is inserted
75 a steel or iron pin (3,) which once in twenty four hours in the revolutions of the wheel (b,) reaches and comes into contact with and moves the star wheel (c,) as shown on Fig. 1, upon an arm of the wheel (b,) let into
80 the under side of the arm (b³) is a pin (6,) which operates upon the wheel (c) Figs. 1, 4 and 5, at the same instant of time that the pin (3) operates upon the star wheel (c); a second pin upon the under side of the
85 wheel (b,) is let in at (24) for a purpose to be hereinafter described; a portion of the view of the wheel (b,) is shown as having more substance than the remaining part of the wheel (b⁴); but this is not necessary
90 unless the constructor may desire to give greater strength to the wheel in which case the additional strength will be added to the entire circumference; an oblong piece (a') is attached to the plate (a,) by two screws
95 (a² a²), the heads of which are upon the under side and not shown; upon this oblong piece an opening is made to admit the stud or shaft (2), the opening is not shown in the drawing; into this opening is screwed
100 the stud or shaft which passes through the piece, and is kept in place by the screw, which is cut upon the end of the stud, the oblong piece being tapped for that purpose; upon this stud or shaft which is intended
105 to be about $\frac{3}{4}$ ths. of an inch in length, the diameter not being material, is secured the star wheel (c,) which is intended to be, and is, one inch and $\frac{1}{8}$ ths of an inch in diameter, with a collet or hub (c') to keep the wheel
110 steady as it revolves, and also to carry a dial (t,) Fig. 2, to show the day of the week which slips on to the collet and is

held tight in the hub of the dial (a^3), a pin in the end of the stud or shaft is shown at (c^2) Fig. 1 and Fig. 2. At the left corner of the plate (a) is a stud 4, let in and held in the same way as the studs already described, upon which is a collar having attached to it a lever (5) with a shoulder (5') which has a hole to fit over the stud or shaft—the lever is $2\frac{3}{4}$ inches in length, having a roller (d) secured by a screw (d'). The lever is kept in contact with the star wheel (e) by a spring (x'), as seen by the dotted lines, and which is fastened to the under side of the plate (a); upon the plate (a) at the lower edge, and at a point equidistant from either side of the plate is let in a stud or shaft one inch in length (x) Fig. 1, Fig. 3, Fig. 4, Fig. 5; upon this stud or shaft is secured a wheel (e) hereinbefore mentioned, which is intended to be and is $3\frac{1}{2}$ inches in diameter, with a collet or hub to keep the wheel steady as it revolves, and the wheel is kept in place by the pin (x^2).

Upon the periphery of the wheel (e), there are 31 cogs or teeth to correspond with 31 days of a month, and which are operated by the pin (6) hereinbefore mentioned. Upon the face of the plate (a) a stud or shaft (10) is inserted in the plate in the way already described, upon which is a collet having attached to it a lever (9) with a shoulder (9'), which has a hole to fit over the stud or shaft. The lever is $2\frac{1}{4}$ inches in length, having a roller (8) secured by a screw from the under side of the roller, and which is not shown in the drawing. The lever is kept in contact with the wheel (e) by the spring (11) Fig. 1, which it is unnecessary to describe, as it is fully shown upon the plate (a). Upon an arm of the wheel (e) as shown in dotted lines, is inserted a stud or shaft in the way already described (16) upon which is secured a wheel (l) having on its periphery 48 cogs or teeth, each cog representing a month, and the 48 cogs representing four years of months; and upon its upper face having three pins, each of which is marked (20) (20) (20) and which pins are placed on the wheel as shown on Fig. 1, Fig. 4, and Fig. 5; there is a fourth pin (21) which is placed near the center of the wheel; the three pins (20) mark each the month of February for three successive years; and the pin (21) the fourth or leap year; the three (20) being each for 28 days and the (21) being for 29 days, which complete the cycle or period of four years. In a circle of the wheel (l) are placed 16 pins (19) (19) (19) (19) (19) (19) (19) (19). Upon the face of the wheel (e) is a stud let in as already described (25), over which works a collet (25^a), having a lever (n). Upon the upper face of the lever (n) is a plate which is laid upon the lever, and se-

cured by soldering or riveting thereto, (25^b), and which forms the base of the hook (o), the collet is kept upon the stud by the pin (o'); the pin (24) upon the under side of the wheel (b) operates upon the point of the lever (n) (22) Fig. 4, and Fig. 5, and when the hook drops on the periphery of the pins (20) (20) (20), the pin (24) in the wheel (b) operates on the point of the lever (n) (22) and carries the wheel (e) forward three teeth, which represents 28 days in February, as shown in Fig. 5, the pin (24) operates upon the point (22) of the lever (n), and acting on the pin (23), the wheel is carried forward three teeth as already expressed, and upon the motion being completed, will carry the month hand forward from the 28th day of February to the 1st day of March, or four days; when the hook (o) drops on the periphery of the pin (21) this pin (24) in the wheel (b) carries the wheel (e) forward two teeth, which shows the leap year or 29 days in February, the motion however is not shown in the drawings; and upon the motion being completed will carry the month hand from the 29th day of February to the first day of March or three days; when the hook (o) drops on the periphery of either of the 16 pins marked (19) (19) (19) (19) (19) (19) (19) (19) as shown in Fig. 4. The pin (24) of the wheel (b) carries the wheel (e) forward one tooth, which makes the variation for any month having 30 days, and upon the motion being completed will carry the month hand from the 30th day of any month having 30 days, to the first day of the following month, or one day; and when the hook (o) drops between either of the pins, as shown in Fig. 1, the pin (24) of the wheel (b) passes the lever (n) without moving the wheel (e) which occurs in all the months having 31 days. In an arm of the wheel (e) is a pin (23) hereinbefore referred to, which prevents the lever (n) from being thrown out of place. In the face of the wheel (e) is a second stud or shaft (17), over which works a collet (17^a) Fig. 4 and Fig. 5, and shown in dotted lines on Fig. 1 having a lever or pawl (m), to keep the wheel in the position, and which will be hereafter described. The lever or pawl (m) is kept in contact with the wheel (l) by a spring (18), as shown in Fig. 1, Fig. 4 and Fig. 5. Upon the plate (a) is secured a bridge (k , k') by a screw (k'); the bridge is elevated nearly $\frac{3}{4}$ ths of an inch above the plate, and from end to end is nearly 4 inches in length; the length however is not material. The bridge is placed upon the plate, and although the stud or shaft (X) passes up through the bridge, still the bridge is for no other purpose than to receive and support the pin (26) which is used for the

purpose of moving the wheel (*l*.) one tooth in every revolution of the wheel (*e*.) which effects the change in the irregularity of the month; upon the collet (*X*²), upon the shaft (*X*) of the wheel (*e*) is placed the month hand (4) Fig. 3, which is kept in place by the pin (4'). An oblong piece (*a*⁴) is attached to the plate (*a*) on the opposite side of the oblong piece (*a'*), having a shoulder next to (*a*) which is shown in dotted lines in Fig. 1.: the oblong piece (*a*⁴) is secured to (*a*) in the same way as (*a'*). Upon this piece an opening is made to admit the stud or shaft (12); the opening is not shown in the drawing and which is kept in place by means already described; upon this stud or shaft which is intended to be about $\frac{1}{16}$ ths of an inch in length, the diameter not being material, is secured the star wheel (*f*.) which is intended to be, and is two inches and a quarter in diameter, with a collet or hub (*f'*.) to keep the wheel steady as it revolves. The wheel (*f*.) having 12 cogs or teeth. The wheel (*f*.) works into the wheel (*g*.) which it propels, and which is secured in the plate (*a*⁴) by a stud or shaft (13); the stud or shaft of the wheel is three quarters of an inch in length, and the wheel (*g*) has a collet (*g'*) over which works the dial for the month. The wheel (*g*.) is kept in position by a lever (*h*) and roller (*i*), which is constructed and placed on plate (*a*.) in a manner similar to (5), and is held by a spring (15); the wheels (*f*.) and (*g*.) being operated by a pin or wiper, (7), upon a cog or tooth of the wheel (*e*) as shown on Fig. 1, Fig. 4 and Fig. 5, and which is reached once in a month, and moves the wheel (*f*.) and wheel (*g*) one tooth, which indicate the given month, there being twelve teeth in (*f*.) and twelve in (*g*.) to complete the year of twelve months.

Having described the several operating parts of my improvement, I will now proceed to state the connection of the improvement with a common clock, and the operation of each part upon the other, to effect the purpose indicated, that is to say, the wheel (*b*.) Fig. 1, is to be connected with the hour wheel of a clock, being the wheel which carries the hour hand, in such manner, that the change of the day of the week and the day of the month, shall take place at midnight; the hour wheel of the clock will be required to have seventy two cogs or teeth, or one half the number of cogs or teeth in the wheel (*b*.) Once in twenty four hours, the pins (3) and (6), by the movement of the wheel (*b*), operate on the wheels (*c*) and (*e*); the wheel (*c*) being moved one seventh, or one cog or tooth to indicate the day of the week, as shown on Fig. 3 (*v*); the dial (*t*.) Fig. 2, being placed on the collet (*c'*) of the wheel (*c*.) and the

wheel (*c*.) being moved one-thirty first, or one cog or tooth to indicate the day of the month as shown by the pointer (*y*.) Fig. 3, which completes a day of the week and a day of the month; and by the successive operation of the wheels (*c*.) and (*e*.) as described, the remainder of the days of a week will be shown; and also the remainder of the days of a month up to and including thirty one days. And if there were no variation in the length of the months of the year, all the remainder of the arrangement could be dispensed with; it being essential, however, to provide for the variations in the length of the several months, and also for leap year, each of the changes will be explained. In a month of thirty days, the pins (19) are used in connection with the point (22) of the lever (*n*); the hook (*o*) dropping on a pin as the wheel (*l*) revolves; which places the point of the lever (*n*) in such a position, that the pin (24) operates on the point (22), and carries the wheel (*e*) forward one tooth as seen in Fig. 4, which completes the thirty day movement, or a month of thirty days. In a month of twenty nine days or leap year, as the month of February is usually called, when it contains twenty nine days, and which occurs in the calendar once in four years; the pin (21) is used in connection with the point (22) of the lever (*n*), the hook (*o*) dropping on the pin (21), instead of the pin (19), as in a month of thirty days; which places the point of the lever (*n*) in such a position, that the pin (24) operates on the point (22), and carries the wheel (*e*) forward two teeth, which completes the twenty nine days or month of February movement in leap year. In a month of twenty eight days, the pin (20) is used in connection with the point (22) of the lever (*n*), the hook (*o*) dropping on the pin (20), which places the point of the lever in such a position that the pin (24) operates on the point (22), and carries the wheel (*e*) forward three teeth as seen in Fig. 5, which completes the month of twenty eight days or February movement. The wheel (*l*.) being moved one tooth in each month, by the pin (26), in the bridge (*k*, *k*.) Fig. 1. On the last day of each month, the pin or wiper (7) on the wheel (*e*.) commences to operate on the star wheel (*f*.) and when the movement is completed carries the star wheel (*f*.) forward one twelfth, or one tooth, which indicates the month as seen in the opening (*w*.) (May) of the dial plate, Fig. 3, which completes the operation of the calendar movement.

The calendar herein indicated and set forth, when attached to a clock, is to be set with a view to leap year in the same way as the hands of a clock are set to the hour, and the movement will continue to show the day

of the week, and the month, and the days of the month, so long as the clock shall continue to operate.

Having thus described my invention, and
5 the operation thereof, what I claim as new is—

The wheel (l) carried by the wheel (e),
and combined with the lever (o,) and its
stop (23); and the pin upon the wheel (b,) 10
to engage the lever (o,) the said wheel (l),
having on its periphery, forty eight cogs or
teeth, each cog or tooth representing a

month, and having upon its upper face
three pins (20) and a fourth pin (21); the
three pins (20) marking the month of Feb- 15
ruary, for three successive years; and the
fourth pin (21) the leap year; also, the pins
(19) to mark the months of thirty days; the
whole operating for the purposes described.

JOHN WILLIAMS.

Witnesses:

JAMES F. SMITH,
DANIEL F. BORDON.