J. H. H. HAWES.

Calendar Clock.

No. 9,727. Patented May 17, 1853.

Fig. 2

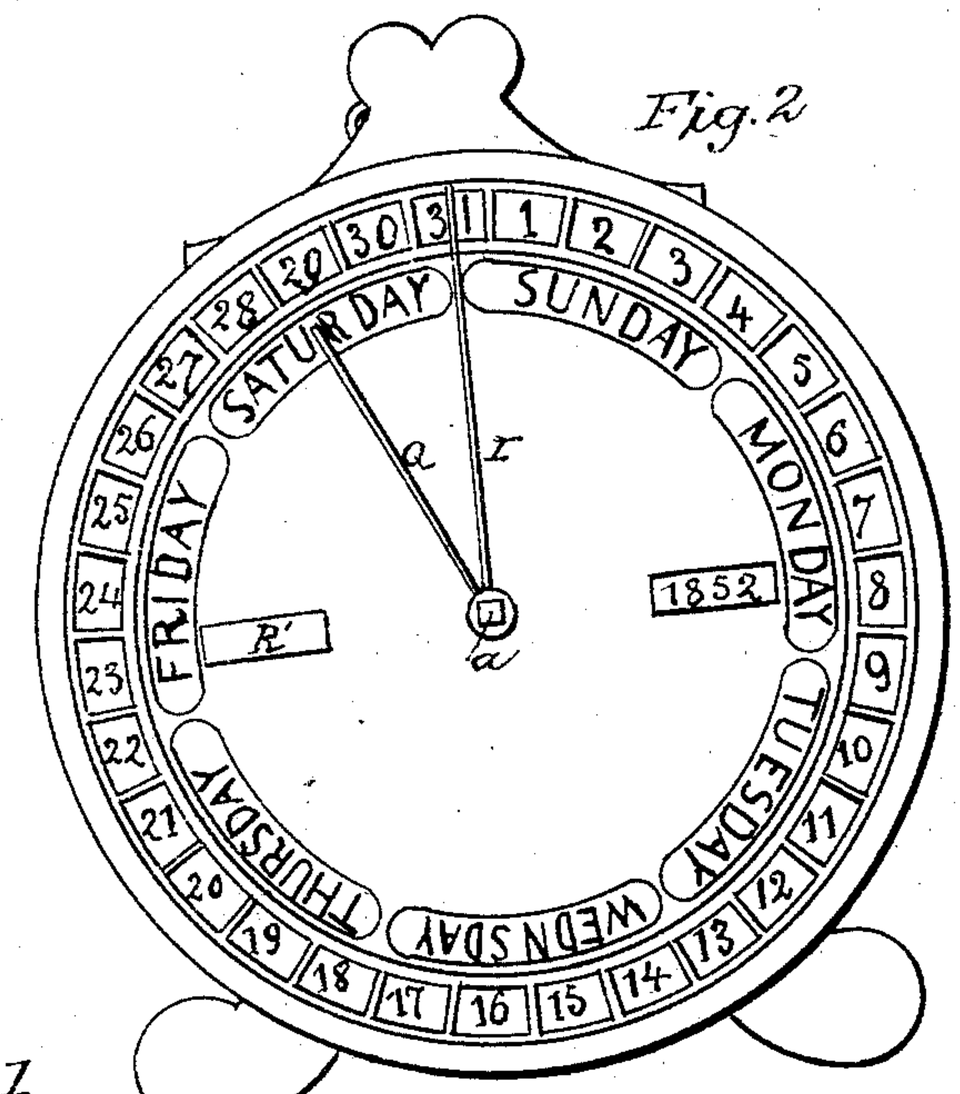


Fig. 1

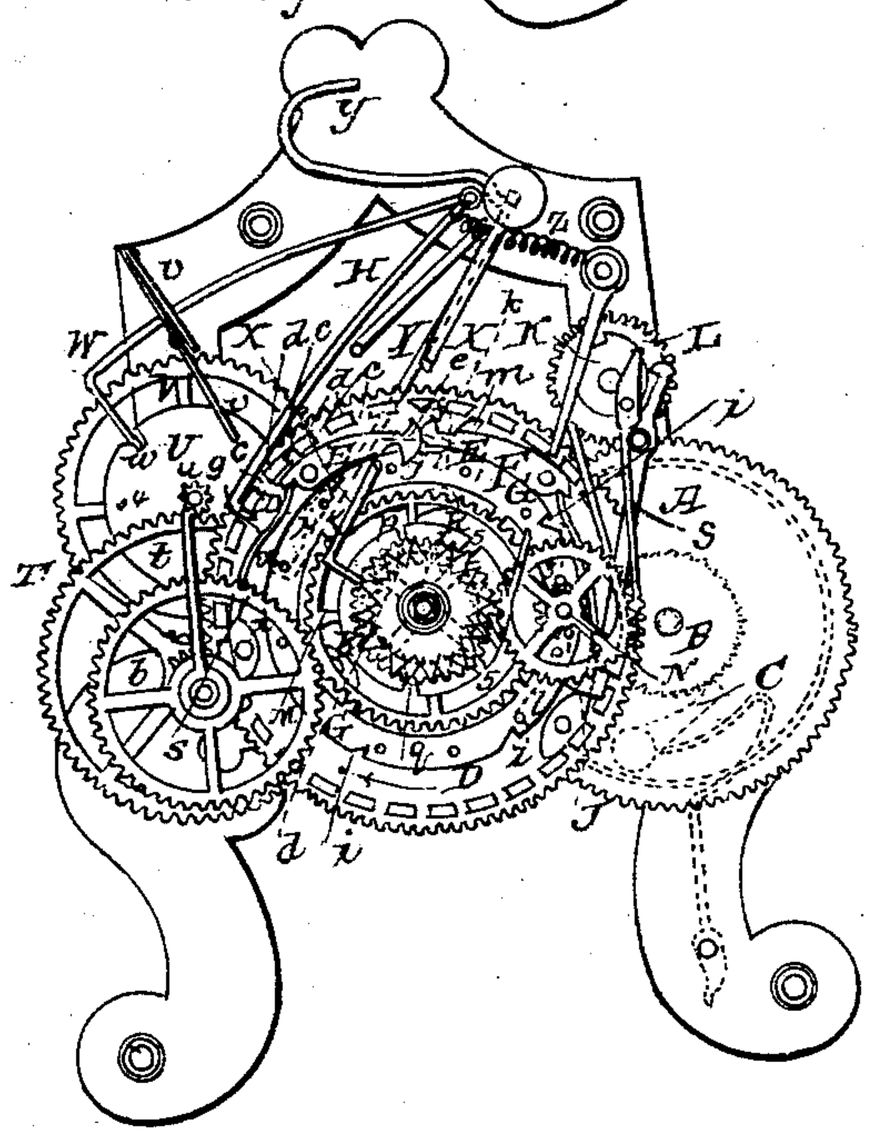
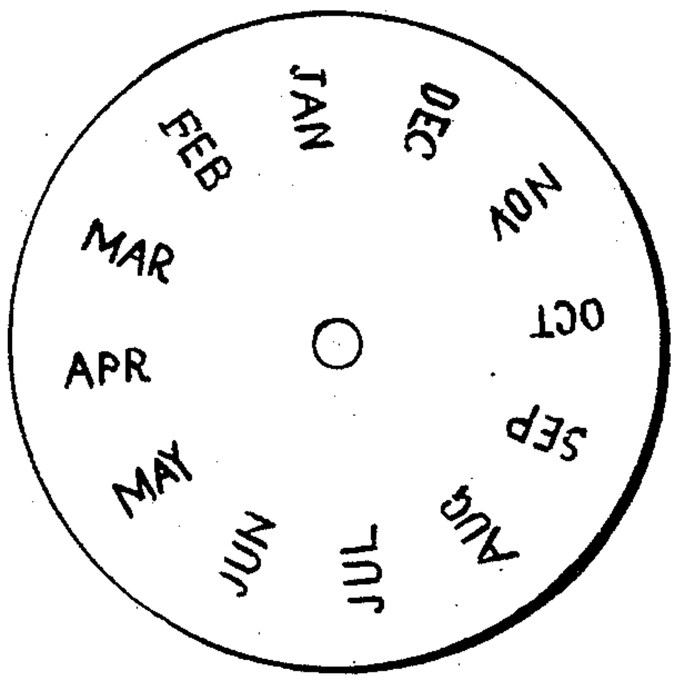


Fig. 3



UNITED STATES PATENT OFFICE.

JOHN H. H. HAWES, OF ITHACA, NEW YORK.

CALENDAR-CLOCK.

Specification of Letters Patent No. 9,727, dated May 17, 1853.

To all whom it may concern:

Be it known that I, JOHN H. H. HAWES, of Ithaca, in the county of Tompkins and State of New York, have invented certain new and useful Improvements in Clock-Calendars; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part thereof, in which—

Figure 1, represents a front view of the clock, the dials and frame being removed to more clearly represent the working parts. Figs. 2 and 3, represent the dials and hands, the latter working behind the former.

The nature of my invention consists, first, in causing a clock calendar to supply its own changes for the irregularities in the length of the months, and showing the exact and no fractional part of a day, week or month; second, in combining with the day of the week indicator, the two wheels working together spring tight, so as to move together and independently of each other, for the purpose of allowing the day of the month indicator to run during the time that the change is taking place from the end of a short month to the beginning of the next month, while the day of the week indicator passes from one day to another in regular succession.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawings, and confining the description more closely to those parts only which are claimed as being original.

The drum A, for containing the main spring which drives the calendar is provided with its ratchet wheel B, and spring pawl C, in the well known usual manner, and the teeth on its periphery work into a smaller cog wheel on the same shaft *a*, with and immediately behind the principal operating wheel D, which wheel (D) and its operative parts constitute a portion of what is herein claimed as new. The number of teeth on the several wheels which make up the train may vary with the size of the clock, but should always preserve the same relative proportions to each other, which will cause them to make the required movements, and as this is common to clock machinery of all kinds, and well known to those skilled in the art of clock making, need not be explained in detail any further than to show their connection with one another. The outer periphery of the wheel D, is provided with cogs or teeth, which take into a pinion *b*, the purpose of which will be hereafter described. A flange is made on the face of the wheel D, near its periphery, which flange is divided into thirty one equal parts, making one space *c*, and one tooth *d*, for every day in the longest of the months. Underneath these spaces and teeth and near that portion of the wheel on which the latter part of the month is indicated (it being from the twenty-eighth day of one month to the first of the next month that provision is made for) I place what I term "lifters" or lifting pieces E, F, the heads *e*, *f*, of which when thrown up will entirely close up two of the spaces in the wheel or flange of thirty-one divisions—the teeth on each side of the spaces being properly beveled for this purpose, as seen in the drawing. The lifting pieces E F, are held down against the periphery of the wheel G, by the springs *g*, *h*, and this wheel G is provided with seven recesses *i*, each of which has one inclined side to allow the projection *j*, on the lower part of the head of the lifter E, to rise up onto the periphery after having dropped into one of the recesses, and when resting on said periphery its head *e* will fill up one of the spaces in the wheel D, making as it were but thirty parts or divisions in said wheel, instead of thirty-one, and which is done when a month of thirty days succeeds one of thirty one days. The lifter F, has also a lower projection *k*, (partly in dotted lines), which projection does not drop into, nor is it in any way, influenced by, the recesses in the wheel G, but is behind said wheel, and is operated but once during the year (viz. for the month of February) by means of an inclined cam *l* (in dotted lines) placed on the back part of the wheel G. The lifter F, carries, besides the head *f*, another half head *m*, which only closes up one half of the space into which it is thrown, and the catch piece H, which drops into the spaces in regular succession when a month of thirty one days comes around slips over the head of the lifter E, (it having closed up one of the spaces), thus missing one space and dropping into the second, which commences the next month. It is obvious that the hand I, (Fig. 2) which indicates the day of the month on the dial and is on the same shaft with the wheel G, will also run

past the spaces when filled, and instead of pointing at thirty one will pass from thirty to figure 1, the beginning of the next month. The half tooth *m*, closes up only one half of the space into which it is thrown (viz. the rear, or that half next the back of the wheel) and consequently the catch piece H, or rather the hook thereon, must also slide over the rear part of the wheel, so as to be carried over three spaces, viz. those that are filled by the heads *e*, *f*, *m*. This makes the necessary change for the month of February, except when leap year comes around, and then the catch bar H, is to be thrown onto the forward part of the teeth *d*, and when it comes to the space into which the piece *m*, is thrown, the catch not passing over that part of the space filled by *m*, will drop into the space along side of it and make up the twenty-ninth day for leap year. The method of moving the catch piece for February in leap year may be by means of a cam on the same shaft with it, which cam could be set by an indicator on leap year so as to accomplish this purpose; but as the arrangement for moving the catch piece is not herein represented or claimed a further description of it in this place is not deemed necessary, as it will form the subject of a claim in a future application for Letters Patent which I intend making.

The two wheels D G, although on the same shaft, work together "spring tight" only, that is to say, when there is nothing interposing except the mere friction of the several pieces which they are intended to operate they move together, and at the same relative velocities; but it becomes necessary in making up the changes that one (G) should be held stationary, while the other D, continues to run, for the purpose of setting the lifters E F, one or both, as may be required for closing up or opening the spaces as the case may be, and when this is done the wheel G, slips on the shaft, while the other D, turns with the shaft. By this means the lifters, which are either raised up onto the periphery to close up or drop into the recesses to open the spaces, are properly placed for this purpose, and the wheel G, being then released again moves with the wheel D, until another change becomes necessary. The mechanical devices for making these movements are as follows, viz: The face of the wheel G, is divided into twelve equal parts, and into each of said divisions are placed small pins I, in such manner that when the hook piece J, is thrown in toward said wheel by the operation of the cam K, on the shaft *n*, which shaft also supports the wheel L, through which it receives its motion from the cylinder or drum A, said hook will catch over one of said pins and will hold the wheel G, fixed; but the wheel D, during this time must continue in motion, and is enabled to do so from the fact that the shaft with which it burns can move independently of and without moving the wheel G, said wheel (G) only moving with the shaft by friction or by being spring tight as it is termed. The wheel G continues to be held stationary by the hook J, until by the operation of the cam K, it is thrown out from the pin, when the wheel G, continues again to rotate with the wheel D, until again caught to prepare the lifters for another change. When the wheel G, is held fast and the wheel D, is moving the lifters E F, will be forced up into the spaces, closing or opening as many spaces as may be necessary to supply the change in the month, and when the wheel G is released the whole continues again to move together until another change is necessary. The division of the periphery of the wheel G, it will be understood is so made as to correspond with the short and long months in the succession in which they follow each other. The changes are made up and the lifters fixed for said changes on this machine on the fifteenth or about the middle of the month. They may, however, by another adjustment of the cam K, be made at any time after the first day of the month. There is a star wheel *o*, in the center of the wheel D, (shown in dotted lines) into which an elbow shaped piece 2, is forced by a spring *p*, and this piece 2, when the wheel does not come around to or passes a little beyond, its precise point, will, by being forced into the star wheel, turn it slightly back or forward and bring it to the exact point; but it is believed that when the parts are all properly made this device will not be found necessary.

On the shaft *a*, in front of the wheel D, is arranged the cogged wheel M, which works into a pinion 3, on the shaft N, which shaft also carries a cogged or toothed wheel O, which in turn operates another cogged wheel of the same size as itself on the shaft *a* (represented by blue dotted lines) and is placed behind the wheel P, of seven divisions. This is for the purpose of giving a positive motion to the wheel *q*, while the wheel P, which works spring tight with it, may move at stated periods independent of it—the wheels P *q*, working together and independent of each other, as in the case of the wheels D G, before described. This fast and loose movement of the wheels with their shaft which is common to both is actually necessary, so that while the one is passing for instance from the twenty eighth of February to the first of March, which distance is the same as would be occupied for three days, but by the arrangement heretofore described is passed over at once, the other wheel must move with great regularity to indicate the days of the week which follow each other

in regular succession. Thus one hand from the last of February to the first of March will pass over the space of three days ordinarily on the wheel, while the other hand must only go one day, and the balance of the month they run together, moving one day at a time. For this purpose they work spring tight, so that they may run together and independently of each other at intervals as occasion may require. The day of the week hand G, Fig. 2, fits onto a socket on the wheel P, and as the wheel P, makes one seventh of a revolution moves said hand Q, from one day of the week to the nevt in regular succession. There is a star wheel R, back of the dial Fig. 3, into which an elbow piece *r*, is forced by the spring *s*, so as to turn the dial to its exact position in case it should not be carried quite up to or a little beyond its proper place. The name of the month is shown through an opening R′, in the dial Fig. 2.

The wheel M, works into and operates another wheel S, of the same size with itself, and on said wheel S, is placed an arm *t*, which catches into the star wheel R, and turns it and the dial Fig. 3, one twelfth of a revolution, and showing through the opening R′, through the dial Fig. 2, the name of the month. On the same shaft with the pinion *b* is placed a toothed wheel T, which works into a pinion *u*, giving motion to its shaft, on which is also placed the disk wheel U, and toothed wheel V, which latter operates the fly *v*. The wheel U, has a recess *w* cut in its periphery into which the hook piece W, catches and holds until the calendar is set in motion or is being prepared to be set in motion. In said wheel U, is also a pin 4, which when the hook piece W, is raised out of its recess allows said wheel to run until the pin 4 strikes another hook piece *x* (partly in dotted lines) which is raised up in proper position for catching said pin by the same movement which raises the catch piece W. The raising of the catch piece W, also raises the catch piece H, out of its recess in the wheel D, and said wheel, while the pin 4 is moving around to the catch piece *x*, will move first far enough to allow the hook on the piece H, to rest on the periphery of the wheel D, and when in this position the calendar is ready to make its changes (which should be at midnight) the moment the hook piece *x*, drops away from the pin 4, which is done in a manner hereafter described.

The wheel P, of seven divisions is recessed as at 5, and into these recesses a catch piece X, operates, which catch piece (X) is on the same shaft with the catch piece *x*, for catching the pin 4, before described, and consequently both are raised up at the same time. On the same shaft which carries these two pieces X, *x*, is a lifting piece Y, which as it rises up lifts up the catch piece H and with it the piece W, both being on the same shaft. On the same shaft with the pieces X, Y, *x*, is a hook *y*, which is to be raised by any of the moving parts of an ordinary clock and which after being raised up and released is drawn back with the several parts attached to it by the spring Z, so that each catch piece will take into its recess when they come around. The raising of the hook *y*, which may be done at any time during the day, (though it is better to do it just previous to 12 o'clock at night when the changes are to be made,) sets the calendar, and the moment the hook *y* is released or drops the several parts are moved by the main spring, which in this machine is long enough to run the calendar one year, but may be made, as I contemplate doing, to run for four years. The calendar may be so connected in the same frame with a common clock so as to have no necessary connection with it other than to start the train (by raising the hooks) in the calendar, which accomplishes every thing else. By this means the clock or time piece may be set at any time without affecting the calendar train.

I am aware that calendars have been worked by clock machinery, but in many of these the calendar itself did not supply its own changes or operate automatically, having to be set every month by hand, and in all of them the calendar train moved with the clock train and the dials indicated the fractions of a day, week, month, &c., moving regularly with the clock. In my calendar I only use the clock train for starting the calendar train, it being at all times independent of it, and by this means I make all the changes at one time (midnight) and do not show on the dials any fractional part of the day, week or month.

Although apparently intricate, the calendar can be made for about the same price or even less than the ordinary clocks.

Having thus fully described my invention, what I claim therein as new and desire to secure by Letters Patent is—

1. Causing a calendar clock to supply its own changes for the irregularities in the lengths of the months, and showing on its dials, the exact, and no fractional part of a day, week, or month, by means of the combination of the wheel D, having thirty-one divisions, the wheel G having twelve divisions, both of which run together and independently of each other at intervals, on the same arbor, and the lifting pieces E, F, for supplying the necessary changes in the length of the months, the whole being operated by the hook piece J substantially in the manner herein described.

2. I also claim in combination, the wheel P, of seven parts working spring tight with

the wheel q, and the catch piece X, so that the two wheels may move together and independently of each other for the purpose of allowing the day of the month indicator to run during the time that the change is taking place from the end of a short month to the beginning of the next month while the day of the week indicator passes from one day to another in regular succession substantially as described.

JOHN H. H. HAWES.

Witnesses:
A. B. STOUGHTON,
S. C. DORM.