

E. N. HEATH.

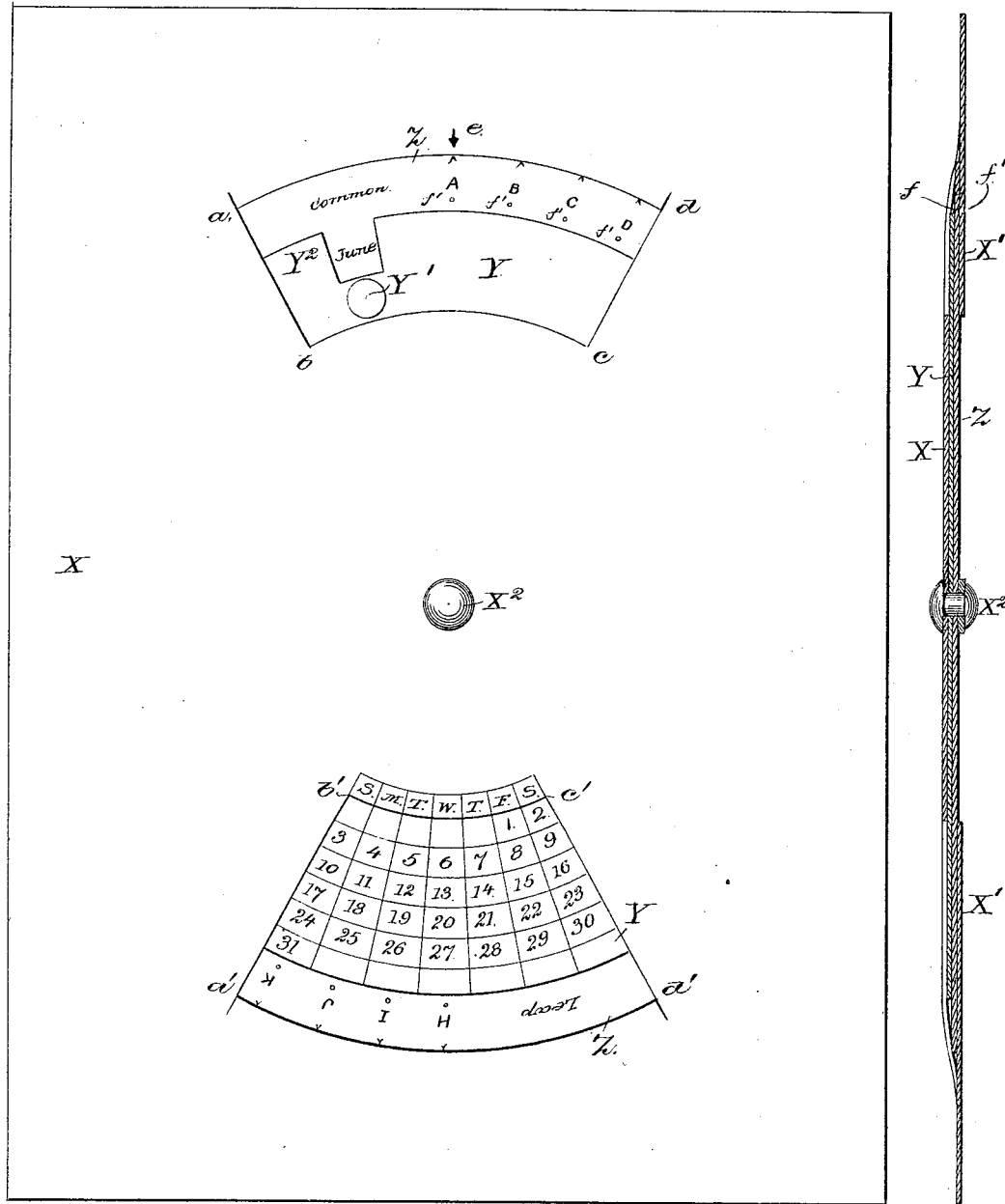
CALENDAR.

No. 344,376.

Patented June 29, 1886.

Fig. 1.

Fig. 2.



Witnesses.

John F. C. Prinkert
Fred A. Powell.

Inventor,

Erroy H. Heath.
by Crosby & Morgan, attys.

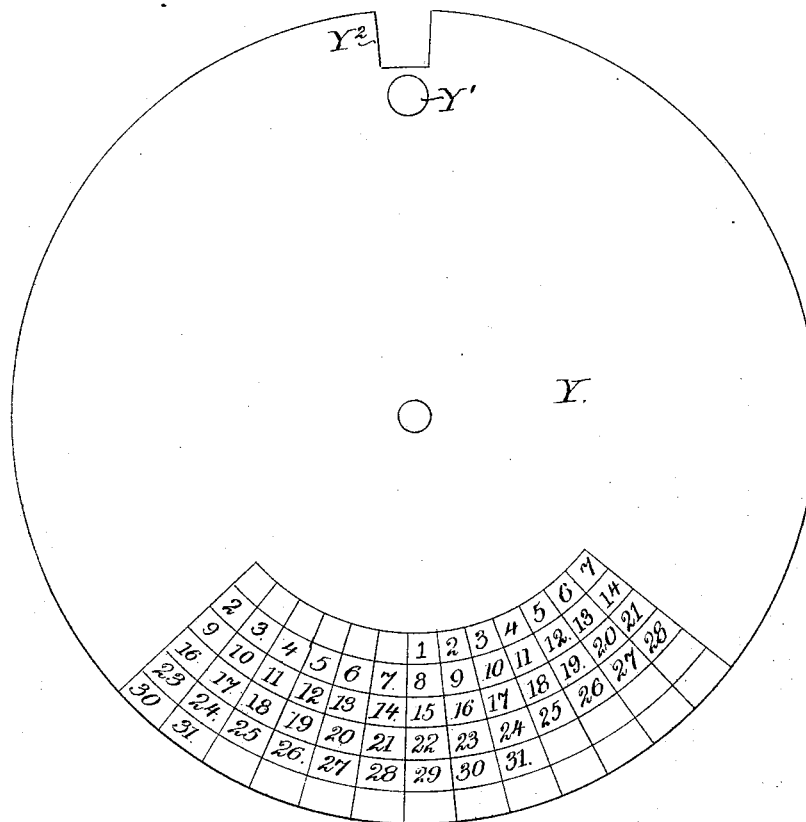
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Fig. 3.



Witnesses.

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(No Model.)

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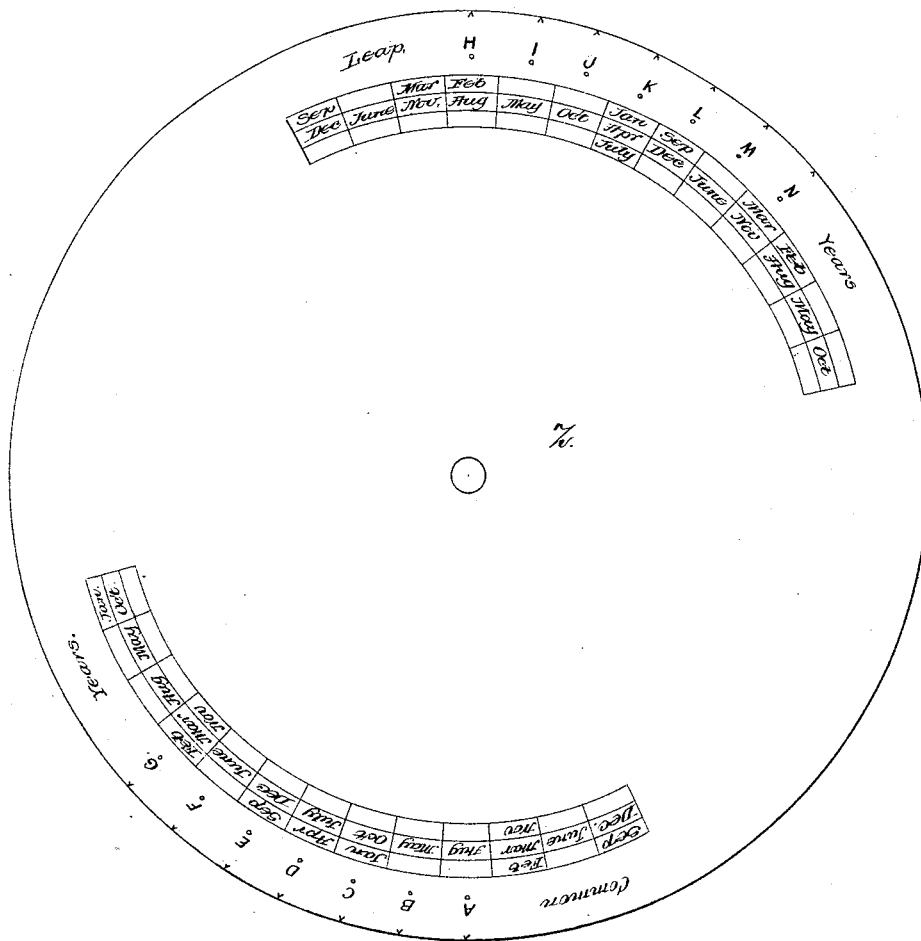
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Fig. 4.



Witnesses.

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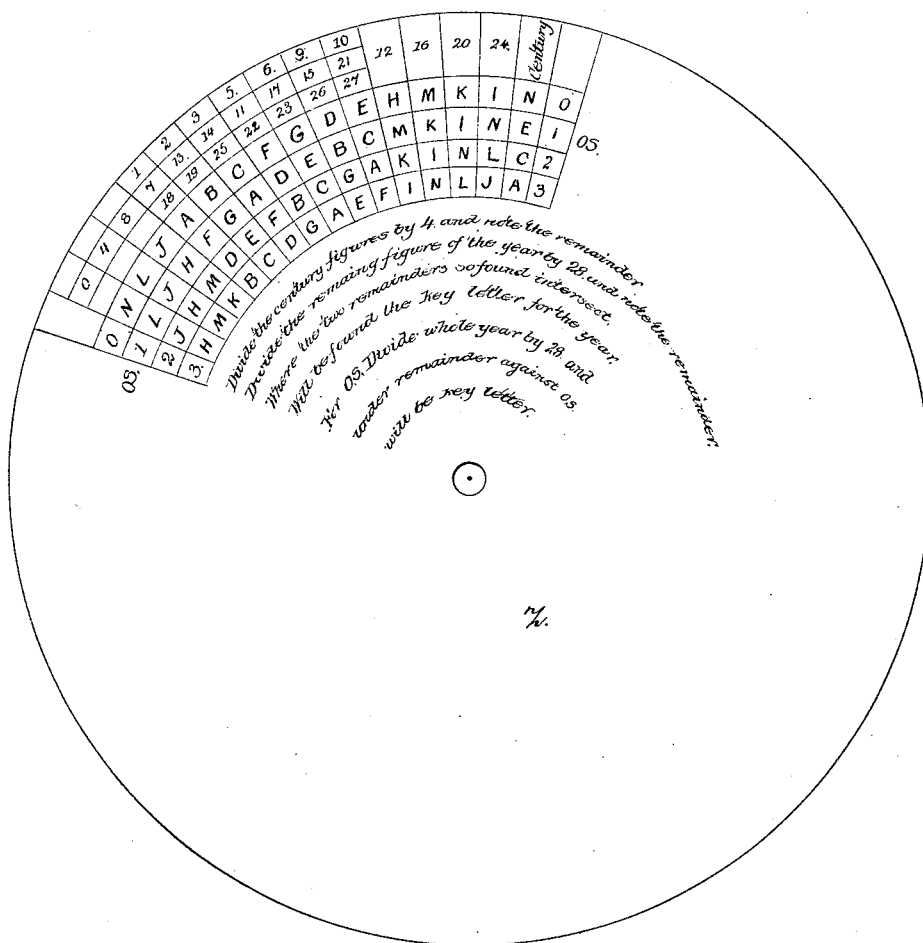
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Fig. 5.



Witnesses.

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UNITED STATES PATENT OFFICE.

ELROY N. HEATH, OF BOSTON, MASSACHUSETTS.

CALENDAR.

SPECIFICATION forming part of Letters Patent No. 344,376, dated June 29, 1886.

Application filed June 25, 1883. Serial No. 99,182. (No model.)

To all whom it may concern:

Be it known that I, ELROY N. HEATH, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Calendars, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My invention relating to calendars has for its object to produce a perpetual calendar, or one which may, by a simple calculation, beset to show correctly the corresponding days of the week and month in any year of the Christian era. The calendar consists, essentially, of three cards or plates movable with relation to one another, one of which may be called the "main card," having the other two cards pivoted upon it with a portion near their peripheries showing through suitable openings in the main card. The openings in the main card are made by cutting a broken line through it, and thus forming flaps, which lie behind the rear of the other cards, and the said main card is provided at one end of the openings with a line of characters representing the days of the week. The card next at the rear of the main card is provided with the numbers 1 to 31 of the days of the month, the larger part of the said numbers being repeated, so that when the figure 1 is brought beneath the initial letter or character of the proper week-day for the beginning of any month, the remaining figures will be brought beneath the proper initials for all the days of the month, this part of the calendar being substantially the same as one previously invented by me, for which Letters Patent No. 266,289, were granted October 24, 1882. The said month-day card, or one that is provided with the number of the days of the month, has a notch in the part of its periphery which shows through the other opening in the main card, the said notch being intended to expose names of the different months which are marked in proper order upon the periphery of the third card instead of, as in the former patent referred to, being marked upon the main card. For any particular year the third or rearmost card which has the names of the months upon it, and which may be called the "year-card," is fixed with relation to the front or main card, and the second or intermediate card is moved from month to month, as de-

scribed in the former patent, except that it has a rotary instead of a sliding movement. The said year-card, which carries the month-names, is adapted to have fourteen different positions with relation to the main card, these positions corresponding to the different days of the week upon which the year begins, and seven being for ordinary years and seven for leap-years. It is consequently necessary only to place the year-card in the proper position with relation to the main card for any year, after which the calendar will be used for the year precisely in the same manner as the calendar formerly invented by me. As shown in this instance, the main card is provided with a small opening, and the year-card is provided with a series of openings corresponding to its fourteen positions, which, by rotation of the said card, are brought into coincidence with the opening on the main card, so that when the year-card is turned to the proper position for any year it may be locked in the said position by passing the said openings over a pin or hook upon which the calendar is suspended when in use.

In order to determine in what position the year-card is to be placed for any given year, the calendar is provided with a table having intersecting rows and columns of different characters, fourteen in number, and shown in this instance as the first fourteen letters of the alphabet. By a simple calculation, hereinafter described, a certain row and column of the said table are found, and the character at their intersecting point will be the key for the year for which the calculation is made, and the said card will be set in the position corresponding to the said key when it will be ready to use for the year in question.

Figure 1 is a front elevation, and Fig. 2 a longitudinal vertical section, of a calendar embodying this invention; Fig. 3, a front view of the intermediate or month-day card, and Figs. 4 and 5 front and rear views, respectively, of the rearmost or year card.

The front or main card, X, (see Fig. 1,) is cut upon the broken lines $a\ b\ c\ d\ a'\ b'\ c'\ d'$, to form openings, through which the peripheries of the other cards, Y and Z, show, the rear card, Z, being of greater diameter than the intermediate card, Y, so that a portion of the periphery of the former shows around the periphery of the latter, as seen in Fig. 1. The

segmental tongues of the main card, that are separated therefrom by cutting through the lines *a b c d a' b' c' d'*, instead of being wholly removed, remain attached to the main card 5 between *a d a' d'*, forming flaps *X'*, (see Fig. 2,) which lie at the back of the card *Z*, thus holding both the cards *Y Z* close to the main card *X*. The three cards *X Y Z* are pivotally connected by a suitable rivet or stud, *X*², and 10 the main card *X* is provided with the usual week-day initials, arranged along the edge of one of the openings, as shown along the line *b' c'*. The intermediate or month-day card, *Y*, is provided with the numbers 1 to 31, arranged as shown in Fig. 3, to show through 15 the openings in the main card in positions corresponding with the week-day initials, so that when the numeral 1 of the said month-card comes beneath any one of the week-day initials, the remaining figures will be in proper 20 order with relation to the rest of the said week-day initials. For instance, the calendar is set, as shown in Fig. 1, for the month of June, 1883, the figure 1 of the said card *Y* being under the week-day initial *F*, Friday being the day of the week on which the month of June, 1883, begins. The card *Y* is shown as provided with a handle, *Y'*, for rotating it to the proper position with relation to the main 25 card, and it also has a notch or openings, *Y*², in its periphery, through which one of the divisions on the front of the year-card, *Z*, may be shown, the said divisions having the names of the months indicated in them, as shown in 30 Fig. 4, their relation being determined by the day of the week upon which each month begins. For any given year there would need to be but seven of these divisions, one corresponding to each day of the week and containing the names of all the months that begin on the said week-day in the said year; but in 35 order to provide for all varieties of years there will have to be twenty-six of the said spaces arranged in two sets of thirteen, as shown in Fig. 4. It will be seen that when the card *Z* is fixed with relation to the card *X* there will be seven of the said spaces lying in the opening *a b c d*, and for the year the said spaces co-operate with the card *Y* and its notch *Y*², just 40 as if the said spaces were marked upon the main card *X*, the card *Y* being moved from month to month, as in my former patent, until the name of the desired month appears in the notch *Y*². For the different years, however, the card *Z* has to be changed in relation to the opening 45 in the card *X*, according to the day of the week upon which the year begins, and also according to whether the year is leap-year or not. This movement of the card *Z* may be determined by different key-characters shown as the first fourteen letters of the alphabet marked on the outer part of its front face, which shows beyond the periphery of the card 50 *Y*. Thus by rotating the said card until one of the index-points, corresponding to the said letters, is brought into line with the index-point *e* at the top of the main card *X*, the said

card will be in proper position for one year. For instance, when the letter "A" is at the top the card is in proper position for a common year, beginning on Monday. When at 70 "B" for a common year beginning on Tuesday. When at "H" it is proper position for a leap-year beginning on Sunday, and "I" for a leap-year beginning on Monday, and so on. 75

In order to determine the key-letter for any desired year, a table is provided, it being shown in this instance as printed on the back of the year-card "Z," as seen in Fig. 5. The said table consists of four rows containing the 80 different key-letters in a particular order, the said rows being characterized by the numbers "0 1 2 3," marked at their ends, which I call "century-remainders," and the intersecting columns, which are in this instance radial, are 85 characterized by a series of numbers varying from "0" to "27," which may be called the "year-remainders."

To determine the key-letter for any year—as, for instance, 1883—divide the century-number of the year, as 18 by 4, and note the remainder, in this instance 2; also divide the year-number, as 83 by 28, and note the remainder, which in the case of 83 is 27. Find the said century and year remainders in the 90 corresponding row and column of the table, Fig. 5, and the point where the row and column characterized by the said remainders intersect shows the key-letter for the year in question, in this instance the letter "A." For 100 the year 1911 the century-remainder will be 3, and the year-remainder 10, giving the key-letter "F" for the said year. For even centuries the key-letter is found in the column marked "century" opposite the requisite century-remainder, as for the year 1900, the century-remainder being 3, the key-letter is A, 105 which is a common year, the first of January being on Monday, as in 1883. For old style, divide the whole number of years by 28, and 110 note the year-remainder and the point of intersection of the year-remainder column with the row marked "O. S." gives the key-letter desired—as, for instance, to find the key-letter for 1395, dividing by 28 gives the remainder 115 23, and at the points where the year-remainder column 23 intersects with the line O. S. we find the key-letter E.

In order to provide means for locking the card *Z* with relation to the card *X*, so that it 120 will not move when the card *Y* is turned from month to month, the main card *X* is provided with an opening, *f*, and the year-card *Z* is provided with a series of openings, *f'*, corresponding to each of the key-letters around its periphery, it being brought into coincidence 125 with the opening *f* of the main card, when each of the key-letters is brought opposite the index-point *e* on the main card. By passing the said openings over a suspending hook or wire 130 the latter will lock the cards together, so that further rotation of the card *Z* with relation to the card *X* will be prevented.

The key-table may be omitted, or the cal-

endar may be used from year to year by merely setting the card Y in proper position with relation to the week-day signs on the card X for the first day of January for each year, and then turning the card Z until the month-sign for January shows through the notch Y², which sets the card Z properly for the year in question, care being taken to use the proper portion of the card Z for leap-year.

10 I claim—

1. A perpetual calendar comprising the main portion containing week-day initials, the month-day card, and the year-card pivoted together, the latter being provided with the key-table, a fixed pointer or indicator on the main portion, and a series of characters corresponding with those on the key-table, whereby the calendar may be adjusted for any year, in the manner set forth.
2. The main portion or card having openings, and the intermediate month-day card, provided with a table of numbers of the days

of the month, and having its periphery notched, combined with the year-card having the month-names thereon, the said cards being pivoted together concentrically, and co-operating together substantially as described.

3. The main card, cut as described, to form openings without removing the material, the flap portion thereby formed being placed behind the rear card, and serving to bind the cards together, combined with a rotating card pivoted to the main card and having a portion of its periphery displayed through the said openings, the material of the main card at the openings being behind the pivoted card, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ELROY N. HEATH.

Witnesses:

JOS. P. LIVERMORE,
W. H. SIGSTON.