

H. F. EILS.  
PERPETUAL CALENDAR.  
APPLICATION FILED DEC. 18, 1911.

1,064,136.

Patented June 10, 1913.

Fig. 3.

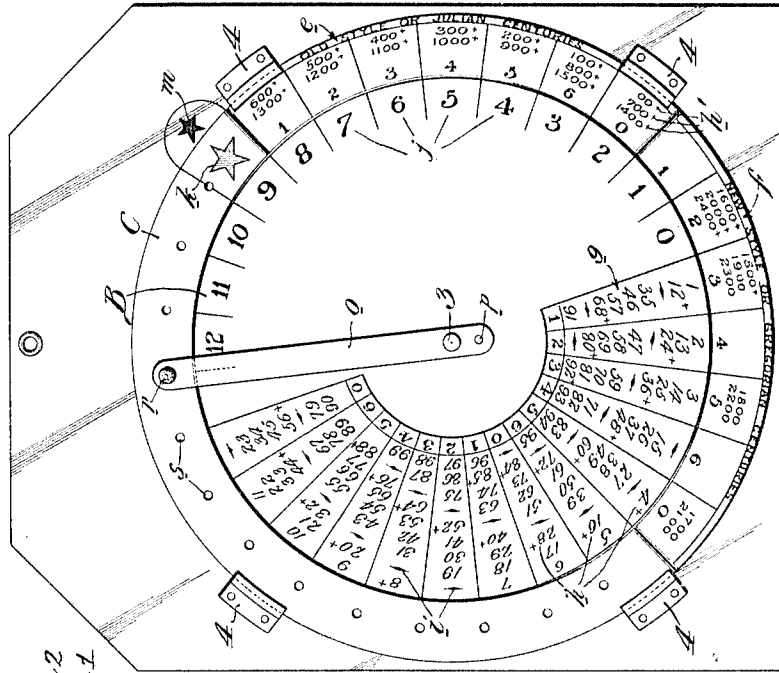


Fig. 2.

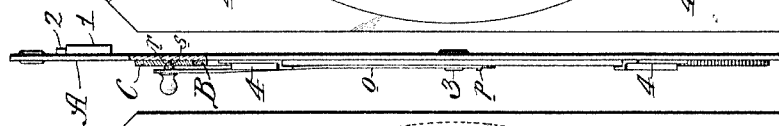
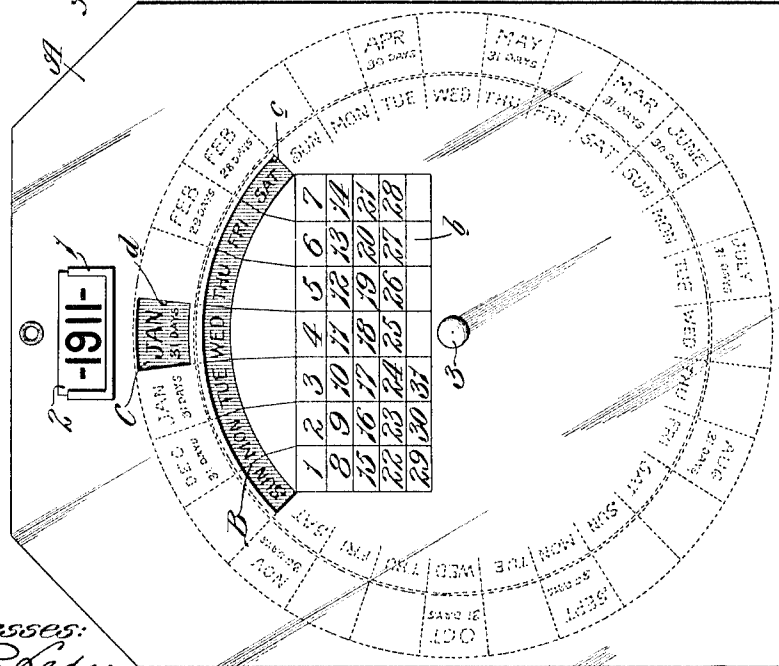


Fig. 1.



Witnesses:  
Geo. P. Radson  
Hells R. Church

Inventor:  
Henry F. Eils.  
By Paul B. Kewell, Atty.

# UNITED STATES PATENT OFFICE.

HENRY F. EILS, OF ST. LOUIS, MISSOURI, ASSIGNOR TO ST. LOUIS UNIVERSITY, OF ST. LOUIS, MISSOURI, A CORPORATION OF MISSOURI.

## PERPETUAL CALENDAR.

1,064,136.

Specification of Letters Patent.

Patented June 10, 1913.

Application filed December 18, 1911. Serial No. 666,429.

*To all whom it may concern:*

Be it known that I, HENRY F. EILS, a citizen of the United States, residing at St. Louis, Missouri, have invented a certain new and useful Improvement in Perpetual Calendars, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to perpetual calendars.

One object of the invention is to provide a novel means for determining quickly the first day of any year or the day of the week on which any year begins.

Another object is to provide a calendar which shows the days, weeks and months of any year in the Christian era. And still another object is to provide a perpetual calendar of simple construction that can be used as a current monthly calendar.

Figure 1 of the drawings is an elevational view showing the front face of the calendar; Fig. 2 is an edge view partly broken away to more clearly show the construction of the means which locks the disk and ring-shaped member of the calendar together; and Fig. 3 is an elevational view showing the rear side of the calendar.

If a year were composed of 364 days or 52 weeks every year would begin on the same day of the week. In view of the fact, however, that a common year contains 365 days and a leap-year 366, days, each year begins on a different day of the week from the day on which the preceding year began. In order that the first day of any year may be ascertained quickly I have devised a calendar which comprises two members that contain certain numbers and symbols which cooperate with each other to indicate the first day of any year in the Christian era. One of these members, which I will refer to as the "century" member, contains numbers that designate the closing years of the centuries, and also characters or symbols, preferably numbers, which I will refer to as "key" numbers, that designate the number of days over or in excess of an even number of weeks that have elapsed at the expiration of the centurial years, the centurial years which relate to the same key number being grouped together with said key number, those which relate to a different key number being arranged in a different group with

their respective key number, and so on. The other member of the calendar, which I will refer to as the "year" member, contains the numbers 1 to 99 that designate the years of the first century and also certain key numbers that designate the number of days over or in excess of an even number of weeks that have elapsed at the expiration of the different years of the century, the key number which is common to certain years of the century being grouped together with the numbers that designate said years, the key number which is common to certain other years being grouped with the numbers that designate said years, and so on.

In the embodiment of my invention herein shown I have used the key number 1 to designate Saturday as the first year of the Christian era began on Saturday, 2 to designate Sunday, 3 to designate Monday, 4 to designate Tuesday, 5 to designate Wednesday, 6 to designate Thursday, and 0 to designate Friday. I do not wish it to be understood, however, that my invention is limited to a calendar in which key numbers of the kind above referred to are used for various other symbols could be used on the century member and on the year member without departing from the spirit of my invention.

The year member and the century member above referred to preferably consist of a disk and a ring, respectively, that are rotatably mounted on the rear side of a plate which is provided on its front face with numerals arranged in seven vertical columns so as to form a monthly calendar. The disk is arranged inside of the ring, and words or symbols that designate the days of the week and the months of the year are arranged on said disk and ring, respectively, in such a manner that they will be exposed to view through openings in said plate and thus form a suitable heading for the monthly calendar on the front face of the plate.

By arranging the disk-shaped year member in a certain position with relation to the ring-shaped century member the user can ascertain the number of days over an even number of weeks that have elapsed at the end of any year, and with this information he can easily determine the day of the week on which the year in question begins. For example, if the user finds that at the expiration of a certain year there were five

days over an even number of weeks he knows that the year ended on Wednesday as the key number 5 on the calendar designates Wednesday. If the year in question is a common year containing 365 days he knows that the year began on Wednesday for each common year begins and ends on the same day of the week. In the preferred form of my invention, as herein shown, it is not necessary for the user to calculate this mentally for the century member and the year member of the calendar are so designed that when they are set in certain positions with relation to the openings in the plate on which said members are mounted the word "Jan." on the century member, which designates the first month of the year, will be exposed to view through one of said openings, and the words or symbols on the disk-shaped year member which designate the days of the week will also be exposed to view through an opening in said plate and arranged in proper relation with the vertical columns of numbers on the front face of the plate that constitute the monthly calendar. Means is provided for locking said disk-shaped member and ring-shaped member together so that they will not move relatively to each other after they have been set in proper relation to each other, thus causing the year member to move in unison with the century member when said century member is rotated to bring the words thereon that designate the months of the year into alinement with the opening in the plate through which said words can be seen.

Referring to the drawings which illustrate the preferred form of my invention, A designates a plate formed of card-board, metal or any other suitable material which is provided on its front face with seven vertical columns of numbers arranged to form a monthly calendar *b*. An arc-shaped slot *c* is formed in the plate A above the calendar *b*, and an opening *d* is also formed in said plate above said arc-shaped slot, as shown in Fig. 1. If desired, the plate A may be provided on its front face with a pocket 1 for holding cards 2 on which year numbers are printed.

A disk-shaped member B and a ring-shaped member C are rotatably mounted on the rear side of the plate A, the disk B being arranged inside of the ring C, and being journaled on a stud 3 in said plate. Any suitable means may be provided for holding the ring C in position such, for example, as clips 4 on the rear side of the plate A which lap over the ring C and thus hold it in position without interfering with its rotary movement around the disk B. The ring C constitutes the century member of the calendar and one-half of said ring is divided into fourteen radial columns that contain key numbers or symbols and also

numbers which designate the closing years of the centuries. Seven of said columns contain numbers that designate the closing year of the "Julian" centuries or "old-style" calendar, the reference character *e* designating this section of the ring. The other seven radial columns of the ring C contain key numbers or symbols and numbers that designate the closing years of the "Gregorian" centuries or centuries of the "new-style" calendar, this section of the ring being designated by the reference character *f*. The key numbers 1, 2, 3, 4, 5, 6 and 0 in the columns of the old-style section *e* of the ring and in the columns of the new-style section *f* of said ring designate the number of days over an even number of weeks that have elapsed at the expiration of certain periods, and said key numbers are associated with or grouped with the respective centennial year numbers to which they relate. For example, referring to the new-style section *f* of the ring, the key number 2 is arranged in the column that contains the numbers 1600, 2000 and 2400, thus indicating that at the end of the sixteenth century, of the twentieth century, and of the twenty-fourth century two days over an even number of weeks had elapsed since the beginning of the Christian era. While I have herein shown the new-style section *f* of the ring C as containing numbers that designate the closing years of the centuries up through the twenty-fourth century, it will, of course, be understood that this section of the ring can be provided with numbers which designate the closing years of any desired number of centuries.

The disk-shaped member B which is arranged inside of the ring C is provided with fourteen radially disposed columns *g* in which are arranged the numbers 1 to 99 that designate the years of the first century, and also complementary key numbers 1, 2, 3, 4, 5, 6 and 0 which cooperate with the key numbers on the century member C, the year member and century member having the same number of radial columns and the same number of key members. The key numbers on the year member B are arranged at the inner ends of the radial columns *g*, and the numbers in said columns which designate the years of the first century are grouped together in such a manner that all of the years that ended on the same day of the week or in which the same number of days over an even number of weeks had elapsed at the end of the year are grouped together with the proper key number that designates this fact. I have provided the disk B with fourteen columns or two sets of columns *g* so that it will correspond with the ring C which contains two sets of columns, one set relating to the old-style calendar and the other set relating to

the new-style calendar. If the ring C were provided with only one set of columns containing numbers that designate the closing years of the centuries of the new-style calendar, the disk B would, of course, be provided with only seven columns instead of fourteen columns. The years of the first century that are leap-years are designated on the year member B by small crosses *h* placed at the right of the numeral which designates the year, and similar crosses *h'* are used on the century member C to designate the centurial years that are leap-years. Dashes *i* are used on the year member B preceding each leap-year so as to provide for the extra day in the leap-year and thus space the leap-year number one column to the right of the column in which it would fall if the year were not leap-year. For example, the numbers 1, 2 and 3 are placed in the three left-hand columns *g* on the year member B, and the key numbers 1, 2 and 3 are placed at the lower ends of said columns so as to indicate that at the end of the first year one day over an even number of weeks had elapsed, at the end of the second year two days over an even number of weeks had elapsed, and at the end of the third year three days over an even number of weeks had elapsed. The number 4 which designates the fourth year of the century which is a leap-year, is placed in the fifth column *g* on the year member instead of in the fourth column so as to provide for the extra day in the leap-year and thus arrange the number 4 in the fifth column which is provided at its lower end with the key number 5, thus indicating that at the end of the fourth year five days over an even number of weeks had elapsed since the Christian era began. The key numbers are preferably printed in different colored ink from the numbers on the century member and on the year member which designate the centurial years and the years of the first century.

The disk B, which constitutes the year member of the calendar, is provided with the numerals 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 and 12, which I will hereinafter refer to as "complete" key numbers *j*, and the ring C is provided with a star *k* that coöperates with said complete key numbers so as to aid the operator in setting the disk in proper relation to the ring C. In the embodiment of my invention herein shown, the complete key numbers *j* on the disk B are printed in larger type than the complementary key numbers on said disk which are arranged in the columns *g* that contain the numbers which designate the years of the century. The star *k* on the ring C also coöperates with a star *m* on the rear side of the plate A so as to aid the operator in setting the ring C in proper position so that the word

"Jan." on said ring will appear through the opening *d* in the plate A. A radially disposed handle *o* is secured to the disk B in any suitable manner as, for example, by the stud *3*, and by a small rivet *p* that passes through the extreme inner end of said handle and through the disk B. The handle *o* preferably consists of a thin strip of spring steel, and it is provided at its outer end with a projection *r* that is adapted to enter one of a plurality of holes or recesses *s* in the ring C, as shown in Fig. 3, so as to lock the year member and century member together.

If the user desires to set the calendar for the year 1907, for example, he moves the year member B into such a position that the numeral 7 in one of the columns *g* thereon aligns with the radial column in the new-style section *f* of the ring C which contains the number 1900 that designates the closing year or centurial year of the nineteenth century. He then adds the key number 3 of the column which contains the number 1900 to the key number 1 of the column *g* on the year member that contains the number 7 so as to obtain the complete key 4 which designates that at the end of the year 1907 four days over an even number of weeks had elapsed since the Christian era began. Having ascertained this fact the user moves the disk B until the complete key number 4 in the group of complete key numbers *j* comes into alinement with the star *k* on the ring C, thus arranging the disk B in proper relation with the ring C. Thereafter, the user rotates the ring C and also the disk which is locked to said ring until the star *k* on the ring aligns with the star *m* on the plate A, thus bringing the word "Jan." on the ring C into alinement with the opening *d* in the plate A, and the word "Tues." on the disk into alinement with the numeral 1 of the calendar *b* on the front face of the plate A, the star *m* being arranged in such relation to the opening *d* that the word "Jan." will always appear through said opening when the stars *k* and *m* are in alinement. After the expiration of Jan. the user turns the ring C so as to bring the word "Feb." into alinement with the opening *d*, the disk B moving with said ring and thus bringing the words on said disk which designate the days of the week into proper relation with the seven vertical columns of numbers in the monthly calendar *b*.

It is not absolutely necessary that the user add the key number 3 of the column which contains the number 1900 to the key number 1 of the column *g* on the year member that contains the number 7 for the same result could be obtained if the user merely rotated the disk B so as to bring the complete key number 1 thereon into alinement with the

column in the century member or ring C that contains the number 1900. After the disk B has been arranged in operative position with relation to the ring C in the manner just-described and locked thereto, the user rotates said ring and disk until the star  $\frac{1}{2}$  on the ring aligns with the star  $m$  on the plate A, thus bringing the word "Jan." on the ring C into alinement with the opening  $d$  in the plate A and the word "Tues." on the disk into alinement with the numeral 1 of the calendar  $b$  on the front face of the plate A.

From the foregoing it will be seen that while I prefer to provide the century member C with key numbers that are adapted to be combined with the key numbers on the year member, and also provide the year member with complete key numbers composed of the numerals 0 to 12, inclusive, the key numbers on the century member may be omitted if desired and the year member provided only with complete key numbers 0 to 6, inclusive.

In order that the words "Sun.", "Mon.", etc., on the year member B will be arranged in proper relation to the vertical columns of numbers on the monthly calendar  $b$  when the calendar is set for a leap-year, I have provided the ring C with symbols that designate the months "Jan." and "Feb." of a leap-year, said symbols preferably consisting of the words "Jan." and "Feb." printed in different colored ink alongside of the words Jan. and Feb. on the ring C that are used for indicating the months of the common years. To set the calendar for a leap-year the user proceeds in the manner previously described, the word "Jan." printed in black on the ring C appearing through the opening  $d$  when the stars  $k$  and  $m$  are in alinement. Thereafter, the user rotates the ring and disk one space to the right, or in clockwise direction, looking at the face of the calendar, so as to bring the leap-year symbol "Jan." into alinement with the opening  $d$  and also shift the words Sun., Mon., Tues., etc. on the disk B one space to the right, thus providing for the extra day in the leap-year. After the expiration of Jan. the disk and ring are rotated in anti-clockwise direction, looking at the face of the calendar, so as to bring the leap-year symbol "Feb." into alinement with the opening  $d$ . It is not necessary to provide the ring C with different symbols for the other months of the leap-year besides Jan. and Feb. owing to the fact that the extra day in February results in bringing the words "Sun.", "Mon.", "Tues.", etc., on the disk B into proper relation with the vertical columns of the calendar  $b$  when the ring C is rotated to bring the succeeding months into position. In other words, the extra day in February compensates for

the one day that the calendar is set back when the leap-year symbol "Jan." is brought into alinement with the opening  $d$ .

If when setting the disk B and ring C the two cooperating key numbers on said disk and ring are "0" the disk should be turned until the zero of the group of complete key numbers  $j$  comes into alinement with the star  $k$  on the ring C. For example, to set the calendar for the year 1706, the operator turns the disk B until the number 6 in the column  $g$  thereon comes into alinement with the radial column in the new-style section of the ring C that contains the number 1700. As both of the key numbers in said columns are "0" the user knows that the complete key is 0 and therefore he turns the disk until 0 of the set of complete key numbers comes into alinement with the star, as previously described.

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

1. A calendar consisting of a supporting member, a movable century member on said supporting member provided with separate sets of symbols and with separate sets of complete numbers that designate the closing years of the old style and the new style centuries, respectively, a cooperating movable year member on said supporting member provided with numbers that designate the years of a century and with symbols which cooperate with the symbols on said century member to indicate the day of the week on which a year begins, numbers on said supporting member arranged in seven columns so as to form a monthly calendar, symbols on one of said movable members which designate the days of the week and thus form headings for the seven columns of numbers on the supporting member, and symbols on the other movable member that designate the months of the year.

2. A calendar consisting of a plate provided on its front face with numerals that are arranged to form a monthly calendar, said plate having openings, a disk rotatably mounted on the rear side of said plate and provided on one side with symbols designating the days of the week that can be seen through one of said openings, a rotatable ring surrounding said disk and provided on one side with symbols designating the months of the year that can be seen through the other opening in the plate, separate sets of complete numbers on the reverse side of said ring that designate the closing years of the old style and new style centuries, respectively, groups of numbers on the reverse side of said disk that designate the years of a century, key numbers on said disk arranged with the group of numbers thereon for indicating the day of the week on which a year begins, a separate and distinct set of key

numbers on said disk that indicate the days of a week, and means on said ring which co-operates with said last-mentioned key numbers to enable said disk and ring to be set in proper relation to each other.

3. A calendar consisting of two relatively movable members, one of which is provided with separate sets of complete numbers that designate the closing years of the old style and new style centuries, respectively, and the other with numbers that designate the years of a century, and symbols on one of said members that indicate the number of days in excess of an even number of weeks that have elapsed at the expiration of the different years of a century and which show how said members have to be adjusted with relation to each other so as to indicate the first day of any year.

4. A calendar consisting of a rotatable century member having two sections, one of said sections having seven radially-disposed columns or a multiple of seven in which numbers designating the closing years of the old style centuries are arranged, the other of said sections having seven radially disposed columns or a multiple of seven in which numbers designating the closing years of the new-style centuries are arranged, the numbers designating years which end on the same day being grouped together, a coöperating rotatable year member provided with seven radially-disposed columns or a multiple of seven in which numbers designating the years of a century are arranged, the numbers that designate years which end on the same day being grouped together, symbols in the columns on said year member which indicate the number of days over an even number of weeks that have elapsed at the expiration of a year, and complete key numbers arranged on said year member in the form of an arc and consisting of the numerals 0 to 6, inclusive, which are adapted to coöperate with the columns on said century member to enable said century member and year member to be set in proper position with relation to each other.

5. A calendar composed of a supporting member provided with openings, a century member mounted on same and having two separate and distinct sections, one of which comprises seven or a multiple of seven radially-disposed columns in which are arranged numbers that designate the closing years of the old style centuries and the other of which comprises seven or a multiple of seven radially disposed columns in which are arranged numbers that designate the closing years of the new-style or Gregorian centuries, the numbers designating the centurial years that end on the same day being grouped together, a coöperating year member mounted on said supporting member and provided with seven or a multiple of seven radially-disposed columns in which are arranged numbers that designate the years of a century, the numbers that designate years which end on the same day being grouped together, coöperating week-day names and month names on the reverse side of said century member and year member that can be seen through the openings in said supporting member, symbols in the columns on said year member that indicate the days of the week on which the years indicated in said columns terminate, seven key numbers or symbols or a multiple of seven on said year member which are adapted to be brought into registration with one or another of the radial columns on said century member so as to bring the coöperating week day names and month names on the reverse side of said members in proper relation with each other, said key numbers having a certain relation to the radial columns on said year member, and numerals arranged on said supporting member to form a monthly calendar.

In testimony whereof I hereunto affix my signature in the presence of two witnesses, this twelfth day of December 1911.

HENRY F. EILS.

Witnesses:

WELLS L. CHURCH,  
GEORGE BAKEWELL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents Washington, D. C."