Dec. 2, 1930. J. H. NEWTON 1,783,302

PERPETUAL CALENDAR

Filed April 17, 1929 2 Sheets-Sheet 1

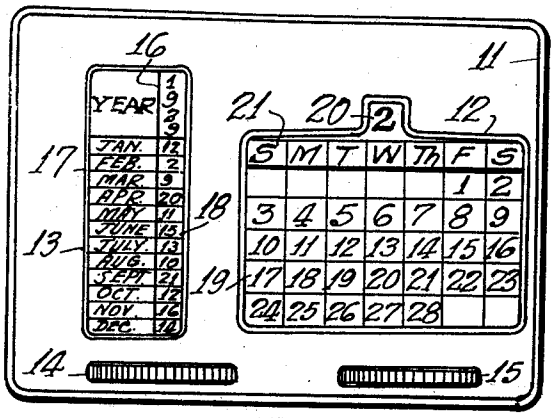


Fig. 1

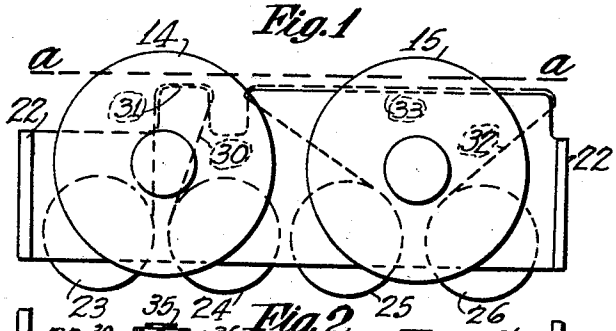


Fig. 2

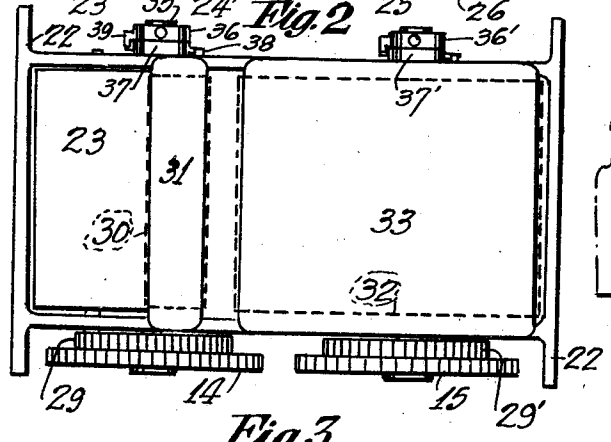


Fig. 3

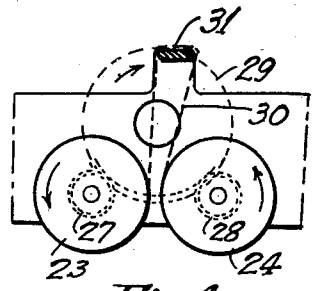


Fig. 4

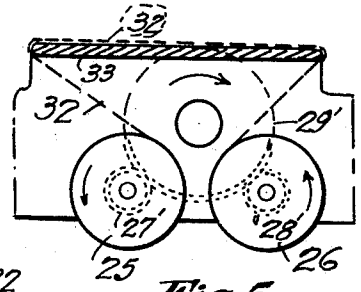


Fig. 5

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Filed April 17, 1929 2 Sheets-Sheet 2

Fig. 6

Fig. 7

Fig. 8

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UNITED STATES PATENT OFFICE

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PERPETUAL CALENDAR

Application filed April 17, 1929. Serial No. 355,912.

This invention relates to perpetual calendars and has for an object to provide a perpetual calendar which is adjusted with reference to a key number for each month in the year; a perpetual calendar in which the key numbers repeat in cycles of 28 years; a perpetual calendar which is easily and quickly adjusted for any month in a selected year, and a system for setting up a calendar which can be extended into the past, or the future indefinitely.

Other objects of the invention reside in the construction and arrangement of parts as more fully described in the following specification and shown in the accompanying drawings, in which:

Fig. 1 is a front view of one form of the calendar, Fig. 2 is a side elevation of the mechanism by which the figures of the calendar are changed, Fig. 3 is a plan view of the mechanism, Fig. 4 is a detail of the mechanism for changing the years and Fig. 5 is a detail of the mechanism for changing the months. Fig. 6 is a table of key numbers running from the year 1800 to the year 1900 inclusive; Fig. 7 is a table of months and Fig. 8 is a continuation of the table of months shown in Fig. 7.

This invention comprises a mechanism with a pair of rollers on which the band containing the table of key numbers is rolled and by manipulating a disc projecting through the casing, this band is moved in front of the aperture of the calendar casing. Also, another similar mechanism is used to move the band containing the table of months and the key numbers.

The key numbers comprise twelve numbers placed in vertical rows below each year on the band—one number for each month. To obtain the calendar for any particular month in any particular year, it is necessary to bring the year desired opposite the aperture in the case and select the key number opposite the month desired. The monthly index band is then turned until this key number is displayed which indicates the calendar for the month and year selected.

Upon a little reflection it will be apparent that seven combinations of numbers will represent every possible calendar arrangement for any month of the same number of days, and as there are months with 28, 29, 30 and 31 days each, four tables with these combinations of numbers will produce a monthly calendar for any month in any year. This arrangement is used in the present invention.

It has been discovered in developing the key numbers that they repeat every twenty-eight years and by using a period of 28 years the calendar may be extended indefinitely. When the years at the end of a century are not leap years, as for instance 1900, certain adjustments in the key numbers are necessary to account for the missing day which otherwise occurs in regular sequence.

In the drawings, 11 is the front cover which is provided with suitable openings as shown through which the monthly calendar 12 and the yearly index 13 is displayed. These openings are preferably provided with a transparent covering to protect the paper bands.

When the knurled disc 14 is rotated by the fingers the vertical row of figures 18 is changed. This changes the year at 16 and changes the key numbers in the column 18 opposite the months 17.

When the knurled disc 15 is rotated, the monthly table 19 is changed and the key number 20. The horizontal row 21 indicating the days of the week is fixed to the cover 11, also the index 17 of the months is fixed to the cover, these parts being the fixed reference by which the other numbers are read.

The operating mechanism is mounted on a frame 22 and comprises the rollers 23 and 24 upon which the band with the key numbers, is rolled. This band 30 passes over a platen at 31 as shown in Fig. 4 so that as it is rolled from one roller to the other the exposed part of the band at 18 changes the key numbers. The roller 23 is provided with a spur wheel 27 and the roller 24 is provided with a spur wheel 28. These wheels mesh with the spur gear 29 attached to the knurled disc 14.

It is apparent that as disc 14 is rotated in one direction, the band with the key numbers moves in one direction and as this

disc is rotated in the opposite direction the band moves in the opposite direction as it is transferred from one roller to the other. The drive between the disc 14 and the rollers may be a belt or any other suitable means as well as spur gears.

The rollers 25 and 26 are similarly operated by disc 15 through the spur gears 27′, 28′ and 29′, the latter being secured to the disc 15. This moves the band 32 with the monthly index characters thereon over the platen 33 as it is transferred between rollers 25 and 26. The line of the cover 11 is indicated at *a*—*a*, Fig. 2, from which it will be noted that the operating discs 14 and 15 project through the cover and the platens 31 and 33 are located just beneath the cover.

As arranged two turns of the disc 14 transfers the entire key band from one roller to the other and in order to prevent undue strain on the band at the end of its movement the disc 14 is provided with a stop mechanism which limits its movement to two turns in each direction. This stop mechanism comprises the collar 36 fixed on the end of shaft 35 upon which 14 rotates and a second collar 37 which is loosely mounted on 35. The collar 37 is free to make one rotation when it is stopped by engaging the pin 38 in the frame 22. The collar 36 is free to make one rotation until the integral projection 39 engages a lug on 37 when 36 and 37 move together until 37 is stopped by 38. Thus 14 is free to make approximately two turns in each direction when it is stopped by the collars 36 and 37. The same type of stop mechanism is provided at 36′ and 37′ for the disc 15.

The frame is suitably mounted in the cover and externally the device may be presented in a variety of forms.

The monthly table as indicated in the band in Figs. 7 and 8 comprises the sections *b*, *c*, *d* and *e*. The key numbers are spaced above the calendar numbers in column 20. The numbers in section *b* from 1 to 7 inclusive represent a 28 day month, only 7 numbers in the horizontal rows can be exposed at a time as indicated in Fig. 1. Section *c* having the key numbers from 8 to 14 inclusive represents a 31 day month; section *d* having the key numbers from 15 to 21 inclusive represents a 30 day month, and section *e* having the key numbers from 22 to 28 inclusive represents a 29 day month. It will be noted that seven key numbers are provided for each section so that all possible combinations can be set up in the calendar.

The key numbers on the band in Fig. 6 are arranged with relation to the key numbers on the monthly band, Figs. 7 and 8. The top portion of the key band 18 has the years arranged in vertical rows beginning with the year 1800 and ending with the year 1900. Below each year in the vertical rows 18, appear the key numbers for each month of the year indicated. Thus in order to obtain a monthly calendar for any year the disc 14 is rotated until the year required appears opposite "Year", the key number is then selected appearing opposite the month desired and disc 15 is rotated until this key number appears at 20. This automatically establishes the monthly calendar desired. For instance, the key number for February, 1929 is 2 and this number shown at 20 gives the February calendar of 28 days.

It should be observed that the key numbers bear a certain repeating relation in periods of 28 years; for instance the section *f* from 1805 to 1832 inclusive is similar to section *g* from 1833 to 1860 inclusive, or to section *h* from 1861 to 1888, and the section *i* from 1889 to 1899 inclusive is similar to the first eleven years of each of the preceding sections. Thus, when leap years occur in regular sequence, these key numbers may be repeated every twenty-eight years indefinitely. This being so it is possible to place them with corresponding key numbers in the same vertical row.

For instance, instead of repeating the key numbers for sections *g* and *h*, the year columns for *g* and *h* may be placed in the corresponding vertical rows with the year numbers for section *f*, if a condensed key band is desired. Thus by properly arranging the years the key numbers are adapted to any periods of time. It will be found that the key numbers in section *f* repeat again in the years 1901–1928; 1929–1956; 1957–1984; 1985–2012, and so on in periods of 28 years, this arrangement carries on throughout the twenty-first century as the year 2000 is a leap year.

As the year 1900 was not a leap year there is a break in the continuity of the 28 year periods of 1900 where the key numbers are arranged to omit the leap year. The same applies to the year 1800 which was not a leap year. Except for this adjustment the numbers repeat in regular regular periods of 28 years.

It should be observed that the purpose of the key numbers is to enable the proper calendar to be selected and these numbers have no meaning except with relation to the key numbers on the calendar. Any numbers or designations might be applied to the monthly calendar as key numbers provided the key sheet was correspondingly numbered; or letters of the alphabet may be used for these designations instead of the figures shown, however whatever designations may be used, they will repeat in periods of 28 years as described. The preferred arrangement is the figures shown on the band in Figs. 7 and 8 with the 30 and 31 day months, which are most frequently used, in the middle of the band.

This invention enables a date to be found instantly and without calculations of any kind and has important uses for legal and financial purposes.

Having thus described my invention, I claim;

1. A perpetual calendar comprising a stand with a pair of parallel rollers in the base thereof and a platen mounted above said rollers, a band having calendar characters passing over said platen and engaging said rollers to be rolled and unrolled as the band is passed over the platen in adjusting the calendar, a second pair of rollers parallel with the first mentioned rollers and a platen mounted above said rollers, a second band having calendar characters passing over said second named platen as the calendar is adjusted, a shaft geared to the first pair of rollers and a second shaft geared to the second pair of rollers and a stop mechanism on each of said shafts limiting the movement of said shafts to two revolutions.

2. A perpetual calendar comprising a stand with a pair of parallel rollers in the base thereof and a platen mounted above said rollers, a band having calendar characters passing over said platen and engaging said rollers to be rolled upon one roller and unrolled from the other roller as the band is passed over the platen in adjusting the calendar, a driving shaft geared to said rollers for rotating said rollers in either direction and a locking mechanism on said shaft, limiting its rotation to two turns in either direction.

In testimony whereof I affix my signature.

JOHN H. NEWTON.