Sept. 26, 1944. E. GATEWOOD 2,358,969

CALENDAR

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FIG I

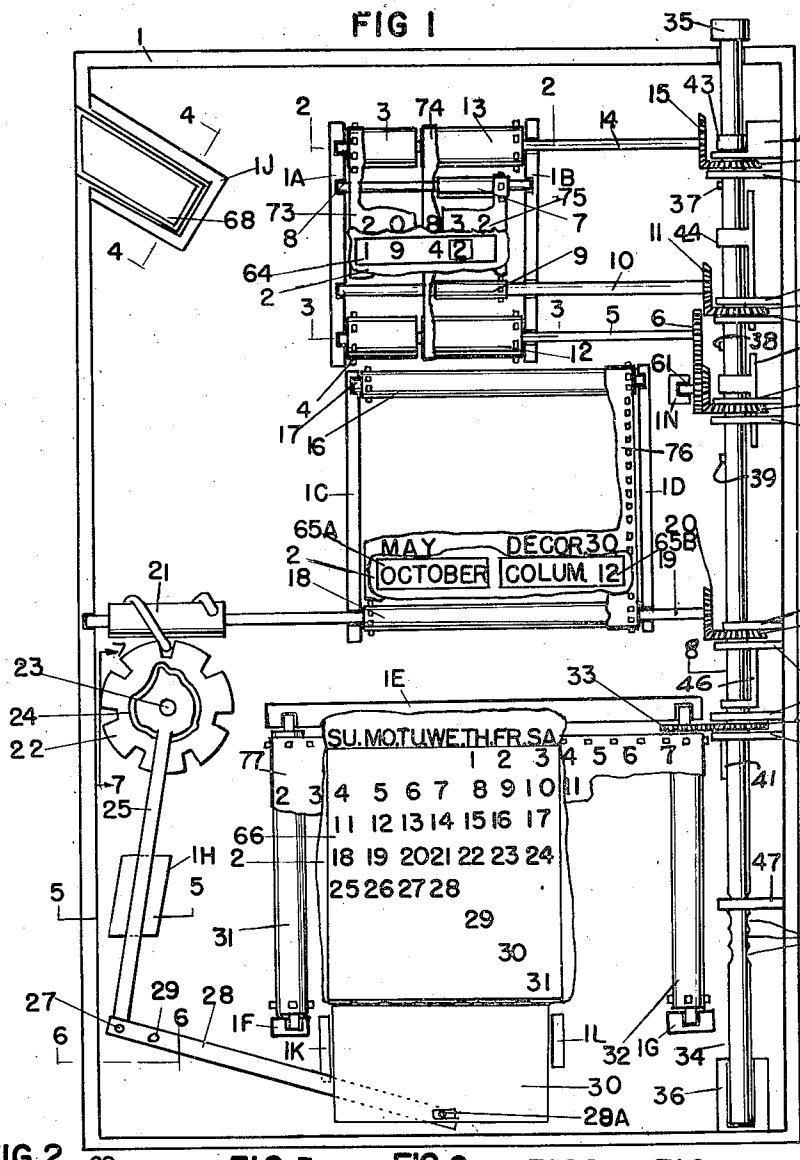


FIG II

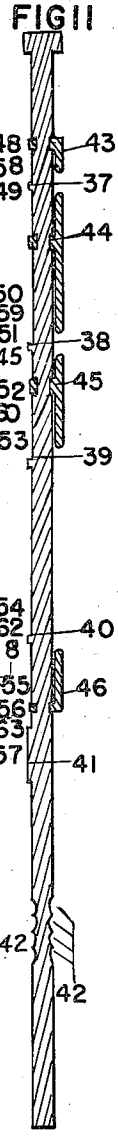


FIG 2

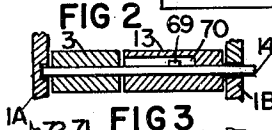


FIG 3



FIG 4

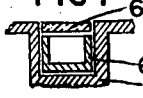


FIG 5

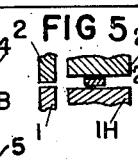


FIG 6

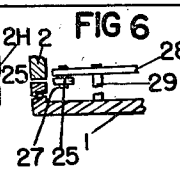


FIG 8

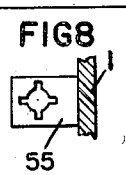


FIG 9

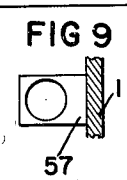


FIG 10

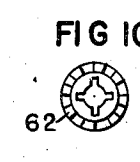
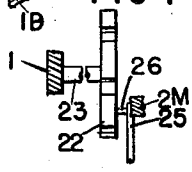


FIG 7



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FIG 12 FIG 13 FIG 14 FIG 15

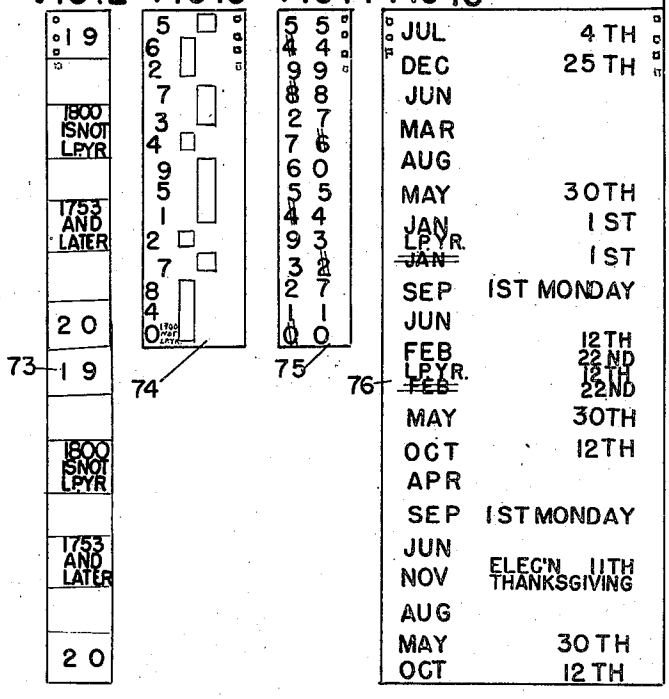
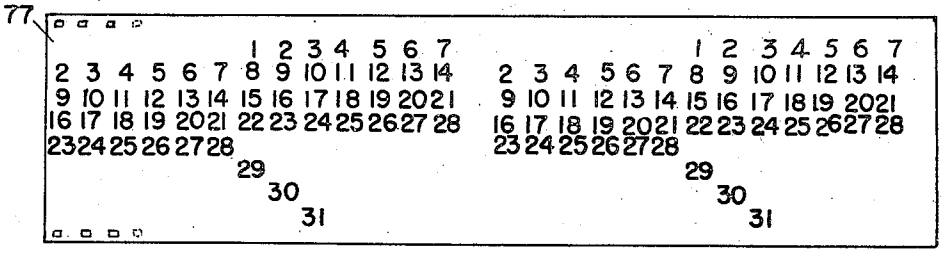


FIG 16



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FIG 17

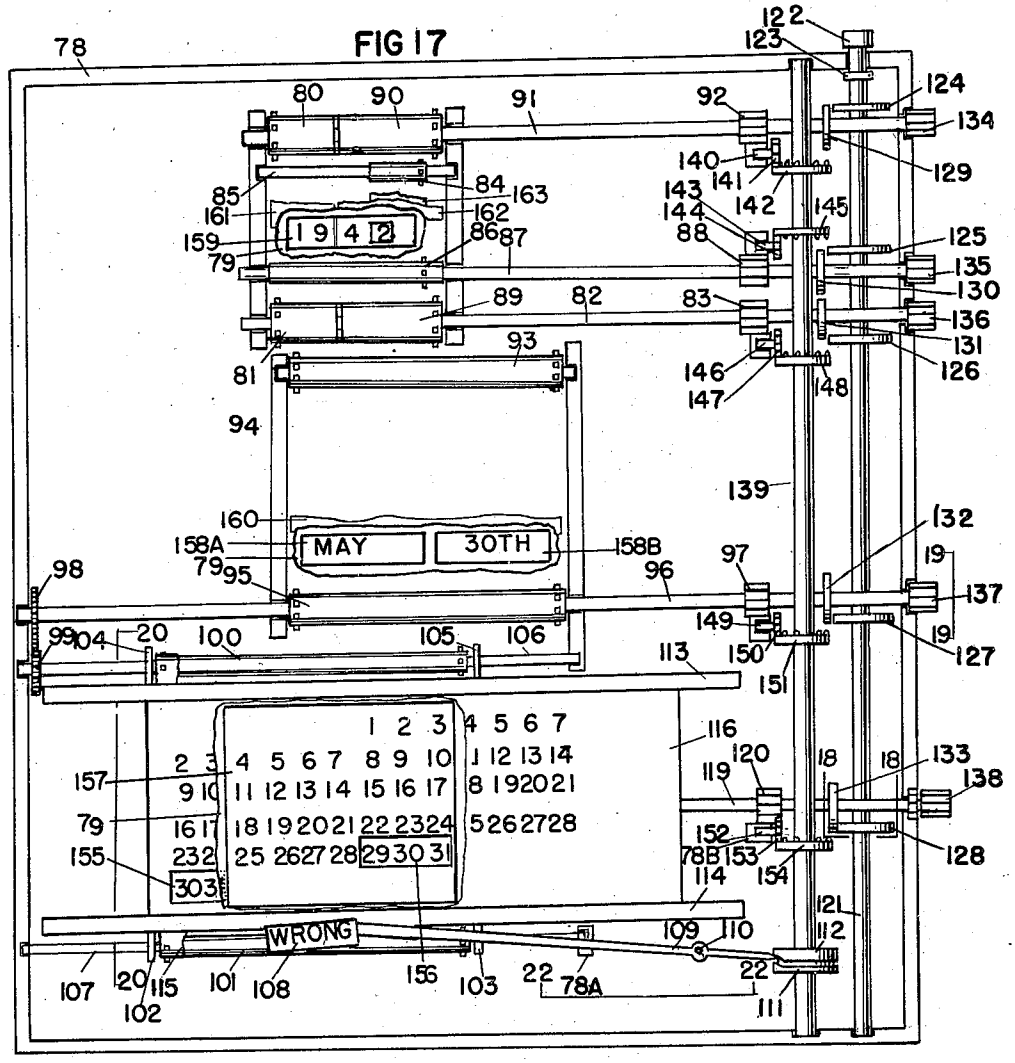


FIG 18

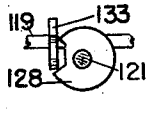


FIG 19



FIG 20

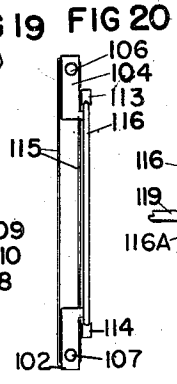


FIG 21

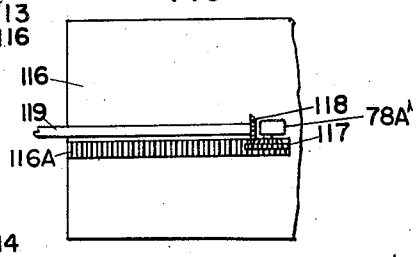
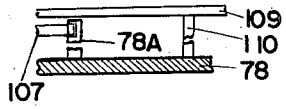


FIG 22



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FIG 23

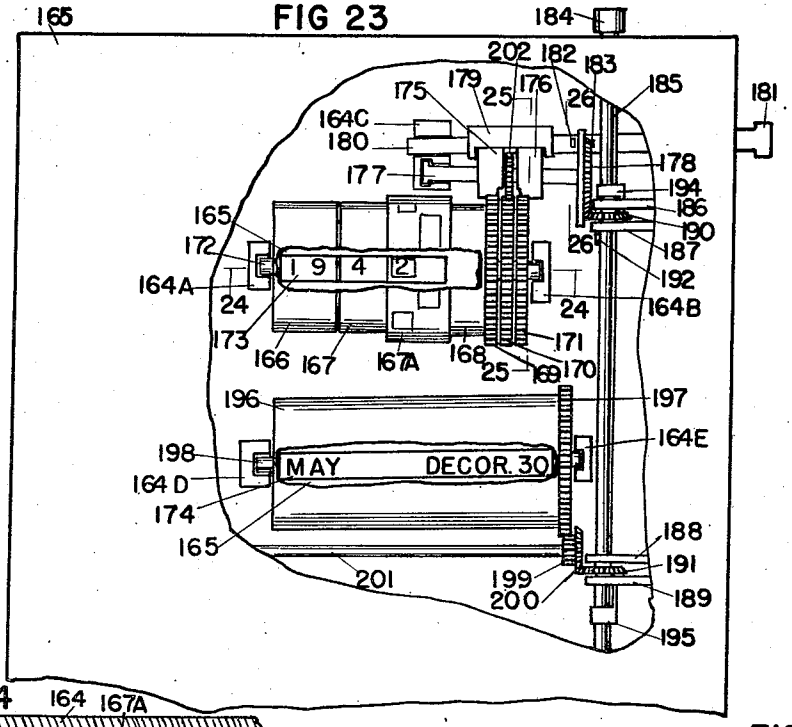


FIG 24

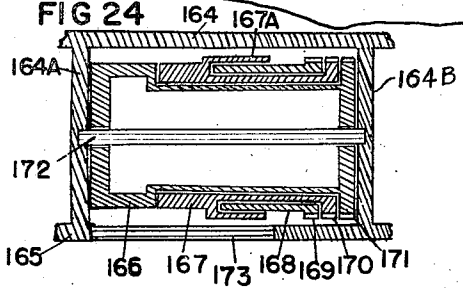


FIG 25

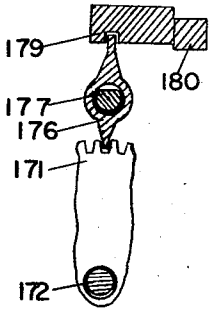
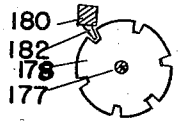


FIG 26



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Patented Sept. 26, 1944

2,358,969

UNITED STATES PATENT OFFICE

2,358,969

CALENDAR

Elbrige Gatewood, New York, N. Y.

Application July 20, 1940, Serial No. 346,575

25 Claims. (Cl. 40—111)

An object of this invention is to provide a calendar which will always be a true calendar of any period, past, present or future, for which it may be set and which will be marketable for common use as a substitute for present printed form calendars.

Inventions of perpetual calendars have been numerous, but no prior perpetual calendar has been accurate, easy to read, and had an appearance similar to the calendars to which the public is accustomed. This application is an improvement on my previous Patent Number 2,338,377 dated January 4, 1944.

Three forms of the calendar are shown in the drawings and described in the specification, all of them good for the period from 1753 to 2099. However I do not confine myself to that period nor to the forms shown. The new and novel means shown can be adapted to numerous forms of calendars for any desired period of time.

Fig. 1 is a front view of a calendar in accordance with the invention with front of case removed except for three windows and the adjacent part of the front, including a portion of the front carrying days of the week. Portions of calendar ribbons are also shown.

Figs. 2 to 8 are fragmentary sectional views taken on lines 2—2, 3—3, 4—4, 5—5, 6—6, 7—7, and 8—8, respectively, of Fig. 1.

Fig. 9 is a bottom view of part 57 and part of case.

Fig. 10 is a top view of gear 62.

Fig. 11 is a sectional view through the center of shaft 34, including also sectional view of key-locks.

Fig. 12 is a view of the continuous ribbon carrying the centuries, the ribbon being shown extended in a single plane.

Fig. 13 is a view, similar to Fig. 12, of ribbon carrying decades.

Fig. 14 is a view, similar to Fig. 12, of ribbon carrying years.

Fig. 15 is a view, similar to Fig. 12, of ribbon carrying months.

Fig. 16 is a view, similar to Fig. 12, of ribbon carrying days of the month.

Fig. 17 is a front view of second form of calendar with front of case removed except for windows and adjacent portion of front and showing also portions of ribbons for centuries, decades, years and months.

Figs. 18 to 20 are fragmentary views taken on lines 18—18, 19—19, and 20—20, respectively, of Fig. 17.

Fig. 21 is a back view of a portion of part 116 showing the means for operating part 116.

Fig. 22 is a view along line 22—22 of Fig. 17.

Fig. 23 is a front view of a portion of third form of calendar with front of case cutaway to show part different from the other two forms.

Fig. 24 is a sectional view through the center of the century, decade and year cylinders on line 24—24 of Fig. 23.

Fig. 25 is a sectional view along line 25—25 of Fig. 23.

Fig. 26 is a sectional view along line 26—26 of Fig. 23.

I have shown in the drawings, and described in the specification three of the forms in which a calendar can be made embodying the new and novel features described and claimed.

I do not limit myself to these forms. Under this invention the calendar can be made in almost any shape and suitable for many purposes, and covering longer or shorter periods of time.

The feature providing for independent operation of the decade and year parts while maintaining a correct calendar is subject to numerous modifications in details.

Various means may be used to lock movable parts against incorrect movement, and to interlock two or more parts for movement in unison in such manner as to disclose an automatically correct calendar.

The preferred form of this invention is shown in Figs. 1 to 16 inclusive. Figs. 12 to 16 show five ribbons which carry the various elements of a calendar. Fig. 12 has 14 spaces, some of which are blank and others of which carry different centuries. Fig. 13 carries decades in fourteen spaces, and has various openings through which figures of years on the ribbon shown in Fig. 14 may be seen. Fig. 14 carries two sets of years, of which those on the left are used with even decades and those on the right with odd decades. Fig. 15 carries the months in twenty-one spaces, together with the holidays. Fig. 16 carries days of the month in two tables of thirteen spaces each with one blank space at the end of each table, making a total of twenty-eight spaces. The ribbons are not to scale.

The calendar elements in Figs. 12–15 are arranged in such order that, when the calendar is originally set to any correct position, a vertical movement of any of them and a simultaneous horizontal movement of the ribbon in Fig. 16 for the same number of spaces will always place the days of the month under the correct days of the week.

Each ribbon is continuous and operates on two rollers. The rollers have teeth meshing with perforations in the ribbons to insure against slippage. One roller of each pair is keyed to a shaft which is operated by a gear driven by another gear upon the shaft 34, except that an intervening gear 61 is inserted between the two members of one pair for convenience.

The number of teeth on driving and driven gears, the diameters of the rollers, and the lengths of the ribbons are in relation to each other so that one quarter turn of shaft 34 will secure a movement of one space on any ribbon operated.

Keylocks 43, 44, 45 and 46 are carried on shaft 34. They do not rotate with the shaft, but do move up and down with it. These keylocks fit into one of the four radially arranged slots shown in stationary part 55, Fig. 8, and similar openings in similar parts 48—54 carried by the case. Since all keylocks are at all time in one of these openings in the various parts 48 to 55, inclusive they are at all times held from rotating with shaft 34.

Keylocks 43, 44, 45 and 46 also fit into any one of the four radially arranged slots shown in driving gear 62, Fig. 10 and similar openings in other driving gears 58, 59 and 60.

The four projections, 37—40, on shaft 34 also fit into any one of the four slots in the respective driving gears 58, 59, 60 and 62, serving to key the driving gears to the shaft. Projection 41 is at all times in position keying gear 63 to shaft 34. To permit 41 to turn without obstruction, 57 and 56 have circular openings large enough to receive the projection 41 as shown in Fig. 9. No keylock extends through these openings.

Days 31, 30 and 29 are hidden as required by curtain 30. This curtain is operated by lever 28 operating on fixed fulcrum 29. Pin 28A projecting through the curtain 30 operates it. Lever 28 is operated by a rod 25 which is guided by suitable guides 1H, 2H and 2M, which, in turn is operated by the rotation of gear 22. Cam groove 24 in gear 22 is so shaped that it moves rod 25 up and down by means of pin 26, shown in Fig. 7, and hides the unneeded days when short months are shown in window 65A. Worm gear 21 rotates gear 22 one twenty-first of a revolution for each change of months in the window 65A.

Receptacle 68, operating in a frame 1J, in the upper lefthand corner, also shown in Fig. 4, is behind a window 67. Small cards can be placed in this receptacle containing reminders of engagements on future dates. This is a substitute for the common practice of marking on the calendar with a pencil, dates of future engagements.

The method of operation is as follows:

In the position shown the year 1942 shows in window 64. The month of October and the holiday show in windows 65A and 65B, respectively. The thirty-one days of October show in window 66 under the days of the week which are stationary and printed on the front of the case.

To change the month, knob 35 is turned in either direction rotating shaft 34 in its bearing 36. Driving gear 62 will rotate since it is keyed to the shaft by projection 40. A one quarter turn of the shaft will rotate ribbon carrier 18 by means of shaft 19 and gear 20 sufficiently to move ribbon 76 one twenty-first of its length, bringing into view month April or May according to which direction the shaft 34 is rotated.

Simultaneously driving gear 63 drives gear 33, rotating ribbon carrier 32 sufficiently to move ribbon 77 one space to the right or left. Any desired month is obtained by continuing to turn shaft 34 in either direction until the desired month appears in window 65A.

If one of the blank spaces in ribbon 77 is under window 66 when the desired month has been reached, shaft 34 is pulled up as far as it will go and turned in either direction seven quarter turns, or until the same century reappears in window 64 on ribbon 73. It will be observed that the centuries are repeated every seven spaces. This moves ribbon 77 seven spaces, carries the blank space out of sight, and makes the calendar complete.

In the position shown in Fig. 1, keylock 43 passes through one of the four slots in member 48 and gear 58, holding gear 58 from rotation. Shaft 34 rotates freely in 58 because projection 37 is not in position to key the gear to the shaft. Similarly keylock 44 holds gear 59, and 45 holds gear 60.

To change the decade, shaft 34 is pulled up until spring detent 47, which is a piece of steel under tension and attached to the side of the case, enters the next depression 42 of the shaft. At this point keylock 43 no longer engages gear 58, and projection 37 does key it to the shaft. Keylock 44 still engages gear 59, 45 engages 60, and 46 has engaged gear 62. When knob 35 is now turned in either direction, shaft 34 rotates gear 58 which drives shaft 14 through gear 15. Roller 13 on which is the decades ribbon 74 turns because it is keyed to 14 by projection 69 on shaft 14 and groove 70 in the inner face of roller 13 as shown in Fig. 2. Shaft 14 does not rotate roller 3 because it is not keyed to the shaft. Lower roller 12, carrying the decade ribbon turns on shaft 5 because it is not keyed to the shaft.

When decades ribbon 74 moves downward one space before window 64, the decade eight will appear and the date will be 1982. Simultaneously ribbon 77 has moved one space to the right.

To change the year, shaft 34 is pulled up until projection 38 keys gear 59 to shaft 34. Rotation of the shaft now rotates shaft 10, moving ribbon 75 which is on rollers 9 and 7. If an even decade is showing in the window at the time the lefthand column of figures on ribbon 75 will successively appear through the opening in the decades ribbon to the right of the even decade. If an odd decade is shown, the righthand column of year figures will successively appear. The shaft is turned in either direction until the desired year is revealed. Simultaneously ribbon 77 will have been moving right or left under window 66 and under the printed weekday names to preserve a correct calendar.

When shaft 34 is at its extreme upper limit of travel, the lower end of keylock 43 will still be engaged in the opening in 48. It will be observed that 48 is thicker on the right of shaft 34 than 50 or other similar parts. This is necessary to hold keylock 43 in position at its upper limit of travel. The upper parts of 44 and 45 will be engaged in gears 58 and 59 respectively to keep them from turning. Keylock 46 will hold gear 62. Gear 60 will be free to turn and will be keyed to shaft 34 by projection 39. Gear 60 now drives gear 61 which has bevel teeth on its righthand side and straight teeth on its lefthand side. 61 drives 6 which rotates roller 4, the roller being keyed to shaft 5 as shown in Fig. 3. Shaft 5 turns freely in roller 12 which is not keyed to it. As shaft 34 is now turned in either direction the century is changed, and simultaneously the days

of the month are shifted to right or left to correspond.

Suitable bearings or supports 1A and 1B, are provided for the shafts 14, 8, 10 and 5, bearings 1C and 1D for the shafts 17 and 19, bearing 1N for gear 61, bearings 1E, 1F and 1G for the shafts of rolls 31 and 32, and suitable guides 1K and 1L for the curtain 30.

Parts 48—54, in addition to their functions of holding keylocks, and holding driving gears, also lock shaft 34 from rotation while shifting from one calendar element to another, since projection 37—40 pass through their indentations.

A second form of this invention is shown in Figures 17 to 22 inclusive. The ribbons, ribbon carriers and windows are the same or similar to those shown in the first form for centuries, decades, years and months. The same forms could also be used for displaying the days of the month, but I have chosen to show a different form.

In this form each calendar element is changed individually while all other elements are locked against change. Simultaneously and in unison with the operation of any element a shaft 139 is rotated which, by means of a flag 108, indicates whether the days of the month are in correct relation to the days of the week for the calendar displayed above.

The knobs 134 to 138 inclusive are seven sided. One end enters into a matching seven sided indentation in the side of the case 78, in which position it cannot be rotated. Five disks 129 to 133 solidly attached to the shafts which operate the calendar ribbons rest against five disks 124 to 128 solidly attached to shaft 121, which prevent knobs 134—138 being pulled out of the indentations in the case. Each disk 124—128 has an indentation at one point as shown in Fig. 18 which the corresponding disks 129—133 can enter, thus permitting the corresponding knob 134—138 to be pulled out into a position which permits it to rotate. The indentations in disks 124—128 are so spaced around the circumference of shaft 121 that only one of the knobs 134—138 can be moved at any one time.

The days of the month are on a rectangular piece of metal or other rigid material 116. They are spaced in thirteen columns of which seven columns show through window 157 of the front 79 of the case 78. 116 slides in grooves in the stationary guides 113 and 114 as shown in Fig. 20. Four parts 102, 103, 104 and 105 attached to the back of 116, and with openings through which shafts 106 and 107 pass serve as guides to move ribbon carriers 100 and 101 along shafts 106 and 107. This movement keeps ribbon 115 at all times in the same relative position to 116.

The method of operation is as follows:

In the position shown knob 122 on shaft 121 has been turned until the disk 128 is in the position shown in Fig. 18, and knob 138 has been pulled to the right until it is out of the side of the case and in position to turn. When 138 is given two-sevenths of a rotation in either direction, gear 118, shown in Fig. 21, on shaft 119, operating in bearing 78A', turns gear 117 which moves the rectangular piece 116 by means of teeth 116A by the width of one of the vertical columns of calendar dates. At the same time gear 120, operating through gear 153 on shaft 152 in bearing 78B turns gear 154 and with it shaft 139 one-seventh of a revolution. Flag 108 on rod 109 which works on fulcrum 110 as shown in Fig. 22, is raised in front of the days of the week between them and window 157, or lowered out of sight, by groove 111 of disk 112 on shaft 139. At one point this grove permits the flag to fall as shown in Fig. 17. At all other of the seven positions that 112 assumes the flag is in view, indicating that the calendar is incorrect.

When it is desired to change the month, shaft 121 is rotated by means of knob 122 until disk 127 is in position to permit knob 137 to be pulled out. Disk 128 will in the meantime have pushed disk 133 to the left and caused 138 to enter the side of case 78. 137 having been pulled out into turning position, is turned in either direction until the desired month appears in window 158A and the corresponding holiday if any in window 158B. Each two-sevenths rotation of 137 moves ribbon 160 one space to disclose a new month. Gear 98 on shaft 96 turns gear 99 which operates shaft 106 and the ribbon carrier 100 which carries ribbon 115. The ribbon carrier 100 is keyed to shaft 106 in a manner similar to that shown in Figs. 2 and 3 permitting the carrier 100 to move to right and left on the shaft 106. Ribbon 115 carries the days 30 and 31 seen through opening 155 of piece 116, also days 29, 30 and 31 seen in opening 156. These days are repeated around the circumference of ribbon 115 to correspond to the months shown on the month ribbon 160, and the simultaneous operation in unison of these two ribbons results in the correct number of days, whether 28, 29, 30, or 31 being shown in window 157 to correspond with the month shown in window 158A. The knob 138 is then turned if necessary until flag 108 is out of sight.

In similar manner centuries, decades or years may be changed.

A third form of this invention is shown in Figs. 23 to 26.

In this form the ribbons shown in Figs. 12–15 are replaced by metal drums and cylinders on which the calendar elements are printed around their circumference. As a matter of convenience in design, the drum 166 and the cylinders 167 and 168 shown in Fig. 23 are divided around their circumference into twenty-one instead of fourteen spaces. This merely involves repeating any seven adjacent calendar elements shown on the ribbons. The elements are also printed in reverse order for decades, years and months due to the fact that the different mechanism causes them to revolve in a different direction when shaft 185 is turned than when shaft 34 of Fig. 1 is turned in the same direction.

As shown in Fig. 24, drum 166 which carries centuries rotates on shaft 172. The shaft 172 rotates in two bearings 164A, 164B. Cylinder 167 which carries decades rotates on a depressed portion of drum 166. Cylinder 168 which carries years rotates on a depressed portion of cylinder 167. The drum and cylinders rotate independently of each other, driven by the teeth 169, 170 and 171 respectively on the parts. The projecting portion 167A of cylinder 167 corresponds to that part of the decades ribbon shown in Fig. 13 which projects over year ribbon shown in Fig. 14. Openings in 167A similar to those in the decades ribbon permit the years to be seen.

The mechanism for days of the months is as shown in Fig. 1, and is not shown here.

Shaft 185 occupies two positions, in one of which it operates the months drum and the days of the month mechanism, and in the other of which it operates a selected one of the other three parts and also the days of the month part.

Shaft 180 occupies three positions which deter-

mine whether centuries drum, or decades or years cylinder shall be operated.

The manner of operation is as follows:

In the position shown, gear 191 is keyed to shaft 185 by a projection on shaft 185 which is not visible because it is in one of the four indentations on the inner diameter of the gear, similar to those shown in Fig. 10. Keylock 195 is in one of the indentations of stationary part 189 similar to those shown in Fig. 8, but does not project far enough to lock gear 191. Keylock 194 passes through indentations in 186 and in gear 190 locking the latter against movement.

In this position, when knob 184 is turned in either direction, gear 191 drives shaft 201 by means of gear 200. Teeth 199 on the shaft turns the month drum 196 by means of teeth 197, permitting the month to be changed in the window 174 in the front of the case 165. The various other months around the drum have been omitted in the figure. The relative number of teeth are such that drum 196 makes one twenty-first of a revolution for each quarter turn of shaft 185. In the illustration this is achieved by having an equal number of teeth on 191 and 200, twelve teeth on 199, and sixty-three teeth on 197.

When it is desired to change century, decade or year, knob 184 is pulled up until projection 192 on shaft 185 keys gear 190 to the shaft. In this position keylock 194 has released gear 190, and keylock 195 has locked gear 191 from rotation.

While the transition is taking place projection 192 and a projection not shown are in indentations of stationary members 187 and 188 respectively making it impossible to rotate the shaft at a time when its rotation would introduce an error in the calendar.

In this new position of shaft 185 and in the position shown for the upper members of the calendar, a rotation of 185 in either direction will rotate shaft 177 by means of gears 190 and 178. Gear 202 which is keyed to shaft 177 turns the decades cylinder 167 by means of teeth 170 on the cylinder. The cylinder makes one twenty-first of a rotation for each quarter turn of shaft 185. In the illustration this is achieved by using twenty teeth on gear 190, thirty on 178, eighteen on 202 and sixty-three on 170.

While cylinder 167 is turning, the other two calendar elements cannot be changed since they are locked as shown in Fig. 25. The lower end of lock 176 is between two teeth of 171 and the upper end is in an indentation of 179. Shaft 177 is not keyed to 176 and rotates freely. Similarly lock 175 holds teeth 169 of cylinder 168 from rotation.

When it is desired to change the century, knob 181 is pulled out, drawing out shaft 180 and with it part 179 which is attached to, or a part of, 180. Since the ends of 179 project down on either side of locks 175 and 176 and the space between these locks is filled with gear 202, they are all pushed to the right. Gear 202 moves freely over shaft 177 because it is geared to it by having its inner diameter match the flattened shape of 177 shown in Fig. 25.

In the new position lock 176 has cleared the teeth of 171 and gear 202 has meshed with them. Lock 175 has entered the teeth of 170 and is also in the teeth of 169, locking both of them against movement.

During the transition a projection 182 from shaft 180 has locked gear 178 from turning by entering into one of six indentations in the circumference of the left part of that gear which is of greater diameter than the teeth. This movement, shown in Fig. 26, prevents turning of shaft 185 at a time when gear 202 has straddled the teeth of two parts.

When it is desired to change the year, knob 181 is pushed in until gear 202 is meshed with gear 169, then knob 184 is turned in either direction until the desired year appears through the openings of 167A and is seen in window 173 of the front of the case 165. The various calendar elements around the circumference of the parts have been omitted in the drawings.

I claim:

1. A calendar containing independently operable means carrying different elements of a calendar arranged in an order determined by the day of the week upon which the months begin in the successive calendar periods that are revealed by movements of any such operable means, independently operable means carrying days of the month, fixed means carrying names of the days of the week above the days of the month, means moving any one of the operable means to reveal any desired calendar element thereon, means locking all other operable means from movement whenever any one is being moved, means cooperating with the movement of any of these operable means indicating whether the days of the month are under the appropriate days of the week for the calendar displayed, means cooperating with movement of the operable means carrying names of months concealing the 29th, 30th and 31st days when they do not properly pertain to the month displayed, and means revealing one calendar element on each of these operable means and concealing others.

2. In a calendar, a combination of a plate carrying tabulation in vertical columns of which any seven adjacent columns represent twenty-eight days of a month to be seen through a window as the plate is moved horizontally, and with holes in the plate where the 29th, 30th and 31st days would normally be located, means moving the plate horizontally, means carrying a continuous ribbon behind the plate and moving horizontally with the plate and containing the 29th, 30th and 31st days in a closed circuit of twenty-one spaces arranged in an order determined by the number of days in the months which are successively displayed by movement of an operable means carrying names of months, an operable means carrying names of months, and means cooperating with means moving the operable means carrying month names to move this continuous ribbon vertically behind the horizontally moving plate so as to reveal through the holes in the plate any of the last three days that pertain to the month revealed.

3. In a multiple calendar, a horizontally operable means carrying tabulations representing days of the month and with the 31st, 30th, and 29th days in three separate horizontal rows below the other figures of days, means operating said operable means, operable means concealing the last three rows or some of them whenever months containing less than thirty-one days are revealed, operable means carrying names of months, means operating the operable month carrying means, and means connected with the month operating means and also with the operable day concealing means to operate the day concealing means.

4. In a multiple year calendar, a horizontally

operable means carrying in a closed circuit tabulations of days of the month arranged in eight horizontal rows with the 29th, 30th and 31st days in the sixth, seventh and eighth horizontal rows respectively, and with the tabulations arranged in one or more series consisting of thirteen vertical rows with figures and one vertical row blank, means operating the horizontally operable means, operable means carrying names of months, means operating the operable month carrying means, means cooperating with said month operating means to hide the bottom three rows as required to conceal any days that do not properly pertain to any month that is disclosed to view.

5. In a multiple year calendar, a combination consisting of an operable means containing decades with the even decades arranged in an order determined by the days of the week upon which any given year begins in the even decades and the odd decades arranged in an order determined by the days of the week upon which any given year begins in the odd decades, an operable means containing two series of figures for years of which one series is for years of odd decades and the other series is for years of even decades, the figures in each series being arranged in an order determined by the days of the week upon which any given month begins in the years of the odd and even decades respectively and the two series being arranged in relation to each other in an order determined by the relative positions of the even and odd decades in the first operable means, means operating these operable means, means revealing one decade, means concealing years of the even decades series when an odd decade is revealed and concealing years of the odd decades series when an even decade is revealed, means revealing one year of the odd decades series when an odd decade is revealed and revealing one year of the even decade series when an even decade is revealed, means carrying days of the week and means carrying days of the month with the two means adjustable relative to each other, and means cooperating with the means that operates the decades means and with the means that operates the years means to adjust the relative position of the days of the month to the days of the week.

6. A multiple calendar containing independently operable means carrying names of months arranged in an order determined by the day of the week on which the months begin in any given year, including month names designated for leap years only, operable means carrying years arranged in an order determined by the day of the week on which a given month begins in the years of an even decade, and carrying years arranged in an order determined by the day of the week on which a given month begins in the years of an odd decade, operable means carrying even decades arranged in an order determined by the day of the week in which a given year begins in the even decades, and carrying odd decades in an order determined by the day of the week on which a given year begins in the odd decades, operable means carrying days of the month, stationary means carrying days of the week, means operating these various operable means, and means operating in unison with said operating means to show whether a correct relationship exists between the days of the week and the days of the month whenever a full calendar is displayed.

7. A multiple calendar containing independently operable means carrying various elements of a calendar, including days of the week and days of the month, means operating these independently operable means, and means cooperating with the operable means indicating whether the calendar which is displayed after any operation is a correct calendar with days of the week in correct relation to days of the month.

8. In a multiple year calendar, a continuous calendar element carrying means, said means having thereon the years of a decade arranged in two parallel columns corresponding to odd and even decades and in the order of the days of the week on which any given month of the years of a decade begin, a second continuous calendar element carrying means having decades arranged thereon in a column of odd and even decades and in the order of the days of the week on which the decades begin, said second element carrying means overlapping said first element carrying means and having an opening corresponding to each decade arranged to display the years of the column corresponding to the decade, calendar element carrying means having days of a month arranged thereon, means for movably mounting said calendar element carrying means, selective operating means for operating the latter calendar means whenever either of the former calendar means is operated, to change the weekday position of the days of the month, means movably mounting said monthday means, and stationary means mounting days of the week above days of the month.

9. In a multiple year calendar, a casing, a calendar element carrying means in said casing, said means having thereon the years of a decade arranged in two parallel columns corresponding to odd and even decades and in the order of the days of the week on which any given month of the years of a decade begin, a second element carrying means in said casing, said second element carrying means having decades arranged thereon in a column and in the order of the days of the week on which the decades begin, said second element carrying means overlapping said first element carrying means and having an opening corresponding to each decade arranged to display one year of the column corresponding to the decade, a third calendar element carrying months of a year including months designated for leap year only, means movably mounting said three calendar element carrying means, a window in said casing displaying a single decade and also disclosing the year displayed by the opening in the overlapping part of the second calendar element carrying means, corresponding to the decade displayed, a window displaying a single month, means operating said three element carrying means to vary the decade and year and month displayed, means carrying days of the month and means carrying days of the week relatively movable, and means for varying the relative position of days of the week to days of the month.

10. In a multiple year calendar, a calendar element carrying means, said means having the years of a decade arranged thereon in each of two parallel columns corresponding to odd and even decades, a second calendar element carrying means having the decades of a century arranged in a single column thereon, said second element carrying means overlapping said first element carrying means and having an opening corresponding to each decade arranged to display the years of the column on said first calendar element carrying means corresponding to the dec-

ade, a third calendar element carrying means having the months of a year arranged in a single column thereon, a fourth calendar element carrying means having the days of a month in chronological order thereon, means for movably mounting said calendar element carrying means, and stationary calendar element means having the days of a week thereon.

11. In a multiple year calendar, a continuous calendar element carrying means, said means having the years of a decade arranged thereon in each of two parallel columns corresponding to odd and even decades, a second continuous calendar element carrying means having the decades of a century arranged in a single column thereon, said second element carrying means overlapping said first element carrying means and having an opening corresponding to each decade arranged to display the years of the column on said first calendar element carrying means corresponding to the decade and means for movably mounting said calendar element carrying means, a third continuous calendar element carrying means having the centuries arranged thereon in a column, the various numbers of said column being arranged to be alined with numbers of said decade and years columns, means for movably mounting said century carrying means, and means for selectively operating said element carrying means.

12. In a multiple year calendar, continuous calendar element carrying means having the centuries, decades, years and months thereon, said year means having years of a decade arranged in each of two parallel columns corresponding to odd and even decades and having years 0, 4 and 8 in the column corresponding to the even decades, and 2 and 6 in the column corresponding to the odd decades distinctively marked to indicate that they are leap years, said decade means overlapping said year means and having an opening corresponding to each decade arranged to display a year of the column corresponding to the decade, means for movably mounting said calendar element carrying means, means for selectively operating said calendar element carrying means, element carrying means having days of the month thereon and means for varying the number of the days of the month displayed in accordance with the month displayed.

13. In a multiple year calendar, an endless calendar element carrying ribbon, said ribbon having the years of a decade arranged thereon in each of two parallel columns corresponding to odd and even decades, a second endless calendar element carrying ribbon having the decades of a century arranged thereon in a single column, said second ribbon overlapping said first ribbon and having an opening corresponding to each decade arranged to display the years of the column on said first ribbon corresponding to the decade, a third endless calendar element carrying ribbon having the months of a year arranged thereon in a single column, a fourth endless calendar element carrying ribbon having the days of a month arranged thereon, rolls supporting said ribbons and means for operating said rolls to provide relative movement of said ribbons.

14. In a multiple year calendar, a cylindrical calendar element carrying member having the years of a decade arranged thereon in each of two parallel columns corresponding to odd and even decades, a second cylindrical calendar element carrying member having the decades of a century arranged thereon in a single column, said second element overlapping said first element and having an opening corresponding to each decade arranged to display the years of the column on said first member corresponding to the decade, a third cylindrical calendar element carrying member having the centuries arranged thereon in a single column, said third element being to the left of said second element in such position that centuries, decades and years can be aligned on a single line to be read together, means supporting said members for coaxial rotary movement, and means for operating said members.

15. In a multiple year calendar, coaxially arranged cylindrical calendar element carrying members having centuries, decades and years, respectively, arranged thereon, means rotatably supporting said members, said year member having the years of a decade arranged thereon in each of two columns corresponding to odd and even decades, said decade member having the decades of a century arranged thereon in a single column and having a portion overlapping said year member, said overlapping portion having an opening corresponding to each decade and arranged to display the years of the column corresponding to the decade, a gear carried by each of said members, a driving gear, means mounting said driving gear for selectively operating the gear on each of said members and means for operating said driving gear.

16. In a multiple year calendar, coaxially arranged cylindrical calendar element carrying members having centuries, decades and years, respectively, arranged thereon, means rotatably supporting said members, said year member having the years of a decade arranged thereon in each of two columns corresponding to odd and even decades, said decade member having the decades of a century arranged thereon in a single column and having a portion overlapping said year member, said overlapping portion having an opening corresponding to each decade and arranged to display the years of the column corresponding to the decade, a gear carried by each of said members, a driving gear, means movably mounting said driving gear for selectively engaging the gear on each of said members, means for operating said driving gear, a locking means and means mounting said locking means for movement with said driving gear for engaging the unselected gears to prevent rotation of said members.

17. In a multiple year calendar, continuous calendar element carrying means having the centuries, decades, years and months, respectively, thereon, said year means having years of a decade arranged in each of two parallel columns corresponding to odd and even decades, said decade means having the decades of a century arranged thereon in a single column and having a portion overlapping said year means, said overlapping portion having an opening corresponding to each decade arranged to display the years of the column corresponding to the decade, means for movably mounting said calendar element carrying means, operating means for selectively operating said element carrying means, a calendar element carrying means having the days of the month thereon, and means operating in conjunction with said month means for varying the number of days displayed to correspond with the month displayed.

18. In a multiple year calendar, continuous calendar element carrying means having the centuries, decades, years and months, respectively, thereon, means for movably mounting said calendar element carrying means, said year means having years of a decade arranged in each of two parallel columns corresponding to odd and even decades, said decade means having the decades of a century arranged thereon in a single column and having a portion overlapping said year means, said overlapping portion having an opening corresponding to each decade arranged to display the years of the column corresponding to the decade, operating means for selectively operating said element carrying means, a calendar element carrying means having the days of the month thereon, means for movably mounting said day of the month means, and means operated upon the operation of said selectively operated means for operating said day of the month means for varying the position of days displayed to correspond with the month displayed.

19. In a multiple year calendar, endless calendar element carrying means having the centuries, decades, years and months, respectively, thereon, said year means having years of a decade arranged in each of two parallel columns corresponding to odd and even decades, said decade means having the decades of a century arranged thereon in a single column and having a portion overlapping said year means, said overlapping portion having an opening corresponding to each decade arranged to display the years of the column corresponding to the decade, means for movably mounting said calendar element carrying means, operating means for selectively operating said element carrying means, an endless calendar element carrying means having the days of the month thereon, means for movably mounting said days of the month means, and means operated by the operation of said selective operating means for operating said day of the month means for displaying in correct weekday position the number of days corresponding to the month displayed.

20. In a multiple year calendar, endless calendar element carrying means having the centuries, decades, years and months, respectively, thereon, said year means having years of a decade arranged thereon in each of two parallel columns corresponding to odd and even decades, said decade means having the decades of a century arranged thereon in a single column and having a portion overlapping said year means, said overlapping portion having an opening corresponding to each decade arranged to display the years of the column corresponding to the decade, means movably mounting said calendar element carrying means, a flat calendar element carrying means, having twenty-eight days of the month thereon and openings for displaying additional days, means mounting said flat calendar element carrying means for reciprocatory movement, means for selectively operating said calendar element carrying means, an endless calendar element carrying means having the twenty-ninth, thirtieth and thirty-first days of the month thereon, rolls supporting said last mentioned calendar element carrying means for displaying the days thereon through the openings in said flat calendar element carrying means, and means for operating said endless calendar element carrying means with days of the month thereon upon operation of said month means to vary the number of days of the month displayed in accordance with the month displayed.

21. In a multiple year calendar, calendar element carrying means having the centuries, decades, years and months, respectively, thereon, means for movably mounting said calendar element carrying means, a flat calendar element carrying means, twenty-eight days of the month thereon and openings for displaying additional days, means mounting said flat calendar element carrying means for reciprocatory movement, means for selectively operating said calendar element carrying means, an endless calendar element carrying means having the remaining days of the month thereon, rolls supporting said endless calendar element carrying means for displaying the days thereon through the openings in said flat calendar element carrying means, means shifting said rolls bodily with said flat calendar element carrying means and means operating said endless calendar element carrying means with said month means to vary the number of days displayed in accordance with the month displayed.

22. In a multiple year calendar, calendar element carrying means having the centuries, decades, years and months, respectively, thereon, means for movably mounting said calendar element carrying means, a flat calendar element carrying means, twenty-eight days of the month thereon and openings for displaying additional days, means mounting said flat calendar element carrying means for reciprocatory movement, means for selectively operating said calendar element carrying means, an endless calendar element carrying means having the remaining days of the month thereon, rolls supporting said endless calendar element carrying means for displaying the days thereon through the openings in said flat calendar element carrying means, means shifting said rolls bodily with said flat calendar element carrying means and means operating said endless calendar element carrying means with said month means to vary the number of days displayed in accordance with the month displayed, and means operated by said selective operating means for displaying an indicator when the days of the month displayed do not accord with the month displayed.

23. In a calendar, endless calendar element carrying means having the months and the days of month, respectively, thereon, with the months arranged in twenty-one spaces in such order that each month will, in any given year, begin one day later in the week than the preceding month, and with the days arranged in units of thirteen columns of which any seven adjacent columns in a unit represent a month of thirty-one days with the 29th, 30th and 31st days in three separate lower lines of the columns and with one blank space between units, means for movably mounting said calendar element carrying means, means operating said calendar element carrying means simultaneously, stationary means revealing one month name and also revealing seven adjacent columns of the days of the month means, stationary means carrying names of days of the week above the seven adjacent columns revealed, means for concealing some or all of the three lower lines carrying the 29th, 30th and 31st days of the month displayed, means movably mounting said concealing means, and means operated in conjunction with said month operating means to operate said concealing means to vary the number of days of

the month displayed in accordance with the month displayed.

24. A calendar containing independently operable parts each carrying elements of a calendar in such order that the displayed elements will combine to form a correct calendar whenever the combined movements of these operable parts add to a net total of seven spaces, means displaying one element or set of elements on each operable part and concealing others, means operating these operable parts, a key which locks all of said operable parts against movement and which is selectively movable to unlock any one but can never unlock more than one at a time, a shaft rotating in unison with any of said operable parts at all times, means rotatably mounting said shaft, means associated with said shaft and with said operable parts to operate said shaft in unison therewith, an indicator operated by said shaft and indicating throughout six of each seven shifts of the shaft that the calendar is wrong, and means associated with said shaft and with said indicator to operate said indicator.

25. A multiple year calendar comprising a case with openings in its front to disclose years, months, holidays, and days of the month, elements carrying respectively centuries, odd and even decades, years for odd and even decades, months, and days of the month, each arranged on continuous circuits with the centuries, the odd decades, the even decades, the years for odd decades, the years for even decades, and the months each arranged on their respective circuits in such order that a movement of any one of said circuits by one space will disclose new calendar indicia for a calendar period beginning one day earlier or later in the week, with the days of the month arranged on their circuit in such spaced order that a movement of the circuit by one space shall place all days disclosed under a day of the week one day later or earlier, distinctive marking on the months used for leap years and on the figures 0, 4, and 8 of the circuit of years for even decades and 2 and 6 of the circuit of years for odd decades to indicate that they are leap year periods, means rotatably mounting the said elements, means for rotating each of said elements, a key comprising means for rotating the days of the months element and selectively rotating in unison therewith any one of the other rotatable elements to disclose a new calendar period, means for locking against movement all of the other rotatable elements, means mounting the key for selective operation, means disclosing or concealing the 29th, 30th and 31st days of the month, means associated with said disclosing or concealing means and with the rotatably mounted element carrying names of months to vary the number of days disclosed to agree with the month disclosed, and stationary means carrying days of the week above the days of the month.

ELBRIGE GATEWOOD.