May 14, 1957 D. M. NOBLE 2,791,850

ELECTRICALLY OPERATED CALENDAR DEVICE

Filed Oct. 5, 1953 3 Sheets-Sheet 1

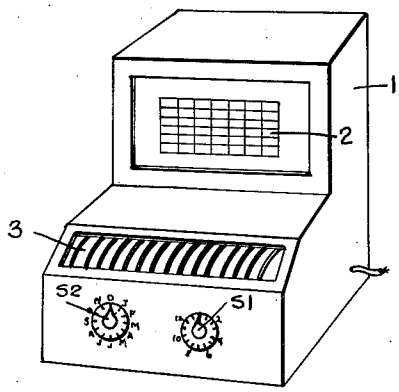
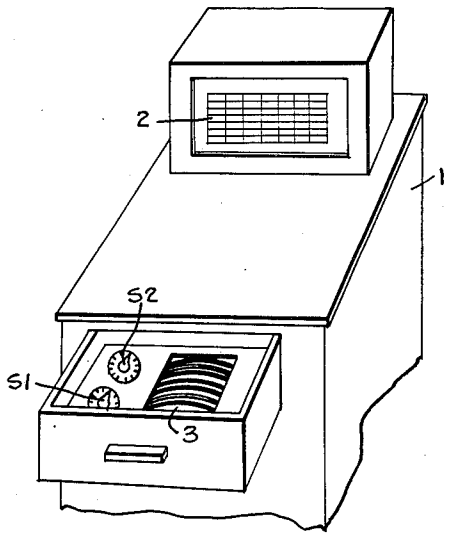


Fig. 1



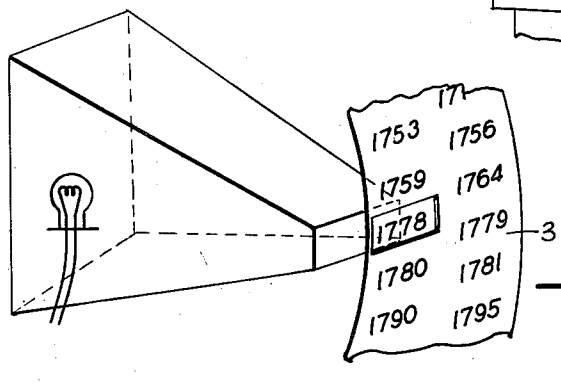


Fig. 4

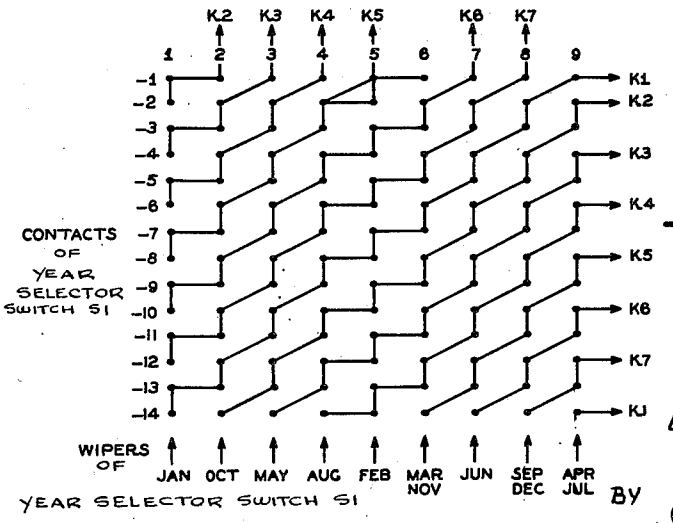


Fig. 6

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ELECTRICALLY OPERATED CALENDAR DEVICE

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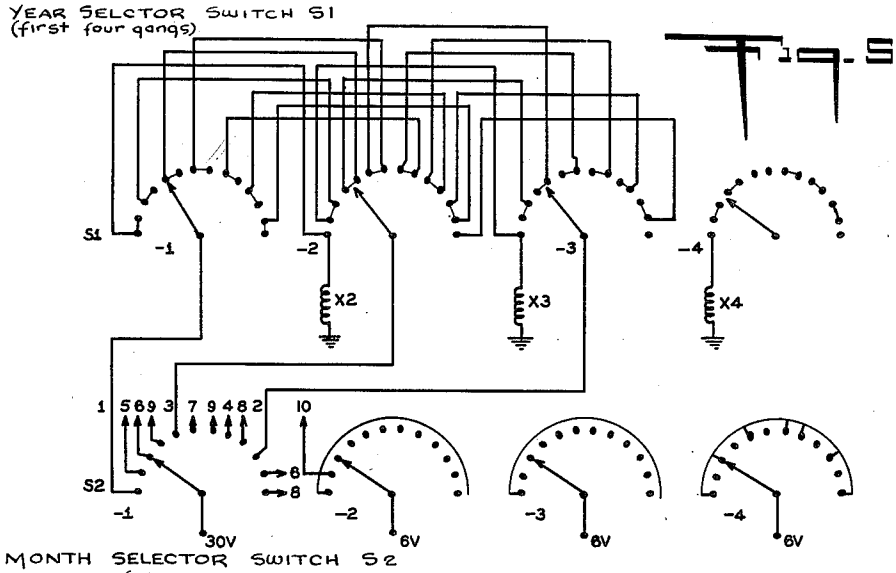


Fig. 5

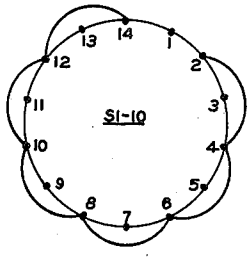


Fig. 7

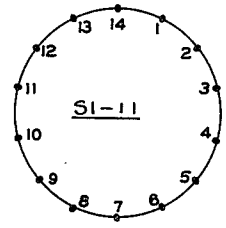


Fig. 8

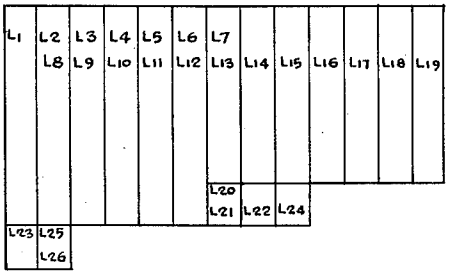


Fig. 9

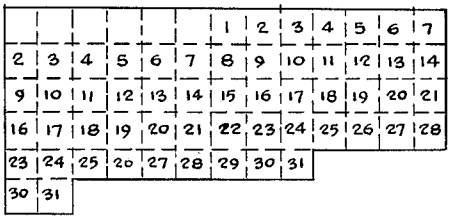


Fig. 10

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ELECTRICALLY OPERATED CALENDAR DEVICE

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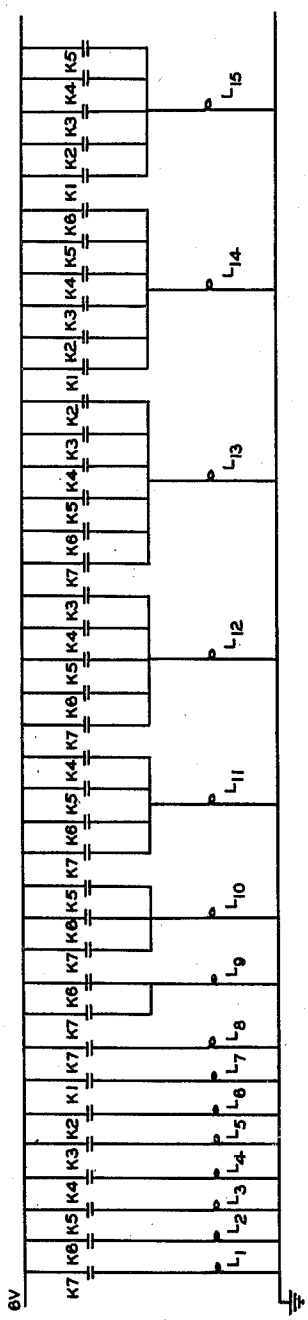


Fig. 9

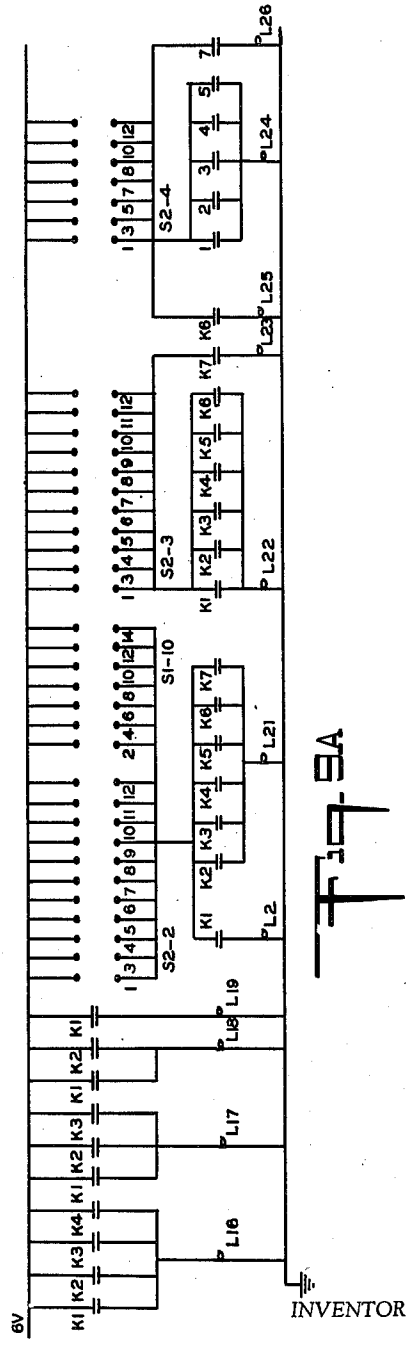


Fig. 9A

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ELECTRICALLY OPERATED CALENDAR DEVICE

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Application October 5, 1953, Serial No. 384,007

2 Claims. (Cl. 40—107)

The present invention relates to electrically operated calendar devices, and particularly to what are known as perpetual calendars.

Perpetual calendards, as generally known in the prior art, require the user to manipulate a number of controls or to interpret a number of charts or graphs and to determine whether or not the particular year involved is a leap year before he may finally be provided with the calendar of a particular month in a particular year. Such calculation and interpretation not only require the expenditure of considerable time and effort, but give rise to a strong possibility that the user will improperly read or misinterpret a particular chart or graph and thus arrive at a result which is not accurate.

Consequently, it is an object of the present invention to provide an accurate perpetual calendar, and also one which comprises a minimum number of adjustments.

Another object is to provide a perpetual calendar device having an attractive appearance wherein electric control means are employed for selecting and providing calendars for any month of any year.

In the attainment of the foregoing objects, I provide an illuminating calendar panel on which there is painted an arrangement of numbers, the latter being illuminated by means of electric lamps located in separate compartments positioned behind the numbers. The panel is sufficiently opaque in order that the numbers are not visible from the front until the electric lights are illuminated directly behind them. Two selector switches are provided; one is a month selector switch with which the particular month desired is selected, and the other is a year selector switch with which the type of year is selected. As is known in the calendar art, there are only fourteen (14) different types of years, and an illuminated drum is provided to assist the user in correlating any one particular year with one of the types of years. It may thus be seen that to operate the calendar of the present invention, the user first adjusts the month selector switch to select the particular month desired, then rotates the drum to the particular year desired, and finally adjusts the year selector switch to the particular type of year involved. At this time, the calendar for the month chosen will appear illuminated on the face of the calendar panel.

Further objects and advantages of the present invention will become apparent, and the invention will be more clearly understood, from the following description referring to the accompanying drawings, and the features of novelty which characterize this invention will be pointed out with particularity in the claims annexed to, and forming a part of, this specification.

In said drawings:

Figure 1 is a perspective of the apparatus of the present invention as it will appear to the user;

Figure 2 is a perspective of another form of apparatus, the same comprising a slidable drawer which houses certain of the elements which will be referred to hereinafter;

Figure 3 illustrates the compartmentation and illuminating means located therein;

Figure 4 illustrates in a cut-away view a fragment of the revolving drum and one of the illuminating means therefor;

Figure 5 is a schematic diagram of a portion of the relay energizing circuits;

Figure 6 is a schematic diagram of the electric wiring of the first nine sections of the year selector switch and of the month selector switch;

Figures 7 and 8 are schematic diagrams of the tenth and eleventh sections of the year selector switch;

Figures 9 and 9A are schematic diagrams of the lighting circuit; and

Figure 10 is a diagram illustrating the arrangement of numbers on the back of the panel of Figure 1, the view being taken from the front and looking through the panel.

Referring particularly to the drawings, in Figure 1, the numeral 1 designates a calendar unit which is provided with a calendar panel 2 constructed of an opaque translucent material, such, for example, as Plexiglas; a year selector drum 3; a year selector switch S1; and a month selector switch S2. Switch S1 is an eleven-section ganged rotary type switch; and switch S2 is a four-section ganged rotary type switch. Directly behind panel 2, on which is painted the arrangement of numbers as shown in Figure 10, are located compartments as indicated in Figure 3. These compartments are provided therein with illuminating means which may acceptably be electric lamps energized from a 6-volt source.

Looking at the compartments (as indicated in Figure 3) from left to right, the first compartment (which corresponds to the first row of numbers in the calendar viewing panel 2) is provided therein with a lamp L1; the second compartment of Figure 3 which corresponds to the second row of numbers in the calendar panel is provided with lamps L2 and L8; the third compartment is provided with lamps L3 and L9; the fourth compartment is provided with lamps L4 and L10; the fifth compartment is provided with lamps L5 and L11; the sixth compartment is provided with lamps L6 and L12; the seventh compartment is provided with lamps L7 and L13; the eighth compartment is provided with lamp L14; and the ninth compartment is provided with lamp L15; the tenth compartment is provided with lamp L16; the eleventh compartment is provided with lamp L17; the twelfth compartment is provided with lamp L18; the thirteenth compartment is provided with lamp L19; the fourteenth compartment is provided with lamp L23; the fifteenth compartment is provided with lamps L25 and L26; the twentieth compartment is provided with lamps L20 and L21; the twenty-first compartment is provided with lamp L22; and the twenty-second compartment is provided with lamp L24. It will be noted upon an observation of Figure 2 that the lamp identification numbers are arranged in two horizontal rows. The upper row indicates those lamps which may be colored, such for example, as red, so that Sundays will appear in red on the face of calendar panel 2. The lower lamps may be colorless and illuminate the week days.

In Figure 4, there is shown an arrangement whereby only one number on the rotatable year selector drum is lighted for a particular setting of the year selector switch. There are fourteen columns of numbers printed on the year selector drum; and each column consists of like years, i. e., one column corresponds to regular years beginning on Sunday; another column to leap years beginning on Sundays, etc. In this view, only one lamp and compartment are illustrated; but thirteen other similar lamps and compartments are provided. Another accept-

able structural arrangement (not illustrated) would be to light all of the visible portion of a single column.

In Figure 5, there is illustrated the first four sections of the year selector switch S1. This switch, which is provided with fourteen "on" positions and one "off" position, distributes 30-volt power which is received from the month selector switch, as hereinafter described. Since March and November, April and July, and September and December may be conveniently combined, nine sections are sufficient for the entire twelve months. The wiring of these sections is illustrated in Figure 6. Referring still to Figure 6, it will be noted that the first contact of section 2 of the year selector switch S1 is connected to the pick-up coil of relay K2; the first contact of section 3 of the year selector switch S1 is connected to the pick-up coil of relay K3, etc. The other connections are clear from the drawing. The wiper of the first section of the year selector switch S1 is connected to the contact of the first section of the month selector switch S2 which corresponds to January; the wiper of the second section of the year selector switch S1 is connected to the contact of the month selector switch S2 corresponding to October; and so on.

There is also illustrated in Figure 5 all four sections of the month selector switch S2; and, in addition, the energizing coils of relays K2, K3 and K4. In the month selector switch S2, the twelve contacts in each section correspond to the twelve months of the year, i. e., terminal 1 corresponds to January, terminal 2 corresponds to February, and so on. The first section of the month selector switch S2 distributes energizing current (which may, if desired, be taken from a 30-volt source) to one of the sections of the year selector switch S1. The first contact of section 1 is connected to the wiper arm of the first section of the year selector switch S1. The second contact is connected to the wiper arm of the fifth section of the year selector switch S1, the third contact is connected to the wiper arm of the sixth section of the year selector switch S1, etc.

In the second section of the month selector switch S2, herein designated as S2–2, all of the contacts, with the exception of the one corresponding to February, are interconnected. This section provides for the lighting of the 29th day of the month. The third section of the month selector switch S2, wherein all of the contacts with the exception of the one corresponding to February are interconnected, provides for the lighting of the 30th day of the month. The fourth section of the month selector switch S2, wherein the contacts corresponding to January, March, May, July, August, October and December are interconnected, provides for the lighting of the 31st day of the month. It will be noted that each of these months has 31 days. A fifth section could be provided on the month selector switch S2 for illuminating the name of the particular month shown, but this feature has not been illustrated in the drawing.

In Figure 7, wherein the wiring of the tenth section of the year selector switch S1 is illustrated, it will be noted that the switch contacts 2, 4, 6, 8, 10, 12 and 14 are interconnected. These even numbers represent the leap years as the circuit is designed, and, as such, allow the energy to illuminate numeral 29 for the month February only in leap years.

The lighting circuit will be more readily understood by reference to Figure 9. By way of example, it will be noted that the energizing of relay K7 will cause lamps L1, L8, L9, L10, L11, L12, L13, L21, L23 and L26 to be illuminated. Of course, since lamp L26 corresponds to the 31st day of the month, it is illuminated only when the fourth section of the month selector switch (i. e., S2–4) is in one of positions 1, 3, 5, 7, 8, 10 and 12. These, of course, correspond to those months having 31 days. Also, lamps L25 and L26 illuminate the numeral 31, L25 for Sundays and L26 for week days. Lamp L26 is provided with current through the contacts of relay K7 and, of course, only for months having thirty-one days.

As an example of the way in which the Sunday lights are illuminated, reference is directed to lamp L25 which is energized through relay K6 and switch S2–4. If the month selected has 31 days such that one of contacts 1, 3, 5, 7, 8, 10 or 12 in switch S2–4 is closed, the operation of relay K6 will cause lamp L25 to be illuminated. Referring to the following Table I, there is shown the lamps which are illuminated through the contacts of the relays. It will be noted that relay K6 causes the illumination of lamps L2, L9, L10, L11, L12, L13, L14, L21, L22 and L25:

Table I

Relay K1	Relay K2	Relay K3	Relay K4	Relay K5	Relay K6	Relay K7
L7	L6	L5	L4	L3	L2	L1
L14	L13	L12	L11	L10	L9	L8
L15	L14	L13	L12	L11	L10	L9
L16	L15	L14	L13	L12	L11	L10
L17	L16	L15	L14	L13	L12	L11
L18	L17	L16	L15	L14	L13	L12
L19	L18	L17	L16	L15	L14	L13
L20	L21	L21	L21	L21	L21	L21
L22	L22	L22	L22	L22	L22	L23
L24	L24	L24	L24	L24	L25	L26

It will be observed that compartments 2, 3, 4, 5, 6, 7 and 8 in Figure 3 are illuminated when relay K6 is energized. Since, in the normal calendar Sundays appear in the left column, compartment 2, which corresponds to this column, contains red lamp L2 which is energized, rather than lamp L8 so that the Sunday column will appear in red. Similarly, lamp L25 is illuminated since the 31st of the month also falls on a Sunday.

Lamps L22 and L23 illuminate the numeral 30 through the contacts of one of the seven relays and through switch S2–3. Since all of the months, with the exception of February, have thirty or more days, the circuit to one of these lamps is completed through switch S2–3 on positions 1, 3, 4, 5, 6, 7, 8, 9, 10, 11 or 12. Position 2 corresponds to February where the numeral 30 should never be illuminated.

Lamps L20 and L21 illuminate the numeral 29 through the contacts of one of the seven relays and through switch S2–2 or switch S1–10. When any month except February, which corresponds to the second position on switch S2, is selected, the circuit is completed from the 6-volt source to one contact of every relay. Since the numeral 29 should be illuminated for the month of February during leap years, and since there are seven different types of leap years which correspond to positions 2, 4, 6, 8, 10, 12 and 14 of the year selector switch, these lamps may be energized through switch S1–10 even when the month of February has been selected by means of the month selector switch S2. Lamp L20 is used to illuminate numeral 29 when the twenty-ninth day of the month falls on a Sunday and is illuminated through the contacts of relay K1. This is due to the fact that, as may be seen by referring to Table I, energization of the relay K1 illuminates the last seven rows on the face of calendar panel 2.

The wiper arm of the eleventh section of the year selector switch S1 is directly connected to the source of 6-volt power and distributes this power to one of the fourteen lights provided within the year drum according to the setting of the year selector switch.

In operation, the year drum is rotated to a particular year desired; and the year selector switch is rotated until the year selected is illuminated. The month selector switch is then adjusted to the month desired. The calendar for the particular month and year so selected will then be illuminated on the calendar panel.

From the aforementioned 30-volt power source, current to activate the proper relay is wired to the first gang of the month selector switch S2. Current enters this

first gang at its center rotating arm. Depending upon the month selected, this current continues out from the perimeter of the gang from the month position contacted and to the proper gang of the year selector rotary switch S1. If the month selector switch S2 is set at January, this current goes only to the first gang of the year selector switch S1 (which is labeled "January"). Current enters gangs of the year selector switch S1 at the center contact arm, and according to the setting of the year selector switch, is transmitted through contact to one of the perimeter points of the particular gang then in use. These points are labeled from K–1 to K–7 and arranged in the manner shown in Figure 6 of applicant's drawings. All like numbered points are wired common and then connected to the corresponding relay armature; that is, all K–1 points are common and are connected to relay K–1, as marked.

The seven relays K–1 through K–7 are simply devices for closing ten (10) electrical circuits simultaneously. Whichever series of points are activated in the year selector switch S1 will close the ten (10) circuits of the corresponding relay. These points have one side connected commonly to the 6-volt current source for the panel lights. The other side of each set of points is wired to its respective light. Thus, it will be seen that relay K–1, when closed, will energize the lights numbered L–7, L–14, L–15, L–16, L–17, L–18, L–19, L–24, L–22 and L–20. This will cause the lighting of the pattern of dates for Sunday (in color) of the following days: 1, 8, 15 and 22 (light L–7); and if the 29th is conditioned (as described later), also the light L–20. For Monday 2, 9, 16 and 23, the light L–14. If the 30th is called for later, also the light L–22. Similarly, the remaining days of the week are illuminated through the respective lights as activated by relay K–1.

The foregoing construction and arrangement is such that

Relay K–1 produces all months with the 1st day thereof falling on Sunday;
Relay K–2 produces all months with the 1st day thereof falling on Monday;
Relay K–3 produces all months with the 1st day thereof falling on Tuesday;
Relay K–4 produces all months with the 1st day thereof falling on Wednesday;
Relay K–5 produces all months with the 1st day thereof falling on Thursday;
Relay K–6 produces all months with the 1st day thereof falling on Friday; and
Relay K–7 produces all months with the 1st day thereof falling on Saturday.

For conditioning of the 29th of any month as needed, the 6-volt current source is first wired to the second gang of the month selector switch S2. Here the points on the perimeter which correspond to the positions of January, March, April, May, June, July, August, September, October, November and December are all wired common and then to the input for the lower right position of each relay K–1 through K–7. The month of February is not included in this list. This wiring permits any month to show the 29th at all times except February. For February, the output is wired to the year selector switch S1 in its 10th gang, the current again going into the center. All perimeter positions corresponding to the positions that represent the leap years in the index of years (in this case, all the even numbered columns) are wired common and then wired to the same points in

the aforementioned relays K–1 through K–7. Whereas the other wire brings in the current for the 29th for the eleven months, the current for the month of February can register the 29th only when the month selector switch S2 is set to February, and the year selector switch S1 is set to any leap year.

For the 30th of the month the 30-volt current source is taken to the center of the third gang of the month selector switch S2, and for the months of the year, except February, is taken to the appropriate relay points as shown. The 31st of the month is conditioned similarly through the fourth gang of the month selector switch S2, except the current is permitted to proceed only for the months of January, March, May, July, August, October and December.

The eleventh gang of the year selector switch S1 is used only to control the indicator lights behind the year index drum 3. This causes the energization of only the light for the particular column in which the desired year is listed.

While the present invention has been described by reference to a particular embodiment thereof, it will be understood that this is by way of illustration of the principles involved and that those skilled in the art may make many modifications in the arrangement and mode of operation. Therefore, I contemplate by the appended claims to cover any such modifications as fall within the true spirit and scope of this invention.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. In a calendar, the combination of a transparent drum having printed thereon numerals representing different years, said numerals being positioned in fourteen different rows contiguously located on said drum, said rows corresponding to the fourteen different types of years, provided with fourteen different positions corresponding to the fourteen different types of years, fourteen illuminating means positioned within said drum and each means being arranged to light only one of said columns, and means connecting terminals on said switch to said illuminating means whereby only one column will be lighted for any one position of the switch.

2. In an electrically operated calendar, the combination of an opaque panel having numerals provided on one surface thereof, a plurality of compartments positioned behind said one surface and coinciding with different ones of said numerals, illuminating means provided in each of said compartments, switch means connecting different sequence of said illuminating means to a source of voltage, said switch means comprising a type year selector switch having fourteen different type years, and a month selector switch, correlating means having located on the surface thereof a plurality of numerals representative of different years and arranged in fourteen groups corresponding to the fourteen year types, and means illuminating at least a portion of the one of said groups corresponding to the position of said type year selector switch thereby a calendar of any month in any year may be illuminated on said opaque panel.

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