

1,282,992.

Patented Oct. 29, 1918.
 4 SHEETS—SHEET 1.

FIG. 1.

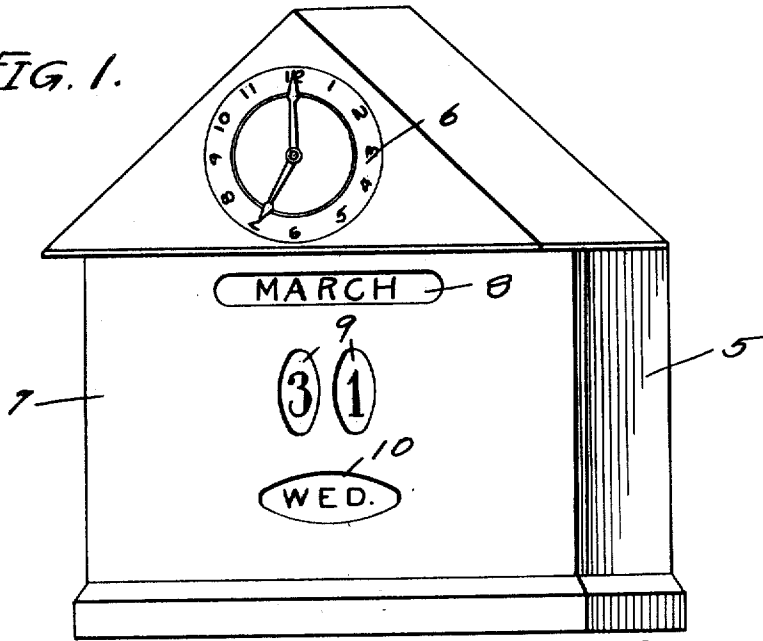


FIG. 5.

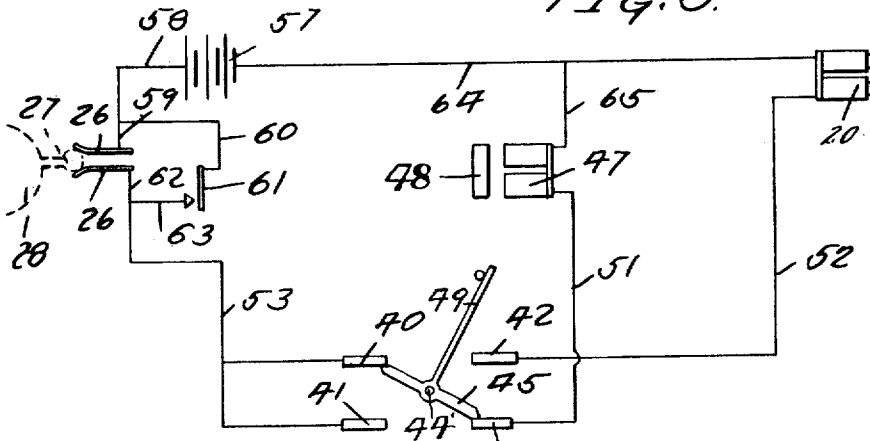
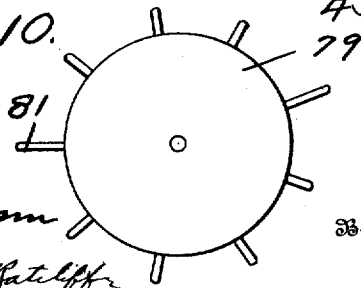


FIG. 10.



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4 SHEETS—SHEET 2.

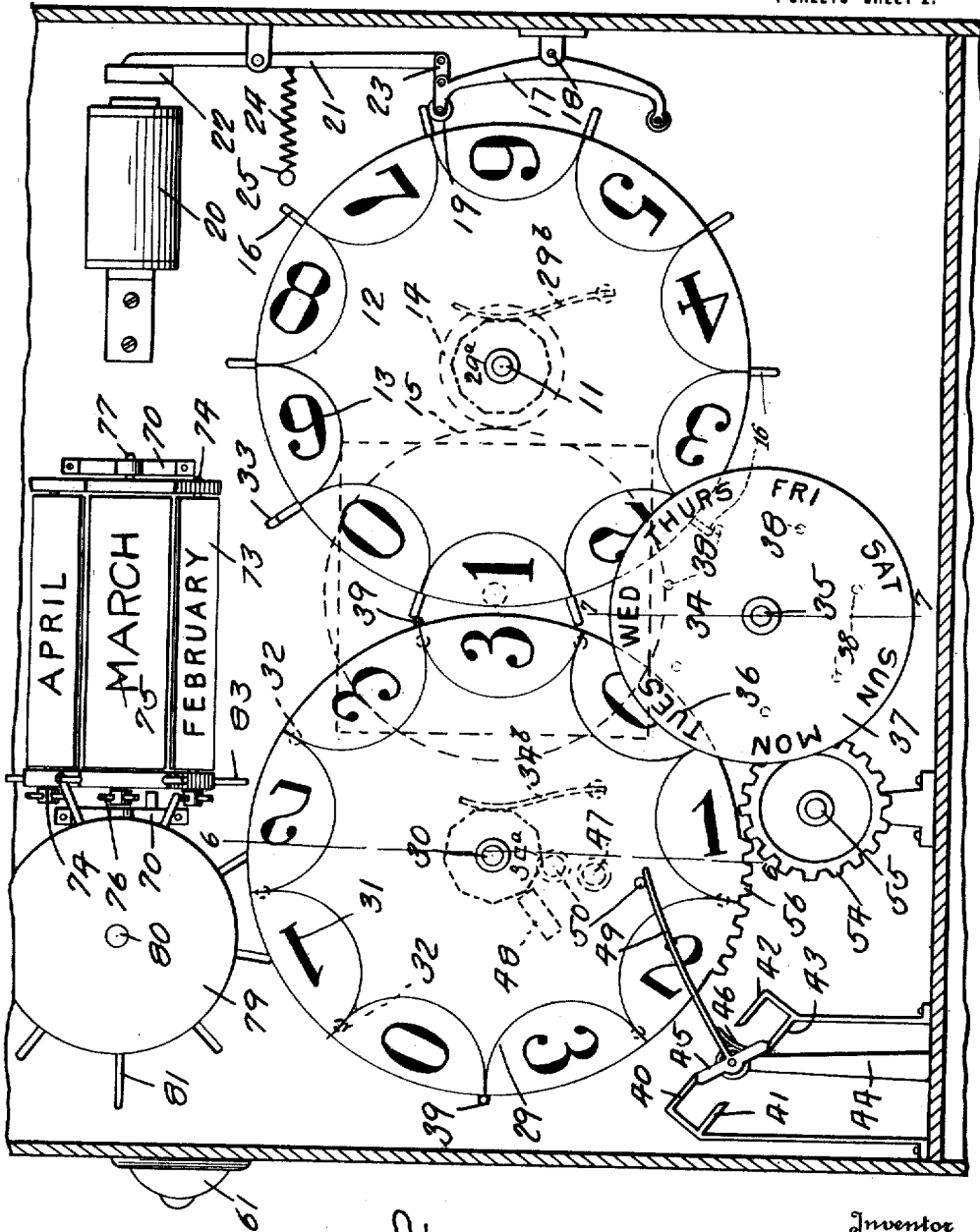
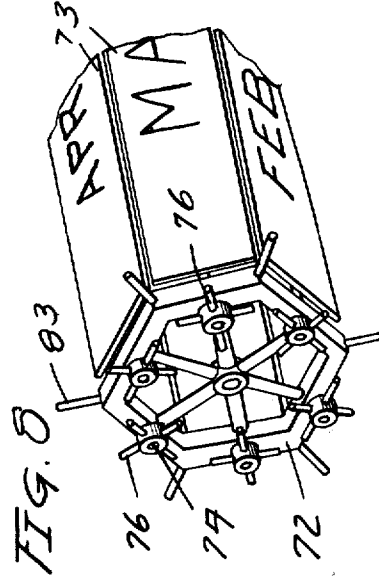
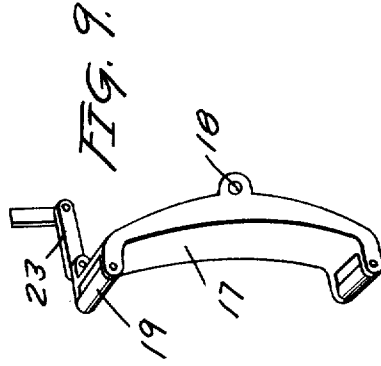
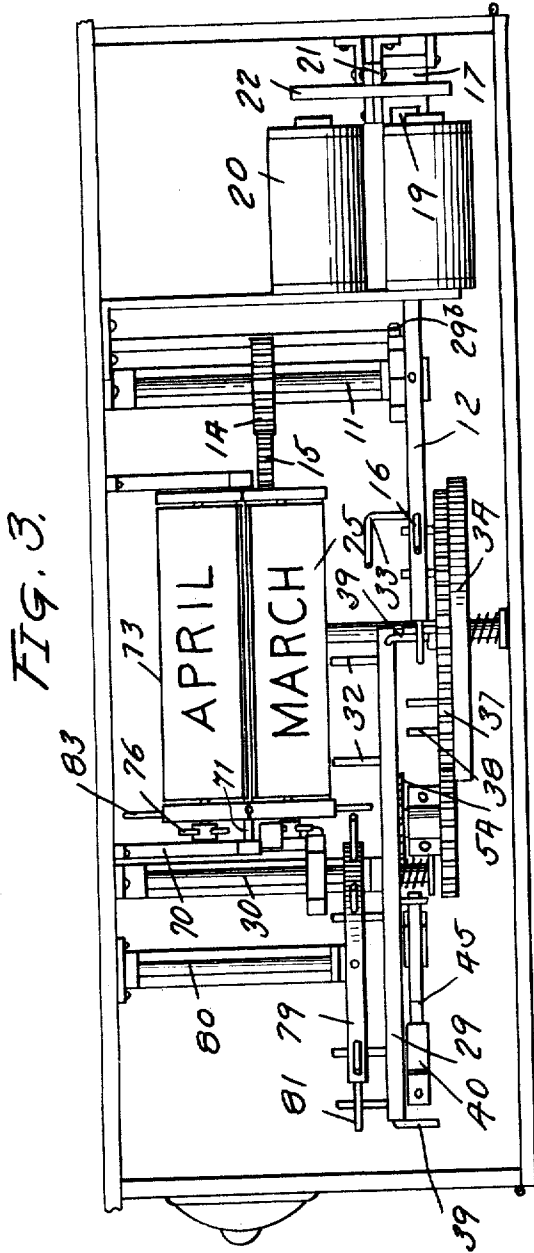


FIG 2

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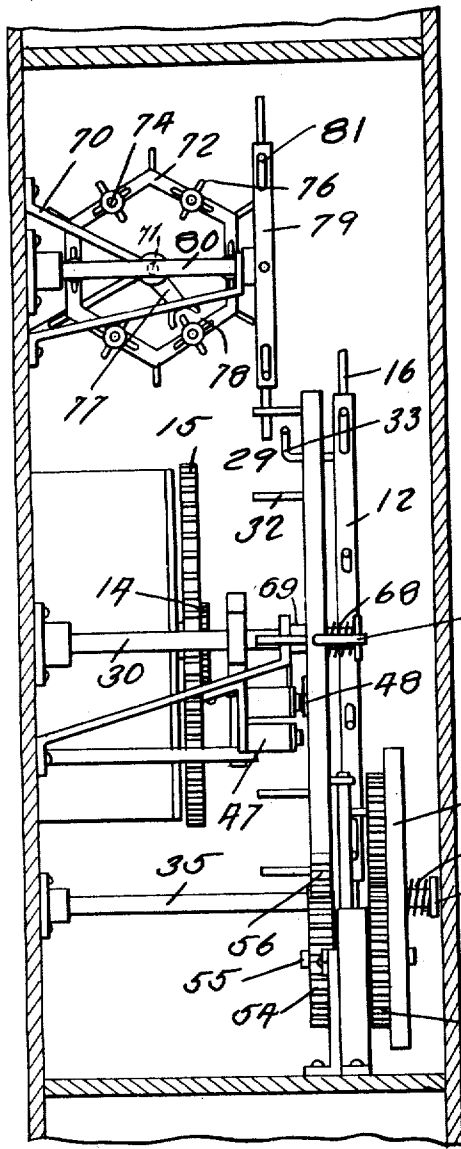


FIG. 4.

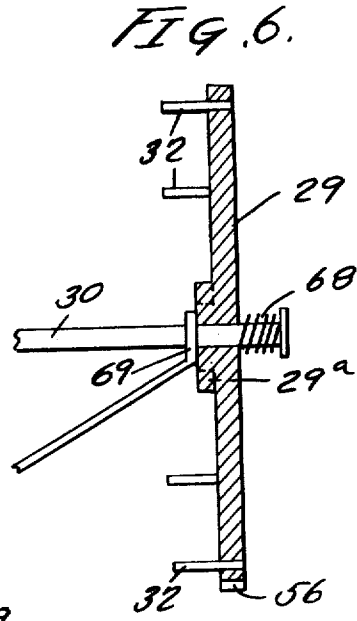


FIG. 6.

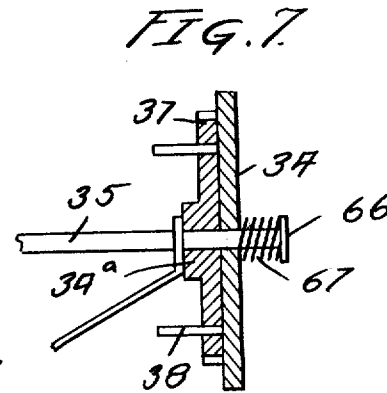


FIG. 7.

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UNITED STATES PATENT OFFICE.

PAUL VICIK, JR., OF NEW YORK, N. Y.

AUTOMATICALLY-OPERATED CALENDAR.

1,282,992.

Specification of Letters Patent.

Patented Oct. 29, 1918.

Application filed October 7, 1915. Serial No. 54,566.

To all whom it may concern:

Be it known that I, PAUL VICIK, Jr., a citizen of the United States, residing at New York, in the county of New York, State of New York, have invented certain new and useful Improvements in Automatically-Operated Calendars; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to new and useful improvements in automatically operated calendars adapted to consecutively display the proper days and months of the year.

It is in general the object of the present invention to simplify the structure and improve the efficiency of mechanisms of this character and it is more specifically an object to provide such a calendar mechanism which is operable by electrical impulses controlled by a suitable clock mechanism.

The fact is noted that with the exception of the short month of February and of two periods in the year where months of thirty-one days occur together, months of thirty days and months of thirty-one days alternate throughout the year and it is further an object of the invention to take advantage of this fact in providing means for displaying automatically the days of the week and their month numbers properly during succeeding months.

It is further an object to provide readily operated means for correcting the calendar for the month of February and for the other two periods as above stated in which the correct operation of the calendar mechanism is interrupted.

It is still further an object to provide means operable by the means for displaying the days, for consecutively displaying the names of the months, a more specific object in this connection being to provide such means which is exceedingly compact in nature so as to occupy a minimum amount of space.

The invention also embodies other and more detailed objects and advantages which will become apparent as the disclosure proceeds.

Entering now into a brief description of the essential features of the invention there is provided a wheel containing the units digits of the month numbers of the days

which is urged to rotation by a suitable spring mechanism. Associated with this wheel and adapted to be rotated one step thereby upon a complete rotation of said wheel is a second wheel containing the tens digits of the month numbers. The series of digits on this last wheel runs as follows: "1, 2, 3, 3, 0, 1, 2, 3 and 0" and is adapted to include a cycle of two months, the first being a month of thirty-one days. The first wheel, carrying the units digits, is controlled by an escapement which is operated by a circuit including an electro-magnet and a switch operatively connected to a suitable clock mechanism to close it once a day. Thus each day this units digits wheel is advanced one step and upon each rotation thereof the tens digits wheel is advanced one step. A wheel containing the week names of the days is provided and is rotated in successive steps by a series of gear pins on the units digits wheel. These gear pins are also adapted to engage gear pins on the tens digits wheel between the digit symbols "3-3," and the symbols "3-0" in their second occurrence as heretofore given, so that between the thirtieth and thirty-first of the month having thirty-one days and the thirtieth of the next month and the first of the first month in the cycle, the tens digits wheel may be rotated one step without necessitating a complete rotation of the units digits wheel.

Now, it will be observed that the power to actuate this calendar mechanism is transmitted through the units digits wheel. However, to make the transition between the thirty-first of one month and the first of the next month it is necessary for the units digits wheel to stand still and for the tens digits wheel to rotate one step. To accomplish this, one wire leading to the escapement magnet of the units wheel is branched and connected to a switch, and one wire extends therefrom to the escapement magnet and another wire extends therefrom to a magnet mounted adjacent the tens digits wheel. The tens digits wheel carries a projection which as the wheel moves into position indicating the thirty-first of the month engages and throws an arm carried by the switch so that when the circuit is completed by closing the switch of the clock mechanism the current will pass through the last named magnet and not through the escapement magnet so that the escapement magnet will lie idle and

the other magnet will attract a suitable armature carried on the tens digits wheel to thus rotate the wheel one step. During such rotation, the projection of the wheel will re-

lease the switch arm and permit it to move back, placing the escapement magnet again in circuit so that upon further closing of the switch of the clock mechanism, the various wheels will be advanced in the usual manner. The wheel containing the week names of the days is, in the transition from the thirty-first of the month to the first, rotated one step by a gear segment on the tens digits wheel which meshes with a gear meshing in turn with a gear on the week name wheel.

Means for displaying the names of the months is operated by the tens digits wheel.

In giving a more detailed description of the invention, reference is had to the accompanying drawing wherein similar characters of reference designate corresponding parts throughout the several views, and in which:

Figure 1 is a perspective view of the improved calendar mechanism housed in a casing and carrying also a clock mechanism for actuating it.

Fig. 2 is an elevational view of the improved calendar mechanism with the front of the casing removed and with the mechanism in relative position indicating the thirty-first of the month.

Fig. 3 is a top plan view of the mechanism shown in Fig. 2.

Fig. 4 is an end view of this structure.

Fig. 5 is a diagrammatic view showing the wiring circuit for operating the calendar mechanism.

Fig. 6 is a transverse sectional view on line 6—6 of Fig. 2.

Fig. 7 is a sectional view on line 7—7 of Fig. 2.

Fig. 8 is a detail perspective view showing one end of the month panel frame.

Fig. 9 is a detail perspective view of the escapement bar for the units digits wheel.

Fig. 10 is a detail view of the gear wheel pin connecting the tens digits wheel and the calendar mechanism and showing the means for compensating for the fact that the tens digits wheel necessarily includes five digits for the month having thirty-one days and four digits for the month having thirty days.

Referring now more particularly to the accompanying drawings, the calendar mechanism is preferably housed in a casing 5 which carries in its upper portion a clock 6 adapted to make the actuating contacts for the calendar mechanism. The front of the casing is closed by a door 7 adapted to be swung open to expose the calendar mechanism and provided in its upper portion with a horizontal slot 8 to display the name of

the month. A pair of openings 9 are disposed below the slot to display the month number of the day, and disposed below these openings is a second horizontal opening 10 for displaying the name of the day.

A shaft 11 extends inwardly from the left hand portion of the rear wall of the casing, looking toward the front of the casing, said shaft having a suitable journal support on the wall, and mounted on the forward end of this shaft is a wheel 12 which carries around its peripheral portion a series 13 of numbers indicating the units digits of the month numbers of the days. This shaft 11 carries at its rear portion a pinion 14 which meshes with a suitable spring drive mechanism 15 secured on the back of the casing. For permitting this wheel to rotate in successive steps under action of the spring, a gear tooth 16 extends outwardly from its periphery between each pair of the symbols and an escapement bar 17 is intermediately pivoted at 18 at the right hand side of the wheel and has its ends bent there toward and carrying rollers 19 to engage said teeth. A magnet 20 is supported in the upper portion of the casing and intermediately pivoted adjacent the magnet is a lever 21 carrying at one end the armature 22 adapted to be attracted by the magnet when it is energized and having its lower end pivoted to an arm 23 extending from the upper end of the escapement bar. A spring 24 is secured to the lower portion of the lever and to a pin 25 extending from the casing to resiliently hold the armature away from the magnet. Thus as the magnet is given successive impulses, the escapement will be actuated to permit the wheel 12 to rotate in successive steps.

The clock actuating means for supplying these successive impulses once a day to the magnet comprises a pair of spring contacts 26, (Fig. 5) connected to an electric circuit including said magnet, and a member 27 carried by a wheel 28 of the clock which is rotated once in a day to temporarily connect the contacts and close the circuit. This clock actuating means is not shown in exact detail, as any switch and means for closing it once during the day may be employed.

For indicating the tens digits of the month numbers of the days, a tens digits wheel 29 is carried on a shaft 30 projecting from the back of the casing at the left of the wheel 12, and carries adjacent its periphery a series of symbols 31 indicating the tens digits normally occurring in a cycle of two months. This series is as follows: "1, 2, 3, 3, 0, 1, 2, 3, 0", the symbols being continuously disposed about the wheel. Between each pair of these symbols a gear pin 32 is provided which extends inwardly of the casing from the periphery of the wheel

and which is adapted to be engaged by a single gear tooth 33 projecting from the units digits wheel 12 between the symbols "9" and "0".

Between and somewhat below the wheels 12 and 29, a wheel 34 is mounted on a shaft 35 extending from the back of the casing, and this wheel carries around its periphery the week names 36 of the days. A gear wheel 37 is secured on the back of the week name wheel, the function of which is later to be described and projecting inwardly of the casing from the periphery of the gear wheel is a series 38 of gear pins adapted to be engaged by the gear pins 16 of the units digits wheel to rotate the week name wheel in successive steps.

Between the two symbols "3" occurring together on the tens digits wheel 29 and between the other symbol "3" and the adjacent symbol "0" there is provided on the wheel a pair of outstanding gear pins 39 which are adapted to be engaged by the gear pin 16 of the units digits wheel which follows the symbol "1" of said wheel so that between the thirtieth and the thirty-first of the month having thirty-one days and the thirtieth of the next month and the first of the first month in the cycle, the tens digits wheel may be rotated one step without necessitating a complete rotation of the units digits wheel.

Taking up now specifically the means of transition from the thirty-first of one month to the first of the next, a pair of upper and lower aligned contacts 40 and 41, respectively, are secured in the end of the casing below the tens digit wheel and aligned with these contacts are upper and lower contacts 42 and 43, respectively. A shaft 44' is rotatably mounted on an arm 44 adjacent the intersection of the diagonals connecting these contacts and carried on the shaft is a plate 45 adapted to connect either the contacts 40 and 43 or the contacts 41 and 42, being normally, however, urged by a spring 46 into connecting position with the last two named contacts. Carried by the back of the casing near tens digits wheel 29 is an electro-magnet 47 and the wheel carries an armature plate 48 which when the wheel is in a position indicating the thirty-first of the month, lies in such position that it will be attracted by the magnet 47 upon energization of the same, to thus rotate the said tens digits wheel one step. Extending from the connecting plate 45 upwardly in front of the tens digit wheel is a spring 49 and the rear of the tens digit wheel carries a projection 50 which as the wheel moves into position indicating the thirty-first engages said arm and rocks it to swing the plate 45 against the action of the spring 46 into position connecting the contacts 40 and 43. A wire 51 extends from the contact 43 to

the magnet 47 and a wire 52 extends from the contact 42 through the magnet 20 controlling the escapement of the units digit wheel. A wire 53 supplying current is branched and connected to the contacts 40 and 41. Thus upon rocking the arm 49 the path of current is diverted from the magnet 20 to the magnet 47 and upon the circuit being closed to transmit the usual daily impulse, said impulse passes through the magnet 47, which, being energized, draws the armature 48 to it and thus rotates the tens digit wheel one step to indicate the first of the month, the units digit wheel 12 in this movement standing still.

To rotate the week name wheel one step during this transition from the thirty-first to the first, an idler gear 54 is provided on a suitable stub shaft 55 arranged transversely in the casing and meshing with the gear wheel 37 on the week name wheel. A segmental gear portion 56 is provided on the periphery of the tens digit wheel and meshes with the gear 54 being disposed in such relation as to enter into mesh upon movement of the tens digit wheel from the thirty-first to the first. Movement of the gear pins of the week name wheel past the gear pins of the units digit wheel is possible on account of the greater diameter of said first wheel, it being noted that each pin 16 engages a pin 38 only in the latter portion of the step movement of said pin 16 and that at the completion of the step movement the pin 16 is substantially at the point of separation from the pin 38. Thus the interference by pins 16 with the independent rotative step movement of the week name wheel can at the most only limit said movement a distance equal to the width of one pin 16.

Taking up now the circuits for supplying the electrical impulses to the magnets, and referring to Fig. 5, there are provided suitable batteries 57 and a wire 58 leads from these batteries and is branched, one branch 59 leading to one of the contacts 26 of the clock switch mechanism and the other branch 60 leading to one of the contacts of a push button device 61. The wire 53 aforementioned which is branched and connected to the contacts 40 and 41 has its other end branched, one branch 63 going to the other contact of the push button and the other branch 62 leading to the other clock switch contact 26. A wire 64 leads from the magnet 20 to the batteries and a wire 65 leads from the magnet 47 and is connected to the wire 64.

Thus a normal circuit through the magnet 20 includes the wire 58, branch 59, contacts 26 and member 27, branch wire 62, wire 53, contact 41, member 45, contact 42, wire 52, said magnet 20 and wire 64 back to the battery. A normal circuit through

the magnet 47 includes the wire 58, branch 60, the push button device 61, branch wire 63, wire 53, contact 40, member 45, contact 43, wire 51, the said magnet, wire 65, and wire 64 back to the batteries.

The utility of the push button 61 and the branch wires leading thereto is that it cuts out the clock switch mechanism and provides an independent means for closing the magnet circuit so that the error in the calendar arising from the short month of February may be corrected as respects the month numbers of the days simply by pushing said button twice to give two impulses. This disarranges the week name wheel, and correction of this wheel must then be made by turning it back two days. The means for so mounting this wheel that such correction may be easily made consists in having the wheel slidable on its shaft 35 and providing a collar 66 on the free end of the shaft so that a spring 67 on the shaft and interposed between the collar and the wheel resiliently urges the wheel into mesh with its gear actuating means.

Reviewing the arrangement of the months and their days, attention is directed to the following table:

30	January-----	31 days.
	February-----	28 (30) "
	March-----	31 "
	April-----	30 "
	May-----	31 "
35	June-----	30 "
	July-----	31 "
	August-----	31 "
	September-----	30 "
	October-----	31 "
40	November-----	30 "
	December-----	31 "
	January-----	31 "

By providing in the month of February two annual impulses to the mechanism by means of the push button 61, it becomes the same in effect as a month of thirty days. It is thus noted with the exception of the months of January and August months of thirty-one days alternate with months of thirty days.

As the calendar operates in two month cycles, each comprising a month of thirty-one days and a month of thirty days, there are thus only two times during the year when the correct operation of the calendar is interrupted, that is, with the exception of February, whose correction has been explained.

To make the correction for these two times in the year it is necessary that the tens digits wheel be at the end of each month of January and August turned back one-half a cycle, and to accomplish this the wheel is slidably mounted on its shaft 30 and is urged by a spring 68 on the shaft forwardly of the

wheel into abutting engagement with a stop collar 69 whereby it is resiliently held into mesh with its various gears, but may be displaced and rotated back a half rotation. This correction would be made on the thirtieth of each month of January and August. When making this correction the gear wheel connecting the tens digits wheel 29 to the month display mechanism, as will be later described, should be turned back one step.

To insure the tens digit and the week name wheels being disposed in exact proper positions after adjustment thereof and after their various movements the hubs 29^a and 34^a, respectively, thereof are provided with flat faces corresponding to the symbols of the wheels and leaf springs 29^b and 34^b are carried by the casing and bear on these faces.

Taking up now the means for displaying the months of the year, a pair of brackets extend from the upper portion of the back of the mechanism casing and provide bearings for a shaft 71. Secured to each end portion of the shaft inwardly of the respective bracket 70 is a hexagonal frame 72 and disposed between respective sides of the frames are panels 73 which are pivotally connected to the sides of the frame by pintles 74. Each side of each panel carries a month symbol 75 and as the shaft is rotated in successive steps to display a month panel before the month opening 8 of the casing, each one of the panels is successively turned so that when it is again disposed at the opening it will display the month symbol which was on the other side thereof. Thus a great saving in space is effected in obviating the necessity of providing a panel for each month. To accomplish this turning of the panels with relation to their carrying frames, each of the pintles 74 adjacent one frame is extended past the frame and carries a pin wheel 76 which is adapted to be engaged by an arm 77 projecting thereadjacent from one of the brackets 70 and carrying a plurality of teeth 78 engageable therewith so that as the panel moves past the said arm it will be given the desired half rotation.

As heretofore stated this month indicating means is actuated by the tens digits wheel 29. To accomplish this, one end of the shaft 71 is disposed adjacent the said wheel 29, with its respective frame 72 lying transversely of the plane thereof. A wheel 79 is provided, lying in a plane parallel to and slightly inwardly of the plane of the wheel 29, and journaled on a shaft 80 extending from the back of the casing. This wheel has extending radially from its periphery the series of gear pins 81, similar in number to and engageable by a series of gear pins 82 disposed around and extending inwardly of the periphery of the tens digits wheel 29, one of said pins as stated being disposed be-

tween each pair of symbols of the wheel. Projecting radially from the adjacent frame 72 between each of the panel ends is a gear pin 83, and two of the gear pins 81 are greater in length than the others and adapted each to engage the gear pins of the frame to thus rotate the month panel structure in successive steps. It will be noted that one of the months of the calendar cycle uses five tens digits and the other uses four tens digits, and the longer gear pins 81 are so arranged that as the tens digits wheel moves to indicate the first of the month the month structure will be rotated one step. The wheel 79 rotates continuously with the tens digits wheel 29. In making the corrections for January and August the wheel 79 is turned back one step when the tens digits wheel is turned back, as heretofore stated.

From the foregoing description taken in connection with the drawings it will be seen that an exceedingly simple and exceedingly compact device has been provided for consecutively displaying the proper months and the proper days in the terms of their month numbers and the week names. The slight corrections of this mechanism for the month of February and the months of July and August may be readily made and the calendar is thus adapted to be operated correctly through succeeding years.

While I have illustrated and described a particular embodiment of my invention, I have merely done so for the sake of convenience and I do not wish to be limited to that particular embodiment as it is obvious that numerous changes may be made within the details of construction thereof without departing from the spirit of the invention as claimed.

What I claim is:

1. An automatically operated calendar including a symbol carrying wheel, means urging said wheel to rotate, a second symbol carrying wheel adapted to be operated by the first wheel, means for independently moving the second wheel, an escapement mechanism for the first wheel, said escapement mechanism and said means for independently moving the second wheel being electrically operable, an electric circuit including an opening and closing switch and a second switch adapted to include either the escapement mechanism or the said means for independently moving the second wheel in the circuit and means operable upon rotation of the second symbol carrying wheel for moving said second switch.

2. An automatically operated calendar including a wheel, means for actuating said wheel in successive steps, a series of units digits disposed about the periphery of said wheel, a second wheel, tens digits disposed about the periphery thereof, such being the consecutive series of digits occurring in a

month of thirty-one days and a month of thirty days, a series of gear pins extending from the second wheel between said digits, a gear pin carried by the first wheel and engageable therewith, gear pins extending from the wheel between certain symbols and in a direction different from the extent of the first named pins, a second gear pin carried by the first wheel and engageable with the second named pins of the second wheel whereby to procure rotative tens-digit shifting steps of the second named gear pins and means operable once during a rotation of said second wheel to cause it to move independently of the first wheel.

3. An automatically operated calendar including a wheel adapted to display the tens digits of the month numbers, a wheel adapted to display the units digits of the month numbers and arranged to actuate the first wheel, means for causing said first wheel to move independently of the second, a third wheel adapted to display the week names of the days and arranged to be operated by the second named wheel and means associated with the first wheel and engageable with the third wheel to rotate it upon independent movement of the first wheel.

4. An automatically operated calendar including a wheel adapted to display the tens digits of the month numbers, a wheel adapted to display the units digits of the month numbers, means connecting the wheels to rotate the first one step upon a complete rotation of the second, means for rotating said second wheel, gear pins projecting laterally from the first wheel between certain digits, a series of gear pins carried by the second wheel, one of which pins is engageable with the said pins of the first wheel to procure step rotations of said first wheel by the second wheel independent of the aforementioned means for rotating the first wheel, a third wheel adapted to display the week names of the days, a series of gear pins carried by said wheel and engageable with the gear pins of the second wheel, a gear wheel carried by the third wheel, means for moving the first wheel independently of the second and a gear segment carried by the first wheel and engageable with said gear wheel during such movement of the first wheel to rotate the third wheel independently of the second.

5. In an automatically operated calendar, means for consecutively displaying month names of the year comprising a rotatable frame, panels rotatably mounted in the frame, a symbol on each face of each panel, means for rotating the frame in successive steps and means for imparting a half rotation to each panel successively during such successive steps.

6. In an automatically operated calendar, the combination with a wheel adapted to

display the tens digits occurring in a series of consecutive months and adapted to be operated in successive steps, of means for consecutively displaying the month names of the year comprising a rotatable display member, gear pins carried by said member between the digits, a gear pin wheel having all of its pins adapted to mesh with said first pins, a series of gear pins carried by the display member and certain of the pins of the gear pin wheel being engageable with the pins of the display member.

7. An automatically operated calendar including means for displaying month numbers of days in regular cycles, each cycle including the numbers for a month of thirty-one days and a month of thirty days.

8. An automatically operated calendar including means for displaying month numbers of days in regular cycles, each cycle including the numbers for a month of thirty-one days and a month of thirty days, and means operated by the said first means for consecutively displaying the week names of the days during succeeding cycles.

9. An automatically operated calendar including means for displaying month numbers of days in regular cycles, each cycle including the numbers for a month of thirty-one days and a month of thirty days, and means operated by the said first means for consecutively displaying the month names of the year during succeeding cycles.

10. An automatically operated calendar including a wheel, means for actuating said wheel in successive steps, a series of units digits disposed about the periphery of said wheel, a second wheel, tens digits disposed about the periphery thereof, such being the consecutive series of tens-digits occurring in a month of thirty-one days and a month of thirty days, a series of gear pins extending

from the second wheel between said digits, a gear pin carried by the first wheel and engageable therewith, gear pins extending from the wheel between certain symbols and in a direction different from the extent of the first named pins, a second gear pin carried by the first wheel and engageable with the second named pins of the second wheel whereby to procure rotative tens-digit shifting steps of the second named gear pins and means operable by said second wheel once during a rotation of said second wheel to cause it to move independently of the first wheel.

11. An automatically operated calendar including a symbol carrying wheel, means urging said wheel to rotate, a second symbol carrying wheel adapted to be operated by the first, an escapement mechanism for the first wheel and means operable by said second wheel for procuring rotative steps thereof independently of the first wheel.

12. An automatically operated calendar including a symbol carrying wheel, means urging said wheel to rotate, a second symbol carrying wheel adapted to be operated by the first, an escapement mechanism for the first wheel, an armature carried by the second wheel, a projection on the second wheel, a switch including an actuating arm engageable by said projection, and a circuit including said switch and a magnet to attract said armature upon closing said switch to procure an independent rotative step of the second wheel.

In testimony whereof, I affix my signature, in the presence of two witnesses.

PAUL VICIK, JR.

Witnesses:

WILLIAM R. FANNING,
RALPH S. FANNING.

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