No. 801,495. PATENTED OCT. 10, 1905.

H. M. WILSON.

UNIVERSAL CALENDAR APPARATUS.

APPLICATION FILED NOV. 18, 1903.

3 SHEETS—SHEET 1.

Fig. 1.

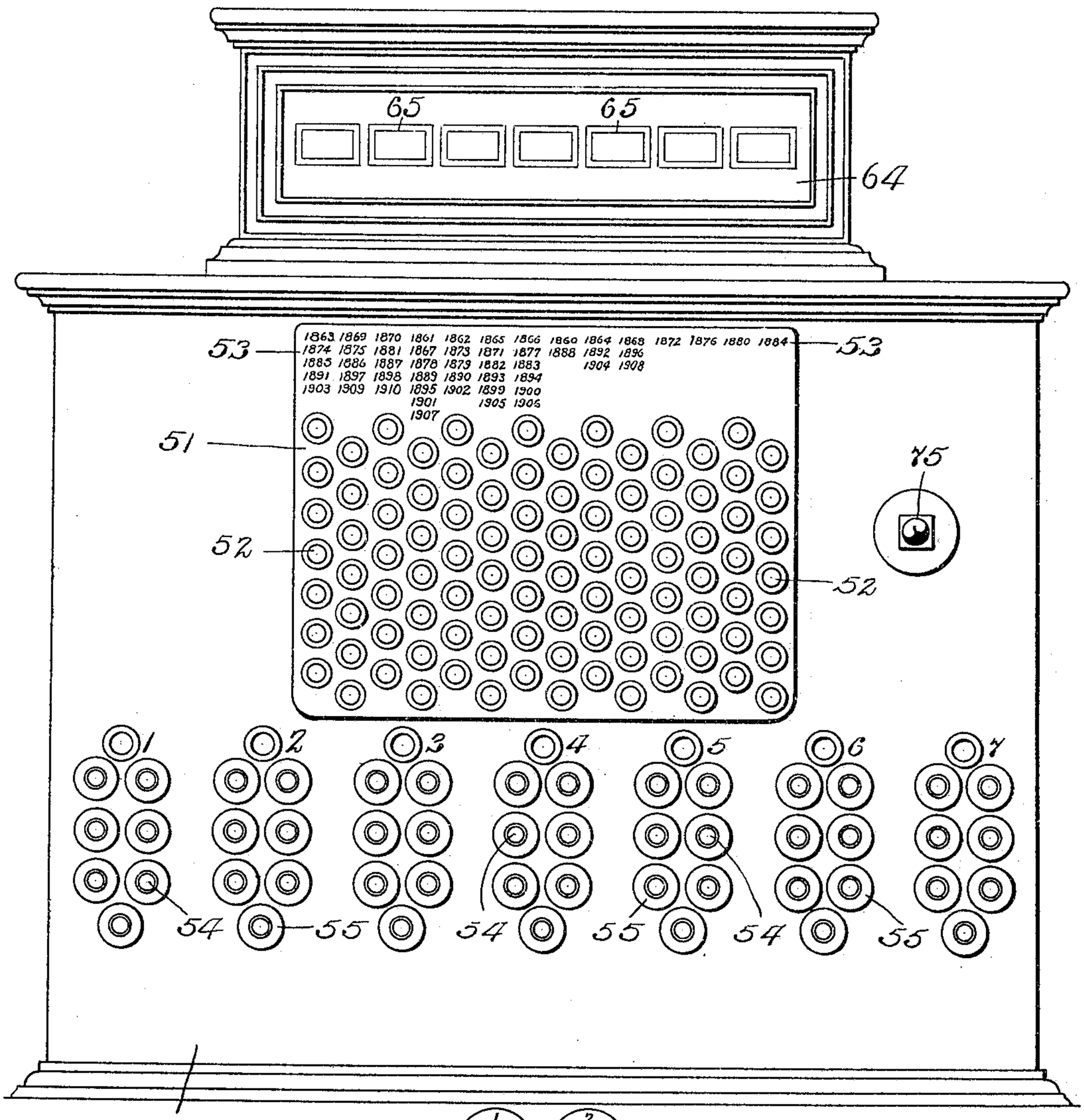
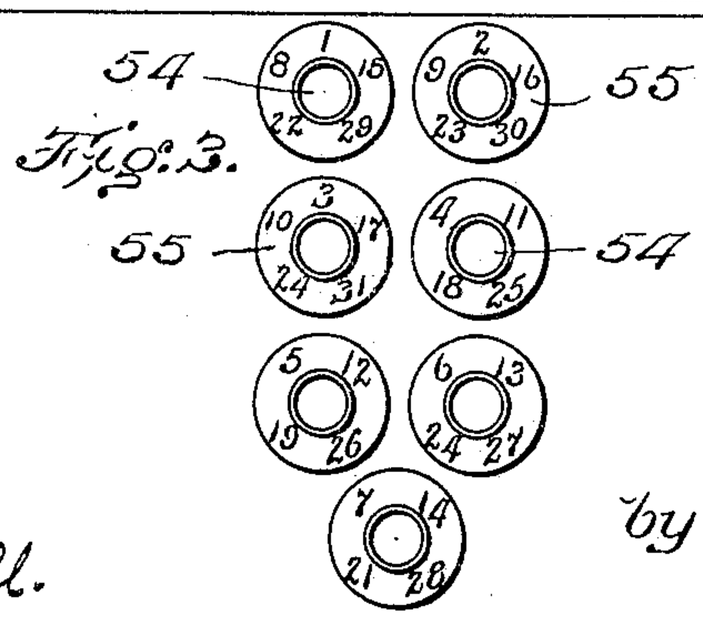


Fig. 3.



Witnesses:

A. C. Raligan

Walter O. Abell.

Inventor:

Horace M. Wilson,

by Wright, Brown & Quinby

Atty's.

No. 801,495. PATENTED OCT. 10, 1905.

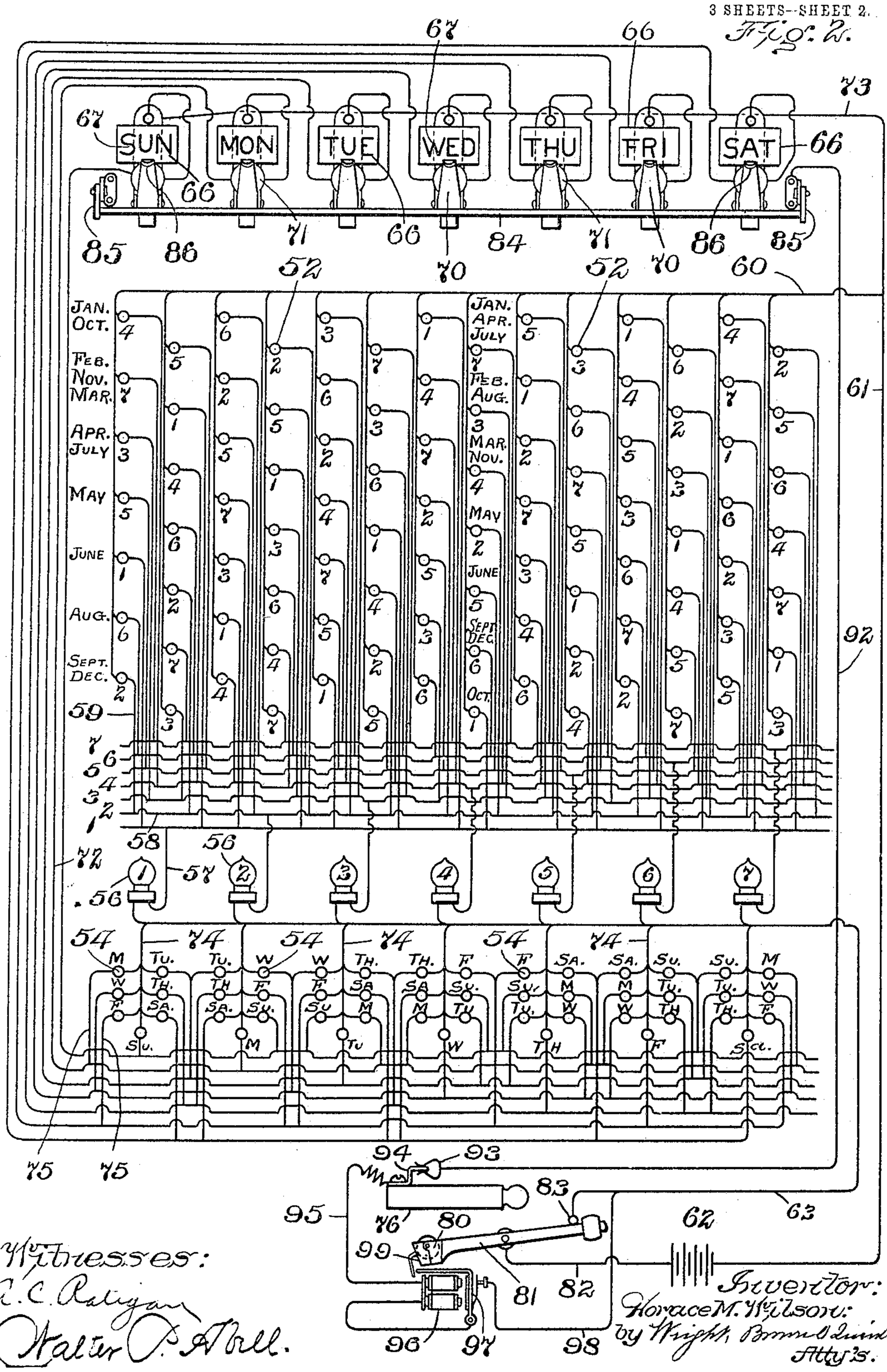
H. M. WILSON.

UNIVERSAL CALENDAR APPARATUS.

APPLICATION FILED NOV. 18, 1903.

3 SHEETS--SHEET 2.

Fig. 2.



Witnesses:
A. C. Ratigan
Walter C. Bell.

Inventor:
Horace M. Wilson:
by Wright, Brown & Quinby,
Atty's.

No. 801,495. PATENTED OCT. 10, 1905.

H. M. WILSON.

UNIVERSAL CALENDAR APPARATUS.

APPLICATION FILED NOV. 18, 1903.

3 SHEETS—SHEET 3.

Fig. 4.

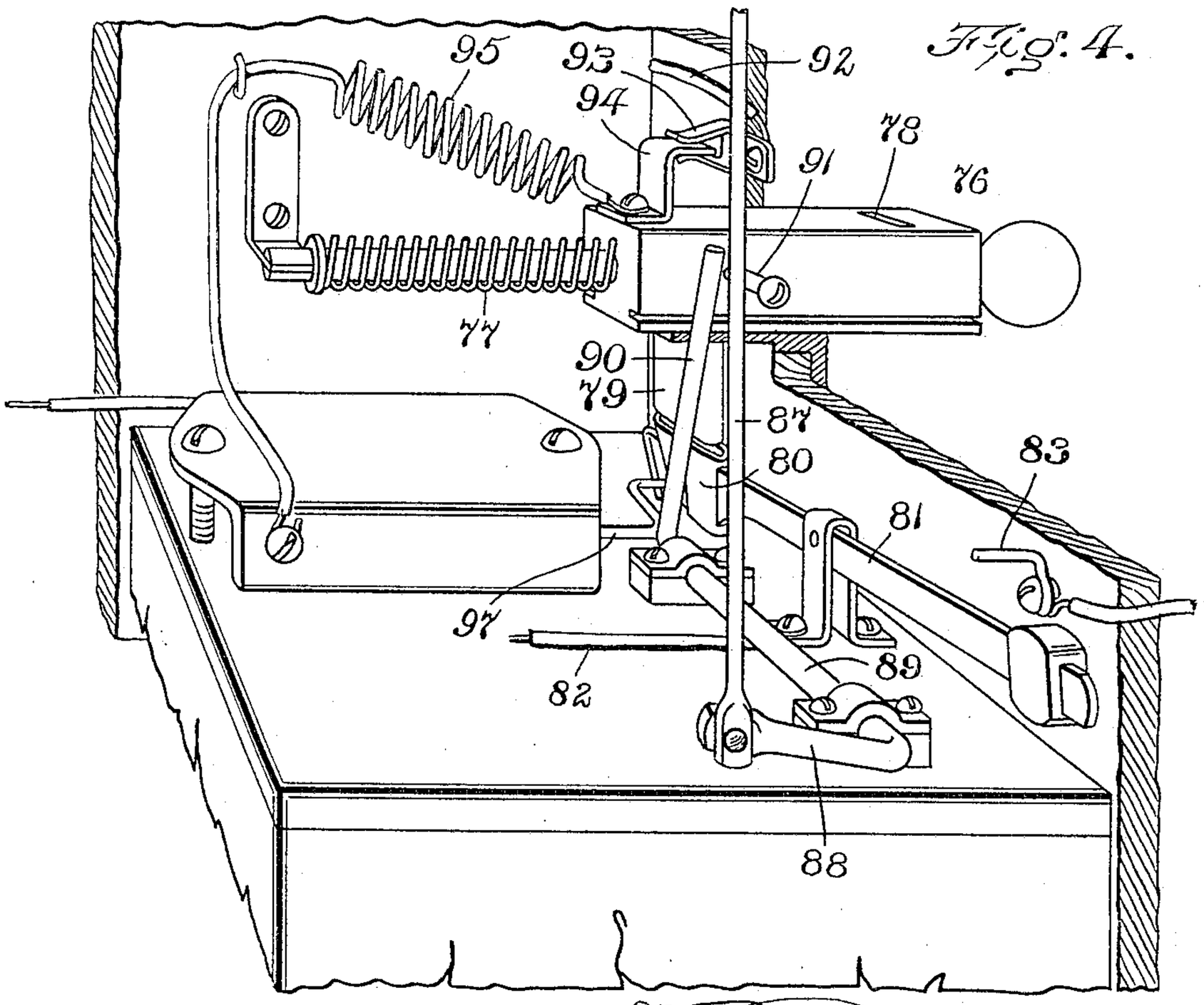


Fig. 5.

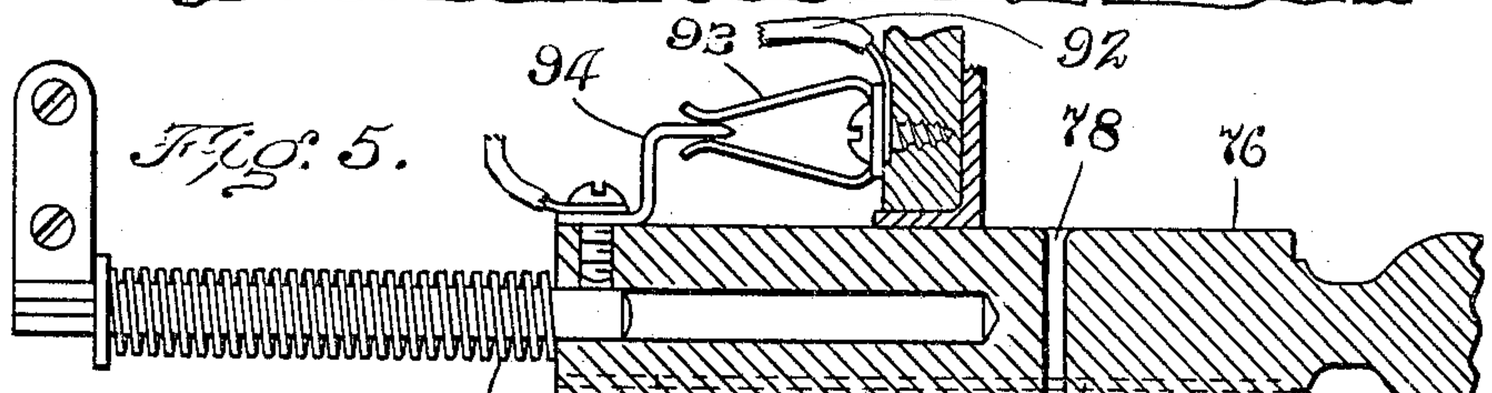
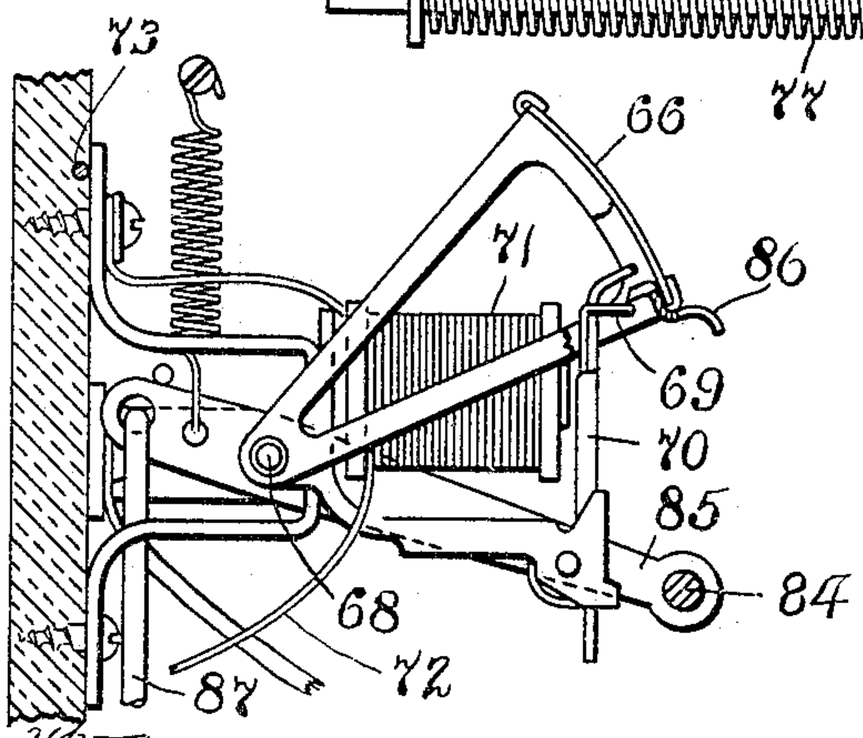


Fig. 6.



Witnesses:
A. C. Ritzgan
Walter P. Abell

Inventor:
Horace M. Wilson,
by Wright, Brown & Quinby
Atty's.

UNITED STATES PATENT OFFICE.

HORACE M. WILSON, OF BOSTON, MASSACHUSETTS, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, OF ONE-FOURTH TO WILLIAM G. BEE, OF GLENRIDGE, NEW JERSEY, AND ONE-HALF TO HENRY C. LITTLE, OF BROOKLINE, MASSACHUSETTS.

UNIVERSAL-CALENDAR APPARATUS.

No. 801,495. Specification of Letters Patent. Patented Oct. 10, 1905.

Application filed November 18, 1903. Serial No. 181,577.

To all whom it may concern:

Be it known that I, HORACE M. WILSON, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Universal-Calendar Apparatus, of which the following is a specification.

This invention relates to a universal-calendar apparatus for ascertaining the day of the week on which any date within the range of years covered by the apparatus fell or will fall.

The apparatus is arranged according to the Gregorian calendar, which came into use in England in 1752, and its range may be any number of years from that date on. It is well known that tables or diagrams have been arranged giving in condensed form the universal or perpetual Gregorian calendar; and it is the object of the present invention to apply mechanical or physically-controllable means to such a diagram, tables, or scheme, so that the desired information may be obtained by a physical act or series of acts performed by the observer.

In constructing the perpetual or universal calendar it is found that all of the years in the common or Christian reckoning from 1752 onward fall within fourteen groups, seven groups of common years and seven groups of leap-years, each group having the same calendar. For instance, it is found that the common years 1863, 1874, 1885, &c., have the same calendar—that is, the dates of these years all fall on similar days of the week. Similarly, the years 1869, 1875, &c., have the same calendar as each other, differing from the calendar of the years 1863, 1874, and 1885, and so on for fourteen groups of years. It is further found that seven representative months may be tabulated which will represent any month of any year in the calendar, the month-days of each of these seven months falling on different days of the week from each other. Therefore by indexing any month in the fourteen groups of months with its corresponding representative month arranged by week-days the week-days of all dates in the calendar may be readily ascertained.

The present invention contemplates the application of mechanical or physically-controllable means to the performance of one or more of the operations required in calculating the week-day of any date.

The apparatus is preferably coin or check controlled.

Of the accompanying drawings, Figure 1 represents a front elevation of a universal-calendar apparatus embodying the present invention. Fig. 2 represents a diagrammatic view of the circuits thereof. Fig. 3 represents an enlarged detail of one of the groups of push-buttons applied to one of the seven groups of representative months. Fig. 4 represents a perspective view of the mechanism for controlling the apparatus by coin or check. Fig. 5 represents a sectional view of the coin push or slide and related parts. Fig. 6 represents a side elevation, partly broken away, of one of the annunciator-drops and related parts.

The same reference characters indicate the same parts in all the figures.

On the front of the casing 50 of the apparatus is a switchboard 51, carrying fourteen vertical columns of push-button switches or circuit-actuators 52, above which are the designations 53 of the years pertaining to the several columns, the range of the apparatus being fifty years, as herein represented. It may, however, have a greater or less range, the range being increased simply by adding the proper years to the different columns, fourteen columns sufficing for all time from the institution of the present calendar. Each column of push-buttons 52 might consist of twelve of said push-buttons; but it has been found that seven will suffice, as in any year certain months will have the same calendar—that is, their dates will fall on the same days of the week. Therefore the first push-button of each of the seven left-hand columns is designated on the apparatus with the words "January" and "October" or suitable abbreviations thereof, the first column being so represented in Fig 2. The second push-button in each of said seven left-hand columns is designated "February, March, November;" the third, "April, July;" the fourth, "May;" the fifth, "June;" the sixth, "August," and the seventh "September, December." These columns pertain to the common years. The seven right-hand or leap-year columns have their push-buttons designated as follows: first,

"January, April, July;" second, "February, August;" third, "March, November;" fourth, "May;" fifth, "June;" sixth, "September, December;" seventh, "October." Below the switchboard 51 are seven groups of push-button switches or actuators 54, there being seven push-buttons in each of said groups. The number might be thirty-one in each group; but this is unnecessary, as the seven week-days each represent a plurality of month-days. Each of the groups of push-buttons 54 is represented on the apparatus by the month-day designations 55 (shown in Fig. 3)—that is, the first push-button is surrounded by the numerals "1, 8, 15, 22, 29;" the second by the numerals "2, 9, 16, 23, 30;" the third by "3, 10, 17, 24, 31;" the fourth by "4, 11, 18, 25;" the fifth by "5, 12, 19, 26;" the sixth by "6, 13, 20, 27;" the seventh by "7, 14, 21, 28."

Above the seven groups of push-buttons 54 are seven glow-lamps 56 or receivers of the current impulses from the month-switches, which lamps for ready reference are designated by the numerals 1 to 7 in the drawings, but are preferably not so designated on the apparatus. The lamps shine through apertures in the front wall of the casing 50. Each of the lamps, receivers, or indicators 56 is connected in circuit with one of the push-buttons 52 in each of the vertical groups on the switchboard 51, the connection being by seven branch wires 57, seven trunk-wires 58, connected to the branch wires, and ninety-eight branch wires 59, one for each push-button 52, said wires constituting directing-circuits. For convenience of reference the trunk wires 58 have the same designations "1, 2, 3, 4," &c., on the drawings as the lamps 56, to which they are respectively connected, and the push-buttons 52 are similarly designated, so that it will be apparent on inspecting Fig. 2 to what lamp 56 any one of the push-buttons 52 is connected. These connections of the lamps and push-buttons are in accordance with the universal calendar, as will more fully appear. The branch wires 59 have a return 60 61 to one side of a battery 62, the current proceeding from the other side of the battery through the coin-controlled mechanism and via wire 63 to the lamps 56.

On the top of the casing 50 is a smaller casing 64, having a front with apertures 65, through which are adapted to appear a series of week-day indicators in the form of annunciator-drops 66, bearing designations 67 of the days of the week, "Sunday," "Monday," &c.,, as seen in Fig. 2. Each of these drops is suitably pivoted at 68, Fig. 6, and controlled by a latch 69 on the armature 70 of an electromagnet 71. Said magnets are connected on one side to trunk-wires 72 and have a common return through the frames of the magnets and wires 73 61 to the battery 62. The several push-buttons 54 have a common return through branch wires 74, wire 63, and the coin-controlled mechanism to the battery and are connected by branch wires 75 to the several trunk-wires 72, each trunk-wire being connected to one of the push-buttons 54 in each of the seven groups. These branch and trunk wires constitute directing-circuits.

For convenient reference the push-buttons 54 in the different groups are designated in Fig. 2 by abbreviations of the days of the week—namely, "M," "Tu," &c.—to indicate the particular drop 66 with which any push-button is connected, the push-buttons being undesignated in the apparatus, however. It will be seen that the first push-button in the first group, reading from the left, is connected with the Monday drop, the second push-button in that group with the Tuesday drop, &c. In the second group the first push-button is Tuesday, in the third group Wednesday, in the fourth group Thursday, &c. The month-day designations of each group being the same—namely, that shown in Fig. 3—it is apparent that the month-days pertain to different week-days in the several groups, and these groups are therefore representative of any month in any year. The connections of the push-buttons 54 with the annunciator-drops 66 are therefore according to the universal calendar.

76 is a coin or check push or slide projected outwardly by a spring 77 and having a slot 78 adapted to register with a chute 79 when the slide is pushed in, below said chute being a coin-bucket 80 upon a pivoted lever 81, connected, through wire 82, with one side of the battery 62. The lever is weighted, so that in the absence of a coin it is out of connection with a contact 83, connected with the wire 63.

84 is a resetting-bar mounted on pivoted arms 85 and adapted to engage lips 86 on the drops 66, whereby said drops are lifted into connection with the latches 69 when the resetting-bar 84 is raised, said lips also furnishing an electrical connection between the resetting-bar and the frames of the magnets and drops. The resetting-bar is actuated by a link 87, Figs. 4 and 6, arm 88 on rock-shaft 89, arm 90 on said rock-shaft, and pin 91 on the slide 76, whereby any drop which has been actuated is reset when the slide is pushed in. The resetting-bar 84 is connected by wire 92 with a stationary contact 93, engaged when the slide 76 is out by a contact 94 on said slide, connected by wire 95 with the magnet 96 of a trembler 97, wire 98 leading from said magnet to the wire 63. The trembler-magnet is thus in circuit with the push-buttons 54 in parallel with the contact 83 and coin-bucket lever 81. The trembler actuates a pivoted valve or door 99 on the coin-bucket 80 for releasing the coin.

The operation is as follows: A coin or other check is first deposited in the slot 78 of the slide 76, and the latter is pushed in until the coin drops through the chute 79 into the coin-

bucket 80, the slide being then released. The descent of the coin-bucket closes the circuit between lever 81 and contact 83, and thus places the circuits of the various push-buttons, lamps, and drops in condition for operation. Supposing it is desired to find the day of the week on which July 4, 1903, occurred, the operator finds the group of years in which 1903 occurs on the switchboard 51 and learns that it is over the first column of push-buttons 52. The third push-button from the top in this column is marked "July," and the operator presses this push-button, with the result that the third lamp 56 is illuminated, the current flowing from the battery 62 through wire 82, lever 81, contact 83, wire 63, third lamp 56, the trunk-wire 58, (marked with the numeral "3,") the branch wire 59, leading to the third push-button 52 in the first column, wire 60, and wire 61, back to the battery. The operator is thereby directed to the third group of push-buttons 54, which by reason of the arrangement of circuits according to the perpetual calendar represents the calendar for July in the year 1903. Then referring to the designations surrounding the push-buttons 54, Fig. 3, it is found that the fourth push-button in the group corresponds to the month-day "4." This push-button is then pressed and completes a circuit through the magnet of the last annunciator-drop 66, designated "Saturday," the current flowing from the battery 62 through wire 82, lever 81, contact 83, wire 63, the branch wire 74 of the third group of push-buttons 54, the fourth push-button of that group, (marked "Sa" in Fig. 2,) the corresponding branch wire 75, the trunk-wire 72, leading to the magnet of the Saturday drop 66, through said magnet, the frame of said drop, and the wires 73 61, back to the battery. The Saturday drop falls into view through its aperture 65 in casing 64, and the desired information is thereby imparted to the operator. Any other date within the range of the machine may be ascertained in the same way. When the drop 66 falls, it completes a circuit between its lip 86 and the resetting-bar 84 through the trembler-magnet 96, the current flowing from battery 62 through wire 82, lever 81, contact 83, wire 98, magnet 96, wire 95, contacts 94 and 93, wire 92, resetting-bar 84, lip 86, the frame of the drop, and wires 73 61, back to the battery. The trembler has the same construction and connections as an electric trembling bell, and it operates on the valve or door 99, so as to release the coin through the bottom of the coin-bucket 80, allowing the lever 81 to return to normal position for a fresh operation, thereby breaking the circuits of the push-buttons, lamps, and drop-magnets. The purpose of the contacts 93 94 is to break the circuit of the trembler when the slide 76 is pushed in, for should the circuit be continuous at such time any drop 66 which was then resting against the resetting-bar 84 from a previous operation would complete the trembler-circuit, and the coin would be dropped out of the bucket as soon as the lever 80 connected with the contact 83. The contacts 93 94, however, break the trembler-circuit until any fallen drop has been reset and the resetting-bar 84 retracted therefrom.

It will be understood that I do not wholly confine myself to the described construction of component parts of my invention, as these may be widely varied without departing from the idea of means herein disclosed. The device as shown may also be employed in part, if so desired, or the principle of operation may be extended. It is permissible to employ various equivalents for the switches and indicating devices herein shown.

I claim—

1. A universal-calendar apparatus provided with a series of designations of divisions of time, a series of designations of a lower order of divisions of time, physical connections associating the one series with the other in a predetermined arrangement according to the universal calendar, and manually-operable means associated with the designations of the higher order and acting through said connections to select predetermined ones of the lower order of designations according to the designation selected in the higher order.

2. In a universal-calendar apparatus, a series of week-day indicators, and means pertaining to a higher order of divisions of time and designated according to the universal calendar for individually operating said indicators.

3. A universal-calendar apparatus provided with a series of normally concealed week-day designations, a series of month-day designations, manually-controllable physical connections associating the two series according to the universal calendar, and means whereby the week-day designations are individually revealed through said connections.

4. A universal-calendar apparatus provided with a series of week-day indicators, seven groups of month-day designations, and means denoted by said designations for actuating the several indicators, said means having connections with the indicators according to the universal calendar.

5. A universal-calendar apparatus provided with a series of designations of divisions of time, a second series of designations of a different order of divisions of time, and electrical connections associating one series with the other in accordance with the universal calendar.

6. A universal-calendar apparatus provided with a series of designations of divisions of time, a second series of designations of the next smaller order of divisions of time, and

electric directing-circuits associating the first said series with the second said series, said circuits having actuators denoted by the first said series and receiving devices associating the circuits with the second said series.

7. A universal-calendar apparatus provided with a series of annunciator devices designated by week-days, a plurality of groups of month-day designations, switch devices denoted by said designations, and circuits for actuating said devices controlled by said devices and associating said groups and devices according to the universal calendar.

8. In a universal-calendar apparatus, groups of month-day designations, indicators denoting the same, groups of month designations, actuators denoted thereby, and connections from said actuators to the indicators arranged according to the universal calendar.

9. In a universal-calendar apparatus, groups of month designations, a series of electric lamps, and electric circuits denoted by said designations and controlling the lamps, said circuits being arranged according to the universal calendar.

10. In a universal-calendar apparatus, seven groups of month-day designations, each having a plurality of circuit-actuators, and seven day-indicators each having a circuit connection with one circuit-actuator in each group.

11. In a universal-calendar apparatus, fourteen groups of month designations, each having a plurality of circuit-actuators, and seven receivers each having a circuit connection with one of the circuit-actuators of each group.

12. In a universal-calendar apparatus, a group of actuators having month designations, certain of said actuators having a plural designation of months whose dates fall on the same week-days, and receivers controlled by said actuators.

13. In a universal-calendar apparatus, a group of actuators having month day designations, each actuator having a plural designation of month-days falling on the same week-day, and indicators controlled by said actuators.

14. In a universal-calendar apparatus, fourteen groups of switches having month designations, a series of groups of switches corresponding to week-days and designated by days of the month, each of the latter groups representing the calendar for one of the month-switches in each group, and receivers pertaining to said week-day groups and connected in circuits with said month-switches according to the perpetual calendar.

15. In a universal-calendar apparatus, seven day-indicators, seven groups of day-switches, each switch connected to actuate one of the indicators and designated by a day of the month, the month-days corresponding to different week-days in the several groups, receivers corresponding to the respective groups of day-switches, fourteen groups of month-switches, each group representing a group of years whose calendar is the same, each switch of any month group being designated by a month and connected to one of the receivers pertaining to a day-switch group representing the calendar of that month for any year in the corresponding year group.

In testimony whereof I have affixed my signature in presence of two witnesses.

HORACE M. WILSON.

Witnesses:
R. M. PIERSON,
A. C. RATIGAN.