

Jan. 24, 1950

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2,495,222

AUTOMATIC CLOCK CALENDAR

Filed March 1, 1946

3 Sheets-Sheet 1

Fig. 1.

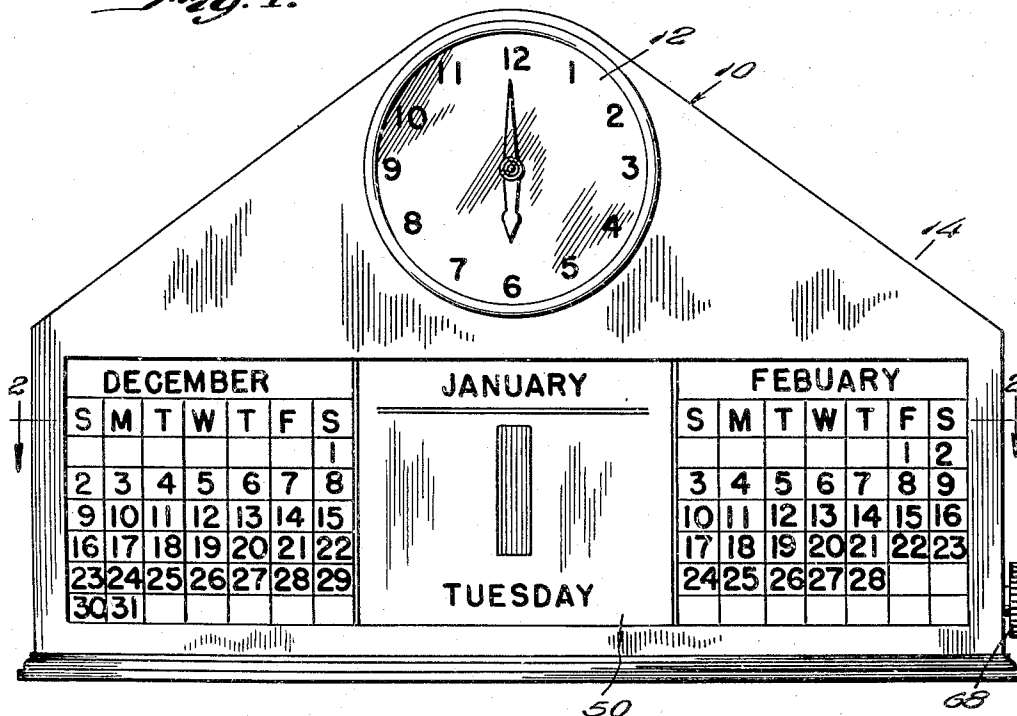


Fig. 5.

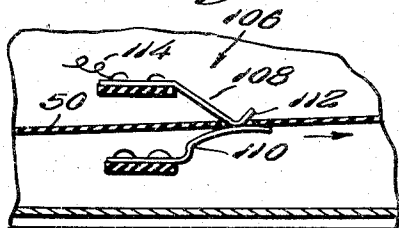


Fig. 6.

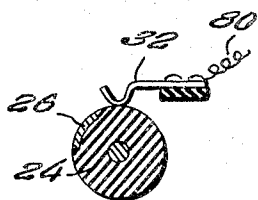
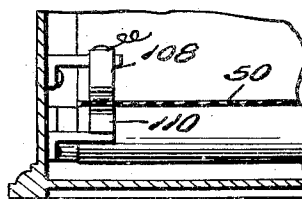


Fig. 7.

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3 Sheets-Sheet 2

Fig. 2.

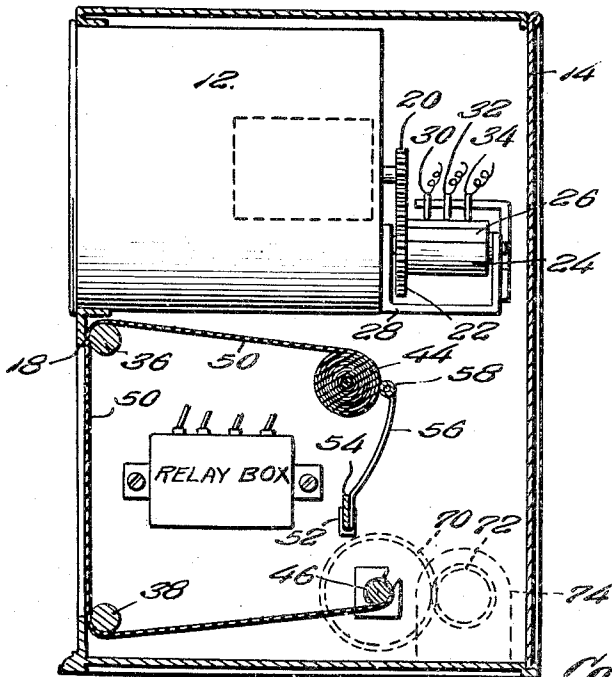
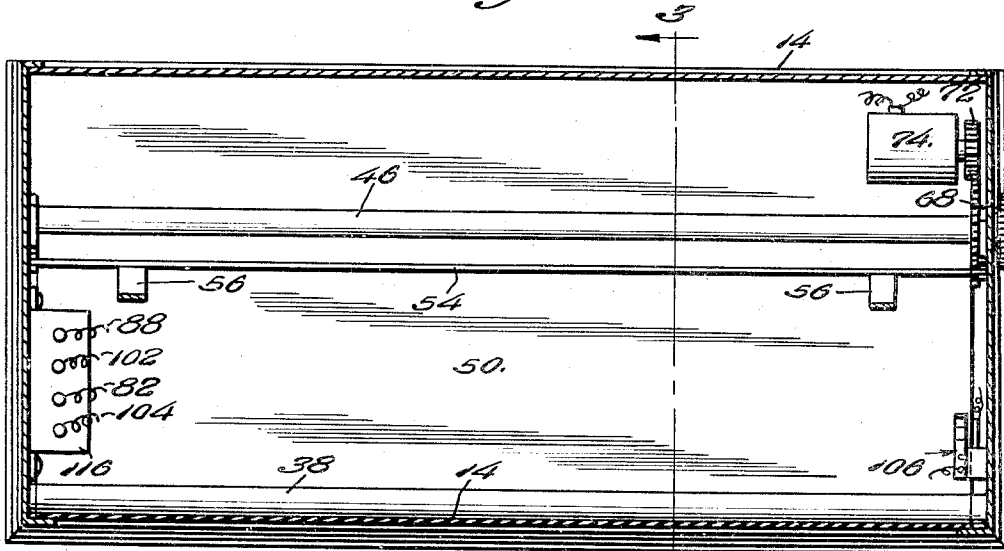
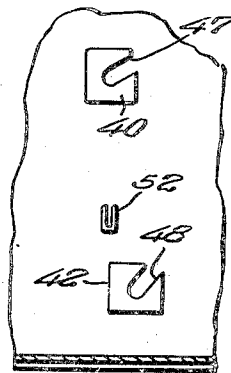


Fig. 4.



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Fig. 3.

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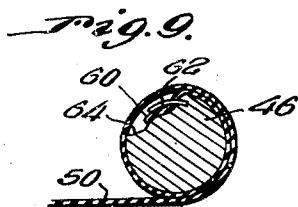
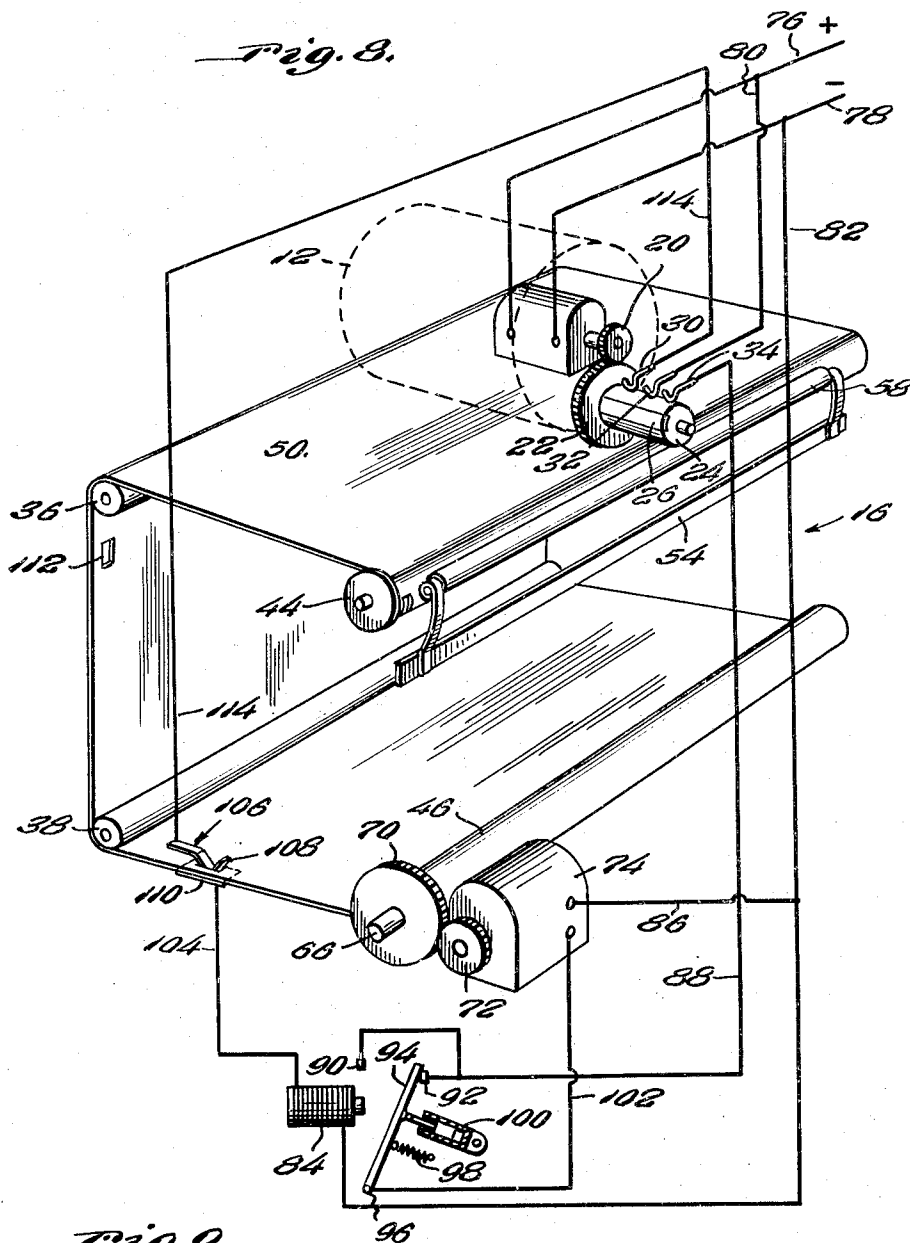
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AUTOMATIC CLOCK CALENDAR

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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

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AUTOMATIC CLOCK CALENDAR

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Application March 1, 1946, Serial No. 651,223

11 Claims. (Cl. 58—6)

1

This invention comprises an automatic clock calendar and more particularly comprises a horological appliance consisting of a clock and a calendar datum sheet synchronized for operation with and by said clock.

Briefly, this invention consists of a continuous web or film of material carrying indicia for visual inspection, pertaining to the day, month and other chronological data, disposed for automatic movement in synchronism, with and by a clock movement, it being contemplated that interchangeable datum webs containing correlated indicia for a predetermined period of operation, for example a year, shall be employed.

A primary object of the invention is the provision of a clock calendar wherein the data pertaining to the day and month are displayed in properly timed relation to the movement of the clock.

An important object of the invention is the provision of electric means for the actuation of both clock and calendar in synchronized relation.

A further important object of the invention is the provision of automatic means for imparting predetermined movement to a calendar web under the control of the clock movement.

Another important object of the invention is the provision of a device wherein the clock initiates the operation of the calendar moving mechanism.

A still further important object of the invention is the provision of a device wherein the clock initiates the operation of the calendar moving mechanism and wherein positive means are provided to disconnect the calendar actuating mechanism after a predetermined movement thereof has been effected.

Another object of the invention is the provision of a clock calendar wherein manual setting means for the calendar is provided.

A still further object of the invention is the provision of a clock calendar calibrated for continuous operation for a predetermined period.

Still another object of the invention is the provision of a clock calendar with interchangeable calendar datum sheets for perennial operation.

An additional object of the invention is the provision of a clock calendar with slack take-up means for the calendar mechanism.

Further incidental objects of the invention are the provision of a clock calendar which shall be reliable in operation, inexpensive in manufacture and maintenance, practical and attractive in appearance.

2

Attention is now directed to the drawings, illustrating one embodiment of my invention, and wherein:

Figure 1 is a front elevation of the clock calendar;

Figure 2 is a horizontal sectional view on line 2—2 of Figure 1 and looking in the direction of the arrows;

Figure 3 is a vertical section through the device on section line 3—3 of Figure 2 and looking in the direction of the arrows;

Figure 4 is an elevational detail showing the roller and spring supporting brackets;

Figure 5 is a vertical sectional detail of a portion of the web feeding control mechanism;

Figure 6 is a vertical sectional detail taken at right angles to Figure 5;

Figure 7 is a sectional detail of the timer contact;

Figure 8 is a diagrammatic perspective sketch indicating the operative association of the elements of the invention; and

Figure 9 is a sectional detail of the web fastening means.

Indicated generally at 10, the combined clock and calendar device of my invention, consists of an electric clock 12 of any conventional and suitable construction mounted in the upper portion of a base 14, whose lower portion houses the calendar datum web and its actuating mechanism 16, the indicia of the web being presented for visual inspection as by a window 18, in the front of the case.

Referring first to Figure 3, it will be seen that an electric clock 12 is provided with an external gear 20, secured to its hour hand shaft, which meshes with a gear 22 of such diameter as to cause the rotation at half speed, or once every twenty-four hours, of the attached drum 24. An axially disposed metallic strip 26 is embedded in the drum 24 of a dielectric material, and is positioned flush with the periphery thereof. Suitably mounted upon and insulated from a support 28, disposed in juxtaposition to the drum 24, are three metallic contact fingers or brushes 30, 32 and 34 which resiliently engage the surface of the drum. The foregoing mechanism constitutes a clock driven timer for controlling the actuation of the calendar mechanism, to be now described.

Mounted in any convenient manner and extending across the housing adjacent to but above and below the window 18, are guide rollers 36 and 38. Secured to opposite side walls of the housing are pairs of brackets 40, 42 rotatably supporting a calendar feed roll 44 and a receiving roll 46. The

feed roll may be formed of a slender arbor insertable into the center of a roll of material, or if preferred, the interchangeable calender rolls may be provided with an arbor therein, either arrangement being designated at 44. The rolls 44 and 46 are provided with trunnions, detachably received in inclined slots 47 and 48 in the bracket member in a conventional manner. A continuous web or sheet of calendar indicia bearing material 50 is threaded from the dispensing roll 44, over the guide rolls 36, 38 and thence is secured, in a manner to be later described, to the receiving roll 46. It will be apparent that as roll 46 is rotated, the web 50 will be wound thereon and withdrawn from the dispensing roll 44, thereby presenting successive indicia at the display window 18.

Secured in oppositely disposed brackets 52 is a strip member 54 from which extend a plurality of resilient fingers 56, supporting a roller 58 biased thereby into engagement with roll 44. The frictional resistance afforded by roller 58 constitutes a drag upon the web 50 to take up any slack in the system and insure thereby the proper alignment and tautness of the web upon the rolls.

As shown in Figure 9, the receiving roll 46 secures the end 60 of the web 50 by means of a spring clip or finger 62 provided in a recess 64 in the roll periphery. Protruding from one end of the roll 46 is an extension 66 extending outside the housing for the reception of a knob 68, which constitutes a finger grip for rotating the roll 46 to wind up or advance the calendar web. This feature is especially useful when intentional or inadvertent stoppage of the clock, or other cause necessitates readjustment of the calendar web.

Adjacent one end, the roll 46 is provided with a gear 70, driven by the gear 72 of an electric motor 74. Gear 70 may be attached to the roll 46 by an overrunning clutch or other conventional slip coupling to permit manipulation of knob 68 and roll 46 without requiring movement of the gear 72 and motor 74, if desired.

As shown in Figure 8, a pair of positive and ground electric leads 76, 78, from any suitable power source, are connected to the electric motor of the clock 12. From lead 76, a conductor 80 extends to the contact 32, while lead 78 is connected with a conductor 82 extending to a solenoid 84. A branch lead 86 connects the electric motor 74 to the ground lead 82. Contact 34 is connected by a conductor 88 to a pair of spaced terminals 90, 92. A metallic switch blade 94, pivoted at 96 and spring biased at 98 into engagement with terminal 92, is oscillatably positioned between the terminals 90, 92 in cooperative relation to the solenoid 84, adjustable dashpot 100 of conventional construction being attached to its blade 94 to regulate the time required for spring 98 to move the switch from contact 90 to contact 92. A positive lead 102 extends from the switch 94 at its pivot 96 to the motor 74. From the solenoid 84, a lead 104 extends to a movement limiting switch indicated generally at 106 and from thence a lead 114 connects with the contact 30. The switch 106 comprises a pair of spring contacts 108, 110, between which passes the edge or margin of the calendar web 50. Contacts 108, 110 are connected to leads 114 and 104 respectively and are normally separated by the web 50 except when cut away portions 112 of the web pass therebetween. These portions are disposed upon the web margin in a position correlated to the location of the limiter switch, the window 18 and the calendar indicia units for a purpose which will be later apparent.

As shown in Figure 2, the relay assembly is housed for convenience as a separate unit in a casing 116, secured to the end of the housing 10 and provides posts of the leads 88, 102, 82 and 104, the casing 116 enclosing the solenoid 84, the switch blade 94, dashpot 100, spring 98 and contacts 90, 92.

The operation of the device is as follows:

At some appropriate time, preferably midnight, the clock driven timer drum 24 reaches a position in which the switch 26 bridges the three contacts 30, 32, 34, thus placing the current from leads 80 and 76 in communication with leads 88 and 114. At this time switch 106 prevents energization of the solenoid 84 by leads 114 and 104 as will appear hereinafter. Lead 88 therefore energizes terminals 90, 92, and as the switch blade 94 is in contact with terminal 92, due to the influence of spring 98, current now flows by lead 102 to motor 74 and thence by leads 86 and 82 to the ground at 78. Activation of the motor 74 now operates roll 46, winding up and advancing the calendar web 50. When the web has advanced nearly to its next desired position, wherein the calendar datum for the next successive day will be presented at window 18, the appropriately placed cut away portion 112, corresponding to that particular indicia unit, will pass between the limiter switch contacts 108, 110. This permits the switch 106 to close, and current may now energize the solenoid 84 through leads 76, 80, 32, 26, 30, 114, 106, 104, 84, 82 and 78. This draws the blade 94 into contact with terminal 90 against the action of spring 98, momentarily breaking the circuit to motor 74 from terminal 92 but restoring it through terminal 90. The motor 74 continues to advance the web 50 until the cut away portion 112 has passed from under switch 106. At this time the calendar unit will be properly located with reference to the window 18 and the switch 106 is opened, deenergizing solenoid 84. The spring 98 immediately withdraws the blade 94 from terminal 90, deenergizing the motor 74 and stopping further winding of the calendar web. It should be here noted that dashpot 100 is designed to permit a slight unretarded initial movement of the switch blade 94 under the influence of spring 98, sufficient to open the circuit through 90; but the dashpot then restricts further movement to such a rate that the blade does not close contact 92 until the clock motor has had sufficient time to rotate drum 24 and contact 26 out of engagement with the fingers 30, 32 and 34. The mechanism is now set for its next actuation whereupon the foregoing cycle of operation is repeated.

It should be here observed, that at the beginning of the year the dispensing roll will be of maximum diameter, containing for example in one embodiment about 123 feet of paper web, while the receiving or winding roll will be of minimum diameter. As the period of time progresses, the receiving roll will increase in diameter to its maximum. It will be evident therefore, that the web advancing means must turn the roll 46 a different amount each actuation in order to advance the web the same amount and present each indicia unit properly before the window. The foregoing limiter switch responds to predetermined web movement to effect proper positioning of the calendar at the window.

From the foregoing description, it will be evident that I have provided a combined clock and calendar, in accordance with the hereinbefore mentioned objects of invention, which is of com-

5

tract, attractive appearance, yet will properly indicate the time of day together with correct calendar data, without requiring attention or adjustment for long periods of time.

Further provision is made for changing the calendar rolls to provide data and indicia corresponding to different chronological periods.

It is to be understood that I may resort to various modifications and adaptation of the invention, falling within the scope of the following claims.

What I claim is:

1. A combined calendar and clock comprising, an electric clock, an indicia bearing web, means including a web receiving roll for progressively advancing said web, an electric motor driving said roll, and further means synchronizing operation of said motor and said clock, said further means including a relay having a solenoid, a switch blade operated by said solenoid, a pair of spaced contacts connected to an electric source, one end of said switch blade being connected to the motor, the other end of the switch blade selectively engaging said spaced contacts to complete the circuit through said motor, a pair of spaced terminals on opposite sides of said web for connecting said solenoid to said clock and with the source of current, and means on said web for establishing an electrical circuit between said contacts.

2. The combination of Claim 1, and resilient, releasable means to attach said web to said roll.

3. The combination of claim 2, and tensioning means for taking up slack in said web.

4. The combination of claim 1, wherein said means on said web for establishing an electrical circuit between said contacts includes spaced apertures provided in said web.

5. A combined calendar and clock comprising, an electric clock, an indicia bearing web, means including a web receiving roll for progressively advancing said web, an electric motor driving said roll, a rotary switch associated with said clock, a relay having a solenoid, a switch blade

6

operated by said solenoid, and a pair of spaced contacts about said switch blade, a limiting switch, and a pair of parallel circuits including a common electric source and ground, the first of said circuits including the rotary switch, the motor, and the switch blade, the second of said circuits including the rotary switch, the limiting switch, and the solenoid.

6. The combination of claim 5, wherein said switch blade is connected at one end to the motor and at the other end selectively engages said spaced contacts to complete the circuit through said motor, and said limiting switch includes a pair of spaced terminals on opposite sides of said web for connecting said solenoid to said rotary switch.

7. The combination of claim 5 and three brushes associated with said rotary switch, one of which is connected to the common electric source, the others of which are each connected respectively to the first parallel circuit and the second parallel circuit.

8. The combination of claim 5, and time delay and resilient means connected to the switch blade.

9. The combination of claim 8, wherein said time delay and resilient means includes a dashpot and a spring.

10. The combination of claim 9, and resilient releasable means to attach said web to said roll.

11. The combination of claim 10, and tensioning means for taking up slack in said web.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
924,416	Beile	June 8, 1909
2,227,362	Parr et al.	Dec. 31, 1940
2,299,913	Clough	Oct. 27, 1942