No. 710,927. Patented Oct. 7, 1902.

# A. V. STRAIT.

## ELECTRIC ALARM CLOCK.

(Application filed Oct. 29, 1901.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

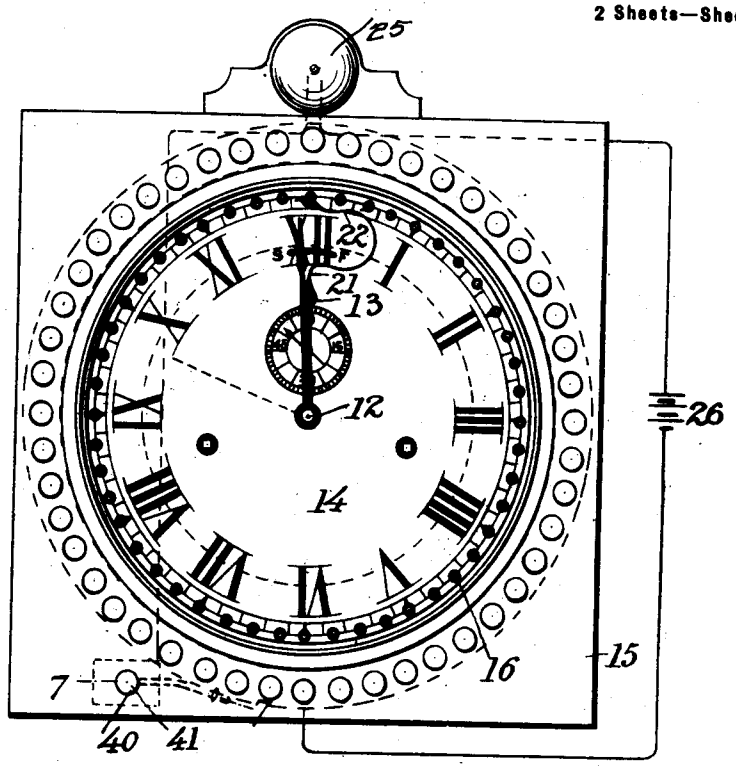
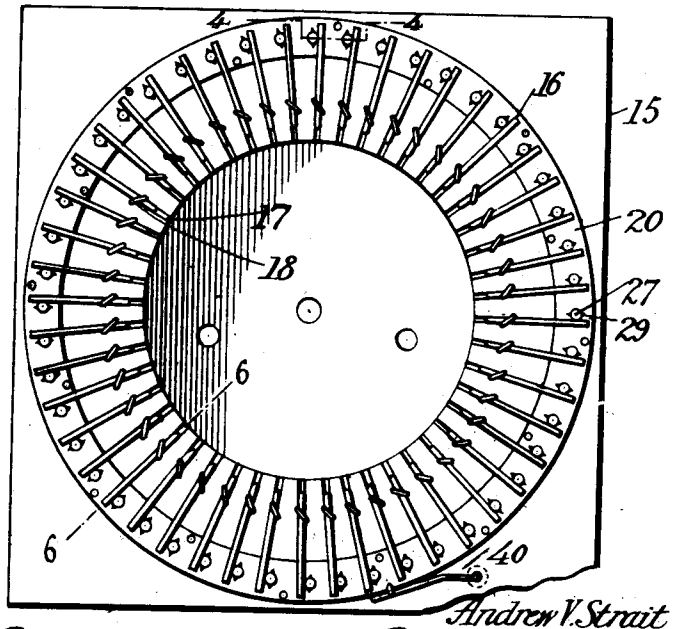



Fig. 2.




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Fig. 3.

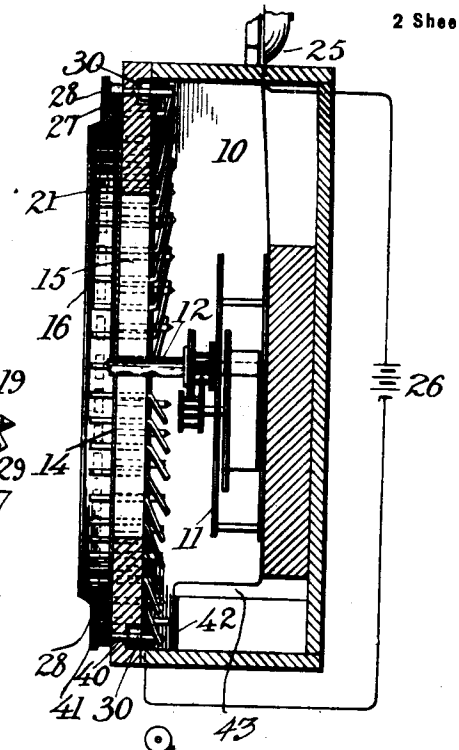



Fig. 6.

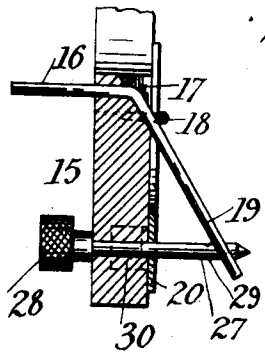
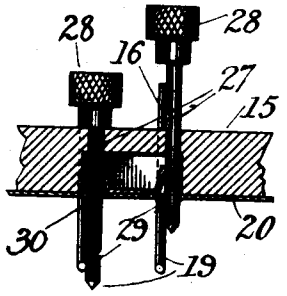



Fig. 4.



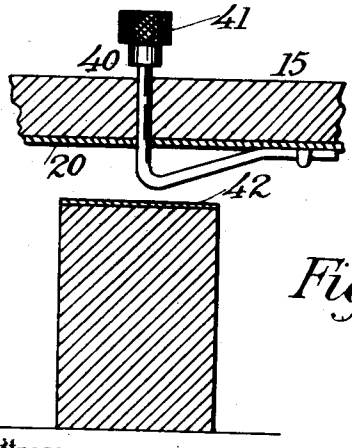




Fig. 7.

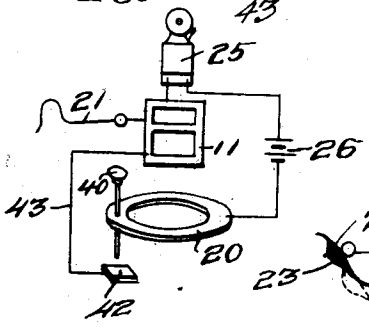



Fig. 8.

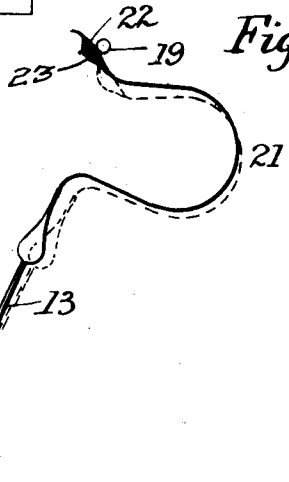



Fig. 5.

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# UNITED STATES PATENT OFFICE.

ANDREW V. STRAIT, OF SIDNEY, NEW YORK, ASSIGNOR TO NEHEMIAH H. BROWN, OF NORWICH, NEW YORK.

## ELECTRIC ALARM-CLOCK.

SPECIFICATION forming part of Letters Patent No. 710,927, dated October 7, 1902.

Application filed October 29, 1901. Serial No. 80,448. (No model.)

*To all whom it may concern:*

Be it known that I, ANDREW V. STRAIT, a citizen of the United States, residing at Sidney, in the county of Delaware and State of New York, have invented a new and useful Clock, of which the following is a specification.

This invention relates to clocks in general, and more particularly to that class in connection with which there is employed a series of contacts for successive engagement by a contact-finger carried by one of the clock-hands to close an electric circuit through a bell or other alarm; and it has for its object to provide a simple and efficient construction by means of which any one or more of the contact-pins may be included in the circuit of the alarm to close said circuit when engaged by the contact-finger.

A further object of the invention is to provide a construction in which the proper pressure between the contact-finger and the several pins necessary for efficiently closing the circuit will be insured and in which said finger will keep the pins clean.

An additional object of the invention is to provide simple and efficient means for holding the push-buttons in their operative and inoperative positions, other objects and advantages of the invention being apparent from the following description.

In the drawings forming a portion of this specification, and in which like numerals of reference indicate similar parts in the several views, Figure 1 is a front elevation of the clock with parts of the mechanism thereof indicated in dotted lines. Fig. 2 is a rear elevation of the front board of the clock that carries the dial. Fig. 3 is a vertical central section through the clock with the works indicated in dotted lines. Fig. 4 is a detail sectional view showing a portion of the front board of the clock with two of the push-buttons, one of which is in engagement with the contact-finger corresponding thereto, while the other is out of engagement with its corresponding contact-finger. Fig. 5 is a detail elevation showing the hour-hand of the clock with its contact-finger and one of the contact-pins, the circuit-closing position of the hand and finger being indicated in dotted lines. Fig. 6 is a section on line 6 6 of Fig. 2. Fig. 7 is a section on line 7 7 of Fig. 1. Fig. 8 is a diagram of the circuits.

Referring now to the drawings, the clock comprises the usual casing 10, in which are located the works of a clock, including a metallic frame 11 and a shaft 12, which carries the hour-hand of the clock (shown at 13) and which is movable over the face of a dial 14, carried by the front board 15 of the clock-casing. The dial of the clock is marked in the usual manner, and at each minute-marking there is disposed a contact-pin 16, these pins projecting outwardly at right angles to the dial and each consisting of a single wire which is passed through alining perforations in the dial and front board from front to back and is then bent outwardly to lie in a radial slot or groove 17 in the back of the board, in which it is held by a staple 18 or in any other suitable manner. Beyond the staple the wire is bent away from the board and then outwardly to form a contact-finger 19, the several contact-fingers projecting over or lying behind a metallic ring 20, which is secured to the rear face of the front board of the casing. As shown in Fig. 1 of the drawings, as also in Fig. 6, the several pins are out of contact with the walls of the perforations in the dial and may be either isolated or insulated therefrom.

The hour-hand 13 of the clock carries a contact-finger consisting of a wire 21, attached to the outer end of the hand, this wire being curved forwardly, or in the direction of movement of the hand, and then upwardly and rearwardly, while at its outer end it is bent into a compound curve 22, the tip of which is bare to form a contacting portion for electrical contact with the contact-pins successively, while in advance of this bare tip it is provided with an insulating-coating 23. Thus as the hand rotates the insulating-coating will first strike a pin, and as the hand continues to move this portion will be drawn across the pin and the compound-curved portion of the finger will act to bend the finger inwardly, so that when the bare extremity of the finger finally comes in contact with the pin the finger will be under such tension that efficient electrical contact of the finger with the pin

will be assured. Furthermore, as the finger rubs across each pin during each rotation and engages at the same point at each rotation the pins are kept bright, so that good contact is effected.

In connection with this apparatus there is employed an electric bell 25, one terminal of the winding of which is connected with the frame of the clockworks and is thus electrically connected with the contact-finger 21. The other terminal of the bell is connected with a battery 26 and therethrough with the ring 20. If then one of the contact-pins be brought into electrical connection with the ring 20 and the contact-finger on hand 13 be then brought into contact with said pin, the circuit of the battery will be closed through the magnets of the bell and the latter will be operated. To thus connect each pin individually with the ring 20, so that it may be brought into the circuit of the battery for operative engagement by the contact-finger, a shiftable circuit-closer is provided for each pin in the form of a push-button. Each of these push-buttons consists of a rod 27, passed through alining perforations in the board 15 and ring 20 and having a knob 28 at its outer end to facilitate movement of the rod inwardly and outwardly, and to limit outward movement of the rod said rod is slit at opposite sides to form ears 29, which are bent outwardly to engage the face of the ring when the rod is drawn outwardly. To insure efficient electrical connection between the rods 27 and the ring 20 and to keep said rods bright at their contacting portions, U-shaped spring-plates 30 are soldered or otherwise secured to the inner face of the ring 20—that is, the face adjacent to the board 15—and one of these plates 30 is disposed between each pair of rods, and the arms are bent to lie divergingly and to press against the contiguous faces of the rods. The rods are thus held in such manner that they may be readily slid into and out of operative positions, but will not move excepting when pressure is applied thereto. Furthermore, the edges of the plates 30 by their engagement with the rods act to scrape the rods and keep them bright. The contact-fingers 19, which, it will be remembered, are integral with their respective contact-pins 16, lie almost diametrically of the rods 27, and the ends of these rods adjacent to said fingers are tapered, so that when a rod is pressed inwardly the tapered end thereof will strike the finger and with a wedging action will press it sidewise and will move with its tapered end beyond the finger, so that the latter may impinge closely against the side of the rod to insure efficient contact. Thus it will be seen that if the alarm is to be sounded at any specific time the push-button corresponding to the time in question is pushed in, thus connecting the corresponding contact-pin in circuit with the battery, and when the hand 13 with its contact-finger strikes that pin the battery-circuit will be closed through the bell to operate it. Any number of the pins may be thus connected to the ring 20 and the bell will be operated at the corresponding times.

At times it may be desired to close the circuit of the battery through the bell manually, and for this purpose a separate push-button 40 is provided and is mounted in the board 15 and consists of a wire which is soldered to the ring 20 and is then bent upwardly and passed through a perforation in the board 15, the outer end thereof being provided with a knob 41. The spring quality of this wire holds the knob normally and yieldably outwardly, and when the knob is pressed inwardly the wire is moved against a plate 42, which is electrically connected with the clock-frame, as shown in Fig. 3, and therethrough with the bell. Thus if the button 40 be pressed inwardly the circuit of the battery will be closed directly through the bell by a shunt 43 around the contact-fingers, push-buttons, and pins above referred to.

In practice modifications of the specific construction shown may be made and any suitable materials and proportions may be used for the various parts without departing from the spirit of the invention.

What is claimed is—

1. In an alarm-clock, the combination with a spring-finger traveled by the clock and forming one terminal of an electric circuit, of a metallic ring connected in the circuit, a circuit including an alarm and a source of electrical energy, an annular series of push-buttons extending through and in electrical contact with said ring, an auxiliary push-button also electrically connected to said ring, a shunt including a terminal for contact by the auxiliary push-button to permit the manual closing of the circuit at any time, and an annular series of permanently-fixed contact-pins arranged in the path of travel of said spring-finger, each of said pins having a portion projected into alinement with one of the annular series of push-buttons, substantially as specified.

2. In an alarm-clock, the combination with a casing including a front board having a dial mounted thereon, of a clock mechanism having a hand disposed to traverse the face of the dial and provided with a contact-finger, a series of contact-pins disposed about the face of the dial and consisting each of a wire passed through the front board and having its inner end bent outwardly and radially of the board, an annular plate upon the inner face of the board and over which the inner ends of the wires project, push-buttons slidably engaged with the plate for movement into and out of contact with their corresponding adjacent wires, a source of electricity, and an alarm connected with the hand and the annular plate in series.

3. In a device of the class described, a traveling circuit-closer, a clock mechanism for operating the same, a series of contact-pins

having their inner ends bent outwardly and radially, an annular ring forming one terminal of an alarm-circuit, a series of push-buttons carried by said ring and adapted to be moved into contact with the bent portions of said pins to connect a selected pin in the circuit, and an alarm connected to the circuit-closer and the annular ring.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

ANDREW V. STRAIT.

Witnesses:
WM. F. WUNZEN,
WM. U. WADHAMS.