

(No Model.)

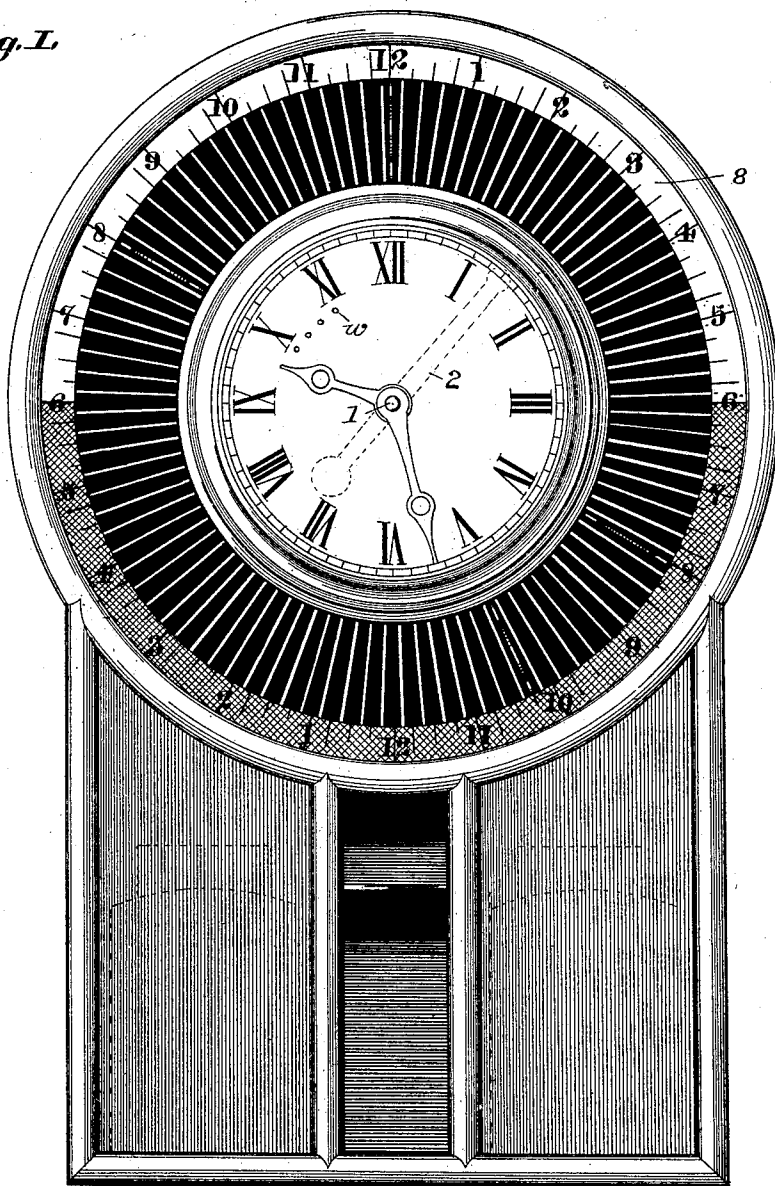
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W. S. BURROUGHS.
ELECTRIC ALARM CLOCK.

No. 468,414.

Patented Feb. 9, 1892.

Fig. 1.



Attest:

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(No Model.)

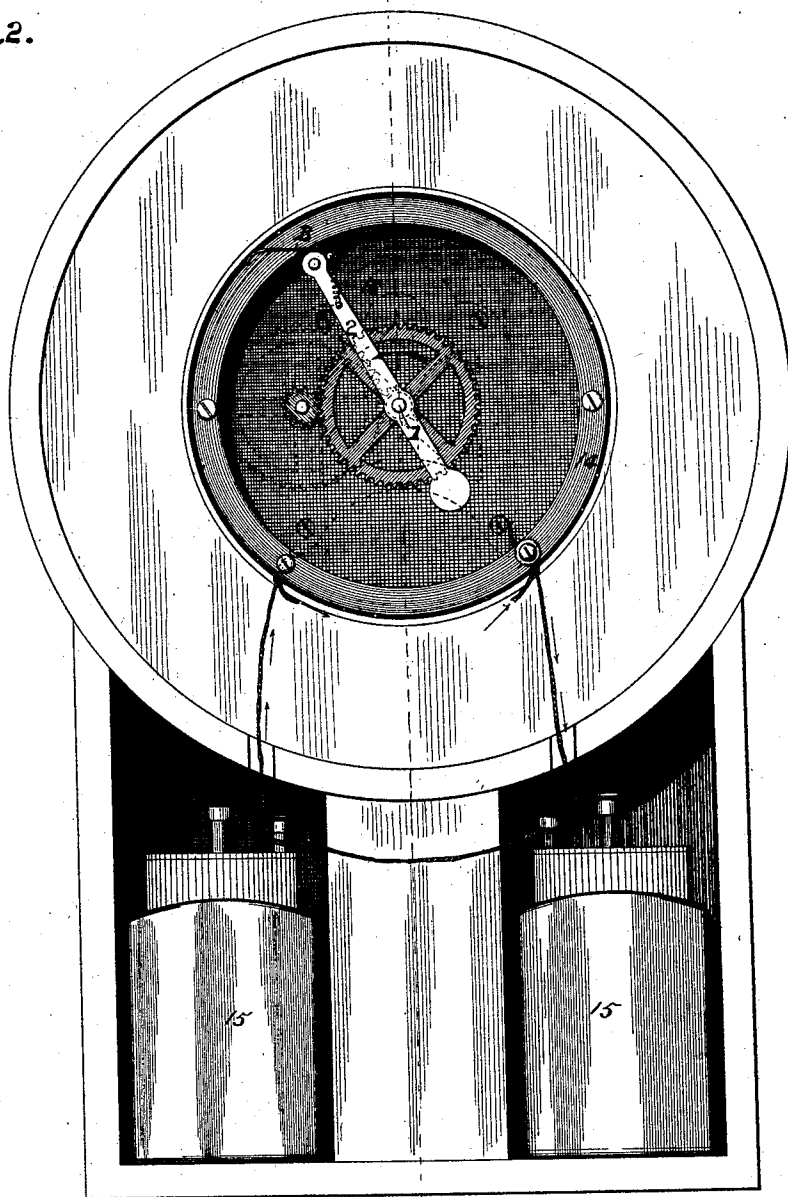
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Fig. 2.



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Fig. 3

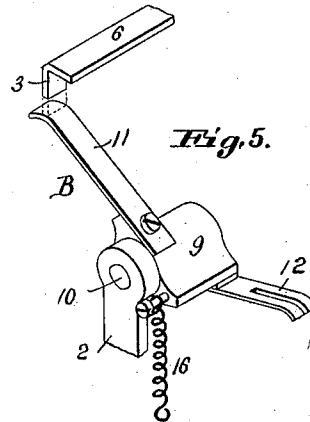
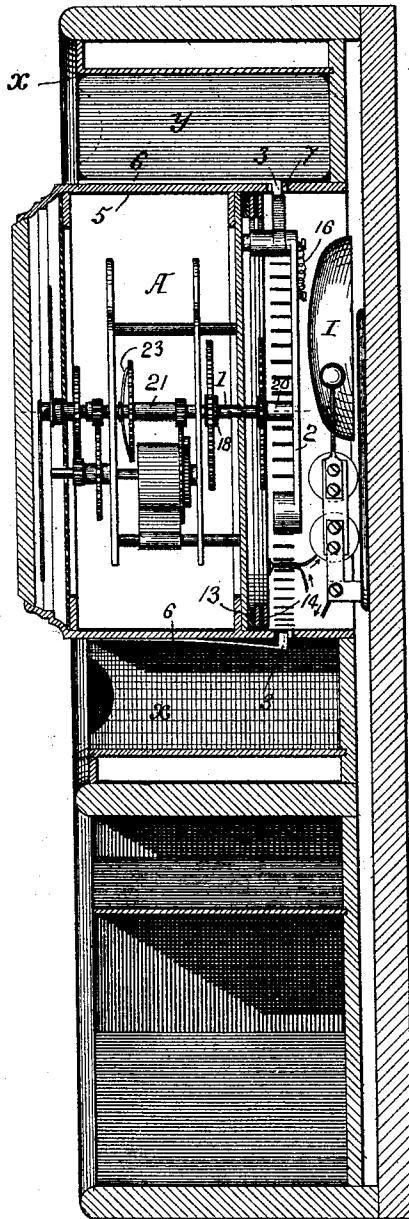


Fig. 6.

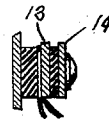


Fig. 7

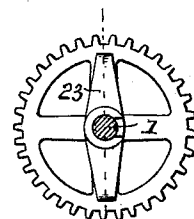
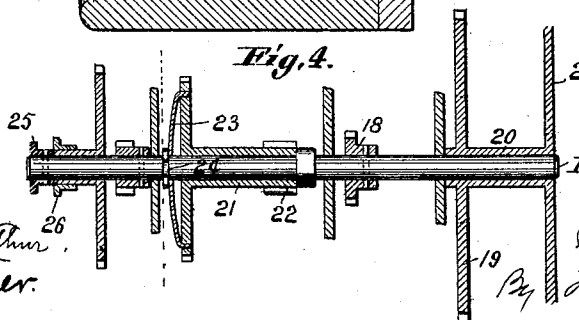


Fig. 4.



est/

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UNITED STATES PATENT OFFICE.

WILLIAM S. BURROUGHS, OF ST. LOUIS, MISSOURI.

ELECTRIC ALARM-CLOCK.

SPECIFICATION forming part of Letters Patent No. 468,414, dated February 9, 1892.

Application filed March 25, 1890. Serial No. 345,222. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM S. BURROUGHS, a citizen of the United States, residing at St. Louis, Missouri, have invented certain new and useful Improvements in Electric Alarm-Clocks, of which the following is a specification.

My invention has for its object to sound an alarm or give a visual indication at any predetermined time; and it consists in combining with a time-piece and with any suitable indicating or alarm devices a series of movable contacts, any one or more of which may be set in position to cause an electric circuit to be completed at a predetermined hour, and thereby put the alarm or indicating mechanism into operation.

In the accompanying drawings, Figure 1 is front elevation of an alarm-clock embodying my invention. Fig. 2 is a rear elevation, the back of the case being removed. Fig. 3 is a transverse sectional elevation. Fig. 4 is an enlarged section along the minute-hand spindle. Fig. 5 is an enlarged perspective view showing the brush and one of the contacts. Fig. 6 is a sectional view through the contact-rings, and Fig. 7 is a detached view of the friction-clutch between the driving-wheel and the minute-hand spindle.

A represents a clock-movement of any suitable character on a spindle 1, of which is carried an arm 2, carrying a brush B of any suitable construction, the particular form shown being described hereinafter.

At points corresponding to hours or subdivisions of hours and in position adjacent to the path of the brush are arranged movable contacts 3, any one of which may be placed in position to make a contact with the brush B as the latter passes adjacent thereto in such manner as to complete an electric circuit, including an alarm, either visual, audible, or both. By this arrangement the placing of any one of the contacts 3 in position will cause an alarm to be given when the brush B arrives in position to touch the said contact.

By constructing and arranging the contacts 3 and the arm so that the brush B will touch each properly-adjusted contact 3 at a certain hour or subdivision of an hour it is possible to cause an alarm to be given at any prede-

termined time. The contacts 3, therefore, are so constructed that any one of them may be temporarily placed in position to be touched by the brush B as the latter travels in its course, whereby an alarm may be sounded at any time or times during the day, as may be desired, to call attention to any matter.

It will be evident that various constructions and arrangements of the parts above described may be adopted to carry out the object of my invention. One which has proved to be effective is illustrated in the drawings, in which the arm 2 is connected to be driven by the minute-hand shaft 1, and the case 5 of the clock is surrounded by a series of radial compartments x , and each contact 3 is a lug upon a flat spring 6, riveted to the outer side of the case at one end, the end which is provided with a lug normally springing outward in position to carry the lug into a slot 7 and out of the path of the brush B. By slipping a tablet or card y into any one of the compartments x the spring 6 is forced against the case and the lug 3 is thrown inward in position to make contact with the brush B to cause an alarm to be sounded when the arm 2 reaches the proper position. By the use of cards or tablets for thus setting the contacts in position I am enabled to write upon said card or tablet memoranda indicating the matter to which attention must be called at the hour when the alarm is sounded.

As shown, the compartments x are arranged radially around the case and are marked to indicate the hours and quarters upon the surrounding rim 8, one-half of which is darkened to indicate the twelve hours after mid-day, or, as shown, after 6 p. m., the arm 2 and its brush B being so constructed that when the hour-hand is at any hour or division of an hour the brush will be in position to touch the contact 3 of the corresponding hour or division of the hour indicated upon the rim 8.

While the end of the arm 2 might serve as a contact-piece, I prefer the construction best illustrated in Fig. 5, in which the brush consists of a rocking block 9, swinging on a pin 10, projecting from the arm 2 and carrying two fingers 11 12, the former in position to touch the contacts 3 and the finger 12 in position to make contact with two parallel rings 13 14, and being split and slightly yielding to

insure contact with both rings. One of the rings 13 is in connection with one pole of a battery 15 and the other ring 14 in connection with the other pole of the battery, so that the circuit is completed whenever the divided finger 12 touches both rings, which results when the finger 11 touches the contact 3 and is moved to swing the block 9 and bring the finger 12 to travel in contact with said rings and the finger 11 to travel in contact with the contact 3 with but little friction, the current being maintained until the finger 11 passes from the contact 3, when a spring 16 will rock the block 9 and carry the finger 12 away from the rings.

The time-piece illustrated is one in which the hours from 1 to 12 only are shown, and it is therefore necessary for the hands to move twice over the dial every twenty-four hours, and I therefore drive the brush-arm 2 from the spindle 1, so that the said arm will move but once to every two complete revolutions of the hour-hand. The intermediate gearing between the wheel 18, secured to the spindle 1, and the wheel 19 upon the sleeve 20, carrying the arm 2, is of too ordinary a character to need description.

By driving the arm 2 from a gear 18, fixed to the minute-hand spindle 1, the positive movement of the brush-arm is secured and its position in respect to the hands positively determined. Inasmuch, however, as it is desirable that the hands should be capable of adjustment independently of the clock-movement, the shaft is driven through the medium of a friction-gear. Thus a sleeve 21 carries a pinion 22 in gear with the clock mechanism, and a spring 23, carried by the sleeve 21, has a frictional bearing on a shoulder 24 on the spindle 1, so that the latter is normally driven with said sleeve, but can be turned independently thereof.

The minute-hand 25 is fixed to the spindle, while the hour-hand 26 turns frictionally upon the sleeve of the pinion, from which it is immediately driven, as usual.

It will be evident that in time-pieces graduated for twenty-four hours the gearing between the brush and arm and the driving-spindle will be modified accordingly, or the hour-hand may in such case serve as the equivalent of the arm 2, while the contacts 3, instead of being constructed as described, may consist of pins inserted by hand in suitable openings *w*, Fig. 1, so as to make a contact with the arm or hand to complete a circuit.

The alarm I may be of any suitable character, an ordinary electric-bell alarm being shown, the electric conductors being arranged to include it in the circuit.

Although I have shown two rings 13 14, between which the circuit is completed by the finger 12 of the brush, a single ring may be used. In such case the finger 12 will be connected with one of the conductors to complete the circuit when it touches said ring.

Without limiting myself to the precise construction and arrangement of parts shown, I claim—

1. The combination, with a time-piece, an alarm, and conductors, of an arm moved by the time-piece and a series of contacts arranged at regular intervals along the path of travel of said arm, and means for moving the contacts into said path, said contacts being held normally out of said path by springs, substantially as described.

2. The combination, with a time-piece having a face graduated to indicate twelve hours, of a series of movable contacts, battery, alarm, and connections, and an arm 2, driven positively from the minute-hand shaft to make one revolution every twenty-four hours, substantially as set forth.

3. The combination, with a time-piece and traveling arm 2, of a series of movable contacts, and a series of pockets arranged in position to receive cards for bearing upon said contacts, substantially as set forth.

4. The combination, with a time-piece, traveling arm, and series of movable contacts, of a series of radial pockets, each containing one of the contacts, with graduations corresponding to the twenty-four hours of the day and divisions thereof, substantially as set forth.

5. The combination, with a time-piece, traveling arm, and adjustable contacts, of a movable brush carried by the arm and a circuit ring or rings arranged in position to make contact with a finger of the brush to complete a circuit when said brush is moved by touching one of the contacts, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM S. BURROUGHS.

Witnesses:

E. WENGER,
E. PARMER.