(No Model.)

D. ROUSSEAU.

ELECTRIC TIME CIRCUIT CLOSER.

No. 246,211. Patented Aug. 23, 1881.

Fig. 1.

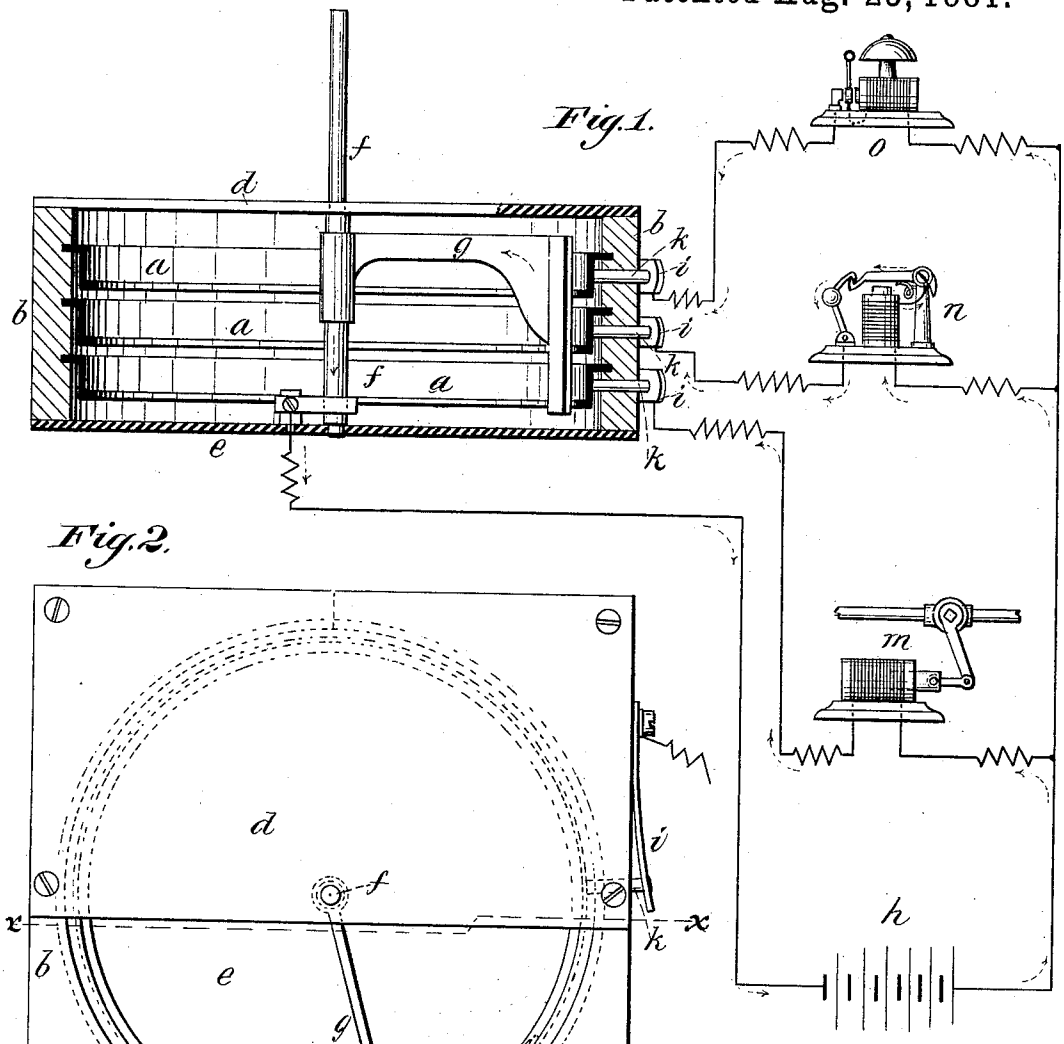
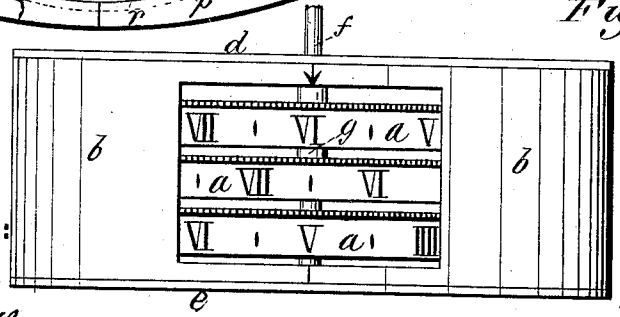


Fig. 2.

Fig. 3.



WITNESSES:

C. Spiro

W. Booth

INVENTOR:

D. Rousseau.

BY Chas. M. Higgins.

ATTORNEY.

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

DAVID ROUSSEAU, OF NEW YORK, N. Y.

ELECTRIC TIME CIRCUIT-CLOSER.

SPECIFICATION forming part of Letters Patent No. 246,211, dated August 23, 1881.

Application filed June 10, 1881. (No model.)

To all whom it may concern:

Be it known that I, DAVID ROUSSEAU, of New York city, State of New York, have invented certain new and useful Improvements in Electrical Time Circuit-Closers, of which the following is a specification.

The object of this invention is to provide an attachment or device for use in connection with a clock and a battery, and with burglar-alarms or other electrical household instruments, whereby certain effects may be produced at set times—for instance, whereby an alarm-bell may be rung at a certain hour to awaken servants or other persons; secondly, whereby a certain section of the burglar-alarms may be switched out of action at a particular hour to allow the opening of certain windows or doors without giving an alarm; thirdly, to light or extinguish gas at a certain hour, or to open furnace doors or dampers, or to produce a variety of effects at definite times, according as circumstances may require.

In the annexed drawings, Figure 1 is a vertical section of my time circuit-closer, with parts of the circuits which it controls shown diagrammatically. Fig. 2 is a plan of the circuit-closer, in which the dotted lines *x x* indicate the plane of section of Fig. 1; and Fig. 3 shows a front elevation of the circuit-closer.

This circuit-closing device is designed to be embodied in a large clock or regulator, being placed in the case below the dial, with the front portion having the figured rings, as seen in Fig. 3, exposed through an opening in the case, while the remainder is inclosed and concealed within the clock-case.

In this device, *a a* indicate one or more metal rings, arranged one above the other in a fixed supporting wooden or insulating frame or socket, *b*, of annular form. These rings are preferably made of spun brass with the cross-section shown in Fig. 1—that is, having outwardly and inwardly turned flanges, respectively, at the top and bottom, both of which flanges serve to stiffen the rings, while the upper flanges rest in grooves turned in the socket *b*, and thus support the rings in secure and firm position therein, and in such a way that one ring is independent of the other, out of contact and insulated, and also free to be turned around in its socket. Now, the annular socket *b* has an opening midway in the front, as seen in Fig. 3, through which a portion of the periphery of the rings appears, as shown, and the flat or wide portion of these rings is figured all around the periphery at equal distances with the twelve hour-figures of a clock-dial, as partly indicated in Fig. 3, and the upper or supporting flanges of the rings are toothed or milled, whereby each ring may be easily turned around in its socket, so as to place any desired hour-figure in line with the center of the socket, or with the fixed noon or zero mark ↓ thereon, as will be understood. On the inner side of each ring is fixed a light plate-spring, *c*, (see Fig. 2,) having its free end bent radially inward a short distance, and located in a position to correspond with the noon-figure on the ring. The top and bottom of the annular socket *b* are closed or partly closed by metal plates *d e*, in which is supported or journaled a rotary shaft or spindle, *f*, which is placed at the center of the rings, and carries a radial arm, *g*, which approaches the inner periphery of the rings, and is adapted to make contact with the contact-springs *c c* thereon as it is turned around within the rings, as will be readily understood. Now, this spindle is geared or otherwise connected with the hand-spindle of the clock, so that it moves uniformly therewith, and the arm *g* hence represents the hour-hand of the clock and has the same motion, so that when the hour-hand of the clock is at noon on the dial the arm *g* will be in line with the fixed noon or zero mark ↓ on the socket, as seen in Figs. 2 and 3.

In Fig. 1, *h* indicates the battery or source of electricity, from which one wire extends to the spindle *f*, while the other wire connects through suitable branches with one pole of the several instruments, *m n o*, which it is desired to operate at specified times, and branches from the opposite poles of these instruments connect each to the different rings *a a*, which respectively correspond therewith and represent the same. The connection is preferably made with the rings in the manner illustrated—viz., through springs *i i* fixed on the outside of the annular socket *b* and pressing on pins *k*, which extend through the socket and bear on the cor-

responding rings, thus making a good connection with the rings, yet allowing them to be freely adjusted around in the socket.

It may now be readily understood that when it is desired to operate any of the instruments *m n o* at any specified hour the rings corresponding thereto are so adjusted or turned round in their socket as to bring the desired hour or fraction of an hour in register with the noon or zero mark on the socket, as shown in Fig. 3, and hence as the arm *g* slowly revolves under the action of the clock-movement it will make contact with the springs *c* on the rings *a* at the times to which they are set, and thus close the circuit with the corresponding instruments and operate the same at the precise times desired. Thus in the case illustrated the circuit will be closed at dawn, or five o'clock, with the instrument *m*, which may be a magnetic valve-operator, as indicated, to turn off the gas from certain burners which may have been left burning during the night. At six o'clock the circuit will be closed on the instrument *o*, which may be an electric bell, as illustrated, which will then ring to awake the servants, and at about the same time, or a little later, the circuit will be closed with the instrument *n*, which may be an automatic switch, as indicated, acting to break circuit with the burglar-alarms, or with a portion of the burglar-alarms, and thus throw the same out of action as soon as the servants are about.

It will be understood that as the contact-making arm *g* is revolving slowly, but constantly, it will make contact with the springs *c*, and continue the contact for a certain length of time, and then break contact by its continued rotation. As its rotation, however, is slow, this contact would last longer than necessary to operate the corresponding instruments were it not that I reduce the contact-making extremity of the arm *g* to a very thin edge or strip, *p*, as shown in Fig. 2, which is preferably made of platinum and embedded in a hard-rubber or insulated strip, *r*, having beveled edges to more easily ride into engagement with the contact-springs *c c*, the effect of which construction will be readily appreciated.

It may now be seen that by means of this automatic time circuit-closer a great variety of actions may be produced electrically at specified times, and that the invention is in no way confined to the number or kinds of instruments or machines which it may be employed to operate.

In addition to the actions described, the device may be employed to operate the valves, doors, or dampers of heating apparatus to raise or reduce the heat at certain times, and, in short, to produce any action which may be performed through an electric current at any desired time, which obviously are various, and do not require to be specified.

Broadly, my invention consists in a contact-making arm or conductor rotating continuously in definite relation with degrees of time, in combination with one or more fixed but adjustable rotating conductors graduated in degrees of time and arranged in or about the path of motion of the time contact-maker, with contact-points thereon in definite relation with the time-graduations, and arranged to be adjusted in the path of rotation of the contact-maker, so that the contact-maker closes circuit with each conductor at the time for which it is set and throws the instrument connected therewith into operation at this time.

I do not limit myself to the precise details of construction shown and described; but specifically it may be observed that the special construction set forth is very simple, compact, and efficient, for by means of the cylindrical rings *a a*, arranged one above the other in an annular socket, with the time contact-arm turning within the same and having the graduations and the socket on the outside of the rings, not only do the parts occupy a compact space and convenient position, but one contact-arm can act on a large number of rings, and the arm is concealed and protected within the rings, while the rings are conveniently supported and adjusted from the exterior, which is obviously quite advantageous. Instead, however, of having the adjustable rotating conductors in the form of the cylindrical rings *a a*, placed one above the other, they may be in the form of flat rings placed concentrically one within the other, with the contact-making arm moving radially over or behind them; but this is clearly not so good as the former.

What I claim is—

1. An automatic electric time circuit-closer consisting of a contact-making arm or conductor organized to rotate constantly in definite relation with the degrees of time, in combination with one or more adjustable circular rotating conductors graduated in degrees of time and arranged in or about the path of rotation of the contact-maker, with engaging contact-points thereon in definite relation with the time-graduations, and arranged to be adjusted around the path of rotation of the contact-maker, substantially as and for the purpose set forth.

2. An automatic electrical time circuit-closer constructed with a conducting-ring graduated in degrees of time, and provided with an engaging contact-point in definite relation with the degrees, and supported about its exterior in a suitable socket in which it is free to be turned or adjusted, in combination with a contact-making arm rotating within said ring in regular time, and adapted to close circuit with the contact-point of the adjustable ring, substantially as and for the purpose herein set forth.

3. An automatic electrical time circuit-closer constructed with a series of conducting-rings arranged one above the other in an externally-supporting socket, with time-graduations on said rings, and contact springs or points in definite relation with said graduations, in com-

bination with a contact-making arm organized to rotate in regular time within said rings and close an electric circuit with the contact-points thereof at the times to which they may be adjusted, substantially as herein shown and described.

4. In an automatic time circuit-closer, a contact-maker propelled by time mechanism, or moving in slow regular time, having its acting end reduced to a narrow conducting-edge embraced by a wide bevel-edged insulator, substantially as and for the purpose set forth.

5. The combination, in a time circuit-closer, with the rotatable rings *a a*, of the springs *i* and pins *k*, substantially as and for the purpose set forth.

6. In an automatic electrical time circuit-closer, the rings *a*, substantially such as set forth, graduated on their exterior, and provided with a projecting peripheral flange, substantially as and for the purpose specified.

DAVID ROUSSEAU.

Witnesses:
CHAS. M. HIGGINS,
WILLIAM G. BOOTH.