No. 726,292. PATENTED APR. 28, 1903.

E. T. HOLMES.

BURGLAR ALARM SYSTEM.

APPLICATION FILED JULY 18, 1900.

NO MODEL. 2 SHEETS—SHEET 1.

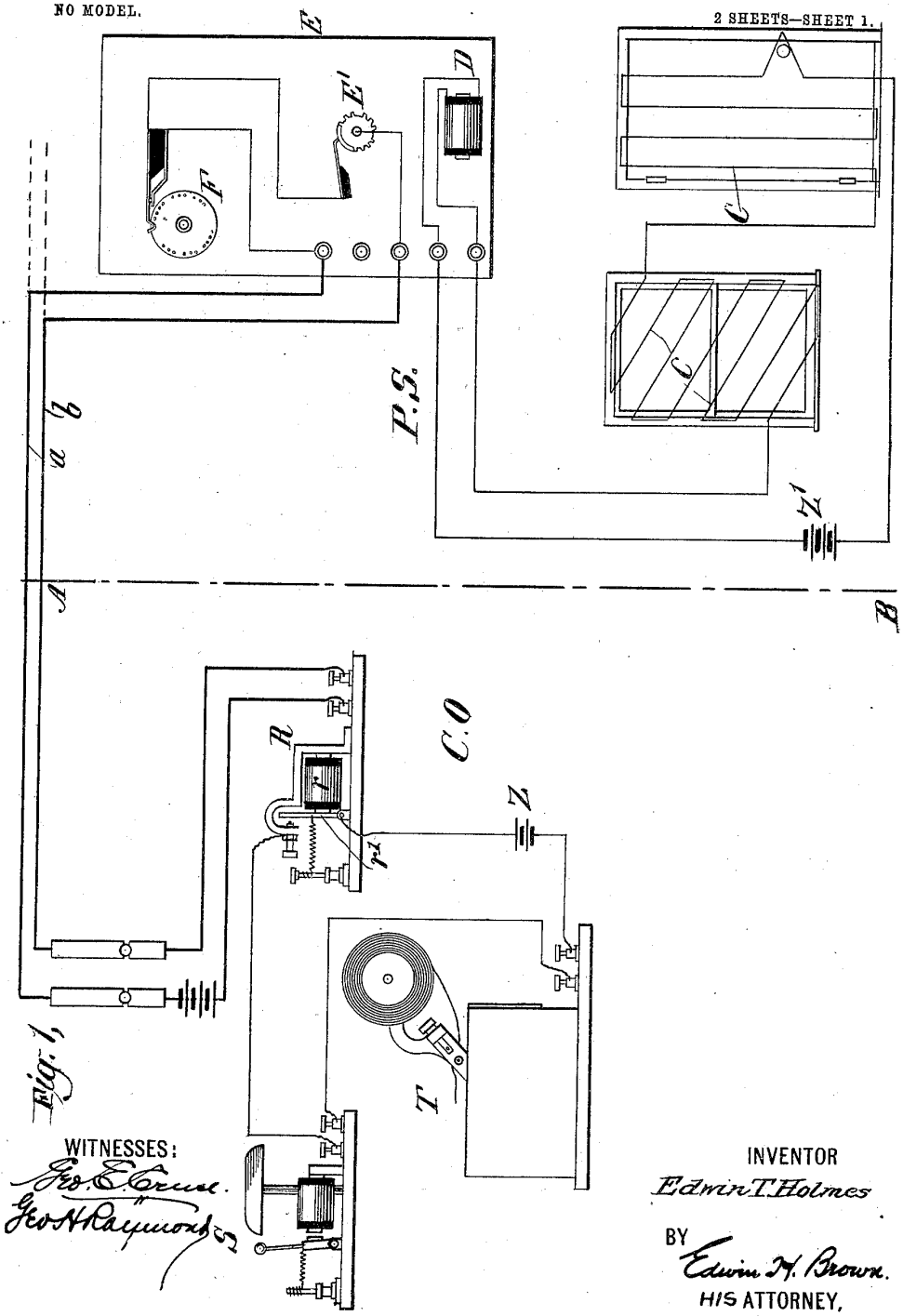

Fig. 1.

WITNESSES:

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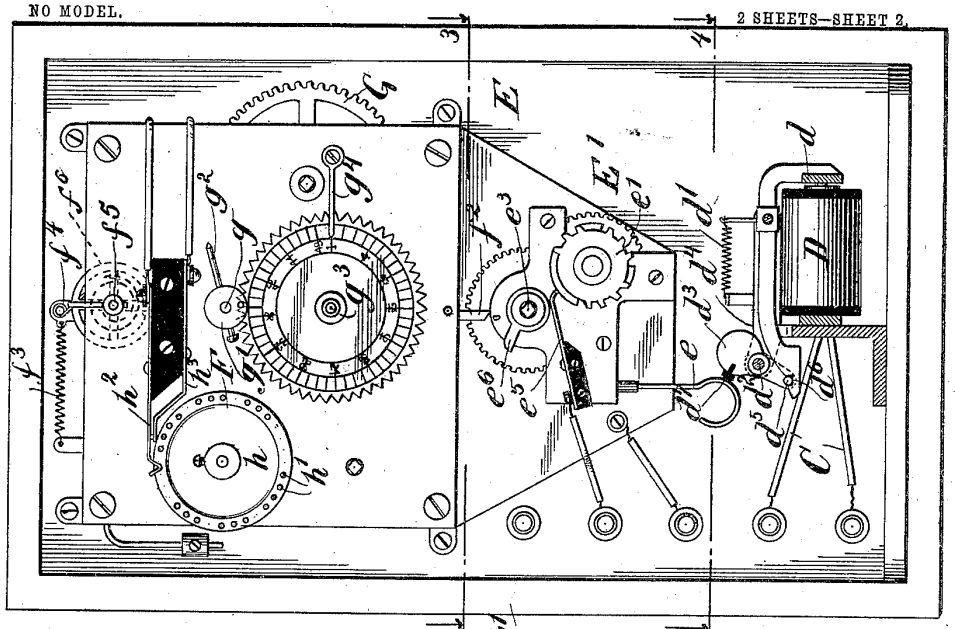

Fig. 2.

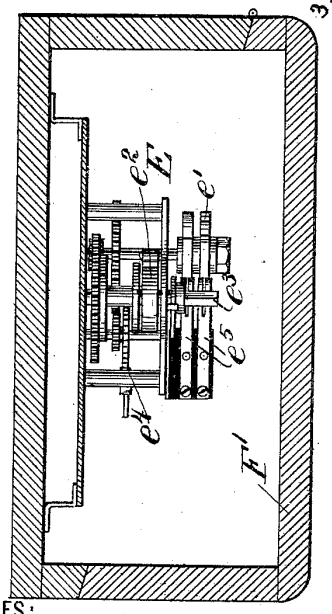

Fig. 3.

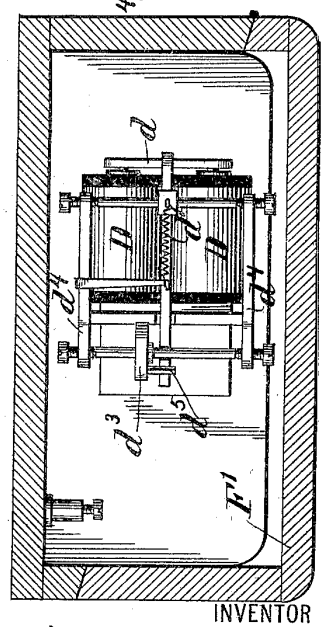

Fig. 4.

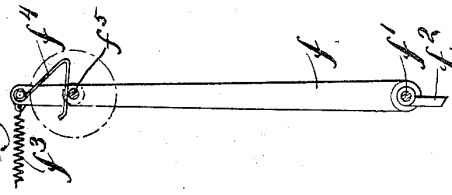

Fig. 5

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UNITED STATES PATENT OFFICE.

EDWIN T. HOLMES, OF NEW YORK, N. Y.

BURGLAR-ALARM SYSTEM.

SPECIFICATION forming part of Letters Patent No. 726,292, dated April 28, 1903.

Application filed July 18, 1900. Serial No. 24,055. (No model.)

To all whom it may concern:

Be it known that I, EDWIN T. HOLMES, a citizen of the United States, residing in the borough of Manhattan, city, county, and State of New York, have invented certain new and useful Improvements in Burglar-Alarm Systems, of which the following is a specification.

In towns and cities where a messenger-call service is in use the call-boxes are frequently made to act as burglar-alarm signaling apparatuses. This is done by running a local closed circuit in the structure to be protected, which laces across exposed openings, as windows, doors, skylights, &c., and includes, besides a battery, a magnet attached to the call-box, so that when its armature is released by breaking the local circuit the call-box at once sends in its signal. Obviously, to secure good protection with such a system, first, the main line must always be in working order; second, two signals must not pass over the line at the same time, and third, the operator at the central office must always be at hand and promptly respond to the signal. As these conditions are not always present, I have improved such a system by adding thereto a clock mechanism which will be set in operation when the first alarm is sent in and thereafter for a definite interval—say twenty-four or forty-eight hours—repeat the alarm-signal over the main line as often as it may be thought desirable.

With my improvement the main line may be out of condition so that the original signal does not reach the center office, or the first signal may be rendered unintelligible by being sent in at the same time with a signal from another station, or the operator may not hear or attend to the first alarm, and yet some of the subsequent alarm-signals which the clock mechanism causes to be sent in may reach the central office in time to provide requisite protection to the guarded structure.

I will describe a burglar-alarm system embodying my invention and then point out the novel features thereof in the claims.

In the accompanying drawings, Figure 1 is a diagrammatic view of a burglar-alarm system embodying my invention. Fig. 2 is a front elevation of a signaling apparatus employed in the system. Figs. 3 and 4 are each cross-sectional views taken on the lines 3 3 and 4 4, respectively, of Fig. 2. Fig. 5 is a detail view of a portion of the apparatus.

Similar letters of reference designate corresponding parts in all of the figures.

Referring now to Fig. 1, all the apparatus to the left of the line A B is located at the central office C O and all the apparatus to the right of the line A B is located at the protected structure P S. *a b* represent the line-wires or line-circuit extending between the central office and the protected structure. If desired, a single line-wire may be used and a ground return. It will be understood that the line-wires *a b* may be continued, as indicated in dotted lines, and the apparatus of any number of protected structures connected therewith.

The apparatus at the central office may be of any signal-receiving form, and, as here shown, it consists of a relay R, a bell-signal S, and a registering apparatus T. The magnet *r* of the relay is included in the line-circuit, while its armature *r'* forms part of a local circuit. This local circuit includes the bell-signal S and register T.

Z represents a battery for the local circuit. In the operation of the burglar-alarm system the line-circuit is preferably a normally closed one. The armature *r'* of the relay R will therefore be attracted, thus having the local circuit at the central office an open one. As the armature *r'* is attracted to and moved away from its magnet, which is caused by opening and closing the line-circuit, the bell-signal and register are correspondingly affected. At the protected structure the doors, windows, skylights, &c., in fact all places where ingress and egress may be had to the premises, are covered by a fine or other wire C, as shown in Fig. 1. The wire C may form a circuit in which a battery Z' and a magnet D are included. The circuit is a closed one and is broken on the surreptitious opening of any door or window, &c., which is covered by the wire C. The magnet D forms part of the signaling apparatus E. The signaling apparatus also comprises a primary signal E', which is directly controlled by the magnet D, and a secondary signal F, which is operated by a clock mechanism G. The clock mechanism is set in motion at about the same time as the primary signal.

The signals E′ and F, together with their operating mechanism, are inclosed in a suitable casing or cabinet F′. The signals are preferably so arranged as to be accessible through separate doors or hinged covers of the casing—that is to say, the opening of one door only presents to view the mechanism covered thereby and nothing of the apparatus covered by the second door. The magnet D is provided with a hinged armature d, which is moved in one direction by a spring d'.

d^2 represents a detent having a weighted end d^3, which is suitably pivoted in bracket-arms d^4. The detent has a pin d^5, which is engaged by the notched end d^6 of the armature d. When engaged by the end d^6, the detent is held in such position as to prevent any movement of a part e, connected with the primary signal E′. When disengaged, the weighted end d^3 causes the detent to move on its pivots and permits the part e to operate. Insulation d^7 is carried by the detent against which the part e rests.

The primary signal E′ consists of the usual form of signal wheel or wheels e', a spring e^2 for turning said wheel, which spring is wound through the arbor e^3, and an escapement e^4, of which the part e serves as a pendulum thereof. Coacting with the signal wheel or wheels e' are the spring finger or fingers e^5. The spring finger or fingers e^5 and the signal-wheels are included in the line-circuit. Fixed on the arbor e^3 and moving therewith is a projection e^6, which operates a lever f, fixed on a rock-shaft f', which is suitably journaled on the framework of the clock mechanism. The rock-shaft is provided with an arm f^2, which is engaged by the projection e^6.

f^3 represents a spring, one end of which is connected to the lever f and the other end of which is connected with the framework of the clock mechanism.

f^4 represents a spring-wiper carried by the lever f and adapted to coact with the arbor f^5 of the balance-wheel. When the projection e^6 is not in engagement with the arm f^2, the spring f^3 moves the lever f and causes the wiper f^4 to move across the arbor and prevent any movement of the balance-wheel, thus stopping the clock mechanism. In its movement across the arbor the wiper f^4 causes the arbor to rotate somewhat to wind the coiled spring f^6. When the wiper f^4 is moved off the arbor, it causes a reverse rotary movement of the arbor, thus insuring a movement of the arbor and balance-wheel and a starting of the clock mechanism. The wiper f^4 is moved off the arbor by the projection e^6 engaging the arm f^2. This is done when the circuit of the magnet D is broken. It is obvious that the wiper f^4 may be made to engage some other part of the clock mechanism to start and stop it.

The clock mechanism G is of the ordinary kind and may be wound to run for any desired length of time. On the arbor g usually employed for the hands I secure a head g', which may carry a pointer g^2. The head is also provided with a pin, which upon each revolution of the head engages a tooth of a dial g^3 to move it one space. The dial g^3 is marked to represent time-spaces, and as it is turned a pointer g^4 indicates the number of spaces of time the dial has been moved. In the present instance the dial is marked to indicate hour-spaces. In connection with the clock mechanism there is the usual striking mechanism. Instead of a gong the secondary signal F is operated thereby. The signal-wheel consists of a disk h, having a series of peripheral openings and a number of pins h', which are removably inserted in the said openings.

h^2 and h^3 represent the usual spring-fingers normally in contact and included in the line-circuit. It will be understood that when the clock mechanism is operating the signal-wheel F will be operated at preferably every hour.

The operation of the system is as follows: The circuit of the wire C is a normally closed one, as stated, in which case the magnet D will be energized and armature d will be attracted. The notched end of the armature is in engagement with the pin of the detent, and the detent is in engagement with the part e of the primary signal E′. The spring of the signal is therefore prevented from turning the signal-wheel, and the spring f^3 holds the lever f in such position as to have the wiper f^4 on the arbor of the balance-wheel of the clock mechanism. In other words, the device shown in Fig. 2 is in what may be termed "set position." As soon as the wire C is broken in any manner the magnet D is deënergized, the spring d' moves the armature to disengage it from the detent, the detent falls, and the pendulum e is left free to operate under the influences of the spring in the primary signal. The signal-wheel is then rotated and its signal made at the central office. This signal serves as a warning, and the structure from which the alarm was sounded should be inspected. The break in the circuit is repaired and the primary signal reset. Immediately at the end of the sounding of the primary signal or during the sounding of the primary signal, if desired, the lever f is moved to start the clock mechanism. The clock mechanism operates until the circuit C is repaired and the primary signal reset, and at regular intervals it sends to the central office a different signal, or it may send the same signal as that of the primary signal. To accomplish this, the pins h' on the wheel H are arranged about the disk h to cause the finger h^2 to lift to open the circuit. In this manner the secondary or auxiliary signal serves to record the time from the sending of the primary signal to its resetting. Thus it will be seen in case of the primary signal not being heard at the central office at a time when it is sprung and the line-wire broken or interrupted a signal will be

heard at regular intervals from the secondary or auxiliary apparatus when the break in the line is repaired or the line otherwise cleared, provided, of course, that the clock mechanism had not run down.

What I claim as my invention is—

1. In a burglar-alarm signal system comprising a line between a protected structure and a central office, the combination of a local circuit at the guarded structure, a primary signal device in circuit with the line and controlled by a device in the local circuit, and a repeating signal device also in circuit with the line and adapted to be put in operation by the primary signal device and to repeat its signal as often as desired at predetermined intervals.

2. In a burglar-alarm signal system comprising a line between a protected structure and a central office, the combination of a local circuit at the guarded structure, a primary signal device in circuit with the line and controlled by an electromagnetic device in the local circuit, a repeating signal device also in circuit with the line and adapted to be put in operation by the primary signal device and to repeat said signal as often as desired at predetermined intervals, said repeating signal device comprising a train of wheels operated by a motor and signal-wheels which are periodically operated from said train of wheels and motor.

3. In a burglar-alarm signal system, comprising a line between a protected structure and a central office, the combination of a local circuit at the guarded structure, a primary signal device in circuit with the line and controlled by an electromagnet in the local circuit, a repeating signal device also in circuit with the line and adapted to be put in operation by the primary signal device to repeat its signal to the central office at predetermined intervals with respect to the primary signal, said repeating signal device comprising a train of wheels operated by a motor and signal-wheels which are periodically operated from the train of wheels and motor and a dial for indicating the interval elapsed after the starting of the repeating signal device.

4. In a burglar-alarm signal system, comprising a line between a protected structure and a central office, the combination of a local circuit at the guarded structure, a primary signal device in circuit with the line and controlled by an electromagnet in the local circuit, a repeating signal device also in circuit with the line and adapted to be put in operation by the primary signal device to repeat its signal to the central office at predetermined intervals with respect to the primary signal, said signal-repeating device comprising a time-train provided with a balance-wheel, a signal-wheel and time-dial, and a starting-lever acting upon said balance-wheel and operated from the primary signal.

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

EDWIN T. HOLMES.

Witnesses:
GEO. E. CRUSE,
GEO. H. RAYMOND.