

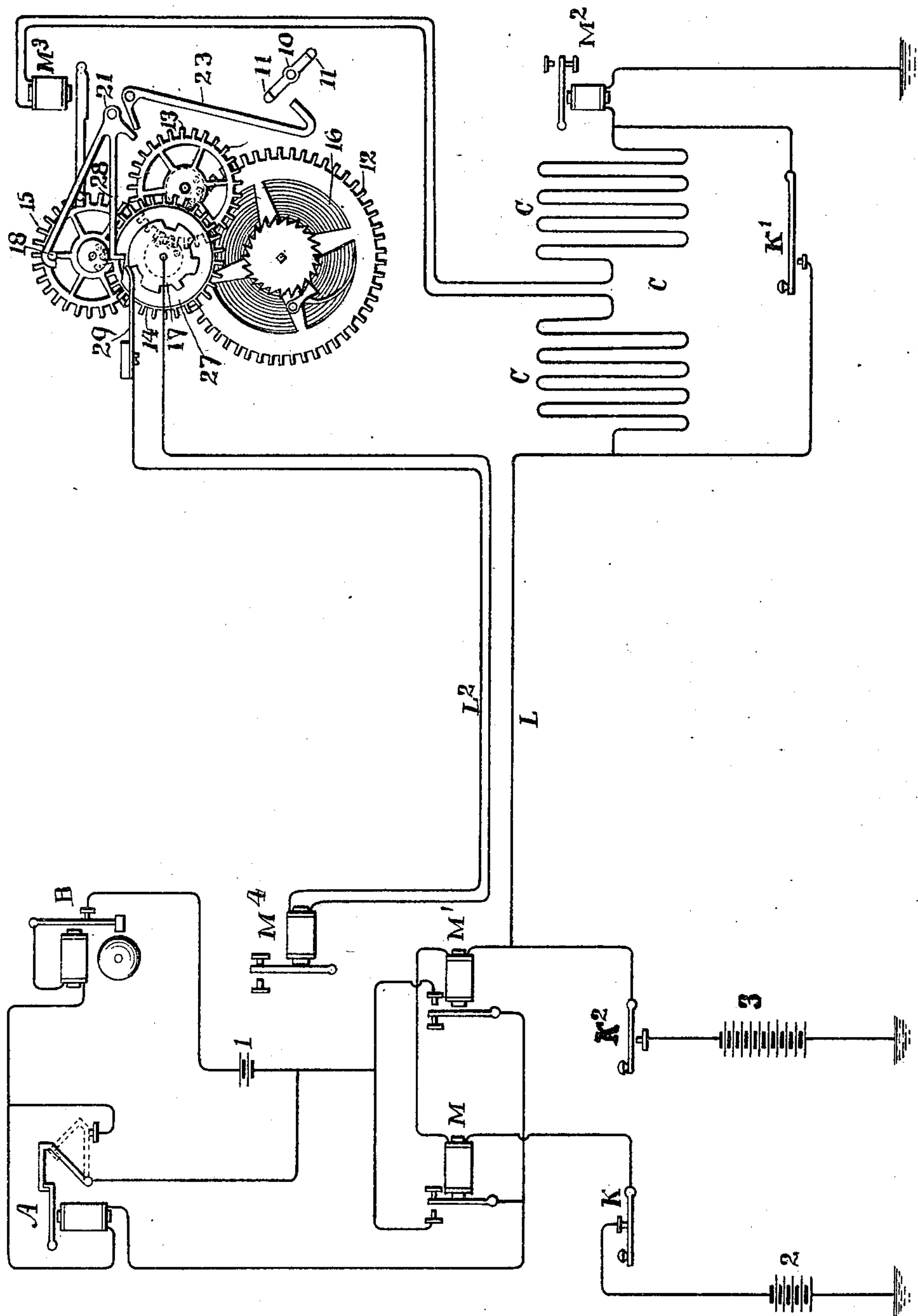
No. 681,290.

Patented Aug. 27, 1901.

J. B. YEAKLE.
BURGLAR ALARM.

(Application filed June 9, 1900.)

(No Model.)



Witnesses:

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BURGLAR-ALARM.

SPECIFICATION forming part of Letters Patent No. 681,290, dated August 27, 1901.

Application filed June 9, 1900. Serial No. 19,684. (No model.)

To all whom it may concern:

Be it known that I, JAMES B. YEAKLE, a citizen of the United States, and a resident of Baltimore, in the State of Maryland, (post-office address American District Telegraph Co., Baltimore, Maryland,) have invented a certain new and useful Improvement in Burglar-Alarms, of which the following is a specification.

10 This invention relates to that class of telegraphs in which a protective circuit is employed connecting a central or supervising office with a building or other structure or device equipped with fire-alarm, burglar-alarm, or other automatic circuit-controllers such that upon any disturbance of the normal condition of said circuit by the operation of the fire-alarm, burglar-alarm, or other automatic circuit-controllers a signal will be automatically transmitted to the central office over the connecting wire or circuit. The invention will, however, be described as carried out in the shape of a burglar-alarm telegraph.

25 The principal object of the invention is to provide a system such that any attempt to derange the circuits or apparatus, so as to render it incapable of performing its detective function, or any accidental derangement may be certainly discovered at the supervising or central office, to which end my invention consists in the novel combinations of apparatus hereinafter described, whereby a double system of tests is provided, one applied periodically by the operation of a time-train at the point to be protected and the other by means of a device, such as a circuit-controlling key, operated at will at the central office.

40 Other novel features of my invention will be described in connection with the accompanying drawing and then more specifically stated in the claims.

45 In the accompanying drawing the figure is a general diagram of apparatus embodying my invention, parts of the same being shown in side elevation.

50 L indicates the main-line or protective circuit leading from the building or structure at the point to be protected to a central or supervising office, where the signal-receiving instruments are located which indicate the operation of the circuit-closers—such as bur-

glar-alarm, fire-alarm, or other character of circuit-closer at the point to be protected.

The circuit L is, as usual, a normally closed circuit and the apparatus at the central office is constructed to respond either to a break in the circuit L or to a diminution in the resistance thereof produced by the operation of the circuit-closing devices at the out-lying point. The signal-receiving instruments at the central station responsive to such changes of condition in the circuit L may be of any character. Those shown are of the well-known type embracing what is known as a "double-balanced relay," a "local gravity-drop," and "alarm-bell." The magnets of the double-balanced relay are indicated at M M', one of said relays being arranged to close the local circuit upon any diminution in the normal strength of current on the line L produced in any way, as by a break of said circuit, and the other to close the local circuit upon any increase of normal current in the circuit L, produced through the short-circuiting of a resistance at the point to be protected through the operation of circuit-closing protective devices at said point.

A indicates a magnet of the gravity-drop in the local circuit controlled by the relays M M', and B indicates the usual alarm-bell of the local circuit.

1 indicates the local battery. When the gravity-drop falls, it completes the circuit of the bell, as shown. Relay M closes the local circuit on its back contact, and relay M' closes the local on its front contact. Closure of the local circuit by either releases the gravity-drop, which in falling closes the circuit for the alarm-bell. This arrangement is well known in the art and merely typical of any arrangement to be employed for indicating the operation of the circuit-closers connected to the protective circuit or an attempt to tamper with the protective circuit by breaking it or otherwise interfering with it.

The wire L is normally charged from the battery 2.

K indicates a key or circuit-controller in the circuit of L at the central office, whereby the circuit may be interrupted to cause the operation of a relay or magnet M² in said circuit at the point to be protected, said relay being intended to receive signals from the

central office. At the point to be protected circuit L includes the lacing or protective network C of a safe or vault, which is shown herein as typical of any device which will act to diminish the resistance of the circuit L or to break the same so as to give an indication upon the apparatus already described at the central office. At the point to be protected the usual resistance, which is shunted by the operation of the protective lacing or by any circuit-closing device, is in the present invention composed of the windings of one of the magnets of the apparatus, as will be presently described.

K' is a key controlling a short circuit around the apparatus at the point to be protected, whereby the resistance of the circuit L may at will be so diminished as to cause the apparatus at the central office to respond through the action of the relay M. The key K' is intended for use in the ordinary way by a person at the point to be protected in order to communicate with the central office.

M³ is a magnet in the circuit of the wire L. This magnet is responsive to a change of electric condition on the wire L, brought about through the operation of a key or circuit-controller K² at the central office. Said magnet M³ when it responds to the operation of the key K² causes the transmission of an answer-back signal to the central-office operator to indicate that the protective circuit is in proper condition. Preferably such answer-back signal is transmitted over another circuit, (indicated by L²), and by preference also the magnet M³ is a neutral magnet adjusted to respond to an increase in the strength of current upon the circuit L produced by the operation of the key K². Said magnet M³ might be constructed, however, to respond to changes of other kinds in the electric condition of the circuit, as well understood in the art. The increased current produced by the operation of the key K² may be furnished by a battery 3 or other generator. Magnet M³ is adjusted so as not to respond to the action of a current of such strength as is furnished by the battery 2. Magnet M³ is located in the circuit L, as shown, between the two sets of lacing-wires C C, so as to furnish the resistance, which is short-circuited through an attempt to enter the vault through the wires C C, thereby bringing about the operation of the alarm at the central office.

The test or answer-back signal sent through the action of the magnet M³ may be transmitted by any desired means—as, for instance, by a circuit-breaking-wheel 17 and circuit-closing spring 29 bearing thereon—said wheel and spring being included in the test-signal circuit L² and operating together in the usual well-known manner. Wheel 17 may be driven and controlled by mechanism constructed as follows:

16 is a driving-spring connected to a train of wheels 12 13 14 15. Wheel 17 is fixed upon the shaft of wheel 14, and wheel 15 carries a

pin 18, constituting a detent-pin to be released by a detent-hook on the end of an arm secured to a rock-shaft 21, which also carries an arm 28, having a hook adapted to rest upon the lift-disk 27, secured to the shaft of wheel 14, having a single notch which determines the number of revolutions of the train when it has been released through disengagement of the pin 18. The train may be released through the momentary action of the magnet M³ by means of an extension from the armature of said magnet, which is adapted to engage one or the other of the arms of the shaft carrying the detent-arm for signal mechanism, as shown. These devices are all well known in the art and may be substantially the same as described in my prior patent, No. 332,130.

The signal transmitted by the circuit-breaking wheel 17 over the circuit L² is received at the central office upon any suitable instrument typified in the drawing, as the magnet M⁴.

The test-signal, which indicates the condition of the apparatus periodically, may be sent by the same transmitting devices and over the same circuit. Suitable means for this purpose are indicated in outline, comprising tripping-hooks 11 11, projecting from the shaft 10 of a suitable time-train. The shaft 10 might be the hour-wheel of the train, as described in my prior patent, No. 332,130, so as to cause the operation of the signal-apparatus every half-hour. The hooks 11 are adapted to engage an arm 23, secured to a rock-shaft, which has a lifter-arm adapted to engage an arm projecting from the shaft 21, which carries the detent hook or hooks of the signal-train. Said time-train might, however, operate in other ways and upon other forms of signal devices without departing from my invention, and the character of the signal transmitted through the action of the time-train might be different from that transmitted when the magnet M³ is called into action.

While I have described the test-signals sent by the action of the time-train and by the action of the magnet M³ as going over the same circuit to the central office, I do not limit myself thereto, as they might go over different circuits. Other variations in the manner of sending the signals to the central office by the operation of a time-train or other device acting at predetermined intervals and by the operation of a magnet under the control of the central-office attendant will readily occur to those skilled in the art.

In the operation of the apparatus the time-train will automatically cause a signal to be transmitted at regular periods to the central office, indicating that the apparatus is in condition to send a signal from the point to be protected, and the signal transmitted by the action of the magnet M³ will indicate that the wire L has not been interrupted and a shunt resistance equivalent to that of the protective

apparatus substituted therefor in a ground connection in an attempt to render the device inoperative to send the detective signaling, which indicates burglarious entry.

5 What I claim as my invention is—

1. In a protective telegraph system the combination with the main protective circuit having devices at the central office responsive to the operation of proper circuit-closing devices at the point to be protected, of a transmitting device at the point to be protected for sending a signal to the central office, a detent for releasing the actuating power of said transmitter, a time-train controlling said detent and adapted to release the transmitter periodically and a magnet operating also on said detent and responsive to changes in the electrical condition on the main protective circuit produced at the central office.

20 2. In an electric protective system having a normally closed charged circuit connecting the point to be protected with the central of-

fice, a signal-controlling magnet located at the point to be protected and included in said circuit said magnet constituting the artificial resistance adapted to be shunted by the automatic protective devices, in combination with a key at the central office controlling the action of said magnet.

3. In a protective telegraph system the combination with the main protective circuit, of an auxiliary test-signal circuit, a transmitter for sending the signal over said test-signal circuit to the central office, a time-train controlling said transmitter and a magnet responsive to changes in electrical condition on the main protective circuit produced at the central office for controlling said transmitter.

Signed at Baltimore city, in the State of Maryland, this 4th day of June, A. D. 1900.

JAMES B. YEAKLE.

Witnesses:

ALFRED J. CARR,
WILLIAM GOODHART.