Jan. 16, 1923.

1,442,508

S. G. ADAMS.
BURGLAR AND LIKE ALARM SYSTEM.
FILED MAY 1, 1922.

2 SHEETS-SHEET 1.

FIG. 1

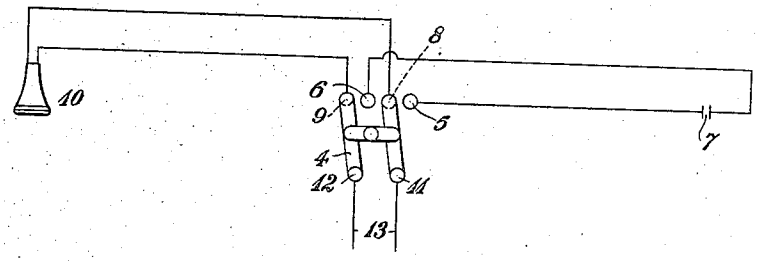


FIG. 2

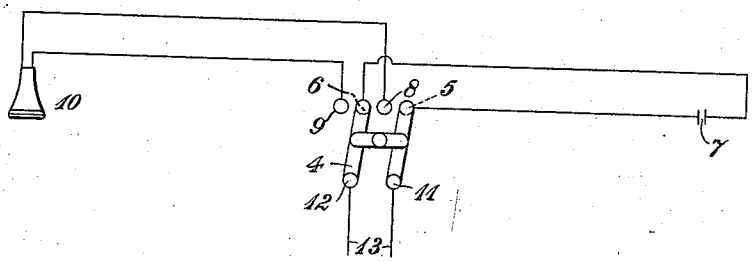
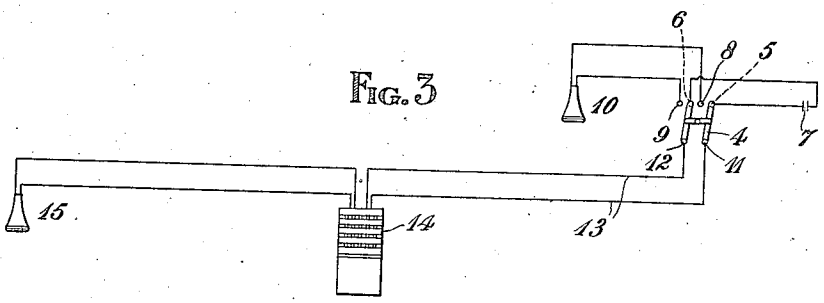


FIG. 3



INVENTOR.
S. G. Adams.
By Lacy & Lacy, Attys.

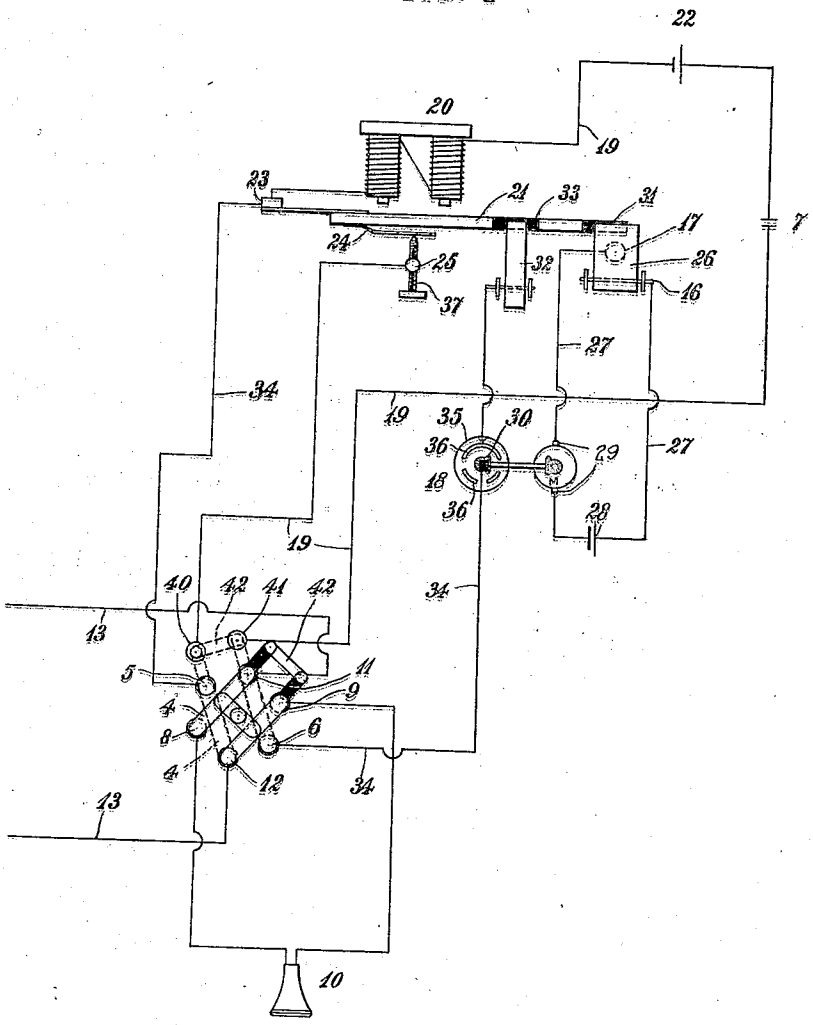
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2 SHEETS-SHEET 2

FIG. 4.



INVENTOR.
S. G. Adams.

BY

Atty's.

Patented Jan. 16, 1923. 1,442,508

UNITED STATES PATENT OFFICE.

SYDNEY GEORGE ADAMS, OF LEWISHAM, ENGLAND.

BURGLAR AND LIKE ALARM SYSTEM.

Application filed May 1, 1922. Serial No. 557,529.

To all whom it may concern:

Be it known that I, SYDNEY GEORGE ADAMS, a subject of His Majesty the King of England, and resident of Lewisham, in the county of London, Kingdom of England, have invented certain new and useful Improvements in or Connected with Burglar and like Alarm Systems, of which the following is a specification.

This invention relates to burglar and like alarm systems.

The invention has for its primary object to provide an improved, simple and efficient alarm system for adaptation to any existing or suitable telephone system, and designed for the protection of houses, offices and other premises particularly against burglars, and whereby the entry into the houses or other premises by unauthorized persons is immediately, silently automatically and secretly notified to the telephone exchange, thus enabling the operator to communicate with the police. The improved system is of such a nature that any type of electrical alarm contacts, any suitable form of two-position switch or similar control device, and any kind of telephone installation existing on the premises can be adopted and utilized for the purposes of carrying out the invention.

Another object of the invention is to provide an alarm system which is of such arrangement that false alarms will not be given when short-circuiting occurs in the telephone system or installation, and whereby any difficulties regarding the proper operation of the alarm system, and consequent upon the varying times of closing of a lock-up shop or other premises, are entirely overcome.

According to one feature of the invention the improved alarm system comprises a two-position switch or similar main control device disposed on the premises to be protected, and interposed between electrical alarm contacts or devices fitted at a door or at one or more other positions on said premises or at all of them, an ordinary and existing telephone instrument installed on the premises, and the telephone exchange, all without any alteration or addition to the apparatus already existing at said exchange, the arrangement being such that when the switch is placed in one of its positions by the subscriber the alarm contacts or devices are in condition for operation and are connected to the exchange with a normally open circuit, the telephone instrument being switched out of circuit with the exchange, and when said alarm contacts or devices are operated they close the circuit to the exchange and cause an audible or visual signal to be given at the latter.

Another feature of the invention consists in that electrical or mechanical circuit closing and signalling devices may be interposed in the circuit between the telephone exchange and the alarm contacts or devices, and be designed to be automatically actuated and to give a signal at said exchange when said alarm contacts or devices become operative, said signal being of such a nature that it is easily distinguished from that received at the exchange should a "short" occur in the circuit, or from any ordinary ring or call.

Yet another feature of the invention consists in that, if desired and in the case of lock-up premises, means may be provided at the main or front entrance of the premises whereby the circuit through the alarm contacts or devices can be controlled and closed and opened by an authorized person leaving or gaining access to the premises.

The invention will now be described with reference to the accompanying diagrammatic drawings, in which:—

Figure 1 illustrates a suitable manner of carrying out the invention, and shows the switch in position for connecting the telephone to the exchange,

Figure 2 shows the switch in position for connecting the alarm contacts or devices to the exchange,

Figure 3 indicates the system together with the exchange and a police, fire or other station telephone,

Figure 4 illustrates a modified method of carrying out the invention.

In both of the arrangements like parts are designated by similar reference numerals.

In the arrangement shown in Figures 1 to 3 a two-position, six-pole switch 4 is employed, and two of the terminals 5 and 6 thereof are connected to a pair of electrical contacts 7 fitted at a door, window, safe or other suitable position on the premises, two other terminals, 8 and 9, are connected to

the subscriber's telephone instrument 10 on the premises, and the other two terminals, 11 and 12, to the main lines 13 to the telephone exchange 14.

With this arrangement, in the normal position, Figure 1 of the switch 4, four of the terminals are bridged by said switch in such manner that the subscriber's telephone 10 is connected to the exchange 14 and the alarm contacts 7 are switched out of circuit. On the other hand, when the alarm contacts 7 are switched into circuit by a movement of the switch 4 into its second position, Figures 2 and 3, the subscriber's telephone 10 is switched out of circuit with the exchange 14 but said contacts are in direct electrical connection with the latter. The switch 4 is secured on a wall or other suitable support in the subscriber's premises in a position likely to be inaccessible to or not easily discovered by a burglar.

A suitable arrangement would be made with the authorities of the telephone exchange, fire or other station, as to the conditions under which they will cooperate in the operation of the alarm system. In the event of a successful attempt at entry into a telephone subscriber's premises, the alarm contacts at a door, window, safe or other position would come into operation immediately, i. e., the exchange apparatus would be actuated in the same manner as if the subscriber's telephone had been used, and the exchange operator would telephone immediately to the police, obtaining the address of the subscriber's premises from the official list, or, alternatively, from the switch board itself, where the address of each subscriber at whose premises the alarm device was fitted could be recorded.

In a modified arrangement illustrated in Figure 4 a two-position, six-pole, main control switch 4 is employed, and two of the terminals, 5 and 6, thereof are indirectly connected to a pair of bridging contacts 16 and 17, two other terminals, 8 and 9, are connected to the subscriber's telephone instrument 10 on the premises, and the other two terminals, 11 and 12, to the main lines 13 to the telephone exchange. An electric buzzer or other interrupter, trembler or signalling device 18 is interposed in the circuit between the switch 4 and the two bridging contacts 16 and 17. A primary and separate circuit 19 is provided and includes an electro-magnet 20 and armature 21, a battery 22 or other source of supply of current, and a pair of electrical alarm contacts 7 fitted at a door, window, safe or other suitable position it is desired to guard on the premises.

With this arrangement, in the normal position of the switch 4, shown in full lines in the drawing, four of the terminals, 8, 11, 12 and 9, are bridged by said switch in such manner that the subscriber's telephone 10 is connected to the exchange and the alarm contacts 7 are rendered inoperative as far as the exchange is concerned. On the other hand, by a movement of the switch 4 into its second position, shown in dotted lines, the subscriber's telephone 10 is switched out of circuit with the exchange, but the alarm contacts 7 can effect the exchange circuit in the manner hereinafter described. The switch 4 is, as before, secured on a wall or other suitable support in the subscriber's premises in a position likely to be inaccessible to or not easily discovered by a burglar.

Here again, a suitable arrangement would be made with the authorities of the telephone exchange, fire or other station as to the conditions under which they will cooperate in the operation of the alarm system. The exchange operator would immediately communicate by telephone with the police, fire or other station when an alarm signal on any of the circuits of the telephone subscriber's, at whose premises the alarm device is fitted, actuated the exchange apparatus in the manner hereinafter specified.

Assuming the switch 4 to be in the position indicated by dotted lines in Figure 4, in the event of an attempt to enter a telephone subscriber's premises or to open a safe, the alarm contacts 7 at the door, window, safe or other position would come into operation immediately and cause the battery 22 to energize the electro-magnet 20 through a terminal block 23, the armature 21, a spring 24, a terminal post 25 and the circuit 19. The electro-magnet attracts the armature 21 and allows a switch arm 26 to drop off said armature on to the contact 17, so that a shunt circuit 27 is closed through a battery 28, the contact and pivot or hinge 16 of the arm 26, said arm, the contact 17, and the terminals 29 of an electric motor, electro-magnet and ratchet, or other device adapted to continually drive a spindle 30; the arm 26 is insulated from the armature by insulation at 31. The attraction of the armature 21 by the electro-magnet 20 allows a second switch arm 32, (normally insulated from said armature by insulation on the upper edge of the latter at 33), to drop off the armature and so that its free end rests in contact with the adjacent side face of the armature. In this manner the armature 21 is locked in its attracted position by the switch arm 32 and the signalling device 18 is switched into direct connection with the telephone exchange through the circuit 34, the switch arm 32, the armature 21, the terminal block 23, the main switch 4, and the main telephone lines 13. The signalling device 18 indicated in the drawing consists of a rotary disc or drum 35 mounted on the spindle 30 and carrying segmental conductors 36 which give a continually interrupted circuit and a distinctive intermit-

tent signal at the exchange, such as the letter D in the Morse code. This signalling continues until the main switch 4 or the armature 21 or both, and the switch arms 32 and 26 are each returned to normal position shown in the drawing, and this by the police, the subscriber or some other person on the premises; in this manner the operations of the alarm and signalling devices are quite independent of control by the exchange operator. Immediately the armature 21 moves towards the electro-magnet 20, and is locked in this position by the switch-arm 32 as above described, the spring 24 is carried out of contact with the terminal screw 37 and thus breaks the circuit 19 and avoids running out of the battery 22.

Thus, the action of the signalling device would operate the exchange apparatus in a special manner known by the operator, who would immediately telephone to the police after having ascertained the address of the subscriber's premises from the official list, or, alternatively, from the switch board itself, where the address of each subscriber at whose premises the alarm device was fitted could be recorded. Alternatively, the police, fire or other station could be provided with a list of the addresses of subscriber's premises at which the alarm system is fitted.

It will be appreciated that the buzzer or other signalling device 18 would obviate possible mistakes through short-circuiting in the telephone system or through any other cause, in that it would give a signal at the exchange which can be easily distinguished from other signals transmitted, such as by short-circuiting. The interrupter or other signalling device would also prevent mistakes being made if the subscriber's premises were closed earlier or later than usual. The type of signalling device employed, and its method of operation, can vary within wide limits.

Any other suitable form of electrical or mechanical automatic circuit closer may be substituted for the electro-magnet 20 and armature 21 above referred to.

If desired, and especially in the case of lock-up premises, the circuit through the alarm contacts or devices 7 may be controlled by a switch operable from the main or front entrance of said premises. This switch could be constructed on the principle of a permutation lock and thus be carried by the door or door frame and be actuated according to a code; in this manner the circuit could be closed, (except, of course, through the alarm contacts or devices), by an authorized person when locking up the premises, and be opened again when he or she returns.

No matter what type of telephone exchange system is in use, including the "automatic" and "magneto" systems, the alarm system can be efficiently operated.

One of the most advantageous features of the system is that it is secret and could give no warning to a burglar that his entry had set in operation an alarm to the police. Another satisfactory feature is that the alarm is instantaneous, being simultaneous with the opening of the door, window, safe or the like; within a minute of a burglar's entry into the premises, the local police would be aware of the attempted burglary, and of its exact locality.

In the case of telephone users, such as doctors and others, who wish to be in constant communication with the telephone exchange, there may be two alternatives (1) a second exchange line, (2) an extension telephone connected to the two exchange line terminals 8 and 9 of the main switch 4.

Although the invention has been particularly described as applicable to burglar alarms, it will be appreciated that it is equally adaptable for notifying to the telephone exchange an outbreak of fire in any house, office or other premises controlled by said exchange. For this purpose, it would only be necessary to substitute for the burglar alarm contacts any known or suitable devices adapted to be actuated to close an electric circuit when rendered operative by heat.

It is necessary to provide means to prevent operation of the circuit 16, 17, 26, 27, 28 and 29 of Figure 4 when the control switch is in its "telephone" position, full lines in the drawing, and when the alarm contacts 7 are operated as by the opening and closing of a door. For this purpose a normally open break is provided in the circuit 19 containing the alarm contacts 7, and said break can be provided between two contacts 40 and 41, which contacts are adapted to be bridged by a member 42 carried by and insulated from the switch 4, such bridging taking place when the switch is in its "alarm contacts" position, dotted lines in the drawing. In a modified arrangement the circuit 19 could be normally opened by a separate switch.

What I claim is:—

1. A device of the class described comprising a telephone line having terminals, a telephone, a switch for said terminals, an alarm system including an interrupter, said switch being adapted to connect said alarm system with said telephone line by contacting with some of said terminals and simultaneously disconnect said telephone from said line.

2. A device of the class described comprising a telephone line having terminals, a telephone, a switch for said terminals, an alarm system including an interrupter, said switch being adapted to connect said alarm system with said telephone line by contacting with some of said terminals and simultaneously

disconnect said telephone from said line, said instrument including a commutator, arranged to give distinct code signals.

3. A device of the class described comprising a telephone line having terminals, a telephone, a switch for said terminals, an alarm system including a code signaling instrument, said switch being adapted to connect said alarm system with said telephone line by contacting with some of said terminals and simultaneously disconnect said telephone from said line, said instrument including a commutator arranged to give distinct code signals; alarm contacts and a circuit therefor connected with some of said terminals, said circuit including electromagnets, an armature therefor and means to actuate said commutator released by the armature.

4. A device of the class described comprising a telephone line, a telephone, a switch, said switch when in one position, connecting said telephone with said telephone line; a shunt line including a commutator, said shunt line being connected with said telephone line when the switch is in another position; a battery circuit including alarm contacts, an electromagnet, an armature therefor, said battery circuit being adapted to be closed by the switch in open position; a second battery circuit including a motor for said commutator, a gap in said second battery circuit, a bridging member for said gap held, normally, in open position by said armature and adapted to be released for closing said gap when said alarm contacts are connected.

5. A device of the class described comprising a telephone line having a set of pairs of terminals, a telephone, a six pole switch for said terminals, an alarm system including an interrupter, said switch being adapted to connect said alarm system with said telephone line by contacting with a pair of said terminals and simultaneously disconnect the terminals of said telephone.

6. A device of the class described comprising a telephone line, a set of pairs of terminals, a telephone with conductors attached to one pair of said terminals, a switch for said terminals, an alarm system including a code signaling intrument and conductors attached to a second pair of said terminals, said switch being adapted to connect said alarm system with said telephone line by contacting with said second pair of terminals and simultaneously disconnect said first pair of terminals from said line, said instrument including an interrupter arranged to give distinct code signals; alarm contacts and a circuit therefor conected with a third pair of said terminals, said circuit including electromagnets, an armature therefor and means to actuate said interrupter when released by the armature.

In testimony whereof I have hereunto signed my name.

SYDNEY GEORGE ADAMS.