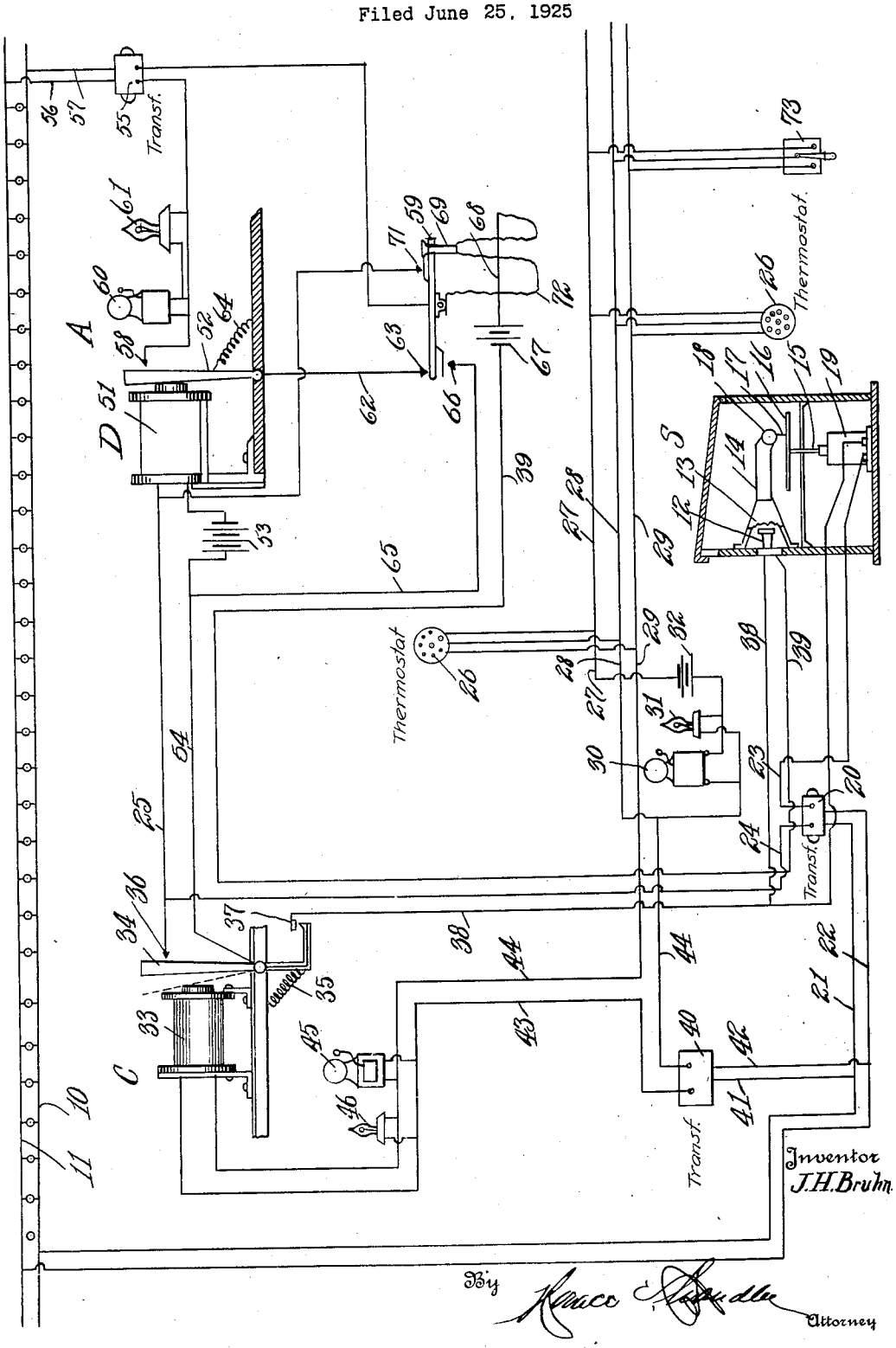
Jan. 11, 1927.

1,614,275

J. H. BRUHN

FIRE AND BURGLAR ALARM SYSTEM

Filed June 25, 1925



Patented Jan. 11. 1927.

1,614,275

UNITED STATES PATENT OFFICE.

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FIRE AND BURGLAR ALARM SYSTEM.

Application filed June 25, 1925. Serial No. 39,520.

This invention relates to new and useful improvements in fire-alarms, and particularly to fire-alarm systems.

One object of the invention is to provide a system for a house, hotel, office building, or the like, wherein an audible signal and a visual signal are given upon the breaking out of a fire, to notify the occupants thereof.

Another object is to provide a system of this character in which audible visual signals are given, within the premises, upon the breaking out of a fire, subsequent audible and visual signals being given when the fire has gained slight headway, the latter signals being given without the premises, and a further signal given at a fire call station, so that the person at such station may establish telephonic communication with, and accurately locate the point of the fire.

A further object is to provide a system wherein thermostats, of double acting type are used and which will operate in one direction, upon the breaking out of a fire, to cause visual and audible signals to be given within the premises, and will operate in another direction, upon the fire advancing to a degree, to cause audible and visual signals to be given on the exterior of the premises, and also at a fire call station, so that the operator at the station may, upon removing a telephone receiver from its hook, automatically establish telephonic communication with the location of the fire, to receive notification, through the medium of a phonograph, as to the exact location of the trouble.

Briefly, the invention comprises a series of double acting thermostats, arranged at different points in a building, and in circuit with audible and visual signals, located both within the building and exteriorly thereof. A telephone transmitter is located in the building and is in circuit with a telephone receiver, located at the fire call station, or fire engine house. A phonograph is associated with the telephone transmitter, and has a record which tells of the location of the building. Upon breaking out of a fire, the heat will cause the nearest thermostat to operate to close a normally open circuit, to light a lamp and ring a bell, within the building, to give an alarm to the occupants of the building. Should the fire gain headway, or intensity, the greater heat will cause a further operation of the thermostat, so as to set into operation additional audible and visual signals, located exteriorly of the building, and at the same time to cause similar signals to be given in the central fire call station. This sets certain mechanism in operation which establishes a telephone circuit between the building and the fire call station, whereupon the operator at the station removes the telephone receiver from its hook, and places same to his ear. Upon removing the receiver, the hook will establish a circuit between the telephone transmitter and the telephone receiver, and at the same time start a motor which causes the graphophone to operate and deliver the message, of its record, into the transmitter, such message being heard at the station, with the result that the station operatives will know the exact location of the fire.

The drawing shows a diagrammatic view of the fire alarm system, and includes the fire call station, and one subscriber's station.

Referring particularly to the accompanying drawing, 10 and 11 represent the main line wires of an electric lighting system. The fire call station is indicated as a whole, by the letter A, and the subscriber's station by the letter S.

In the subscriber's station, which may be a private dwelling, an office building, hotel, or the like there is located a telephone transmitter 12, which is covered by one end of an amplifying horn 13, and connected to the other end of the horn is the tone arm 14, of a graphophone 15. A turntable 16, on which is placed a record 17, is located in position to be engaged by the needle of the soundbox 18, of the tone arm, said turntable being arranged to be driven by the electric motor 19. At a suitable point, adjacent the graphophone, is a transformer 20, the primary winding of which is connected to the main line wires 10 and 11, by means of the wires 21 and 22, while wires 23 and 24 lead from the secondary winding of the transformer, the former being connected with the electric motor 19, and the latter to a line wire 25, to which reference will be made later herein. At different points in the subscriber's station are arranged thermostats 26, which are of the double acting type, that is, when subjected to a moderate heat will operate to close one circuit, and when

subjected to a greater heat will operate to close another circuit. Three line wires 27, 28, and 29 are used in the system, the wire 28 being used as the neutral line. In the subscriber's station there are located the signal bell 30, and the red signal light 31, one side of the bell and the light being connected in the neutral line 28, while the other side is connected with the line 27. In this circuit is a suitable source of current, such as the battery 32. An automatic switch C is located within the building, and includes the magnet coil 33, and the pivoted armature 34, the latter being normally held away from the coil by the spring 35. One end of the armature is arranged to engage with the contact 36, while the other end is normally held out of engagement with a contact 37, said contact being connected with the wire 38, which leads to and is connected with one side of the telephone transmitter 12. A second wire 39 is connected with the telephone transmitter, as shown. A second transformer 40 is located within the subscriber's station, and has its primary connected with the magnet coil 33 by means of the wires 43 and 44, and arranged in parallel in this circuit are the bell 45 and lamp 46. The wire 44, however, leads to the coil 33 by means of the circuit wires 28 and 29, through the thermostat 26.

In the fire call station A there is located an automatic switch D, which includes the magnet coil 51, and the pivoted armature 52. The wire 25 is connected with the winding of the coil 51, while a battery 53 is connected with the other end of said winding. A wire 54 leads from the other side of the battery 53 to the armature 34, of the switch C. A transformer 55 is located adjacent the switch D, and has its primary winding connected with the lines 10 and 11, by means of the wires 56 and 57. The wires of the secondary of the transformer 55 lead to a contact 58, and to the pivot of a telephone receiver support 59, respectively, a bell 60 and lamp 61 being arranged in parallel in this circuit. From the pivot of the armature 52 there extends a wire 62 which has a contact 63 arranged in position to be engaged by the inner end of the receiver support 59. The contact 58 is located in position to be engaged by the armature 52, when the coil 51 is deenergized, and said armature moved therefrom by the spring 64. From the wire 54 a wire 65 leads to a contact 66 which is located in position to be engaged by the lower side of the end of the receiver support 59, which engages with the contact 63. Adjacent the support 59 is a battery 67, and connected with one side of this battery is a wire 39, leading to the transmitter 12, the other side having a wire 68 which is connected with the telephone receiver 69. From the pivot of the support 59, to the telephone receiver 69, there extends a wire 72.

The drawing shows the system in normal position.

At the breaking out of a fire in the subscriber's station, the nearest thermostat 26 will operate under the influence of the heat from the fire, which will close the circuit through the bell 30, lamp 31, and battery 32, thus notifying the occupants of the presence of fire in the building. If desired, an annunciator may be arranged in this circuit, with a view to showing the exact location of the fire. Should the fire gain headway before anyone can locate it, or should no one be in the building at the time, the thermostat will operate to close the circuit through the switch C, so that the magnet coil 33 will be energized, thus setting the bell 45, and the lamp 46 into operation on the outside of the building, whereby to attract the notice of passers-by, who might send in an alarm. The armature 34 will be attracted by the coil, thus breaking the closed circuit 25—54, at 36, and causing the engagement of the armature 34 with the contact 37. Upon breaking of the circuit 25—54, the magnet 51 will become deenergized, permitting the armature 52 to be drawn, by the spring 64, into engagement with the contact 58, with the result that the lamp and bell 61 and 60, in the fire call station, will operate to notify the firemen that there is a fire. Everything is thus set for the person in the fire call station to receive a message telling of the exact location of the fire. Upon removing the receiver 69 from the support 59, said support will rock on its pivot to move away from the contact 63, and engage with the contacts 66 and 71. Immediately upon this circuit being completed, current will flow through the motor 19, causing the same to rotate the turntable 16, and the message of the record 17 to be transmitted through the transmitter 12, to the receiver 69. Current flows from the battery 67, through the wire 39, the transmitter 12, wire 38, armature 34, by means of contacts 36 and 37, wires 54 and 65, support 59, receiver 69, back to the battery.

The first signal is produced by the bell 30 and lamp 31, in the local circuit of the battery 32, when the fire starts, to notify the occupants of the presence of fire. The second call is produced when the fire becomes hotter and operates the thermostat to signal by means of the bell 45 and lamp 46, and at the same time set the system ready for telephonic communication with the fire call station. Upon removal of the telephone receiver 69, in the fire call station, the graphophone is set in motion to transmit its message to the listener at the fire call station.

Properly connected in the lines 27, 28, and 29, is a three-point switch 73, which is

adapted to be operated manually to accomplish the same result as that of the thermostat. Thus, should a person in the building discover a fire before it had reached such a temperature as to operate a thermostat, such person can, by throwing the switch, set the system in condition for establishing communication with the fire call station.

While I have shown a single subscriber's station, it will be understood that there may be any number of subscribers on the system, each equipped in the same manner as the system herein described.

Furthermore this system is adapted for use as a burglar alarm, the thermostats being replaced by suitable circuit closers operable at the doors and windows, by a burglar, and communication established with police headquarters, or substation, for calling the police.

What is claimed is:

1. A fire alarm system including a central fire call station, a subscriber's station, signals at the subscriber's station and at the call station and thermostatically controlled from the subscriber's station, and telephonic communication between the subscriber's station and the central call station set into condition for operation upon actuation of said signals, whereby upon the operation of said signals, and removal of the telephone receiver at the call station telephonic communication will be established.

2. A fire alarm system including a central fire call station and a subscriber's station, fire controlled signals at said stations, means for automatically sending a fire call from the subscriber's station to the fire call station, and set in condition for operation upon operation of said signals, and means operable at the fire call station for completing the operation of the sending means and receiving the fire call.

3. A fire alarm system including a central fire call station and a subscriber's station, simultaneously operable fire controlled signals in said stations, telephone communication between the stations, thermostatic controlled means for setting the system in condition for transmitting a fire call to the call station, and means at the call station for completing the telephone communication and receiving the fire call.

4. A fire alarm system including a central fire call station and a subscriber's station, simultaneously operable fire controlled signals in said stations, a telephone circuit between the stations, a graphophone having a record carrying a fire call message, thermostatic controlled switches for setting the telephone circuit in condition for receiving and transmitting the fire call message, and means operable at the fire call station upon removal of the telephone receiver for causing the operation of the graphophone transmission of the fire call message.

5. A fire alarm system including a central fire call station and a subscriber's station, a graphophone having a record containing a fire call message, a telephone transmitter associated with the graphophone, a telephone receiver in the fire call station, a series of signals at the subscriber's station, a signal at the call station, fire controlled means at the subscriber's station for operating the signals successively at the subscriber's station and then simultaneously with the fire call station signal, and means operable upon removal of the telephone receiver at the call station for establishing telephonic communication between the stations operating the graphophone to transmit the call message.

In testimony whereof, I affix my signature.

JOHN H. BRUHN.