J. P. KELLY.

FIRE ALARM SYSTEM.

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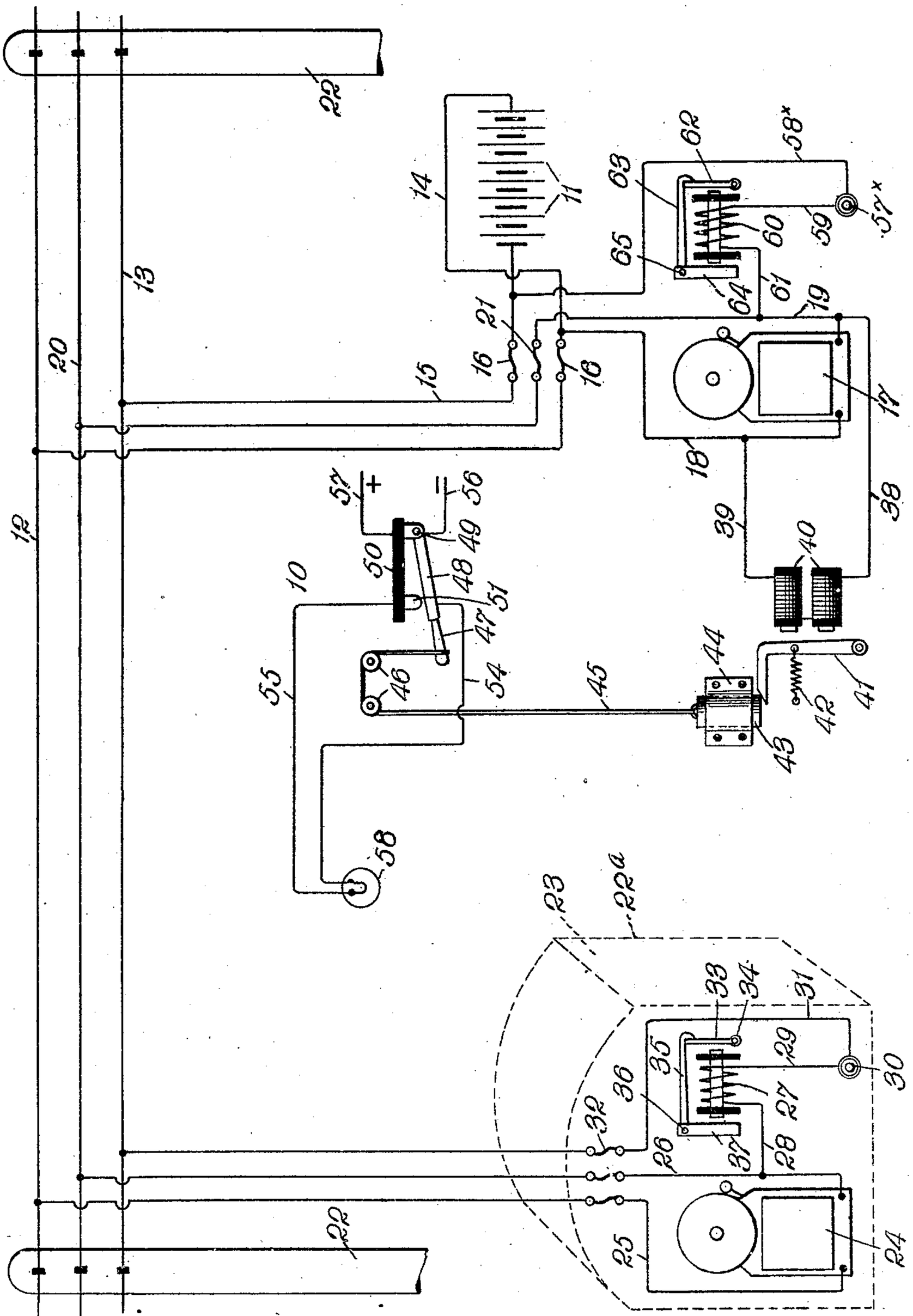
947,000. Patented Jan. 18, 1910.



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FIRE-ALARM SYSTEM.

947,000. Specification of Letters Patent. **Patented Jan. 18, 1910.**

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To all whom it may concern:

Be it known that I, JOHN P. KELLY, a citizen of the United States, and a resident of Basking Ridge, county of Somerset, and State of New Jersey, have invented certain new and useful Improvements in Fire-Alarm Systems, of which the following is a full, clear, and exact description.

This invention relates more particularly to an electric fire alarm system for towns and villages, but which is also adapted for cities and the like.

The primary object of the invention is to provide a simple and efficient fire alarm system in which headquarters or a central station may be notified of a fire through means located at various points at a distance from the central station, and in which, after the alarm has been turned in, the central station may send a return signal, so that the person turning in the alarm will be notified that the signal set has been received, thereby making it possible for the person sending the alarm to immediately know that the central station has been properly notified.

Another object of the invention is to provide simple means whereby when an alarm is sent to the central station from a distant point, electric mechanical mechanism will be set into operation so as to automatically turn on one or more lights.

Other objects of the invention are to provide a three-wire system to adapt the same for return signals; to provide a visual as well as a sounding signal to further notify the person that the proper number has been sent, and to indicate which point the signal has been sent from, and at the same time to cause the ringing of an electric bell at the different alarm boxes or signal stations in order that a policeman may be notified, and particularly at crossings where traffic is considerable so that the policeman may keep the way clear for the fire apparatus.

A further object of the invention is to provide simple and efficient means for operating an electric switch for turning on the electric light or lights at the central station or headquarters; and to provide means whereby it is possible to arrange the mechanism at the private or signal stations, so that immediately an alarm or signal is sent from the signal station to the central station, an annunciator or other usual signal will be operated, and that this annunciator and also a signal at the signal station may be so arranged within the casing that it will be accessible only to the inspector or a person having authority to have access to said mechanism in order that tampering with the mechanism or injury thereto by storms or otherwise may be prevented, thereby requiring the inspector to re-set the annunciator before the same is again operated.

With these and other objects in view, the invention will be hereinafter more particularly described with reference to the accompanying drawings which form a part of this specification, and will then be pointed out in the claims at the end of the description.

The drawing represents a diagrammatic view of one form or system embodying my invention, and while only one signal box or station is shown, it will be understood that there may be as many as desired, and instead of a single headquarters or central station there may be more than one.

The central station or headquarters 10 may be located at any desired point, and said central station may have a number of cells 11, and said cells 11 are connected by the wire 14 to the line wire 12, and by the wire 15 to the line wire 13, and in each of said connecting wires may be arranged a fuse 16.

A single stroke gong 17 or other signal is provided at the central station, and this gong is connected by the wire 18 to the wire 14, and is connected by a wire 19 to a third line wire 20, there being also a fuse 21 arranged in the wire 19 as is usual in electric systems. The line wires 12, 13 and 20 may be held to the poles or supports 22 in any desired way, and located at various points throughout the village, city or section in which the central station is located are signal stations 22^a. These signal stations or fire alarm boxes may be of any suitable number and variously constructed, and said boxes may be arranged in the house of the fireman and along the street or streets as desired. Each box may comprise a casing 23 as shown in dotted lines, and said casing may be provided with an inner door to inclose the mechanism, and with an outer door which may be opened by any one, while the inner door can only be opened by the inspector or person having a key thereto.

Within the box or casing 23 is a bell 24, and this bell is connected by a wire 25 to the line wire 12, and by a wire 26 to the third line wire 20. A magnet 27 has its coil

connected by a wire 28 to the wire 26, and leading from the coil is a wire 29 which connects with one contact of a suitable push button 30 or other circuit closer, while the other contact of the push button connects by a wire 31 to the line wire 13, and in each of the wires 25, 26 and 31 may be arranged a fuse 32.

Each alarm box is provided with a suitable number and directions for sending in an alarm, and this number may be arranged upon the door or otherwise and also upon the face of an annunciator member 33. This annunciator member 33 is located behind a glass-covered opening on the inner door and is pivoted at 34 at one edge and is held by an arm 35 forming a pawl or detent which is pivoted at 36 so as to move with the armature 37, so that when the armature is moved by the magnet 27, as will be presently explained, the armature will raise the pawl 35 and will release the annunciator member 33 so that the latter will drop by gravity, though a spring may be provided for this purpose if desired. As will be seen when the push button 30 is operated to send an alarm, the circuit will be completed through the battery 11, wire 14, line wire 12, wire 25, electric bell 24, wire 28, magnet 27, wire 29, to the push button, wire 31 to line wire 13, and wire 15 to battery. If the number on the box at the signal station is 41 for example, the button will be pushed four times, then a stop, and then once, and after another stop may be repeated. This operation of the button will release the annunciator member 33 and will also ring the bells 24 of all of the boxes at the signal stations, and will also ring the gong 17 at the central station, the said gong being connected by the wire 18 to the line wire 12, and by means of the wire 19 to the line wire 20, which is properly connected to the electric bells of all of the signal stations.

To automatically light the central station when an alarm is turned in, particularly at night, various means may be employed. As shown a wire 38 connects with the wire 19 of the gong or signal 17, and a wire 39 connects with the wire 18, and said wires 38 and 39 lead to and from an electro magnet 40. An armature 41 is pivotally held adjacent to the magnet 40, and is normally forced in one direction by a spring 42, and said armature has its outer end bent at an angle and arranged to normally support a weight 43 which may be guided in a bracket 44. A rope or other connection 45 extends from the weight 43 and passes around one or more pulleys 46, and is held at one end to a handle 47 of a switch lever 48. This switch lever may be of the usual knife-edge type, and is pivoted at 49 to a bracket on the switch board 50, and on said switch board is a switch contact 51. A source of electric supply may be had through the wires 56 and 57, leading to the switch lever 48 and the contact 51, and connected to the switch lever 48 is a wire 54, and leading from the contact 51 is a wire 55, and included in the circuit of the wires 54 and 55 are one or more electric lights 58 so that when the alarm is turned in from any one of the signal stations, the gong 17 will not only be sounded at the central station, but the circuit will be completed through the magnets 40 which will move the armature 41 thereby releasing the weight 43. This weight 43 will throw the switch lever 48 into engagement with the contact 51 so that the circuit through the light or lights 58 will be completed. By this means not only a gong or other signal may be sounded at the central station, but the building may be automatically lighted, or other means operated to assist in the proper working of the system.

If the return signal is desired, this may be accomplished from the central station, and it is desirable to do this to notify the person sending the alarm that the same has been properly received at the central station. A push button $57^{\times}$ or other device may be provided, and this push button may have one contact connected by a wire $58^{\times}$ to the battery wire 15, and its other contact connected by a wire 59 to a coil of a magnet 60, the said coil being connected by a wire 61 to the wire 19 which leads to the line wire 20 which is connected to all of the signal stations. An annunciator member 62 is pivoted adjacent to the magnet, and this member is held in place by a pawl or detent 63 which is held to an armature 64, the latter being pivoted at 65 so that when moved on its pivot it will raise the pawl 63 to permit the annunciator member 62 to drop either by gravity or by a spring provided for that purpose, it being understood that there may be an annunciator for each fire alarm box, and also a separate push button therefor or the signal otherwise arranged and operated as preferred. When the push button is operated to send the return signal, the annunciator member 62 will be released and the circuit will be completed through the battery wire 14, line wire 12, through electric bell, wire 26, line wire 20, wire 19, wire 61, magnet 60, wire 59, push button $57^{\times}$, wire $58^{\times}$, and battery 11. This operation will also ring the same signal in all of the boxes which may be connected with the central station, each of the fire alarm boxes being connected through the line wire in substantially the manner shown in the drawing.

When the signal or fire alarm boxes are to be placed in private residences or similar places, the electric bell and connection may be dispensed with so that in such places only an alarm may be sent and not received, and in some instances where a bell would be

unsuitable, a buzzer or other signal may be employed in place of the bell.

It will be understood that the various connections and parts may be made with the proper resistances to adapt the parts to operate properly, as for example the bells should be of a uniform size and resistance and this may correspond to the annunciator coils, while the trip magnet may have a different resistance; that other circuit operating means than push buttons may be used, and that various changes in the arrangement and construction of the invention may be made without departing from the character of the invention.

The term "central station" is used in its broadest sense to include the place which receives the alarm, and "signal station" is intended to include any place which has means to send an alarm.

From the foregoing it will be seen that a simple and efficient fire alarm system is provided which is adapted for small places as well as cities; that said system permits a return signal to be sent from the central station or headquarters to the signal stations or fire alarm boxes; that simple connections are provided whereby the alarm may be readily sent to the central station; that simple means are provided whereby the central station may have the lighting means turned on simultaneously with the sending of the alarm; that by arranging the mechanism within the fire box within an inner compartment accessible only to one in authority, it can be readily seen whether or not the fire alarm box has been tampered with; and that by connecting the parts in the manner shown the return signal to the box will not release the annunciators of the other boxes, as the said annunciators are only operated when the push buttons located at the boxes are operated.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:—

1. The combination with a central station, of a signal station, signaling means located at the signal and central stations, an electric circuit including the signaling means at the central station and the signal stations, lighting means, a switch controlling the lighting means, a weight operatively connected to the switch, an armature for holding the weight in one position, a magnet to permit the weight to operate the switch and electric connections, whereby when the weight is released the electric lighting means will be turned on simultaneously with the operation of the signaling means at the signal station.

2. The combination with central and signal stations, of signaling means located at the signal and central stations, an electric circuit including the signaling means at the central station and the signal stations, lighting means, a switch controlling the lighting means, mechanism operatively connected to the switch, and electric connections whereby the electric lighting means will be turned on simultaneously with the operation of the signaling means at the signal station.

3. The combination with a central station, of a signal station, signaling means located at the signal and central stations, an electric circuit including the signaling means at the central and signal stations, lighting means, a switch controlling the lighting means, a weight operatively connected to the switch, means for holding the weight in one position, means for releasing the weight-holding means to operate the switch, signals located at the stations, and electric connections including the signals at the central station, whereby when the latter are operated from the signal station the weight will be released and the electric lighting means turned on simultaneously with the operation of the signals at the central station from the signal station.

4. In a fire alarm system, the combination with a central station, of a signal station, an electric circuit, an annunciator located at the signaling station having a movable member provided with the number of the signal station, and included in said circuit, and means for releasing said annunciator member when an alarm is sent from the signal station to the central station, electric lighting means at the central station and electric connections whereby the electric lighting means will be turned on simultaneously with the release of the annunciator.

This specification signed and witnessed this 2′′ day of March A. D. 1909.

JOHN P. KELLY.

Witnesses:
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M. Dinnhaupt.