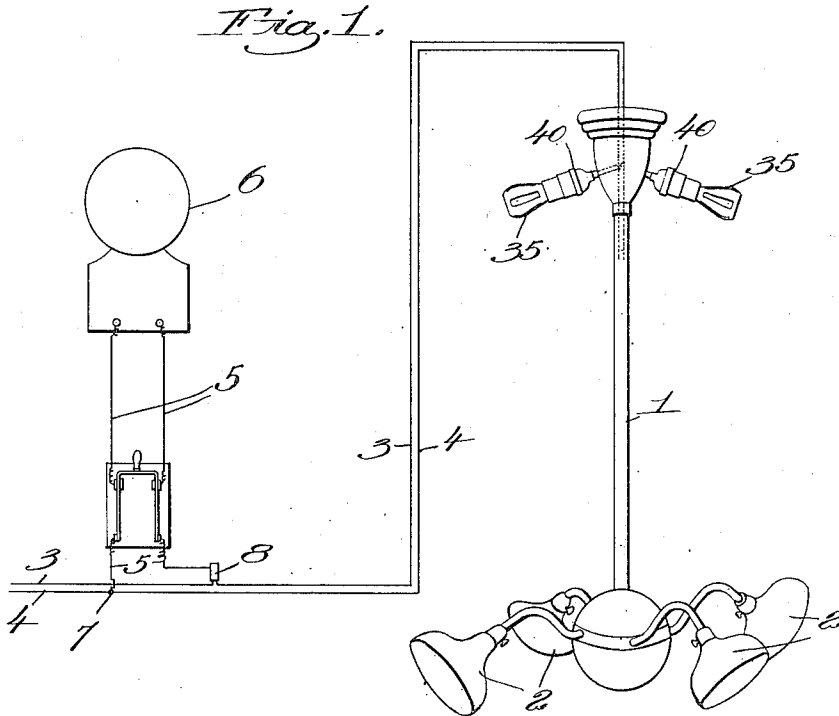
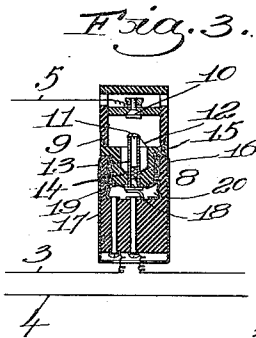
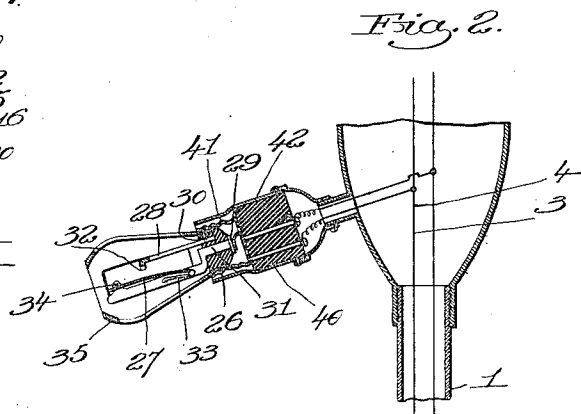


J. J. McCARTHY.
FIRE ALARM SYSTEM.
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Witnesses:

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FIRE-ALARM SYSTEM.

1,068,440.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHN J. MCCARTHY, a citizen of the United States, residing at Newton, county of Middlesex, State of Massachusetts, have invented an Improvement in Fire-Alarm Systems, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

This invention relates to fire alarm systems which are adapted to be used in connection with any working circuit, such, for instance, as a lighting circuit, a bell circuit, or even a telephone circuit, and which is so arranged that if a fire occurs the current in the working circuit is made use of to sound an alarm. I accomplish this object by providing a normally-open signaling circuit having a signal therein, one end of which circuit is connected to one side of the working circuit and the other end of which signaling circuit is connected to the other side of the working circuit, and providing means whereby when the temperature in the building or room reaches a predetermined point the signaling circuit will be closed thereby causing the current of the working circuit to be shunted therethrough and the alarm to be sounded. This automatic closing of the normally-open signaling circuit is accomplished by means of a thermostatic plug connected to the working circuit at the point where it is desired to note any abnormal rise in temperature and a fuse plug which cooperates with the thermostatic plug to close the signaling circuit when the thermostatic plug operates.

Referring to the drawings wherein I have illustrated one embodiment of my invention, Figure 1 is a partial diagram view showing an electric chandelier and the wiring therefor and also indicating the method of applying my invention thereto; Fig. 2 is an enlarged sectional view through the thermostatic plug; Fig. 3 is an enlarged sectional view through the fuse plug.

In the drawings I have shown at 1 a chandelier having the usual lighting fixtures 2 thereon.

3 and 4 designate the two sides of a working circuit which supplies electricity to the fixtures 2.

In applying my invention to an electric lighting circuit I provide a signaling circuit

5 having a signal 6 therein of some suitable or usual type, that herein shown being in the nature of a bell, and I connect one end of this circuit 5 to the side 4 of the lighting circuit, as shown at 7, and I connect the other end of the signaling circuit to the side 3 of the lighting circuit through a fuse plug 8. The fuse plug 8 is constructed so that normally the circuit 5 is open at said plug, but when the plug fuse blows then the signaling circuit becomes closed at said plug and current from the working circuit 3, 4 will flow through the signaling circuit and sound the alarm 6. The construction of the plug is shown in Fig. 3, and it comprises a body portion 9 carrying a fixed terminal 10 that is connected to one side of the signaling circuit 5. This plug also contains a second terminal 11 which is normally held separated from the terminal 10 by a fusible connection 12. The terminal 11 is shown as a pin slidably contained in a sleeve or holder 13 and acted upon by a spring 14 which normally tends to project said pin outwardly into contact with the terminal 10. The fusible connection 12 is secured at one end to the pin 11 and passes out through an opening 15 in the body 9 and is secured to a screw shell 16 formed thereon. This plug is adapted to be screwed into a socket 17 which has a center terminal 18 that engages the center terminal 19 of the fuse plug, and a screw shell terminal 20 which connects with the screw shell 16 of the plug. The center terminal 18 and screw shell terminal 20 of the socket are connected in series in the side 3 of the working circuit so that when the plug is in position, as shown in Fig. 3, the side 3 of the working circuit includes the screw shell 20, screw shell 16, fusible connection 12, pin 11, holder 13, center terminal 19 of the plug, center terminal 18 of the socket 17. The fusible connection 12 thus carries all the current normally used when the fixtures 2 are lighted, and said connection is so constructed that it will carry this current without fusing.

So long as the fusible connection 12 remains intact the signaling circuit 5 is open at the fuse plug, as will be obvious. If, however, the current carried by the working circuit assumes abnormal proportions, then the fusible connection 12 becomes fused, thus allowing the spring 14 to force the pin 11 outwardly into contact with the terminal 10. When this occurs the signaling circuit is

closed and part of the working current will be shunted through said signaling circuit, thus sounding the alarm.

My complete invention includes a thermostatic plug which is set in operation when the temperature of the air adjacent said plug reaches a predetermined point and which when operated causes an abnormal current to be developed in the working circuit. The thermostatic plug which I employ is shown in sectional view in Fig. 2. It is formed with a screw shell 26 adapted to screw into an electric light socket and it carries two terminals 27 and 28, one of which is electrically connected to the screw shell and the other of which is connected to the center terminal 29 of the plug. The terminal 28 is herein shown as electrically connected to the screw shell through the connection 30, said terminal being set into the porcelain base 31 and provided at its upper end with the forked portion 32. The terminal 27 is in the form of a resilient wire which is connected to a post 33 that is also anchored in the porcelain base 11 and is electrically connected to the central terminal 29 of the plug. Under normal conditions the resilient terminal 27 is withdrawn from the fixed terminal 28 and is held withdrawn by a fusible link 34 which may be made of any easily-fusible material. This link or connection 34 ties the terminal 27 to the post 33 and holds it out of contact with the terminal 28. Whenever the temperature at the plug reaches a predetermined point this fusible connection 34 will fuse or burn thereby releasing the terminal 27 and permitting it to come into contact with the terminal 28. If desired I may inclose the terminals 27 and 28 in an outer shell 35 which may preferably be provided with apertures so as to permit a free circulation of air.

The terminals of the plug are connected to the two sides 3 and 4, respectively of the working circuit, and this may be done in any suitable way as by screwing the thermostatic plug into an ordinary lamp socket 40 which is provided with the screw shell and center terminals 41 and 42, respectively, that are connected to the two sides of the working circuit 3 and 4 in usual manner. Under normal conditions the circuit through the thermostatic plug is open because of the fact that the terminals 27 and 28 are separated from each other. Whenever the temperature at the plug reaches a predetermined point, however, the fusible connection 34 will be fused, thus allowing the terminal 27 to close against the terminal 28. The resistance of the thermostatic plug is small so that when the circuit is closed through said plug the amperage of the working circuit will be greatly increased and increased to a sufficient extent to fuse

the connection 12. The fusing of the connection 12 will close the signaling circuit 5, as above described, thus causing the alarm to be sounded.

With my invention it is possible to place a thermostatic plug in any one of the lamp sockets of an electric-lighting system, and whenever the temperature of the air adjacent said plug is sufficient to cause the fusible link 34 therein to be fused, then the alarm will be set in operation to sound the alarm 6.

The alarm 6 may be placed in any location, as will be obvious.

Where several branch line circuits are taken off from the main line circuit an annunciator may be used in connection with the alarm 6 to indicate on which particular branch circuit the thermostatic plug has operated.

I have shown the thermostatic plugs in Fig. 1 as secured in sockets placed at the upper end of the chandelier 1, but the operation would be the same if a thermostatic plug were placed in any one of the fixtures 2.

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

1. In a fire alarm system, the combination with a working circuit, of a signaling circuit having one end thereof connected to one side of the working circuit, a fuse plug forming the connection between the other end of said signaling circuit and the other side of the working circuit, said fuse plug having two terminals connected in series with said working circuit, a fusible connection between said terminals, a third terminal connected to the signaling circuit and normally disconnected from the other terminals, and means to establish a connection between one of the first-named terminals and said third terminal when the fusible connection is destroyed, said fusible connection being capable of withstanding normal working current without fusing, and means for causing the production of an abnormal current in the working circuit sufficient to fuse said fusible connection when the temperature at a predetermined location increases beyond a predetermined point whereby said fusible connection will be destroyed and the signaling circuit closed.

2. In a fire alarm system, the combination with a working circuit having lamp sockets connected therewith, of a signaling circuit having one end thereof connected to one side of the working circuit, a fuse plug forming the connection between the other end of said signaling circuit and the other side of the working circuit, said fuse plug having two terminals connected in series with said working circuit, a fusible connection between said terminals, a third terminal

connected to the signaling circuit and normally disconnected from the other terminals, means to establish a connection between one of the first-named terminals and
5 said third terminal when the fusible connection is destroyed, said fusible connection being capable of withstanding normal working current without fusing, and a thermostatic plug adapted to be placed in any
10 lamp socket of the lighting system and provided with two low resistance terminals normally held separated by a fusible con-

nection whereby when said connection is fused the circuit is closed through said thermostatic plug, thus producing an abnormal current in the main circuit which
15 fuses the fusible connection of the fuse plug.

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

JOHN J. McCARTHY.

Witnesses:

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