

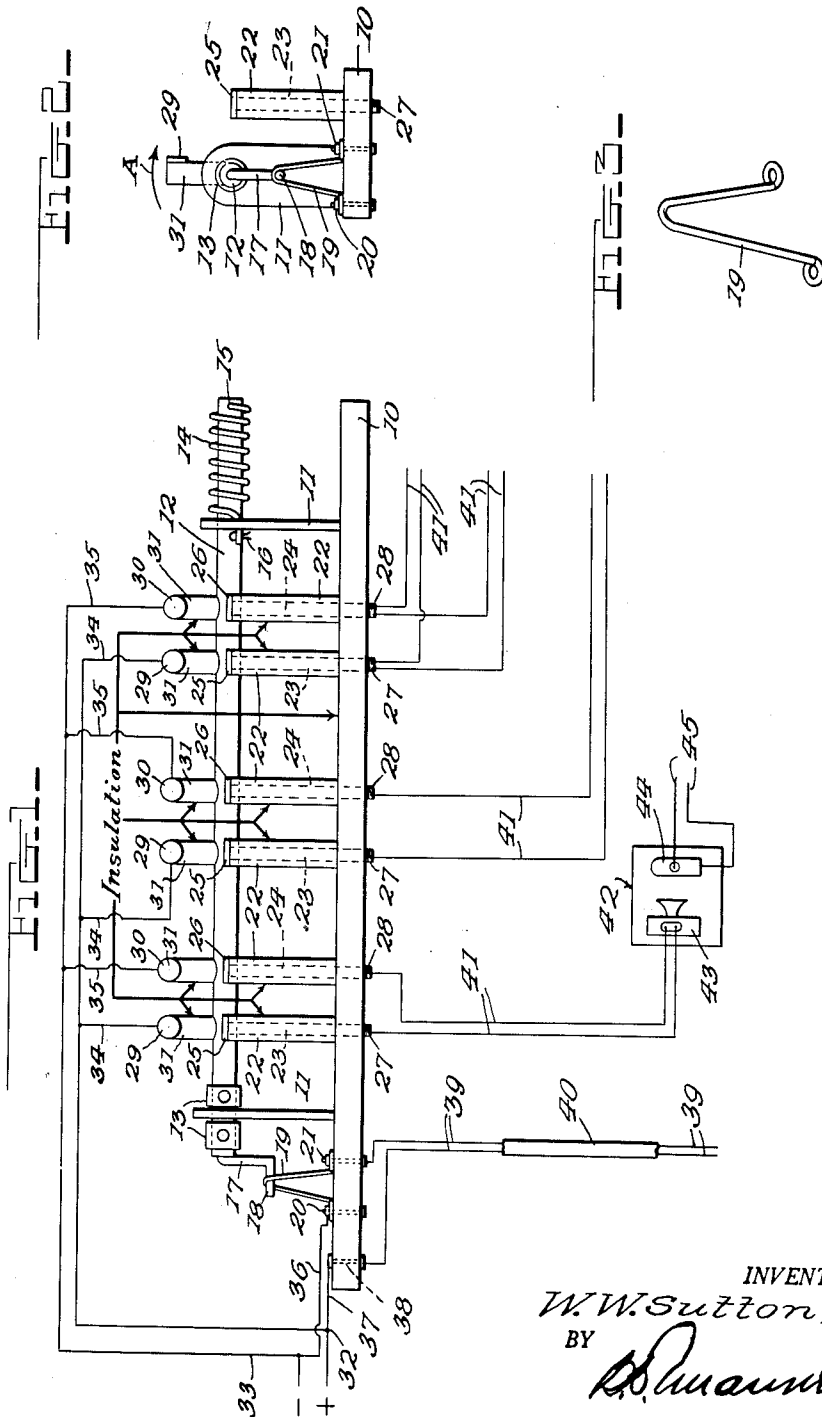
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MULTIPLE FIRE ALARM CIRCUIT CLOSER

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MULTIPLE FIRE ALARM CIRCUIT CLOSER

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2 Claims. (Cl. 340—227)

This invention relates generally to fire alarm systems and more particularly it relates to a fire alarm system including a temperature responsive circuit for transmitting alarm signals to a plurality of signal receiving stations. This application is a substitute of my abandoned application Serial No. 64,551, filed December 10, 1948.

The principal object of this invention is to provide a fire alarm circuit responsive to abnormal temperatures for operating alarm signals at a plurality of signal receiving stations.

Another object of this invention is to provide switch means adapted to be operated in response to abnormal temperatures for simultaneously closing a plurality of alarm circuits.

In accordance with this invention there is provided a fire alarm system comprising a fire detection means, a plurality of alarm circuits, and a multiple switch actuated in response to said fire detection means for simultaneously closing said fire alarm circuits.

The full nature of the invention will be understood from the accompanying drawings and the following description and claims:

Fig. 1 is a combined circuit diagram and side elevation of the switch for controlling the circuit illustrated in the diagram.

Fig. 2 is an end view of the switch taken on the left hand end of Fig. 1.

Fig. 3 is a perspective view of the fusible switch control member illustrated in Figs. 1 and 2.

In accordance with this invention there is provided a fire alarm system having a control switch consisting of an elongated base 10, at each end of which is mounted a bracket and bearing member 11. A shaft 12 is rotatably mounted in the bearings 11, and collars 13 are mounted on opposite sides of the left hand bearing 11 in sliding contact therewith for preventing longitudinal movement of shaft 12. At the right hand end of shaft 12, a coil spring 14 is mounted thereon with one end anchored to shaft 12 at 15 and the other end anchored to the right hand bearing 11 by cotter pins 16.

The shaft 12 is provided at its left hand end with a radial crank arm 17 carrying a crank 18. An electrically fusible wire 19 is mounted at its ends to the base 10 by terminal screws 20 and 21, and is looped over the crank 18 for normally holding the shaft 12 in the position illustrated in Figs. 1 and 2. In this position the shaft 12 will have been rotated to wind spring 14, whereby the fusible wire 19 serves to hold shaft 12 against the torsional action of spring 14.

The multiple switch comprises a plurality of stationary contacts which include pairs of insulating tubes 22 through each pair of which extend conductors 23 and 24, terminated at their upper ends by contacts 25 and 26 and at their lower ends by binding screws 27 and 28. Cooperating with the respective pairs of stationary contacts 25 and 26 are pairs of movable contacts 29 and 30, each pair of which is carried by radial insulating arms

31 mounted in pairs on the shaft 12. When the shaft 12 is released, it may rotate in a clockwise direction (Fig. 2) under the influence of spring 14 to engage the respective movable contacts 29 and 30 with their respective oppositely disposed fixed contacts 25 and 26.

The fire alarm system may be energized from a commercial power source or other suitable source of potential, conductor 32 being connected from the source through branches 34 to contacts 29, and conductor 33 being connected from the source to contacts 30 through branches 35. The electrically fusible wire 19 is connected to conductor 33 and the source through conductor 36. The conductor 32 is connected through branch 37 to binding post 38. From the binding posts 21 and 38 are connected the lead wires 39, the insulation 40 of which is of inflammable character, whereby conductors 39 serve as a fire detection means. Any desired number of pairs of conductors 39 may be led through a protected premises in conventional manner so that the occurrence of an abnormal temperature or a fire condition can ignite or otherwise destroy insulation 40, thereby to permit conductors 39 to electrically contact one another. This causes a flow of current sufficient to fuse the fusible wire 19, thereby to release shaft 12 and close the contacts 25, 26, 29 and 30, respectively.

A plurality of alarm circuits 41 are connected to the binding posts 27 and 28 of the various pairs of contacts 25, 26. For example, an acoustical transducer 42 may be connected to wires 41, the transducer comprising a horn, phonograph or alarm bell 43, for example, together with a microphone 44 connected through conductors 45 to a central fire station. The transducer 42 may also comprise a home telephone set operable in known manner, automatically to respond to closure of contacts 25, 26, thereby to provide an alarm signal over a telephone circuit to a central fire alarm station. The other pairs of conductors 41 may be connected to a red signal lamp mounted on the front of the protected premises, also to an alarm bell mounted on the front of the protected premises and to, for example, an alarm located in the residence of the proprietor of the protected premises.

Fuse 19 may consist of any well known electrical fuse material and may be dimensioned to melt at any desired current value so long as it melts at a current value less than that of the fuse or circuit breaker controlling the power source. When a fire condition occurs and the insulation 40 on the conductors 39 burns away, or its insulating properties are destroyed, contact is established between wires 39 whereby sufficient current flows therein to melt the fusible wire 19. Since the spring 14 is exerting torsional forces on shaft 12, the melting of fuse 19 releases the crank 17, 18, permitting shaft 12 to rotate contacts 29 and 30 into electrical contact with contacts 25 and 26. Thus, the switch operates simultaneously to energize all of the circuits including conductors 41. These circuits are energized through conductors 32 and 33 and branches 34 and 35 to actuate the various alarm devices connected in the alarm circuits.

From the foregoing description it will be apparent that this invention provides a simple fire detection system, together with a simple alarm system. The switch provided in accordance with this invention makes it possible to energize any desired number of alarm circuits simultaneously from any desired number of fire detection circuits. It should also be noted that a system provided in accordance with this invention may be supervised from a central station by means of conventional supervisory circuits.

The invention claimed is:

1. A fire alarm system comprising a source of potential, a fire detection circuit connected to said source and

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closeable in response to a predetermined temperature, an alarm circuit including said source and an alarm device, a switch including normally open contacts connected to said source and to said alarm circuit, a spring biased shaft supporting said contacts in open position and tending to close said contacts and an electrically fusible element connected in said fire detection circuit and mechanically restraining said shaft from rotating into contact closing position, whereby closure of said fire detection circuit fuses the fusible element to release said shaft and simultaneously close said contacts. 10

2. A fire alarm system comprising a fire detection circuit, an alarm circuit, a source of potential common to said circuits, a switch including normally open contacts connected to said alarm circuit, a spring biased shaft supporting said contacts in open position and tending to close said contacts, and an electrically fusible element coupled to said source of potential and to said fire 15

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detection circuit and mechanically connected to said shaft for restraining said shaft from rotating into contact-closing position, said fire detection circuit including means for connecting said fusible element across said source in response to a predetermined temperature thereby to fuse said fusible element and release said shaft into contact-closing position.

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