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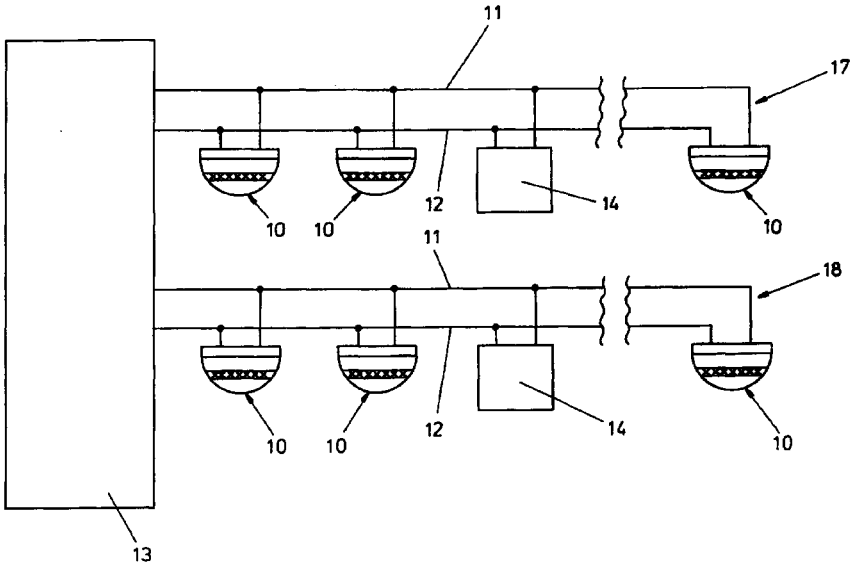
(54) Fire alarm system

(57) A fire alarm system comprises a control panel 13 and a plurality of combined smoke detectors and sounders 10 connected to a wire extending from the control panel 13. Each detector 10 is arranged to change from a standby condition to an alarm condition when activated by smoke, however the control panel 13 is only arranged to trigger the sounders 10 when the activated detector 10 has changed from its standby condition to the alarm condition at least twice within a predetermined time period.

In use, if the detector 10 was activated by smoke eg. from cooking, the smoke will diffuse quickly and the detector will not be activated again, and the sounders will not be triggered. However, if there is a real fire, the detector will be reactivated immediately and the sounders will be triggered.



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Description

[0001] This invention relates to a fire alarm system.

[0002] Fire alarm systems are known, which comprise a plurality of smoke detectors connected in parallel across one or more pairs of wires extending from a control panel.

[0003] In use, the control panel is triggered to emit an audible warning signal and perhaps alert the emergency services when one or more of the smoke detectors changes from a standby condition to an alarm condition when smoke is detected.

[0004] It is a requirement in many countries that flats or apartments, tenements, bedsitters and halls of residence etc. are fitted with a fire alarm system of the above-mentioned type.

[0005] It is common for each flat etc. to have some kind of cooking facility and we have found that many false alarms are triggered when toast is burnt or when smoke is inadvertently created whilst cooking. These false alarms are annoying to the occupants of other flats connected to the system. Furthermore, if the emergency services are called to attendance, there could be a charge imposed for the unnecessary call out.

[0006] I have now devised a fire alarm system which alleviates the above-mentioned problems.

[0007] In accordance with this invention there is provided a fire alarm system comprising a control panel and a plurality of remote smoke detectors connected to the control panel, each detector being arranged to change from a standby condition to an alarm when activated by smoke, said control panel being arranged to trigger an alarm signal only when the same detector has changed from its standby condition to said alarm condition at least twice within a predetermined time period.

[0008] In use, if smoke is sensed in one of the flats connected to the alarm system, the smoke detector in the flat will change from its standby condition to an alarm condition.

[0009] Preferably the control panel is arranged to reset an activated detector to said standby condition at least once. If the detector was activated by smoke from cooking or from burnt toast, the smoke will diffuse quickly and the detector will not be activated again, and the alarm will not be triggered.

[0010] However, if there is a real fire, the detector will be reactivated immediately and the alarm will be triggered.

[0011] Preferably, the control panel is arranged to reset an activated detector, a predetermined time period after it has been activated. The time period is preferably sufficiently long to allow the smoke from a false alarm to diffuse before the alarm is reset.

[0012] Preferably the time period is adjustable.

[0013] Preferably, the number of successive times that each detector has to be activated before the alarm signal is triggered is adjustable.

[0014] Preferably, at least some of the detectors have sounders associated therewith, a sounder being energised to produce an audible output whenever its associated detector is activated. The sounder provides a localised warning within a flat etc. that its associated detector has been activated and thus the occupant can take steps to clear the smoke before the detector is activated again.

[0015] Preferably the control panel is arranged to silence the sounder in the event that its associated detector is not activated again within said predetermined time period.

[0016] Preferably the control panel is arranged to trigger an alarm signal, when two different detectors are activated by smoke, signalling that the fire is spreading.

[0017] An embodiment of this invention will now be described by way of example only and with reference to the accompanying drawing, the single figure of which is a schematic diagram of a fire alarm system in accordance with this invention.

[0018] Referring to the drawing, there is shown a fire alarm system comprising a control panel 13, which is connected to an alarm circuit consisting of two zones 17, 18.

[0019] Each zone comprises a plurality of combined detector and sounder devices 10 connected in parallel across a pair of wires 11, 12 extending from the control panel 13. A plurality of manual call points 14 are also connected in parallel across the wires 11, 12.

[0020] Each detector/sounder device 10 comprises a heat sensor and a smoke sensor, say of the optical-scatter type.

[0021] The system may be installed in a house, which is divided into a plurality of self-contained flats, with the control panel 13 being located in the entrance hall and one or more detector/sounder devices 10 located in each flat.

[0022] In the past, whenever smoke is detected by one of the devices 10, the control panel is triggered to energise the sounder in each device 10, so as to provide an audible indication that there is a fire.

[0023] A disadvantage of this arrangement, is that smoke is often created whilst cooking, say when toast is burnt and this smoke can trigger an alarm condition, which causes annoyance to the occupant of each flat, especially if it is a common occurrence.

[0024] The alarm system in accordance with this invention alleviates this problem, as will be explained.

[0025] When a detector/sounder device 10 detects smoke, it changes from its Standby Mode to an Alarm Mode, wherein it latches into a condition in which an alarm signal is applied to the wires 11, 12. The sounder in the device 10 is also activated to produce an audible alarm signal.

[0026] The control panel 13 detects the alarm signal and after a period of 5-10 seconds, the control panel sends signal along the wires 11, 12 to rest the activated detector/sounder device 10 back into its Standby Mode.

[0027] If the detector/sounder device 10 was trig-

gered by smoke from cooking, the smoke will disperse quickly and the detector/sounder device 10 will not be reactivated.

[0028] If smoke is still present, the detector/sounder device 10 will be reactivated immediately. The control panel 13 is programmed to send a signal to energise each of the sounders in the devices 10 only when any particular detector/sounder device 10 has been activated at least twice within a predetermined time period, although the control panel 13 preferably resets the activated detector/sounder device 10 several times before energising the sounders, in order to make allow time for smoke from cooking to disperse.

[0029] In this manner, the sounders are only energised to produce an audible warning signal when a detector is activated on say three successive occasions over a 30 second period, thereby indicating that smoke is persisting in the room and that a real fire must have broken out.

[0030] Smoke from cooking diffuses quickly and is unlikely to persist around the detector for 30 seconds. Thus, the detector will not be re-activated on the second or third occasion that it is reset and thus the sounders are not activated.

[0031] The number of times which the detector/sounder devices 10 are reset is preferably adjustable and time between activation and resetting is preferably also adjustable.

Claims

1. A fire alarm system comprising a control panel and a plurality of remote smoke detectors connected to the control panel, each detector being arranged to change from a standby condition to an alarm condition when activated by smoke, said control panel being arranged to trigger an alarm signal only when the same detector has changed from its standby condition to said alarm condition at least twice within a predetermined time period.

2. A fire alarm system as claimed in claim 1, in which the control panel is arranged to reset an activated detector to said standby condition at least once.

3. A fire alarm system as claimed in claim 2, in which the control panel is arranged to reset an activated detector, a predetermined time period after it has been activated.

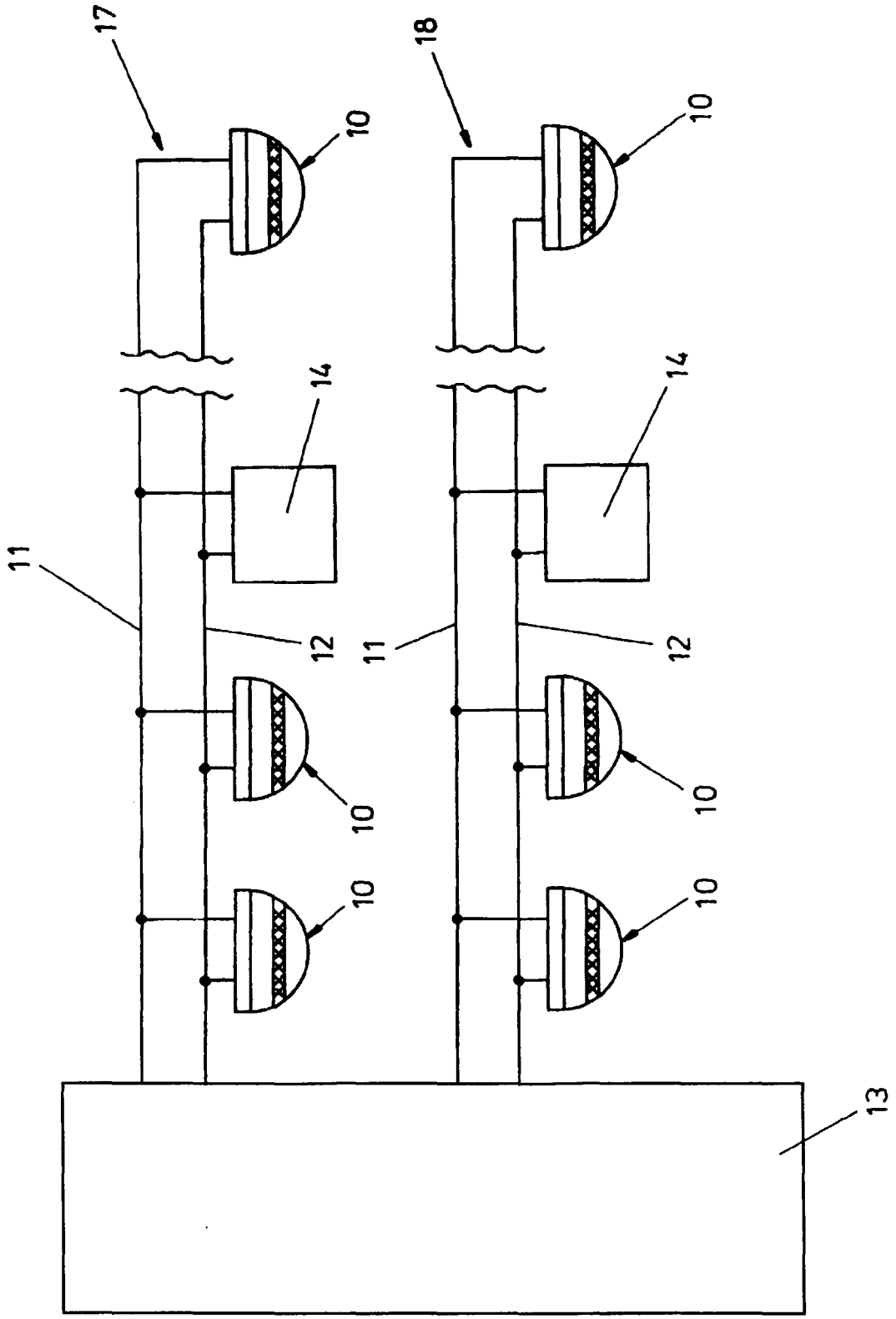
4. A fire alarm system as claimed in claim 3, in which the time period is adjustable.

5. A fire alarm system as claimed in any preceding claim, in which the number of successive times that each detector has to be activated before the alarm signal is triggered is adjustable.

6. A fire alarm system as claimed in any preceding claim, in which at least some of the detectors have sounders associated therewith, a sounder being energised to produce an audible output whenever its associated detector is activated.

7. A fire alarm system as claimed in claim 6, in which the control panel is arranged to silence the sounder in the event that its associated detector is not activated again within said predetermined time period.

8. A fire alarm system as claimed in any preceding claim, in which the control panel is arranged to trigger an alarm signal, when two different detectors are activated by smoke.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