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DESCRIPTION DE2535728A1

[0001]

Frank Moik, 3551 Niederweimar, Huteweg 3, and Helmut Steffes, 3551 Niederweimar, Sonnenstraße 13 Alarm device Description The present invention relates to an alarm device for room protection purposes with at least one ultrasonic motion detector in a device that is designed for installation in a room to be monitored with connection to a mains voltage source.

[0002]

A low-voltage powered alarm system for room protection purposes is described in DT-GM 71 31 626.

[0003]

Behind the front panel of a housing containing a power supply, two ultrasonic transducers are arranged at a distance from each other: an ultrasonic transmitter with oscillator and an electrically connected ultrasonic receiver with evaluator.

The latter is connected to a signal transmitter mounted on the housing's cover plate, which...

For example, a loudspeaker, a signal lamp, a bell, a tape recorder, a television or... This can be a film camera or similar device, and is triggered by a body moving in the monitoring room when the receiver detects a frequency shift compared to the ultrasound frequency constantly emitted by the ultrasound transmitter. Such a device initially only allows for a warning within the monitored room itself, where it is rarely needed. If warning signals are to be generated outside the monitoring room, special connections to permanently installed equipment are required, namely plug connections for the cable connection of telephone dialers, remote control switches, additional sirens, etc. Each such connection represents a potential source of interference and increases the required effort.

[0004]

The same applies to an alarm device specified in DT-GM 74 34 581 for theft protection of enclosed spaces, wherein a motion detector, a warning tone generator and the supply parts for mains and emergency operation are housed in a common housing which is sound-permeable in an area exposed to the warning tone generator.

The installation of separate connecting lines is also essential here if a warning is to be sent to a room other than the one being monitored.

[0005]

In contrast, the object of the invention is to create an improved alarm device that, with simple construction, economical manufacturing and convenient installation, ensures reliable monitoring of premises even outside the range of the ultrasonic motion detectors, without the need for additional installations or laying of further cables.

[0006]

In an alarm device of the type mentioned above, the invention provides that the device has a signal transmitter located in the monitored room, controlled by the ultrasonic motion detector(s), and is coupled via existing lines to at least one receiver located outside this room, which is in operative communication with an alarm transmitter.

[0007]

According to the invention, the device containing the ultrasonic motion detectors is thus combined with the building installation system, which is already equipped with suitable connecting lines.

The transmitter in the device receives signals from the ultrasonic motion detector(s) and, if necessary after conversion, transmits them to one or more receivers outside the monitored room.

[0008]

This system eliminates all installation work.

[0009]

Furthermore, a "silent" alarm is possible, which is initially only perceived by the person located at the receiving intercom station and who can then initiate further measures, e.g.

B. calling for help, forwarding the alarm to third parties, activating additional alarm devices, etc.

[0010]

A preferred embodiment of the invention provides that the signal transmitter and receiver are connected to mains voltage lines and coupled to each other via these, preferably by means of a carrier frequency outside the low frequency range.

For this purpose, the installed power supply lines that are present in every building that has a room to be monitored or a number of such rooms can be used.

Furthermore, conventional connection devices can be used, which are common in public buildings, offices, apartments, etc., and therefore would not be noticed by an unauthorized person.

[0011]

At least the signal transmitter can be disguised as an inconspicuous object, for example, by the device containing it being...

B. has book form or is designed like a secondary loudspeaker.

Transmission and coupling using a carrier frequency is simple and reliable, especially when a permissible average frequency of z .

B. 200 kHz is used, as is common for intercom systems. The invention thus provides a property-based system that, provided the radio interference level N is maintained, can be used within the property boundaries free of restrictions, fees and permits.

[0012]

The invention further provides that signal transmitters and receivers are optionally or additionally connected or connectable with a quiescent current loop, so that a further security option is readily available, particularly in premises already equipped for this purpose such as banks, savings banks, offices, department stores, warehouses, etc.

[0013]

According to a feature of the invention, the signal transmitter has a tone circuit controlled by the ultrasonic motion detector located in the monitoring room, which can be tuned or matched to a tone circuit of the receiver(s) which controls an output relay.

Regardless of the other function of the installed equipment, the carrier frequency can therefore be modulated by the ultrasound signal arriving from the monitored room.

[0014]

This modulated carrier frequency is present everywhere in the building's installation system containing the monitoring room because of the transmitter's range, which can be 100 m or more.

Therefore, a receiver connected at any point in the building can be used to receive, demodulate and broadcast the warning signal as soon as the output relay is triggered.

The tuning of the tone circuits of the signal transmitter and receiver(s) ensures that unwanted influences are kept out.

[0015]

It is advisable to have a selection device for the tone circuit tuning frequency at least on the receiver side, so that the transmitter frequency can be located precisely.

This also makes it possible to set up a signal transmitter in each of the various monitored rooms, provided that each of these signal transmitters, operating with a uniform, post-approved carrier frequency, has a different audio frequency or modulation frequency in the AF range and these frequencies are e.g. B. can be set using a selector switch on the respective receivers. This allows receivers of a uniform type to be used as needed at the various locations in the building that need to be monitored.

[0016]

Monitoring security is increased if, according to another feature of the invention, a relay is arranged at the input of the tone circuit of the signal transmitter and/or at the output of the tone circuit of the receiver.

An alarm can therefore only be triggered if the relevant relay has been activated, which can be delayed by delay circuits or held as a permanent state by holding circuits, but can also be forgotten (only for the monitored area) after being stored in a counter, shift register or the like, in order to establish readiness for a further alarm in the monitoring zone, while the first alarm remains in effect outside of this zone.

[0017]

An advantageous embodiment of the invention provides that the signal transmitter has a clock generator by means of which the operational readiness of the signal transmitter can be indicated at the receiver.

Without any such indication being detectable on the latter, the receiver in question performs the operational control for the signal transmitter.

[0018]

Therefore, on the receiver side, any network failure or any operational malfunction of the signal transmitter can be detected visually and/or audibly by a fault indicator controlled by the clock generator, which is clearly different from the alarm signals.

For example, it may be provided that a clock frequency different from the ultrasound and carrier frequencies can be generated by means of the clock generator, which also travels via the installed lines and reaches the relevant receiver(s) throughout the building. At least on each receiver, an indicator device, for example in the form of a light-emitting diode, an acoustic signal generator or the like, can be provided to warn of any failure of the external power supply.

[0019]

A preferred embodiment of the invention consists in the signal transmitter being set up for continuous operation, for example by means of a quiescent current relay.

Therefore, the signal transmitter is constantly in operation, so that room security is possible around the clock.

[0020]

For the monitoring system, it is advantageous if the alarm device, in addition to the signal transmitter, comprises a master receiver and a number of daughter receivers, wherein, for example, the master receiver may have external outputs for the optional connection of various devices, while each of the daughter receivers is of a simpler design and, for example,

B. is equipped with a specific signaling device such as a rotating beacon, horn, etc. The receiver(s) may be equipped with an operating switch, preferably formed by a manually operated device, in particular an electromechanical or electronic contactor, an electromagnetic locking device or the like.

[0021]

Department stores, as well as public buildings and other complexes requiring security, can be freely used during normal working hours with such a device, while after closing time the corresponding contacts, locks, etc. are operated in the conventional manner, simultaneously with the operating switch that activates the alarm receiver(s).

[0022]

The master receiver can contain a converter by means of which, upon receipt of an alarm signal from the transmitter, a new, changed frequency can be transmitted to the daughter receiver(s), in particular with an adjustable delay.

B. via an RC circuit, so that a separate tone circuit and/or a separate oscillator can be used to switch an (additional) alarm device.

[0023]

A simple structure of a device according to the invention is given by an alarm control section of the receiver, wherein a power amplifier with a control stage is provided that feeds a control device for the operational readiness of signal transmitter and/or receiver.

[0024]

Only a few components are needed, which can be...

B. can be placed on a printed circuit board with small dimensions, so that signal transmitters and receivers can be built very economically.

[0025]

A further embodiment of the invention is advantageous in terms of its construction, in which the signal transmitter is housed together with the ultrasonic motion detectors in a partially

sound-permeable housing, wherein minimum distances are expediently provided between the ultrasonic motion detectors themselves and to the receivers, which prevent acoustic feedback even in unfavorable room conditions.

[0026]

A particular embodiment of the invention consists in the fact that the functional connection between the ultrasonic motion detectors and/or the quiescent current loop on the one hand and the signal transmitter and/or at least one receiver on the other hand is formed electrically, e.g.

B. via a switching relay; however, this functional connection can also be formed additionally or only by sound transmission, provided that interference-free transmission is ensured.

[0027]

An important embodiment of the invention, for which independent protection is claimed, provides that the signal transmitter and each receiver are integrated into an intercom device.

This not only means a significant simplification of the design, but can also promote the camouflage of the ultrasound detector.

Commercially available AC/DC equipment can be used; the devices containing the signal transmitter and the receiver(s) can also be equipped to transmit and receive ultrasound signals, which can be converted into high-frequency electrical signals and transmitted via the existing lines to the receiver(s) and converted into audible sound in the receiver by means of a converter.

[0028]

For this purpose, each receiver can have a demodulator connected upstream or downstream of the converter.

[0029]

For the audibility of both special signals and ordinary speech, it is advantageous if each receiver has a squelch.

[0030]

In the device according to the invention, the individual devices can be equipped with push buttons, indicator lights, small speakers, etc., which allow any conventional use, but may also offer additional possibilities or features.

They can create connections.

[0031]

According to a preferred embodiment of the invention, the alarm device units can be connected to the mains without connecting cables by providing the transmitter and/or each receiver with a plug part which is either rigidly connected to the device housing (e.g.

B. molded in one piece) or detachably and in particular pivotably attached to it.

This makes it convenient to plug each unit designed in this way directly into an existing electrical outlet.

Depending on the installation height of the relevant socket, the radiation surface of the transmitter housing in the swiveling embodiment, which advantageously has brackets or other supports articulated by means of a swivel bearing, can be adjusted at a suitable angle to the room wall, so that the ultrasonic motion detectors cover the entire room to be monitored in a wide directional beam.

In the case of rigid or

[0032]

In a one-piece design, the front wall of the housing is preferably inclined at a shallow angle to the rear wall, which is advantageous for high-level mounting, but also - if the device is rotated 90° in its plane - e.g.

B. in corners, niches, etc. can be advantageous.

[0033]

Further features, details and advantages (dortirfindur) will become apparent from the following description of exemplary embodiments based on the drawing.

The figures shown are: Fig. 1a a side view of a device according to the invention with a built-in actual transmitter in front of a socket shown in section, Fig. 1b a side view of a modified embodiment similar to Fig. 1a, Fig. 2 an oblique view of a receiver, Fig. 3 a schematic of an alarm device according to the invention, Fig. 4a a block diagram of the signal controller and Fig. 4b respectively.

[0034]

and 5 of the receiver of an alarm device according to the invention, Fig. 6A)

each a simplified circuit diagram of a device and 6B) according to Fig. 4 or 6B.

5, Fig. 7 shows a circuit diagram of the power supply section of a device according to the invention, Fig. 8 shows a diagram of another embodiment of an alarm device according to the invention, Fig. 9 shows a diagram of a further modification of an alarm device according to the invention, Fig. 10 shows a block diagram of a signal transmitter according to the invention, Fig. 11 shows an oblique view of another embodiment of a device with a built-in signal transmitter, and Fig. 12 shows an oblique view of another embodiment of a receiver.

[0035]

The devices 10 shown in Fig. 1a and 1b have a housing 11, a plug part 28 or 28' for direct plugging into a socket St and sound-permeable openings 13,13' (Fig. 4), behind which ultrasonic motion detectors 14,14' are arranged.

In Fig. 1a, the plug part 28 is rigidly connected or integrally connected to the housing 11, and the preferably slight inclination of the front wall 11a is chosen such that, with the socket St located at approximately head height, the directional beam of the motion detectors 14,14' sweeps over the entire room R (Fig. 3) to be monitored. The same can be achieved in the embodiment of Fig. 1b. This can also be achieved with low-lying sockets by adjusting the housing 11 (which has parallel front and rear walls) which is pivotably and lockably connected to the plug part 28' on the bearing L to the most favorable angle towards the room.

[0036]

The device can have a number of receivers, 30 e.g.

B.

[0037]

of the type shown in Fig. 2, whose housing 31 has a mains connection 32.

An acoustic signaling device can be arranged behind sound-permeable openings 33.

[0038]

As explained below, an operating indicator lamp 34 shows the operational readiness of the signal transmitter in the device 10, which may also be connected with an operational check of the receiver 30 itself.

Additional lights or LEDs can indicate other functions, such as visual alarm signals, the existence of connections, or the remote operation of electrical devices.

[0039]

A key assembly 55 is used to establish various connections.

[0040]

The scheme of Fig. 3 shows the general arrangement of an alarm device according to the invention.

The device 10 is arranged in a space R indicated by dotted lines and is connected via network connections 12 to existing installation lines 29, with which outside the space R, but in the same line system, a master receiver 59 and daughter receivers 60,61 are connected via network connections 32.

[0041]

While the device 10 with the signal transmitter is located directly in the room R to be monitored, the receivers 59 to 61 can be placed anywhere, provided they are connected to the same circuit of the installed power supply network.

The number and arrangement of recipients are generally not subject to any restrictions.

[0042]

It can be seen from Fig. 4 that the device 10 has in its housing 11 a feedthrough for the mains connections 12 and openings 13,13', behind which the ultrasonic motion detectors 14,14' are located with a large base distance between them, which are connected to a switching relay 17 that controls a tone circuit 18.

This can be equipped with 22 external inputs.

It is connected to an oscillator 19, which has a clock generator 20. The oscillator 19 is connected to a transformer 21, which can be coupled to a power supply 15 and, if necessary,

to an emergency power supply 16, and also serves as the output transformer of the device 10. The network connections 12 connect the transformer 21 to the nearest power outlet.

[0043]

Receivers 30 (Fig.) have a similar design.

5).

[0044]

They have a housing 31 with mains connections 32 and sound-permeable openings 33.

A power supply 35 and an emergency power supply 36 are connected to an input transformer 37, which is connected to the mains connections 32. Furthermore, the input transformer 37 is connected to a demodulator 38, a squelch 39 and a low-frequency amplifier 40. The low-frequency amplifier 40 supplies power to an alarm control unit, which may be connected to an additional alarm transmitter 50 if necessary.

[0045]

A preferred embodiment of an alarm device according to the invention is shown in the figures.

6A and 6B.

[0046]

The device 10 containing the signal transmitter has an operating switch 24, the contacts of which are closed in the rest state.

The mains connections 12 are connected to a power supply unit (not shown here) and to an emergency power supply, which provides a DC voltage of $z.$ at the terminal marked $+$. B. supply 9 V or 12...20 V. The input transformer 21 has a variable inductance and is coupled via a corresponding actuator to a variable inductance 23 of the oscillator 19, which may, for example, have a clock generator 20 shown with a dashed line in the base circuit of its transistor. A transistorized tone circuit 18 is connected to the emitter of the oscillator transistor; this circuit has a coil with a tap which is connected to the switching contacts of the relay 17. This is directly influenced by the motion detectors 14.14l.

[0047]

On the receiver side, the connections 32 lead to the input transformer 37, to which the demodulator 38 is connected.

This is connected to the squelch 39, which has a voltage divider actuator. A power amplifier 42 is capacitively coupled to the subsequent low-frequency amplifier 40 as the first stage of the alarm control section 41, at whose output a selection device 43 is connected, e.g., for tuning the tone cross frequency to that of the signal transmitter. B, an RC gliea or a group of tuned RC elements, and on the other hand a control stage 47, in whose output lines the operating control 34 is located in the form of a light-emitting diode or the like.

[0048]

As schematically indicated, the power supply is provided via terminals marked with $+$.

Behind the selection device 43 is the tone circuit 44, the output of which contains a control relay 45, which is equipped with contact sets 46. An operating switch 49 is normally in the open position and requires actuation to put the receiver 30 into operation. A holding element may be provided to keep the operating switch 49 in the closed position.

[0049]

An embodiment of the power supply components of an alarm device according to the invention is shown in Fig. 7.

The power supply 35 contains the mains connections 32 with the operating switch 49 and the input transformer 37.

[0050]

A bridge rectifier 65 is connected to this, which supplies the required DC voltage to the terminals marked + and - via a filter element.

[0051]

In addition to the other equipment, a quiescent current relay 66 is connected to the DC voltage terminals, which has changeover contacts 67 belonging to the emergency power supply 36, which only close when the relay 66 drops out as a result of a mains voltage failure or a malfunction in the power supply 35.

The emergency power supply 36 has a battery 64 which, when contacts 67 are closed,

supplies a voltage to the emergency power supply terminals 68, which is then also available for the operation of the devices 39 to 47 and, if necessary, the alarm device 50.

[0052]

The latter can be switched off manually to prevent an unintentional alarm from being triggered when receiver 30 is disconnected from the network.

[0053]

It should be mentioned that stabilization of the power supplies 15,35 is not required because the circuit arrangement of an alarm device according to the invention functions without any problems even with mains voltage fluctuations.

[0054]

Another embodiment of an alarm device according to the invention can be seen in Fig. 8.

The mains voltage lines 29 can be connected, on the one hand, to the control unit 10 with the ultrasonic motion detectors 14,141 and the signal transmitter marked here with S, which can have external inputs 22, via the connections 12, and on the other hand, to a number of receivers.

[0055]

In the illustrated example, a master receiver 59 with external outputs 48 is connected via the connections 32, which has a main station I.

Also connected to the network lines 29 are the daughter receivers 61, 62, 63, forming substations II, III, IV and possessing signaling equipment, e.g.

B. an optical signaling device 51, which can be attached as a rotating beacon to the building or part of the building to be secured, an acoustic signaling device, for example in the form of a horn or a siren, or any other alarm device 50. It should be emphasized that, due to the tunability to different tone circuit frequencies, it is possible to provide further monitoring rooms on the same circuit 29, in each of which a control unit 10 with a different signal frequency can be installed.

Instead or additionally, it is also possible to design the clock generators 20 3 of each individual signal transmitter differently or to make them switchable, so that the clock signals emanating from them can also be significantly different.

[0056]

While conventionally the connection of all-round lights, horns, etc. was only possible via permanently installed central units where all lines from all monitored rooms converge, according to the invention any receiver is sufficient for the same purpose, which is basically freely movable and therefore can be connected at any point in the installation system.

In particular, a very advantageous form of monitoring can be implemented with the parent receiver 59 by placing it in an important location, e.g.

B. at the campsite manager, and with this one receiving device monitors the functioning of a number of transmitters tuned to different sound frequencies (10). Without any additional installations, every single fault is displayed immediately, including every shutdown of every transmitter on the network.

[0057]

However, disabling this one receiver would not render the alarm system fundamentally unusable, because any number of additional receivers can be installed at any time at other points in the wiring system.

[0058]

can be.

[0059]

Also of importance is the possibility provided by the invention of triggering an alarm by background noise from the environment, e.g.

B. to prevent noise from household motors, telephones, construction bells, etc. by means of an automatic threshold control.

Furthermore, a switching device may be provided by means of which the alarm can be switched off at a predetermined time interval after the end of the fault, namely the alarm-triggering movement.

[0060]

Another embodiment of the invention is shown in Fig. 9.

In addition to the openings 13,13', the control unit 10 has another sound-permeable opening 13'', which allows the ultrasound emitted by the motion detectors 14,14' to strike the opening 33 and an ultrasound microphone 58 located behind it of a correspondingly positioned receiver 30.

The microphone feeds into a converter 53, which transmits corresponding high-frequency signals to a demodulator 54, in which a low-frequency modulation voltage can be taken and supplied to the circuit parts 39...41, which directly control an alarm transmitter 50 - arranged outside the receiver 30 in the illustrated embodiment.

[0061]

While the ultrasonic motion detectors 14, 14' are generally connected electrically to the corresponding circuit components of the device 10, according to the embodiment of Fig. 10 a shield connection is also possible, which is based on a z.

B. with ultrasonic microphone 58 and a converter 59 loudspeaker 56 or acts on a broadband acoustic transducer, to the tone circuit 18, oscillator 19 and clock generator 20 as well as output transformer 21. The presence of the power supply is schematically indicated by the membrane 15,16.

[0062]

An important feature of the invention is that each receiver receives 30 or

59...62 can be determined whether the associated signal transmitter of device 10 is in operation. This is served by the operational control 34, which is supplied via the clock generator 20 with a signal that is clearly different from any other signal, so that any operational fault at the signal transmitter becomes immediately audible and/or visible. In

combination with this or additionally, a light indicator may be present to check the receiver's operational readiness.

[0063]

An alarm device according to the invention can interact with any contact loop or with a number of contact loops, which can be supplied with either normally closed or normally open current, depending on the circumstances.

[0064]

For numerous purposes, a (not shown) quiescent current loop is preferred.

[0065]

The invention is not limited to the described embodiments.

Thus, an important further development consists in the fact that signal transmitter and receiver are combined with the devices of an intercom system.

[0066]

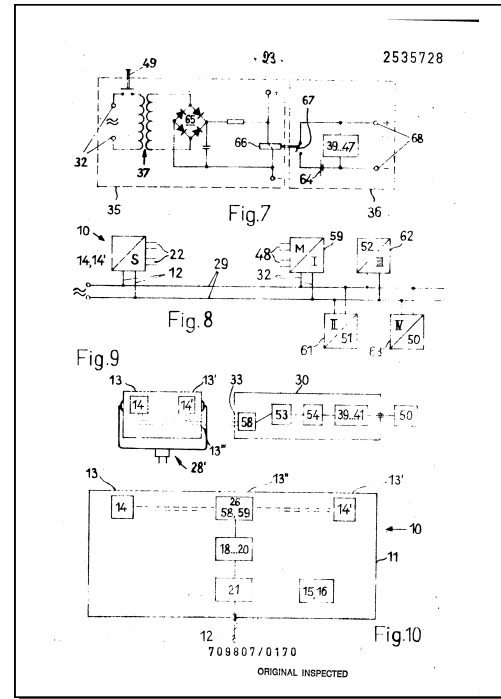
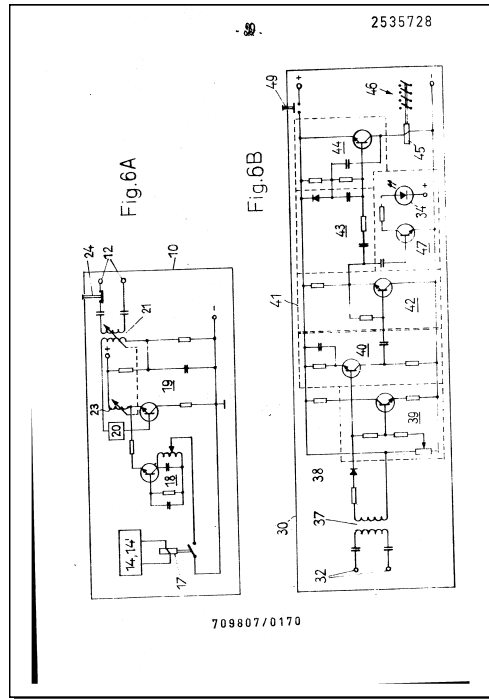
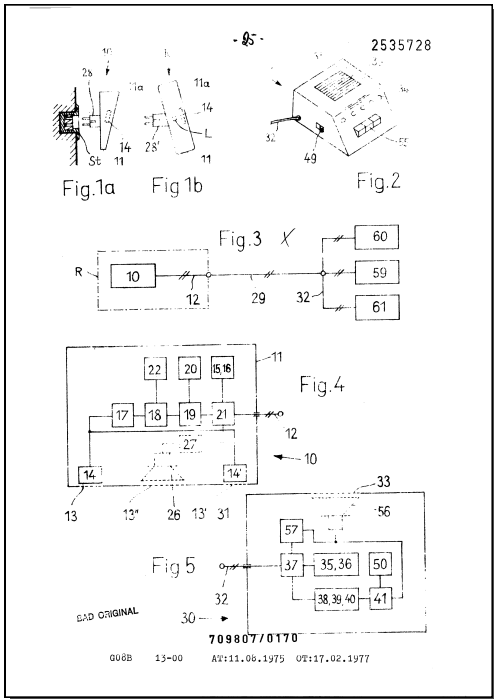
Suitable elements are shown in Figs. 4, 5, 11 and 12 with dashed or dotted lines.

Thus, the Gerbt 10, equipped with a sound-permeable opening 13", a microphone loudspeaker 26 and a downstream amplifier 27, can form a main speaking station, while speaking receivers 30 and 59 to 61 are provided as secondary stations, which have a small loudspeaker 56 behind their sound-permeable openings 33 and a speaking circuit 57, which, however, can also be replaced by the circuit parts 38, 39, 40 (Fig. 5 and 6B).

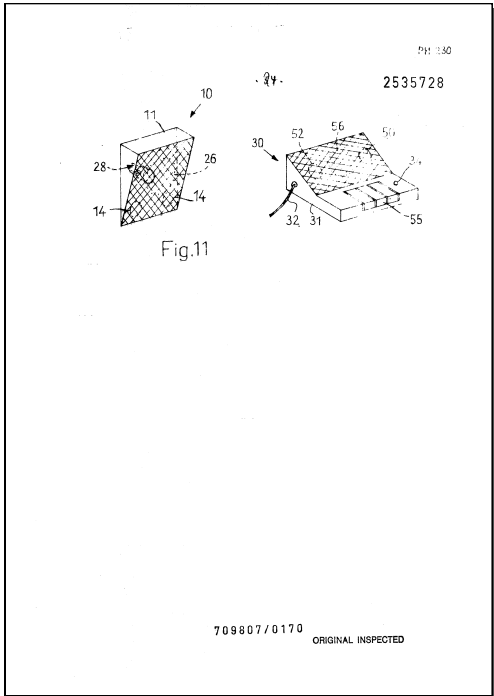
[0067]

Numerous other modifications using known aids and simplifications fall within the scope of the invention.

All features and advantages of the invention arising from the claims, the description and the drawing, including constructive details, spatial arrangements and processing steps, can be essential to the invention both individually and in various combinations.



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CLAIMS DE2535728A1

1.

Frank Moik, 3551 Niederweimar, Huteweg 3, and

2.

Helmut Steffes, 3551 Niederweimar, Sonnenstraße 13 Alarm device Patent claims 1. Alarm device for room protection purposes with at least one ultrasonic motion detector in a device which is designed for installation in a room to be monitored with connection to a mains voltage source, characterized in that the device has a signal transmitter (10) located in the monitored room, controlled by the ultrasonic motion detector (14,14') and is coupled via

existing lines (29) to at least one receiver (30) located outside this room, which is in operative communication with an alarm transmitter (50).

3.

2. Device according to claim 1, characterized in that signal transmitter (10) and receiver (30) are connected to mains voltage lines (29) and coupled to each other via these, preferably by means of a carrier frequency outside the low frequency range.

4.

3. Device according to claim 1 or 2, characterized in that signal transmitter (10) and receiver (30) are optionally or additionally connected or connectable with a quiescent current loop.

5.

4. Device according to one of claims 1 to 3, characterized in that the signal transmitter (10) has a tone circuit (18) controlled by the ultrasonic motion detector (14,14') located in the monitoring room, which can be tuned or is tuned to a tone circuit (44) of the receiver(s) which controls an output relay (45).

6.

5. Device according to claim 4, characterized in that a selection device (43) for the tuning frequency (18,44) is provided.

7.

6. Device according to claim 4 or 5, characterized in that a relay (17 or 45) is arranged at the input of the tone circuit (18) of the signal transmitter (10) and/or at the output of the tone circuit (44) of the receiver (30 etc.).

8.

7. Device according to at least one of claims 4 to 6, characterized in that the signal transmitter (10) has a clock generator (20) by means of which the operational readiness of the signal transmitter (10) can be indicated at the receiver (30).

9.

8. Device according to claims 2 and 7, characterized in that a clock frequency different from the ultrasound frequency and the carrier frequency can be generated by means of the clock generator (20).

10.

9. Device according to at least one of claims 1 to 8, characterized in that at least on the or each receiver (30 etc.) a display device (34) for example in the form of a light-emitting diode, an acoustic signal generator or the like is provided for each failure of the external power supply.

11.

10. Device according to at least one of claims 1 to 9, which additionally has its own power supply, characterized in that the signal transmitter (10) is set up for continuous operation.

12.

11. Device according to at least one of claims 1 to 10, characterized in that it comprises, in addition to the signal transmitter (10), a master receiver (59) and a number of daughter receivers (60, 61, 62).

13.

12. Device according to at least one of claims 1 to 11, characterized in that for the respective

14.

The receivers (30 etc.) have an operating switch (49).

15.

13. Device according to claim 12, characterized in that the operating switch (49) is formed by a manually operated device, in particular by an electromechanical or electronic contactor, an electromagnetic locking device or the like.

16.

14. Device according to at least one of claims 1 to 13, characterized in that the receiver(s) (30 etc.) have an alarm control unit (41) which has a power amplifier (42) with a control stage (47) which supplies a control device (34) for the operational readiness of signal transmitter (10) and/or receiver (30 etc.).

17.

15. Device according to at least one of claims 11 to 14, characterized in that the master receiver (59) contains a converter by means of which, upon receipt of an alarm signal from the transmitter, a new, modified tone frequency can be transmitted to the daughter receiver (s) (60, 61), preferably with adjustable delay.

18.

16. Device according to at least one of claims 1 to 15, characterized in that the signal

transmitter (10) together with the ultrasonic motion detectors (14,14') is housed in a partially sound-permeable housing (11).

19.

17. Device according to at least one of claims 1 to 16, characterized in that between the ultrasonic motion detectors (14, 14') each other and to the receivers (30 etc.)) Minimum distances are in place.

20.

18. Device according to at least one of claims 1 to 17, characterized in that the operative connection between the ultrasonic motion detectors (14, 14') and/or the quiescent current loop on the one hand and the signal transmitter (10) and/or at least one receiver (30 etc.) on the other hand is formed electrically, e.g. B.

21.

via a switching relay (17).

22.

19. Device according to at least one of claims 1 to 18, characterized in that the functional connection between the ultrasonic motion detectors (14, 14') and/or the quiescent current

loop on the one hand and the signal transmitter (10) and/or at least one receiver (30 etc.) on the other hand is additionally or only formed by sound transmission.

23.

20. Device according to at least one of claims 1 to 19, characterized in that the signal transmitter (10) and the respective Each receiver (30 etc.) is integrated into a two-way intercom system.

24.

21. Device at least according to claim 20, characterized in that the receiver (30 etc.) has a squelch (39).

25.

22. Device at least according to claim 20 or 21, characterized in that the intercom containing the signal transmitter (10) is configured to transmit and receive high-frequency electrical signals or ultrasonic signals which can be converted into high-frequency electrical signals, and that the latter can be transmitted on the intercom lines (29) to the receiver or each receiver (30 etc.) and converted into audible sound in the receiver by means of a converter (53).

26.

23. Device according to claim 22, characterized in that the receiver (30 etc.) has a demodulator (54) upstream or downstream of the converter (53).

27.

24. Device according to at least one of claims 1 to 23, characterized in that the individual devices (30 etc.; 10) are equipped with push-button switches (25, 55) and small loudspeakers (26, 56) and optionally with a microphone.

28.

25. Device according to at least one of claims 1 to 24, characterized in that the device (10) and/or the or each receiver (30 etc.) is integrally formed with a connector part (28).

29.

26. Device according to at least one of claims 1 to 24, characterized in that the device (10) and/or the or each receiver (30 etc.) is detachably and in particular pivotably connected to a plug part (28').