PATENT SPECIFICATION

628,574

Application Date: Sept. 3, 1946. *No. 26447/46.*

Complete Specification Left: Oct. 3, 1947.

Complete Specification Accepted: Aug. 31, 1949.

Index at acceptance:—Class 40(iv), K1k.

PROVISIONAL SPECIFICATION

Improvements in automatic burglar and fire alarms

I, EDRED RABJOHN MOUNTSTEPHEN, a British subject, of 78, Hampstead Road, London, N.W.1, do hereby declare the nature of this invention to be as follows:

This invention relates to automatic burglar and fire alarms of the kind comprising a gramophone or like sound reproducing device adapted to be operatively connected with a telephone and associated with means automatically to establish communication with a police, fire, or other station and to transmit a suitable message to said station upon the occurence of a buglary or fire.

In prior specification No. 484308 is described an alarm of this character in which the unauthorised opening of a door, window, safe or the like, or the operation of a thermostat due to an abnormal rise in temperature, operates an electro-magnet which releases trip mechanism whereby means are set into operation to establish a connection between the alarm device and the telephone system and to start the gramophone motor. The gramophone motor, upon being started, operates mechanism which successively dial an emergency signal to establish communication with the appropriate station, lowers the sound box on to a sound reproducing record to produce the message or alarm to be transmitted, returns the sound box to the commencement of the record to repeat the message and finally disconnects the device from the telephone system.

In the prior arrangement the dial operating mechanism comprises a rotating cam member, driven continuously by the gramophone motor, and lever mechanism actuated by said cam to lift the dial in a vertical plane to bring a pin or pins mounted on the rotary face thereof into the path of a continuously rotating arm, which then engages the pin or pins and thereby rotates the dial to effect the dialling operation. In this prior arrangement means are also provided for disconnecting the dial lifting lever immediately after the dialling operation is completed in order to ensure that the dialling of the emergency signal is not repeated when the continuously rotating operating cam returns again to its operative position. It has now been found, however, that in certain circumstances, it may be desirable to provide for repetition of the dialling operation and the object of the present invention is to provide means whereby the alarm device can be set for repeating the dialling operation or not, as circumstances demand, after the first or each transmission of the alarm message has been completed.

It will be understood that when it is necessary or desirable to arrange for the dialling operation to be repeated, it is important to ensure that such repetition is effected between successive transmissions of the alarm message without interruption of the message and in accordance with the invention this is effected by so arranging the cam member and giving to the gearing by which it is driven such a ratio that the period between each dialling operation—that is the period required for the cam to complete one revolution—is equal to or greater than that required for at least one complete transmission of the alarm message and that the period required for each dialling operation is equal to or less than the period between successive transmissions of the alarm message—in other words the arrangement is such that the transmission of the alarm message commences after the initial dialling operation and is completed before the operating cam returns to its operative position to cause the dialling operation to be repeated, and the complete dialling operation is effected during the period that the tone arm of the gramophone is lifted off the record at the end of the recording and returned to the commencement of the record to repeat the message as described in the aforesaid prior specification.

[*Price* 2/-]

In order to enable the device to be set either for repeating the dialling operation or for preventing such repetition, the alarm apparatus is provided, as in the aforesaid prior construction, with means for disconnecting the dial operating mechanism after the initial dialling operating but in accordance with the present invention such means are constructed and arranged so as to be capable of being set in the operative or inoperative position as desired.

In accordance with one particular embodiment of the present invention the dial lifting and lowering mechanism is of substantially the same construction as described in the specification of prior application No. 484308. Such mechanism comprises a rockable arm which is caused to rock about a pivot intermediate its ends by a pivoted lever actuated by the cam member and engaging one end of said arm, the opposite end engaging below a pivoted finger or catch mounted on the dial carrying lever to raise said dial as above described.

In accordance with the present invention means are provided for moving the pivoted finger or catch on the dial carrying lever out of engagement with the end of the rockable arm after completion of the dialling operation when it is desired to prevent repetition of the dialling operation. Such means comprise an axially slidable and rotatable horizontal rod having an arm projecting radially therefrom and a tooth mounted or formed on said rod, which tooth engages a suitably positioned abutment to hold said rod, against the action of a spring, in such a position that the arm projecting therefrom extends into the path of a pin or the like mounted on the continuously rotating spindle carrying the cam which operates the dialing mechanism. The pin or the like mounted on the cam spindle is so arranged in relation to said cam that immediately the cam has actuated the dialling mechanism, said pin or the like engages the radial arm on the horizontal rod whereby said rod is rotated and thereby the tooth thereon is moved out of engagement with its abutment, so that the horizontal rod is slidden axially, under the action of the spring, and engages with its free end the pivoted finger or catch mounted on the dial mechanism, said finger or catch thus being moved out of engagement with the end of the rockable arm thus disconnecting the dial operating mechanism so that the dialling operation will not be repeated however many times the alarm message is transmitted.

If it is desired to set the alarm device so that the dialling operation is repeated after each tranmission of the alarm message it is only necessary to turn the horizontal rod (manually) so that the radial arm projecting therefrom is moved out of the path of the pin mounted on the cam spindle, as in this way the disconnecting of the dialling mechanism as above described, will not be effected and the dialling operation will be carried out after each complete revolution of its operating cam.

Dated this 3rd day of September, 1946.

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COMPLETE SPECIFICATION

Improvements in automatic burglar and fire alarms

I, EDRED RABJOHN MOUNTSTEPHEN, a British subject, of 78, Hampstead Road, London, N.W.1, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to automatic burglar and fire alarms of the kind comprising a gramophone or like sound reproducing device adapted to be operatively connected with a telephone and associated with means automatically to establish communication with a police, fire, or other station and to transmit a suitable message to said station upon the occurrence of a burglary or fire.

In prior specificaion No. 484308 is described an alarm of this character in which the unauthorised opening of a door, window, safe or the like, or the operation of a thermostat due to an abnormal rise in temperature, operates an electro-magnet which releases trip mechanism whereby means are set into operation to establish a connection between the alarm device and the telephone system and to start the gramophone motor. The gramophone motor, upon being started, operates mechanism which successively dial an emergency signal to establish communication with the appropriate station, lowers the sound box on to a sound reproducing record to produce the message or alarm to be transmitted, returns the sound box to

the commencement of the record to repeat the message and finally disconnects the device from the telephone system.

In the prior arrangement the dial operating mechanism comprises a rotating cam member, driven continuously by the gramophone motor, and lever mechanism actuated by said cam to lift the dial in a vertical plane to bring a pin or pins mounted on the rotary face thereof into the path of a continuously rotating arm, which then engages the pin or pins and thereby rotates the dial to effect the dialling operation. In this prior arrangement means are also provided for disconnecting the dial lifting lever immediately after the dialling operation is completed in order to ensure that the dialling of the emergency signal is not repeated when the continuously rotating operating cam returns again to its operative position. It has been found, however, that in certain circumstances, it may be desirable to provide for repetition of the dialling operation, for example it has been found that with some telephone exchanges the time lag between the lifting of the receiver and the receiving of the "dialling tone" is sometimes such that the dialling operation is completed before the "dialling tone" is received, and the object of the present invention is to provide for such a contingency by providing means whereby the alarm device can be set for repeating the dialling operation or not, as circumstances demand, after the first or each transmission of the alarm message has been completed.

In order to enable the device to be set either for repeating the dialling operation or for preventing such repetition, the alarm apparatus is provided, as in the aforesaid prior construction, with means for disconnecting the dial operating mechanism after the initial dialling operation but in accordance with the present invention such means are constructed and arranged so as to be capable of being set in the operative or inoperative position as desired.

In order that the invention may be more clearly understood one particular embodiment thereof will now be described by way of example with reference to the accompanying drawings wherein:

Figure 1 is a plan view of the device; Figure 2 is a side elevation looking in the direction of the arrow II in Figure 1; Figure 3 is a section, on a somewhat enlarged scale, on the line III - III of Figure 2 with the parts shown in operative position, and Figure 4 is a similar view with the parts shown in inoperative position.

Referring to these drawings the alarm device shown is of the kind having a self-contained transmission unit, generally designated A, which is driven by the gramophone motor and which in turn drives the dialling mechanism, generally designated B, and sound box lifting and lowering mechanism, generally designated C, the alarm device being set into operation upon the unauthorised opening of a door, window or the like or by an abnormal rise in temperature by the mechanism generally designated D. The transmission mechanism A, the sound box lifting and lowering mechanism C and the mechanism D for setting the alarm into operation are of the same construction and operate in the same manner as in the aforesaid prior specification No. 484308.

The dialling mechanism, generally designated B, comprises an annular rack 5 rigidly mounted on a spindle 6 mounted in suitable bearings in a supporting bracket 7. On the lower end of the spindle 6 is mounted a radial arm 8. The annular rack 5 is arranged concentrically above a standard telephone dial 9 and is driven continuously by a pinion 10 mounted on a driven shaft 11 of the transmission unit A, so that the radial arm 8 is caused to rotate continuously around the face of the dial 9.

The dial 9 is mounted on one end of an arm or plate 12 which is pivoted at 13 to the base plate 14 of the machine in such a manner as to pivot in a vertical plane whereby said dial 9 can be raised to bring upstanding lugs 15 and 16 mounted thereon into the path of the continuously rotating arm 8.

The dial 9 is raised and lowered as desired by the action of a cam 17 which, during the rotation of the shaft 18 upon which it is mounted, actuates a lever 19 which is pivoted at 20 and which in turn operates a rockable lever 21 pivoted at 22 and projecting below a catch 23 pivotally mounted on a pin 24 secured to the vertically movable plate or arm 12. The catch 23 is normally held in position above the end of the rockable lever 21 by a tension spring 25. The pivoted lever 19 is provided with a vertical projection (not visible in the drawings) with which the cam 17 engages and said lever extends above the outer end of the rockable lever 21.

In operation the transmission unit A rotates the cam 17 and the radial arm 8, mounted above the dial 9, continuously as hereinbefore described. During its rotation the cam 17 engages the vertical projection on the lever 19 and

causes said lever to move about its pivot 20 and press downwards against the end of the rockable lever 21 which is thus caused to rock about its pivot 22 whereupon the opposite end of said rockable lever is moved upwards and, since it is positioned below the spring loaded catch 23, which is mounted on the plate 12 carrying the dial 9, lifts said dial and thus brings the lugs 15 and 16 into the path of the rotating radial arm 8 to dial the required emergency signal. In the particular construction illustrated, the apparatus is arranged to dial the number "71" which, for the sake of example, is assumed to represent the emergency dialling signal, thus the lug 15 is located on the dial opposite the number "7" and the lug 16 opposite the number "1." The lug 15 projects vertically upwards to a height somewhat above that of the lug 16 and the cam 17 is so shaped that it first operates to lift the dial 9 to the height at which the continuously rotating arm 8 will engage the lug 15, but not the lug 16, and hold the dial in that position until the number "7" has been dialled whereupon the cam first lowers the dial to move the lug 15 out of engagement with the rotating arm 8 to permit the dial to run back and then raises the dial until the lug 16 is at a height at which it will be engaged by the rotating arm 8, the dial being held in this position until the number "1" has been dialled.

The radial arm 8 is angularly rotatable about the spindle 6, but is normally held against rotation on said spindle by a helical spring 8*a*, the tension of which is sufficiently strong to prevent the arm 8 from turning on the spindle 6 under the pressure exerted on it during the rotation of the dial. In operation the dial 9 is raised, as described above, to bring the lug 15 into the path of the rotating arm 8 which thus engages said lug and thereby rotates the dial until a pin 15*a*, adjacent the lug 15, engages a stop 26 whereupon the pressure exerted on the arm 8 causes it to turn angularly about the spindle 6, against the action of the spring 8*a*, and thus slide past the lug 15 when the dial returns to its lowered position. After the number "7" has thus been dialled the dial 9 is lifted still further by the cam 17 to bring the lug 16 into the path of the rotating arm 8 whereupon the number "1"" is dialled as described above until a pin 16*a* engages the stop 26, with result described above.

According to the present invention means are provided which can be selectively set or adjusted at will, either to prevent the dialling operation being repeated when the cam 17 returns again to its normally operative position or to cause the dialling operation to be repeated between each transmission of the alarm message. Such means comprise a horizontal rod or shaft 27 axially slidable and rotatably adjustable in a U-bracket 28 and having a radially projecting arm 29 securely mounted thereon by means of a collar 30. Arranged on the rod or shaft 27 between the collar 30 and one leg of the U-bracket 28 is a helical spring 31 which tends to move the rod or shaft 27 axially in the direction of the arrow 32. The said rod or shaft 27 is normally held against such axial movement by a pin 33 mounted on said rod or shaft and abutting against a fixed abutment in the form of an axially slotted or recessed sleeve like member 34. This sleeve member is fixed to the U-bracket 28 and the rod 27 is axially slidable therein and said sleeve member is provided with axial slots or recesses of the different lengths in which the pin 33 can slide whereby the rod or shaft 27 can be positioned at will in various axial positions. Mounted on the outer end of the rod or shaft 27 is a radial cranked contact arm 35 which abuts against the spring loaded catch 23.

If, when the alarm device is in operation, it is desired to prevent repetition of the dialling operation the axially slidable rod 27 is positioned or adjusted as shown in Figure 3 with the radial arm 29 projecting inwardly in the path of a pin 36 mounted on a driving pinion 37 keyed to the shaft 18 which also carries the cam 17. The relative positions of the cam 17 and the pin 36 are such that the cam operates the dialling mechanism, as above described, before the pin 36 moves into contact with the radial arm 29. After the dialling operation has been completed the pin 36 engages the radial arm 29 and moves it into the position shown in dotted lines in Figure 3. This movement of the radial arm 29 causes rotation of the rotatable and axially slidable rod or shaft 27 on which it is mounted. As said rod or shaft is rotated the pin 33 is moved in front of one of the slots or recesses in the sleeve 34 and slides into said slot or recess whereby the rod or shaft 27 is slidden axially in the direction of the arrow 32 so that the cranked contact arm 35, mounted on the end of said rod 27, pivots the spring loaded catch 23 about its pivot 24 against the action of the spring 25 and out of contact with the end of the rockable lever 21 situated below it. The said lever 21 then moves under its own

weight into the position shown in broken lines in Figure 2. This movement of the lever 21 causes the lever 19 also to fall under its own weight so that the vertical projection thereon is moved out of the path of the continuously rotating cam 17, thus when said cam again returns to its normally operative position it will not operate the lever mechanissm 19, 21 and consequently no further dialling operation will take place.

If it is desired to ensure that the dialling operation shall be repeated periodically the arm 29 is moved outwards that is into the position shown in Figure 4, whereby the cranked contact arm 35 is moved out of contact with the spring loaded catch 23, which is thus always held above the end of the rockable lever 21 by the action of the spring 25, and the radial arm 29 is positioned outside the path of the pin 36 so that the dial operating lever mechanism 19, 21 will always remain in its operative position and will be actuated each time the cam 17 moves into its operative position. In this way the dialling operation will be periodically repeated.

It will be understood that when it is necessary or desirable to arrange for the dialling operation to be repeated, it is important to ensure that such repetition is effected between successive transmissions of the alarm message without interruption of the message and in accordance with the invention this is effected by so arranging the cam member and giving to the gearing by which it is driven such a ratio that the period between each dialling operation—that is the period required for the cam to complete one revolution—is equal to or greater than that required for at least one complete transmission of the alarm message and that the period required for each dialling operation is equal to or less than the period between successive transmissions of the alarm message—in other words the arrangement is such that the transmission of the alarm message commences after the initial dialling operation and is completed before the operating cam returns to its operative position to cause the dialling operation to be repeated, and the complete dialling operation is effected during the period that the tone arm of the gramophone is lifted off the record at the end of the recording and returned to the commencement of the record to repeat the message as described in the aforesaid prior specification.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. An automatic alarm device of the kind described having means for successively connecting the alarm device with the telephone system, dialling an emergency dialling signal to establish communication with an appropriate station and transmit an alarm message to said station, wherein means selectable at will are provided for causing repetition of the dialling operation at predetermined intervals or for preventing repetition of said dialling operation after the first dialling operation has been completed.

2. An automatic alarm device of the kind described having cam and lever mechanism for setting into operation a dialling mechanism for establishing communication with an appropriate station, means for transmitting an alarm message to said station and means for rendering the dialling mechanism inoperative after the initial dialling operation characterised in that the means for rendering the dialling mechanism inoperative is capable of being selectively set in its operative position to prevent repetition of the dialling operation, or in its inoperative position, to permit repeated operation of the dialling mechanism after the first or each transmission of the alarm message.

3. An automatic alarm device according to Claim 1 or 2, wherein the means for selectively preventing or ensuring repetition of the dialling operation comprises an axially slidable and rotatably adjustable rod or shaft and means for causing said rod or shaft, when in one adjustable position, to move axially to disconnect the dialling mechanism.

4. An automatic alarm device according to Claim 3, wherein the axially slidable and rotatably adjustable rod is provided with a radial arm which, in one adjusted position, projects into the paths of a pin mounted on a continuously rotating member, the arrangement being such that said pin engages said radial arm to cause rotation of said slidable and adjustable rod to a position in which it is slidden axially by a spring.

5. An automatic alarm device according to Claim 4, wherein the axially slidable and rotatably adjustable rod is normally held against axial movement by a pin which engages a fixed abutment but is moved out of engagement with said abutment when rotated in one direction.

6. An automatic alarm device according to Claims 3 to 5, wherein the axially slidable and rotatably adjustable rod is provided at one end with a contact

* C L M S *

weight into the position shown in broken lines in Figure 2. This movement of the lever 21 causes the lever 19 also to fall under its own weight so that the vertical projection thereon is moved out of the path of the continuously rotating cam 17, thus when said cam again returns to its normally operative position it will not operate the lever mechanissm 19, 21 and consequently no further dialling operation will take place.

If it is desired to ensure that the dialling operation shall be repeated periodically the arm 29 is moved outwards that is into the position shown in Figure 4, whereby the cranked contact arm 35 is moved out of contact with the spring loaded catch 23, which is thus always held above the end of the rockable lever 21 by the action of the spring 25, and the radial arm 29 is positioned outside the path of the pin 36 so that the dial operating lever mechanism 19, 21 will always remain in its operative position and will be actuated each time the cam 17 moves into its operative position. In this way the dialling operation will be periodically repeated.

It will be understood that when it is necessary or desirable to arrange for the dialling operation to be repeated, it is important to ensure that such repetition is effected between successive transmissions of the alarm message without interruption of the message and in accordance with the invention this is effected by so arranging the cam member and giving to the gearing by which it is driven such a ratio that the period between each dialling operation—that is the period required for the cam to complete one revolution—is equal to or greater than that required for at least one complete transmission of the alarm message and that the period required for each dialling operation is equal to or less than the period between successive transmissions of the alarm message—in other words the arrangement is such that the transmission of the alarm message commences after the initial dialling operation and is completed before the operating cam returns to its operative position to cause the dialling operation to be repeated, and the complete dialling operation is effected during the period that the tone arm of the gramophone is lifted off the record at the end of the recording and returned to the commencement of the record to repeat the message as described in the aforesaid prior specification.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. An automatic alarm device of the kind described having means for successively connecting the alarm device with the telephone system, dialling an emergency dialling signal to establish communication with an appropriate station and transmit an alarm message to said station, wherein means selectable at will are provided for causing repetition of the dialling operation at predetermined intervals or for preventing repetition of said dialling operation after the first dialling operation has been completed.

2. An automatic alarm device of the kind described having cam and lever mechanism for setting into operation a dialling mechanism for establishing communication with an appropriate station, means for transmitting an alarm message to said station and means for rendering the dialling mechanism inoperative after the initial dialling operation characterised in that the means for rendering the dialling mechanism inoperative is capable of being selectively set in its operative position to prevent repetition of the dialling operation, or in its inoperative position, to permit repeated operation of the dialling mechanism after the first or each transmission of the alarm message.

3. An automatic alarm device according to Claim 1 or 2, wherein the means for selectively preventing or ensuring repetition of the dialling operation comprises an axially slidable and rotatably adjustable rod or shaft and means for causing said rod or shaft, when in one adjustable position, to move axially to disconnect the dialling mechanism.

4. An automatic alarm device according to Claim 3, wherein the axially slidable and rotatably adjustable rod is provided with a radial arm which, in one adjusted position, projects into the paths of a pin mounted on a continuously rotating member, the arrangement being such that said pin engages said radial arm to cause rotation of said slidable and adjustable rod to a position in which it is slidden axially by a spring.

5. An automatic alarm device according to Claim 4, wherein the axially slidable and rotatably adjustable rod is normally held against axial movement by a pin which engages a fixed abutment but is moved out of engagement with said abutment when rotated in one direction.

6. An automatic alarm device according to Claims 3 to 5, wherein the axially slidable and rotatably adjustable rod is provided at one end with a contact

member which engages a spring loaded catch which normally holds the dial operating mechanism in operative position but is tripped by axial movement of said rod to move said dial operating mechanism into inoperative position.

7. An automatic alarm device according to Claims 3 to 6, wherein the axially slidable rod is rotatably adjustable to move the radial arm and the contact member into inoperative position while the dial operating mechanism remains in operative position.

8. An automatic alarm device of the kind described having means selectable at will for causing repetition of the dialling operation or preventing repetition thereof constructed and adapted to operate substantially as herein described with reference to the accompanying drawings.

Dated this 3rd day of September, 1947.

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Printed for His Majesty's Stationery Office by Charles Birchall & Sons, Ltd., Liverpool.—1949.
Code 39-219. Published at the Patent Office, 25, Southampton Buildings, London, W.C.2.
from which copies, price 2s. 0d. each (inland) 2s. 1d. (abroad) may be obtained.

