

Jan. 9, 1951

E. R. MOUNTSTEPHEN

2,537,599

AUTOMATIC BURGLAR AND FIRE ALARM

Filed Nov. 15, 1947

2 Sheets-Sheet 1

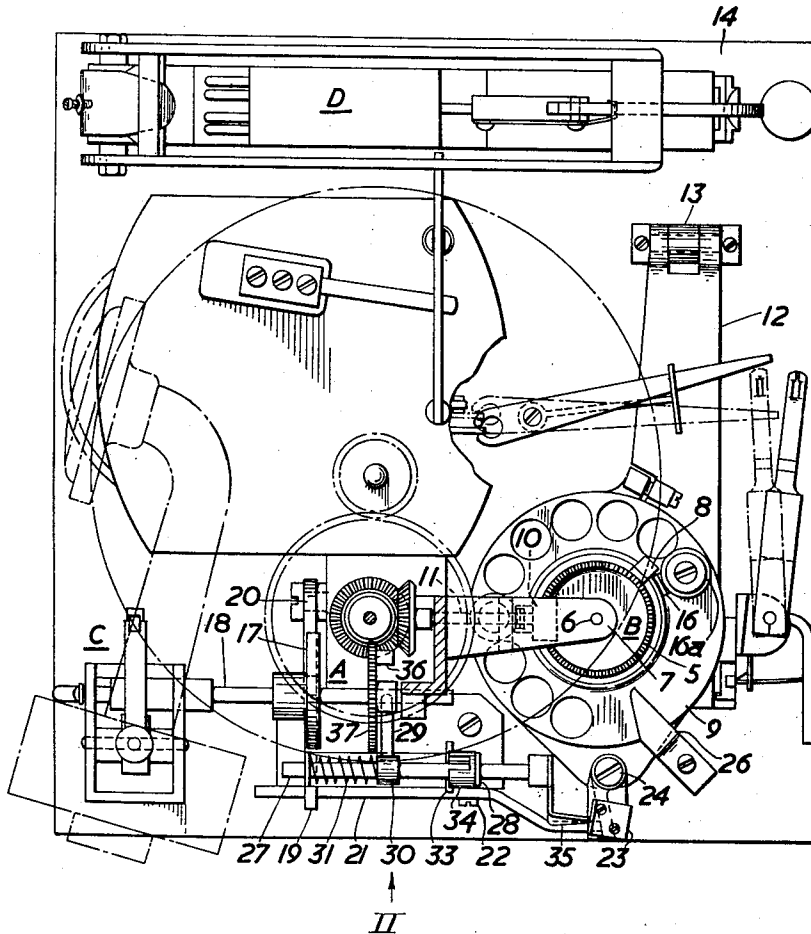


FIG. 1.

Inventor
EDRED RABJOHN MOUNTSTEPHEN

By *Medaniel S. Hays*
Attorney

Jan. 9, 1951

E. R. MOUNTSTEPHEN

2,537,599

AUTOMATIC BURGLAR AND FIRE ALARM.

Filed Nov. 15, 1947

2 Sheets-Sheet 2

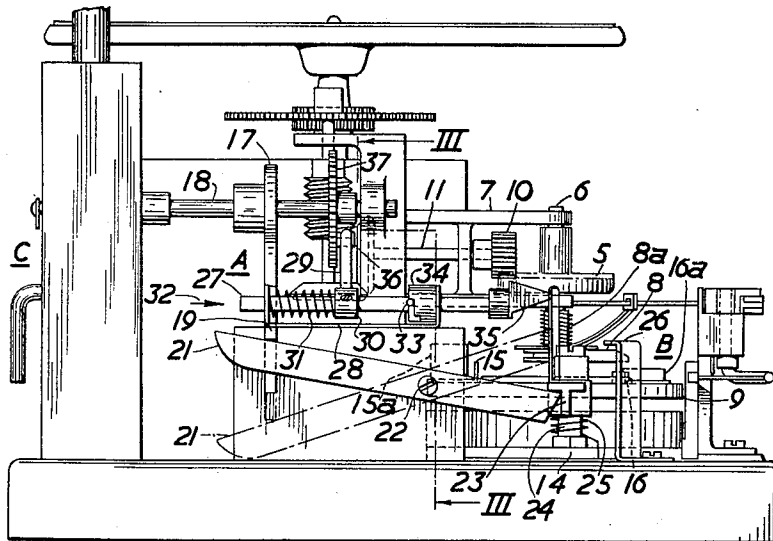


FIG. 2.

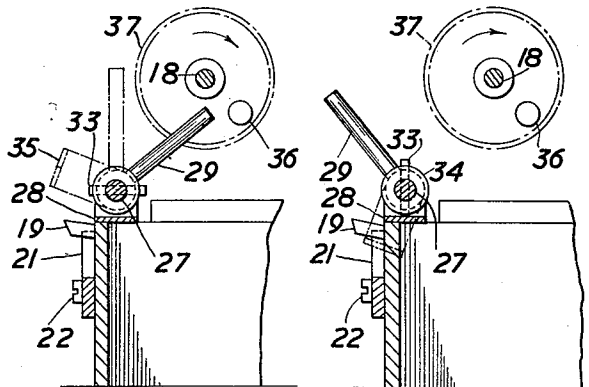


FIG. 3.

FIG. 4.

Inventor
EDRED RABJOHN MOUNTSTEPHEN

By *Fredrick S. Hays*
Attorney

UNITED STATES PATENT OFFICE

2,537,599

AUTOMATIC BURGLAR AND FIRE ALARM

Edred Rabjohn Mountstephen, London, England

Application November 15, 1947, Serial No. 786,291
In Great Britain September 3, 1946Section 1, Public Law 690, August 8, 1946
Patent expires September 3, 1966

7 Claims. (Cl. 179-5)

1

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 United States Patent 2,161,525, 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 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.

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

2

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 United States Patent 2,161,525.

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, actu-

3

ates a lever 19 which is pivoted at 20 and which in turn operates a rockable lever 21 pivoted at 22 and projects below a catch 23 pivotally mounted on a pin 24 secured to the vertically movable plate or arm 14. 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 14 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 raises the dial still further 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 8a, 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 15a, 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 8a, and thus slide past the lug 15 when the dial returns to its normal 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 16a 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. Ar-

4

ranged 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 an axially slotted sleeve like member 34. This sleeve member is provided with axial slots of 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 set for 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 in the slotted sleeve abutment 34 and slides into said slot whereby the rod or shaft 27 is displaced 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 mechanism 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 re-

quired 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.

What is claimed is:

1. An automatic alarm device of the type described and including means for successively connecting the alarm device with a telephone system, dialling an emergency signal to establish communication with an appropriate station of the telephone system and to transmit an alarm message to said station, all in response to the actuation of a supervising system, supervising a physical magnitude, in combination with adjustable control means for selectively rendering the alarm device inoperative for the purpose aforesaid upon completion of the first cycle of operations or maintaining the device operative for repeating the dialling operation at predetermined intervals, said control means including a control element movable into either one of the two positions and coacting with said cam and lever arrangement so as to render said alarm device inoperative in one position and to maintain the same operative in the other position and selecting means for placing the control element in a selected one of said two positions.

2. An automatic alarm device of the type described and including a dialling mechanism for establishing an electric connection between the alarm device and an appropriate signal receiving station, means for transmitting an alarm message to said station over said connection, a cam and lever arrangement for operating said dialling mechanism for the purpose aforesaid, and supervising means responsive to a physical magnitude for controlling said alarm device, in combination with control means movable into either one of two positions and arranged to render in one position the dialling mechanism inoperative for the purpose aforesaid upon completion of the initial dialling operation and to maintain in another position the dialling mechanism operative for repeated dialling operations upon each completion of the alarm message, and selecting means for placing the control means in a selected one of said positions.

3. An automatic alarm device as described in claim 2, wherein said control means comprise a rod mounted axially slidably and arranged to coact with said cam and lever arrangement so as to render said dialling mechanism inoperative for the purpose aforesaid in one axial position of the rod and to maintain the said mechanism operative in a different axial rod position, and wherein said selecting means are arranged to move said rod into a selected one of said axial positions.

4. An automatic alarm device as described in claim 2, wherein said control means comprise a rotatable rod mounted axially slidably in a predetermined rotational position, said rod being arranged to coact with said cam and lever arrangement so as to render said dialling mechanism inoperative for the purpose aforesaid in one axial position of the rod and to maintain the said mechanism operative in a different axial rod position, spring means urging said rod into the axial position for rendering the dialling mechanism inoperative, an arm secured to said rod and radially extending therefrom, a member arranged to rotate continuously when the alarm device is actuated by said supervising means, a dog protruding from said member and positioned to engage said arm upon setting the arm in a predetermined angular position for rotating the rod into said predetermined rotational position, thereby causing the spring means to slide the rod into the axial position for rendering the dialling mechanism inoperative while in another angular position of the arm the dog passes the arm.

5. An automatic alarm device as described in claim 4, in combination with a pin secured to the arm, and a stationary abutment arranged and positioned to be engaged by said pin for retaining the arm, against the action of said spring means, in its axial position for rendering the dialling mechanism inoperative and to release said pin upon rotation of the arm and the rod by the said dog.

6. An automatic alarm device as described in claim 2, wherein said dialling mechanism comprises a spring loaded movable catch member normally positioned to urge the dialling mechanism into a position operative for the purpose aforesaid, and wherein said control means comprise a rod mounted axially slidably, a contact member secured to one end of the rod and arranged to engage, in one axial position of the rod, said catch member and to move the same into a position for rendering the dialling mechanism inoperative for the purpose aforesaid and to be disengaged from the catch member in a different axial rod position, and wherein said selecting means are arranged to move the rod into a selected one of said axial positions.

7. An automatic alarm device as described in claim 6, wherein said rod is rotatably mounted and arranged to be axially slidably in a predetermined rotational position for sliding the rod into the axial position rendering the dialling mechanism inoperative, and wherein said selecting means comprise actuating means operatively connected with the rod for rotating the rod and the contact member thereon into a rotational position other than said predetermined rotational position, thereby maintaining the dialling mechanism operative for the purpose aforesaid.

EDRED RABJOHN MOUNTSTEPHEN.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,627,612	Luse	May 10, 1927
2,161,525	Mountstephen	June 6, 1939
2,191,971	Mountstephen	Feb. 27, 1940