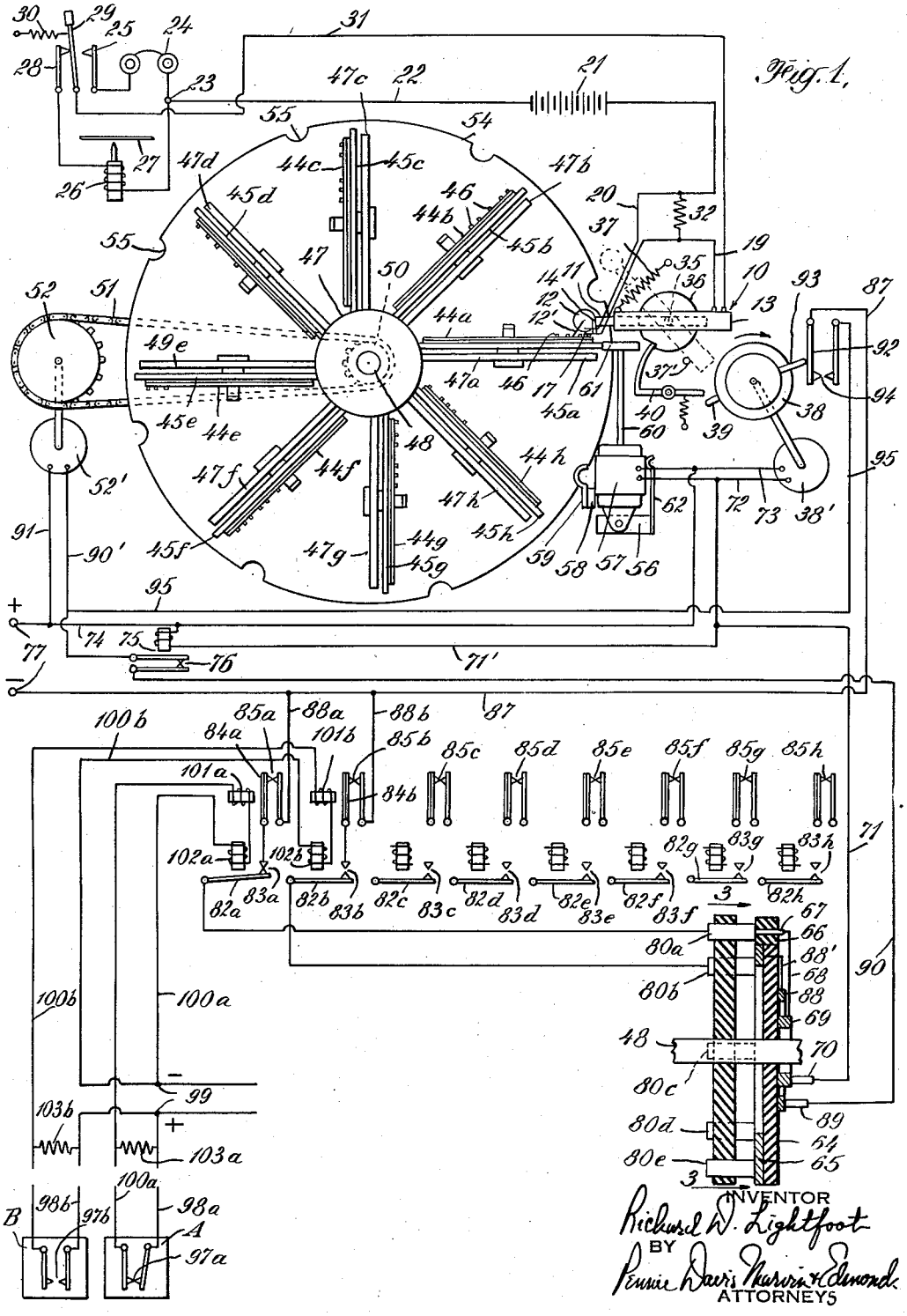
June 11, 1940. R. D. LIGHTFOOT 2,204,420

ALARM SYSTEM

Filed July 11, 1939 3 Sheets-Sheet 1

Fig. 1.



INVENTOR
Richard D. Lightfoot
BY
Pennie Davis Marvin & Edmonds
ATTORNEYS

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ALARM SYSTEM

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Fig. 2,

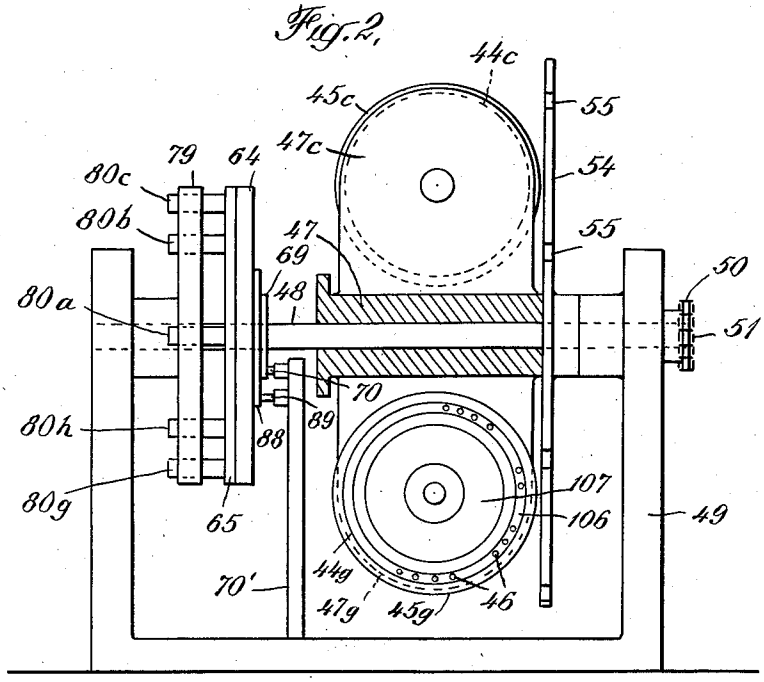


Fig. 5,

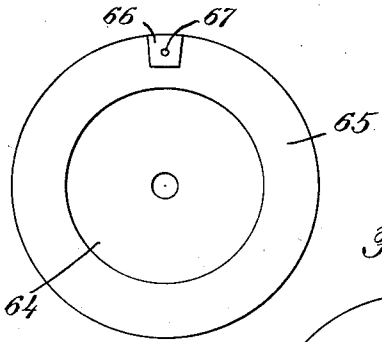


Fig. 3,

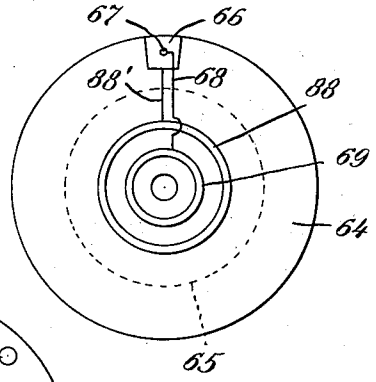
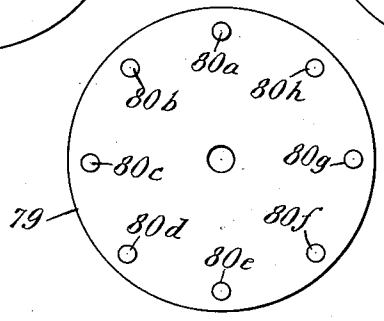


Fig. 4,



INVENTOR
Richard D. Lightfoot
BY
Pennie Davis Marvin & Edmonds
ATTORNEYS

June 11, 1940. R. D. LIGHTFOOT 2,204,420

ALARM SYSTEM

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Fig. 6,

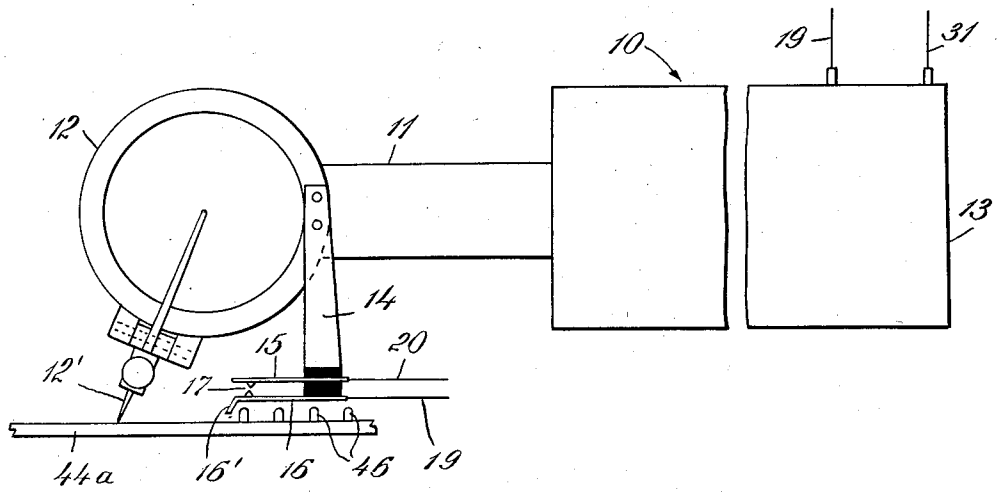


Fig. 7,

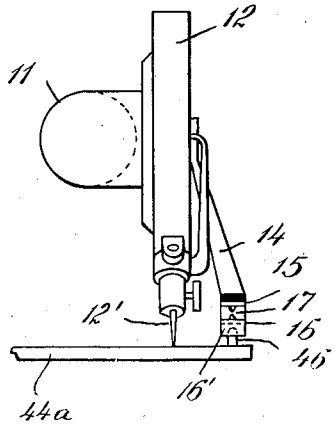
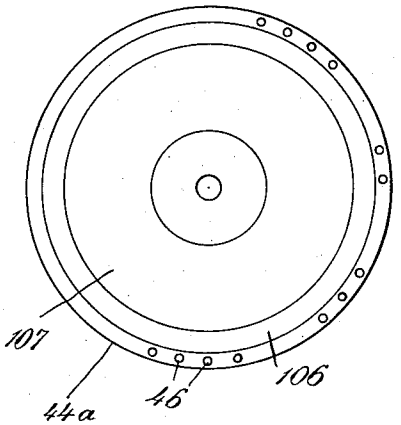


Fig. 8



INVENTOR
Richard D. Lightfoot
BY
Dennie Davis, Nourse & Edmonds
ATTORNEYS

Patented June 11, 1940 2,204,420

UNITED STATES PATENT OFFICE

2,204,420

ALARM SYSTEM

Richard D. Lightfoot, Great Neck, N. Y., assignor to Signaphone Corporation of America, New York, N. Y., a corporation of Delaware

Application July 11, 1939, Serial No. 283,839

9 Claims. (Cl. 179—5)

This invention relates to alarm systems and more particularly to a novel alarm system which may be used for the protection of two or more areas with but a single, central message-transmitting apparatus and which is operable from any one of the protected areas to transmit from the central apparatus both a coded and a telephonic alarm message indicating the location of the area. The new system is reliable in operation and affords protection at a lower cost per unit of protected area than prior telephonic alarm systems.

Alarm systems of various forms have been devised heretofore for transmitting alarm messages to a central station from any one of a number of protected areas. One alarm system of this type operates in conjunction with a telephone line to transmit an alarm message telephonically to the central station. These systems generally include a message transmitting apparatus located on the protected premises and connected to the subscriber's telephone line, usually through a control switch. When an emergency occurs on the premises, the transmitting mechanism is automatically started and closes the control switch so as to connect the mechanism directly into the telephone line. The transmitting mechanism then signals the central exchange or dials a predetermined station, depending on the type of equipment at the central exchange, and transmits over the line a recorded telephonic alarm message which gives the location of the premises. Alarm systems of this form are expensive for the reason that each subscriber requires a separate message-transmitting mechanism which includes a large number of parts, such as a motor, a dialing device, a phonograph pick-up and various control elements, and is therefore expensive to manufacture. Also, there is danger that several message-transmitting mechanisms may be started at about the same time, so that one or more of them will have completed its transmitting cycle before it can be connected to the central exchange, whereby its alarm message will not be received.

In my copending application Ser. No. 217,273, filed July 2, 1938, of which this application is a continuation-in-part, I have disclosed a telephonic alarm system which overcomes these disadvantages and is adapted to accommodate a large number of protected areas with only a single message-transmitting apparatus. The system there shown comprises a plurality of phonograph records, one for each protected area, each record having an alarm message recorded thereon for indicating the location of the respective area. Each of the protected areas is provided with an alarm circuit connected to a selector in a transmitting station, and when one of the circuits is affected, it causes the selector to move the corresponding record to a pick-up common to all of the records which transmits the message telephonically to a central receiver. For some purposes, it is desirable to obtain a permanent indication of the fact that the message has been transmitted and received, as, for example, to provide proof that the emergency was made known immediately to the proper authority. Heretofore, such permanent indications have been available only in alarm systems of the type which sends a coded message, but systems of this type are objectionable for various reasons, principally because of the difficulty and possible errors involved in decoding the messages.

The present invention, therefore, is directed to the provision of a novel telephonic alarm system which provides a permanent record of each telephonic alarm message received at the central receiving station. The mechanism by which this record is obtained is simple and inexpensive and may be mounted in part on the telephonic alarm-transmitting mechanism.

According to the present invention, a code transmitter is connected in the telephonic alarm circuit between the pick-up and the receiving station or in a separate line extending to the receiving station and is operable by a plurality of impulse devices, one for each record. When any one of the records is moved by the selector into cooperative relation with the pick-up, the corresponding impulse device is moved relative to the code transmitter so as to operate the latter and initiate current impulses at the receiving station. These impulses operate a suitable recording device which marks on a tape, or the like, a coded identification of the record which has been selected to send a message. The impulse device may then be rendered inoperative and the record caused to operate on the pick-up and send a telephonic alarm message to the receiving station informing the attendant verbally of the location of the emergency. It will be understood that the sequence of operations may be reversed, if desired, so that the code transmitter operates the recording device after the telephonic alarm has been received.

The new system thus provides a permanent record of the telephonic alarm messages received at the station, and this record identifies in code the location of each area from which the message transmitting mechanism was initiated. The code transmitter is of simple form and preferably comprises contacts connected through the line to the recording device and which are actuated by impulsing means in the form of a series of projections for each record. When a record is selected in response to an emergency at one of the protected areas, the series of projections corresponding to that record is

caused to actuate one of the contacts either by movement of the record into the transmitting position or by rotation of the record carrier, whereby current impulses of a predetermined sequence are created at the receiving station to operate the recording device.

For a better understanding of the invention, reference may be had to the accompanying drawings, in which

Fig. 1 is a schematic view of one form of the new alarm system;

Fig. 2 is a side view, partly in section, of part of the selector shown in Fig. 1;

Fig. 3 is a section on the line 3—3 in Fig. 1;

Fig. 4 is an end view of part of the selector mechanism shown in Fig. 2;

Fig. 5 is an end view of another part of the selector mechanism;

Fig. 6 is a schematic view showing in detail the code transmitter and the pick-up illustrated in Fig. 1;

Fig. 7 is an end view of the code transmitter and the pick-up shown in Fig. 6, and

Fig. 8 is a plan view of one of the phonograph records.

The alarm system, as shown, comprises an electrical pick-up 10 including a tone arm 11 carrying a reproducer or sound box 12 on which is mounted a needle 12′ adapted to engage a phonograph record. The tone arm 11 is slidably mounted in a cylindrical support 13 in which it is loosely fitted, whereby the reproducer 12 may move up and down on the record due to irregularities thereof, without affecting the support. Mounted on the reproducer 12 is a bracket 14 (Figs. 6 and 7) which carries near its lower end a pair of contact arms 15 and 16 forming part of a code transmitter. Each of the contact arms is provided with a contact 17, and these contacts are adapted to be engaged by movement of the lower arm 16 to be described. The reproducer 12 is connected to a telephonic transmission line including a wire 19 leading from one terminal of the reproducer through the support 13 to the contact arm 15. The other contact arm 16 is connected by a wire 20 to one terminal of a current source 21, such as a battery, the other terminal of which is connected by a wire 22 to a terminal 23 located at a central receiving station. A branch connection leads from terminal 23 through a suitable receiving device 24, such as a pair of earphones, to a stationary contact 25, and another branch connection leads from terminal 23 through a suitable recording device 26, such as an electromagnetic stylus coacting with a tape 27, to another fixed contact 26. A switch arm 29 is movable selectively into engagement with one or the other of the contacts 25 and 28 but is normally urged against the contact 28 by a spring 30. The switch arm is connected by a wire 31 through the support 13 and the tone arm to the other terminal of the reproducer 12. A high resistance element 32 is included in the transmission line and is adapted to be shunted by the contacts 17.

Intermediate its ends, the support 13 is pivoted on a horizontal shaft 35 and is connected to a cam 36 which turns with the support on the shaft. Normally, the support 13 is held in a retracted, inoperative position, shown in dotted lines in Fig. 1, by a tension spring 37 connected at one end to the outer end of the support and fixed at its opposite end. The retracted position of the support and the tone arm is determined by a stop 37′ against which the inner end of the support is urged by the tension spring. The reproducer assembly is movable from its retracted position to its operative position, shown in full lines in Fig. 1, by a rotatable member 38 connected to an electric motor 38′ and having a finger 39 positioned to engage the inner end of support 13 during rotation of the member. That is, when the member 38 is driven by the motor, it moves the finger 39 clockwise into engagement with the support 13 and gradually elevates the inner end thereof to the position shown in full lines, whereupon the finger disengages the support. A lever 40 pivoted intermediate its ends is urged against the periphery of cam 36 by a tension spring 41, and when the support 13 is moved by finger 39 to its operative position, the hooked end of the lever is forced into a notch in the periphery of the cam and thereby holds the support against retraction by the spring 37.

The reproducer assembly 10 is located at a central transmitting station and cooperates with a plurality of phonograph records 44*a* to 44*h*, inclusive, mounted on turn tables 45*a* to 45*h*, respectively. Each of the records has recorded thereon a message which indicates the location of an area to be protected, and while in the system illustrated eight records are shown for use with a corresponding number of protected areas, it will be understood that any desired number of records may be employed, depending on the number of areas to be protected. Each record is provided near its periphery with a series of projections 46 which are spaced apart and form an impulsing means adapted to engage a lip 16′ on the contact arm 16 when the record is in the transmitting position (Fig. 6). The spacing of the projections 46 on each record is different from the spacing on the other records, so that the projections cause the contacts 17 to close and open in a predetermined sequence which identifies the record.

The records are adapted to be positioned selectively relative to the reproducing assembly 10 by a selector means which, as shown, comprises a carrier 47 provided with radially extending arms 47*a* to 47*h*, inclusive, on which the turn tables 45*a* to 45*h*, respectively, are mounted. The record carrier is rotatable on a horizontal shaft 48 journaled at its ends in bearings on a frame 49, and the shaft may be driven by a sprocket wheel 50 keyed to one end of the shaft and connected through a chain 51 to a sprocket wheel 52 driven by an electric motor 52′. Mounted on the shaft 48 adjacent the record carrier is a cam wheel 54 which turns with the carrier and is formed on its periphery with a series of semicircular indents 55 corresponding in number to the number of the turn tables. A support 56 adjacent the record carrier has an electric motor 57 pivoted thereon and adapted to swing about a horizontal axis parallel to the shaft 48. A horizontal arm 58 is connected to the motor and extends to a point adjacent the cam wheel 54, where it carries a vertical finger 59 having a curved end adapted to fit in the indents 55. The motor 57 has a vertical drive shaft 60 provided on its upper end with a friction disk 61 which may engage the periphery of and drive the adjacent turn table. The finger 59 is urged against the periphery of cam wheel 54 by a leaf spring 62 mounted on the support 56 and bearing its free end against the motor 37.

The record carrier 46 is rotatable in a clockwise direction by motor 52′, and when it rotates, the curved end of finger 59 is forced out of the indent

55 against the action of leaf spring 62 and rides onto the periphery of the cam wheel, whereby the friction disk 61 is moved radially away from the turn table. As the next turn table comes into position adjacent the reproducer assembly, the finger 59 rides into the next indent 55 and allows the spring 62 to force the disk 61 into driving engagement with the table. Thus, the finger 59 serves to hold the record carrier against movement while the record is playing and controls movement of driving disk 41 into and out of engagement with the turn tables.

Mounted on the shaft 48 near one end of the record carrier is a control member or disk 64 made of insulating material and adapted to rotate with the shaft and the carrier. A conducting member in the form of a metal ring 65 is disposed on the front face of the disk and secured thereto in any suitable manner. The peripheries of the ring and the disk are recessed to receive an insulating element 66, the front face of which is flush with the front face of the ring. A brush 67 extends through the insulating element and is connected at its rear end through a wire 68 to a slip ring 69 secured to the rear face of the disk. A brush 70 mounted on a standard 70' (Fig. 2) engages the slip-ring and has a wire 71 leading therefrom to a wire 72 connected to one terminal of each of the motors 38' and 57. The other terminals of these motors are connected by a wire 73 from which a wire 74 extends to the positive terminal of a current source 77. A branch wire 71' leads from wire 71 to one side of the coil of a relay 75 for controlling a pair of contacts 76, the other side of the coil being connected to wire 74.

Opposite the rotatable member 64 is a stationary control member 79 made of insulating material and mounted on the frame 49. Arranged in circular series on the member 79 are contacts 80*a* to 80*h*, inclusive, which extend through the member and bear at their inner ends against the conducting ring 65. The contact 80*a* is connected at its outer end through a wire 81*a* to a contact arm 82*a* for actuating one of a pair of normally open contacts 83*a*. The other contact 83*a* is connected to a bimetallic contact arm 84 controlling a pair of normally closed contacts 85*a*, the fixed contact of which is connected through a wire 86*a* to a wire 87 leading to the negative side of the current source 77. Similarly, the contact 80*b* is connected at its outer end through a wire 81*b* to a movable contact arm 82*b* controlling a pair of normally open contacts 83*b*, the stationary contact of which is connected to a bimetallic arm 84*b*. The arm 84*b* operates one of a pair of normally closed contacts 85*b*, the other of which is connected through a wire 86*b* to the wire 87. The remaining contacts 80 to 80*h*, inclusive, are connected in a similar manner to line 87 through contacts 83*c* to 83*h*, and contacts 85*c* to 85*h*, respectively, by suitable wiring, not shown.

A second slip-ring 88 is mounted on the back of disk 64 concentric with the slip ring 69 and is connected by a wire 88' to the conducting ring 65. A brush 89 mounted on standard 70' engages the slip ring 88 and is connected by a wire 90 to one of the contacts 76 of relay 75. The other contact 76 is connected by wire 90' to one terminal of motor 52', the other terminal being connected through wire 91 to wire 71 and the positive side of the current source. The wire 87 extends from the negative terminal of the current source to a contact arm 92 which is operable by a finger 93 mounted on the rotatable member 38 opposite the finger 39. The arm 92 operates one of a pair of contacts 94, the other of which is connected by a wire 95 to the wire 90'.

The contacts 83*a* and 85*a* of the selector are controlled by an alarm circuit including a pair of contacts 97*a* located on a premises A which is remote from the transmitting station. The contacts 97*a* are adapted to be closed and remain closed when an emergency occurs at the premises, and one of the contacts is connected by a wire 98*a* to the positive terminal of a current source 99 situated at the transmitting station, and the other contact is connected through wire 100*a* to the coil of a heating device 101*a* adjacent the bimetallic arm 84*a*. The heating device and the bimetallic arm constitute jointly a time-delay switch which opens the contacts 85*a* after a predetermined time interval following the energizing of the heating device. From the heating device 101*a*, the wire 100*a* extends to the coil 102*a* of a relay for controlling the contacts 83*a*, and from the coil 102*a* to the negative side of current source 99. The contacts 83*b* and 85*b* are controlled by a similar circuit including a pair of contacts 97*b* located at a distant premises B to be protected, one of the contacts being connected through a wire 98*b* to the positive side of the current source 99, and the other contact being connected through a wire 100*b* to the coil of a heating device 101*b* adjacent the bimetallic contact arm 84*b*. From the heating device 101*b*, the wire 100*b* extends to the coil 102*b* of a relay for controlling contact 83*b*, and from the coil to the negative side of current source 99. Preferably, resistances 103*a* and 103*b* are connected across wires 98*a*, 100*a* and 98*b*, 100*b*, respectively, in parallel with the contacts 97*a* and 97*b*. The other contacts 83*c* to 83*h* and 85*c* to 85*h*, inclusive, are controlled by similar circuits (not shown) extending to other premises to be protected.

Normally, the contacts on the protected premises are open and the current supplied from current source 99 through resistances 103*a*, 103*b*, etc., to the coils 81*a* and 82*a*, 81*b* and 82*b*, etc., is insufficient to actuate the respective contacts 83*a* and 85*a*, 83*b* and 85*b*, etc. Accordingly, all of the contacts 83*a* to 83*h* are normally open and all of the contacts 85*a* to 85*h* are normally closed. Although contacts 76 are normally closed, the motor 52' cannot be energized because the conducting ring 65 connected through these contacts and the motor 52' to the positive side of current source 77 does not have a connection through any of the contacts 83*a* to 83*h*, inclusive, to the negative side of the current source. Also, the motor 52' cannot be energized through the circuit including wires 87 and 95, since the contacts 94 controlling the latter circuit are normally open. When the system is idle, the insulator 66 and brush 67 are not engaged by any of the contacts 80*a* to 80*h*, and all of the latter contacts engage the conducting ring 65.

Assuming that an emergency occurs at the premises A, for example, the contacts 97*a* are closed so as to short-circuit resistance 103*a* and energize coils 101*a* and 102*a*. The energizing of coil 101*a* does not immediately affect the normally closed contacts 85*a*, but when coil 102*a* is energized, the arm 82*a* is immediately attracted and closes contacts 83*a* so as to establish a circuit through motor 52'. This circuit is traceable from the positive side of current source 77 through wire 91, motor 52', wire 90', normally closed contacts 76, wire 90, brush 89, slip ring 88, wire 88', conducting ring 65, contact

80*a*, wire 81*a*, arm 82*a*, contacts 83*a* and 85*a*, and wires 86*a* and 87 to the negative side of the current source. The motor 52' then commences to drive shaft 48 and turn the record carrier 46 and the insulating disk 64 in a clockwise direction, whereby the conducting ring 65 and insulator 66 are moved over the contacts 80*a* to 80*h*, inclusive. When the insulator 66 rides onto the conductor 80*a*, the circuit previously traced through motor 52' is broken and another circuit is established which is traceable from the positive side of current source 77 through the coil of relay 75, wires 71' and 71, brush 70, slip ring 69, wire 68, brush 67, contact 80*a*, wire 81*a*, contacts 83*a* and 85*a*, and wires 86*a* and 87 to the negative side of the current source. The relay 75 is thus energized so as to open contacts 76 and prevent subsequent energizing of motor 52' through any of the contacts 83*a* to 83*h*, inclusive. When the insulating element 66 engages contact 80*a* causing motor 52' to stop, the record 44*a* on the carrier 46 is adjacent the reproducer assembly 10, as shown in Fig. 1, where it remains during the subsequent transmitting cycle to be described.

At the instant the motor 52' is de-energized, the motors 38' and 57 are energized through a circuit traceable from the positive side of current source 77 through wires 74 and 73, parallel connected motors 38' and 57, wires 72 and 71, brushes 70 and 67, contact 80*a*, contacts 83*a* and 85*a*, to the negative side of the current source, whereby motor 57 rotates the turn table 45*a*, and motor 38' rotates the wheel 38. As the latter rotates, the finger 39 thereon moves the reproducer 12 downwardly until the needle rests on the record 44*a*, whereupon the lever 40 moves into the notch in cam 36 and holds the reproducer in its operative position. The needle 12' initially engages an annular zone 106 on the record which is disposed just inwardly from the series of projections 46, whereby the lip 16' on the lower arm 16 is in position to be engaged by these projections. The zone 106 does not have any part of the message recorded thereon but is made up of a groove in which the needle rides toward an inner zone 107 on which the alarm message is recorded. Accordingly, as the record rotates, the projections 46 successively engage the lip 16' and thereby cause the contacts 17 to close and open in a predetermined sequence, as, for example, the sequence 4–3–2–4 with the record shown in Fig. 8.

Each time the contacts 17 close, the resistance 32 is short-circuited, thereby causing a current surge through the transmission circuit traceable from the battery 21 through wire 22, terminal 23, the recording device 26, contact 28, switch arm 29, wire 31, the reproducer 12, wire 19, contacts 17, and wire 20 back to the other terminal of the battery 21. This current surge operates the recording device 26 and causes the latter to make a mark on the tape 27 which moves continuously near the stylus of the recorder. Thus, with the record shown in Fig. 8, the recorder produces marks on the tape 27 in the sequence 4–3–2–4, which when decoded show that the record 44*a* has been selected to send a telephonic alarm. After the coded message has been inscribed on the tape 27, the operator moves the switch arm 29 away from contact 28 into engagement with contact 25. When the needle 12' moves to the inner portion of the zone 106, the lip 16' on the contact arm 16 is moved out of line with the projections 46, and thereafter the needle moves over the zone 107 and causes a telephonic alarm to be transmitted over the alarm circuit traceable from battery 21 through wire 22, terminal 23, receiver 24, contact 25, switch arm 29, wire 31, reproducer 12, wire 19, resistance 32, and wire 20 to the other side of the battery. The operator at the receiving station is thus informed verbally of the location of the premises A.

The relative speeds of the motors 38' and 57 are such that the rotatable member 38 is turned substantially one revolution during the code sending operation and the playing of the record. Thus, when the transmitting cycle has been transmitted, the finger 39 engages the inner end of lever 40 and trips the lever, thereby permitting the tone arm 11 to move upwardly to its inoperative position under the action of spring 37. Simultaneously, the finger 93 on the member 38 engages contact arm 92 and closes contacts 94, thereby establishing a circuit traceable from the positive side of current source 77 through wire 91, motor 52', wires 90' and 95, contacts 94, and wire 87 to the negative side of the current source. The motor 52' is then re-energized and rotates the record carrier and disk 64 until brush 67 moves off the contact 80*a*, whereupon the circuits previously traced through relay 75, motors 38' and 57, and contact 80 are broken. Although the motors 38' and 57 are de-energized as soon as brush 67 disengages contact 80*a*, the motor 38' thereafter has sufficient momentum to move the finger 93 off the contact arm 92, whereupon contacts 94 are opened and motor 52' is de-energized. The rotatable member 38 is thus restored to its initial position with the finger 93 slightly beyond the lower arm of 92, and the finger 39 between the inner ends of lever 40 and the support 13. When the support 13 is retracted by spring 37, the tone arm 11 swings by gravity back to its initial position over the outer zone 106 of the record.

After completion of this transmitting cycle and the lapse of a certain time interval to be transcribed in detail presently, the bimetallic arm 84*a* is heated sufficiently by the heating device 101*a* to bow and disengage contacts 85*a*, whereby the contacts 83*a* cannot affect the record selector until the contacts 97*a* are reset manually. It will be apparent that when brush 67 moves off contact 80*a* and de-energizes relay 75, the contacts 76 close so as to permit energizing of motor 52' through any of the other contacts 83*b* to 83*h*, inclusive.

When the contacts 97*b* are operated at the premises B, the contacts 83*b* are closed in a similar manner so as to energize motor 52' and cause the latter to rotate the record carrier and disk 64 until the insulator 66 and brush 67 ride onto the contact 80*b*. The motor 52' is then de-energized and the carrier stops with the record 44*b* adjacent the reproducer 12 and the contacts 17. At the same time, the motors 57 and 38' are energized through brush 67, contact 80*b* and contacts 83*b*, whereby the record 44*b* is rotated causing the contact 17 to be closed and opened in a predetermined sequence by the projections 46. As a result, the recording device 26 produces marks on the tape 27 of a predetermined sequence, which, when decoded, indicate that the record 44*b* has been selected to send a telephonic alarm message. When the message on record 44*b* has been transmitted telephonically, the motor 52' is started again to move brush 67 off contact 80*b* and de-energize motors 38' and 57, after which the motor 52' is stopped by the breaking

of contacts **94**, and the contacts **85***b* are opened. Subsequent operation of any one of the other pairs of contacts **83***c* to **83***h*, inclusive, from the corresponding protected area causes the selecting mechanism to move the respective phonograph record into operative relation with the reproducer **12** and the code transmitting contacts **17**, so that an appropriate coded message is sent to the receiving station followed by a telephonic message.

If two or more pairs of contacts on the protected premises are closed at about the same time, the motor **52'** will be energized through those contacts **83***a*, **83***b*, etc., corresponding to the operated alarm circuits and will turn the record carrier and disk **64** until the brush **67** rides onto the first energized contact **80***a*, etc., in its path, that is, the first contact which is connected to the negative side of current source **77** through a pair of closed contacts **83***a*, etc. Upon closing of contacts **76** after completion of the subsequent message-transmitting cycle, the motor **52'** is re-energized through one of the other pairs of closed contacts **83***a*, etc., and the record carrier and disk **64** are rotated until brush **67** moves onto the next energized contact **80***a*, etc., whereupon the transmitting cycle is repeated with the corresponding phonograph record acting on the reproducer assembly.

Each of the time delay switches **85***a*, etc. upon energization of its corresponding coil **101***a*, etc., is arranged to open only after the lapse of a time interval sufficient to allow the carrier **46** to make a complete revolution in which a message is sent from each of the records. For example, in the apparatus illustrated, assuming that the sending cycle for each record requires one minute, with eight records, as shown, each time delay switch **85***a*, etc. would be set to open after a time interval of at least eight minutes and preferably a somewhat greater time interval, say ten minutes. Thus, when two or more pairs of contacts on the protected premises are closed at about the same time, resulting in the energization of their corresponding time delay switches **85***a*, etc., these switches cannot open and thus lose the actuation until their corresponding records have been moved to the transmitter to send the appropriate impulses and telephonic alarms, and this is so even though all of the pairs of contacts are actuated simultaneously. It will be apparent that when only one pair of contacts on the premises is actuated, the carrier, on completion of the sending cycle with the corresponding record, will make a complete revolution and bring the same record back to the transmitter for a new cycle, and this will be repeated until the corresponding contacts **85** open. When two pairs of contacts **97** are actuated at about the same time, the number of these "repeats" for each of the corresponding records will be considerably less, and as the number of substantially simultaneous actuations on the premises increases, the number of "repeats" for each record decreases. Thus, the system provides desirable repetitions of the messages when there is little demand on the transmitting apparatus, but automatically cuts down on the number of repetitions as the demand increases.

In the new system, there is no danger of interference with the transmitting cycle in the event that one of the alarm circuits is operated while a message is being transmitted, since the contacts **76** are opened as soon as a record has been selected and remain open while the transmitting cycle is in progress. If several alarm circuits are operated concurrently, the selector operates successively, that is, selects the corresponding records in the order in which their respective contacts **80***a*, etc., are engaged by the brush **67**. After the code impulses and the telephonic alarm message have been transmitted as a result of the closing of a pair of alarm contacts, the contacts **97***a*, for example, the latter are reset manually so as to break the alarm circuit through them, whereby the coils **101***a* and **102***a* are de-energized and cause the contacts **85***a* to close and the contacts **83***a* to open. The recorder **26** provides on the tape **27** a permanent record of each telephonic message received at the receiving station so that insurance companies, etc., may be assured that an appropriate telephonic alarm message was sent to the proper authority. After the attendant at the receiving station has moved switch **29** into engagement with contact **25** and received the telephonic message, the switch is automatically returned to contact **28** by spring **30** so that the receiving station is prepared to receive another coded message.

While I have illustrated a single transmission line for sending both the telephonic and the coded messages, it will be understood that a separate line may be used for the coded message. Also, while the time delay switches **85** may be used to advantage where it is desired to automatically break the circuits through the protected premises after they are closed, it will be understood that these switches may, if desired, be eliminated, in which case the circuits are broken when the premises is inspected and the contacts **97** are reset.

I claim:

1. A telephonic alarm system for a plurality of areas to be protected which comprises a phonograph pick-up common to all of the areas, a central receiving station, a transmission line between the pick-up and the receiving station, a phonograph record for each area operable on the pick-up to send a telephonic alarm message over said line indicating the location of the area, a selector common to all of the areas and operable from each area to select a record for operating on the pick-up, impulsing contacts near the pick-up, actuating means, one for each record, for causing the contacts to open and close in a predetermined sequence, and a recording device connected to the impulsing contacts for recording the impulses initiated by each actuating means to identify its corresponding record.

2. A telephonic alarm system for a plurality of areas to be protected which comprises a phonograph pick-up common to all of the areas, a central receiving station, a transmission line between the pick-up and the receiving station, a phonograph record for each area operable on the pick-up to send a telephonic alarm message over said line indicating the location of the area, selector means common to all of the areas and operable from each area to select the corresponding record for operating on the pick-up and to rotate the record, impulsing contacts near the pick-up, actuating means, one for each record, operable by the selector means to cause said contacts to open and close in a predetermined sequence, and a recording device at the central station connected to the impulsing contacts for recording the impulses initiated by each actuating means to identify its corresponding record.

3. A telephonic alarm system for a plurality of areas to be protected which comprises a phono-

graph pick-up common to all of the areas, a central station having a receiver, a transmission line between the pick-up and the receiver, a phonograph record for each area operable on the pick-up to send a telephonic alarm message over said line to the receiver for indicating the location of the area, a selector common to all of the areas and operable from each area to move the corresponding record into cooperative relation with the pick-up, impulsing contacts connected in the transmission line near the pick-up, actuating means, one for each record, for causing the contacts to open and close in a predetermined sequence, a recording device at the central station for recording the impulses initiated by each actuating means to identify its corresponding record, and switching means at the central station for selectively connecting one of said receiver and recording device into the transmission line and disconnecting the other therefrom.

4. A telephonic alarm system for a plurality of areas to be protected which comprises a phonograph pick-up common to all of the areas, a central station having a receiver, a transmission line between the pick-up and the receiver and including a high resistance element near the pick-up, a phonograph record for each area operable on the pick-up to send a telephonic alarm message over the line to the receiver for indicating the location of the area, a selector common to all of the areas and operable from each area to move the corresponding record into cooperative relation with the pick-up, impulsing contacts for shunting said resistance, actuating means, one for each record, for causing the contacts to open and close in a predetermined sequence and thereby create current impulses at the central station, and a recording device at the central station for recording the impulses initiated by each actuating means to identify its corresponding record.

5. A telephonic alarm system for a plurality of areas to be protected which comprises a phonograph pick-up common to all of the areas, a central receiving station, a transmission line between the pick-up and the receiving station, a phonograph record for each area operable on the pick-up to send a telephonic alarm message over said line indicating the location of the area, a selector common to all of the areas and operable from each area to select a record for operating on the pick-up, impulsing contacts mounted on the pick-up, actuating means, one for each record, for causing the contacts to open and close in a predetermined sequence, and a recording device connected to the contacts for recording the impulses initiated by each actuating means to identify its corresponding record.

6. An alarm circuit for a plurality of areas to be protected which comprises a plurality of alarm circuits, one for each area, a phonograph pick-up common to all of the circuits, a central station having a receiver, a transmission line connecting the pick-up and the receiver, a phonograph record for each circuit operable on the pick-up to send a message over the line indicating the location of the area corresponding to the circuit, a plurality of control elements, one for each circuit, a selector cooperating with said elements and engageable therewith, driving means for relatively moving the selector and said control elements in response to actuation of one of said alarm circuits, means responsive to engagement of said selector with a control element corresponding to an actuated circuit for rendering said driving means inoperative, means under control of said selector for moving the record corresponding to an actuated circuit into cooperative relation with the pick-up, impulsing contacts near the pick-up, actuating means, one for each record, operable to cause said contacts to open and close in a predetermined sequence, and a recording device at the central station for recording the impulses initiated by each actuating means to identify its corresponding record.

7. A telephonic alarm system for a plurality of areas to be protected which comprises a phonograph pick-up common to all of the areas, a central receiving station, a transmission line between the pick-up and the receiving station, a phonograph record for each area operable on the pick-up to send a telephonic alarm message over said line indicating the location of the area, a selector common to all of the areas and operable from each area to select a record for operating on the pick-up, impulsing contacts connected in the transmission line near the pick-up, actuating means movable with each record relative to the contacts to cause the contacts to open and close in a predetermined sequence, and a recording device connected to the contacts for recording the impulses initiated by each actuating means to identify its corresponding record.

8. A telephonic alarm system for a plurality of areas to be protected which comprises phonograph pick-up means, a central receiving station, a transmission line between the pick-up means and the receiving station, record means for each area operable on the pick-up means to send a telephonic alarm message over said line indicating the location of the area, a selector common to all the areas and operable from each area to select the corresponding record means for operating on the pick-up means, impulsing contacts near the pick-up means, a recording device connected to the impulsing contacts for recording the impulses initiated thereby, and actuating means, one for each of said record means, operable by the selector to cause said contacts to open and close in a predetermined sequence and thereby operate said recording device to identify the corresponding record means.

9. A telephonic alarm system for a plurality of areas to be protected which comprises phonograph pick-up means, a central receiving station, a transmission line between the pick-up means and the receiving station, record means for each area operable on the pick-up means to send a telephonic alarm message over said line indicating the location of the area, a selector common to all the areas and operable from each area to select the corresponding record means for operating on the pick-up means, electrical impulsing means, a recording device connected to the impulsing means for recording the impulses initiated thereby, and actuating means, one for each of said record means, operable to cause said contacts to open and close in a predetermined sequence and thereby operate said recording device to identify the corresponding record means.

RICHARD D. LIGHTFOOT.