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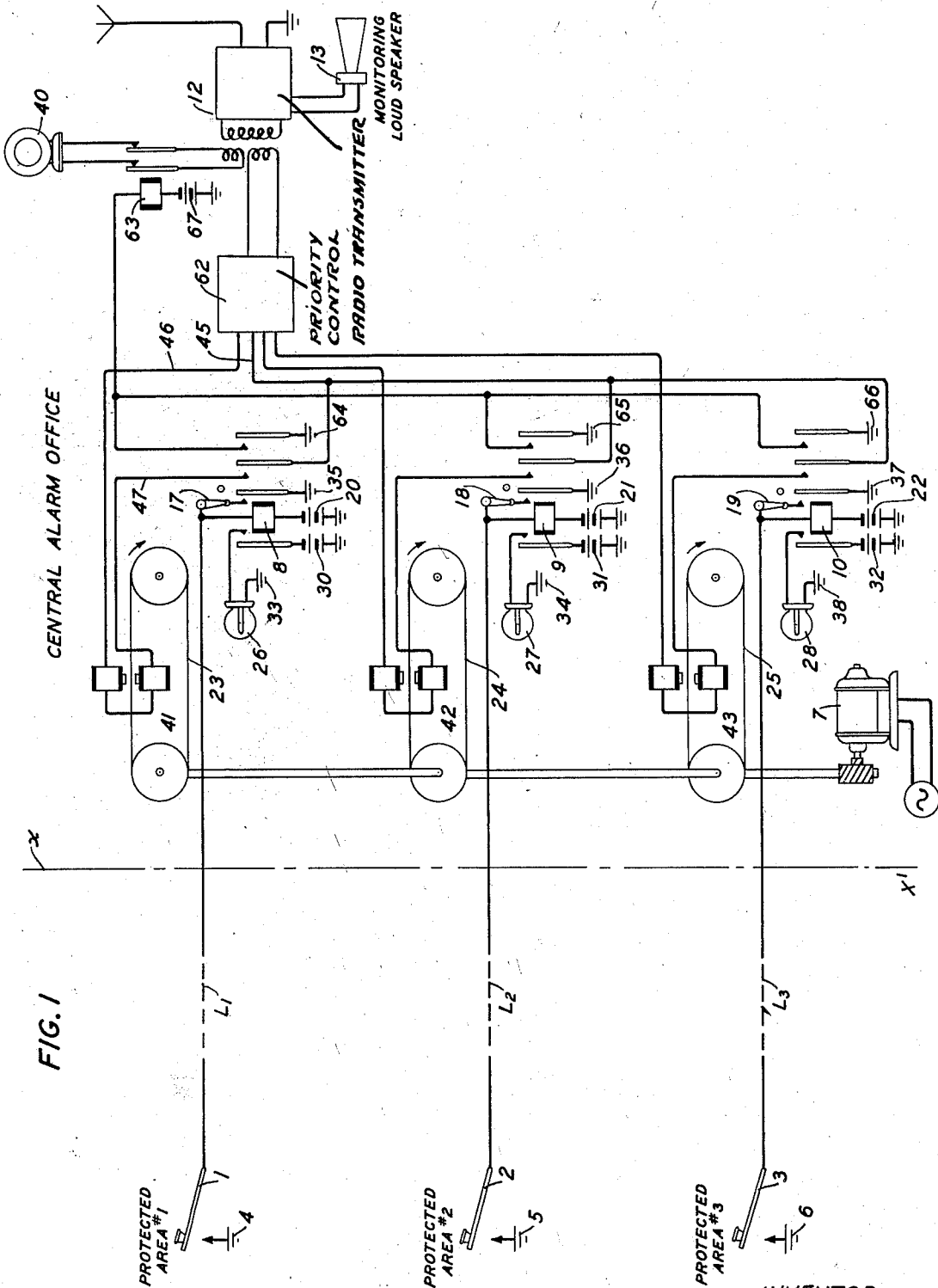
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2,022,991

ALARM TRANSMITTING SYSTEM

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2 Sheets-Sheet 1



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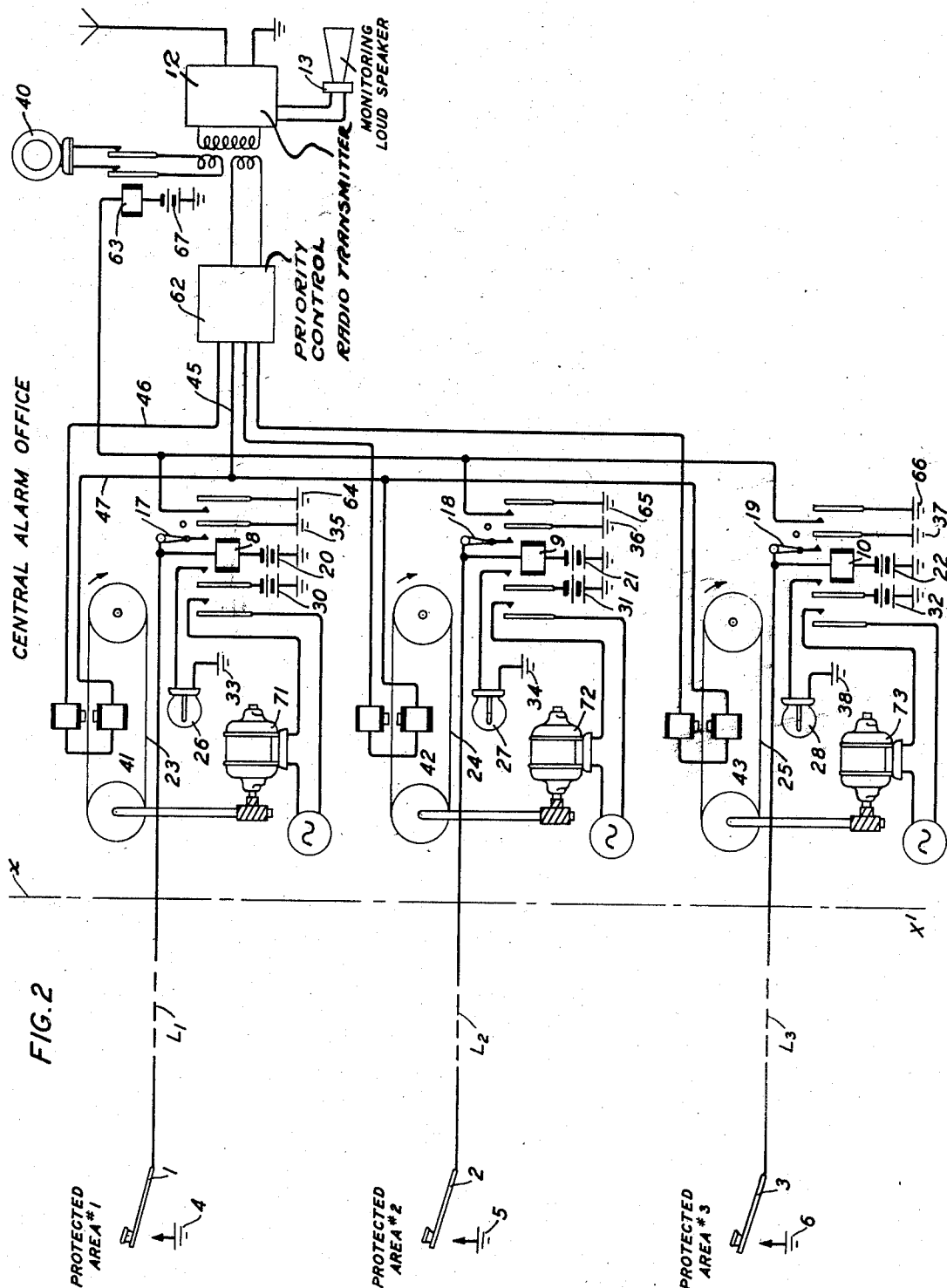
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ALARM TRANSMITTING SYSTEM

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3 Claims. (Cl. 177-314)

This invention relates to an alarm transmitting system and more particularly to such a system whereby the alarm is transmitted by radio.

There have recently been established in certain of the larger cities, police radio car departments which maintain at various locations in the city police cars equipped with radio receivers. Upon receipt of an alarm at the central alarm office (usually transmitted thereto by telephone) instructions are broadcast over the radio transmitter directing the particular car, assigned to the neighborhood from which the alarm has been received, to proceed to the premises in question. While this service has proved to be very efficient in the apprehension of criminals it has been observed that in many cases of a robbery, no opportunity is afforded those on the premises to put in a call to the central bureau until the intruders have departed. This delay often results in a failure to apprehend the criminals whereas if the alarm could have been broadcast during actual progress of the robbery, they could in many cases have been captured.

It is accordingly an object of the invention to automatically transmit an alarm by radio.

Another object of the invention is the reduction of the amount of protective apparatus required at the protected premises.

According to a feature of the invention, means are provided whereby upon the mere actuation of a switch on the protected premises, an alarm message including the address of the premises, is transmitted by radio.

According to another feature of the invention, practically all the equipment used in the system except of course, the actuating switches, is located at the central bureau thus reducing installation and maintenance expenses.

In accordance with a preferred embodiment of the invention, a plurality of reproducing units, such as telegraphones, are provided at the central alarm bureau. One unit is assigned to each protected location, the record of each unit having inscribed thereon the address of the associated location as well as any other appropriate alarm message. The units are preferably continuously in operating condition and apparatus, such as a relay circuit, controlled by switches on the protected premises, are effective when operated to connect the output of the proper unit to the input of the radio transmitter whereupon the alarm on the record of the selected unit is transmitted. The broadcast alarm is received by the police radio cars and the one assigned to the neighborhood in which the alarm originated will proceed to the address broadcast.

According to the operation of the system contemplated by the invention the only action necessary at the premises to cause transmission of the complete alarm by the radio transmitter at the central bureau is the actuation of a switch and, as these switches may be concealed about the premises or may even be carried on the person of an employee, as disclosed for example in De Munbrien Patent 1,824,663 of September 22, 1931, the efficiency of the present type of police radio car service may be greatly increased.

A complete understanding of the invention and an appreciation of its various features may be gained from a consideration of the following detailed description and reference to the annexed drawings in which:

Fig. 1 shows an alarm transmitting system, the reproducing units of which are normally in operating condition; and

Fig. 2 shows a modification of the system of Fig. 1, in accordance with which the reproducing units are normally inoperative.

Referring now to Fig. 1, the apparatus shown to the right of line X-X' is preferably located at the central alarm office, and the alarm switches to the left of line X-X' are located at three separated areas to be protected. It should be understood of course that although in order to illustrate the principles of the invention as simply and clearly as possible, only one switch at each area has been shown and only three areas have been included in the system, a plurality of switches may be provided on the protected premises in accordance with the usual practice and a large number of areas may be served by the one system.

As shown, the switch at each protected area is connected by a line to the central alarm office. Here a plurality of telegraphone reproducing units are provided, one unit being associated with each line. The units are maintained in operating condition by motor 7. A relay is associated with each line and, when operated, connects the output of an associated telegraphone unit to the input of radio transmitter 12. This transmitter is preferably tuned constantly to a particular frequency, the radio receivers of the police cars being tuned to this same frequency. Any message sent out by transmitter 12 is therefore picked up by the radio receivers of the police cars. A microphone 40 is provided through which the announcer at the central office may transmit information and orders to the drivers of the cars. The microphone is connected to the radio transmitter through contacts of relay 63 which, upon

connection of a telegraphone unit to the radio transmitter, operates and disconnects the microphone from the radio transmitter thereby assuring priority to the alarm message of the connected telegraphone unit. It is not considered necessary to describe in detail the manner in which the microphone output is associated with the input circuits of the radio transmitter as arrangements of the kind are well known and disclosed in the art. Heising Patent 1,442,146, for example, discloses a radio transmitter circuit in accordance with which a microphone (17) is associated with the modulator circuit through a transformer (18). A monitoring loudspeaker 13 is associated with the transmitter and reproduces, for the information of those at the central office, the information being broadcast. A lamp is associated with each reproducer unit for indicating that a particular unit has been connected to the transmitter. A priority control switching arrangement indicated at 62, is preferably included whereby, should a second alarm be received while the alarm message of a prior unit is being broadcast, interference with the message by the connection of the second unit to the radio transmitter is prevented. Upon interruption of the first alarm, however, the message of the second unit is immediately broadcast. Priority or lockout arrangements are well known in the telephone, radio and public address system art and it is not believed necessary, therefore, to describe the operation of "priority control" 62 in detail. By way of example, however, reference is made to Hulfish Patent 1,118,490 as a disclosure of a priority control arrangement designed for telephone system use which might well be applied to the present system. It will be understood, of course, that units 41, 42, and 43 would replace subscribers' stations 1, 2, 3, and 4 of the Hulfish patent, the outputs of the units being completed through relay contacts as shown by Hulfish and the operation of relays 8—28 of the Hulfish patent being controlled by the completion of the respective alarm circuits over lines L₁, L₂ and L₃.

Let us assume now, for purposes of description, that a robbery is taking place at protected area No. 1 and that some person at that location operates switch 1 in order to transmit an alarm.

Operation of switch 1 completes a circuit from battery 20, winding of relay 8, line L₁, make contact of key 1 to ground 4, relay 8 operating over this circuit. Relay 8 by operating (1) completes a holding circuit for itself traced from battery 20, winding of relay 8, switch 17, inner right make contact of relay 8 to ground 35, the relay being held in operated condition over this circuit even though switch 1 is restored to normal position, (2) completes a circuit through its second right make contact by which the output of reproducer 41 is connected to radio transmitter 12, (3) completes a circuit traced from battery 30, left make contact of relay 8, lamp 26 to ground 33, lamp 26 being energized over this circuit and indicating that the associated reproducing unit 41 has been connected to the radio transmitter and (4) completes a circuit traced from battery 67 winding of relay 63, outer right make contact of relay 8 to ground 64, relay 63 operating over this circuit to disconnect microphone 40 from radio transmitter 12, thus affording priority to the alarm message of unit 41. As reproducer 41 is continuously operated by motor 7 and as its output has now been connected through conductor 46 and conductors 47 and 45 to the input of radio transmitter 12,

the message recorded on record 23 is broadcast by the transmitter. This message includes the address of protected area No. 1 and any other appropriate alarm message. The broadcast alarm is picked up by the radio receivers of the police cars and the car assigned to the district including protected area No. 1 proceeds to that address. The attendants at the central alarm office are enabled to hear the alarm being transmitted through monitoring loudspeaker 13.

By virtue of the holding circuit traced above, relay 8 is held in operated condition thus causing the alarm to be repeated. After the alarm has been repeated several times, an attendant at the central office may momentarily move switch 17 to "break" position thus interrupting the holding circuit of relay 8 which thereupon restores to normal and interrupts the path over which the output of reproducer 41 was connected to the input of the radio transmitter. The energizing circuits of lamp 26 and relay 63 are also interrupted as relay 8 restores to normal. Switch 17 after being momentarily moved to "break" position is allowed to restore to its normal "make" position in order that the holding circuit of relay 8 may be reestablished should the relay be again operated.

After disconnection of the reproducer unit from the radio transmitter and reconnection of microphone 40 thereto (upon restoration of relay 8 to normal position), the microphone may be utilized by the attendants in broadcasting further instructions to the police cars.

It has been assumed above that no prior unit was connected to the input of the radio transmitter at the time reproducer unit 41 was connected thereto. Had the alarm of a prior unit been broadcasting, however, priority control switching arrangement 62 referred to above would have prevented interference therewith by the connection of unit 41. Lamp 26 would have been lighted in the usual manner, however, thus indicating to the attendants at the alarm office that an alarm had come in from area No. 1 and was being "held" for transmission. As soon as feasible they would then interrupt the operation of the prior unit whereupon the message of unit No. 41 would be transmitted.

Operation of switch 2 at protected area No. 2 or of switch 3 at protected area No. 3 results in the connection of the associated reproducer unit 42 and 43 respectively, to the radio transmitter and in the lighting of the associated indicator lamp, 27 and 28 respectively, in a manner similar to that described in detail above in connection with the operation of switch 1.

Referring now to the modification of the invention shown in Fig. 2, the system illustrated is in general similar to that shown in Fig. 1 and described above. The reproducing units in this instance, however, being normally inoperative and started only upon actuation of an alarm switch at a protected area.

As shown, each reproducing unit is provided with a driving motor 71, 72, and 73; the power supply of each motor being controlled through make contacts of relays 8, 9, and 10. The output of each reproducer is normally connected to the input of the radio transmitter through priority control switching apparatus 62.

Assuming now, as before, that switch 1 is actuated, a circuit is completed from battery 20, winding of relay 8, line L₁, make contact of switch 1 to ground 4, relay 8 operating over this circuit. As previously described, relay 8 by its operation com-

pletes: (1) a holding circuit which holds the relay in operated condition, (2) a circuit to energize lamp 26 and (3) a circuit to operate relay 63 and, in addition to these circuits previously described, completes a circuit through the left outer make contact of relay 8, to supply current to motor 71 which is thereby set into operation. Motor 71 operates reproducer 41 and as the output of the reproducer is connected to the radio transmitter, the message recorded on record 23 is now broadcast by the transmitter.

As previously described, operation of switch 17 to "break" position causes interruption of the broadcast and restoration of the apparatus to normal.

Priority control switching apparatus 62 functions as previously described to prevent interference with a message being broadcast should a second reproducing unit be set into operation.

Although specific embodiments of the invention have been selected for detailed description it is not intended to indicate that the invention is so limited. For example, the recorded message need not be an alarm message but may be any predetermined announcement. It is, as a matter of fact, intended to indicate the scope of the invention only by the annexed claims.

What is claimed is:

1. In an alarm system, a central office, a plurality of protected locations remote from the central office, lines connecting the central office and the protected locations, a radio transmitter at the central office, a microphone normally connected to the transmitter for transmission of local announcements, a plurality of reproducers at the central office, said reproducers being normally in operating condition, a record associated with each of the reproducers having recorded thereon the address of one of the protected locations, means at each protected location which, when operated, causes the output of the particular reproducer with which is associated the record bearing the address of that location at which said means is operated to be connected to the radio transmitter and addition-

al means for disconnecting the microphone from the radio transmitter when one of the reproducers is connected thereto.

2. In an alarm system, a central office, a plurality of protected locations remote from the central office, lines connecting the central office and the protected locations, a radio transmitter at the central office, a microphone normally connected to the transmitter for transmission of local announcements, a plurality of reproducers at the central office, said reproducers being normally inoperative, a record associated with each of the reproducers having recorded thereon the address of one of the protected locations, means at each protected location which, when operated, causes the particular reproducer with which is associated the record bearing the address of that location at which said means is operated to be set into operation and its output to be connected to the radio transmitter and additional means for disconnecting the microphone from the radio transmitter when one of the reproducers is set into operation and connected thereto.

3. In an announcing system, a central announcing office, a plurality of control locations remote from the central office, lines connecting the central office and the control locations, a radio transmitter at the central office, a microphone normally connected to the transmitter for transmission of local announcements, a plurality of reproducers at the central office, a record associated with each of the reproducers, each record having recorded thereon a message more pertinent with respect to one of the control locations than to any of the other control locations, means at each control location which, when operated, causes the output of the particular reproducer with which is associated the record bearing the message pertinent with respect to that location at which said means is operated to be connected to the radio transmitter and additional means for disconnecting the microphone from the radio transmitter when one of the reproducers is connected thereto.

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