

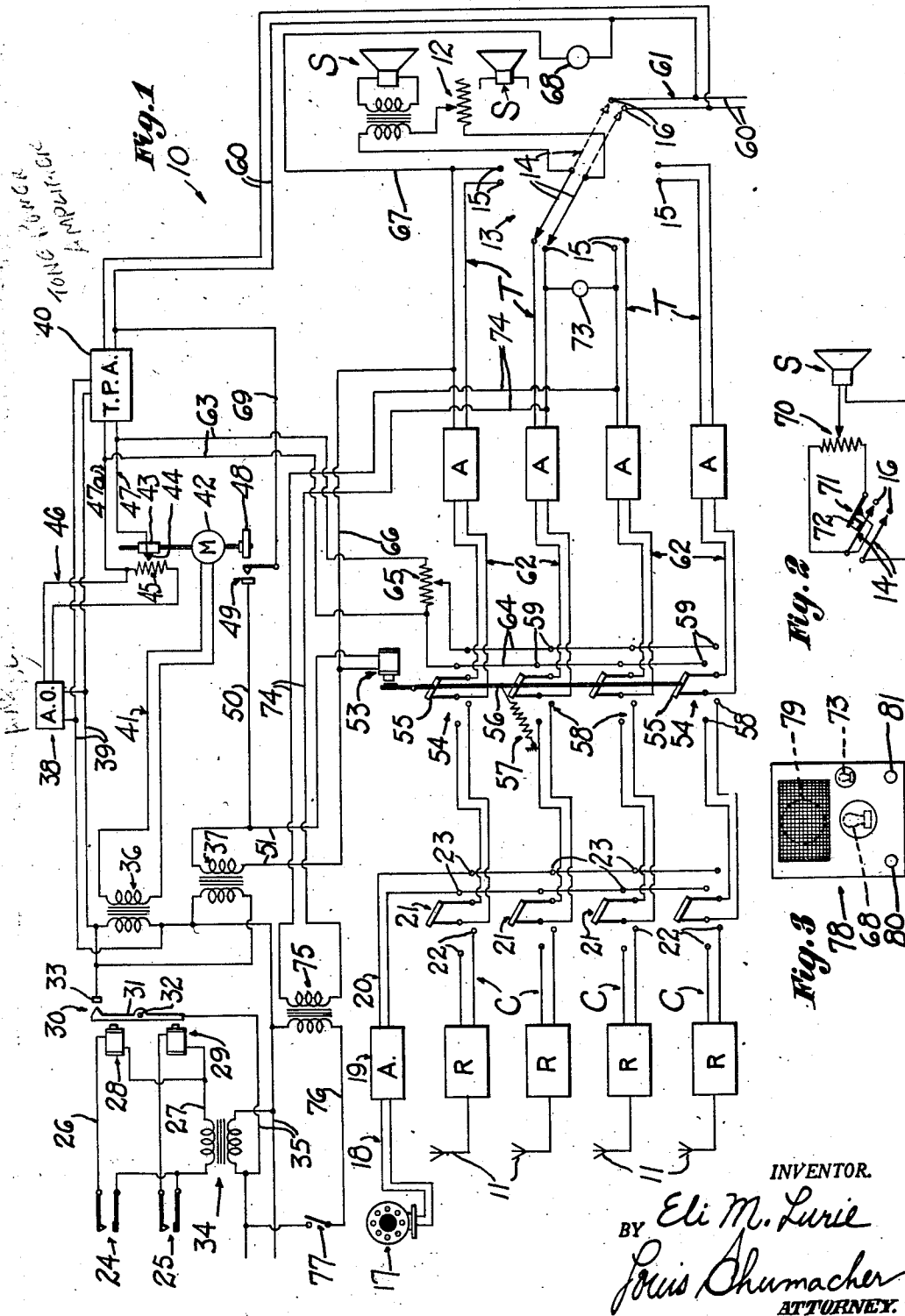
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COMBINATION MULTICHANNEL RADIO RECEIVING AND SIGNALING SYSTEM

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COMBINATION MULTICHANNEL RADIO RECEIVING AND SIGNALING SYSTEM

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This invention relates to selective channel radio receiving systems and to multiplex signaling systems for fire or air raid alarms for the rooms of an apartment house or hotel.

One object of the invention is to provide an apparatus having improved means for combining such systems to thus produce a simplified relatively inexpensive apparatus having a substantially increased reliability and factor of safety.

Another object of the invention is the provision of an apparatus of the character described having improved means whereby substantial portions of the multi-channel radio receiver system are utilized for the transmission of an automatically recurrent alarm signal.

Another object of the invention is to furnish an apparatus of the type set forth having improved means such that the normal incoming signals for the radio receivers of the multi-channel system are cut off at a central point of control, and an alarm signal transmitted to the receivers irrespective whether the same have been turned on or off.

Another object of the invention is to construct an apparatus of the character described having improved means whereby the radio receivers of the multi-channel system is so adjusted in its inoperative position as to be readily adapted to cooperate with the signaling system.

A further object of the invention is to provide an apparatus of the class referred to having improved low voltage means comprising lighting and/or sounding devices operated intermittently or in a graduated manner in conjunction with the multi-channel receiving system or the receivers thereof.

Other objects and advantages of the invention will become apparent as the specification proceeds.

With the aforesaid objects in view, the invention consists in the novel combinations and arrangements of parts hereinafter described in their preferred embodiments, pointed out in the subjoined claims, and illustrated in the annexed drawing, wherein like parts are designated by the same reference characters throughout the several views.

In the drawing:

Figure 1 is a diagrammatic view of an apparatus embodying the invention, with parts removed.

Fig. 2 is a diagrammatic fragmentary view of a modification.

Fig. 3 is a view in elevation showing a radio receiver according to the invention.

The advantages of the invention as here outlined are best realized when all of its features and instrumentalities are combined in one and the same structure, but, useful devices may be produced embodying less than the whole.

It will be obvious to those skilled in the art to which the invention appertains, that the same may be incorporated in several different constructions. The accompanying drawing, therefore, is submitted merely as showing the preferred exemplification of the invention.

Referring in detail to the drawing, 10 denotes an apparatus embodying the invention. The same may include a multi-channel radio receiving system comprising a plurality of radio receivers R, each connected to its antenna 11, and having its respective output circuit or channel C, containing a power amplifier A which may be operative at 110 volts. From each amplifier A extends a trunk line T feeding the tone current, which may be at only 6 volts, to a series of electromagnetic loudspeakers S. One of the latter is provided in each apartment, and each speaker unit is connected to all of the trunk lines so as to selectively cooperate with any one of the receivers R. Accordingly, the speaker units are relatively simple, since each may have associated therewith merely a variable resistance or volume control such as 12, and a switching device 13 whereby the speaker S is connected to any desired one of the trunk lines T. For this purpose the switch 13 may have an arm 14 that is movable to contact any of the terminals 15 of the different trunk lines, or to the cut off position shown in dotted lines in which said arm 14 contacts the terminals 16 as for a purpose hereinafter described.

Generally, a microphone 17 is provided whereby the hotel or building manager may make certain announcements. This microphone may be connected by a circuit 18 to an amplifier 19, from which leads a circuit 20 that is adapted to cooperate with the receiver output channels C. For this purpose a double pole, double throw switch 21 may be provided in each channel, which when engaged with the terminals 22 closes the channel circuit to the receiver R, but when engaged with the terminals 23, cuts off said receiver and connects the circuit 20 into the channel. Any one or all of the switches 21 may be thus operated so that the announcement may be transmitted over selected channels or over all of the channels.

Associated with the multi-channel system, is my new multiplex signaling system which will now be described. In the control room or central office are provided switches 24, 25 for the respective circuits 26, 27 arranged in conjunction with the electromagnets or relays 28, 29 for a switch 30. The latter may be of any suitable structure such that when the switch 24 is closed, the switch 30 is opened by the relay 28, and when the switch 25 is closed, the switch 30 is closed by the relay 29. For this purpose there may be a common armature 31 pivotally mounted at 32 for operative engagement with the contact 33. As shown in the drawing, the circuits 26, 27 may be arranged in multiple and energized by a transformer 34 whose primary is connected across the house circuit 35. Since the latter is usually charged with 110 volts, and because the relays 28, 29 may be located at a remote point in the building, it is desirable that the transformer 34 shall reduce the voltage for the circuits 26, 27 to approximately 6 volts. Accordingly the insulation requirements and the fire hazard are substantially reduced, and the cost of the installation is kept at a minimum. As this specification proceeds, it will be noted that this principle is carried through wherever possible.

When the switch 30 closes the main supply circuit 35, the transformers 36, 37 are energized, since their primary coils are connected in parallel into the main circuit. The output currents of these transformers are preferably at a low voltage, such as 6 volts. Connected to the main circuit is the audio oscillator 38, also designated by the letters A. O., and input circuit 39 therefor may include the tone power amplifier 40 also designated by the letters T. P. A. However, the output currents of the latter and of the audio oscillator are at a relatively low voltage, according to standard practise. For the transformer 36 there is provided a circuit 41 containing a motor 42 also designated by the letter M. Operative by the shaft thereof is a reciprocating device 43 carrying a contact member 44 for a resistance 45 that is in the output circuit 46 of the audio oscillator 38. Since the contact member 44 slides back and forth across the resistance 45, so that the latter is constantly varying, the intensity of the audio oscillator signal constantly automatically changes. The contact 44 and the resistance 45 are respectively connected by the leads 47, 47a to the tone power amplifier, whereby a powerful siren effect is transmitted to the various apartments of the hotel as hereinafter described. For the visible signal, the said shaft of the motor 42 carries a cam 48 for closing a normally open switch 49 for 6 volt circuit 50 which is joined to a circuit 51 that contains the secondary coil of the step-down transformer 37. In the circuit 51 is an electromagnet or relay 53 which controls a multiple switch that is normally in such position as to close the multi-channel system, and which is operative by the relay to open the channels C and to connect portions thereof to the signaling system. For a simplified and clear schematic view, the multiple switch referred to (which in actual practise may be of the rotary type) is shown as comprising a double pole double throw switch 54 for each channel C, the arms 55 whereof may be linked together or interconnected by a rod or other means 56 which, by any automatic means such as a tension coil spring 57, is normally caused to move the switch arms 55 to engage the terminals 58

to close the channels C for the usual operation of the radio receiving system. When the relay 53 is energized it may be caused to move the member 56 and hence the switch arms 55 to engage the terminals 59, thus opening the radio receiver channels C, and closing circuits including that of the signaling system, as will be described hereinafter.

From the tone power amplifier 40 extends a circuit 60 that forms a trunk line, from which lead branch circuits such as 61 to each speaker unit S, these branch circuits being connected to the terminals 16 of the switch 13 that is associated with each speaker. Accordingly, when the switch arm 14 is moved to the "off" position indicated in dotted lines, the circuit 60, 61 to the speaker S is closed, and the connection to all of the receivers R is open. Nevertheless the speaker may receive siren signals that may be transmitted over the circuit 60, with the high resistance at 12 shunted out as above explained. If, however, the switch 13 is closed to one of the receivers R, then the relay 53 having been operated to cause these receivers to be disconnected, the siren current may come in directly from the audio amplifier 38 to the terminals 59 and thence to the circuit portions 62 of the channels C, with the signal increased by the amplifiers A and fed through the trunk lines T to the speaker unit S. This is effected by a circuit 13 connected across the input of the tone power amplifier 40, and leading into a circuit 64 containing the terminals 59 and also a tone control or variable resistance 65. With the operation just described, the variable resistance 12 of the speaker unit would remain in the circuit, but its effect can be sufficiently overcome by the high power of the amplifiers A to cause the production of a siren tone of sufficient audibility. Thus the siren tone currents may be transmitted simultaneously through different paths so that the alarm is caused in rooms where the speaker S is in operation and also in rooms where it is cut off. It may be mentioned that the amplifiers A may be stepped up to extreme power when the siren alarm is desired, and that this can be done manually or automatically by a separate control or by coordination with the movement of the switches 55.

During this operation of the siren alarm, the light signal alarm circuit may be simultaneously operated. For example, a lead 66 may extend from the interrupted circuit 50 to one of the trunk lines T at a point adjacent to its amplifier A, and another lead 67 may extend from this trunk line at a point in the cabinet of the speaker unit to one of the wires of the circuit 60 to thus form a circuit for the lamp 68, this circuit being completed by a lead 69 extending from the switch 49 to a corresponding wire of the circuit 60. Consequently regardless of the position of the switch 13, the intermittent closing of the cam operated switch 49 causes a flickering signal of the lamp 68, and the circuit for the lamp is such that considerable wiring is saved by utilizing a wire of the circuit 60 and a wire of the trunk line T.

According to an alternative arrangement, the variable resistance or volume control 12 may be disconnected when the switch 13 is moved to the open position, as shown in Fig. 2. Here the variable resistance 70 may be cut out of the circuit by a normally closed switch 71 that may be moved to open position by movement of the switch arm 14 to engage the contacts 16. For example, the switch arm 14 may mechanically coact with

or may be provided with an abutment portion 72 to strike the arm of the switch 71. However, for most purposes the shunting arrangement disclosed is preferable, since the speaker unit may then be operative for the siren alarm even if the switch is in a different position.

If it be desired to transmit an all-clear signal, a green light may be employed such as a small bulb 73 connected across certain wires of adjacent trunk lines T, a circuit 74 therefor extending from these wires to form a circuit containing the secondary coil of a step down transformer 75, whose primary may be in a circuit 76 connected across the circuit 35 and being controlled by any manually operated switch 77.

In Fig. 3 is shown a typical unit or cabinet 78 embodying or housing the speaker unit S and its associated parts. This may include the cone 79, and the lamps 68 and 73, and also the knobs 80 and 81 for the volume control 12 and for the switch 13. Thus a small, simple and compact device is employed for reception, and for transmission of audible and visible alarms for fire and air raids, and for the all clear signal.

The operation of the invention will now be briefly described. To cause a fire or air raid alarm the switch 25 is closed, whereupon the switch 30 is closed to cause the step-down transformer 37 to cause relay 53 to be energized to throw the switches 54 from contacts 58 to contacts 59. At the same time the step-down transformer 36 is energized to operate the motor 42 and cause the contact 43 to reciprocate along its resistance 45, with the motor causing intermittent closing of the switch 49. The closing of the switch 30 also causes operation of the audio oscillator 38 which is connected to the variable resistance 45 and thence to the amplifier 40. If the switch 13 at the speaker unit S be connected to one of the receivers R, a siren signal is transmitted from the variable resistance 45 to circuit 63 and thence to the sections 62 of the open receiver channels C, with the amplifiers A being effective to cause a signal of sufficient volume to be transmitted over the trunk lines T to the speaker units S to be readily audible despite the resistance of the volume control 12. If the switch 13 has been moved to the "off" position indicated in dotted lines, to disconnect the speaker unit S, the siren signal is received from the amplifier 40 by way of a trunk line 60 connected to terminals 16 which are engaged in the "off" position of the switch 13. In this position of the switch, the resistance at 12 is shunted out, so that the maximum volume of the siren signal is readily obtained. Meantime, the lamp 68 produces a flashing signal because of the intermittent action of the cam switch 49 which thereby interrupts the current from the circuit 51 flowing into the lead 66, part of one trunk line T, the lead 67 and through a wire of the circuit 60 to the lead 69 to the switch 49 and back to the circuit 51. This visible signal operation is wholly independent of the position of the switch 13. Thus the audible and visible signals are obtained simultaneously by means of a central control for a multitude of speaker units regardless of their operating conditions. For the "all clear" signal of the green light 73, the switch 77 is closed for the circuit 74, 76. Then the switch 24 is closed to open the switch 30 and permit the switch 21 to automatically move to close the circuit channels C for the receiver R to thus restore the system for normal selective operation of the speaker units S with the receivers R and the amplifiers

A. If an announcement is to be made through the microphone 17, the switches 21 are thrown to the contacts 23 cutting out the receivers R and connecting the amplifier 19 to the speaker units S.

It is to be understood that the audio oscillator 38 may be replaced by a condenser. Whereas a condenser changes the volume of sound, the audio oscillator changes the pitch thereof, and the effect is therefore, that of a siren and hence more desirable. However, the audio oscillator variable resistor 45 may be regarded herein as the equivalent of a variable condenser, and the term oscillator means may be regarded as including a condenser or equivalent means.

I claim:

1. An apparatus including a multi-channel radio receiving system comprising a radio receiving apparatus for each channel and a plurality of speaker units selectively connected to the different receiving apparatus, a hand operated multi contact switching means located wholly at each speaker unit and having main individual contacts for the different receiving apparatus and having auxiliary contacts free of the different receiving apparatus and being connected to the speaker units as the switch means are selectively operated to disconnect the receiving apparatus, a signaling system connected to said auxiliary contacts to energize the speaker units whose switch means are disconnected from the different receiving apparatus, means connecting the signaling system to the said channels to energize the speaker units whose switch means are selectively connected to said channels, and means coacting with the signaling system and the different receiving apparatus to cause the signals from the signaling system to be operatively transmitted to the channels for energizing speaker units without interference by said receiving apparatus.

2. An apparatus according to claim 1, wherein each receiving apparatus includes a receiver and an amplifier, and the last mentioned means comprises means for disconnecting the amplifiers from their respective receivers and for connecting the amplifiers to the signaling system.

3. An apparatus according to claim 1, including individual volume control resistances for the speaker units adapted to be connected to said main contacts and being independent of the auxiliary contacts.

4. An apparatus including a multi-channel radio receiving system comprising a plurality of radio receivers, individual amplifiers therefor, signal reproducing instruments, a first means for selectively connecting said instruments to said amplifiers, a signaling system, a second means co-operating with the first means for connecting the signaling system to the said instruments when the first means are operated to disconnect the said instruments from the receivers, switches for connecting and disconnecting the receivers with respect to their amplifiers and the signaling system so that the signaling system can operate through the amplifiers when the same are disconnected from their receivers, and a unitary device for simultaneously operating said switches.

5. An apparatus including a multi-channel radio receiving system comprising a plurality of radio receivers, individual amplifiers therefor and electromagnetic speaker units comprising a first means including switches for selectively connecting the speaker units to said amplifiers, a signaling system comprising an oscillator means,

an amplifier therefor, a second means cooperating with the switches for connecting the amplifier of the oscillator means to the speaker units when the switches are moved to disconnect the speaker units relatively to the receivers, and means for disconnecting the receivers relatively to their respective amplifiers and for connecting the oscillator means to the amplifiers of the receivers so as to cause the signaling system to coact with such speaker units as are connected by their switches with respect to any one of said receivers, whereby the oscillator means imparts a signal through different amplifying paths according to the position of the speaker unit switches.

6. An apparatus according to claim 5, wherein the speaker units comprise volume control resistances so related to the said switches as to be shunted out when the switches are in said disconnecting positions.

7. An apparatus according to claim 5, wherein said oscillator means is adapted for operation at audio frequency, a variable resistance means being provided connected into the output of the oscillator, a motor having means for causing the resistance of said variable resistance thereof to alternately increase and decrease, and means whereby operation of the motor is automatically caused upon disconnecting said receivers from their respective amplifiers.

8. An apparatus including a multi-channel radio receiving system comprising a plurality of radio receivers, individual amplifiers therefor, signal reproducing instruments, a first means for selectively connecting said instruments to said amplifiers, a signaling system, a second means cooperating with the first means for connecting the signaling system to the said instruments when the first means are operated to disconnect the said instruments from the receivers, switches for connecting and disconnecting the receivers with respect to their amplifiers and the signaling system so that the signaling system can operate through the amplifiers when the same are disconnected from their receivers, and a unitary device for simultaneously operating said switches, and a single control means for causing simultaneous operation of the unitary means and of the signaling system so that the latter is caused to operate when the amplifiers are disconnected from their receivers.

9. An apparatus including a multi-channel radio receiving system comprising a plurality of radio receivers, individual amplifiers therefor, signal reproducing instruments, a first means for selectively connecting said instruments to said amplifiers, a signaling system, a second means cooperating with the first means for connecting the signaling system to the said instruments when the first means are operated to disconnect the said instruments from the receivers, switches for connecting and disconnecting the receivers with respect to their amplifiers and the signaling system so that the signaling system can operate through the amplifiers when the same are disconnected from their receivers, the signaling system including an oscillating means comprising a variable resistance and a motor for controlling the same, and means for causing operation of the signaling system coincident with the disconnection of the receivers from their amplifiers.

10. An apparatus including a multi-channel radio receiving system comprising a plurality of radio receivers, individual amplifiers therefor, signal reproducing instruments, a first means for

selectively connecting said instruments to said amplifiers, a signaling system, a second means cooperating with the first means for connecting the signaling system to the said instruments when the first means are operated to disconnect the said instruments from the receivers, switches for connecting and disconnecting the receivers with respect to their amplifiers and the signaling system so that the signaling system can operate through the amplifiers when the same are disconnected from their receivers, and a unitary device for simultaneously operating said switches, and a unitary means for causing operation of said unitary device and of the signaling system, including an electromagnet for said unitary device.

11. An apparatus including a multi-channel radio receiving system comprising a plurality of radio receivers, individual amplifiers therefor, signal reproducing instruments, a first means for selectively connecting said instruments to said amplifiers, a signaling system, a second means cooperating with the first means for connecting the signaling system to the said instruments when the first means are operated to disconnect the said instruments from the receivers, switches for connecting and disconnecting the receivers with respect to their amplifiers and the signaling system so that the signaling system can operate through the amplifiers when the same are disconnected from their receivers, and a unitary device for simultaneously operating the said switches, the signaling system including an oscillating means comprising a variable resistance and a motor for controlling the same, and a control means comprising an electromagnetic means for the said unitary device, individual circuits for said electromagnetic means and for said motor, and a common switch means for controlling said circuits including the signaling system.

12. An apparatus including a multi-channel radio receiving system comprising a plurality of radio receivers, individual amplifiers therefor, signal reproducing instruments, a first means for selectively connecting said instruments to said amplifiers, a signaling system, a second means cooperating with the first means for connecting the signaling system to the said instruments when the first means are operated to disconnect the said instruments from the receivers, switches for connecting and disconnecting the receivers with respect to their amplifiers and the signaling system so that the signaling system can operate through the amplifiers when the same are disconnected from their receivers, a source of light adjoining each instrument, a circuit for said source of light, and unitary means whereby the said switches and the light sources are controlled.

13. An apparatus including a multi-channel radio receiving system comprising a plurality of radio receivers, individual amplifiers therefor, signal reproducing instruments, a first means for selectively connecting said instruments to said amplifiers, a signaling system, a second means cooperating with the first means for connecting the signaling system to the said instruments when the first means are operated to disconnect the said instruments from the receivers, switches for connecting and disconnecting the receivers with respect to their amplifiers and the signaling system so that the signaling system can operate through the amplifiers when the same are disconnected from the receivers, the signaling system including an oscillating means comprising a

variable resistance and a motor for controlling the same, and means for causing operation of the signaling system coincident with the disconnection of the receivers from their amplifiers, a luminous signaling system including light sources adjacent to the individual instruments, and an intermittently operating control means for the luminous system actuated by said motor.

14. An apparatus according to claim 13, wherein said luminous system is controlled by said common switch means.

15. An apparatus including a multi-channel radio receiving system comprising a plurality of radio receivers, individual amplifiers therefor, signal reproducing instruments, a first means for selectively connecting said instruments to said amplifiers, a signaling system, a second means cooperating with the first means for connecting the signaling system to the said instruments when the first means are operated to disconnect the said instruments from the receivers, switches for connecting and disconnecting the receivers with respect to their amplifiers and the signaling system so that the signaling system can operate through the amplifiers when the same are disconnected from their receivers, an "all clear" signaling system including lamps adjacent to the individual instruments and comprising a circuit connected across a plurality of the channels at each said instrument.

16. An apparatus including a multi-channel radio receiving system comprising a radio receiving apparatus for each channel and a plurality of speaker units selectively connected to the different receiving apparatus, a hand operated multi-contact switching means located wholly at each speaker unit and having main individual contacts for the different receiving apparatus and having auxiliary contacts free of the different receiving apparatus and being connected to the speaker units as the switch means are selectively operated to disconnect the receiving apparatus, a signaling system connected to said auxiliary contacts to energize the speaker units whose switch means are disconnected from the different receiving apparatus, means connecting the signaling system to the said channels to energize the speaker units whose switch means are selectively connected to said channels, and means coacting with the signaling system and the different receiving apparatus to cause the signals from the signaling system to be operatively transmitted to the channels for energizing speaker units without interference by said receiving apparatus, each receiving apparatus including a receiver and an amplifier, and the last mentioned means comprising means for disconnecting the amplifiers from their respective receivers and for connecting the amplifiers to the signaling system, and individual volume control resistances for the speaker units adapted to be connected to said main contacts and being independent of the auxiliary contacts.

17. An apparatus including a multi-channel radio receiving system comprising a radio receiving apparatus for each channel and a plurality of speaker units selectively connected to the different receiving apparatus, a hand operated multi contact switching means located wholly at each speaker unit and having main individual contacts for the different receiving apparatus and having auxiliary contacts free of the different receiving apparatus and being connected to the speaker units as the switch means are selectively operated to disconnect the receiving

apparatus, a signaling system connected to said auxiliary contacts to energize the speaker units whose switch means are disconnected from the different receiving apparatus, means connecting the signaling system to the said channels to energize the speaker units whose switch means are selectively connected to said channels, and means coacting with the signaling system and the different receiving apparatus to cause the signals from the signaling system to be operatively transmitted to the channels for energizing speaker units without interference by said receiving apparatus, each receiving apparatus including a receiver and an amplifier, the last mentioned means comprising means for disconnecting the amplifiers from their respective receivers and for connecting the amplifiers to the signaling system, and individual volume control resistances for the speaker units adapted to be connected to said main contacts and being independent of the auxiliary contacts, the signaling system including an amplifier and oscillator means connected in parallel to its amplifier and the amplifiers of said channels.

18. A signaling apparatus for a multi-channel radio receiver system wherein speaker units are selectively connected into trunk lines extending from the receivers, comprising electromagnetic speaker units having switches for selectively connecting the speaker units to the trunk lines and for disconnecting the speaker units from the trunk lines, trunk line amplifiers for the speaker units, a signaling system comprising an oscillator means, an amplifier therefor, means co-operating with the switches in the disconnecting position thereof for connecting the speaker units to the amplifier of the oscillator means, means for connecting the trunk line amplifiers to the oscillator means and for disconnecting the receivers from the trunk line amplifiers.

19. A multi-channel radio receiving and signaling system wherein each transmission channel is provided with its individual receiver and power amplifier with the channels being selectively connected to different electromagnetic speaker units, comprising an audio oscillator means, a variable resistance in the output thereof, a motor for causing constant change in said variable resistance, a circuit for connecting said variable resistance to said different channels, amplifiers in said channels, switches for disconnecting the receivers from said amplifiers and for connecting said amplifiers to said circuit, an amplifier means outside of said channels connected to said variable resistance, a unitary means for operating said switches to connect the variable resistance to the amplifiers, switches for the individual speaker units for selectively connecting and disconnecting them relative to the said channels, and means for causing the switches in their disconnected position to connect the amplifier means to the speaker units in the said disconnected position of the switches, and a unitary means for controlling said motor and oscillator means and the unitary operating means for the receiver switches.

20. A system according to claim 19, wherein a source of light is provided adjoining each speaker unit, a circuit for said source of light, and a switch for said circuit intermittently closed by said motor.

21. A signaling system for a multi-channel radio receiving system wherein a radio receiver is connected to each channel and the latter selectively connected to different electromagnetic

speaker units, comprising speaker units, an audio frequency signaling system having means for transmitting thereto audible signals, means for disconnecting the receivers while automatically causing the signaling system to be energized and connected to said speaker units, and a luminous signaling system comprising light sources adjacent to the units, said luminous signaling system having means so that it is energized as a unit with the audible signaling system.

22. A signaling system for a multi-channel radio receiving system wherein a radio receiver is connected to each channel and the latter selectively connected to different electromagnetic speaker units, comprising speaker units, an audio frequency signaling system having means for transmitting thereto audible signals, switch means for selectively causing the speaker units to be connected or disconnected with respect to the different receivers, means co-operating with the switch means for connecting the said signaling means to the speaker units in the disconnecting position of the switch means, control means for disconnecting the receivers relative to the speaker units and for connecting said signaling means to the switch means for operation in the connected position of the latter, and a luminous signaling system including individual light sources for the speaker units energized by said control means independently of the said switch means.

23. An apparatus including a signaling system comprising an oscillator operative at audio frequencies, means for energizing the same at will, an impulse varying means for the output of said oscillator, actuator means for causing operation of the impulse varying means so as to afford signals having a siren effect when the signals are caused to produce sound, a trunk line circuit connected to the output of the impulse varying means, and a plurality of signal reproducing instruments connected to the trunk line circuit so as to be responsive to the varying oscillator signals.

24. An apparatus including a signaling system comprising an oscillator operative at audio frequencies, means for energizing the same at will, an impulse varying means for the output of said oscillator, actuator means for causing operation of the impulse varying means so as to afford signals having a siren effect when the signals are caused to produce sound, a trunk line circuit connected to the output of the impulse varying means, and a plurality of signals reproducing instruments connected to the trunk line circuit so as to be responsive to the varying oscillator signals, said impulse varying means including a variable resistance and the actuator means including a motor for causing the variation of said variable resistance.

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