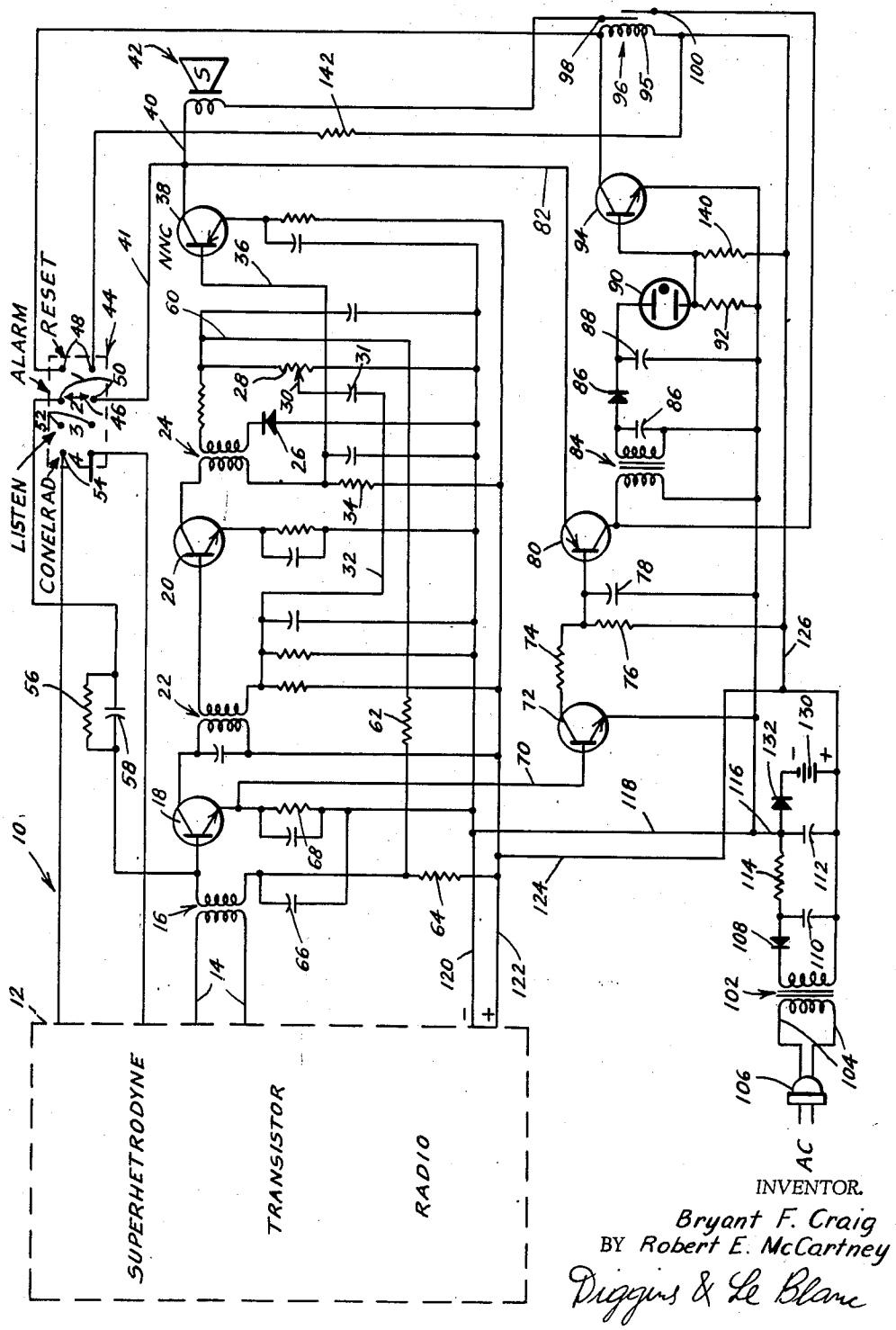
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CONELRAD WARNING DEVICE

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CONELRAD WARNING DEVICE

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This invention relates to a radio warning device and more particularly to a radio receiver warning device for developing and delivering an audible warning of a CONELRAD alert.

More specifically, the present invention relates to an electronically actuated signal responsive apparatus, the operation of which is dependent upon the reception of radio frequency signals transmitted pursuant to and in accordance with the standard CONELRAD warning system.

The instant apparatus may be used in applications where an alerting signal of the predetermined CONELRAD code actuates a responding portion of the apparatus which in turn causes a standard superheterodyne transistorized radio receiver to be actuated so as to render a signal reproducing device operative and thereby result in an audible announcement of an impending national emergency.

The instant apparatus may be also used in conjunction with the predetermined NEAR code which is transmitted over pre-existing power transmission lines and networks.

Various radio systems and devices have been known for many years. None, however, is particularly suited for use in conjunction with standard CONELRAD warning signals, and many of the prior devices require complicated equipment and expensive circuit components, making them impractical for mass production and utilization.

Further, most of the heretofore known radio warning systems relied principally upon the fact that, in the event of a national emergency, modulation of the broadcast carrier frequency of a standard transmitting station would cease, thereby causing signalling means, such as lights, buzzers, bells, etc., to be actuated. Such systems, however, are not practical nor effective since there are often circumstances when standard transmitting stations transmit only a carrier wave for short periods of time. It is apparent, therefore, that under such conditions systems operating on the above-mentioned principle would emit false alarms.

Still further, since it is obviously desirable to quickly alert the populace and instruct them on the proper course of action to be taken, in the event of a national emergency, many of the heretofore known systems have suggested the use of centrally located loud speakers. However, an obvious disadvantage regarding centrally located loud speakers is that a large portion of the populace may not hear the emergency because of their physical location with respect to the loud speaker.

Yet still further, most of the heretofore known radio warning systems and devices required specific and cumbersome procedures for attachment thereto to existing superheterodyne radio receivers commonly found in civilian, industrial and governmental sites. Such arrangements were often objectionable in that normal operation and use of the radio receiver was impaired or the cost for connecting the device or system thereto was considerable.

Yet still further, most of the prior known radio warning systems or devices were unreliable, ineffective and inefficient in performing the functions intended should the commonly available 110 volt, 60 cycle, alternating

current power supply be disconnected. That is to say, the receipt of a warning of an impending disaster or the like was not perfected in the event that conventional A.C. power commonly available in this country were to be disconnected for one reason or the other.

The present invention avoids the above-set forth difficulties by providing a simplified and inexpensive unit usable in civilian, industrial or governmental sites to give an audible indicaton of a national emergency and which device is particularly suited for use in conjunction with the standard CONELRAD system.

While the present invention may be used in a variety of civilian, industrial and governmental applications, the principle of operation makes it particularly useful for the unattended reception and reproduction of CONELRAD code signals. Accordingly, the present invention may be used for civil defense purposes by the general public, by operators of radio broadcasting equipment and by commercial, industrial, or amateur services which are presently required by law to have available responding equipment in order that radio broadcasting, except for civil defense purposes, may be discontinued during a national emergency.

In addition, the heretofore known radio warning systems required the continuous operation of the entire warning device, whereas, the device and principles of the present invention permit conventional superheterodyne transistorized radio receivers to be uniquely modified so as to receive and decode CONELRAD alerts yet not require continuous full operation of the apparatus, thereby resulting in a noticeable economy of operation.

There is disclosed in copending application Serial No. 123,469, filed July 12, 1961, in the names of Craig and McCartney, a simplified and inexpensive unit usable in the home to get an audible indication of warning, which unit is particularly suited for use in conjunction with standard CONELRAD warning alerts. The present invention is directed to such a CONELRAD warning device as is described in said copending application, and provides a further simplified and inexpensive unit which may be manufactured at a minimum of cost and yet gives adequate and reliable operation over extensive periods of time.

It is therefore a primary object of the present invention to provide a novel radio warning device capable of civilian, industrial and governmental use.

Another object of the present invention is to provide a system for developing and delivering audible warnings of a national emergency.

Still another object of the present invention is to provide a simplified and inexpensive unit for civilian, industrial or government use for developing audible warnings of a national emergency.

Yet still another object of the present invention is to provide a radio warning device particularly suited for use in conjunction with the existing CONELRAD warning systems.

A further object of the present invention is to provide a novel radio warning device which is capable of delivering an audible warning of a national emergency notwithstanding the destruction or discontinuance of conventional A.C. power commonly used by radio receivers in this country.

A still further object of the present invention is to provide a unique warning device which is capable of receiving the CONELRAD signal code and yet does not require the continuous operation of the apparatus thereby resulting in a noticeable economy of operation.

Yet a still further object of the present invention is to provide a novel warning device whereby a CONELRAD emergency signal code actuates a responding por-

tion of the device which in turn causes the receiver portion of the device to be actuated thereby giving an audible warning of an impending national emergency.

An additional object of the present invention is to provide a warning device wherein a continuously operating, unattended, responding circuit thereof, is responsive to the CONELRAD signal code and which circuit automatically actuates an alerting circuit thereby resulting in an audible warning of an impending national disaster.

Still an additional object of the present invention is to provide a novel emergency warning device particularly suited for use in conjunction with the existing CONELRAD warning system which is simple in construction, economical to manufacture, and highly reliable in performing the functions intended.

These and further objects and advantages of the invention will be more apparent upon reference to the following specification and claims, and appended drawing wherein:

The single figure of the drawing is a detailed circuit diagram of the novel portion of the radio warning device of the present invention.

While the present invention is described in conjunction with and is particularly suited for, use with existing CONELRAD broadcast systems, the present invention has utility in conjunction with other emergency warning purposes, such as general broadcast information, as well as tornado, hurricane and other weather alerts.

In the event of an enemy bomber or missile attack, it is well known that the general public will have very little warning and will have only a short time to take cover, evacuate and to make other arrangements essential to their survival during such enemy attack. The time after general warning and before attack, has been estimated by the experts to be merely a matter of minutes, and even the most optimistic estimates consider 45 minutes as about the greatest possible warning time present known warning systems are able to provide to the general public.

While conventional air raid warning sirens to some extent provide a usable general warning system, they have many undesirable features, among which may be listed the high expense of installation and upkeep, along with the periodic disturbance and annoyance to the public when the sirens are tested or inadvertently turned on.

The novel warning device of the present invention is incorporated in a small container in the form of a small transistor radio receiver and permanently plugged into the conventional A.C. power supply outlet found in most civilian, industrial and governmental sites.

When a predetermined series of warning signals are transmitted from local radio stations during a CONELRAD alert, the device of the present invention is actuated and it amplifies the audio tone signal transmitted during the CONELRAD alert. The amplification of the audio tone signal provides sufficient volume thereof so that it can be heard throughout the owner's site. Further, the device is operative throughout an entire 24 hour day on an automatic basis, so that it does not depend upon the owner thereof having his radio turned on, and will operate to warn the public even during the night when most are asleep.

Referring to the drawing, the warning device of the present invention comprises a modified radio receiver generally indicated at **10**, which is approximately the size of a transistorized radio receiver, as more fully described in said copending application Serial No. 123,469. In the drawing, the conventional RF and local oscillator stages of a superheterodyne transistor radio are, for the sake of clarity, indicated in block form at **12**. The output from the receiver mixer passes by way of leads **14** to the primary of an IF transformer **16**, from transformer **16** the IF signal passes through a pair of IF amplifier stages, including NPN junction transistors **18** and **20**, by way of a second IF transformer **22**. The signal then passes through transformer **24** and is detected by rectifier **26** with the detected audio signal being developed across resistor **28**.

The foregoing elements all constitute latter stages in a standard transistor superheterodyne reflex receiver.

Referring now to the upper middle portion of the drawing, the audio signal is tapped off of resistor **28** by slider **30** and capacitively coupled, via capacitor **31**, transformer **22** and lead **32** to the base electrode of transistor **20**. Transistor **20** thus acts as a reflex stage since it is used as both an IF and AF amplifier. The resulting amplified AF signal is developed across resistor **34** and delivered by way of lead **36** to the base electrode of PNP junction transistor **38**. The collector electrode of transistor **38** is connected by way of lead **40** to the driving coil of a speaker **42**.

Also connected in the circuit is a four-position switch **44** having a slider **46** for alternatively coupling four pairs of contacts **48**, **50**, **52** and **54**. When switch **44** is (1) in position 1, hereinafter referred to as the RESET position, slider **46** connects contacts **48**, (2) in position 2, hereinafter referred to as the ALARM position, slider **46** connects contacts **50**, (3) in position 3, hereinafter referred to as the OPERATE position, slider **46** connects contacts **52** and (4) in position 4, hereinafter referred to as the CONELRAD position, slider **46** connects contacts **54**. With the slider of switch **44** in position 2, as shown, lead **41** is connected through contacts **50** of switch **44** so that feedback resistor **56** and feedback capacitor **58** are connected between the collector electrode of transistor **38** and the base electrode of transistor **18**. Resistor **56** and capacitor **58** provide a regenerative feedback circuit for increasing and enhancing the amplitude of the AF signal when switch **44** is in the ALARM position.

The IF signal developed in the secondary circuit of transformer **24** is fed back by way of lead **60** and resistor **62** to resistor **64** and smoothing capacitor **66**. Resistor **64** is the automatic volume control (AVC) resistor of radio **12**. The AVC signal developed across resistor **64** is then fed through the secondary of transformer **16** as an AVC signal to the base electrode of transistor **18**. As a result of this AVC feedback, an AVC potential is developed across self-biased resistor **68** in the emitter circuit of transistor **18** and delivered by way of lead **70** to the base electrode of NPN junction transistor **72**.

Transistor **72** is collector coupled by way of resistors **74** and **76** and capacitor **78** to the base electrode of PNP junction transistor **80**. The emitter electrode of transistor **80** is connected by way of lead **82** to the collector lead **40** of transistor **38**.

The collector electrode of transistor **80** is connected to the primary of transformer **84** which has a tuned secondary including capacitor **86**. The secondary of transformer **84** is preferably tuned to approximately 1,000 cycles. The output from transformer **84** is delivered by way of diode **86** and capacitor **88** to flow discharge tube **90**. A voltage corresponding to the current flow through tube **90** is developed across resistor **92** and fed to the base electrode of NPN junction transistor **94**. The collector of transistor **94** is connected to the actuating coil **95** of a vibrating reed relay **96**. Relay **96** has one terminal **100** connected to the collector electrode of transistor **80**. The reed relay coil **95** has its opposite ends connected to the upper and lower contacts **48** of switch **44**.

The power supply circuit for the device of the present invention comprises a step-down transformer **102** having its primary connected by way of leads **104** to a conventional plug **106**, for insertion into a conventional A.C., 110 volt, 60 cycle power outlet. The secondary of transformer **102** develops approximately 11 volts A.C. which signal passes through diode rectifier **108** and filter capacitors **110** and **112** by way of limiting resistor **114** to negative supply line **116**. Negative line **116** is connected

by way of lead 118 to negative bias line 120 of the receiver. The positive bias line 122 is connected by way of lead 124 to positive supply line 126 and the other side of the secondary of step-down transformer 102. The other ends of capacitors 110 and 112 are also connected to the other side of transformer 102.

Also forming a part of the power supply circuit is a 9 volt standby battery 130 connected through diode 132 to negative supply line 116 and having its positive terminal connected to positive supply line 126.

Cycle of Operation

In operation, the alarm device is plugged into the A.C. power outlet commonly available in most civilian, industrial and governmental sites and remains silent until a CONELRAD alert is given. During this time, which may be a period of several months or more, the unit is powered from the house outlet with the standby battery 130 unused. If, for some reason, either during or after an attack, the A.C. power supply should fail or be disconnected for any reason, then the battery 130 is automatically switched in the device and supplies the operating potentials therefor. Rectifier 132 prevents the 9 volt battery 130 from discharging into the load as long as approximately 11 volts from transformer 102 exist on the load side of diode 132. In this way, diode 132 effectively isolates the battery from the household power supply and the battery furnishes no current to the device until such time as the A.C. power supply is either disconnected or goes off the line. In effect, the diode arrangement acts as a relay which permits the 9 volt battery to last approximately full shelf life but automatically switches it into the load if the plug 106 is either removed from the wall or line voltage disappears.

The alarm device 10 is initially tuned to one of the stronger local broadcast stations so that the CONELRAD code signal will be received at any time it is transmitted from the local station. During such an alert, the regular program modulation of the broadcast station carrier is replaced by the CONELRAD signal which is a 1,000 cycle modulation signal superimposed on the broadcasting station carrier. This 1,000 cycle tone actuates the receiver alarm with speaker 42 in the circuit so that the 1,000 cycle tone is delivered to the occupants of the sites in which the device is located as a loud audible tone through the speaker or signal reproducing device of the receiver. This audible tone is greatly magnified by the regenerative feedback through resistor 56 and capacitor 58. Once the occupants are alerted by this audible tone, they can then actuate manual switch 44 and move it from position 2, i.e., the ALARM position, to the OPERATE position, i.e., position 3, thereby connecting contacts 52. This movement of switch 44 to the OPERATE position disconnects the regenerative feedback from the circuit so that the alarm device functions as a simple transistor radio receiver tuned to the local broadcast station frequency so that any oral instructions or information that may be broadcast by the radio station can be heard and heeded.

It is contemplated that sometime after the initial CONELRAD warning, all broadcast stations will discontinue transmission of their regular broadcast frequencies and transmit instead the CONELRAD frequencies. When this happens, it is possible for the owner of the device to move switch 44 into position 4, i.e., the CONELRAD position, thereby connecting contacts 54 so that the device is automatically tuned to the CONELRAD frequencies whereby additional information and instructions may be heard.

The CONELRAD code signal, as now used, consists of the following procedure: Standard broadcast station carrier going (1) OFF for 5 seconds; (2) ON for 5 seconds; (3) OFF again for 5 seconds; (4) ON again with a 1,000 cycle modulating tone applied to the carrier for 15 seconds; and (5) then audio modulated with an announcement giving the nature of the alert and any instructions.

A basic feature of the present invention is the provision of a control circuit that detects and uses the complete CONELRAD code. The audio output of the device of this invention is muted, that is, nothing is reproduced by the speaker until after 5 seconds of 1,000 tone has been received. This, of course, as mentioned above, must be preceded by the 5 second OFF, 5 second ON and 5 second OFF sequential intervals of carrier frequency and then the modulating 1,000 cycle tone. The control unit will then connect the speaker to the output of the receiver to give a very harsh buzzing sound which is greatly amplified by the regenerative feedback circuit. This harsh audible tone is identified by the owner of the device as the CONELRAD warning.

As long as standard broadcast carrier signal is being received from the front end of the receiver over lead 14, an AVC voltage is developed across resistor 68 in the emitter circuit of transistor 18. When the carrier goes off, the AVC voltage disappears and the potential across resistor 68 rises, causing normally cut off transistor 72 to conduct. Conduction of transistor 72 causes current to flow through the voltage divider comprising resistors 74 and 76 thus dropping the potential at the base electrode of rtansistor 80 and likewise causing transistor 80 to conduct. However, the time constant of the circuit comprising capacitor 78 and resistors 74, 76 in conjunction with transistors 72 and 80 is such that capacitor 78 is only partially discharged at the end of the first 5 second interval of the CONELRAD code so that transistor 80 only begins to conduct when capacitor 70 is further discharged at or near the end of the third 5 second interval of the CONELRAD code. In other words, when the carrier first disappears, transistor 72 becomes conductive and offers a low resistance discharge path to capacitor 78 so that the capacitor partially discharges during the first 5 second interval of the CONELRAD code. When the carrier returns, capacitor 78 tends to recharge through resistor 76 but since this is a high resistance path compared to the discharge path through transistor 72, the capacitor 78 does not recharge during the second 5 second interval of the CONELRAD code. Then during the third 5 second interval of the CONELRAD code when carrier frequency is again OFF, capacitor 78 again discharges almost completely through the then conducting transistor 72 so as to drop the potential at the base of transistor 80 to a voltage level whereby transistor 80 begins conducting.

The circuit relationship of capacitor 78 and resistor 74 form an integrating circuit which acts to hold transistor 80 non-conductive for some 1 to 2 seconds after the carrier with the 1,000 cycle modulating tone superimposed thereon is transmitted, i.e., during the fourth interval of the CONELRAD code. This 1,000 cycle modulating tone passes through the receiver stages including transistors 18, 20 and 38 and is fed by way of lead 82 to the emitter electrode of the now conducting transistor 80 so that the 1,000 cycle tone is developed across the primary of transformer 84. The tuned secondary of transformer 84 passes the 1,000 cycle tone which is rectified in diode 86 and applied across the electrodes of tube 90. Tube 90 is preferably a neon tube which will not conduct until there is approximately 70–100 volts across it. The voltage developed across capacitor 88 when the 1,000 cycle tone is received through transformer 84 and rectifier 86 reaches a value sufficient to fire neon tube 90 thereby causing a voltage to be developed across resistor 92 and supplied to the base electrode of transistor 94. The voltage developed across resistor 92 is in the form of a positive spike of voltage. Transistor 94, when the positive spike voltage is applied to its base electrode, passes sufficient current to energize relay 96. The base electrode of transistor 94 is at all times furnished with sufficient voltage from the positive supply lead 126 by way of resistor 140 to hold the

contacts of relay 96 "in" after sufficient current has been drawn from tube 90 to energize that relay. However, the voltage from the positive supply through resistor 140 is insufficient in itself to energize the relay 96 and "pull in" the contacts thereof. The "Q" of the tuned secondary of transformer 84 need not be extremely high but should discriminate against frequencies other than 1,000 cycle tones and should have a discrimination band width of approximately 100–150 cycles.

As can be seen, as long as transistor 80, in the control circuit of the device, is cut off, there can be no current through transistor 38 and hence the speaker 42 is muted and receives no signal for reproduction.

When moving from the ALARM position to the OPERATE position of switch 44, that is, position 2 to position 3, after the signal is heard, the feedback circuit and control circuit are disconnected and the device operates as a simple transistorized radio receiver tunable to the local broadcast station frequencies. However, when moving from position 3 to position 4, i.e., OPERATE to CONELRAD, contacts 54 are connected thereby connecting a shunting or trimmer capacitor (not shown) across the conventional tuning capacitor of the radio receiver and automatically tuning the device to either 640 or 1240 kc., that is, one of the CONELRAD frequencies.

When first plugging the set into the wall, it is possible to hear a local broadcast station signal through the speaker 42 when switch 44 is in the ALARM position, i.e., the number 2 position. However, the reproduced signal is unintelligible or garbled due to the regeneration caused by the feedback circuit. On the other hand, if the switch is in the OPERATE position, it is possible to utilize the unit as a simple radio receiver and listen to the local broadcast station. In order to reset the device, or to mute the unit, that is, turn off the ALARM during test, the slider 46 of switch 44 is moved to the RESET position which automatically shunts relay 96 with a small resistor 142 thereby de-energizing relay 96 and causing the contacts thereof to open. With relay 96 open, there is no voltage furnished to transistor 38 and this acts to effectively mute the speaker and interrupt the regenerative feedback path.

The normal steps of operation of the device is that, when first plugged into the wall, the switch 44 is momentarily moved to the RESET position. The set is then muted. The switch is then moved to the ALARM position and left there in readiness for a CONELRAD alert. When the CONELRAD code signal is transmitted and the switch 44 is in the ALARM position and a loud squealing noise constituted by the regenerated 1,000 cycle CONELRAD tone is heard from speaker 42, the switch 44 is then moved to the OPERATE position for information and instructions transmitted over the local broadcast station frequency or moved to the CONELRAD position for information and instructions transmitted over the CONELRAD frequency. It will be apparent, of course, that if A.C. power fails or is disconnected for one reason or another, the standby battery 130 automatically supplies the operating potentials for the device and provides a self-contained portable warning device capable of delivering an audible indication of an impending or imminent national emergency.

Thus, it will be seen that the present invention provides a novel and unique radio warning device capable of producing audible warnings of a CONELRAD alert, and which may be used in civilian, industrial or governmental sites. Further, the present invention may be incorporated in a small transistorized container and plugged into a conventional A.C. power outlet commonly available in this country.

It will be apparent from the foregoing that the device of the present invention is low in cost, rugged in construction, and requires very little maintenance. The use of a standby storage supply provides economy in that the life of the battery in conjunction with the present invention is the shelf-life thereof.

It is also apparent from the above that the present invention provides a novel radio receiver alarm device of quite simple and inexpensive construction and of a size comparable with portable transistorized radio receivers. In addition, the alarm system of the present invention is operative both day and night and can be preset to a local broadcast station frequency so that any time the CONELRAD code signal is transmitted, the receiver is automatically energized and caused to reproduce the 1,000 cycle CONELRAD tone as an audible sound to awaken sleeping persons or to draw the attention of the owner of the device that a national emergency is imminent.

Further, through manual switch 44, it is possible to (1) mute the alarm, (2) cut off regeneration, (3) tune to local broadcast stations or (4) tune to the CONELRAD frequencies.

It should be noted that notwithstanding the position of switch 44 or the existence of A.C. power, the device of the present invention may be removed from the A.C. power outlet and carried as a portable transistor radio which is tunable to either a local broadcast station frequency or to the CONELRAD frequencies, i.e., 640 kc. or 1240 kc., and is capable of reproducing an audible indication of an imminent or impending national emergency.

From the foregoing it will be seen that the present invention is uniquely adapted to obtain all of the ends and objects heretofore set forth together with other advantages which are obvious and apparent to the device.

It will be understood that certain features and subcombinations are of utility and may be employed without reference to other features and subcombinations. This is contemplated by and is within the scope of the appended claims.

It is to be understood that the device of the present invention may be readily modified so as to be responsive to any code signal which may be adopted by governmental authorities for the purpose of notifying the populace of an imminent and impending emergency without departing from the scope of the invention. Accordingly, the hereinabove described CONELRAD signal code system is merely exemplary of one of the presently adopted Civil Defense systems to which the device of the present invention is responsive and should not be construed as restricting or limiting. By way of example, the device of the present invention may be modified to be responsive to a signal code system which utilizes power transmission lines or telephone lines as the means for linking the signal between the transmitter and the receiver. A system of the latter type has been adopted by Civil Defense Authorities and is commonly referred to as the NEAR warning system. Thus, a modification of the device of the present nivention so as to be responsive to the NEAR signal code is clearly contemplated and requires only minor circuit changes.

It is to be further understood that the parameters of the regenerative feedback circuit (56—58) are preferably designed so as to drive the rear-end of the transistor radio (18—20) into oscillation so that the audio tone (1000 c.p.s.) reproduced by the speaker 42 will continue until the switch 44 is moved to the OPERATE, CONELRAD or RESET positions. Of course, it is not necessary that the rear-end of the radio be driven into oscillation since the 1000 c.p.s. signal transmitted during the fourth interval of the CONELRAD signal code will be heard for approximately fifteen seconds.

The invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The present embodiment is therefore to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description and all changes which come within the meaning and

range of equivalency of the claims are therefore intended to be embraced therein.

What is claimed and desired to be secured by United States Letters Patent is:

1. A warning device for receiving a transmitted signal code comprising: a radio receiver having an IF amplifier, a reflex amplifier, an AF circuit and an AVC circuit; a normally non-conductive coupling transistor coupled to said AF circuit for amplifying the output of said AF circuit; a speaker connected to said coupling transistor for reproducing said output of said AF circuit; a relay switch for connecting said speaker across said coupling transistor; a normally non-conductive switching transistor coupled to said coupling transistor for rendering said coupling transistor conductive; a normally charged first storage capacitor coupled to the input of said switching transistor for biasing said switching transistor non-conductive; a normally non-conductive discharging transistor coupled to said IF amplifier for step-discharging said first storage capacitor in accordance with said signal code; a tuned circuit resonant to one audio frequency of said signal code and coupled to said switching transistor; a normally discharged second storage capacitor coupled across said tuned circuit; a normally open discharge switch for discharging said capacitor when charged to a predetermined voltage level; and a normally non-conductive energizing transistor coupled between said discharge switch and said relay switch for energizing said relay switch thereby causing said relay switch to connect said speaker across said coupling transistor whereby said audio output is reproduced by said speaker.

2. A warning device in accordance with claim 1 wherein the output of said AF circuit is fed back to the input of said reflex amplifier for amplification.

3. A warning device in accordance with claim 2 wherein said device further includes a regenerative feedback capacitor coupled between the output of said coupling transistor and the input of said IF amplifier whereby the energization of said relay switch renders said regenerative feedback capacitor operative.

4. A warning device in accordance with claim 3 wherein said device further includes a four position switch for first disconnecting said relay switch from said device so as to de-energize said relay switch; second for connecting said relay switch to said device, and connecting said regenerative feedback capacitor to said coupling transistor; third for disconnecting said regenerative feedback capacitor from said coupling transistor; and fourth for automatically tuning said receiver to the CONELRAD carrier frequency.

5. A warning device in accordance with claim 4 wherein: said AVC circuit develops an AVC signal in accordance with said signal code and delivers said AVC signal to said IF amplifier; said IF amplifier amplifying said AVC signal and said signal code and simultaneously delivering each signal to said discharging transistor; said AVC signal being of sufficient voltage level to render said discharging transistor conductive whereby said first storage capacitor is step-discharged in accordance with said signal code; upon discharge of said first storage capacitor to a predetermined voltage level, said switching transistor is rendered conductive thereby delivering said signal code to said tuned circuit and rendering said coupling transistor conductive; upon receipt of said one audio frequency of said signal code in said tuned circuit, said second storage capacitor is charged to a predetermined voltage level whereby said discharge switch is caused to close thereby delivering said one audio frequency to said energizing transistor and rendering said energizing transistor conductive; upon conduction of said energizing transistor said relay switch is caused to close thereby coupling said speaker across said coupling transistor whereby the output of said AF circuit is reproduced by said speaker.

6. A warning device in accordance with claim 5 wherein said device further includes a rectifying and filtering circuit for developing the operating potentials of said device; and means for automatically switching the power supply of said device from rectified A.C. voltages to stored D.C. voltages.

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