United States Patent

[11] 3,614,763

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[21] Appl. No. **808,106**
[22] Filed **Mar. 18, 1969**
[45] Patented **Oct. 19, 1971**

[54] **PRONE POSITION ALARM**
13 Claims, 5 Drawing Figs.

[52] **U.S. Cl.** ..... **340/279,** 40/129 A, 128/1 R, 128/2.05 R, 128/2.06 R, 340/283, 340/321
[51] **Int. Cl.** **G08b 21/00**
[50] **Field of Search** ..... 340/279, 283; 40/2.2, 129; 128/2.05 R, 2.05 Q, 2.05 P, 2.06 A, 2.06 F, 2.06 G, 2.06 R, 2.1 A, 2.1 R, 1 R

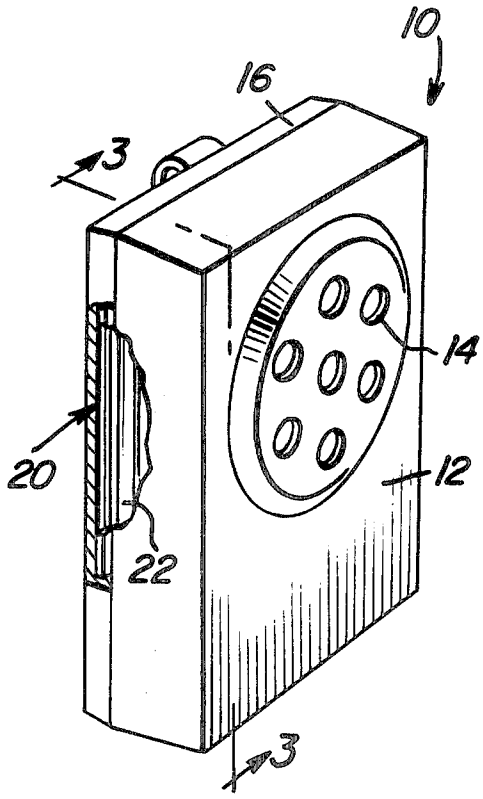
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ABSTRACT: A housing to be secured to a person's clothing encloses an audio signal generator. A mercury switch is connected to the generator so that when the person falls to a prone position, the mercury switch energizes the circuit to cause issuance of an alarm signal. The housing further encloses medication and a medical record sheet which informs a first aider as to the person's medical condition.



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Fig. 1

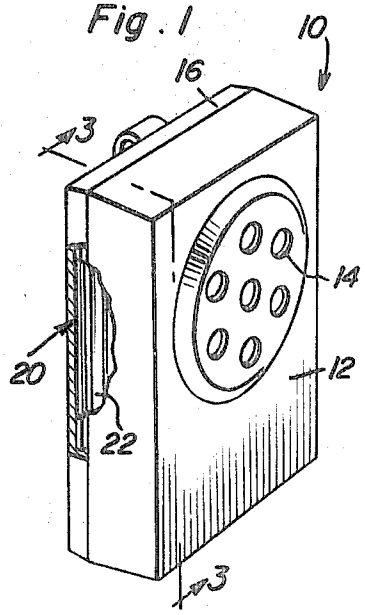


Fig. 2

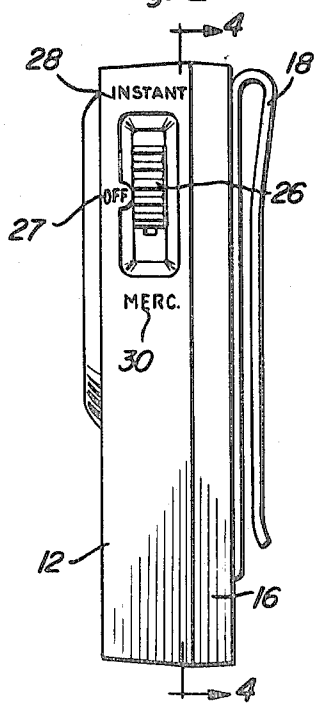


Fig. 3

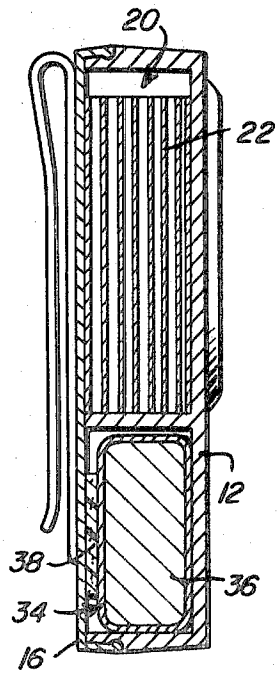


Fig. 5

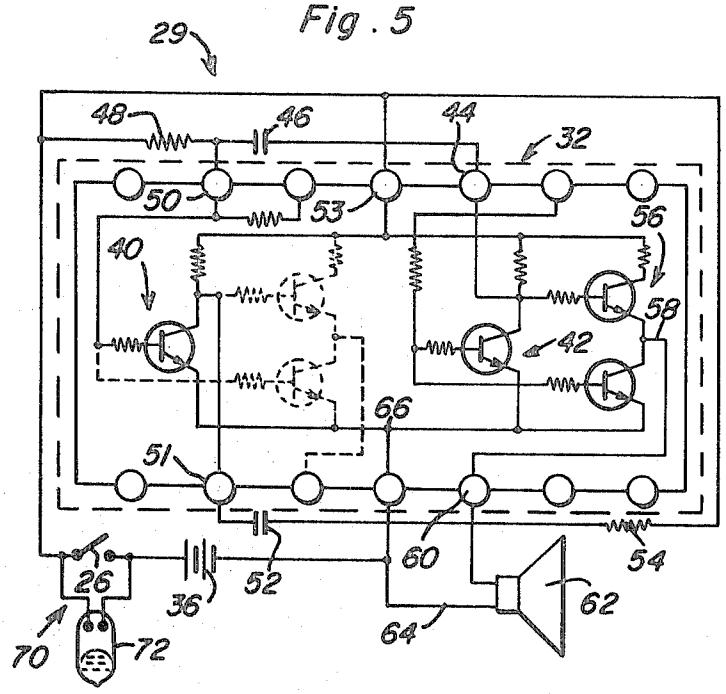
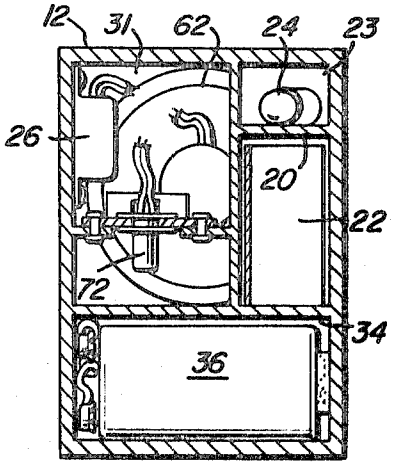


Fig. 4



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PRONE POSITION ALARM

The present invention relates to prone position alarm devices in combination with medical information carriers.

Medical information carriers are presently available to individuals who may require first aid treatment and are unable to relate needed medical information to first aiders. The medical carriers are usually in the form of bracelets, lockets or the like on which medical information is inscribed or in which a medical record in enclosed. However, when using such devices the medical information must first be located before aid can be administered so that the first aider will know the condition of the stricken individual before he can administer the proper treatment. It has been found from experience that those coming to the aid of victims are unfamiliar with the form or appearance of the medical information carrier and therefore are not apprised of the stricken individual's condition until it is too late. It is therefore desirable to incorporate an alarm device in such medical information carriers which will be triggered into operation for a prolonged period of time should the wearer fall or assume a horizontal position when stricken. The alarm may then attract attention as well as locate the information carrier.

The present invention includes an electronic audio signal generator incorporating a miniature integrated circuit which permits the alarm device to be housed within a small and inconspicuous package. A position-sensing device such as a mercury switch is connected in circuit with the signal generator so that when the stricken individual assumes a prone position, the switch is closed thereby causing the issuance of an audio alarm for a sustained period of time. A bypass switch is also included which allows an individual to manually set off the alarm when he feels himself weakening.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIG. 1 is a perspective view illustrating the appearance of the alarm housing.

FIG. 2 is a side elevational view illustrating a selector switch for operating the present alarm.

FIG. 3 is a transverse sectional view taken along a plane passing through section line 3—3 exposing the interior of the alarm housing.

FIG. 4 is a sectional view taken substantially through a plane indicated by section line 4—4 in FIG. 2.

FIG. 5 is an electrical schematic diagram of an audio signal generator within the alarm housing.

Referring to the drawings and more particularly to FIG. 1 thereof, the present device is generally indicated by reference numeral 10 and is seen to include a container or housing 12 which may be the size of a cigarette package. The front surface of the housing includes a number of apertures 14 therein to permit emission of an audio alarm from a speaker disposed immediately behind the apertures 14. The housing has a removable back cover 16 which mounts a clip 18 thereon to permit the securement of the housing within an individual's pocket. It should be appreciated however, that the clip 18 may be replaced with other fastening devices such as a pin clasp or the like to allow the fastening of the device to women's wearing apparel.

The interior of the housing 12 as shown in FIGS. 3 and 4, includes a compartment 20 for receiving a folded medical information record sheet 22 having printed information of the individual's condition and required treatment as indicated by 24. It is advantageous to fabricate the record sheet from a plasticized or similar material so that it is waterproof and long lasting. By folding the record sheet in alternating leaves, upon removal of the housing back cover 16, the resiliently folded record sheet will jump outwardly from the housing. A compartment 23 may also be formed in the housing to hold medication such as the ampul 24.

As seen in FIG. 2, a slide switch 26 is mounted to a side of the housing 12. The slide switch is a three-position switch that can be displaced to a lower position 30 which represents the automatic mode of the alarm whereby an audio alarm is automatically issued upon the falling of a stricken individual to a prone position. As explained hereinafter, a mercury switch 72 is employed to sense an individual'fall. The oppositely disposed switch position is in effect a manual override which enables an individual to issue an instant alarm when he feels himself weakening. In order to denote the latter switch position, the word INSTANT 28 is imprinted on the enclosure. The intermediate OFF position 27 of the switch causes circuit deenergization.

The audio signal generator 29 illustrated in FIG. 5 is employed to generate an audio alarm signal when a strickened individual is in need of assistance. The generator 29 as well as the mercury switch 72 are housed within compartment 31 of the housing 12 as shown in FIG. 4. A successful working model has been constructed by employing an integrated circuit 32 for accommodating the small dimensional requirements of the housing. Circuits of this required type are commercially available, for example, the Motorola integrated circuit module MC799P, which includes two inverting buffers that can be interconnected through the integrated circuit terminals to create an astable multivibrator.

In order to energize integrated circuit 32, a miniature battery 36 is received within a compartment 34 formed interiorly of the housing 12. Means for securing the battery 36 in place may include a pad of foam material 38 and a metal clip (not shown).

Referring to FIG. 5, the integrated circuit 32 is enclosed within the dotted line. The circuit module or chip contains the inverting buffers including a first NPN-transistor section 40 and a second transistor section 42. The collector of the second section 42 is connected through low-level signal output terminal 44 and an external recharging capacitor 46 to input terminal 50. Likewise, the collector of the first transistor section 40 is connected through its low-level signal output terminal 51 and external recharging capacitor 52 to input terminal 53. The capacitors 46 and 52 are respectively charged through resistors 48 and 54 from the positive terminal of battery 36. The foregoing interconnection of the sections 40 and 42 effect the formation of an astable multivibrator having a waveform symmetry and operating frequency determined by the recharging capacitors 46 and 52 and the resistors 48 and 54. In the aforementioned constructed model, the values of the resistors and the capacitors have been selected to produce an operating frequency of approximately 1,500 c.p.s. The output waveform generated is characterized as a square wave. A push-pull output stage driven by the astable multivibrator is generally indicated by reference numeral 56 and includes two NPN-transistor sections. The purpose of the push-pull output stage is for load drive and isolation. As will be noted in FIG. 5 by dotted line, two transistors included in the commercially available integrated circuit portion 32 are not needed and are therefore nonfunctional. The push-pull output stage 56 is directly connected to high-level signal output terminal 60 which in turn is connected to one input terminal of speaker 62. The other input terminal 64 of the speaker is connected to a junction point 66 which forms the common emitter point for all transistor sections on the integrated circuit.

The negative terminal of the aforementioned battery 36 is connected to the common emitter point 66 while the positive terminal is connected through switch assembly 70 to the resistors 48 and 54 and terminal 53 of the integrated circuit 32. The circuit is designed so that upon short circuiting of the switch assembly 70 as presently explained, the circuit is energized by the battery 36 so that issuance of an alarm can be realized.

The switch assembly 70 includes the parallel connection of the aforementioned switch 26 which becomes closed upon its displacement to the INSTANT position. However, when it is desired that the alarm operate in the automatic mode, the

switch 26 is displaced to the MERC position wherein the switch 26 is opened (disabled) and only a parallel-connected mercury or other type position-sensing device 72 is rendered operative. Thus, in the automatic mode, when a strickened individual assumes a prone position, the sensing switch 72 is closed thereby causing energization of the signal generator.

The mercury switch 72 as shown in FIG. 4 may be mounted for manually adjustable displacement from a vertical position so that the level of inclination required to close the mercury switch can be varied. Of course, other positionally adjustable mounting facilities could be used. This effects an adjustment in the triggering level of the alarm.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to.

What is claimed as new is as follows:

1. A portable emergency alarm device comprising an enclosure having a plurality of compartments and a removable closure through which access to each of said compartments is provided, a speaker mounted in the enclosure for issuing an alarm, audio signal-generating means disposed in the enclosure and having an output connected to the speaker, position-sensing switch means connected to the generating means for energization thereof in response to displacement of the housing to attract attention to the contents of the enclosure, and record means disposed in one of the compartments for projecting outwardly therefrom in response to removal of said closure.

2. The device set forth in claim 1 together with a manually operated bypass switch connected in parallel with the mercury switch.

3. The device set forth in claim 2 together with fastener means for securing the closure to a person's clothing.

4. In combination with a container storing a record therein and adapted to be carried on a person in a predetermined position, an emergency alerting device mounted within the container comprising an audio transducer and signal-generating circuit means mounted within the container and connected to the transducer, position-sensing means connected to the circuit means for rendering the same operative in response to angular displacement of the container from said predetermined position, said container having an opening through which the record is exposed and cover means mounted on the enclosure for closing said opening.

5. The combination of claim 4 wherein said circuit means includes an integrated circuit chip having low and high level output terminals, a source of electrical energy, external recharging means interconnecting the low-level output terminals with the source for converting the integrated circuit chip into an astable multivibrator and means connecting the high-level output terminals to the audio transducer.

6. The combination of claim 5 including selectively bypass means connecting the source to the recharging means for rendering the circuit means operative.

7. The combination of claim 4 wherein said container is formed with separate internal compartments respectively housing the circuit means and the record in the form of a folded sheet of written data.

8. The combination of claim 7 including means mounting the position-sensing means in an adjusted position within the container.

9. The combination of claim 4 including means mounting the position-sensing means in an adjusted position within the container, and selective bypass means for manually rendering the circuit means operative in any position of the container.

10. A portable alarm device comprising an enclosure having a sound emitting face and an opening spaced therefrom exposing a record storing compartment, a cover removably secured to the enclosure closing said opening, fastener means mounted on the cover for attachment of the enclosure to a person's clothing, audio signal-generating means mounted within the enclosure for emitting sound through said sound emitting face of the enclosure, and mode selection means connected to the audio-generating means for rendering the same operative to attract attention to the contents of the record-storing compartment under emergency conditions.

11. The combination of claim 10 including a sheet of data retained in folded condition within the record-storing compartment.

12. The combination of claim 11 wherein the mode selection means includes a bypass switch displaceable between a closed position rendering the audio-signal-generating means operative and an open position, and position-sensing means connected to the signal-generating means for rendering the same operative only in a predetermined position of the enclosure when the bypass switch is in the open position.

13. The combination of claim 10 wherein the mode selection means includes a bypass switch displaceable between a closed position rendering the audio-signal-generating means operative and in open position, and position-sensing means connected to the signal-generating means for rendering the same operative only in a predetermined position of the enclosure when the bypass switch is in the open position.