United States Patent

[11] 3,547,107

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[54] **CHEST MOUNTED HEART TACHYCARDIA DETECTOR**
3 Claims, 5 Drawing Figs.

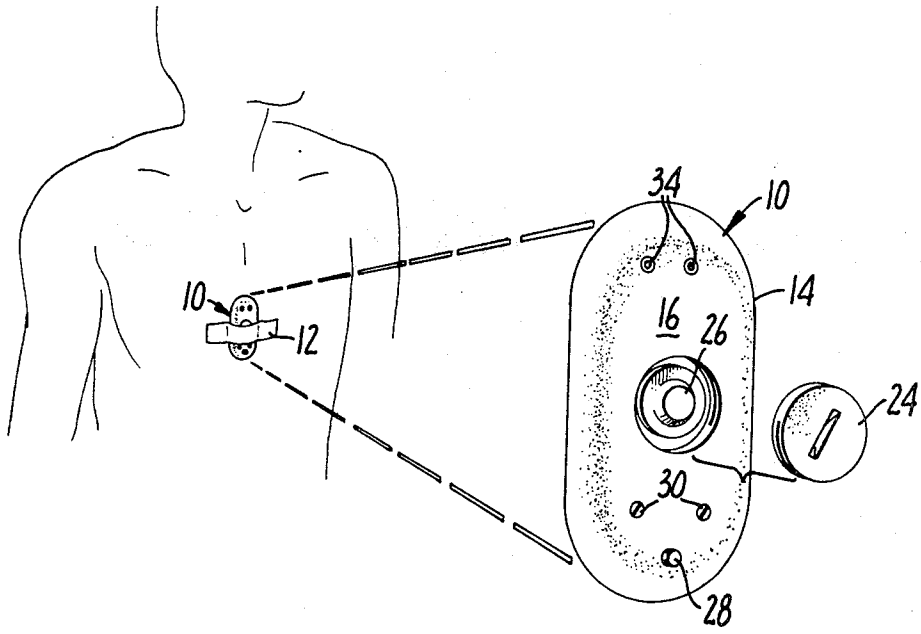
[52] **U.S. Cl.** **128/2.06**
[51] **Int. Cl.** **A61b 5/04**
[50] **Field of Search** ..... 128/2.05P, T; 1/206, 405

[56] **References Cited**
UNITED STATES PATENTS

2,848,992	8/1958	Pigeon	128/2.05
3,212,496	10/1965	Preston	128/2.06

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ABSTRACT: A self-contained chest mounted heart tachycardia detector is provided with a housing having a back side curved to fit the patient's chest having a pair of electrodes on the back side thereof. An alarm device is located within the housing and is adapted to be set off when a ventricular tachycardia series of predetermined duration is received by the pair of electrodes. Electrical circuitry within the housing connects together the electrodes and the alarm device.



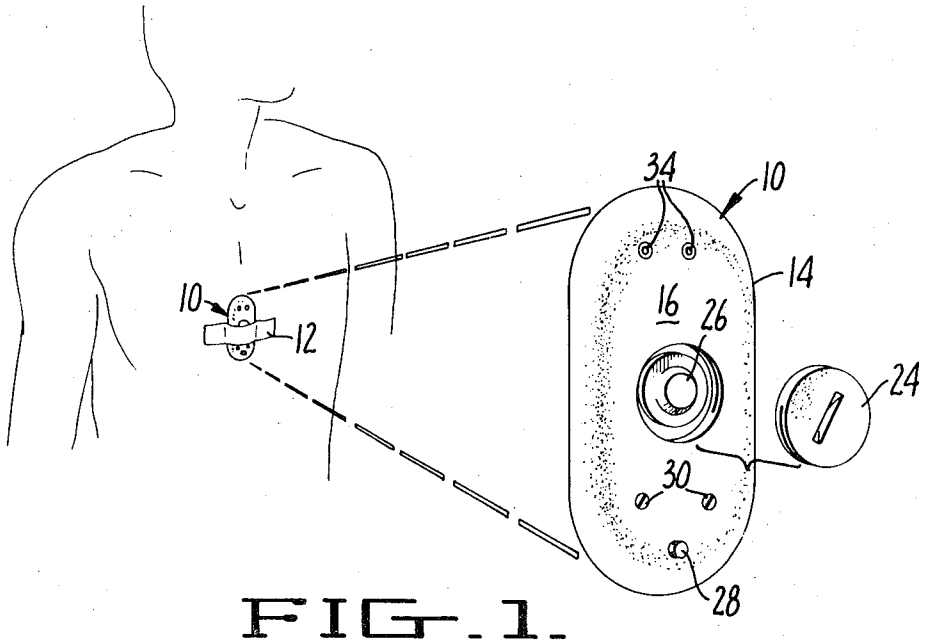


FIG. 1.

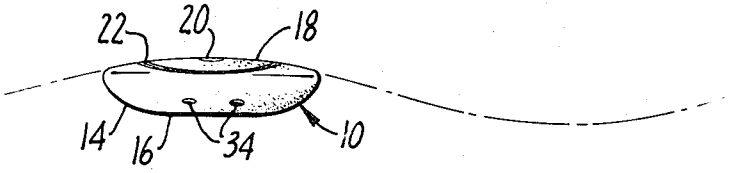


FIG. 2.

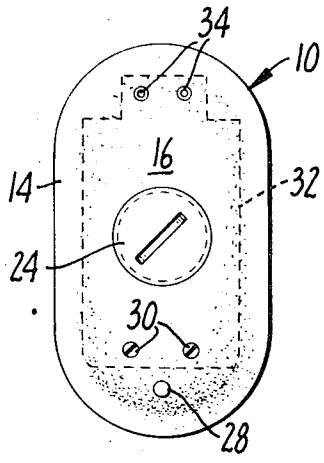


FIG. 3.

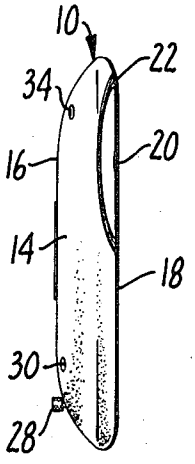


FIG. 4.

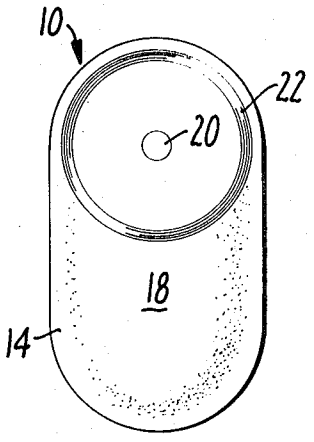


FIG. 5.

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CHEST MOUNTED HEART TACHYCARDIA DETECTOR

BACKGROUND OF THE INVENTION

1. Field of the Invention

A self-contained chest mounted heart tachycardia detector is provided with a pair of electrodes and alarm device and electrical circuitry, all of which are interconnected so that a ventricular tachycardia series of predetermined duration will actuate the alarm device and warn the wearer of an impending heart attack.

2. Description of the Prior Art

No search was run on the self-contained chest mounted heart tachycardia detector of the present invention prior to the filing of this application. However U.S. Pat. Nos. 3,138,151 and 3,342,176 are known and these patents will be distinguished hereinafter.

SUMMARY OF THE INVENTION

Recent FIGS. indicate that coronary heart disease kills more than one-half million people in the Unites States annually. This makes coronary heart disease the number one cause of death in the Unites States. Most of these heart attacks come without warning and kill the victim before medical assistance can be obtained.

A normal functioning heart initiates a regular sequence of electrical impulses which are followed by regular cardiac contractions. When the heart is not functioning properly the regular electrical sequences and impulses may become grossly disturbed and replaced by a rapid, irregular set of impulses originating in the ventricle of the heart. These rapid, irregular impulses known as ventricular fibrillation, cause the cardiac muscle to quiver which results in blood not being delivered to all the organs.

The normal heart rhythm of a ventricular fibrillation is often preceded by what might properly be called cardiac irritability. This may take the form of frequent individual impulses or runs of impulses due to irritable foci in the ventrical. In addition, a regular fast rhythm originating in such foci occurs and is known as ventricular tachycardia. Thus, frequency individual ventricular impulses, runs of impulses, or ventricular tachycardia can be a forerunner of the lethal ventricular fibrillation.

Certain devices have been manufactured and marketed which forewarn if a ventricular fibrillation may be near so that appropriate measures can be taken in time to possibly save a life. Typical of these devices are Kaplon et al. U.S. Pat. No. 3,342,176 and Chapman et al. U.S. Pat. No. 3,138,151 . However these devices are of a size and setup which do not lend themselves easily adaptable to accompany a person throughout an active daily schedule.

It is the object of the present invention to provide a new and improved self-contained chest mounted heart tachycardia detector.

It is another object of the invention to provide a heart tachycardia detector which is light in weight and which can be readily attached to a person.

It is a further object of the present invention to provide a self-contained detector which is shaped to follow the contour of the chest of the wearer.

Brief Description of the Drawings

FIG. 1 is a perspective, exploded view of a device embodying the present invention.

FIG. 2 is a top (end) view.

FIG. 3 is a front view.

FIG. 4 is a side view.

FIG. 5 is a rear (end) view.

Referring particularly to FIG. 1 there is shown a self-contained chest mounted heart tachycardia detector generally indicated 10 which is constructed in accordance with the present invention and is adapted to be worn on the chest of the wearer. A piece of tape 12 or some other adhesive is used to attach the detector 10 to the chest of the wearer.

The detector 10 can be made of a plastic or some other suitable material and has a housing 14 having a front side 16 and a backside 18. The back side 18 of the housing is shaped to follow the contour of the chest of the wearer so that the shape of the back side of the housing would be different for a male than for a female and would also be different if the detector would be worn by a child. Of course a child would only wear the detector if there was a known history of previous heart trouble.

A pair of electrodes 20 and 22 are positioned on the back side of the housing in contact with the chest of the wearer, particularly so that the electrodes are centered over the sternum. As can be best seen in FIG. 5, electrode 22 encircles electrode 20. Power for the detector 10 is provided by replaceable battery 24 which can be easily inserted into aperture 26. To insure good electrical contact with the skin, a conducting paste may be applied to the electrodes 20 and 22.

An alarm device within the housing 10 having an alarm winding mechanism 28 is adapted to be set off when a ventricular tachycardia series of predetermined duration is received by the electrodes 20 and 22. Adjustment screws 30 are used to preset the alarm device to actuate on a predetermined ventricular tachycardia series. Electrical circuitry 32 within the housing 14 connects the alarm device and the electrodes 20 and 22. Electrical circuitry 32 such as the analogue type shown in U.S. Pat. No. 3,138,151 has proven satisfactory for the operation of the detector 10 although it will be understood that this is for the purposes of illustration only.

Test circuit connections 34 are provided to insure that it can be easily determined that electrical circuity 32 is functioning properly.

It can thus be seen that the present invention provides a self-contained chest mounted heart tachycardia detector which can be used to forewarn if ventricular fibrillation may be near so that appropriate measures can be taken in time to possibly save a life.

For ease of operation, all openings are on the front side 16 of the housing 14. Also, this arrangement prevents perspiration from entering into the detector. A completely sealed detector permits the wearer to shower and swim without removal of the detector.

We claim:

1. A self-contained chest mounted heart tachycardia detector comprising:

a compact, relatively flat housing having a front side and a back side; the back side of said housing being generally dish-shaped to correspond to the contour of a chest on which said housing is to be mounted; a pair of electrodes on the back side of said housing substantially flush with the back side of said housing and adapted to be in contact with the outer skin of the chest; an alarm device within said housing adapted to be set off when a ventricular tachycardia series of predetermined duration is received by the said electrodes; electrical circuitry within said housing connecting the said alarm device and the said electrodes; and means for attaching said housing to the chest.

2. The self-contained chest mounted heart tachycardia detector of claim 1 wherein one electrode encircles the other electrode.

3. The structure of claim 1 having test connections on the front side thereof.