ATRIOVENTRICOLAR BYPASS

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Invention

Cardiac stimulation pace-maker currently on the market require a rechargeable battery to be replaced periodically, are bulky and present a high risk of infections.

Furthermore, they are sensitive to electromagnetic fields and their cost is high.

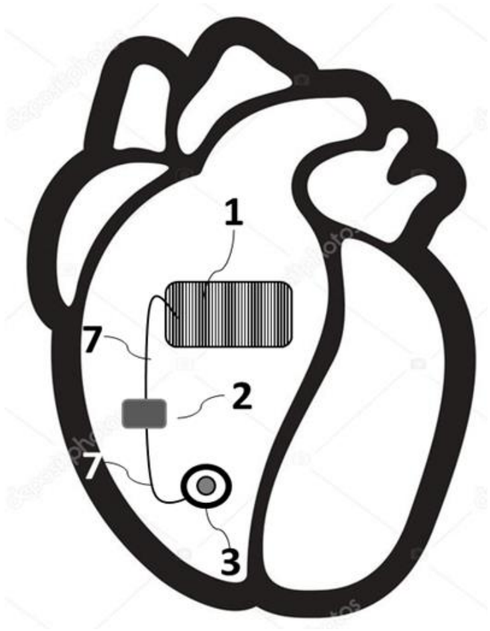
The invention is a passive circuit device (without battery), modular (capable of mimicking the normal continuous cardiac cycle), flexible and small in size.

The solution proposed in the present invention is a passive device (without battery) for ventricular electrical stimulation. The energy for the generation of this impulse derives from the detection of the residual cardiac contraction converted into an electrical stimulus by means of piezoelectric transducers. The proposed medical device, designed for epi- or endocardial application, consists of three basic elements (Figure 1): a multilayer patch (Fig. 2) to be applied directly on the atrial wall capable of detecting the residual atrial contraction and converting it into a electric impulse; a passive circuit for physiological signal modulation; a stimulating element.

Advantages of the present invention are:

- Patch with passive circuit (without battery)
- Small size
- Low risk of infection
- Cardiac cycle modulation
- Low cost

Drawing
& pictures



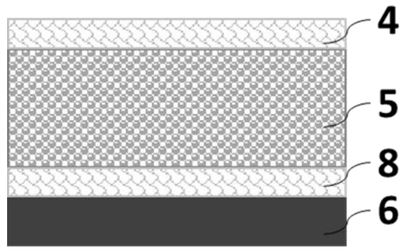


Fig.2 Detail of the multilayer patch: Double conductive layer 4 and 8, piezoelectric composite layer (5) which allows to accumulate the charge produced and to transmit the voltage electrical signal to the modulation circuit.

Industrial Applications

- Atrioventricular stimulation
- Ventricle-Ventricle Stimulation
- Treatment of pathologies of the cardiac conduction system

Possible developments

The research group is interested in industrial partners and possibly interested in technology for possible collaboration opportunities.

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