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(54) **METHOD AND DEVICE FOR PULSE RATE DETECTION**

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(57) **ABSTRACT**

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There is described a device and a method for detecting the pulse rate. The measuring principle consists of emitting radiant energy at the surface of or through human body tissue (5) by means of a light-emitting source (10), measuring the intensity of the radiant energy after propagation through the human body tissue by means of at least first and second light detectors (21, 22, 23, 24) located at a determined distance from the light-emitting source and providing first and second input signals ($y_1(t)$, $y_2(t)$) representative of this propagation. Simultaneously, a motion detecting device (40), such as a three dimensional accelerometers, provides a motion reference signal ($a_x(t)$, $a_y(t)$, $a_z(t)$) representative of motion of the detecting device on and with respect to the human body tissue (5). The input signals are then processed in order to remove motion-related contributions due to motion of the detecting device (1) on and with respect to the human body tissue (5) and to produce first and second enhanced signals. This processing basically comprises the elaboration of a model of the motion-related contributions based on the motion reference signal and the subtraction of this model from each of the input signals. Pulse rate is then extracted from the enhanced signals using for instance a maximum likelihood histogram clustering technique.

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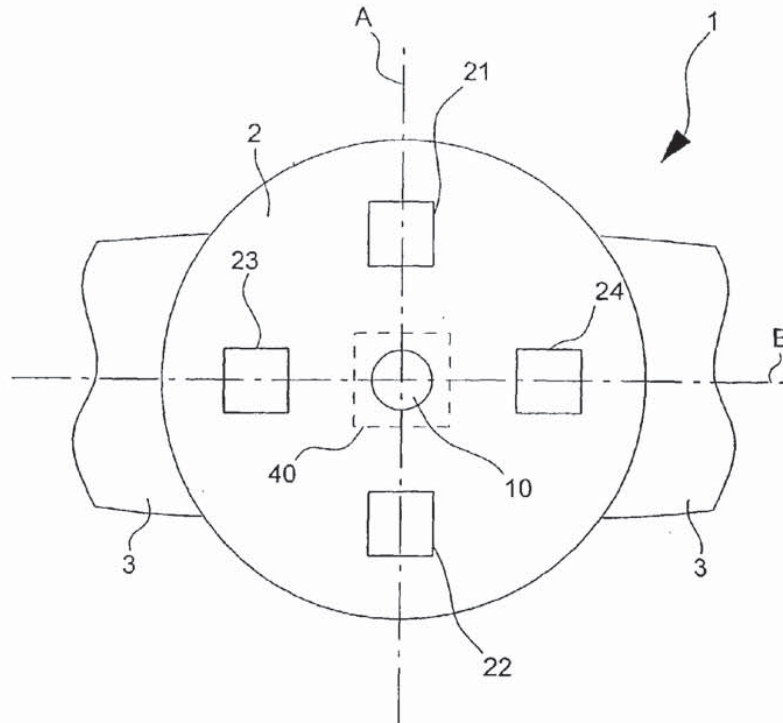
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Fig.1

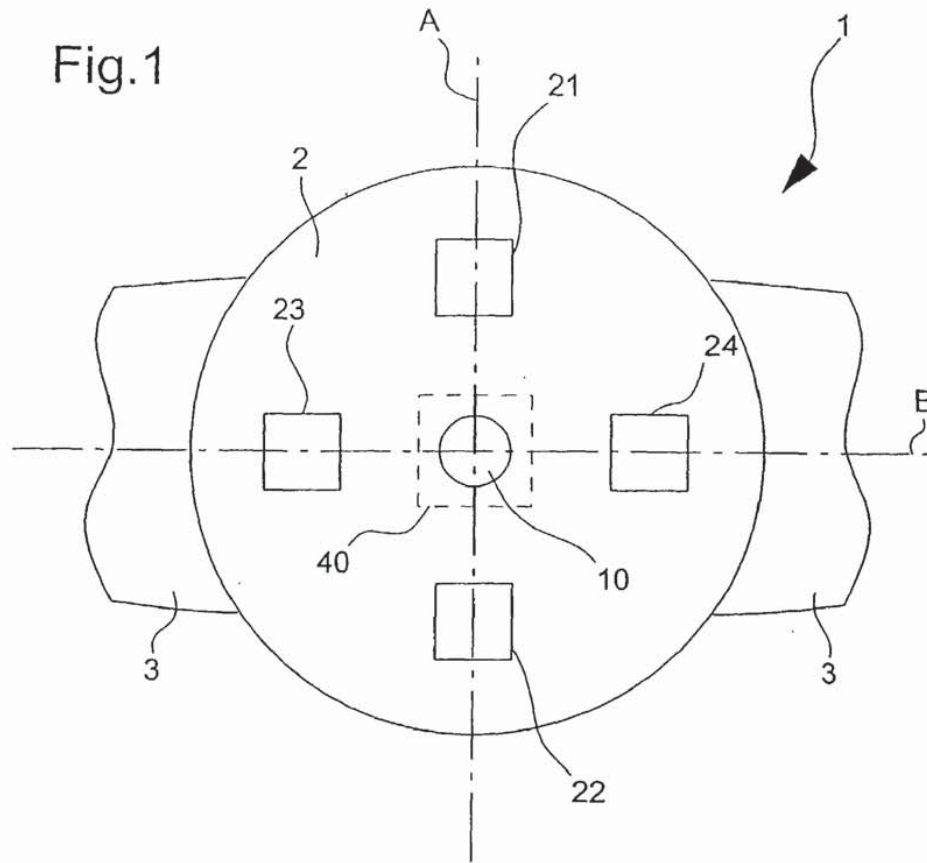


Fig.2

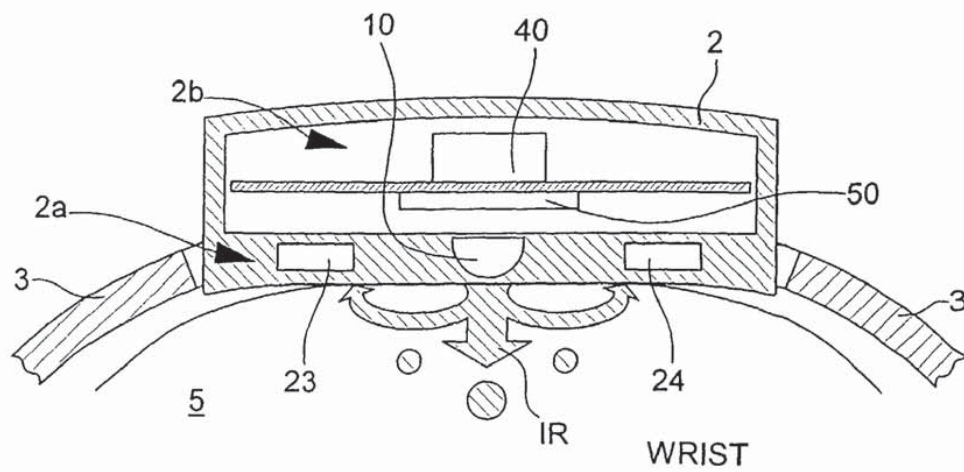
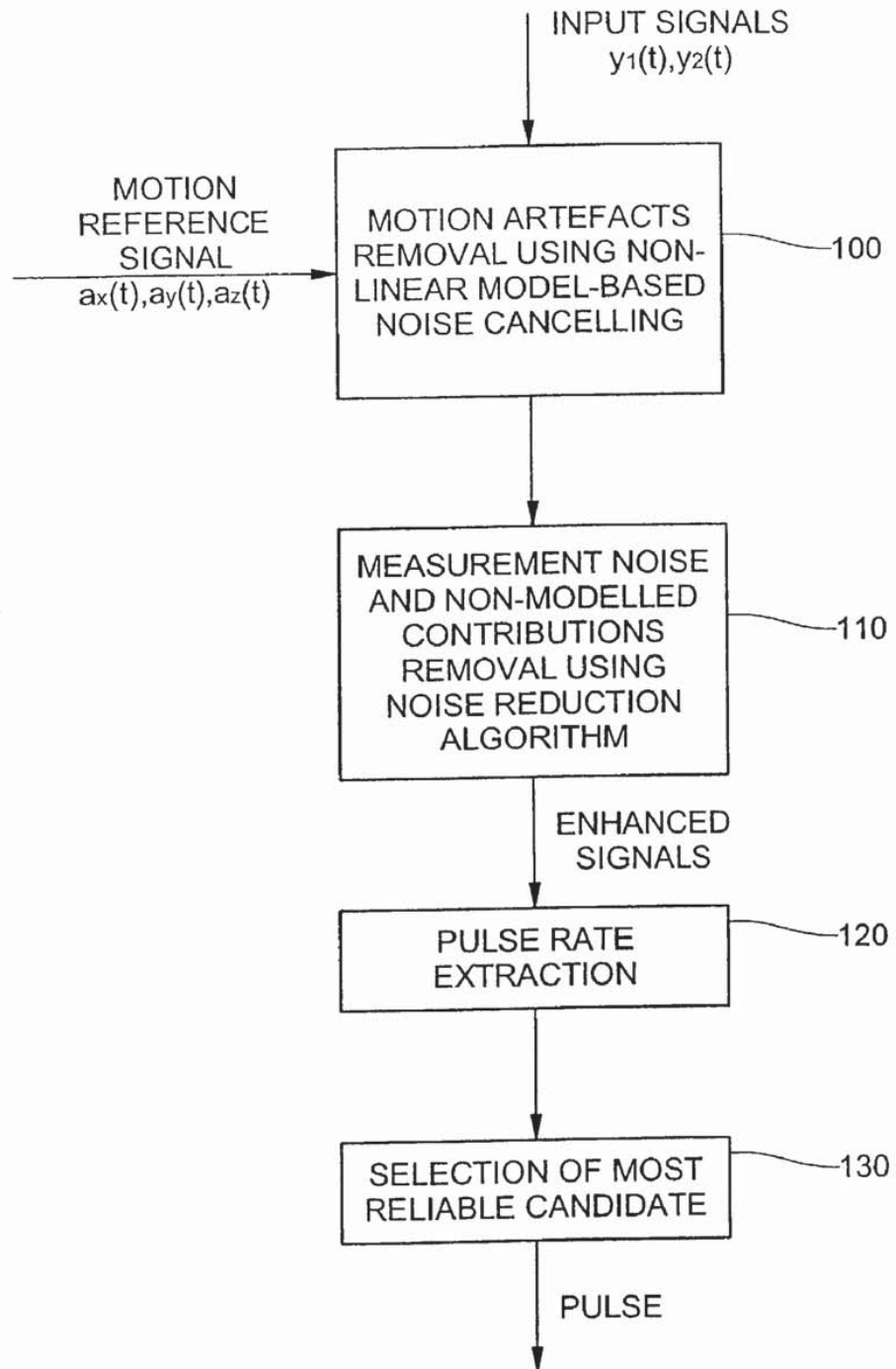


Fig.3



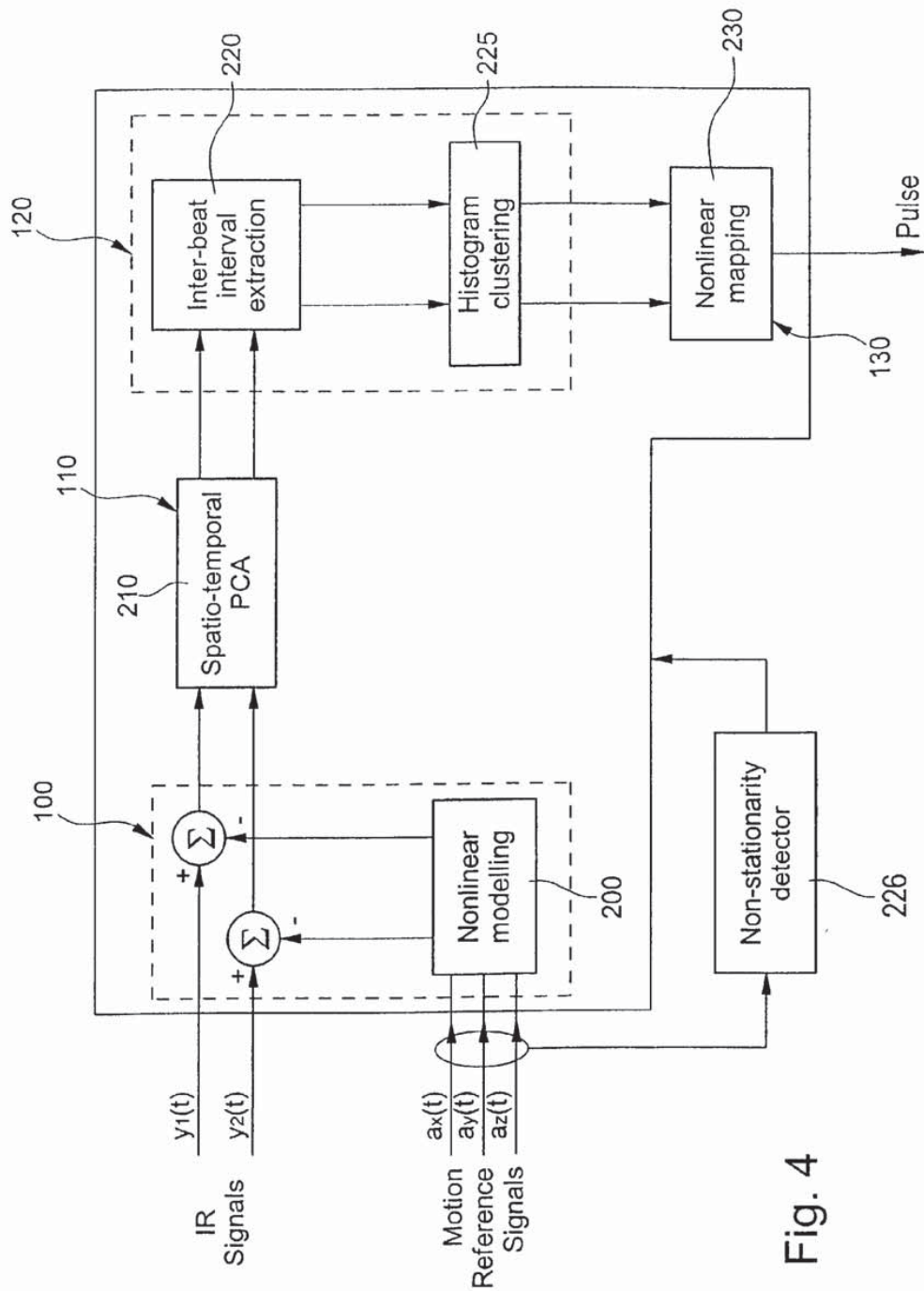


Fig. 4

Fig. 5a

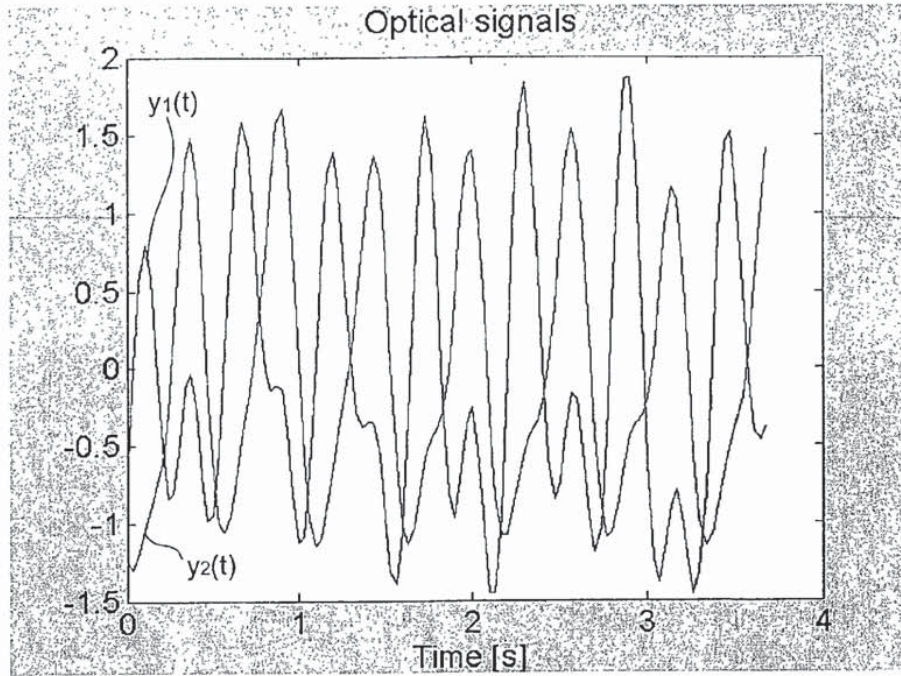
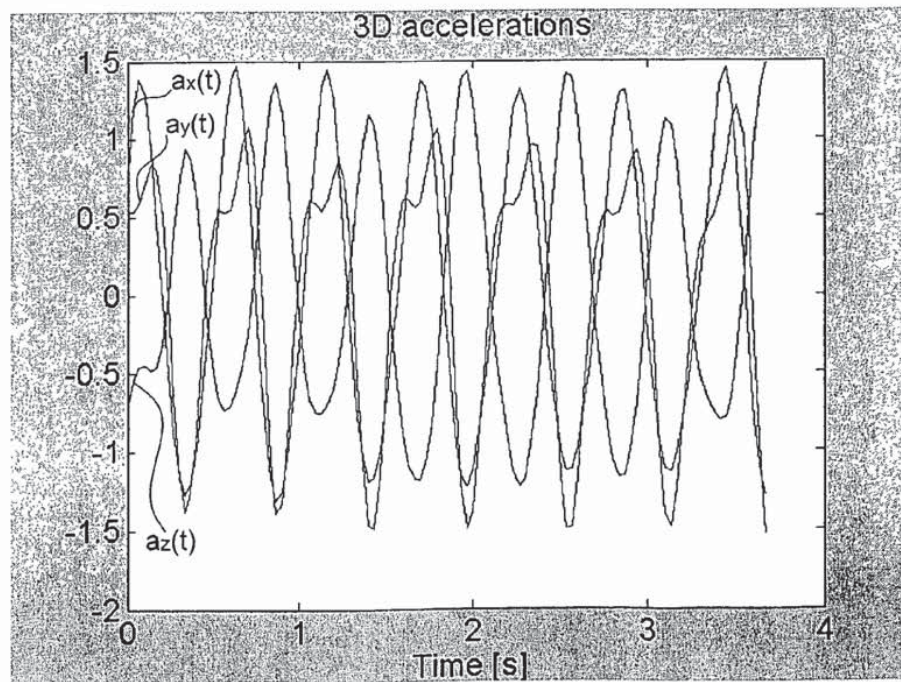


Fig. 5b



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