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(54) [Title of the Invention] Physiological Information Measuring Device

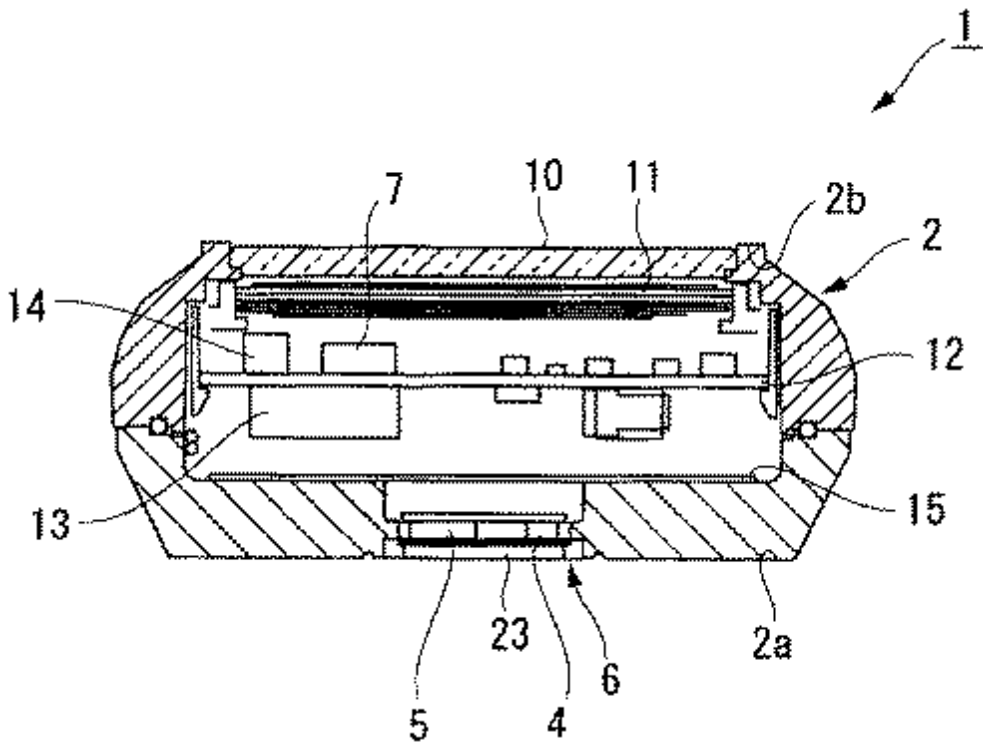
(57) [Abstract]

PROBLEM TO BE SOLVED: To provide a physiological information measuring device that has a simple and small construction and does not generate erroneous detection even if there is external light.

SOLUTION: A physiological information measuring device 1 with a detection part that detects whether or not a physiological sensor part 6 is in contact with the surface of a living body comprising a light emitting part 4 that irradiates light onto the living body, a cover glass 23 that transmits and reflects light irradiated by the light emitting part 4 and transmits light backscattered from the living body, a light receiving part 5 that receives light transmitted by the cover glass 23, and a determination part 7a that determines whether or not the living body and physiological sensor part 6 are in contact based on the light reception signal received by the light receiving part 5.

[Selected Drawing] FIG. 6

Apple Inc.  
APL1030



## Claims

### Claim 1:

A physiological information measuring device comprising a main body,  
a physiological sensor part provided on the main body that irradiates light towards a living body and generates a physiological information signal based on the amount of light backscattered from this living body,  
a physiological information calculation part provided on the main body that calculates physiological information based on the physiological information signal,  
a detection part arranged on the bottom surface side of the main body that detects whether or not the physiological sensor is in contact with the surface of the living body,  
a light emitting part that irradiates the living body with light,  
a cover glass arranged on the bottom surface of the main body that transmits and reflects light irradiated from the light emitting part as well as transmits light backscattered from the living body,  
a light receiving part that receives light transmitted by the cover glass,  
and a determination part that determines whether or not the living body and physiological sensor are in contact based on the light reception signal received by the light receiving part.

### Claim 2:

The physiological information measuring device according to claim 1 wherein the light receiving part receives backscatter light from the living body transmitted by the cover glass and generates a physiological information signal based on the amount of backscatter light.

### Claim 3:

The physiological information measuring device according to claim 2 comprising a reflective surface arranged in the cover glass between the light emitting part and the light receiving part that reflects part of the light propagating in the cover glass.

Claim 4:

The physiological information measuring device according to claim 2 comprising a bundle of optical fibers arranged with one end close to the cover glass and the other end close to the light reception surface of the light receiving part.

Claim 5:

The physiological information measuring device according to claim 1 or claim 2 comprising a concentration part on a surface of the cover glass opposite the light receiving part that concentrates light backscattered from the living body.

## DETAILED DESCRIPTION OF THE INVENTION

[Technical Field]

[0001] The present invention relates to a physiological information measuring device that when mounted to the wrist (arm), measures physiological information such as pulse rate and the like.

[Background Art]

[0002] Interest in health monitoring has risen in recent years and so various types of physiological information measuring devices that can measure various types of physiological information such as pulse rate while mounted on the wrist (arm) have been offered (for example, see patent document 1).

[0003] The pulse meter (physiological information measuring device) disclosed in patent document 1 comprises two electrodes in contact with the skin. Furthermore, when the two electrodes are both in contact with the skin, a minute current flows through the skin causing a reduction in voltage between the two electrodes enabling determination that the pulse rate sensor is in contact with the skin. Therefore, the presence or absence of contact with skin is determined based on potential difference of these two electrodes.

[0004] Furthermore, a pulse rate measurement device (physiological information measuring device) with a pulse rate measurement system that uses a light emitting diode (light emitting part) and a light receiving element (light receiving part) has also been proposed (for example, see patent document 2). The pulse rate measurement device disclosed in patent document 2 has a light receiving element for measuring brightness arranged and detects contact based on the output of the light receiving element.

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