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(54) TEMPERATURE DETECTIVE STRUCTURE OF EAR THERMOMETER

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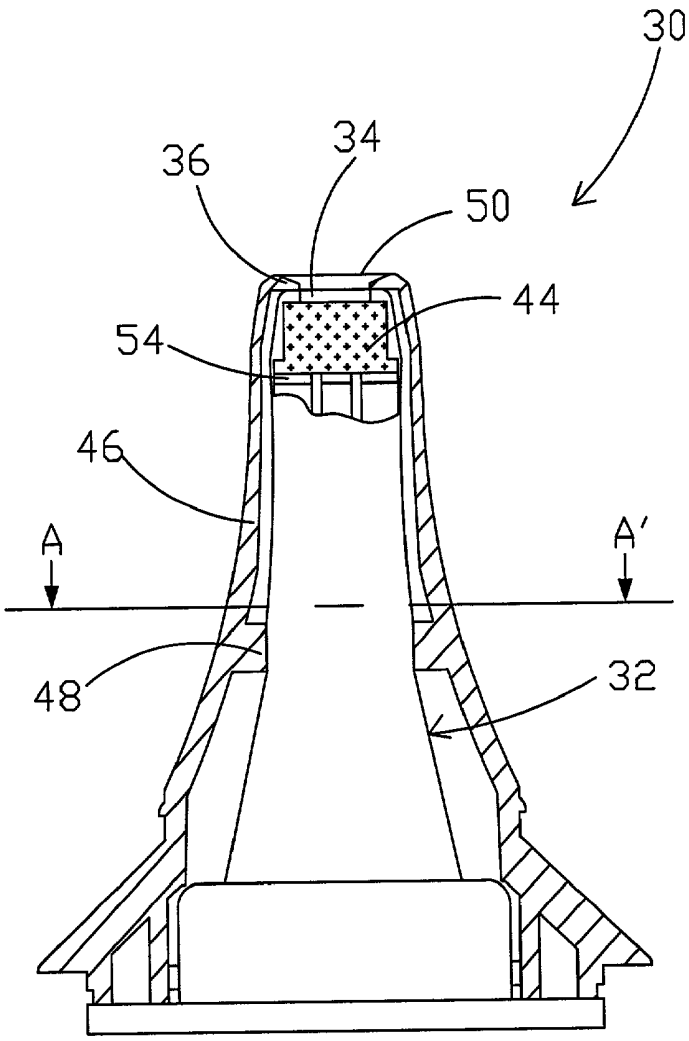
(57) **ABSTRACT**

The present invention provides a temperature detective structure of an ear thermometer, wherein a through receiving space is formed at the center of a fixing seat, and a radiation sensor is disposed at the top inside the receiving space. A heat-spreading sheet is fixedly disposed at the bottom end of the radiation sensor to fix the radiation sensor. A plurality of fixing ribs are annularly disposed on the inner wall of a shell cover to retain the fixing seat in the shell cover. A funneled opening is formed at the top of the shell cover to expose the radiation sensor. The present invention has good sensing effect and a low manufacturing cost.



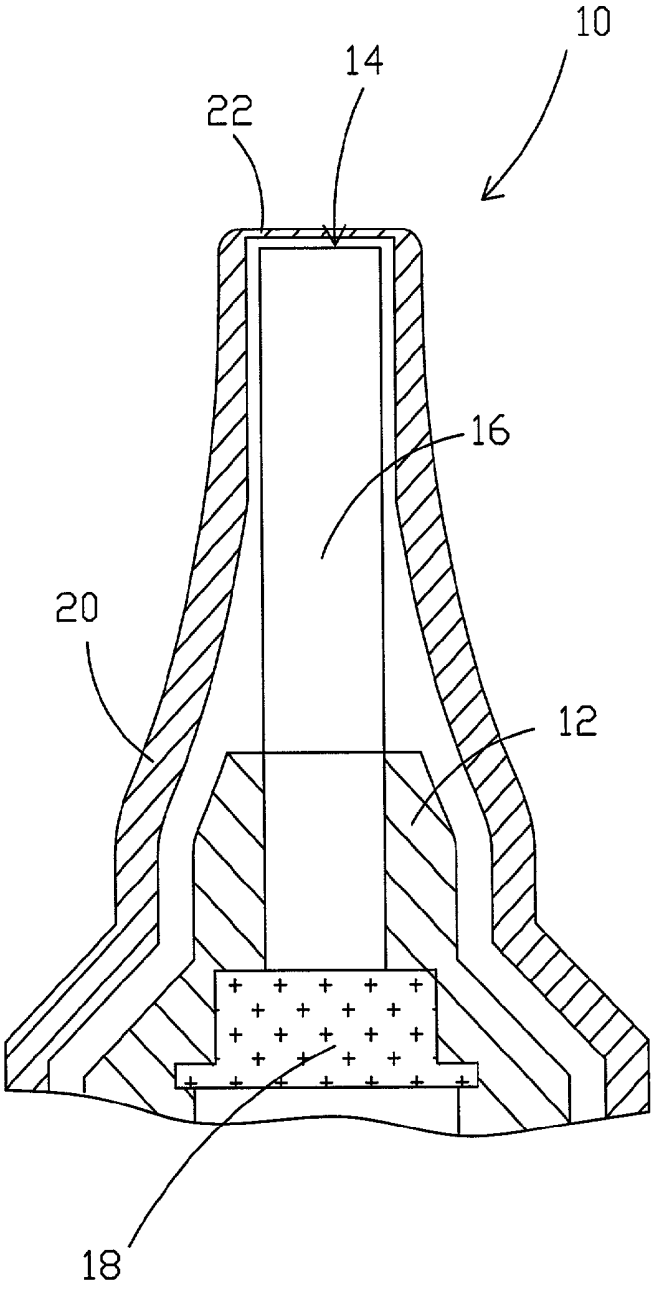


Fig.1

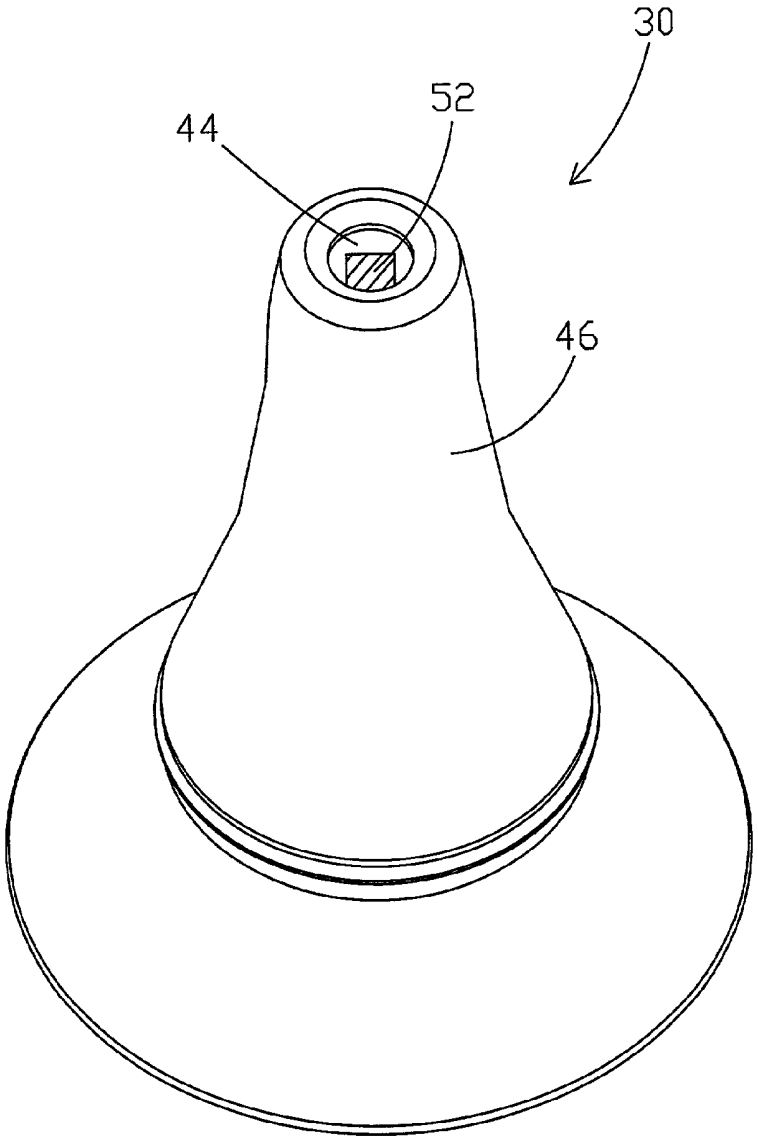


Fig.2

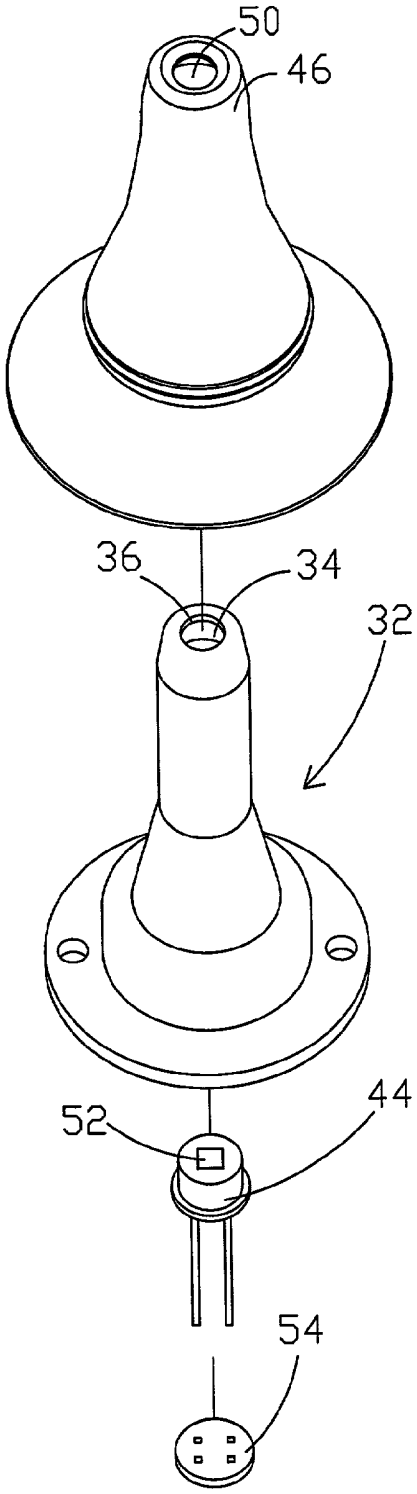


Fig.3

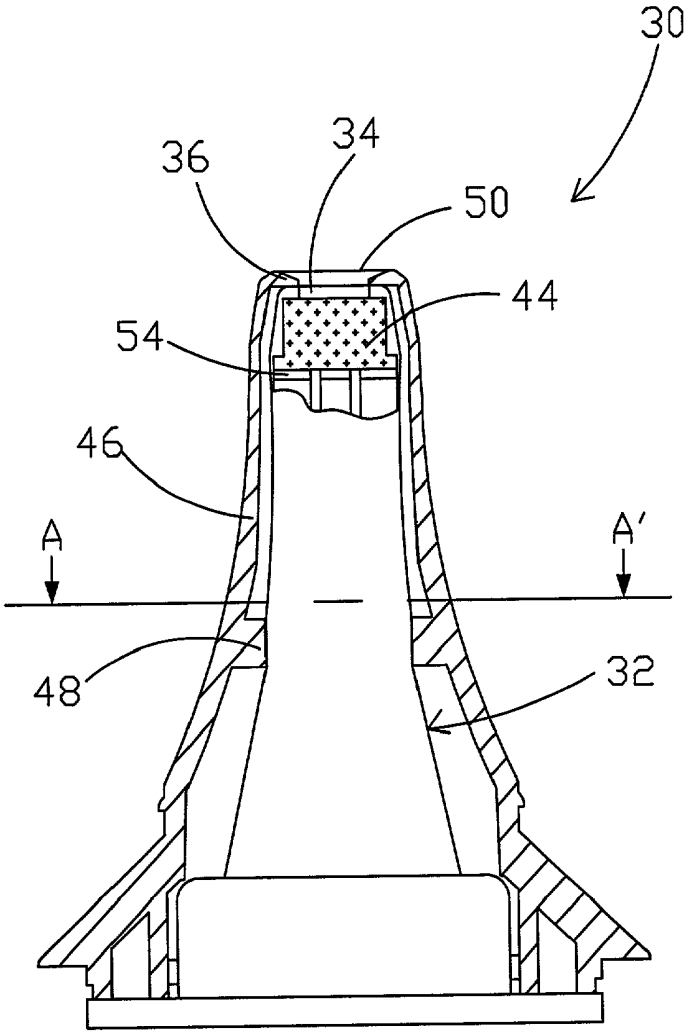


Fig.4

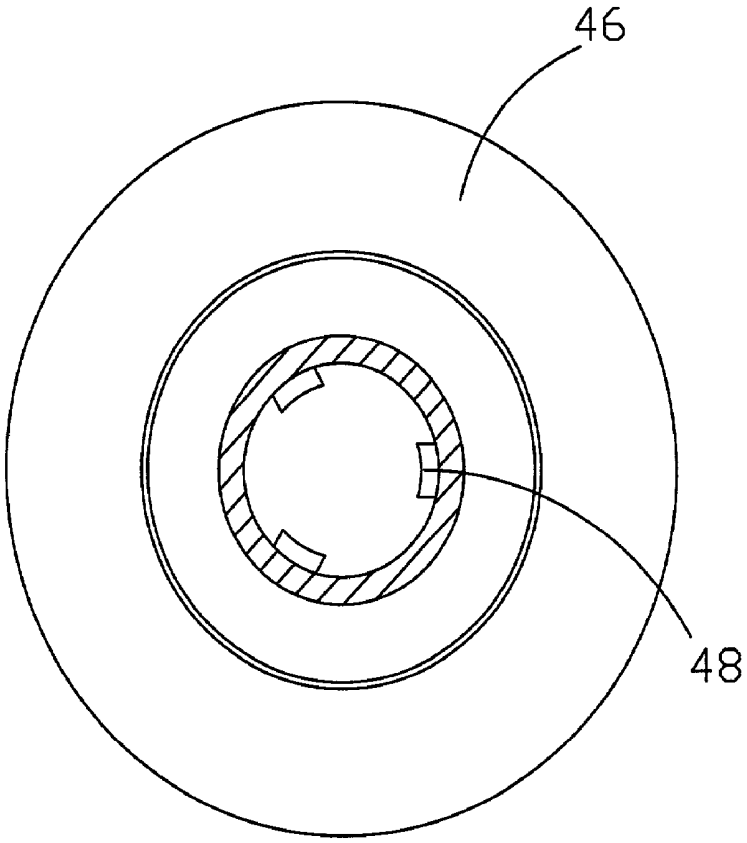


Fig.5

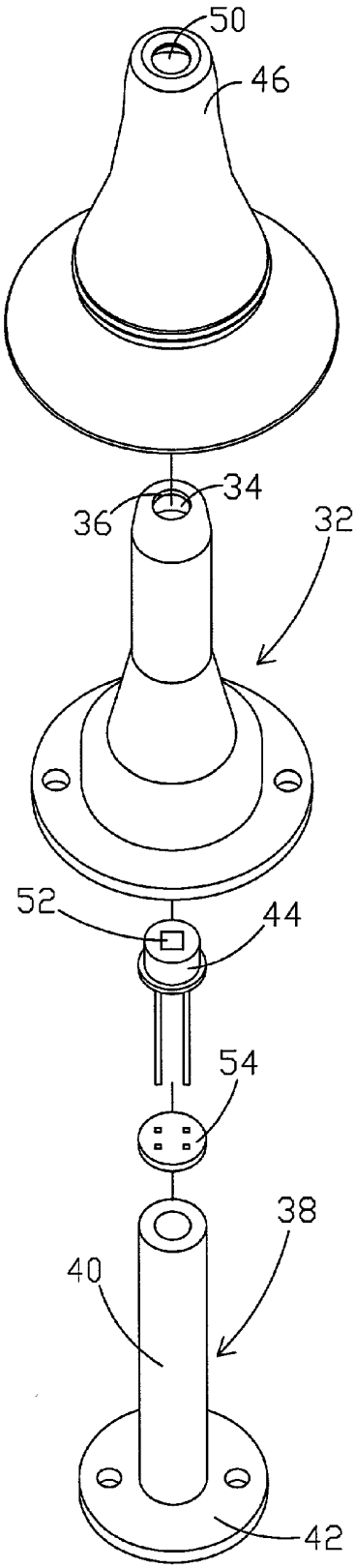


Fig.6

TEMPERATURE DETECTIVE STRUCTURE OF EAR THERMOMETER

FIELD OF THE INVENTION

[0001] The present invention relates to an improved structure of an ear thermometer and, more particularly, to a temperature detective structure of an ear thermometer.

BACKGROUND OF THE INVENTION

[0002] Radiation thermometers have been widely used for quick and accurate measurement of the body temperature during a general diagnosis process. Among all body portions used to measure the body temperature, the temperature of the eardrum can much more represent the temperature inside the body than the mouth cavity, the rectum, or the armpit. Use of an infrared ear thermometer is achieved by sticking a temperature probe at the front end thereof deeply into the ear canal to measure infrared radiation emitted from the eardrum in the ear canal, hence obtaining an accurate temperature of the human body.

[0003] As shown in **FIG. 1, a** temperature probe **10** of a prior art ear thermometer **10** comprises a fixing seat **12** with an infrared waveguide tube **16** disposed therein. The top of the waveguide tube **16** has an opening **14**, and the bottom thereof has a thermal radiation sensor **18**. A shell cover **20** is sleeved onto the outside of the fixing seat **12**. A slot **22** forms on the top of the shell cover **20** so that infrared radiation received from the slot **22** via the opening **14** can be transferred to the thermal sensor **18** by the waveguide tube **16**, thereby obtaining the temperature in an ear canal.

[0004] However, because the thermal radiation sensor **18** of the thermal probe **10** of this kind of ear thermometer is situated below the waveguide tube **16**, it is far from the infrared receiving mouth. Infrared radiation received by the thermal radiation sensor **18** needs to be first guided by the waveguide tube **16**, thermal gradient thus easily arises, hence letting the thermal radiation sensor **18** be not able to obtain a most direct value of radiation. Therefore, measurement error is easily generated for the temperature measured each time. In consideration of the above problem, the present invention aims to propose a thermal sensor of an ear thermometer.

SUMMARY OF THE INVENTION

[0005] The primary object of the present invention is to propose a thermal sensor of an ear thermometer having good sensing effect so that an exact body temperature can be obtained when measuring the temperature in an ear canal.

[0006] Another object of the present invention is to propose a temperature detective structure of an ear thermometer having a reduced cost.

[0007] According to the present invention, a through receiving space is formed at the center of a fixing seat, and a radiation sensor is disposed at the top inside the receiving space. A metal heat-spreading sheet is fixedly disposed at the bottom end of the radiation sensor. The radiation sensor is fixed through fixedly retaining the metal heat-spreading sheet in the receiving space. A hollow vertical tube of a bushing seat is disposed in the receiving space to fix the radiation sensor. A plurality of fixing ribs are annularly disposed on the inner wall of a shell cover to fixedly retain the fixing seat in the shell cover. A funneled opening forms at the top of the shell cover.

[0008] The various objects and advantages of the present invention will be more readily understood from the following detailed description when read in conjunction with the appended drawing, in which:

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] **FIG. 1** is a cross-sectional view of a temperature probe of a prior art ear thermometer;

[0010] **FIG. 2** is a perspective view of the present invention;

[0011] **FIG. 3** is an exploded perspective view of the present invention;

[0012] **FIG. 4** is a cross-sectional view of the present invention;

[0013] **FIG. 5** is a partly cross-sectional view along line A-A' shown in **FIG. 4**. and

[0014] **FIG. 6** is a view of another embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0015] As shown in **FIGS. 2 and 3**, the present invention comprises a fixing seat **32** with a through receiving space **34** formed at the center thereof. The top edge of the inner wall of the receiving space **34** is bent inwards to form a stop portion **36**. A radiation sensor **44** is placed at the top inside the receiving space **34**. The outer edge of the radiation sensor **44** is retained with the stop portion **36**. A metal heat-spreading heat **54** is disposed at the bottom end of the radiation seneor**44**, and is fixedly retained in the receiving space **34** to fix the radiation sensor **44**. A plurality of fixing ribs **48** are annularly disposed on the inner wall of a shell cover **46** to fixedly retain the fixing seat **32** in the shell cover **46**, as shown in **FIGS. 4 and 5**. An opening **50** is formed at the top of the shell cover **46**. The diameter of the opening **50** is the same as that of the top of the receiving space **34** of the fixing seat **32** for exposing the radiation sensor **34** situated in the receiving space **34**, thereby facilitating reception of external infrared rays.

[0016] The shell cover **46** is made of plastic material. The fixing seat **32** is made of metallic material. The opening **50** of the shell cover **46** forms a funneled structure. The top face of the radiation sensor **44** has a sensing window **52**. Infrared radiation enters the radiation sensor **44** via the sensing window **52** so that the radiation sensor **44** can transform temperature increase due to radiation into an electrical output signal, which is then transferred to an electronic measuring circuit (not shown) in the ear thermometer to measure the temperature.

[0017] As shown in **FIG. 6, a** bushing seat **38** comprising a hollow vertical tube **40** and a bottom seat **42** is disposed in the receiving space **34** of the fixing seat **32**. The hollow vertical tube **40** is disposed in the receiving space **34** to fix the radiation sensor **44**. The bottom seat **42** of the bushing seat **38** is fixedly disposed on the bottom face of the fixing seat **32**.

[0018] In the present invention, when a temperature detective structure **30** of the ear thermometer is stuck into an ear canal to measure infrared radiation emitted from the eardrum, because the radiation sensor **44** is situated at the front end of the temperature detective structure **30**, it can directly sense infrared radiation. As compared to the prior art wherein infrared radiation needs to pass a waveguide tube to reach a sensor, the measuring effect of the present invention is better. Therefore, an accurate body temperature can be obtained. Moreover, in addition to having the function of retaining the fixing seat **32**, the structure of the fixing ribs **48** on the inner wall of the shell cover **46** can let gap be kept between the fixing seat **32** and the shell cover **46**, hence effectively resolving heat-radiating problem. Additionally, because the fixing seat **32** of the present invention is made of metallic material, the manufacturing and material costs are lower than those of a prior art waveguide tube. Therefore, the present invention has the advantage of reducing the cost.

[0019] Although the present invention has been described with reference to the preferred embodiment thereof, it will be understood that the invention is not limited to the details thereof. Various substitutions and modifications have been suggested in the foregoing description, and other will occur to those of ordinary skill in the art. Therefore, all such substitutions and modifications are intended to be embraced within the scope of the invention as defined in the appended claims.

I claim:

1. A temperature detective structure of an ear thermometer, comprising:

a fixing seat with a through receiving space formed at a center thereof;

a radiation sensor placed at a top inside said receiving space, a heat-spreading sheet being fixedly disposed at a bottom end of said radiation sensor and fixedly retained in said receiving space; and

a shell cover with a plurality of fixing ribs annularly disposed on an inner wall thereof to fixedly retain said fixing seat therein, an opening being formed at a top of said shell cover to expose said radiation sensor.

2. The temperature detective structure of an ear thermometer as claimed in claim 1, wherein said opening is a funneled structure so that said radiation sensor can shore up said funneled structure.

3. The temperature detective structure of an ear thermometer as claimed in claim 1, wherein said shell cover is made of plastic material.

4. The temperature detective structure of an ear thermometer as claimed in claim 1, wherein said fixing seat is made of metallic material.

5. The temperature detective structure of an ear thermometer as claimed in claim 1, wherein a bushing seat is disposed in said receiving space to fix said radiation sensor..

6. The temperature detective structure of an ear thermometer as claimed in claim 1, wherein a top edge of an inner wall of said receiving space is bent inwards to form a stop portion for retaining said radiation sensor.

* * * * *

专利名称(译)	耳温计的温度检测结构		
公开(公告)号	US20030067957A1	公开(公告)日	2003-04-10
申请号	US09/970859	申请日	2001-10-05
[标]申请(专利权)人(译)	KO广源 陆涛程		
申请(专利权)人(译)	KO广源 陆涛程		
当前申请(专利权)人(译)	KO广源 陆涛程		
[标]发明人	KO KUAN YUAN LU TAO CHENG		
发明人	KO, KUAN YUAN LU, TAO CHENG		
IPC分类号	A61B5/01 G01J5/02 G01J5/04 G01K1/08 G01K13/00 A61B5/00		
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外部链接	Espacenet USPTO		

摘要(译)

本发明提供一种耳温计的温度检测结构，其中，在固定座的中心形成有贯通容纳空间，在容纳空间内的顶部设置有辐射传感器。散热片固定设置在辐射传感器的底端，以固定辐射传感器。多个固定肋环形地设置在壳盖的内壁上，以将固定座保持在壳盖中。在壳盖的顶部形成漏斗形开口以暴露辐射传感器。本发明具有良好的传感效果和较低的制造成本。