NASA TECHNICAL MEMORANDUM NASA TM-75429

A DEVICE FOR DETERMINING THE INTENSITY OF PARTIAL SWEATING

by

V.A. Rayskiy, Ye.A. Vinogradov, and O.A. Safonov

Translation of "Ustroystvo dlya opredeleniya intensivnosti partsial'nogo potoodeleniya." Description of Invention with Authors' Certificate No. 249546, Application date 30 Nov. 1967 (No 1199864/31-16), Published 5 August 1969, Bulletin No. 25, Date of Publication of description 26 December 1969, (Class 3Da, 4/01, International Classif. A61b), 3 pp.

(NASA-TM-75429) A DEVICE FOR DETERMINING THE INTENSITY OF PARTIAL SWEATING (National Aeronautics and Space Administration) 7 p
HC A02/MF A01 CSCL 06B

N80-19801

Unclas
G3/54 47441

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON, D.C. 20546 MARCH 1979

V.A. Rayskiy, Ye. A. Vinogradov and O.A. Safonov

A DEVICE FOR DETERMINING THE INTENSITY OF PARTIAL SWEATING

A quantitative evaluation of the intensity of sweating in / * a test subject or patient is of great importance when treating diseases of the nervous system, psychological disorders, during medical and biological studies and also for diagnostics and evaluation of the effectiveness of the treatment.

Devices designed for this purpose are well known. They contain an absorption chamber and a moisture absorbing agent. Reading of the perspiration is accomplished according to the increment of weight of the moisture absorbing agent. However, the well known devices do not permit separating the amount of perspiration generated at different points on the skin, that is, they give total perspiration and not partial. In other well known instruments for providing readings it is necessary to have direct contact with the skin which breaks down the operating function of the sweat glands.

The proposed device for determining the intensity of partial sweating is distinguished from those mentioned in that the absorption chamber is made in the form of a filled moisture absorbing agent, for example, an organic film, hollow with a torroidal form and an orifice whose face part has a shape corresponding to the profile of the test section of the skin.

This way of making the device makes it possible to measure

---

*Numbers in the margin indicate pagination in the foreign text.

sweat from a limited section of the skin.

In order to avoid contact of the loose moisture absorbing agent, for example, silica gel, with the skin, a dividing removable grid is placed between the orifice and the main volume of the chamber.

Figure 1 shows the proposed device in a longitudinal axial cutaway; Figure 2 likewise, is viewed from below (with the cover removed); Figure 3 shows a variation for constructing the instrument.

The instrument contains chamber 1 for absorption made of material impenetrable for moisture and air, for example, from glass or teflon. The chamber is hollow with a toroidal shape. The lower part of the chambers ends at orifice 2 whose end part has a shape corresponding to the shape of the test section of the skin which makes it possible to have hermetic seal of the chamber when it is applied to this section.

The chamber is filled with moisture absorbing agent 3 for which an organic film can be used. In this case, when one uses a loose moisture absorbing agent, for example, silica gel, the latter is separated from the skin by separating removable grid 4 placed between the orifice and the main volume of the chamber. / This grid can be made, for example, as a mounting and can be threaded onto the instrument.

The instrument is hermetically closed with cover 5 which is removed during measurement. In order to mount the instrument on the section of skin being studied on the patient, on the external surface of the chamber there are fasteners, for example, handle 6. Using the strap which passes through the handle, the instrument is tightly fastened to the section of skin being studied,

for example, to the patient's palm.

The shape of the instrument and the method of attaching it can vary according to comfort in placing the instrument on the section of skin being studied.

The instrument operates in the following way.

Technological cover 5 and grid 4 are removed. The instrument is filled with a dessicate (unsaturated) absorbing agent, for example, granules of silica gel. Then, the grid is inserted. In order to avoid moisture getting in and being absorbed by the absorbing agent before the measurements begin, the instrument is covered with a technological cover.

The instrument is weighed with a precision which makes it possible later on to separate the increment of weight from absorption by the absorbing agent (for example, on analytical scales).

The instrument with the cover removed is attached to the section of skin being studied in such a way that it provides the necessary tightness along the edges of orifice 2 for that section of skin and provides minimum mechanical effects on the body of the subject (patient).

Upon completion of the study, the device is removed, the technological cover is closed and it is again weighed. The difference in weight of the instrument before and after the study indicates the quantity of sweat from the test section of the skin.

To decrease error in readings, the time from removing the cover to mounting the instrument on the skin section being studied and the time from removal of the instrument until it is covered

again with the technological cover must be kept minimum.

Design variations of the instrument can have different shapes.

For example, the orifice of the instrument and the chamber with the absorbing agent can vary in shape depending on the purposes of the study, the location for mounting it, the method of fastening and convenience in charging the absorbing agent.

The orifice of the instrument and the chamber with the absorbing agent can be made separately and connected even after fastening the orifice to the section being studied (see Figure 3).

This also can make it possible to unify the chamber with the absorbing agent and charge it with specialized production.

One can unify the fastenings of the chamber with the absorbing agent and orifice and the edges of the orifice can be made as a set for different sections of skin and with different effective areas.

Object of the Invention

1. The instrument for determining the intensity of partial perspiration which contains an absorption chamber and a moisture absorbing agent is distinguished by the fact that in order to measure sweat from a limited part of the skin, the chamber is made as a filled moisture absorbing agent, for example, organic film, hollow with a torroidal shape and orifice whose face section has the same shape as the section of skin being studied.

2. The instrument described in paragraph 1 is distinguished by the fact that in order to avoid contact of the loose moisture absorbing agent, for example, silica gel, with the skin, a removable separating grid is placed between the orifice and the main part of the chamber.

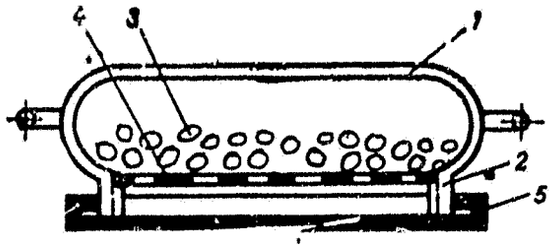
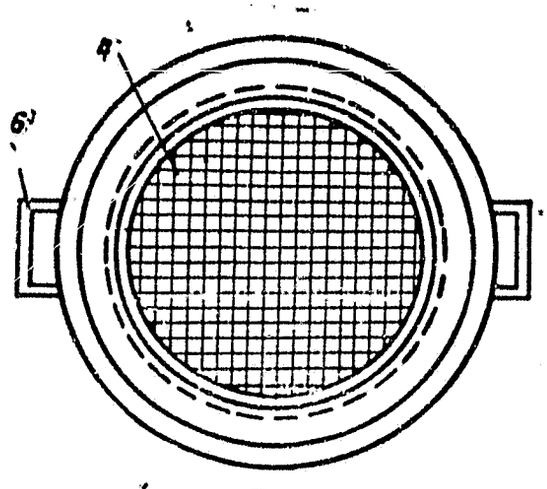


Fig. 1 Фиг.1



Фиг.2
Fig. 2

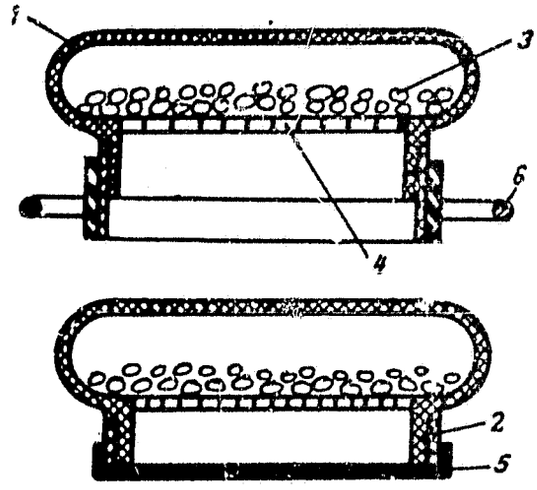


Fig. 3

Фиг. 3