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(54) **ELECTRONIC DEVICE FOR REFLEXOTHERAPY**

(57) An electronic reflexotherapy device comprises a compact body (1) with a cover (3) and an insert (2) made of transparent material at the top. The body (1) houses an energy source (10), an optical indicator (9) and an electronic unit (8), provided additionally with an audio indicator device (11). At its forward end, the body (1) incorporates a stimulating metal end-piece (4) in the form of a bushing serving as a passive electrode (5), the lower part of which has an annular, cylindrical cavity (12). Located at the centre of the passive electrode (5) is an acicular active electrode, dielectrically insulated

therefrom, the working end of which is hemispherical. The height of the annular cavity (12) is at least twice the diameter of the active electrode (6). The active and inert electrodes form part of the electronic actuating system for the electronic unit (8) and automatically switch on the device on contact through the skin. The device of the invention can be used in searching for acupuncture points, marking them and performing therapy automatically while carrying out an express diagnosis by electro-acupuncture methods.

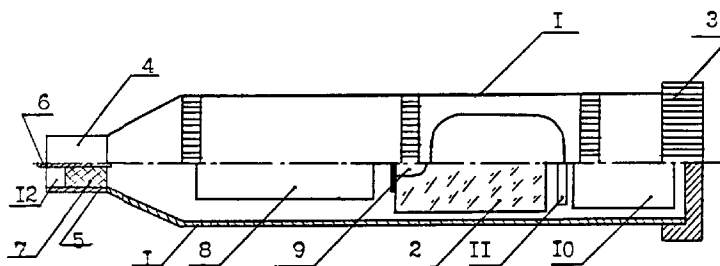


FIG. 1

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Description

The subject of the present invention is to provide an electronic reflexotherapy device which can be used in searching for acupuncture points and influence thereon.

The ancient acupuncture was a stimulus to understanding of many unknown processes occurring in the human diseased and healthy organism.

The achievements in the fields of high technology and new acupuncture methods, such as electro-acupuncture, lasero-acupuncture, magneto-acupuncture and phono-acupuncture, allowed the creation of various medical devices.

For some time electronic acupuncture devices are being used, one of which (cf. DE Pat. Appl. Nr. 3.631.600, A6IH 39/00, 1988) comprises a compact body with an energy source and an electronic unit inside. There is a press-button for starting stimulation and a step-by-step switch for changing the intensity of the current. Disposed at the working end of the body is a stimulating tip made of metal in the shape of a rod. The device has a graduated sensibility regulator.

The main disadvantage of the known device is the shape of the stimulating tip which is pointed towards its working end. This increases the risk of skin injury during indication of acupuncture points thereon. Moreover, as already known, the provision of various electric switches and regulators increases the searching time for acupuncture points and the probability of failures of the device.

Known in the art is an electronic reflexotherapy device (cf. DE Pat. Appl. Nr. 2.928.826, A 61 H, 1981) allowing the search for biologically active points. The device has a body in which are housed an energy source, an electronic unit, an optical indicator and a stimulating tip made in the form of an annular cylindrical (passive) electrode in the centre of which an active electrode is arranged. The working end of the active electrode has a hemispherical shape. There is an insulating insert between the electrodes. The described electrodes represent a part of a trigger of the electronic unit.

However, the design of the stimulating tip does not allow to find the acupuncture points quickly and precisely. Moreover, the known device is not sufficiently reliable in its application and the handling of it is awkward because of the large number of electric switches and its bulkiness.

An object of this invention is to create a reliable and easy to handle device which can be used in an automatic operational mode and shortens the searching time for acupuncture points, marks the acupuncture points found, and reduces the traumatism of the skin.

Object of the invention is the provision of a device for finding, marking, and acting upon acupuncture points.

The proposed electronic reflexotherapy device comprises a body with an energy source and an electronic unit inside, an optical indicator being placed under an insert of transparent material, a stimulating

end-piece formed by an indifferent (passive) annular cylindrical electrode and an acicular active electrode with a hemispherical working end which is located in the centre of said passive electrode, with an insulating insert therebetween. These electrodes are connected with an optical indicator, able to be switched on upon detection of an acupuncture point, and with an electronic unit. The said stimulating end-piece is made on one end of said body. An insulating insert is located between the electrodes, forming an annular cylindrical cavity at the side of the working part of the acicular electrode. The annular cavity is provided to bring about a marking of an acupuncture point in the form of an imprint of the electrodes on the skin. It has a height of at least twice the diameter of the active electrode. The electrodes are connected with an electronic unit and are able to connect the same to an energy source and transfer it into a searching mode upon contact with the skin, and to automatically switch the unit over into a mode of therapeutic influence when discovering an acupuncture point.

Preferably a part of the body of the electronic reflexotherapy device is made of transparent material. The device can be provided with a sound signalling device located in the electronic unit.

The contact surface of the stimulating end-piece with the skin formed by the passive electrode's ring with the active electrode in the centre, having a working end in the form of a hemisphere, allows a fast moving the device over the skin in searching, marking, and stimulation of acupuncture points. Inasmuch as the acicular electrode is rounded off, the passive electrode has a base in the form of a ring, and the forces exerted on the skin are determined by the weight of the device (60-70g), the pressure on the skin surface is minimum and cannot hurt during the procedure, reducing the probability of skin injuries. The electronic trigger of the electronic unit and the sound and light signalisation, starting automatically upon finding an acupuncture point, allows short-term treatments of the same.

In searching for acupuncture points and acting upon the same the passive and active electrode have, to some extent, to be impressed into the skin in the projection zone of the acupuncture point. Here, the height of the annular cavity restricts the depth of skin surface deformation. Since the working end of the active electrode is hemispherical with a diameter of 1.5 - 2.0 mm, which, as a rule, coincides with the dimensions of the projection zone of an acupuncture point onto the skin, an annular cavity having a height of at least twice the diameter of the active electrode allows an operational mode of elastic deformation of the skin which leaves a short-term imprint mark after lightly pressing the stimulating end-piece onto the skin.

Exactness of the localization and marking an acupuncture point is within the limits of the acicular electrode diameter (1.5 - 2.0 mm). These circumstances shorten the time of the acupuncture point searching and reduce the probability of skin injuries during the proce-

ture.

The essence of the invention is illustrated by the accompanying drawings, in which:

- Fig. 1 is a longitudinal section of an electronic reflexotherapy device, and
 Fig. 2 is the circuit diagram of the same.

The electronic reflexotherapy device has a body 1 made in the form of an oblong cylinder in which an insert 2 made of a transparent material is disposed. A removeable cap 3 is disposed at one end of this body 1, and at the other end of said a body 1 a stimulating end-piece 4 is disposed, which comprises an indifferent (passive) cylindrical annular electrode 5 and an acicular active electrode 6 located in the centre of the passive electrode 5. The working end of the acicular active electrode 6 is hemispherical. Located between electrodes 5 and 6 is an insulating insert 7. The electrodes 5 and 6 are electrically connected with an electronic unit 8 and an optical indicator 9, located within the body 1. An energy source 10 and a sound signalling device 11 are disposed in the body 1. Due to the removeable cap 3 the energy source can be replaced. The insulating insert 7 is arranged so that an annular cylindrical cavity 12 is formed on the working part side of the active electrode 6. The height of this annular cavity 12 is at least twice the diameter of the active electrode 6.

The device is operated as follows:

In searching for acupuncture points or stimulating the same the end-piece is brought into contact with the skin with its contact surface formed by the annular passive electrode and the acicular active electrode. Doing this the device is held at a right angle relative to the skin surface.

Electrodes are connected electrically to the electronic unit, which at this time is in a standby operational mode.

When the active and the passive electrode are bridged by the skin the electronic starter of the electronic unit is triggered and connects the latter to the energy source and shifts the electronic unit into the search mode for acupuncture points.

By smoothly moving the stimulating end-piece over the skin surface the search for acupuncture points takes place. When the active electrode reaches the zone of an acupuncture point the optical indicator and the sound signalling device are activated automatically.

To mark a found acupuncture point it is sufficient to slightly depress the stimulating end-piece into the skin surface during the indication. This produces a mark of the electrodes in the form of a ring with a point in the centre, which lasts a short period of time (about 1 min).

At the moment of an indication that an acupuncture point has been found, the electronic unit shifts automatically into the operational mode of therapeutic treatment, the duration of which is determined for each acupuncture point according to the specific technique.

The appearance of the electronic reflexotherapy

device is that of a pen. The body of the device, the cap and the stimulating end-piece are made of metal (for example of copper) with a nickel plating. The upper part of the body is made of pellucid plastic. The insulating insert disposed in the stimulating end-piece is made of dielectrical plastic, for example of ebonite. The energy source consists of hermetical disk-shaped zink-silver elements, for instance, CU-21 or their counterparts corresponding to the standard of the International Electrotechnical Commission SR-41. The optical indicator is made on the base of a light-emitting diode or light-emitting diode matrix. The sound signalling device is made on the base of piezoceramics.

The active acicular electrode and the passive annular cylindrical electrode are connected with the electronic unit which is made of discrete elements and integrated circuit chips.

The electronic unit is so designed that in the operational mode of searching for acupuncture points it consumes minimum energy from the energy source and that practically no energy is consumed when the device is stored. This allows to use the electronic reflexotherapy device for a long time without replacement of the power source.

The device of the invention can be used in searching acupuncture points on the human body and marking the same, and also to perform express diagnoses and therapeutic treatment by electro-acupuncture methods. The device can also be used for training reflexotherapists for a quick practical mastering different techniques including an acupuncture.

The invention is not limited to the form of realization described above on the basis of the attached drawings. It encompasses all possible modifications functioning on the basic principle.

Claims

1. An electronic reflexotherapy device comprising : a compact body (1) with an energy source (10), an electronic unit (8), an optical indicator (9) inside and a metal stimulating end-piece (4) disposed outside the said body, on its forward end, and connected with electronics, characterized in that the upper part of said body (1) is formed by an insert (2) made of transparent material and comprises an optical indicator (9) therebeneath, said stimulating end-piece (4), the lower part of which contacts with the skin surface and has annular cylindrical cavity (12), includes two electrodes dielectrically insulated herefrom: an active acicular one (6), the working end of which having hemispherical shape, is located in the centre of the indifferent (passive) circular cylindrical electrode (5), thus said active and passive electrodes are a part of an electronic unit launcher (8) and they launch the device in closing through skin automatically.

2. An electronic reflexotherapy device according to claims 1, wherein the height of said annular cavity (12) of said stimulating end-piece (4) is at least twice the diameter of the active electrode (6). 5
3. An electronic reflexotherapy device according to claims 1, wherein the electronic unit (8) is provided with a sound indicator device (11) additionally.
4. An electronic reflexotherapy device according to claims 1, wherein the indifferent (passive) electrode (5) of said stimulating end-piece (4) is made in the form of cylinder. 10

Amended claims under Art. 19.1 PCT 15

1. An electronic reflexotherapy device comprising a body (1) housing an energy source (10), an electronic unit (8) and, beneath an insert (2) of transparent material, an optical indicator (9), 20
and a stimulating end-piece (4) formed by an indifferent (passive) annular cylindrical electrode (5) and, located in the centre of the same, an acicular active electrode (6) made with a working end in the form of a hemisphere with an insulating insert (7) 25
therebetween, said electrodes being connected with the optical indicator to be activated when discovering an acupuncture point,
characterized in that the stimulating end-piece (4) is provided at one end of the body (1) and 30
the insulating insert (7) is located between the electrodes forming an annular cylindrical cavity (12) at the working end side of the acicular electrode (6) for marking an acupuncture point on the skin in the form of an impression of the electrodes, the height 35
of said annular cavity (12) being at least twice the diameter of the active electrode (6),
wherein the electrodes are connected with the electronic unit (8) enabling the same, upon contact with the skin, to be connected to the energy source (10) 40
and to be shifted into a searching mode of operation and, upon discovery of an acupuncture point, to be shifted automatically into a mode of therapeutic treatment. 45
2. An electronic reflexotherapy device according to claim 1, characterized in that a part of the body (1) is formed by the insert (2) made of transparent material. 50
3. An electronic reflexotherapy device according to claim 1, characterized in that a sound signalling device (11) is provided, located in the electronic unit. 55

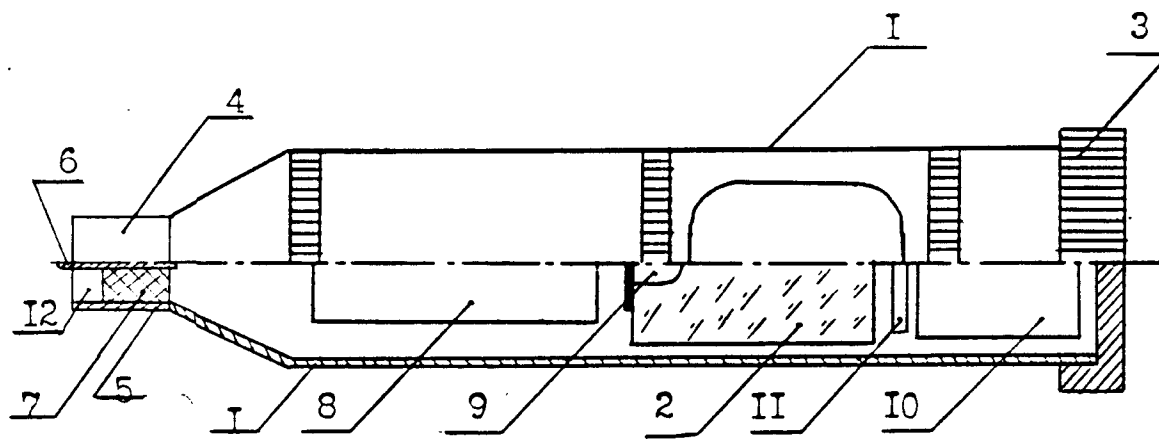


FIG. 1

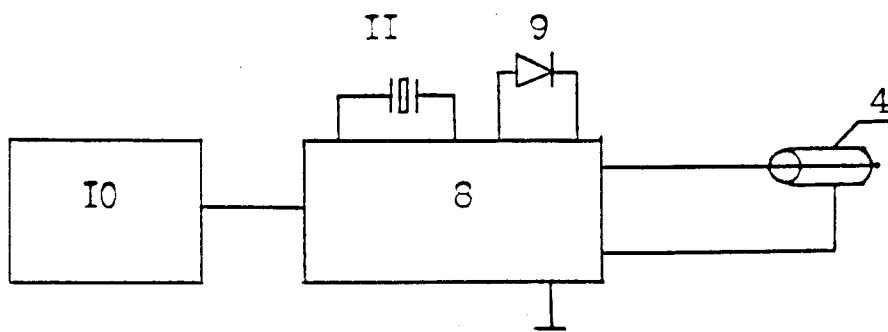


FIG. 2

INTERNATIONAL SEARCH REPORT

International application No.

PCT/RU94/00088

A. CLASSIFICATION OF SUBJECT MATTER		
Int. Cl. ⁵ A61H 39/00		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols)		
Int. Cl. ⁵ A61H 39/00-39/08; A61N 1/04		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	DE, A1, 3048358 (Fa Walter Krebs, EHVak Elektronik GmbH) 1 July 1982 (01.07.82)	1,3,4
Y	DE, A1, 2928826 (Pape, Wolfgang), 12 February 1981 (12.02.81), fig.11,12,c.11,12	1,4
A	US, A, 4125116 (Robert E. Fischell), 14 November 1978 (14.11.78)	1
A	US,A,4010758 (Ronald H. Rockland et Al.), 8 March 1977 (08.03.77)	1
A	SU, A, 1191081 (Sudovoi gosptal "Kuban" Krasnoeramennovo Chernomorskovo Flota), 15 November 1985 (15.11.85)	1,3,4
☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.		
* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family		
Date of the actual completion of the international search		Date of mailing of the international search report
28 June 1994 (28.06.94)		22 July 1994 (22.07.94)
Name and mailing address of the ISA/ RU		Authorized officer
Facsimile No.		Telephone No.

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