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DEVICE PERMITTING THE AMBULATORY IONIZATION OF BLOOD CIRCULATORY TROUBLES OF THE LOWER LIMBS

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2 Claims. (Cl. 128—172.1)

This invention relates to a device for producing the ambulatory ionization of blood circulatory troubles.

It is now generally recognized that excellent results are obtained in the treatment of blood circulatory troubles by the direct ionization of the affected part of the body. However, this treatment requires as a rule long periods of immobilization, cumbersome appliances, a close observation, etc.

The scope of this invention is to provide an electrolytic ambulatory device (for instance for the ionization with iodide of sodium or iodide of potassium) constructed for the particular treatment of a lower limb and permitting a lasting, low-intensity ionization without interrupting the occupation of the patient or giving him or her any appreciable discomfort.

The device according to the invention comprises essentially an anode adapted to be impregnated with a medicament and placed close to the pathological point, and a cathode disposed in another part of the leg whereby a current having a very moderate strength may flow during several hours through the sick portions.

The device according to this invention consists therefore of an assembly comprising:

(a) A source of low-voltage, low-strength current, for instance a 4.5-volt battery;

(b) Connected to the positive terminal of this battery, an insulated anode surrounded with a pad adapted to be impregnated with, and retain during several hours, a suitable medicament;

(c) Connected to the negative terminal of the battery: an insulated cathode surrounded with a felt pad soaked with distilled water.

Preferably, the source of current and electrodes are fixed on a support of convenient design adapted to be placed on the patient’s thigh which is to be treated.

The support of the electro-ionie device is a conventional elastic stocking with high thigh-portion; the anode and battery are fixed in the thigh portion whilst the cathode is secured under that part of the stocking which corresponds to the plantar arch; the anode was may be impregnated for instance with sodium iodide and the cathode pad with water.

As long as the pads are wet, a current of moderate strength will flow through the sole leg and produces the desired ionization without causing any discomfort to the patient.

After all, such device might be used in the treatment of an arm, in which case the sleeve of an undergarment would be used to support the anode and the cathode.

The attached drawings forming part of this specification illustrate diagrammatically by way of example two embodiments of the invention.

In the drawings:

Figure 1 shows a stocking modified according to this invention for treating an arteritis, and

Figure 2 shows an elastic stocking with high thigh portion for the treatment of chronic venous circulatory troubles.

Referring first to Fig. 1, in the thigh portion of a stocking 1 of any suitable type an interchangeable elastic battery 2 having an E. M. F. for example of 4 volts is secured thereto by means of a strap 3 with press-buttons or hook fasteners.

The positive terminal of the battery is connected to the metal plate forming the anode 4 inserted between a sheet of insulating material 5, for instance of rubber, placed on the outside, and a pad 6 of absorbent material, for example of felt.

The negative terminal of the battery is connected, through a flexible wire 7 passing preferably through a sheath 8 sewn to the stocking, to the cathode 9 fixed by press-buttons to the plantar portion 10 of the stocking. This metal cathode is placed like the anode between an outer rubber sheet 11 and a pad 12.

This stocking is used as a conventional stocking and may comprise a longitudinal aperture with buttons or a slide-fastener to facilitate the putting on of the stocking.

By soaking the anode with sodium iodide and the cathode with water a ionization current of a few milli-amperes is caused to circulate along the leg to be treated, as long as the anode and cathode are wet.

Thus, in an elastic stocking with high portion (Fig. 2) the battery 3 is contained in a gusset 13 closed by a slide fastener 14; the positive terminal of the battery has connected thereto a two-wire conductor 15 having a stripped loop-shaped portion 16 forming the electrode 4; this loop 16 surrounds a pad 17 of absorbent material such as felt and is protected by a fold 17 thereof on one side and by an insulating sheet 18 on the other side; the pad itself is sewn on this sheet fixed in turn through press-buttons 18 to the thigh portion 19 of the stocking.

The other electrode 9 consists similarly of a two-wire conductor 20 connected to the negative terminal of the battery. In order to prevent this conductor from deteriorating on extending the stocking, it is formed with waves between and about stitches or hook-fasteners provided for assembling a pair of elastics 21 threaded in a sheath portion 22 sewn along the stocking seam.
The stocking according to the invention is used as follows:

A dropping-tube is filled up to a predetermined mark with the medicament contained in a bottle carrying the sign + and poured slowly on the + electrode.

Then, the lower or — electrode is soaked with water.

The stocking is ready for use.

It is then put on with care so that both electrodes 4, 9 will engage the skin in a perfect manner, the upper electrode contacting the external side portion of the thigh and the lower electrode the planter portion of the foot.

As soon as the stocking is worn current flows through the leg until the electrodes are dry, which represents a treatment by ionization of circa 6 hours. Thereafter, the electro-ionic stocking becomes an ordinary retentive stocking.

While the embodiment of the invention illustrated in the drawings and described above refers more particularly to an elastic stocking fitted with the ionization device according to the invention, it will be readily understood that any other portion of the body may be treated likewise.

What I claim is:

1. A device for the ambulatory longitudinal ionization of blood circulatory troubles in the lower limbs comprising a stocking, a low-strength D. C. source, a pocket arranged at the top end of the stocking to support said source, an anode, an absorbent pad surrounding said anode soaked with a medicinal solution, an insulating sheet secured to the thigh end of the stocking having said pad secured thereto, a cathode designed to avoid any interference with the statics of the patient's foot, a pad wrapped about said cathode, an insulating sheet secured to the stocking opposite the instep having the cathode pad secured thereto, an extensible lead connecting the anode and the cathode with the electric source and a sheath to protect said lead.

2. A device according to claim 1 wherein a sheath running along the stocking seam contains the cathode lead and a pair of elastics sewed together alongside the sheath and enclosing the undulations of said lead retained by the seam threads.

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