

[54] MAGNETOTHERAPEUTIC DEVICES

[76] Inventor: Joseph Miquel, 7 Rue Simonet,
Paris, France

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[58] Field of Search 128/1 R, 1.3, 104, 1.5,
128/41

[56] References Cited

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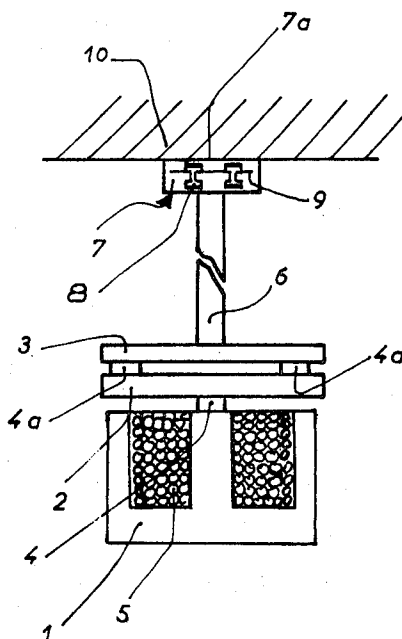
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Primary Examiner—Dalton L. Truluck
Attorney, Agent, or Firm—Robert E. Burns;
Emmanuel J. Lobato; Bruce L. Adams

[57] ABSTRACT

Static and dynamic magnetotherapeutic devices for the treatment of living beings. The static device, taking the form of a sole for attachment to a shoe, combines magnetic and electrical influences produced respectively by magnetic bands of alternate north and south magnetisation, and crescent-shaped open metal turns producing oscillating circuits. The dynamic device combines magnetic, electrical and mechanical influences in a head placed in contact with a body to be treated, the magnetic and electrical influences being produced respectively by permanent magnets and open metal turns, and the mechanical influence being created by a vibration generator which vibrates the head.

1 Claim, 2 Drawing Figures



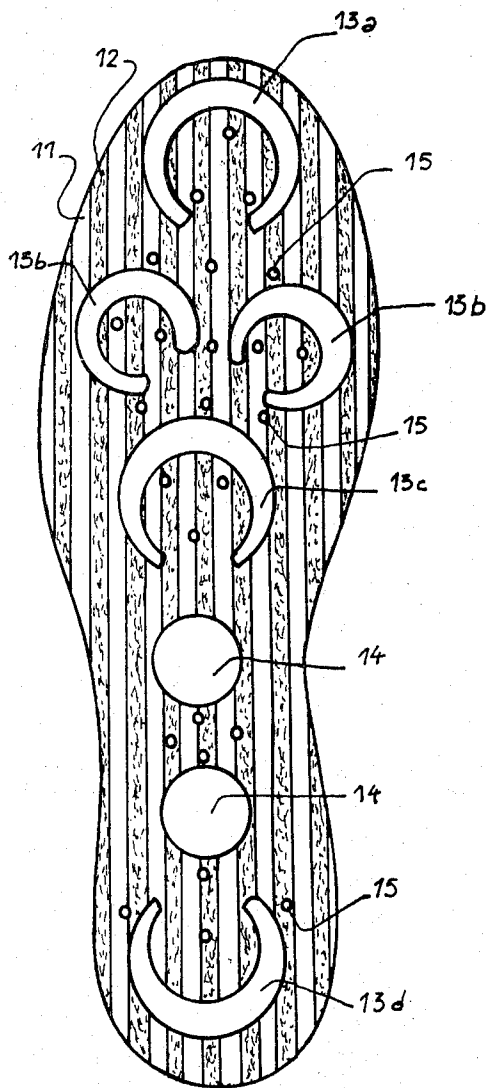


Fig. 2

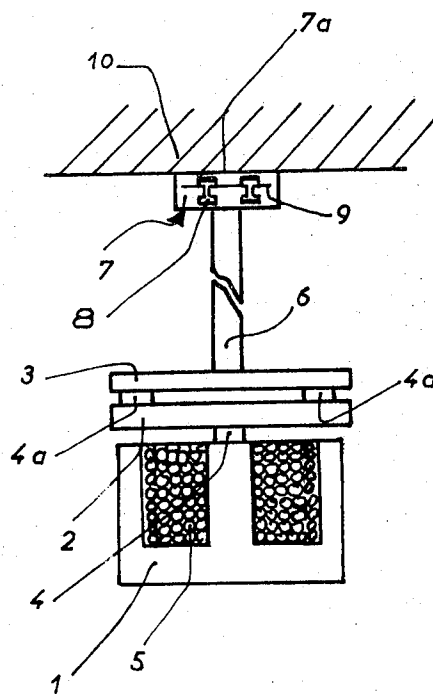


Fig. 1

MAGNETOTHERAPEUTIC DEVICES

BACKGROUND OF THE INVENTION

This invention relates to devices for static and dynamic magnetotherapy, combining a number of effects, among which may be mentioned the magnetic effect, an effect of electrical origin and a mechanical effect.

The devices of the invention are suitable for use in the treatment of living beings.

The beneficial influence of the action of a magnetic field applied to the vital centers of the human body has been observed for some considerable time. An example of an apparatus in which use is made of this magnetic effect is described in U.S. Pat. No. 1,379,919.

It has also been found that a treatment of electrical origin has an undoubted and beneficial effect on living beings. A device in which open turns of a coil are used in order to produce an electrical effect is described in French Patent No. 775,539.

Finally, it is a known fact that massage, mainly effected by vibrations applied locally to the human body, activates the circulation of the blood and relaxes the person who undergoes this mechanical treatment.

Up to the present, use has been made of these different observations and apparatus has been proposed which is based on one or other of these influences or on the partial combination of two influences. In particular, apparatus for treatment is known which produces a mechanical massage effect by reciprocating movements or by vibrations imparted to a device placed in contact with the part of the body to be treated. This vibratory apparatus, however, whether used by itself or in conjunction with a magnetotherapeutic apparatus, usually suffers from the drawback of noise and of uneven distribution of the vibrations over the surface of the body to be treated. The cause of these drawbacks must be sought in the use of springs for the transmission of the vibratory or reciprocating movements. It is clear that therapeutic apparatus intended to relieve pain and to be operated by the patients themselves require, among other qualities, simplicity of use, moderate weight, easy handling and suitability for application to any part of the body to be treated.

In addition to the aforementioned disadvantages of the known vibration generators, the various devices utilizing one or other of the influences are of limited effect, since they do not make simultaneous use of all the available beneficial influences, i.e. the magnetic influence, the influence of electrical origin and the mechanical influence of the massaging action.

The purpose of the present invention is to propose dynamic magnetotherapeutic devices and static magnetotherapeutic devices designed in particular to be applied to a painful spot and differing from the already known apparatus in that they are less limitative and that their effect is more complete. Furthermore, the devices covered by the invention are free of the drawbacks of the known vibration generators and have the necessary characteristics for a magnetotherapeutic apparatus.

BRIEF SUMMARY OF THE INVENTION

For this purpose, according to one aspect of the present invention there is provided a dynamic magnetotherapeutic device for the treatment of living beings,

comprising a head for placing the device in contact with that area of a body which is to be treated, at least one permanent magnet in the head for the production of a single-pole, two-pole or multipolar magnetic field, at least one open turn in the head and constituting an oscillating circuit to obtain an electrical influence which combines with the influence of the magnetic field, and means for imparting to the head, and thus to the magnetic and electrical fields, reciprocating movement or vibrations for producing an additional mechanical massage effect on a body.

According to another aspect, the invention provides a static magnetotherapeutic device for treatment for incorporation in an article placed in contact with a body to be treated, the device comprising, on one of its faces, a succession of magnetic bands of alternate north and south magnetization creating a magnetic field, at least one substantially crescent-shaped open metal turn forming an oscillating circuit, and at least one substantially circular collector for an canalization of the electric current.

The invention is thus highly advantageous by comparison with the known devices, and the improvements resulting from it ensure greater efficacy in the relief obtained. A dynamic magnetotherapeutic device according to the invention combines a magnetic influence, an electrical influence and a mechanical influence, all three interacting to exert a considerable analgesic effect on the patient. In the static magnetotherapeutic device to which the invention relates, the magnetic influence is reinforced by an influence of electrical origin, due to the open turns and to the collectors by which the electric current is canalized.

BRIEF DESCRIPTION OF THE DRAWING

Embodiments of the invention will now be described, by way of example, with reference to the accompanying drawing, in which:

FIG. 1 is a sectional diagram through a longitudinal plane of a dynamic magnetotherapeutic device, and

FIG. 2 is a plan view of a static magnetotherapeutic device.

DESCRIPTION OF PREFERRED EMBODIMENTS

According to FIG. 1, a dynamic magnetotherapeutic device for the treatment of a living being comprises a head or head portion 7, preferably detachable, which is placed in contact with an area 10 of a body to be treated. The head 7 contains one or more permanent magnets 8 and an open turn 9. According to the treatment to be effected, either one, two or a number of magnets 8 can be placed in the head 7. These magnets can all be polarized in the same direction or in different directions. A single-pole, double-pole or possible multipolar magnetic field is thus created around the head 7. The open metal turn 9, likewise situated in the detachable head 7, constitutes an oscillating circuit for the purpose of obtaining an influence of electrical origin. In one preferred embodiment the poles of the magnets 8 are in the main situated in the vicinity of the application surface 7a of the head 7, the application surface 7a being in contact with the area 10 of the body to be treated. The open metal turn 9 is likewise preferably situated near the application surface 7a and parallel thereto.

In the dynamic magnetotherapeutic device according to the invention, a reciprocating movement or vibra-

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tions are imparted to head 7, in order to obtain a supplementary mechanical massage effect. This reciprocating movement or these vibrations are obtained by means of a rod 65 affixed by one of its ends to the head 7 and by its other end to a first soft iron plate 3. A second plate 2, of a non-deformable material and with substantially the same shape and dimensions as the first plate 3, is placed parallel with the first soft iron plate 3, and integral therewith, without being directly in contact with it; the association between the plates 3, 2 is obtained via securing struts 4a affixed to the periphery of the first soft iron plate 3 on the one hand and to that of the second plate 2 on the other. By means of one or more securing struts 4, the second plate 2 is itself rendered integral, in its central portion, with a magnetic circuit 1, without being directly in contact therewith. The magnetic circuit 1 produces reciprocating movements or vibrations as a result of a winding 5 placed inside the said magnetic circuit 1 and fed with electric current by means not shown in FIG. 1. Other means, likewise not shown, whether electrical (rheostat) or electronic (diode thyristor), enable the frequency of the vibration or the reciprocating movement to be varied in accordance with the required massage effect.

The head 7 can be disconnected from the rest of the device, which as a whole constitutes a vibration generator. In this manner, by only using one single vibration generator, a number of heads can be used, which differ from one another in the number and orientation of the permanent magnets 8 or in the number of open metal turns 9 forming the oscillating circuits.

The production of the reciprocating movements or vibrations with the use of the vibration generator of the dynamic device according to the invention eliminates the drawbacks of the usual vibration generators and results in a remarkable operational flexibility. The second plate 2 is made of a non-deformable material, preferably alveolar plastics. The first plate 3, of soft iron, can be replaced by a core of laminated or agglomerated magnetic material, according to the power of the vibrator.

According to FIG. 2, a static magnetotherapeutic device in an embodiment given by way of an example is generally sole-shaped and can be fitted to a shoe. This static device comprises a succession of magnetized bands of north and south magnetization alternately and marked 11 and 12. In a preferred embodiment these

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alternate magnetic bands are positioned longitudinally on the sole. In all cases, whatever their orientation, they create a magnetic field substantially perpendicular to the face of the sole, in the direction of the wearer of the shoe, and produce a beneficial effect. The same face of the said sole bears oscillating circuits 13a, 13b, 13c, 13d, each consisting of a metal turn which is not closed and which is substantially crescent-shaped, its opening being preferably orientated towards the collectors 14, which are substantially circular, canalizing the electric current and intensifying the magnetic influence. Holes 15 are distributed over the same face of the sole in order to ensure good ventilation for the shoe.

It is clear that this static magnetotherapeutic device in the version suggested by FIG. 2 is in no way limitative. In particular, a completely different arrangement would be conceivable for the open turns 13a, 13b, 13c, 13d, the collectors 14 and the magnetic bands 11, 12. The same applies to the number of bands 11, 12, per sole. More generally, a static device according to the invention is not necessarily integrated in a sole but can be placed on any other support in contact with that area of the body which is to be treated, such as a belt or bracelet.

The invention is not strictly confined to the embodiments of the dynamic device and of the static device which have been described in the foregoing. Numerous alternative versions thereof could be adopted within the scope of the appended claims.

I claim:

1. A device comprising a head portion having a surface for contact with a selected area of the human body; means detachably connectable to said head portion for effecting reciprocatory or vibratory motion thereto, said means comprising a rod detachably fixed at one end thereof to said head portion, a first plate fixedly connected to the other end of said rod, a second plate comprising a non-deformable material and having substantially the same shape and dimensions as said first plate, struts disposed between the two plates at their periphery to space the two plates apart and fixedly connect them together, an electromagnetic circuit fixed to the center portion of said second plate for effecting reciprocatory or vibratory movement of said second plate, said struts and thereby said first plate said rod and said head portion.

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