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- (73) Patenthaver: **Della Ragione, Riccardo, Piazza Matteotti 40, 56100 Livorno, Italien**
Garzella, Roberto, Via Crispi 52, 56125 Pisa, Italien
- (72) Opfinder: **Della Ragione, Riccardo, Piazza Matteotti 40, 56100 Livorno, Italien**
Garzella, Roberto, Via Crispi 52, 56125 Pisa, Italien
- (74) Fuldmægtig i Danmark: **NORDIC PATENT SERVICE A/S, Bredgade 30, 1260 København K, Danmark**
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DE-U1- 29 807 129
DE-U1- 29 901 078
US-A- 3 113 567
US-A- 4 753 225
US-A- 4 782 822
US-A- 6 027 463
US-A1- 2001 004 678

DESCRIPTION

Field of the invention

[0001] The present invention relates to a vibro-massage unit that can be used in apparatus for applying a massage on at least one part of the body of a user, for example a armchair, a couch, a footboard, etc.

[0002] Furthermore, the invention relates to a method for producing a vibro-massage effect.

Description of the prior art

[0003] Different devices exist capable of carrying out a massaging action on at least one part of the body of a user. These devices usually comprise a plurality of vibrating elements arranged within cushions or upholstered articles like beds, armchairs, chairs, etc. Vibro-massage obtained with these devices has mainly the object of relaxing and stretching the muscular tension of a user, and has also a therapeutic function.

[0004] A first example of a vibro-massaging device is described in US 6682494. It comprises a plurality of vibrators arranged in determined areas of the stuffing of a seat of a car. The different vibrating devices are operated selectively by a control unit. In particular, each vibrator is arranged according to a recess of the stuffing, behind an upholstered portion in contact with a user.

[0005] However, the massaging action of the above described system and of similar devices is a standard one, i.e. not personalized according to the features of the user and is carried out in a uniform way on all the area of interest.

[0006] To increase the relaxing action of an armchair, couch, and similar articles comprising a vibro-massaging device as above described, the massaging action can be provided in combination with listening to the music in order to increasing the relaxing effect for the user.

[0007] To this purpose, armchairs and beds exist integrating audio amplification systems capable of transmitting the sounds to the user with a surrounding and very pleasant musical effect. However, in order to provide a relaxing effect the massage and the music have to be harmonized. In US 6027463, for example, an apparatus is described for harmonizing the two effects. It provides a plurality of vibrators arranged on an armchair according to a determined configuration and operated selectively by a processor capable of synchronizing the audio signals sent by a sound source. This way, the pulses coming from the vibrators carry out a massage at the rhythm of the selected music.

[0008] Also exist beds, divans and bathtubs that are associated to several generators of vibrations, loudspeakers, ultrasonic transducers for which it is necessary the use of ceramic plates to provide electric insulation (see for example WO 98/27923).

[0009] Other examples of device for producing a relaxing or a massaging action are also disclosed in DE29901078, EP1350502 and DE29807129.

[0010] However, all the solutions of prior art are expensive, structurally complex and furthermore provide a substantially random distribution of the vibrations.

Summary of the invention

[0011] It is therefore a first feature of the invention to provide a vibro-massage unit for carrying out a customized massage.

[0012] It is another feature of the invention to provide a vibro-massage unit that is structurally easy and cheap with respect to the prior art, as well as capable to convey a very effective relaxing or stimulating action responsive to desired audio frequencies.

[0013] It is a further feature of the invention to provide a vibro-massage unit that carries out a distribution of the vibrations.

[0014] These and other features are accomplished with a vibro-massage unit for applying a massaging action on at least one part of the body of a user, according to claim 1 of the invention.

[0015] In particular, the means for generating vibrations create sound waves and carry out at the same time a vibrating action on the resonating structure. The sound and the massaging action surround then the user in perfect harmony. More in detail, the harmonic vibro-massage unit is capable of combining the effects of the massage with those of the sound and of the vibrations.

[0016] Preferably, the means for generating vibrations comprises a single sound transducer located at a determined point of the resonating structure for carrying out the above described distribution of sound waves.

[0017] Alternatively, the means for generating vibrations provide a plurality of sonic transducers located in contact of the resonating structure in order to obtain a predetermined the distribution of sound waves.

[0018] In particular, the audio signal before reaching the sound transducer crosses an amplifier suitable for interfacing the audio signal source with the means for generating vibrations.

[0019] Preferably, the resonating structure has essentially a central beam, rectilinear or curvilinear, and a plurality of rods, or boards, transversal to it.

[0020] Alternatively, the resonating structure comprises a plurality of adjacent portions of different suitable thickness to provide said selective vibration distribution.

[0021] In particular, owing to the particular shape and to the distribution of the mass the resonating structure achieves a selective vibration distribution of the vibrations and of the relative tactile effect according to their frequency and to their amplitude. More in detail, on the resonating structure under vibrations it is possible to identify at least one zone where the vibrations are concentrated at lower frequency and at least one zone where the vibrations are concentrated at an intermediate frequency. This allows stimulating in a selective way different parts of the body of the user depending on corresponding zones of concentration of the vibrations in order to convey specific treatments.

[0022] In particular, the vibrations at lower frequency have a frequency set between 5 and 275 Hz, whereas the vibrations at an intermediate frequency have a frequency set between 275 and 535 Hz. At the same time the vibrations at higher frequencies, i.e. in a range approximately between 535 and 800 Hz, cause a light and diffused background vibration. The audio input used for transduction and for generating the vibrations belongs then to the range of infrasonic frequencies set between 5 and 19 Hz and sonic frequencies between 20 and 800 Hz.

[0023] For example, if the vibro-massage unit is used in a couch, armchair, or similar support where the whole body of the user is involved by the massaging action, the sound waves at lower frequency convey tactile effects at the portion of the resonating structure for contacting the thorax, neck, head of the user, whereas the sound waves at an intermediate frequency convey tactile effects at the portion of the resonating structure suitable for contacting the abdomen, pelvis and legs of the user.

[0024] Advantageously, the resonating structure is made of material capable of conducting vibrations selected from the group comprised of: wood, metal, glass, plastic materials, conglomerated material.

[0025] In a possible embodiment on of the invention, the vibro-massage unit is associated to a container for liquid, for example a basin filled with water, a bath, etc.

[0026] Advantageously, the resonating structure can be put into in the container, or alternatively, be integral to the base frame of the container same.

[0027] In another exemplary embodiment, the means for generating vibrations can be arranged contacting the base of the liquid container.

[0028] According to another aspect of the invention, the vibro-massage unit above described is operated by a signal recorded in a track of a digital support for example DVD, CD, and the like.

[0029] Similarly, in different tracks of the same digital support or in a track of a different digital support a signal is contained for triggering, for modulating, or stopping appliances selected from the group comprised of: fragrances diffusers, coloured lights diffusers, etc.

Brief description of the drawings

[0030] The invention will now shown with the following description of an exemplary embodiment thereof, exemplifying but not limitative, with reference to the attached drawings wherein:

- figure 1 shows a perspective view of a first exemplary embodiment of a vibro-massage unit, according to the invention;

Description of the preferred embodiments

[0031] With reference to figures from 1 to 6, a vibro-massage unit, according to the invention, provides a resonating structure 1, or 101, with ergonomic shape in contact with a sound transducer 20 suitable for transmitting to it a plurality of vibrations and for propagating sound waves generated by a generator of audio signals 10 after suitable amplification. In a first exemplary embodiment, shown in figure 1, the resonating structure 1 comprises essentially a central beam 2, for example curvilinear, and a plurality of rods, or boards 3, arranged transversally to it. The resonating structure can be solid, hollow, or pneumatic and can be made of a material capable of conducting vibrations for example wood, metal, glass, plastic material or conglomerated material.

[0032] Alternatively, in an exemplary embodiment shown in figure 6, the resonating structure 101 comprises a plurality of adjacent portions 102-107 of different thickness.

[0033] In both the exemplary embodiments of the invention, for the resonating structures 1 and 101, the vibrations depart from the transducer 20 jointly for then propagating through the resonating structure 1, or 101, in a differentiated way selectively concentrating according to their frequency and their amplitude in determined areas of the resonating structure. In particular, the differentiated distribution of vibrations generated by the transducer 20 involves essentially a first zone 7, where the vibrations are concentrated at lower frequencies, i.e. frequencies set in a range about between 5 and 275 Hz, and a second zone 5, where the vibrations are concentrated having an intermediate frequency, i.e. set about between 275 and

535 Hz. The vibrations at higher frequencies, set about between 535 and 800 Hz causes a slight sensation tactile with background and diffused high vibration.

[0034] Such a distribution of the vibrations provides a massaging effect located in selected regions of the body of the user optimizing, therefore, the beneficial effect of the vibro-massage unit. It is capable of combining the massaging action with the sound transmission with a perfect harmony between the two effects.

[0035] In particular, the sound can be produced by playing a Hi-fi system, by a DVD, a CD or the like, in order to let the user to choose a desired rhythm responsive to the mood of the moment, or in harmony with particular therapies.

[0036] In particular, it is possible to use the vibro-massage unit for particular applications, for example, for carrying out a relaxing effect on the whole body of a user resting on an armchair 30 (figure 2), or on a couch 40 (figure 3) of the type used in the aesthetic centres, or for carrying out a massage therapeutic on the foot sole of the user integrating the vibro-massage unit in a footboard 60 (figure 5). In this case two separate footboards can be provided for the feet of the user, as shown in figure 5, or alternatively, according to an exemplary embodiment not shown in the figure, a single footboard for both the feet.

[0037] A further possible application of the vibro-massage unit is shown in figures 4A and 4B. In this case, the vibro-massage unit can be associated to a liquid container, for example a bath for harmonic vibrating hydro massage 50 (figure 4A) in which the user can relax surrounded by the effect produced by the transducer 20. This can be directly put in contact with the structure of the bath for harmonic vibrating hydro massage 50 (figure 4B) that would in this case resonate directly, or indirectly through a resonating structure 1 of the type above described, arranged under the bath 50 as a support for the user (figure 4A). In this case the resonating structure may have a rectilinear profile, a curved profile of the "relax" type, or another line.

[0038] On the body of a user in bath 50, a double massaging effect is conveyed. In fact, a uniform action of skin micromassage produced by the vibrations conveyed by the water in basin 50 adds to an intense macromassaging action, which acts in depth on the muscles. The macromassaging action is in particular conveyed by the vibrations transmitted directly by the walls 51 and by the bottom 52 of the resonating bath 50. The combined action of micromassage, macromassage and music, produces on the user of the relaxing and toning up effects.

[0039] As shown in figures 4A and 4B the installation is structurally easy and cheap with remarkably reduced electric consumption with respect to baths of prior art, having traditional hydro massage. Furthermore, the use of a single transducer makes cheaper the production. Further advantages derive from the fact that normal maintenance treatment are not necessary, by the absence of electro-pumps and the vibrations associated to them, absence water remaining in ducts and pumps, that require washing, draining and cleaning cycles after use. Furthermore, differently from known hydro massage apparatus the use of bath salt and bath

foam does not affect functionality. For this reason, the bath 50 can be used for applications such as mud bath therapy and the thalasso therapy.

[0040] The electric/electronic components necessary to interfacing the sound source and the sound transducer, are electrically insulated out of the resonating structure and operate even at low voltage (12 v./low current). A risk is thus avoided that the body of the user immersed in the basin 50, can accidentally be put under voltage.

[0041] Finally, in figure 7 a possibility is diagrammatically shown of applying the vibro-massage unit 1 to a seat 70 for example of a car, of a airplane, of a watercraft, of a driving simulator, of a videogame, of a armchair for dentistry, on a psychotherapy couch etc.

[0042] The foregoing description of a specific embodiment will so fully reveal the invention according to the conceptual point of view, so that others, by applying current knowledge, will be able to modify and/or adapt for various applications such an embodiment without further research and without parting from the invention, and it is therefore to be understood that such adaptations and modifications will have to be considered as equivalent to the specific embodiment. The means and the materials to realise the different functions described herein could have a different nature without, for this reason, departing from the field of the invention. It is to be understood that the phraseology or terminology employed herein is for the purpose of description and not of limitation.

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- [US6682494B \[0004\]](#)
- [US6027463A \[0007\]](#)
- [WO9827923A \[0008\]](#)
- [DE29901078 \[0009\]](#)
- [EP1350502A \[0009\]](#)
- [DE29807129 \[0009\]](#)

PATENTKRAV

1. Vibromassageenhed til anvendelse til massage på mindst en del af en brugers krop, hvilken vibromassageenhed omfatter:

- en resonansstruktur (1, 101),
- en lydsignalkilde (10), der er indrettet til at generere et lydsignal,
- et middel til at genere vibrationer på resonansstrukturen (1, 101),

hvor midlet til at generere vibrationer omfatter mindst en lydtransducer (20), der er indrettet til at generere vibrationer med en frekvens og en amplitude, der er moduleret på grundlag af lydsignalet, hvor transduceren (20) er placeret i kontakt med resonansstrukturen (1, 101) på et forhåndsbestemt sted, kendetegnet ved, at resonansstrukturen (1, 101) er konfigureret således, at vibrationerne forplantes på en differentieret måde med selektiv koncentration af vibrationerne i henhold til deres frekvens og deres amplitude i bestemte områder, hvorved der således opnås en selektiv vibrationsfordeling.

2. Vibromassageenhed, ifølge krav 1, hvor lydtransduceren (20) er indrettet til at frembringe lydbølger og til samtidig at foretage vibration på resonansstrukturen.

3. Vibromassageenhed, ifølge krav 1, hvor midlet til generering af vibrationer omfatter en enkelt lydtransducer (20).

4. Vibromassageenhed, ifølge krav 1, hvor lydsignalet, før det når lydtransduceren (20), er indrettet til at krydse en forstærker, der er indrettet til at forbinde lydsignalkilden med transduceren (20).

5. Vibromassageenhed, ifølge krav 1, hvor resonansstrukturen (1, 101) omfatter en central bærer (2) og en flerhed af stave (3) på tværs af den centrale bærer.

6. Vibromassageenhed, ifølge krav 1, hvor resonansstrukturen (1, 101) omfatter en flerhed af tilstødende dele (102-107) af forskellig tykkelse, der er indrettet til at tilvejebringe den selektive vibrationsfordeling.

7. Vibromassageenhed, ifølge krav 1, hvor vibrationsfordelingen på resonansstrukturen (1, 101) tilvejebringer mindst én zone (7), hvor vibrationerne er koncentreret ved lavere frekvens og mindst én zone, hvor vibrationerne er koncentreret ved en mellemliggende frekvens.

8. Vibromassageenhed, ifølge krav 7, hvor vibrationerne ved lavere frekvens har en frekvens, der er indstillet mellem 5 og 275 Hz, mens vibrationerne ved en mellemliggende frekvens har en frekvens, der er indstillet mellem 275 og 535 Hz.

5

9. Vibromassageenhed, ifølge krav 1, hvor resonansstrukturen (1, 101) er fremstillet af et materiale, der er i stand til at lede vibrationer udvalgt fra gruppen bestående af: træ, metal, glas, plastmaterialer og blandet materiale.

10 10. Vibromassageenhed, ifølge krav 1, hvor vibromassageenheden er forbundet med en beholder (50), der indeholder en væske, og navnlig er anbragt i beholderen (50) for at røre dens vægge.

11. Vibromassageenhed ifølge de foregående krav, hvor vibromassageenheden drives af et
15 signal, der er registreret i en digital bærer, for eksempel en dvd, cd og lignende.

DRAWINGS

Fig. 1

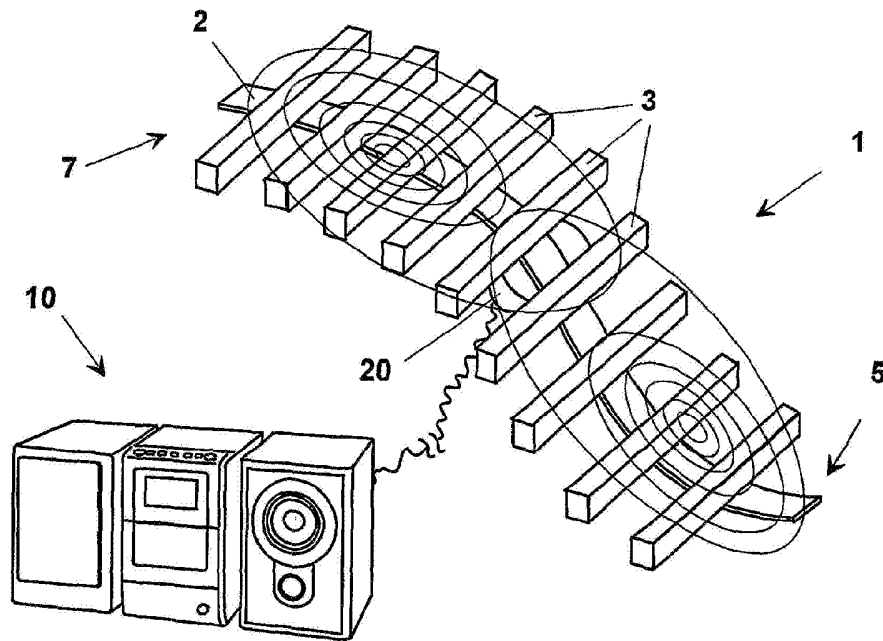


Fig. 2

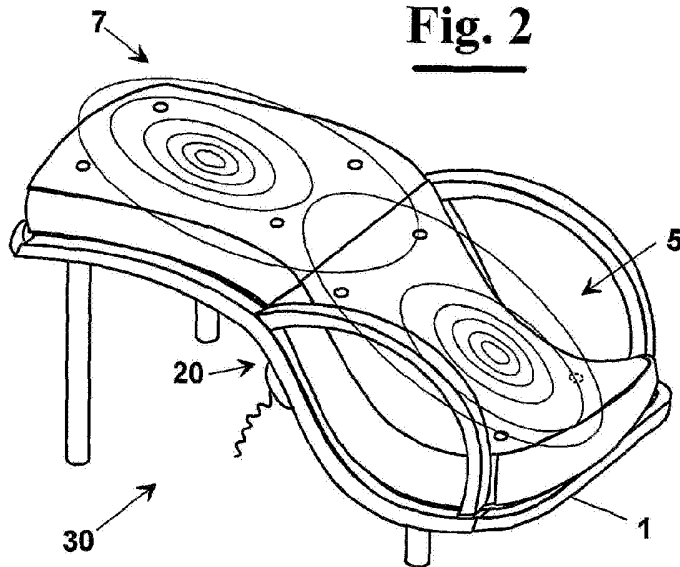


Fig. 3

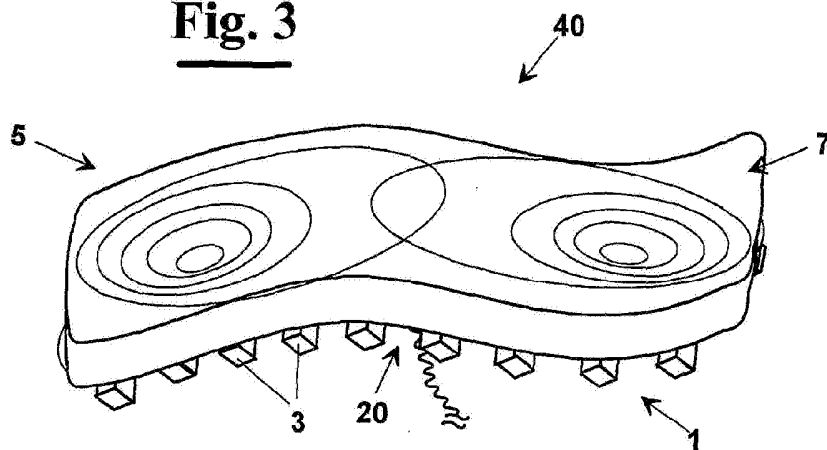


Fig. 4A

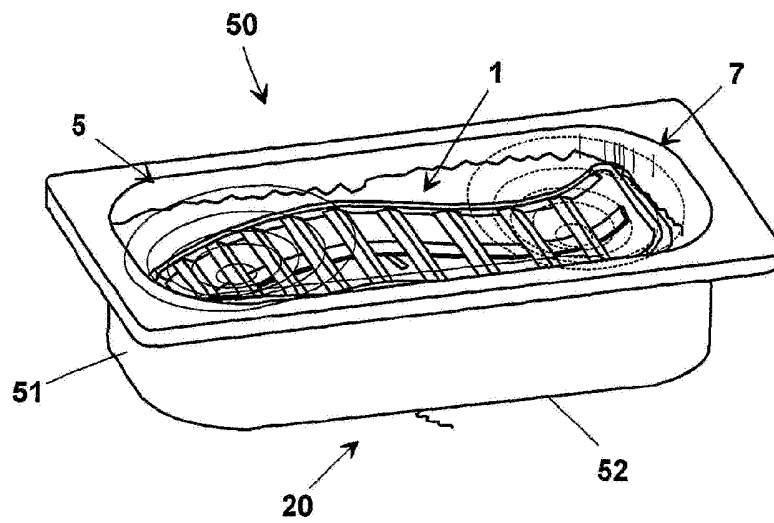


Fig. 4B

