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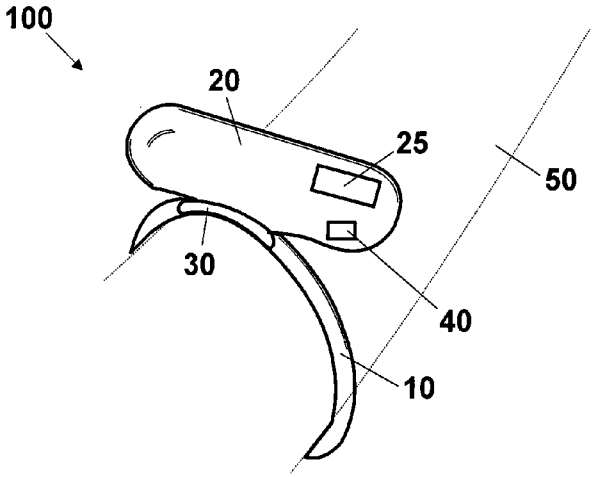
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(54) Title: A VIBRATION RING

(57) Abstract: A vibrating ring (100) for sexual." stimulation comprising a ring body (10) arranged to be inserted at the basis of a male member (50) of a user. The ring (100) further comprises a vibration means (20) arranged to transmit a vibration with predetermined vibration parameters to the ring body (10) during a sexual intercourse and a battery (25) arranged to feed the vibration means (20). Furthermore, an inertial sensor is provided (30), in particular an accelerometer, which is arranged on the ring body (10) and configured to measure the movement of the user, and also to provide corresponding measurement signals (32), and a microprocessor (40) associated with the inertial sensor (30) and to the vibration means (20) arranged to transmit a drive signal (42) to the vibration means (20) on the basis of the measurement signals (32). Through a program means resident in the microprocessor (40) the measurement signals (32) are computed to generate the drive signal (42) in order to cause the vibration parameters to follow a predetermined function. In particular, the vibration parameters follow a predetermined function of frequency and/or intensity of vibration responsive to the measurement signals (32). This way, it is possible to adapt the vibration parameters, such as frequency and/or intensity, to the movement of the user and then improving the effectiveness of the stimulation. Furthermore, a vibrating ring-user interface is provided (46) that enables the user to set/read the rate of preference of the vibration pattern.

Fig. 1



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A VIBRATING RING

DESCRIPTION

Field of the invention

The present invention relates to a vibrating ring for males arranged to improve the stimulation during a sexual intercourse and/or reducing problems due to sexual dysfunctions.

Description of the prior art

Various types are known vibrating tools are used for stimulating limbs of the human body. Specific vibrators are used for sexual stimulation, in order to improve the stimulation and satisfaction of the partner, but also for reducing troubles due to sexual dysfunctions.

Among these, vibrating rings are known which can be located at the root of the male member and stimulated by means of vibrating pulses for supplying additional sensations to the partner.

An example of a vibrating ring is disclosed in US2007038019 and comprises a motor arranged on the ring to transmit a predetermined vibration. The motor is activated by the user before starting the intercourse and is then turned off at the end. During the passive times of the sexual intercourse the vibrating ring is always in function.

Another vibrating ring similar to the previous is disclosed in EP1790381.

Other types of vibrating rings, for example described in US2009012355, provide systems for modulating the

vibration in order to adjust the intensity. Such types comprise a switch element that adjusts manually, before starting the intercourse, the vibration intensity and can switch also among different vibrating modes. It is also possible to adjust the ring during the intercourse, but this causes an interruption of the same. Actually, the above described vibrating rings do not allow adjusting the vibration responsive to the intensity of the intercourse but operate always a fixed vibration.

In particular, a predetermined mode of vibration can in certain cases result unpleasant and incapable of increasing the stimulation of the sexual intercourse.

It is desirable that the vibration can be for example adjusted in intensity in a way increasing or decreasing according to the different phases of the intercourse.

Summary of the invention

It is therefore a feature of the present invention to provide a vibrating ring that enables the user to adjust the ring operation responsive to the user's preferences and habits in order to improve the stimulation efficiency in a sexual intercourse.

It is other particular feature of the invention to provide a vibrating ring for improving the ring operation responsive to preferences selected in a previous sexual intercourse.

It is also particular feature of the invention to provide a vibrating ring which makes it possible to avoid dysfunctions such as premature ejaculation, impotence, problems of erection, etc.

It is, furthermore, a feature of the invention to

provide a vibrating ring which is easy to use and is of minimum encumbrance.

It is another feature of the invention to provide a vibrating ring which is structurally easy and not expensive to make.

These and other objects are achieved by a vibrating ring for sexual stimulation comprising:

- a ring body arranged to be inserted at the basis of a male member of a user;
- a vibration means which is adapted to transmit a vibration with predetermined vibration parameters to said ring body during a sexual intercourse,
- a battery arranged to feed said vibration means;

whose main feature is that said vibrating ring also comprises an inertial sensor arranged on said ring body, said inertial sensor configured to measure the movement of said user and to provide corresponding measurement signals;

- a microprocessor associated with said inertial sensor and to said vibration means which is adapted to transmit a drive signal to said vibration means responsive to said measurement signals;
- a program means resident in said microprocessor configured to analyse said measurement signals and to generate said drive signal in order to cause said vibration parameters to follow a predetermined function.

In particular, said vibration parameters are computed to follow a predetermined function of frequency and/or intensity of vibration responsive to said measurement signals.

This way, it is possible to adapt said vibration

parameters, such as frequency and/or intensity, to the movement of the user, then improving the stimulation during the intercourse.

This way, the program means can adjust the operation of the vibration means selecting a predetermined function or vibration pattern, etc., i.e. a predetermined function of frequency and/or intensity of vibration chosen according to the preferences of the users, but that is active only when predetermined dynamic conditions recognized by the inertial sensor are met.

Advantageously, a memory unit is provided associated with said microprocessor, arranged to memorize a plurality of said drive signals obtained with time by processing said measurement signals, in order to define a customized operation pattern for said user. In other words, in addition to a predetermined pattern, a customized pattern can be defined based on recorded data.

This way, a step is carried out of learning the stimuli obtained by the vibration means reaching with time a desired setting for the user who wears it for improving its own performance.

Advantageously, a vibrating ring-user interface is provided that allows the user to determine the rate of preference of the vibration pattern. The interface can comprise a key and/or it can be the inertial sensor same. In particular, adopting a key it is possible to associate a score to the performance, for example it is possible to give a score set between 1 and 5 pushing a corresponding number of times the key.

Alternatively, the score can be predetermined through the same inertial sensor. In this case, only with the

inertial sensor it is possible to start a learning mode giving a stronger pulse and recognizing the activation of the learning mode with a vibration. Once entered the learning mode it is possible to give the score shaking the ring a corresponding number of times.

In particular, a transceiving means is provided for transmitting said operation pattern from said vibrating ring to a remote unit and from said remote unit towards said vibrating ring. This way, it is possible to transfer the operation pattern of the vibrating ring on an remote unit to store the data in an external memory and to transmit them back on another vibrating ring when the useful life of a worn vibrating ring is ended. This allows to save the acquired useful data, and to re-start from a pattern already developed, improving it with time, in order to obtain a vibrating ring that is most effective for the user.

In other words, not only the vibrating ring may have the capacity of storing the intercourses and learn the phases of the intercourse that trigger its activation, supplying the ideal intensity of vibration, the kind of vibrations and other factors that identify said operation pattern, but is also possible to save the continuous improvement of the stimulation acquired when passing from a vibrating ring to another, saving the ability to immediately re-start from the last operation pattern recorded.

Advantageously, said transceiving means is configured to use a wired, or wireless transmission.

In particular, in the wired transmission there is a cable connection between said vibrating ring and said

remote unit, whereas the wireless transmission can for example use a Bluetooth low energy protocol.

Preferably, the remote unit is selected from the group consisting of: a PC, a mobile phone, a tablet, a combination thereof, or other device.

Preferably, the program means comprises a local program resident in the microprocessor of the ring and a remote program resident in the remote unit. In particular, the remote program is suitable for assisting the local program on the microprocessor.

Advantageously, the remote program is configured to generate on the remote unit a user interface through which a user can transmit and select functions of the vibrating ring. This way, it is possible to change and improve in turn the operation pattern of the vibration means, to select a profile for example on the basis different places, preferences of the partner, time available for the intercourse, etc.

In particular, the vibrating ring comprises at least one mechanical actuator, associated with the vibration means. The, or each, mechanical actuator is adapted to adjust a diameter of the ring body in order to move from a contact configuration, where the ring body is peripherally in contact with the male member, in order to transmit the vibration, to a narrower configuration where the ring body tightens substantially the male member. This way, the vibrating ring in the narrower configuration allows delaying the ejaculation and increases then the duration of the intercourse.

In particular, the mechanical actuator is adapted to be operated by a drive signal responsive to signals coming

from said inertial sensor, at determined dynamic situations or in determined execution steps of the vibration pattern. Such device can have especially therapeutic application for users with premature ejaculation dysfunctions.

Advantageously, the vibrating ring comprises a device for releasing chemical substances such as lubricant substances, or flavouring substances, or even stimulating substances, or therapeutic substances.

In particular, furthermore, an electric device can be provided associated with the ring body and arranged to release an electric stimulus on the basis of a drive signal generated by the signals coming from the inertial sensor, at determined dynamic situations, or in determined execution steps of the vibration pattern.

This way, the electric stimulus of measured intensity allows delaying the ejaculation of the user and increases, then, the duration of the intercourse.

Brief description of the drawings

The invention will be now shown with the following description of its exemplary embodiments, exemplifying but not limitative, with reference to the attached drawings in which:

- Fig. 1 shows a perspective view of a vibrating ring, according to the invention, which comprises a vibration means and an inertial sensor associated with a control microprocessor;
- Fig. 2 shows a diagrammatical view of the vibrating ring of Fig. 1, depicting the electronic components that make them up, the inertial sensor produce a measurement signal converted then into a drive signal

that triggers the intensity and frequency of the vibration to the vibration means;

- Fig. 3 shows a diagrammatical view of the vibrating ring of Fig. 2, which implements, furthermore, an feedback interface with a user;

- Fig. 4 shows a block diagram that identifies the logical operation steps of the vibrating ring, with the user interface that allows setting a profile that operates the vibration according to a selected operation pattern;

- Fig. 5 shows a perspective view of a vibrating ring, according to the invention, which also comprises a transmission module configured to communicate with a remote unit and a memory module;

- Fig. 6 shows a diagrammatical view of the vibrating ring of Fig. 5, which implements the transmission module and the memory arranged to memorize the relating to different sexual intercourses;

- Fig. 7 shows a block diagram that identifies the logical operation steps of the vibrating ring of Fig. 6 capable of self-learning on the basis of the feedback data coming from the user, in order to develop a operation pattern customized for the user;

- Fig. 8 shows a diagram that depicts a gratification curve of the stimulation that is rising versus the number of intercourses which are also increasing in number on the basis of the feedback from the user;

- Fig. 9 shows a diagrammatical view of the vibrating ring which implements a mechanical and/or electric actuator;

- Figs. 10 and 11 show a perspective view of the

vibrating ring with the mechanical actuator for narrowing the ring diameter for therapeutic purposes for example in case of premature ejaculation.

Detailed description of some exemplary embodiments

With reference to Fig. 1, a vibrating ring 100 for sexual stimulation comprises a ring body, or ring, 10 arranged to be inserted at the basis of the male member 50 of a user. Ring body 10 is associated to a vibration means 20 arranged to transmit a vibration with predetermined vibration parameters to ring body 10 during a sexual intercourse and a battery 25 arranged to feed the vibration means 20. As diagrammatically shown in Fig. 2, the vibrating ring 100 may comprise, furthermore, an inertial sensor 30, for example an accelerometer, which is arranged on the ring body 10 and configured to measure the movement of the user and to provide corresponding measurement signals 32. Furthermore, a microprocessor 40 can be provided associated with inertial sensor 30 and to the vibration means 20. The microprocessor 40 is configured to transmit a drive signal 42 to the vibration means 20 on the basis of the measurement signals 32. Furthermore, a program means is resident in the microprocessor 40 configured to analyse the measurement signals 32 and to generate the drive signal 42 in order to cause the vibration parameters according to a predetermined function. The vibration parameters can follow a predetermined function of frequency and/or intensity of vibration responsive to the measurement signals 32. This way, it is possible to adapt the vibration parameters, such as frequency and/or intensity, to the movement of the user and then to improve the effectiveness

of the stimulation.

Furthermore, as shown in the diagrammatical view of Fig. 3, a vibrating ring-user interface is provided 46 that enables the user to set/read the rate of preference of the vibration pattern. Such interface 46, can be, as depicted, for example a key, and/or it can be the same accelerometer 30. In particular, adopting a key it is possible to associate a score to the intercourse, for example set between 1 and 5, pushing a corresponding number of times the key.

Alternatively, the score can be selected by accelerometer 30. In this case, only with the accelerometer a learning mode can be started giving a stronger pulse to ring 10, which recognizes and activates the learning mode replying with a vibration. Once activated the learning mode it is possible to enter the score, like the above case of the key, shaking the ring 10 a corresponding number of times.

In particular, as shown in the diagrammatical view of Fig. 4, the program means can adjust the operation of the vibration means 20 selecting a predetermined function, or vibration pattern, etc., i.e. a function of frequency and/or intensity of vibration, selected according to the preferences of the user, but that is triggered only when predetermined dynamic conditions are achieved, as recognized by inertial sensor 30.

In a further exemplary embodiment of Fig. 5 and in the diagrammatical view of Fig. 6 a memory unit 60 can be provided, associated with the microprocessor 40 and arranged to memorize a plurality of drive signals 42 obtained with time when controlling the measurement signals

32, in order to build a customized operation pattern for the user. In other words, in addition to the predetermined pattern, the customized pattern can be created based on historically recorded data. This way, a step is carried out of learning the stimuli obtained by the vibration means 20, building with time a desired set of data generated by the user who wears it for improving its own performance.

In addition, a transceiving means is provided 70 for transmitting the operation pattern to a remote unit 80, and back from the remote unit 80 towards the vibrating ring 100. In this case, it is possible to transfer the operation pattern of the vibrating ring 100 to an remote unit 80, which stores the data in an external memory 60, and to transmit them back on another vibrating ring 100 when the useful life of a worn vibrating ring 100 is ended. This allows to save the acquired useful data, and to re-start from an already developed pattern, and then enriching it adding with time the data (Fig.7), in order to obtain a vibrating ring 100 that is most effective for the user, as shown in the chart of Fig. 8.

In particular, the block diagram of Fig. 7, shows a succession of operating steps that carry out the program means starting from a generic intercourse N, associated for example to a first ring, acquiring the data measured by inertial sensor 30, controlling them and generating the drive signal 42 on the basis of the instant data determined by the sensor and also on the basis of the data stored in the memory 42. Starting from these data the operation pattern of the ring will then be started. Such data stored in the memory, will be then in turn updated and then adapted to the habits of the user on the basis of the

feedback score entered by the latter.

Then, the operation pattern of the ring is updated for the next N+1 intercourse, which will follow the above described process steps such that in order to become more and more reliable and customized for the user. The system carries out, in this way, a self-learning process.

In other words, not only the vibrating ring 100 can have the capacity of storing the intercourses and learn the steps at which it has to activate, supplying the ideal intensity of vibration, the kind of vibrations and other factors that identify said operation pattern, but also it is possible to save the continuous improvement of the stimulation acquired when passing from a vibrating ring 100 to another, transferring to the latter the ability to immediately re-start from the last recorded pattern.

Advantageously, the transceiving means 70 uses a Bluetooth low energy protocol and the remote unit 80 is embodied for example by a PC, a mobile phone, a tablet, or other device.

In a preferred exemplary embodiment, which provides a the remote unit, the program means comprises a local program resident in the microprocessor 40 of the ring 10, and a remote program resident in the remote unit 80. The remote program is suitable for assisting the local program on the microprocessor 40. This way, the remote program is configured to generate on the remote unit 80 a user interface 82 through which a user can give a feedback and select functions of the vibrating ring 100 for changing and improving in turn the operation pattern of the vibration means 20.

In a further exemplary embodiment, shown in Figs. 9, 10

and 11, the vibrating ring 100 may comprise, furthermore, an mechanical/electric actuator 90, associated with the vibration means 20, that is arranged, for example, to adjust the diameter of the ring body 10 in order to change from a contact configuration, where the ring body 10 is peripherally in contact with the male member 50, in order to transmit the vibration (Fig.10), to a narrower configuration B where the actuator 90 tightens the ring body 10 about the male member 50. This way, the vibrating ring 100 in the configuration of restriction B allows delaying the ejaculation of the user and increasing then the stimulation of the same. In particular, the mechanical actuator 90 is adapted to be operated by a drive signal 42 responsive to signals coming from inertial sensor 30, at determined dynamic situations or in determined execution steps of the vibration pattern. Such device has especially therapeutic application for users with premature ejaculation dysfunctions.

Structurally, the actuator 90 can be a helical body made with a memory metal alloy arranged in the ring body 10, that can change the diameter and then tighten the ring body 10 through a predetermined activation current. When the current stops, the helical body returns to its original condition. The ring body 10 can be configured to move from a diameter d_1, in the condition of contact A, to a diameter d_2 less than d_1 in the tightened condition B.

Alternatively, or in combination, the actuator 90 is associated with a device for releasing chemical substances such as lubricant substances, or flavouring substances, or even stimulating substances, or therapeutic substances.

Even alternatively, or in combination, furthermore, an

electric device can be provided associated with the ring body 10 arranged to release an electric stimulus on the basis of a drive signal 42 generated by the signals coming from inertial sensor 30, at determined dynamic situations or in determined execution steps of the vibration pattern. This way, the electric stimulus of measured intensity allows delaying the ejaculation of the user and increasing then the duration of the intercourse.

The foregoing description exemplary specific embodiments 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 embodiment without further research and without parting from the invention, and, accordingly, it is therefore to be understood that such adaptations and modifications will have to be considered as equivalent to the specific embodiments. 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 that is employed herein is for the purpose of description and not of limitation.

CLAIMS

1. A vibrating ring (100) for sexual stimulation comprising:

- a ring body (10) arranged to be inserted at the basis of a male member (50) of a user;
- a vibration means (20) arranged to transmit a vibration with predetermined vibration parameters to said ring body (10) during a sexual intercourse;
- a battery (25) arranged to feed said vibration means (20);

characterised in that

said vibrating ring (100) comprises, furthermore:

- an inertial sensor (30) arranged on said ring body (10), said inertial sensor (30) configured to measure the movement of said user and to provide corresponding measurement signals (32);
- a microprocessor (40) associated with said inertial sensor (30) and to said vibration means (20) arranged to transmit a drive signal (42) to said vibration means (20) responsive to said measurement signals (32);
- a program means resident in said microprocessor (40) configured to analyse said measurement signals (32) and to generate said drive signal (42) in order to cause said vibration parameters to follow a predetermined function.

2. A vibrating ring (100), according to claim 1, wherein said vibration parameters are computed to follow a predetermined function of frequency and/or intensity of vibration responsive to said measurement signals (32).

3. A vibrating ring (100), according to claim 1, wherein a

memory unit is provided associated with said microprocessor (40), arranged to memorize a plurality of said drive signals obtained with time by processing said measurement signals (32), in order to build a customized operation pattern for said user.

4. A vibrating ring (100), according to claim 1, wherein a transceiving means is provided for transmitting said operation pattern from said vibrating ring (100) to a remote unit and from said remote unit towards said vibrating ring (100).

5. A vibrating ring (100), according to claim 4, wherein said transceiving means is configured to use a transmission selected from the group consisting of:

- a wired transmission;
- a wireless transmission.

6. A vibrating ring (100), according to claim 5, where in said wired transmission there is a cable connection between said vibrating ring (100) and said remote unit.

7. A vibrating ring (100), according to claim 5, where in said wireless transmission a Bluetooth low energy protocol is used.

8. A vibrating ring (100), according to claim 4, wherein said remote unit is selected from the group consisting of:

- a PC;
- a mobile phone;
- a tablet;
- or a combination thereof.

9. A vibrating ring (100), according to claim 3, wherein a vibrating ring-user interface is provided (46,82) for

said user to determine the rate of preference of said vibration pattern.

10. A vibrating ring (100), according to claim 9, wherein said interface is selected from the group consisting of: a key, or said inertial sensor (30), or said remote unit.

11. A vibrating ring (100), according to claim 4, wherein said program means comprises a local program resident in said microprocessor (40) of said ring and a remote program resident in said remote unit, said remote program suitable for cooperating with said local program on said microprocessor (40).

12. A vibrating ring (100), according to claim 11, wherein said remote program is configured to generate on said remote unit a user interface through which a user can transmit and select functions of the vibrating ring (100) for changing and improving in turn the operation pattern of the vibration means (20).

13. A vibrating ring (100), according to claim 1, wherein said vibrating ring (100) comprises at least one mechanical actuator associated with said vibration means (20), said, or each, mechanical actuator arranged to adjust a diameter of said ring body in order to move from a contact configuration, where the ring body (10) is peripherally in contact with said male member (50), in order to transmit said vibration, to a narrower configuration where the ring body tightens substantially said male member (50).

14. A vibrating ring (100), according to claim 13, wherein said mechanical actuator is adapted to be operated by a

drive signal (42) responsive to signals coming from said inertial sensor (30) at determined dynamic situations, or in determined execution steps of the vibration pattern.

15. A vibrating ring (100), according to claim 1, wherein said vibrating ring (100) comprises a device for releasing chemical substances, in particular lubricant substances, or flavouring substances, or even stimulating substances or therapeutic substances.

16. A vibrating ring (100), according to claim 1, wherein an electric device is further provided associated with said ring body, said electric device arranged to release an electric stimulus on the basis of a drive signal (42) generated by the signals coming from said inertial sensor (30), at determined dynamic situations, or in determined execution steps of the vibration pattern.

Fig. 1

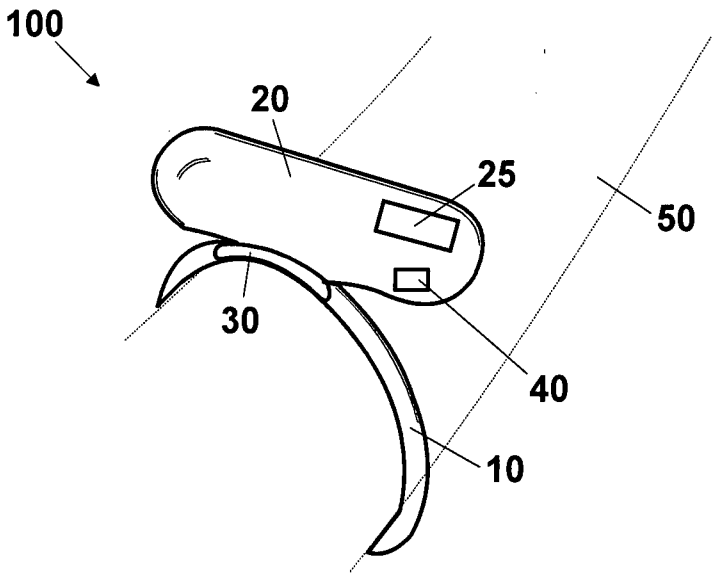

100
20
25
50
30
40
10

Fig. 2

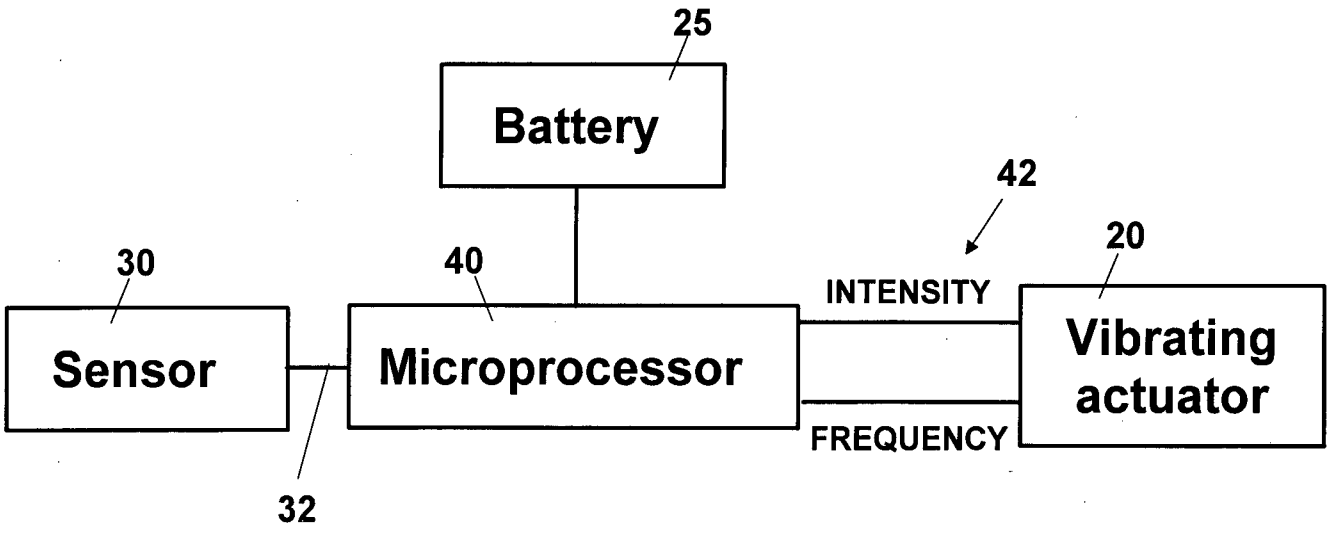

25
Battery
42
30
40
20
INTENSITY
Sensor
Microprocessor
Vibrating actuator
FREQUENCY
32

Fig. 3

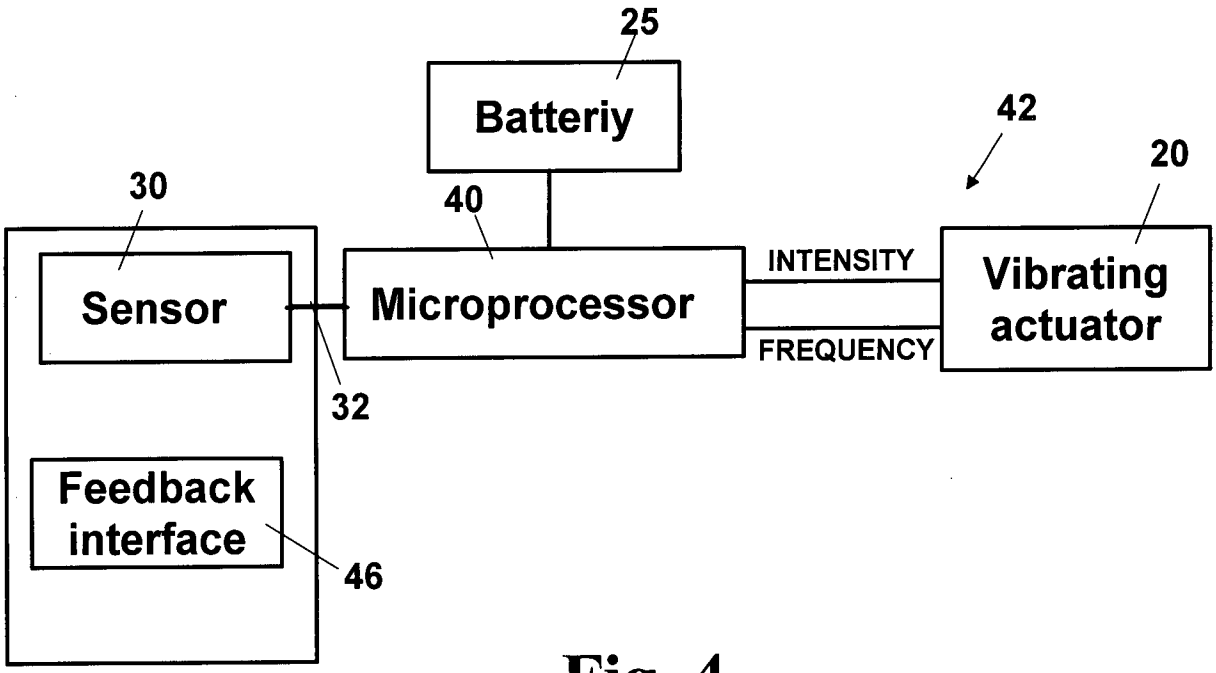

25
Batteriy
42
20
30
40
Sensor
Microprocessor
INTENSITY
FREQUENCY
Vibrating actuator
32
Feedback interface
46

Fig. 4

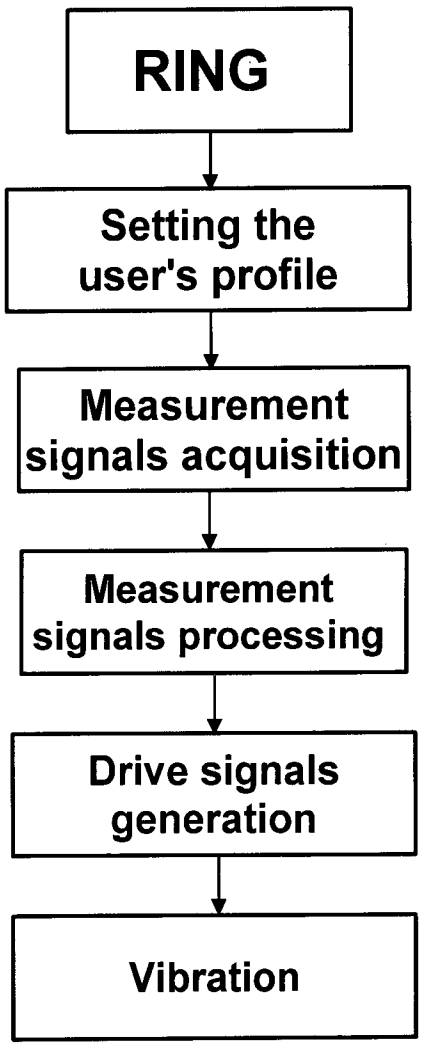

RING
Setting the user's profile
Measurement signals acquisition
Measurement signals processing
Drive signals generation
Vibration

Fig. 5

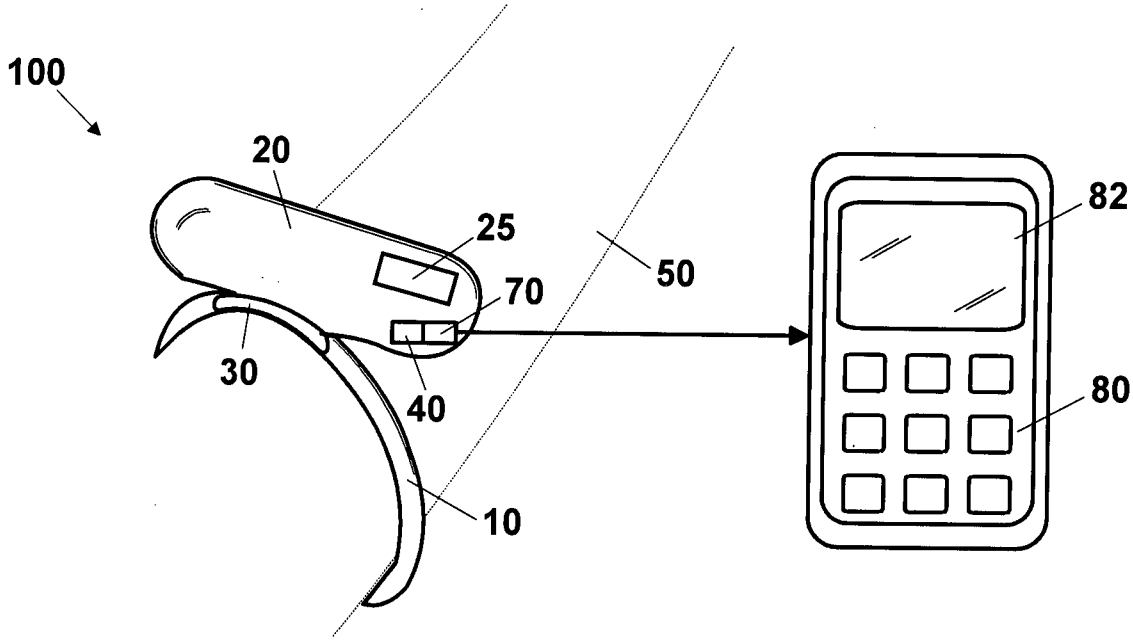

100
20
25
70
50
82
30
40
80
10

Fig. 6

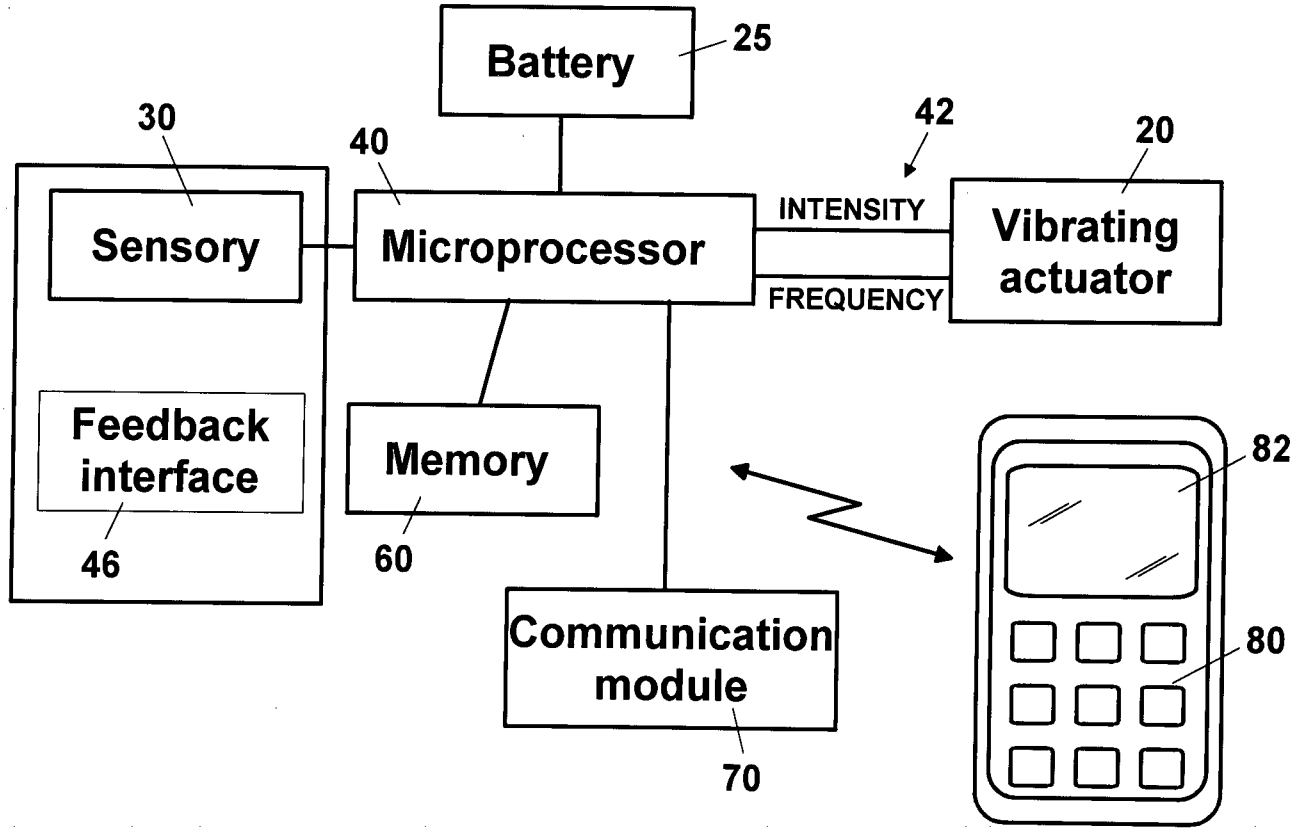

Battery
25
30
40
42
20
Sensory
Microprocessor
INTENSITY
FREQUENCY
Vibrating actuator
Feedback interface
46
Memory
60
82
Communication module
70
80

Fig. 7

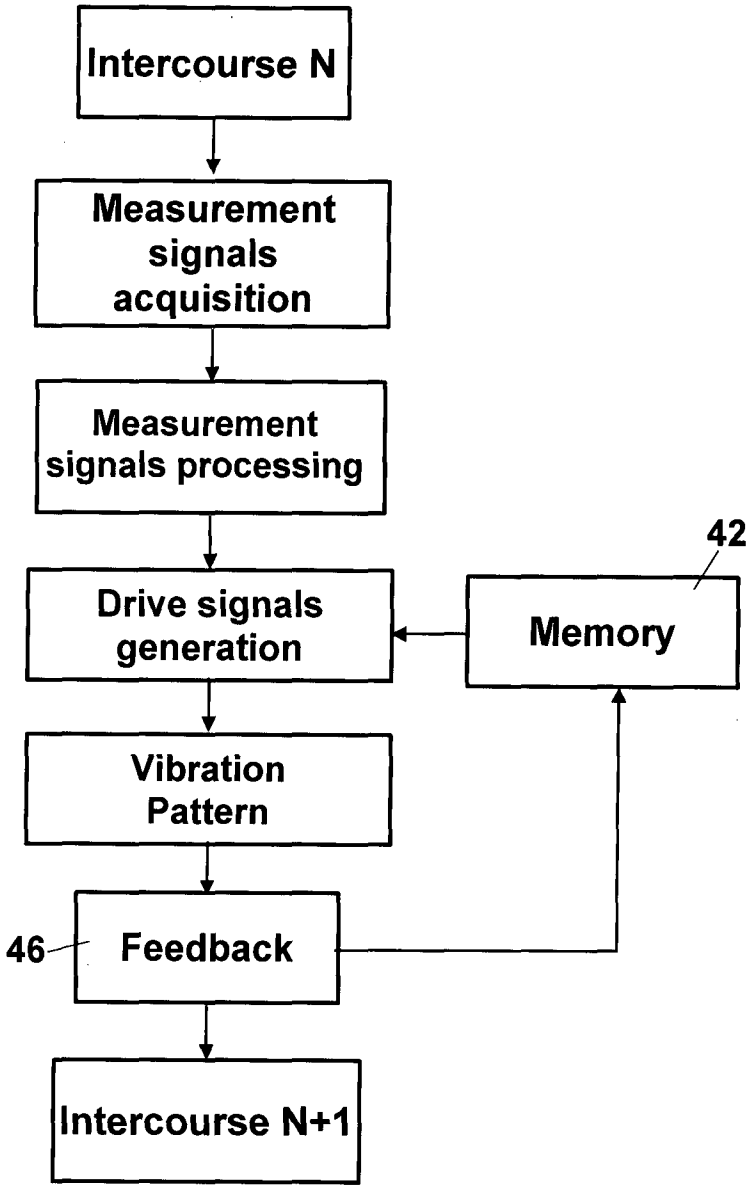

Intercourse N
Measurement signals acquisition
Measurement signals processing
42
Drive signals generation
Memory
Vibration Pattern
46
Feedback
Intercourse N+1

Fig. 8

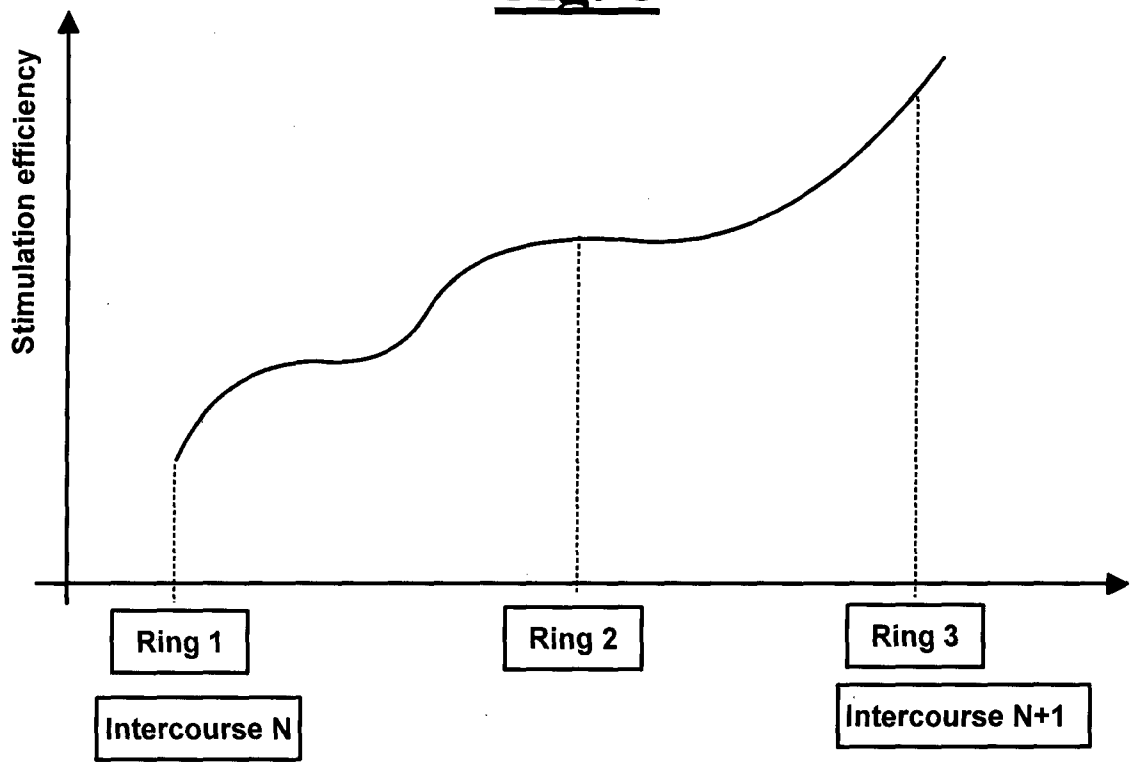

Stimulation efficiency
Ring 1
Ring 2
Ring 3
Intercourse N
Intercourse N+1

Fig. 9

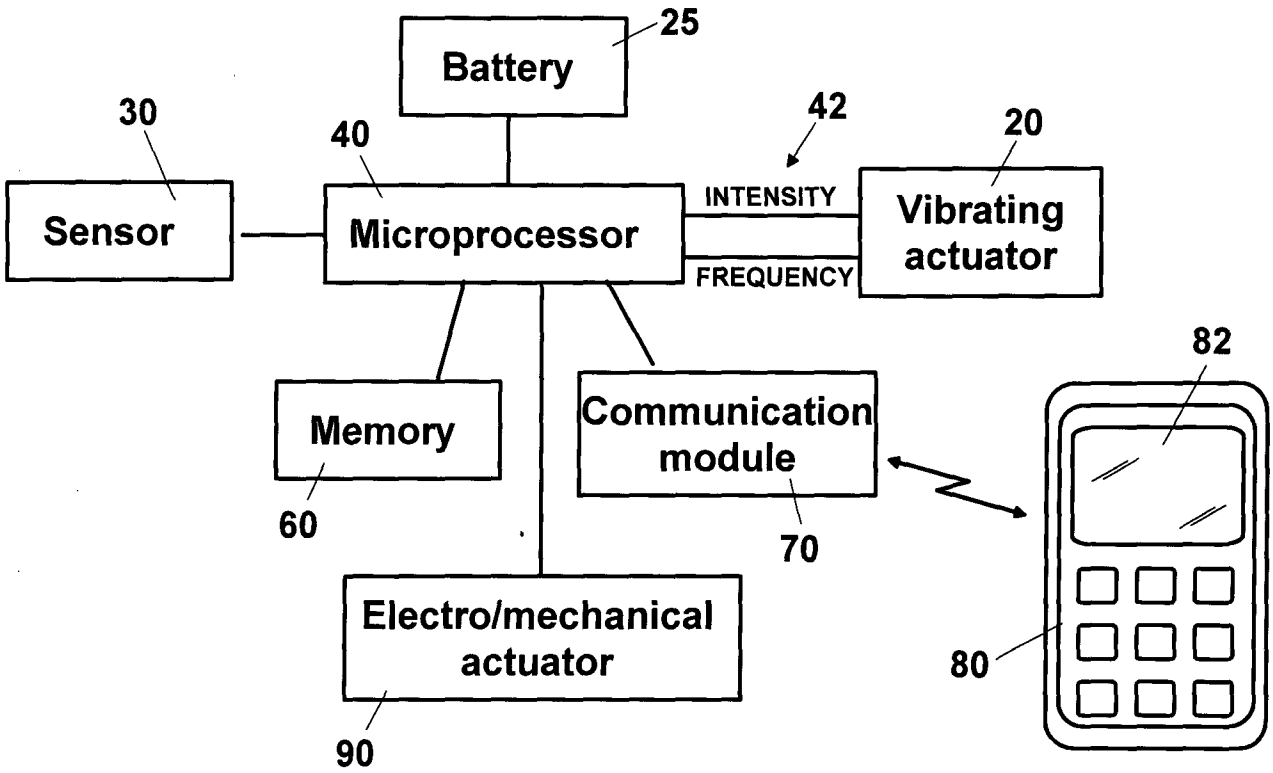

Battery
25
30
40
42
20
Sensor
Microprocessor
INTENSITY
FREQUENCY
Vibrating actuator
82
Memory
60
Communication module
70
Electro/mechanical actuator
90
80

Fig. 10

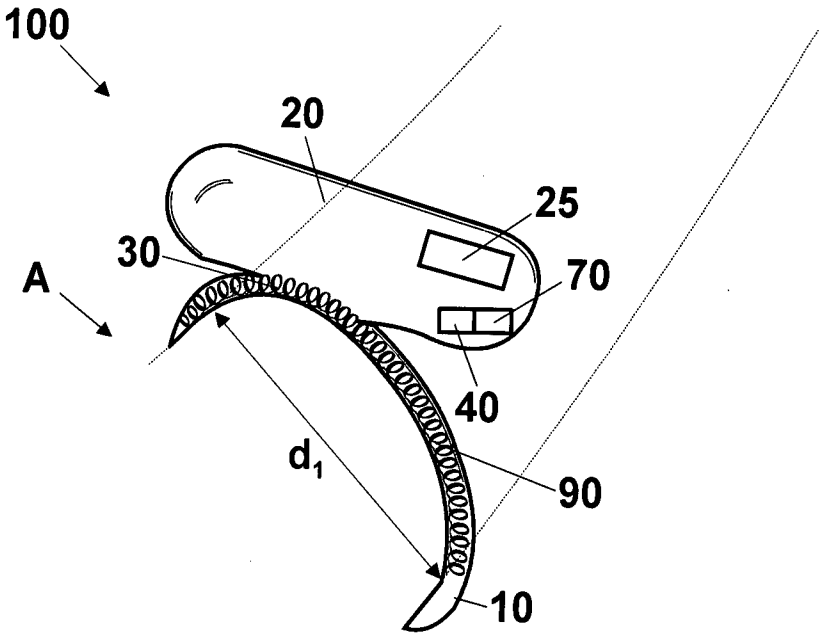


Fig. 11

