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Vasapollo

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(54) **EROTIC DREAM INDUCTION APPARATUS**

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A61B 5/00	(2006.01)
A61H 9/00	(2006.01)
A61H 19/00	(2006.01)
A61B 3/113	(2006.01)
A61B 5/11	(2006.01)

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CPC ***A61M 21/00*** (2013.01); ***A61B 5/048*** (2013.01); ***A61B 5/4812*** (2013.01); ***A61H 9/0078*** (2013.01); *A61B 3/113* (2013.01); *A61B 5/11* (2013.01); *A61H 19/30* (2013.01); *A61H 2201/165* (2013.01); *A61H 2201/1619* (2013.01); *A61H 2201/1628* (2013.01); *A61H 2201/1654* (2013.01); *A61H 2201/5007* (2013.01); *A61H 2201/5064* (2013.01); *A61H 2205/025* (2013.01); *A61H 2205/082* (2013.01); *A61H 2205/087* (2013.01); *A61H 2230/00* (2013.01); *A61H 2230/06* (2013.01); *A61H 2230/065* (2013.01); *A61H 2230/10* (2013.01); *A61H 2230/105* (2013.01); *A61M 2021/0022* (2013.01); *A61M 2205/07* (2013.01); *A61M 2205/3569* (2013.01); *A61M 2205/3592* (2013.01); *A61M 2205/50* (2013.01); *A61M 2209/088* (2013.01); *A61M 2210/1007* (2013.01); *A61M 2210/1067* (2013.01); *A61M 2210/1475* (2013.01); *A61M 2210/16* (2013.01); *A61M 2230/04* (2013.01); *A61M 2230/10* (2013.01); *A61M 2230/18* (2013.01); *A61M 2230/63* (2013.01)

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CPC A61F 5/41; A61F 2005/412; A61F 2005/415; A61F 2/004; A61H 19/32; A61H 2201/165; A61H 2205/082; A61H 9/005; A61H 19/34; A61H 21/00

See application file for complete search history.

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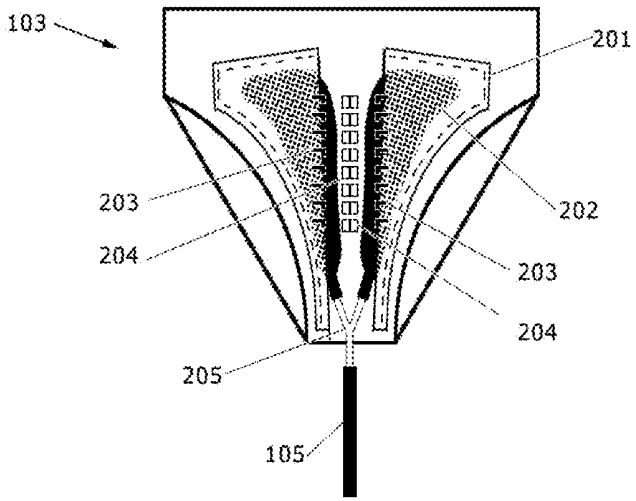
(57) **ABSTRACT**

An erotic dream induction apparatus includes an inflatable air bladder, such as a rubber balloon, to induce sexual arousal via genital stimulation. The air bladder is brought into contact with either the penis or vagina of the user, and/or is inserted into the anus and/or vagina of the user. In one embodiment, the air bladder is brought into contact with the penis, vagina, and/or anus of the user by being maintained in position near, against, or around the penis, vagina, and/or anus by means of straps or pockets in stimulation underwear, such that when the air bladder is inflated, the air bladder makes contact with at least a portion of the penis, vagina, and/or anus of the user. The air bladder is repeatedly inflated and deflated by pumps and/or valves.

20 Claims, 7 Drawing Sheets



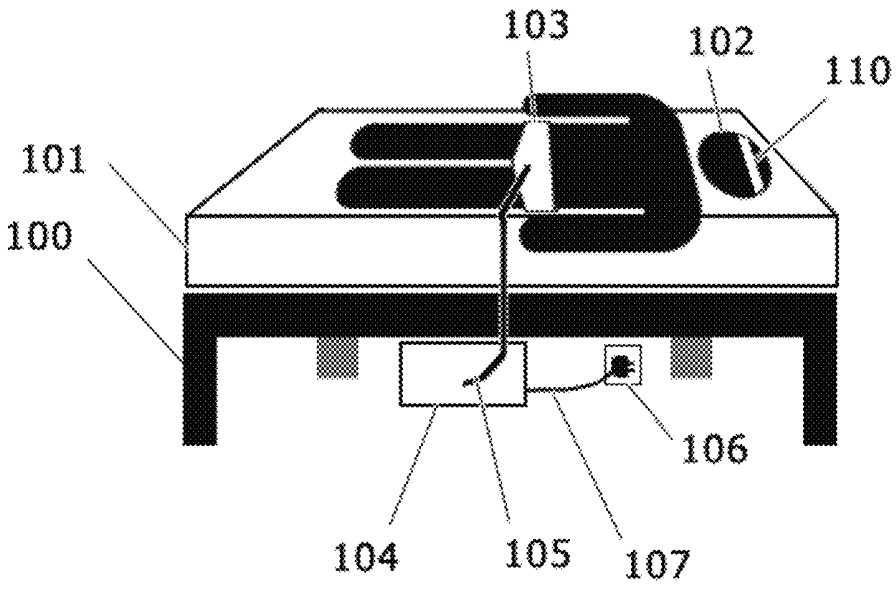


FIG. 1A

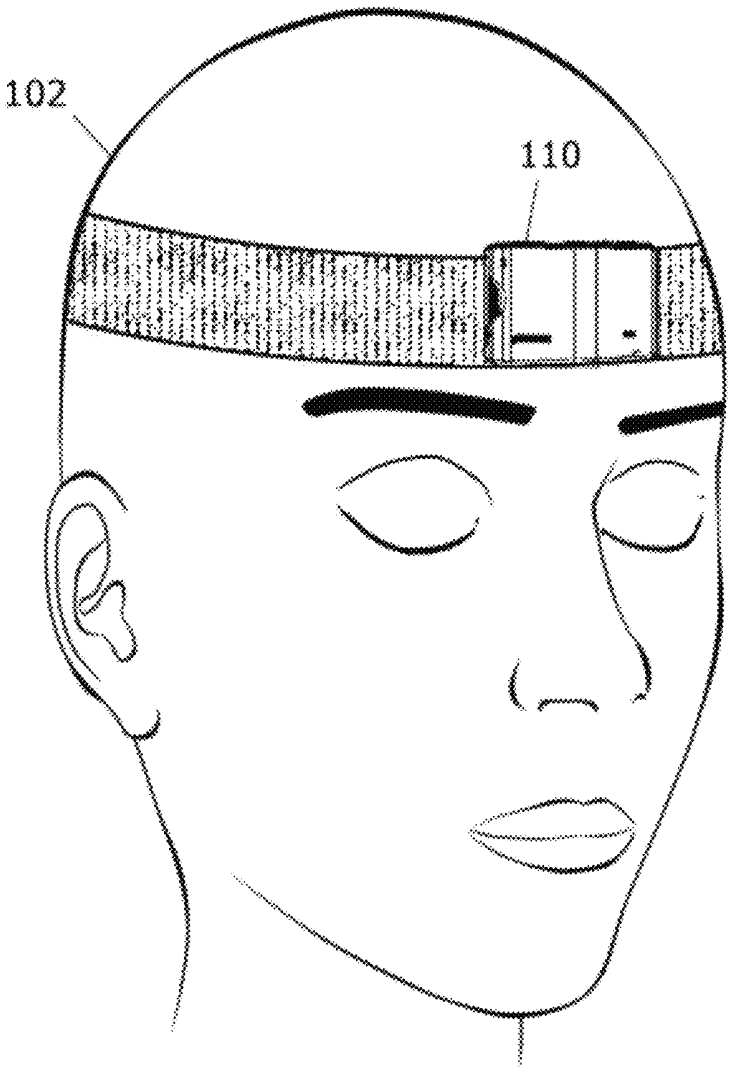


FIG 1B

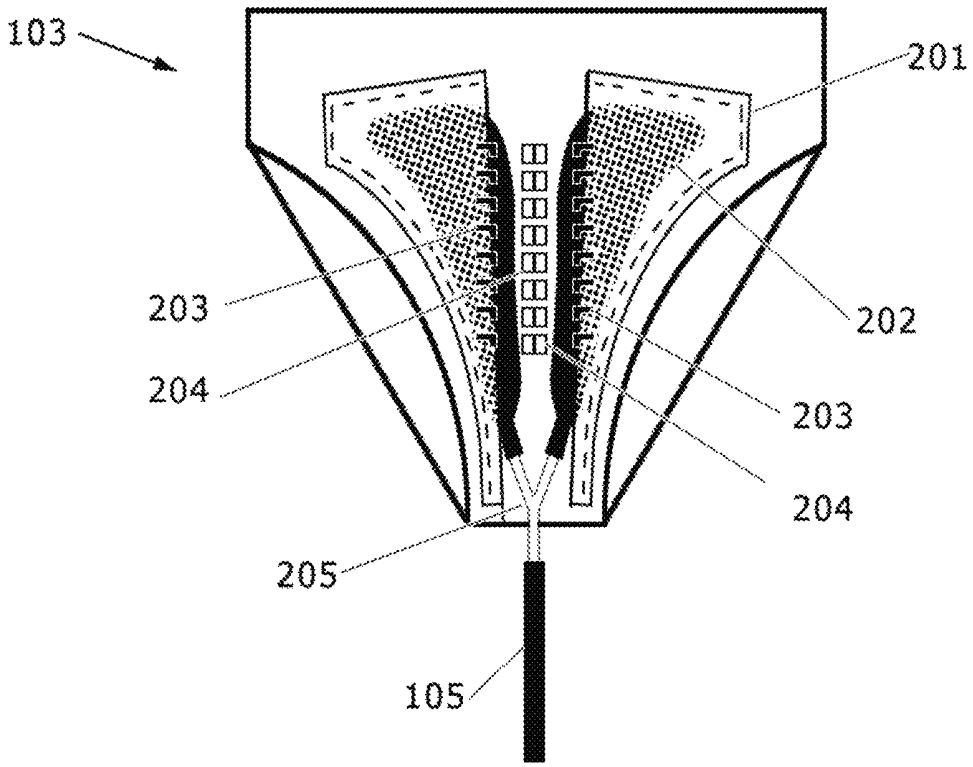


FIG. 2

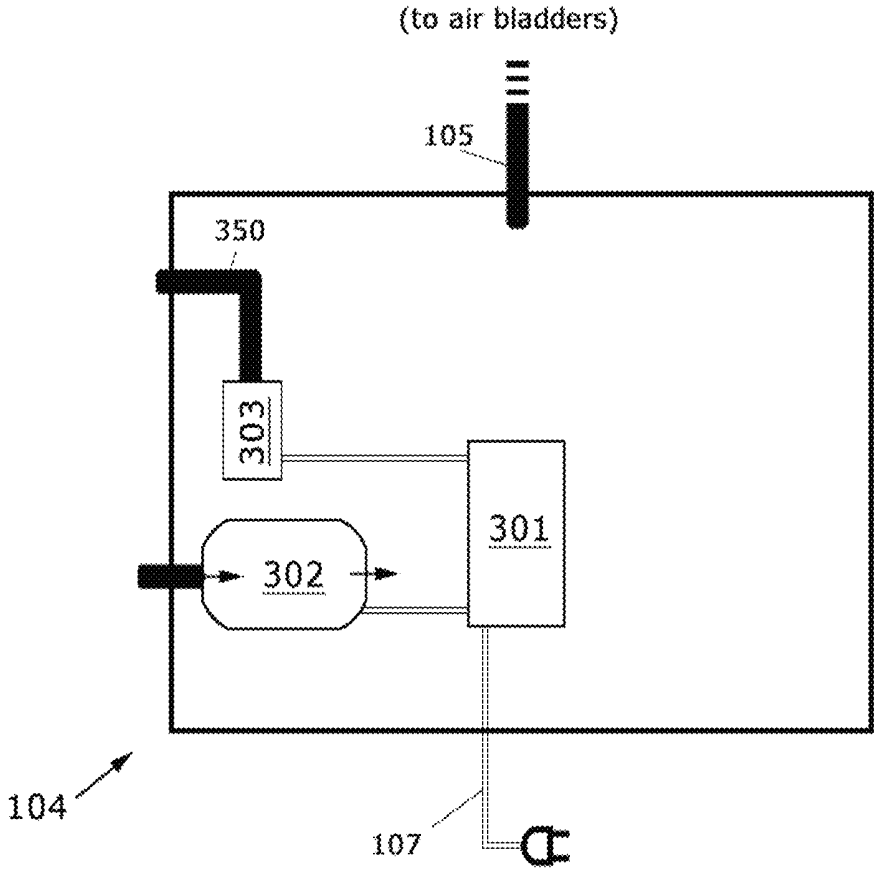


FIG. 3

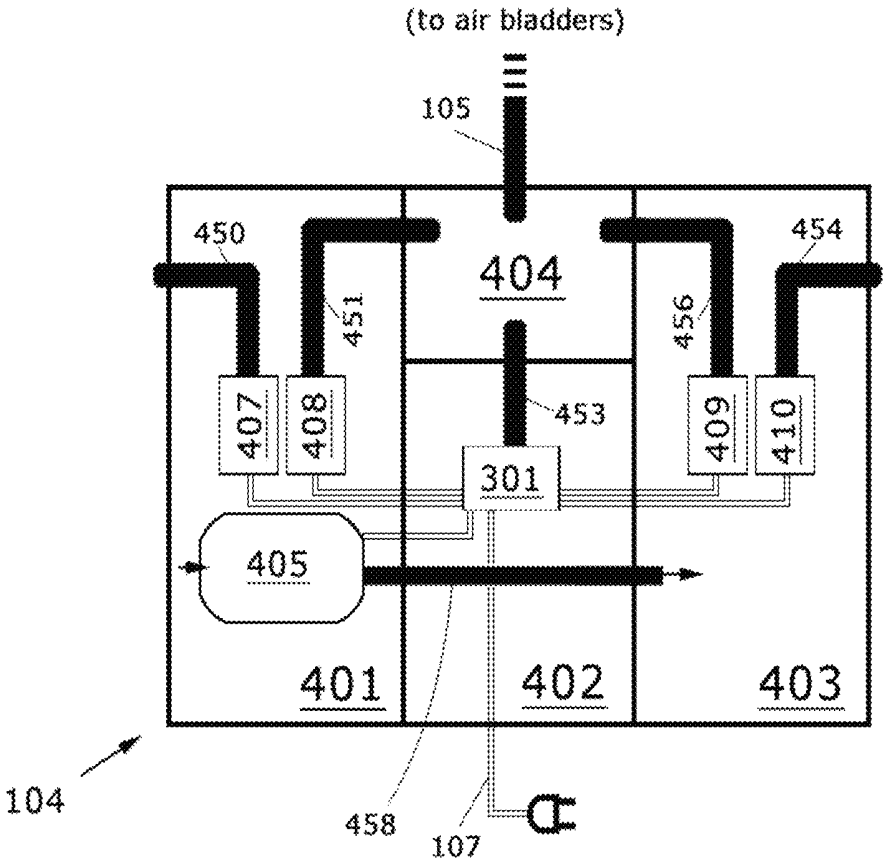

(to air bladders)
105
450
451
404
454
456
407
408
453
409
410
301
405
401
402
403
104
458
107

FIG. 4

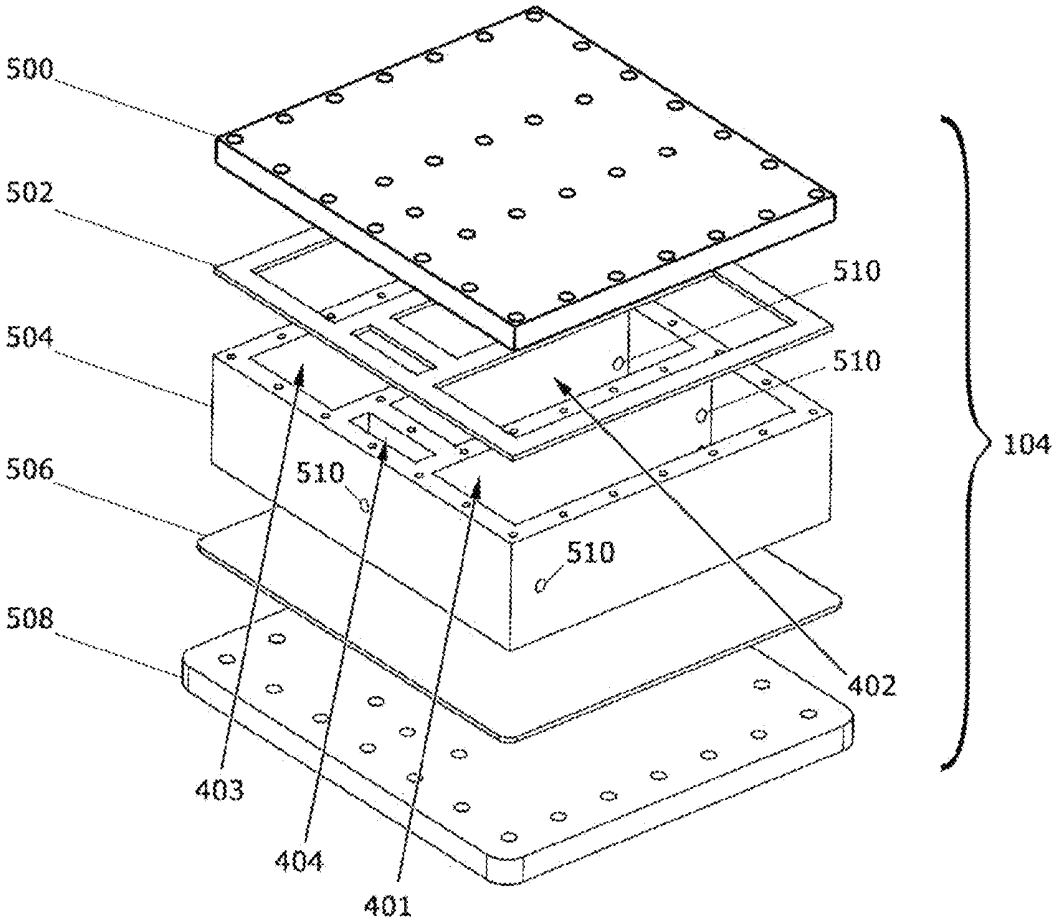


FIG.5

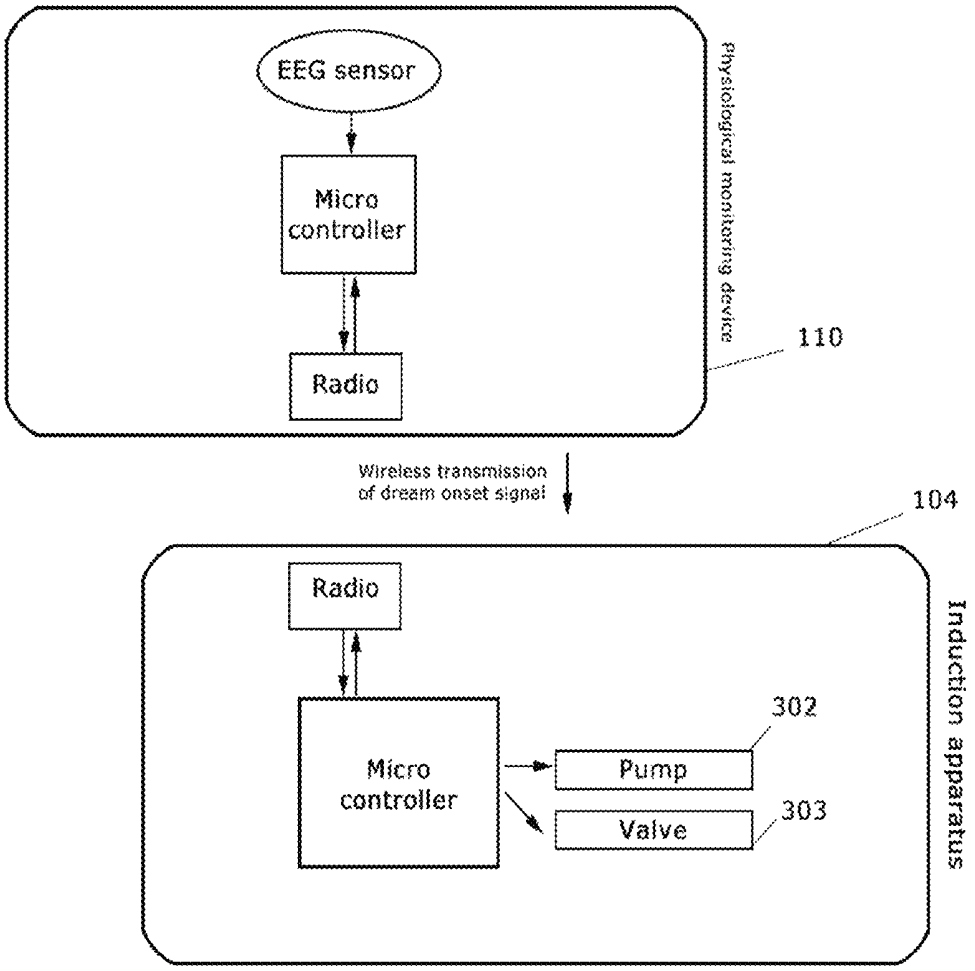

EEG sensor
Micro controller
Radio
physiological monitoring device
110
Wireless transmission of dream onset signal
104
Radio
Micro controller
302
Pump
303
Valve
Induction apparatus

FIG.6

EROTIC DREAM INDUCTION APPARATUS

FIELD OF THE INVENTION

This invention relates generally to sleep apparatus, more particularly to dream induction apparatus.

BACKGROUND

Most available erotic stimulators use vibration and/or a rotary motion to stimulate the user. These erotic stimulators are available in a large variety of shapes and sizes, and share several disadvantages:

the vibration and/or motion, characterized by low force and high frequency, is very different from the physical contact they are meant to simulate;

they must normally be held in place manually by the user so that the vibration and/or motion is transmitted to erogenous areas of the user's body; and

the vibration and/or motion creates considerable noise.

In particular, these disadvantages make existing sexual stimulators unsuitable for use during sleep. A user may wish to utilize stimulation during sleep so as to achieve erotic dreams, as referenced in patent application WO2011132142 A1. However, the noise of vibrating motors typically used in ordinary erotic stimulators is easily transmitted and amplified through a mattress, and is sufficient to awaken the user.

Two existing types of self-stimulation devices that do not utilize motors (and therefore do not produce noise) are the Fleshlight® and inflatable dolls.

The Fleshlight® is an erotic stimulator with a handle and a soft silicone interior. The silicone interior has a hole in which the penis is inserted. This product aims to provide more realistic stimulation than a vibrating device, and it does not produce noise. However, it is a device requiring the user to actively hold and move the device to deliver the stimulation. Further, it can only be used if the user's penis is erect, and the user is awake.

Inflatable dolls (also known as sex dolls, love dolls, or blow up dolls) have the many of the same limitations as the Fleshlight® because essentially they are a Fleshlight® with an attached body, and so require active and intentional movements from the user to derive stimulation from the device.

SUMMARY OF THE INVENTION

The present erotic dream induction apparatus uses one or more inflatable air bladders, either inserted into the user's rectum and/or vagina, or held in place (typically against a user's genitalia) using straps, adhesive tape, or one or more pockets in a stimulation garment, such as stimulation underwear and/or a stimulation bra. Each air bladder is connected by a soft flexible tube to the induction apparatus' housing, which provides air flow to enable a cyclical pressurization and depressurization of the air bladder(s).

The housing includes at least one air pump (such as a miniature diaphragm pump) for inflating the air bladder, and at least one mechanical actuator (such as a solenoid valve) for deflating the air bladder. The housing can house additional pumps and valves to provide alternating positive and negative air flow, thereby both actively inflating and deflating the air bladder.

The invention overcomes several problems associated with existing motor-based erotic stimulators, such as vibrators and massagers. First, it provides stimulation that is more similar to physical touch by another human, because the air bladder can expand to a sufficient extent and with sufficient gradually changing pressure to provide stimulation without waking up the user. Also, the speed of the inflation can be made as slow as needed to achieve a sensation similar to human touch, while avoiding waking up the user. Second, this type of stimulator can be held in place above or around the user's genitalia by placing the air bladder(s) inside a pocket in a stimulation garment, such as stimulation underwear or a stimulation bra, relieving the user from the need to hold the stimulator in place. Third, the stimulator of the invention can operate silently. When stimulation is carried out during sleep using common stimulation devices, such as a vibrator, the noise created by such common stimulation devices is unacceptable, in particular when they make contact with a mattress which can act as a sound conductor. In the present invention, no motor is placed near the user, and the housing containing the pump can be completely soundproofed, connected to the air bladder(s) through a silicone tube, and conveniently stored under the user's bed.

Compared to an inflatable doll or a Fleshlight®, the present invention relieves the male user of the need to move his body or the device itself, and enables stimulation to occur during sleep, regardless of whether the male user's penis is erect or not.

One general aspect of the invention is an erotic dream induction apparatus for providing erotic stimulation to a user while the user is sleeping. The apparatus includes: a stimulation signal generator, responsive to a REM sleep onset signal, the stimulation signal generator being capable of providing a stimulation signal in response to the REM sleep onset signal; an air pump, cooperative with the stimulation signal generator, the air pump being capable of receiving the stimulation signal and providing air flow in response to the stimulation signal; and one or more inflatable air bladders, cooperative with the air pump, the one or more inflatable air bladders being capable of receiving and containing the air flow provided by the air pump; and a deflation valve, cooperative with the one or more inflatable air bladders, the deflation valve being capable of receiving the stimulation signal, and releasing air from the one or more air bladders in response to the stimulation signal, the one or more inflatable air bladders inflating and deflating in response to the air flow and the air release under control of the stimulation signal, thereby erotically stimulating the user.

In some embodiments, the REM sleep onset signal is provided by a REM sleep phase detector, the REM sleep phase detector being in sensing relationship with the user.

In some embodiments, the REM sleep phase detector is capable of analyzing a sleep phase indication so as to detect REM sleep in the user, so as to provide the REM sleep onset signal. In further embodiments, the sleep phase indication is derived from at least one of: user motion data, user EEG signals, user heart rate, and user eye movement.

In some embodiments, the air pump includes a miniature diaphragm pump.

In some embodiments, the deflation valve includes a solenoid valve.

In some embodiments, the stimulation signal generator is implemented using a micro-controller. In further embodiments, the micro-controller initiates stimulation at a particular time, or after a length of time has elapsed from reception of the REM sleep onset signal.

In some embodiments, at least one of the air bladders is housed in a pocket of a garment.

In some embodiments, at least one of the air bladders is physically embedded into a garment.

In some embodiments, at least one of the air bladders can be inserted into a vagina of the user or a rectum of the user.

In some embodiments, the stimulation is carried out while the user is sleeping, such as during a REM sleep phase.

Another general aspect of the invention is an erotic dream induction apparatus for providing erotic stimulation to a user while the user is sleeping. This apparatus includes: a REM sleep phase detector, capable of analyzing a sleep phase indication signal so as to detect REM sleep in the user, and to then provide a REM sleep onset signal; a stimulation signal generator, responsive to the REM sleep onset signal, the stimulation signal generator being capable of providing a stimulation signal in response to the REM sleep onset signal; an air pump, cooperative with the stimulation signal generator, the air pump being capable of receiving the stimulation signal and providing an air flow in response to the stimulation signal; and one or more inflatable air bladders, each air bladder being capable of being held in place against the user by a garment, each air bladder being cooperative with the air pump, each air bladder being capable of receiving and containing the air flow provided by the air pump; and a deflation valve, cooperative with the one or more inflatable air bladders, the deflation valve being capable of receiving the stimulation signal, and releasing air from the one or more air bladders in response to the stimulation signal, the one or more inflatable air bladders inflating and deflating in response to the air flow and in response to the air release under control of the stimulation signal, thereby erotically stimulating the user.

In some embodiments, the sleep phase indication is derived from at least one of: user motion data, user EEG signals, user heart rate, and user eye movement.

In some embodiments, the air pump includes a miniature diaphragm pump.

In some embodiments, the deflation valve includes a solenoid valve.

In some embodiments, the stimulation signal generator is implemented using a micro-controller, and the micro-controller initiates stimulation at a particular time or after a length of time has elapsed from reception of the REM sleep onset signal.

In some embodiments, at least one of the air bladders is wearable in a pocket of a garment worn over the user's genitalia or nipples.

In some embodiments, at least one of the air bladders is incorporated into a garment.

In some embodiments, at least one of the air bladders is shaped and sized so as to be insertable into a user's vagina or rectum.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will be more fully understood from the following detailed description, in conjunction with the following figures, wherein:

FIG. **1**A is a schematic view of a user sleeping on a bed wearing a physiological monitoring headband and stimulation underwear according to the invention, also showing the housing which supplies air flow to the stimulation underwear.

FIG. **1**B is a front view of the physiological monitoring headband of FIG. **1**A affixed to the user's forehead.

FIG. **2** is a front view of the stimulation underwear of FIG. **1**A, showing two air bladders, each contained within a pocket of the stimulation underwear.

FIG. **3** is a schematic diagram of the internals of the housing of FIG. **1**A, which supplies air flow to the stimulation underwear of FIG. **2** via an air tube.

FIG. **4** is a schematic diagram of the internals of a housing having a more complex air reservoir, which enables stronger stimulation.

FIG. **5** is an exploded view of the housing of FIGS. **3** and **4**, showing the structural elements.

FIG. **6** is a block diagram of the components of the physiological monitoring headband and the housing of FIG. **3**.

DETAILED DESCRIPTION

FIG. **1**A shows the main elements of the invention in a possible embodiment. A male user **102** is lying horizontal, supported by a bed frame **100** and a mattress **101**. The user **102** is wearing stimulation underwear **103** and a physiological monitoring headband **110**. Stimulation underwear **103** is underwear having at least one pocket for holding an air bladder against the male's genital area. An electrical cord **107**, connected to a power outlet **106**, powers the circuit board **301** and pneumatic elements inside the induction apparatus' housing **104**. When the user enters the REM sleep phase, the physiological monitoring headband **110** produces a REM sleep onset signal, for instance a radio signal. The REM sleep onset signal is received by a microcontroller on the circuit board **301**, housed within the apparatus' housing **104**. The microcontroller produces, in response to the REM sleep onset signal, a stimulation signal. For instance, the stimulation signal could begin after a certain interval after receiving the REM sleep onset signal. Or, the stimulation signal could only be generated a number of times until the current REM phase is over.

The stimulation signal controls the action of one or more pumps and one or more valves within the housing **104**. The pumps and valves provide air flow and air release to inflate and deflate air bladders **202**, held within the pockets of the stimulation underwear **103**, through a silicon tube **105**.

Through the inflation and deflation, a cyclically varying pressure is applied to erogenous areas of the user **102**, providing erotic stimulation thereto.

FIG. **1**B shows the physiological monitoring headband **110** affixed to the user's **102** forehead. This is a simple way of sensing the EEG signal and detecting REM sleep. REM sleep is easily detected from the EEG signal by analyzing the frequency spectrum of the EEG signal. During REM, beta waves appear in the sleep EEG. Alternatively, REM sleep can be detected by less accurate and technically simpler methods; for instance, by monitoring eye movement with an infrared sensor, as is common in lucid dream induction masks available since the 1980s. Furthermore, in a simpler but less accurate embodiment, REM sleep can be detected by analyzing other sleep phase indications (such as noise and vibrations of the mattress **101**) instead of the EEG signal; this analysis can be performed by a mobile phone app, reducing costs while also reducing accuracy.

FIG. **2** shows some features of an embodiment of the stimulation underwear **103**. Two non-stretchable pockets **201** are sewn on the outside of the stimulation underwear **103**. The two pockets **201** each house an air bladder **202**. Dashed lines indicate sewn sides of the pockets **201**. The non-sewn side of each pocket is closed by means of hooks **203** and loops **204**. In FIG. **2**, the hooks **203** are attached to the pockets **201**, and loops **204** arranged vertically and attached to the underwear **103** at its center. The pockets **201** can thus be closed like in a corset by engaging the hooks **203**

with the loops **204**, thereby capturing the air bladders **202** inside the pockets **201**. The pockets **201** are created by sewing non-stretchable fabric on the outside of a stretchable pair of underwear. By so doing, when air is pumped into the air bladders **202**, the air bladders **202** can expand only inwards towards the user's body, fully directing the pressure upon the genital area. Buttons or zippers can be substituted for the hooks **203** and loops **204** for closing the pockets **201**. The two air bladders **202** are connected to the silicone tube **105** with a Y junction **205**.

FIG. **3** schematically illustrates the internals of the erotic dream induction apparatus' housing **104**. In this simple embodiment, the erotic dream induction apparatus' housing **104** contains: a circuit board **301** powered through a power cord **107**, a solenoid valve **303**, and a miniature diaphragm pump **302**. In this diagram, thick black lines represent tubing, and white lines represent electrical connections. Arrows indicate the flow of air through the pump **302** and into the airtight housing **104**. A silicone tube **105** connects the space inside the airtight housing **104** to the air bladders **202** of the stimulation underwear **103** of FIG. **2**. The air bladders **202** and the space inside the housing **104** are therefore always at the same pressure. When the pump **302** is not powered it impedes the flow of air in either direction. This is a common feature of miniature diaphragm pumps. When powered, the pump **302** actively moves air from the outside of the induction apparatus' housing **104** to its inside. The valve **303** allows air to pass freely in either direction if and only if it is powered; thus, when the inside of the induction apparatus' housing **104** is at higher pressure than the external environment, and the valve **303** is powered, air can escape to the outside, restoring the pressure inside the housing **104** to environmental levels. When both the pump **302** and the valve **303** are powered down, no air can flow between the inside and the outside of the airtight housing **104**.

Inflation of the air bladders **202** of FIG. **2** occurs when the electronic circuitry on the circuit board **301** allows electrical current to flow to the pump **302**, but not the valve **303**. No air can escape through the valve duct **350** (because the valve **303** is powered down). Pressure inside the housing **104** increases due to the action of the pump, and the air bladders **202**, connected through the silicone tube **105** to the pressurized interior of the housing **104**, inflate.

Conversely, deflation of the air bladders **202** is accomplished when the circuitry on the circuit board **301** powers down the pump **302**, but allows current to flow to the valve **303**, thereby allowing airflow through it. Under these conditions, the pump **302** resists air movement in either direction. Pressure inside the housing **104** falls because air escapes through the valve, to the valve duct **350** and ultimately to the outside of the housing **104**. The air bladders **202** deflate as a result of the outflow of air.

FIG. **4** illustrates a more complex embodiment allowing the induction apparatus to inflate and deflate the air bladders **202** more quickly, thus achieving stronger stimulation. This embodiment utilizes a plurality of valves (a negative pressure outlet valve **407**, a negative pressure inlet valve **408**, a positive pressure outlet valve **410**, and a positive pressure inlet valve **409**). It also utilizes a plurality of air compartments within the housing **104**. In the embodiment of FIG. **4**, the induction apparatus' housing **104** is divided into four different air-tight compartments (a negative pressure compartment **401**, a circuitry compartment **402** housing the circuit board **103**, a positive pressure compartment **403**, and a central compartment **404**). The central compartment **404** is always at equal pressure with the air bladders **202** shown in FIG. **2**, to which it is connected via the silicone tube **105**. Air cannot move between compartments except through conduits or tubing, shown in the picture as thick black lines. The flow of air between the various compartments and the outside of the housing **104** will be explained. In this explanation the word "connected" is meant to indicate that flow of air is possible. The negative pressure compartment **401** is connected to the outside by means of a negative pressure inlet valve **407** and a negative pressure inlet duct **450**. Only when the negative pressure inlet valve **407** is powered on, air can flow (in both directions) between the negative pressure compartment **401** and the outside of the enclosure. The negative pressure compartment **401** is connected to the central compartment **404** by means of a negative pressure outlet valve **408** and a negative pressure outlet duct **451**. Only when the negative pressure outlet valve **408** is powered on, air can flow (in both directions) between the negative pressure compartment **401** and the central compartment **404**. The positive pressure compartment **403** is connected to the outside by means of a positive pressure inlet valve **410** and a positive pressure inlet duct **454**. Only when the positive pressure inlet valve **410** is powered on, air can flow (in both directions) between the positive pressure compartment **403** and the space outside of the enclosure. The positive pressure compartment **403** is connected to the central compartment **404** by means of a positive pressure outlet valve **409** and a positive pressure outlet duct **456**. Only when the positive pressure outlet valve **409** is powered on, air can flow (in both directions) between the positive pressure compartment **403** and the central compartment **404**. A central compartment pressure sensing tube **453** connects the central compartment **404** to a pressure sensor mounted on the circuit board **301** in the circuitry compartment **402**. However, the circuitry compartment **402** and the central compartment **404** are not pneumatically connected, and air never flows between them. When powered on, the diaphragm pump **405** moves air from the negative pressure compartment **401** to the positive pressure compartment **403**; this air movement is indicated by the arrows entering **405** and exiting **458**. When the pump **405** is powered off, no air can flow between the negative pressure compartment **401** and the positive pressure compartment **403**.

When all valves and pumps are powered down, no air flows between any of the compartments. The air bladders **202** and the central compartment **404** are at equal pressure as they are connected through a silicone tube **105** with no valve. The pressures in the negative pressure compartment **401** and the positive pressure compartment **403** are unknown. Pressure in the circuitry compartment **402** is irrelevant as it is not part of the pneumatic system; in fact this compartment is not strictly required for the pneumatic functioning of the device but simply houses the necessary circuitry.

To inflate the air bladders **202** at regular speed (achieving an inflation and deflation speed of which the embodiment of FIG. **3** is also capable), two of the valves (the negative pressure inlet valve **407** and positive pressure outlet valve **409**), and the pump **405** are powered by the circuitry on the circuit board **301**. All other pneumatic elements are powered down. Air flows from the outside of the housing through negative pressure inlet duct **450** and negative pressure inlet valve **407**, moved by the action of the pump **405**. Air flows from the negative pressure compartment **401** to the positive pressure compartment **403** through a conduit **458**. Air continues to flow from the positive pressure compartment **403** to the positive pressure outlet valve **409**, then to the positive

pressure outlet duct **456**, on to the central compartment **404** and finally through a silicone tube **105** to the air bladders **202**, thereby inflating them.

Conduit **458** allows air to be moved by the diaphragm pump **405**, from the negative pressure compartment **401** into the positive pressure compartment **403**, although the pump itself resides entirely within the negative pressure compartment **401**. Many miniature diaphragm pumps have a discharge nozzle to which a silicone tube can be connected, but no similar nozzle on the suction side; for this reason the diaphragm pump **405** is located in the negative pressure compartment so as to enable air to be suctioned from of this compartment.

To deflate the air bladders **202** at regular speed (no different from the embodiment of FIG. **3**), the negative pressure outlet valve **408** and negative pressure inlet valve **407** are powered. All other pneumatic elements are powered down. Air escapes freely from the central compartment **404** through the negative pressure outlet duct **451**, the negative pressure outlet valve **408**, the negative pressure inlet valve **407** and the negative pressure inlet duct **450** (in sequence) to the outside of the enclosure **104**. The same effect can be obtained by opening the positive pressure outlet valve **409** and the positive pressure inlet valve **410** instead. Air then flows in this sequence: air bladders **202**, silicone tube **105**, central compartment **404**, positive pressure outlet duct **456**, positive pressure outlet valve **409**, positive pressure inlet valve **410**, positive pressure inlet duct **454**, to the outside of the enclosure **104**. If all four valves are powered on, air can leave the interior of the enclosure **104** and be discharged into the environment slightly faster, reducing the time required to completely deflate the air bladders **202**.

The inflation and deflation speed increase ("boost") in the embodiment of FIG. **4** is realized when pressure is allowed to accumulate in the compartments prior to any air moving into or out of the air bladders **202**. To rapidly inflate the air bladders **202**, positive pressure is first built in the positive pressure compartment **403** (step **1**). To accomplish this, the negative pressure inlet valve **407** and the pump **405** are turned on. Air moves from the outside of the enclosure through the negative pressure inlet duct **450**, the negative pressure inlet valve **407**, the pump **405**, into the positive pressure compartment **403**. Pressure builds inside the positive pressure compartment **403** as both valves in the positive pressure compartment are powered down and there is no way for the air to escape. After a certain interval, to rapidly inflate the air bladders **202**, the negative pressure inlet valve **407** is closed, the pump **405** is powered down, and the positive pressure outlet valve **409** is opened (step **2**). When this occurs the air accumulated inside the positive pressure compartment **403** rushes into the air bladders through the positive pressure outlet duct **456**, at a rate much faster than a miniature diaphragm pump can move air. The speed increase is directly proportional to the size of the positive pressure compartment **403**, the length of step **1** and the type of pump used. It is to be noted that the size of the pump used is limited not only by cost and space considerations, but also by the noise produced which may disturb, and perhaps awaken the user.

To rapidly deflate the air bladders **202**, first air must be suctioned out of the negative pressure compartment **401**, so as to reduce its pressure to a level below that of the environment outside the enclosure **104**. To accomplish this, the circuitry on the circuit board **301** powers the pump **405** and the positive pressure inlet valve **41**. All other elements are powered down. Air is moved from the negative pressure compartment **401** into the positive pressure compartment **403** by the pump **405**; and air is allowed to escape through the positive pressure inlet valve **410** and positive pressure inlet duct **454**. The positive pressure compartment **403** maintains constant pressure with the environment outside the housing, but more and more air is moved out of the negative pressure compartment **401**. Pressure in the negative pressure compartment **401** falls. After a certain interval, the pump **405** and the positive pressure inlet valve **410** are powered down, and the negative pressure outlet valve **408** is opened. Air rushes out of the air bladders **202** through the central compartment **404**, the negative pressure outlet duct **451** and the negative pressure outlet valve **408** into the negative pressure compartment **401**. In this manner the air bladders **202** are deflated rapidly. The speed of deflation is directly proportional to the degree to which the pressure inside the negative pressure compartment **401** can be lowered with respect to the air in the air bladders **202** prior to opening the negative pressure outlet valve **408**.

The noise produced by the diaphragm pump in any of the embodiments described can be reduced by choosing an appropriately thick enclosure. For example, a 1 cm thick polycarbonate enclosure can completely silence the noise created by a miniature diaphragm pump of the kind required to practice the present invention.

Air-proofing is essential to practicing the present invention. In FIG. **5**, the structural elements of the induction apparatus' housing **104** are shown. This structural configuration minimizes manufacturing costs and allows reliable air-proofing. This embodiment of the housing **104** allows the realization of the induction apparatus embodiment of FIG. **4**. For ease of reference to FIG. **4**, the air compartments are labeled with arrows.

A rubber mat **506** is captured between a plastic base **508** and a plastic mid-section **504**. A rubber gasket **502** is captured between the plastic mid-section **504** and a plastic top **500**. The plastic base **508** and the plastic top **500** have a large number of screw holes through which screws are inserted at assembly time. The screws penetrate the walls of the mid-section, ensuring that the rubber mat **506** and rubber gasket **502** are well compressed at every location. This is important to ensure that air cannot leak out of the housing **104** when the air pressurized. All unlabeled holes on the plastic mid-section **504** are screw holes. All holes on the plastic base **508** and plastic top **500** are screw holes.

In FIG. **5**, several cabling and tubing holes **510** on the plastic mid-section **504** allow cabling or tubes to penetrate the enclosure walls, to achieve the internal configuration and functionality previously explained in reference to FIG. **4**. Rubber grommets are inserted in the cabling and tubing holes **510** for air-proofing.

The rubber gasket **502** can easily be replaced by another rubber mat **506**, as their function is identical.

FIG. **6** schematically represents the intercommunication and components of the physiological monitoring headband **110** (having an EEG sensor in communication with a microcontroller that is cooperative with a radio transceiver), and the induction apparatus' housing **104** (having a radio transceiver for communicating with the radio transceiver of the headband **110**, a microcontroller cooperative with the radio transceiver, the microcontroller also controlling the pump **302** and the valve **303**, consistent with the embodiment of FIG. **3**.

Other modifications and implementations will occur to those skilled in the art without departing from the spirit and the scope of the invention as claimed. Accordingly, the above description is not intended to limit the invention, except as indicated in the following claims.

What is claimed is:

1. An erotic dream induction apparatus for providing erotic stimulation to a user while the user is sleeping, the apparatus comprising:

a stimulation signal generator, responsive to a REM sleep onset signal, the stimulation signal generator being capable of providing a stimulation signal in response to the REM sleep onset signal;

an air pump, cooperative with the stimulation signal generator, the air pump being capable of receiving the stimulation signal and providing air flow in response to the stimulation signal;

a sound-proof housing enclosing the air pump, the sound-proof housing being configured to enable the air pump to operate substantially silently;

one or more inflatable air bladders, cooperative with the air pump, the one or more inflatable air bladders being capable of receiving and containing the air flow provided by the air pump; and

stimulation underwear having one or more pockets for holding the one or more inflatable air bladders against a genital area of the user; and

a deflation valve, cooperative with the one or more inflatable air bladders, the deflation valve being capable of receiving the stimulation signal, and releasing air from the one or more air bladders in response to the stimulation signal,

the one or more inflatable air bladders inflating and deflating in response to the air flow and the air release under control of the stimulation signal, thereby erotically stimulating the user.

2. The apparatus of claim 1, wherein the REM sleep onset signal is provided by a REM sleep phase detector, the REM sleep phase detector being in sensing relationship with the user.

3. The apparatus of claim 2, wherein the REM sleep phase detector is capable of analyzing a sleep phase indication so as to detect REM sleep in the user, so as to provide the REM sleep onset signal.

4. The apparatus of claim 3, wherein the sleep phase indication is derived from at least one of:

user motion data, user EEG signals, user heart rate, and user eye movement.

5. The apparatus of claim 1, wherein the air pump includes a miniature diaphragm pump.

6. The apparatus of claim 1, wherein the deflation valve includes a solenoid valve.

7. The apparatus of claim 1, wherein the stimulation signal generator is implemented using a micro-controller.

8. The apparatus of claim 7, wherein the micro-controller initiates stimulation at a particular time, or after a length of time has elapsed from reception of the REM sleep onset signal.

9. The apparatus of claim 1, wherein at least one of the air bladders is housed in the one or more pockets.

10. The apparatus of claim 1, wherein at least one of the air bladders is physically embedded into the stimulation underwear.

11. The apparatus of claim 1, wherein at least one of the air bladders can be inserted into a vagina of the user or a rectum of the user.

12. The apparatus of claim 1, wherein the stimulation is carried out while in a REM sleep phase.

13. An erotic dream induction apparatus for providing erotic stimulation to a user while the user is sleeping, the apparatus comprising:

a REM sleep phase detector, capable of analyzing a sleep phase indication signal so as to detect REM sleep in the user, and to then provide a REM sleep onset signal;

a stimulation signal generator, responsive to the REM sleep onset signal, the stimulation signal generator being capable of providing a stimulation signal in response to the REM sleep onset signal;

an air pump, cooperative with the stimulation signal generator, the air pump being capable of receiving the stimulation signal and providing an air flow in response to the stimulation signal;

a sound-proof housing enclosing the air pump, the sound-proof housing being configured to enable the air pump to operate substantially silently; and

one or more inflatable air bladders, each air bladder being capable of being held in place against only a genital area of the user by a garment, each air bladder being cooperative with the air pump, each air bladder being capable of receiving and containing the air flow provided by the air pump; and

a deflation valve, cooperative with the one or more inflatable air bladders, the deflation valve being capable of receiving the stimulation signal, and releasing air from the one or more air bladders in response to the stimulation signal,

the one or more inflatable air bladders inflating and deflating in response to the air flow and in response to the air release under control of the stimulation signal, thereby erotically stimulating the user.

14. The apparatus of claim 13, wherein the sleep phase indication signal is derived from at least one of:

user motion data, user EEG signals, user heart rate, and user eye movement.

15. The apparatus of claim 13, wherein the air pump includes a miniature diaphragm pump.

16. The apparatus of claim 13, wherein the deflation valve includes a solenoid valve.

17. The apparatus of claim 13, wherein the stimulation signal generator is implemented using a micro-controller, and the micro-controller initiates stimulation at a particular time or after a length of time has elapsed from reception of the REM sleep onset signal.

18. The apparatus of claim 13, wherein at least one of the air bladders is wearable in a pocket of a garment worn over the user's genitalia or nipples.

19. The apparatus of claim 13, wherein at least one of the air bladders is incorporated into a garment.

20. The apparatus of claim 13, wherein at least one of the air bladders is shaped and sized so as to be insertable into a user's vagina or rectum.

* * * * *

专利名称(译)	色情梦感应器		
公开(公告)号	US9943663	公开(公告)日	2018-04-17
申请号	US14/712089	申请日	2015-05-14
[标]申请(专利权)人(译)	VASAPOLLO CURZIO		
申请(专利权)人(译)	VASAPOLLO，CURZIO		
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IPC分类号	A61M21/00 A61H9/00 A61B5/00 A61B5/048 A61H19/00 A61B5/11 A61B3/113		
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其他公开文献	US20160331924A1		
外部链接	Espacenet USPTO		

摘要(译)

色情梦诱导装置包括可膨胀的气囊，例如橡胶气囊，以通过生殖器刺激诱发性唤起。使气囊与使用者的阴茎或阴道接触，和/或插入使用者的肛门和/或阴道。在一个实施例中，通过带子或口袋将气囊保持在阴茎，阴道和/或肛门附近，靠近或围绕阴茎，阴道和/或肛门的位置，从而使用户与阴茎，阴道和/或肛门接触。在刺激内衣中，当气囊膨胀时，气囊与使用者的阴茎，阴道和/或肛门的至少一部分接触。气囊通过泵和/或阀门反复充气和放气。