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Description

[0001] The invention relates to a stimulation device for a male penis and in particular to an applicator for such a stimulation device. The stimulation device comprises a pressure field
5 generating device for generating a pneumatic alternating pressure field which can be applied by means of the applicator to an area of a penis to be stimulated.

[0002] Various stimulation devices for the male penis are known which can lead to sexual arousal and/or optionally increase sexual arousal to climax. Such stimulation devices usually
10 comprise a receiving space which is substantially closed and has an opening into which the (erect) penis can be inserted. The front end of the receiving space is often closed, so that in particular the glans of the penis is enclosed. The inside of the receiving space abuts against the penis and can comprise structures, such as protrusions, for enhancing stimulation. In addition to manual devices, in which a user must themselves perform desired movements for stimulation by friction, automatic devices are known.

[0003] Such automatic devices can either mimic a manual movement or perform other
15 stimulation-like movements. For example, devices acting mechanically or pneumatically on the receiving space can completely or partially change the shape or the volume of the receiving space in order to generate stimulation. For this purpose, the receiving space can be designed as a flexible sleeve made of a soft material and can be located in a solid housing which, in addition
20 to the receiving space, can also accommodate corresponding drives, pumps, stimulation heads, batteries, and the like. Stimulation devices are also known in which the receiving space on the shaft of the penis is sealed, so that a stimulation effect can be achieved by means of a varying underpressure.

[0004] Since the known devices often achieve only a stimulation function, the stimulation
25 effect is often perceived as unsatisfactory. In addition, in known stimulation devices the entire penis is usually inserted into the receiving space, and therefore these devices are relatively unwieldy due to the large housing. Such devices are also usually only available in a standard size and are often insufficiently adjustable for different penis sizes. Because of the closed shape of the receiving space, cleaning can also be difficult, as lubricant or similar is often necessary
30 in order to avoid skin irritation due to friction.

[0005] DE 20 2015 005 041 U1 describes a manual stimulation device which has an outer container body with an inner rubber sleeve. The penis is inserted into the rubber sleeve through an opening in one side, while the container body has a sealing group at the other end which can

be adjusted such that when the device is moved, the magnitude of the underpressure or overpressure produced by the movement can be adjusted. An additional pump is not provided.

[0006] Devices are also known by means of which an underpressure can be exerted onto a penis. For example, US 5,647,837 discloses a device for achieving an erection. The penis is inserted into a cylindrical hollow body through an opening having a circumferential seal. A pump is connected by means of which underpressure can be generated. US 2015/0105609 A1 discloses a device into which the penis is inserted and then an underpressure is generated for penis enlargement.

[0007] It is therefore the object of the present invention to produce a stimulation device for a male penis which is improved with regard to stimulation of the penis and application.

[0008] The object is achieved by a stimulation device with an applicator and a pressure field generating device having the features of independent claim 1. An article with such a stimulation device and at least one further applicator is also provided.

[0009] According to one aspect, a stimulation device for a male penis is produced, which comprises at least one applicator and a pressure field generating device for generating a pneumatic alternating pressure field.

[0010] The applicator comprises an applicator body with a contact area, which contact area is designed to abut against the penis at least partially when placed thereon. The applicator further comprises a pressure chamber, which is formed on the applicator body and is designed to receive a pneumatic alternating pressure field from a pressure field generating device. The pressure chamber has an opening in the contact area, so that the alternating pressure field can be applied via the opening to an area of the penis to be stimulated. A sealing device is formed on the applicator body and is designed to seal the pressure chamber from the surroundings when the applicator body is placed on the penis.

[0011] The pressure field generating device comprises a pneumatic outlet, via which a generated pneumatic alternating pressure field can be outputted, the pneumatic outlet being connectable or connected to the applicator, so that the pneumatic alternating pressure field can be transferred to the pressure chamber of the applicator.

[0012] According to another aspect, an article with such a stimulation device for a male penis and at least one further applicator of this kind is produced, the applicators contained in the article preferably being different. The article can also be referred to as a set and allows a modular construction of the stimulation device.

[0013] According to a preferred embodiment, the applicator is releasably connected to the pressure field generating device, either directly or by means of a connecting part as described

in more detail below, so that the applicator can be disconnected from and reconnected to the pressure field generating device for cleaning or replacement. Alternatively, however, the applicator can be rigidly connected to the pressure field generating device or formed integrally therewith.

5 **[0014]** Applicators of an article or set can be different in particular with regard to shape, size, geometry and the like. The applicators may also differ in other functional parts described above and below, such as the sealing device or the shape of the contact area. The applicators may differ with regard to the geometry and/or the size of their pressure chamber, as a result of which stimulations of different intensities can be achieved during continuous operation of the pressure
10 field generating device. Alternatively, however, the applicators may be identical, so that an applicator can be replaced if it is lost, damaged, worn out or the like. Particularly advantageously, the applications are releasably connectable to the pressure field generating device for this purpose, for example via a connecting part as described in more detail below, which can also be considered part of the article. In one variant, the article can comprise more
15 than one connecting part, and the connecting parts can be identical or different.

[0015] An alternating pressure field generated by the pressure field generating device can be applied by means of the applicator to a part of the penis to be stimulated. For this purpose, the contact area of the applicator is placed on a part of the penis to be stimulated, for example the glans, the glans furrow and/or the frenulum, as described in more detail below. The opening of
20 the pressure chamber is arranged in the contact area and faces the penis when in use, so that there is no contact between the penis and the applicator in the area of the opening of the pressure chamber and the pressure chamber directly borders on the skin of the penis. The alternating pressure field is thus applied directly to the penis.

[0016] In contrast to known stimulation devices, the stimulating excitation thus takes place by
25 contactless transmission of a stimulation force by means of the alternating pressure field. In particular, parts of the pressure field generating device, such as a flexible wall or membrane of the pressure field generating device which is correspondingly deflected to generate the alternating pressure field, also do not come into contact with the penis, in particular during any phase of operation. In other words, the flexible wall or flexible membrane is spaced apart from
30 the opening of the pressure chamber and thus also from the sealing device, in particular is different therefrom. This is advantageous in particular for stimulation of the sensitive frenulum, as described below in more detail. A particular stimulation effect can thus be produced which differs from the effect of conventional tactile stimulation devices. The applicator is compact and can simply be placed on the penis, so that it can be used and also cleaned easily.

[0017] The sealing device is designed such that when the applicator is placed on the penis, the pressure chamber is sealed against the surroundings. In this way, an alternating pressure field can form and the part of the penis to be stimulated, i.e. in particular the part of the penis which is located in the area of the opening of the pressure chamber immediately bordering the pressure chamber, can be stimulated by means of the alternating pressure field.

[0018] Here, alternating pressure field is understood to mean a varying pressure field which exhibits both underpressure and overpressure with regard to the ambient pressure, for example alternating underpressure phases and overpressure phases or in another specified pattern of optionally identical or different underpressure and overpressure. This alternating pressure field prevails in the pressure chamber of the applicator, in particular in the area of the opening of the pressure chamber, i.e. parameters such as frequency and amplitude of the alternating pressure field can be measured at the opening. The pressure can alternate at a frequency of 5 Hz to 250 Hz, preferably 10 Hz to 200 Hz, more preferably 20 Hz to 100 Hz, for example 60 Hz. The pressure difference can be 20 mbar to 800 mbar, preferably 50 mbar to 750 mbar, more preferably 100 mbar to 700 mbar, for example 200 mbar, with the pressure difference being between the highest overpressure and the lowest underpressure and being preferably symmetrical about an ambient pressure. At a normal pressure of the surroundings of approximately 1 mbar, the alternating pressure field can, for example, lead to a pressure of 0.7 mbar to 1.3 mbar in the pressure chamber, which corresponds to a pressure difference of 0.6 bar (600 mbar). The alternating pressure field is in particular a pneumatic alternating pressure field, i.e. in particular air is used as the pressure medium. However, it is conceivable that the alternating pressure field is transmitted via another medium, for example via a fluid, such as water, gel or the like, which is introduced into the pressure chamber.

[0019] The sealing device is therefore in particular suitable for sealing the pressure chamber against the surroundings with regard to both underpressure and overpressure relative to an ambient pressure of the surroundings. In other words, the sealing device is designed to prevent or at least virtually prevent flows, in particular air flows, in both directions, i.e. out of the pressure chamber into the surroundings and from the surroundings into the pressure chamber. The surroundings include in particular areas outside the pressure chamber or outside the applicator.

[0020] The sealing device can be formed in particular in the contact area and designed to abut against the penis at least in sections when the applicator body is placed thereon, in order to seal the pressure chamber against the surroundings. In particular, the sealing device can be formed all round the opening of the pressure chamber, for example in the shape of a circle, oval or the

like. The sealing device can also be designed such that it has a plurality of sections which, when a contact pressure is applied, deform elastically in order to form a circumferential seal for sealing the pressure chamber against the surroundings.

[0021] It goes without saying that the sealing device can also have other shapes which are suitable for sealingly abutting against the penis. In particular, however, the sealing device preferably does not enclose the penis all the way round, but instead abuts against the side of the penis, for example in the area of the frenulum. Alternatively or additionally, the sealing device can also be formed at least in sections in an outer edge area of the applicator body, in particular in the contact area.

[0022] The sealing device can be designed as a raised structure in the contact area and can have, for example, a sealing lip, a sealing membrane, a bulge, a projection or the like. Advantageously, the sealing device is made of a soft material, so that it adapts to the anatomical conditions when placed on the penis and abuts against the penis sealingly. For example, the sealing device can have a round, for example semicircular, sectional profile. A contact pressure can be applied to the sealing device in order to improve sealing. This can be carried out manually or by means of a holding device, as described in more detail below.

[0023] The sealing device can be designed in particular to seal the pressure chamber when the applicator abuts against the penis in a stationary manner, i.e. is not moved. However, the sealing device can be produced and designed as a sliding seal in such a manner that at least partial sealing of the pressure chamber or approximate sealing, as in the immobile state, is achieved when the applicator moves along the penis. Advantageously, the sealing device is designed such that, despite effective sealing in the immobile state, it allows or at least does not prevent movement of the applicator along the penis. For example, the sealing device can be particularly soft and rounded for this purpose. Optionally, additional stimulation of the penis can be achieved when the applicator is moved by the sealing device if the sealing device is designed as a raised structure in the contact area.

[0024] At least one anatomically formed projection can be arranged in the contact area of the applicator body, which projection preferably follows, at least in sections, the course of a glans furrow of the penis. The anatomically formed projection can be connected to the sealing device or separate therefrom. It can support the sealing effect and also make it easier to correctly position the applicator on the penis. The anatomically formed projection can be adapted to the desired anatomy in terms of its position, its course and/or its cross-sectional profile. For example, the projection can follow at least part of the glans furrow, for example in the area of the frenulum. In this case, the anatomically formed projection can consist of two sections which

enclose an angle. The protrusion can, like the sealing device, be designed as a bulge or a lip, for example.

[0025] The pressure chamber, which is also referred to as the application chamber, is preferably designed to at least partially receive a frenulum of the penis when the applicator body is placed on the penis. In particular, the opening of the pressure chamber in the contact area of the applicator body is dimensioned and formed such that it surrounds the frenulum at least partially or completely. For example, the opening for entirely or partially receiving the frenulum can have a diameter of less than 40 mm, preferably less than 30 mm, more preferably less than 20 mm.

[0026] As the pressure chamber is open toward the penis, the alternating pressure field can thus directly act on the frenulum in this way, for example by slightly pulling the frenulum into the pressure chamber in the underpressure phases. The type of stimulation provided by a pneumatic alternating pressure field is particularly effective, as the erogenous zone is sensitized by increased blood flow in the underpressure phase and is stimulated in the overpressure phase. This area of the penis is one of the most erogenous zones of the male body, and therefore suitable stimulation can lead to sexual arousal or can increase sexual arousal. In particular stimulation by means of an alternating pressure field, i.e. contactlessly applying a stimulation force, is particularly suitable for the sensitive frenulum.

[0027] The applicator can comprise a connector which is arranged on the applicator body and is designed to be connected to a pressure field generating device and to receive a pneumatic alternating pressure field therefrom, the pressure chamber being fluidically connected to the connector. In particular, it is advantageous to provide a connector when the applicator is releasably connectable to a pressure field generating device. In particular, the pressure field generating device can be arranged on one side of the connector and the pressure chamber on the other, in particular opposing side of the connector. For example, a flexible membrane designed for generating an alternating pressure field therefore does not form a boundary of the pressure chamber, but is arranged outside the pressure chamber, preferably at a spacing from the pressure chamber.

[0028] A fluid channel can be formed in the applicator body, via which fluid channel the connector and the pressure chamber are fluidically connected to one another. In particular, the fluid channel can have a smaller cross-section than the pressure chamber and the pressure chamber can have a greater cross-section than the fluid channel. In this way, the alternating pressure field can be effectively transmitted from the connector into the pressure chamber.

[0029] The opening of the pressure chamber can, for example, have the same cross-section as the pressure chamber, so that the alternating pressure field can be applied to the part of the penis to be stimulated over as large an area as possible. At the same time, the connection to the pressure generating device can be kept small in cross-section.

5 [0030] In order to further increase the area on which the alternating pressure field acts on the penis, i.e. in particular the area of the opening of the pressure chamber in the contact area, the pressure chamber can widen toward the opening. Alternatively, however, the pressure chamber can have a constant cross-section and be cylindrical, for example.

[0031] Conversely, the cross-section of the pressure chamber can decrease toward the opening.
10 For example, a cross-section of the fluid channel and/or connector can, irrespective thereof, be greater than a cross-section of the pressure chamber and/or of the opening. In this way, the pressure in the area of the opening can be increased. The opening can also, irrespective of the geometry of the pressure chamber, have a smaller cross-sectional area than the area of the pressure chamber bordering the opening.

15 [0032] A connector-side opening of the pressure chamber, via which the pneumatic alternating pressure field can be introduced into the pressure chamber, can be arranged opposite the opening of the pressure chamber in the contact area of the applicator body. This arrangement is advantageous for the transmission of the alternating pressure field from the pressure generating device via the connector into the pressure chamber as far as the opening of the
20 pressure chamber and finally to the penis, as the compressive forces act along an axis. Alternatively, however, the connector may be arranged at another location in the applicator relative to the pressure chamber, for example in the side of the pressure chamber. If, as mentioned above, a fluid channel is provided, the fluid channel can either extend in a straight line or assume any other curved or angled course, in order to fluidically connect the connector
25 to the pressure chamber.

[0033] The contact area of the applicator body can define a receiving space, which is delimited by the contact area and is designed to at least partially receive the penis, so that the contact area abuts along at least a part of the circumference of the penis. As the opening of the pressure chamber is arranged in the contact area, it opens directly into the receiving space. In other
30 words, as described above, the pressure chamber is open toward the receiving space and thus also toward the penis when the applicator is placed on the penis, and therefore the alternating pressure field can act directly on the skin of the penis, for example the frenulum. The opening of the pressure chamber and the sealing device can therefore lie in particular in a contact surface defined by the contact area.

[0034] The receiving space can have in particular two open ends which oppose one another in a longitudinal direction, the penis being inserted into the applicator through one of the ends and optionally being able to exit from the other end. For this purpose, the receiving space can be, for example, symmetrical with respect to a plane perpendicular to the longitudinal axis. The receiving space can be closed or open along its circumference. If the receiving space is open along the circumference, the contact area rests only along part of the circumference of the penis, for example in an area comprising the frenulum.

[0035] The receiving space can be wide open, so that the contact area rests only on part of the circumference of the penis, for example along a quarter to half of the circumference. For stimulation of the frenulum, it may be sufficient in particular if the contact area is only on the underside of the penis. This allows a particularly compact design of the applicator and simple placement, without the penis needing to be inserted into the applicator.

[0036] In other embodiments, the contact area can surround the penis further, and for example abut against more than half of the circumference of the penis up to the entire circumference. This may improve the hold of the applicator on the penis, but requires the penis to be inserted into the applicator.

[0037] The contact area or the receiving space can be made of a particularly soft material that conforms to the surface of the penis, for example a silicone or a silicone mixture with a low Shore hardness, for example less than 5, preferably less than 3, more preferably less than 2. A self-lubricating silicone can also be used in order to avoid or reduce the use of lubricant, in particular if the applicator is intended to be moved. In order to increase stimulation when the applicator is moved along the penis, the contact area can be provided with raised structures, such as protrusions, ribs or the like. The pressure chamber and the connector of the applicator can be formed in part of the applicator which is made of a more rigid material and which, for example, can form a formwork around a soft insert forming the contact area. The material used for this can be, for example, a silicone or a silicone mixture with a high Shore hardness, for example greater than 20, preferably greater than 30, more preferably greater than 40, or a hard plastics material, such as acrylonitrile butadiene styrene (ABS) and the like.

[0038] Alternatively, the applicator as a whole may be made of one material, in particular produced in one piece. Plastics materials which are not too hard and suitable for abutting against the penis on the one hand, and which have sufficient rigidity to form the pressure chamber and the connector on the other, such as silicones or suitable silicone mixtures, are particularly suitable for this purpose. The applicator is produced by injection molding and, in

particular, by two-component or multi-component injection molding, in which silicones of different hardness are joined together to form a single part

[0039] The applicator can also comprise a holding device which is designed to hold the applicator body after it is placed on the penis. “Holding device” is understood to mean in particular devices which hold the applicator in place after it has been placed on the penis, without the user holding it and without it falling off. In particular, the holding device is designed such that it holds the applicator to a point on the penis at which the opening of the pressure chamber is located over a part of the penis to be stimulated, for example over the frenulum. This allows the applicator to be used “hands-free” without the user having to hold the applicator.

[0040] Alternatively, the holding device can make it easier for the user to hold the applicator. In this case, the holding device can also be referred to, for example, as a “gripping device.” Flexible arms can be provided, for example, which can be laid over at least part of the circumference of the penis and thus make it easier to hold the applicator by hand. It goes without saying that other grip-like structures which make it easier to hold the applicator are also conceivable.

[0041] The holding device can extend from the applicator body and be designed to abut against at least a part of the circumference of the penis. This is in particular advantageous if the contact area of the applicator body extends over only part of the circumference of the penis. The holding device can extend from the applicator body over at least part of the rest or the entire rest of the circumference of the penis. The holding device can comprise, for example, arms, bands, strips or the like. Means for fastening or tightening the bands or straps can optionally be provided. The holding device can also comprise, for example, an optionally flexible, annular structure which extends around the circumference of the penis. Irrespective of the design of the holding device, the holding device can be releasably or rigidly connected to the applicator body.

[0042] The holding device can further be designed to increase a contact pressure of the sealing device on the penis. In other words, instead of simply holding the applicator, the holding device can be adjustable, in order to change the contact pressure of the sealing device. For example, the holding device can comprise means for tightening, it being possible, for example, for an inner diameter of the receiving space to be reduced so that the contact pressure of the sealing device on the penis increases. Instead of a mechanism for tightening, the applicator can also comprise a pressure means, for example in the form of one or more air cushions which can be

inflated in order to enhance the fit of the applicator on the penis and to increase the contact pressure.

[0043] It is possible, for example, that the applicator has an outer formwork which can consist of two or more parts that can be moved relative to one another, for example slid or pivoted, such that an inner diameter of the receiving space is reduced. By increasing the contact pressure, the stimulation effect can also be increased and the risk of the applicator slipping can be reduced. Alternatively, in particular if the holding device is only designed as a gripping device, the contact pressure can also be increased by hand.

[0044] The holding device can comprise a fixing device in order to fix the holding device in a desired position. In particular, a desired contact pressure can be maintained in this way without the user having to hold the applicator or the holding device by hand. The fixing device can comprise a latching mechanism, for example, which prevents release of the holding device after tightening. Corresponding means for releasing the fixing device, such as a knob or lever, can be provided, so that the applicator can be removed from the penis or at least the contact pressure on the penis can be reduced.

[0045] As already mentioned above, the stimulation device can comprise a connecting part for connecting the applicator to the pressure field generating device. The connecting part can have a first connector, which is designed to be connected fluidically to the pneumatic outlet of the pressure field generating device, and a second connector, which is designed to be connected fluidically to the connector of the applicator, so that the pneumatic alternating pressure field can be transferred by means of the connecting part from the pressure field generating device to the pressure chamber of the applicator.

[0046] The connecting part can be provided as a separate part and can be connectable both to the applicator and to the pressure field generating device. This allows a modular design of the stimulation device, in particular if several, optionally different applicators are intended to be used. It is also easier to clean the stimulation device, and therefore hygiene can be improved. However, the connecting part can be rigidly connected to the applicator or the pressure field generating device or both. The connecting part can comprise, for example, as a tube, in particular a flexible tube, as a pipe or another suitable structure, which has a corresponding cavity for transmitting the alternating pressure field from the pressure generating device to the connector of the applicator.

[0047] A tube, in particular a longer tube, allows a spatial distance between the applicator and the pressure field generating device, which can make it easier to use the stimulation device “hands-free,” as the pressure field generating device can be placed next to the user, for example.

A short connecting part or a direct connection of the pressure field generating device to the connector of the applicator allows a compact design of the stimulation device, although the stimulation device may then have to be held by hand during operation due to the greater weight of the entire device compared with the applicator alone.

5 **[0048]** Advantageously, plug connections are used for connecting the connecting part to the pressure field generating device and the applicator or for directly connecting the applicator to the pressure field generating device. This allows a quick and easy connection, thus simplifying the use of the stimulation device. The plug connections can comprise corresponding seals, such as sealing lips, O-rings or the like, or can be sufficiently tight on their own to transmit the
10 alternating pressure field substantially without losses. It goes without saying that other connecting mechanisms, such as screw connections, bayonet connections, snap connections or the like, are also possible.

[0049] The connecting part can comprise a coupling device, which is arranged between the first connector and the second connector and is designed to transfer the pneumatic alternating
15 pressure field and to prevent a fluid flow, in particular a fluid flow from the second connector to the first connector, i.e. from the applicator to the pressure field generating device. This can prevent water, bodily fluids or other contaminants from reaching the connecting part and possibly even the pressure field generating device from the opening of the pressure chamber via the pressure chamber and the connector of the applicator, which could be caused in
20 particular by capillary forces in a thin tube. The coupling device therefore acts as a backflow closure.

[0050] Advantageously, the coupling device between the first and second connectors of the connecting part is arranged closer to the second connector, i.e. closer to the applicator, in order to keep as small as possible the part of the connecting part into which liquids can potentially
25 enter. Optionally, the coupling device can be formed directly at the second connector or form the second connector to the applicator. The coupling device may be separable, so that a first part of the connecting part can remain connected to the pressure field generating device and a second part of the connecting part which is located between the coupling device and the applicator can be cleaned separately.

30 **[0051]** Providing a coupling device can prevent fluids flowing from the applicator through the connecting part. At the same time, the coupling device allows transmission of the alternating pressure field in the opposite direction from the pressure generating device to the applicator. For this purpose, the coupling device can comprise a flexible and fluid-impermeable membrane. In particular, the membrane can be impermeable to fluid of any viscosity.

Alternatively or additionally, however, a semi-permeable membrane and/or another filter device can be provided which at least retains solids.

[0052] The membrane can form a separation between two chambers in the coupling device, one of the chambers being on the side of the membrane facing the pressure field generating device and the other of the chambers being on the side of the membrane facing the applicator. The chambers allow a deflection of the flexible membrane in order to transmit the alternating pressure field. For this purpose, the cross-sectional area of the coupling device is preferably greater than that of the connecting part.

[0053] The invention is described below by way of example with reference to the accompanying drawings. For the sake of better understanding of the invention, the drawings merely schematically show preferred embodiments of the invention, and the invention is not limited to the preferred embodiments shown.

Fig. 1 shows a male penis.

Fig. 2 shows an embodiment of a stimulation device.

Fig. 3 shows another embodiment of a stimulation device.

Fig. 4 shows another embodiment of a stimulation device.

Fig. 5 shows an embodiment of a pressure field generating device.

Fig. 6 is a perspective view of the pressure field generating device of Fig. 5.

Fig. 7 shows a drive unit of the pressure field generating device.

Fig. 8 shows an electric drive of a pressure field generating device.

Fig. 9 is another view of the electrical drive of Fig. 8.

Fig. 10 shows an embodiment of an applicator in different views.

Fig. 11 shows another embodiment of an applicator, placed on a penis, in different views.

Fig. 12 shows another embodiment of an applicator, placed on a penis, in different views.

Fig. 13 shows another embodiment of an applicator, placed on a penis, in different views.

Fig. 14 shows another embodiment of an applicator, placed on a penis, in different views.

Fig. 15 shows another embodiment of an applicator, placed on a penis, in different views.

Fig. 16 shows another embodiment of an applicator.

Fig. 17 shows a stimulation device with the applicator of Fig. 16.

Fig. 18 shows a holding device of an applicator.

Fig. 19 shows another embodiment of an applicator and the holding device thereof.

Fig. 20 shows another embodiment of an applicator.

5 Fig. 21 shows another embodiment of an applicator.

Fig. 22 shows a coupling device for a connecting part between an applicator and a pressure field generating device.

Fig. 23 shows an embodiment of a plug connection.

10 **[0054]** For the sake of better understanding of the invention, relevant aspects of the anatomy of a human male penis (or member) are explained with reference to Fig. 1, in particular with regard to desired stimulation by means of a stimulation device according to the invention. The glans 4 and the frenulum 24 of the male member are among the most erogenous zones of the male body, and therefore suitable stimulation or excitation can lead to sexual arousal or can increase sexual arousal. Sexual arousal can lead to male orgasm and ejaculatory reflex.
15 Underpressure can also be used to promote blood flow to the stimulated area and overpressure can be used to apply a stimulating force.

[0055] The frenulum 24 and the glans furrow 25, i.e. the transition between the glans 4 and the penis shaft, are particularly sensitive to this stimulation or excitation.

20 **[0056]** A stimulation device according to the invention, in particular with a corresponding applicator according to the invention, makes it possible to promote blood flow to and stimulate the glans 4 of the male member, in particular the frenulum, in a constant alternation of overpressure and underpressure at a suitable intensity, so that a pressure field stimulation which is suitable in its frequency and amplitude leads to sexual arousal of the man, in the best case to male orgasm.

25 **[0057]** In order to be able to form an alternating pressure field (also referred to simply as a pressure field in the following) suitable for sexual stimulation with sufficient strength, an applicator with an opening is provided, as explained in the following, in order to apply an alternating pressure field generated by means of a pressure field generating device directly to the skin of the penis. The applicator is adapted to the anatomy of the male member and is
30 designed in particular for placement over the frenulum 24 and the glans furrow 25, and also in particular for receiving the frenulum 24. By providing a sealing device, the alternating pressure field required for stimulation can be formed to a sufficient extent by a pressure chamber of the applicator being sealed against the surroundings.

[0058] The stimulation device is designed such that the stimulation does not cause the mucous membranes to dry out, which would happen, for example, due to a constant exchange of air with the surroundings. In addition, the device is designed for hygienic use, i.e. cavities which are difficult to access and thus difficult to clean and in which bodily fluid, for example, can accumulate, such as in valves, are avoided. Moreover, the temperature of the relatively small air volume enclosed in the pressure chamber of the applicator can quickly adapt to the body temperature, thus ensuring comfortable use. The stimulation device is also simple in terms of construction and thus in terms of use, thus minimizing distraction of the user during use and the effort required for use.

[0059] A comparatively high-frequency alternating frequency of 5 Hz to 250 Hz and a pressure difference of 20 mbar to 800 mbar around the ambient pressure of approximately 1 bar, preferably symmetrical around the ambient pressure, is particularly advantageous as suitable sexual stimulation of the glans 4 of the male member, at best until orgasm. Such an alternating pressure field consisting of the alternation of underpressure and overpressure at an alternating frequency of 5 Hz to 250 Hz and pressure differences of 20 mbar to 800 mbar can be generated by means of a pressure field generating device, which is shown schematically in Fig. 2 to 9. Different embodiments of applicators are shown in Fig. 10 to 21. It goes without saying that the different embodiments or aspects of the different embodiments can be combined as desired.

[0060] Fig. 2 shows a first embodiment of a stimulation device with a pressure field generating device 1. The pressure field generating device 1 has at least one wall 5 or membrane which is made of a resilient material, for example silicone or rubber, this flexible wall 5 being deflected by means of a drive 6 in order to cause a positive and negative volume change dV in the pressure field generating device 1 for generating the pressure field, in particular the alternating pressure field consisting of underpressure phases and overpressure phases. A pressure chamber 2 is provided in which the alternating pressure field generated by deflection of the wall 5 is formed. In particular, the flexible wall 5 serves only to generate the alternating pressure field in the pressure chamber 2 and is spaced apart from the opening 3, i.e. does not contact the penis during operation (i.e. in particular in any deflected position). The pressure chamber 2 can have an invariable cross-section in the flow direction, so that the pressure chamber is substantially cylindrical.

[0061] The pressure chamber 2 comprises an opening 3 which is designed such that the pressure chamber 2, when placed on an area of the penis to be stimulated, such as the glans 4 or in particular the frenulum 24, is sealed or approximately sealed against the surroundings, i.e. against areas outside the pressure chamber, so that the alternating pressure field can be formed.

For this purpose, a sealing device 32 is provided, which is directed to sealing against underpressure as well as overpressure relative to the ambient pressure. The device surrounds the opening 3 and can be placed sealingly on the glans 4, in particular such that the frenulum 24 is at least partially received in the opening 3. The area of the opening 3 is equal to the cross-sectional area of the pressure chamber 2. Stimulation of the frenulum 24 can have a particularly strong effect with regard to sexual arousal.

[0062] Here, approximately sealing placement over the male glans 4 means in particular that an at least largely closed flow system is formed by means of the pressure field generating device 1. Media flows are generated in the flow system, in particular pneumatic flows, i.e. air flows, which are directed alternately in time toward the male glans 4 (overpressure) and away from the male glans 4 (underpressure). It goes without saying that this is equally possible for any other desired area of the penis to be stimulated. In this closed flow system, removal of bodily fluid from the pressure field generating device 1 is largely avoided.

[0063] Fig. 3 shows an embodiment of a stimulation device in which a pressure field generating device 1 is connected to an applicator 11. The applicator 11 comprises an applicator body 29 in which the pressure chamber 2 is formed. The applicator 11 also comprises a connector 30, to which a fluid channel 7 with the pressure chamber 2 is connected in order to transmit an alternating pressure field generated by means of the pressure field generating device 1 via the opening 3 to the penis. The connector 30 is opposite the opening 3 with respect to a longitudinal axis of the pressure chamber 2. The flexible membrane 5 is located outside the pressure chamber 2 on a side of the connector 30 opposite the pressure chamber 2 and is in particular spaced apart from the pressure chamber 2 by the fluid channel 7. A sealing device 32, for example a sealing lip or bulge, is formed in the contact area 31 around the opening 3, in order to seal the pressure chamber 2 against the surroundings.

[0064] Fig. 4 shows an embodiment in which the applicator 11 is connected to the pressure field generating device 1 via a connecting part 8 in the form of a tube, in order to transmit the alternating pressure field generated by means of the pressure field generating device 1 to the applicator 11 and to apply it to the penis via the opening 3. In particular, a first connector 36 of the connecting part 8 is connected to a pneumatic outlet 35 of the pressure field generating device 1, while a second connector 37 of the connecting part 8 is connected to the connector 30 of the applicator 11. This can be carried out by means of a plug connection, for example, as described in more detail below. The connecting part 8 can be flexible in sections or completely.

[0065] The configuration of the stimulation device with a tube as the connecting part 8 can serve for simple use of the stimulation device, as the user only has to hold the applicator 11 by

hand. This may optionally also be possible without a tube if the shape of the stimulation device is suitably designed, optionally with a short connecting piece (cf. for example Fig. 17). With the simultaneous provision of a corresponding holding device, as described in more detail below, “hands-free” use in particular can also be possible in this way, since the pressure field
5 generating device 1 can be placed somewhere (for example, next to or on top of the user).

[0066] A cross-sectional change of the pressure chamber 2 or of a pressure or flow system, which can also comprise, in addition to the pressure chamber 2, the fluid channel 7, the connecting part 8 and/or other cavities exposed to the alternating pressure field, may have an effect on the flow velocity of the medium (in particular air), i.e. a cross-sectional constriction
10 means a flow acceleration and a cross-sectional expansion correspondingly means a flow deceleration.

[0067] Since the pressure chamber 2 is placed on the penis approximately sealingly, thus forming an at least largely closed flow system, there is virtually no exchange of air with the surroundings, and therefore the removal of bodily fluid from the pressure field generating
15 device is avoided and the stimulation does not cause the mucous membranes to dry out. The temperature of the air volume enclosed in the closed system quickly adapts itself to the body temperature due to the relatively small volume. Moreover, the stimulation device can operate without valves, which facilitates hygienic use.

[0068] Also with regard to hygienic use, a receiving area or receiving space 34 of the applicator
20 11 defined by a contact area 31 is preferably open in the area of the tip of the glans 4. As a result, when using the stimulation device according to the invention, in particular due to the compact shape of the applicator 11, which is preferably designed for stimulation of the frenulum 24 and thus only has to seal a small part of the penis against the surroundings, the ejaculate can be discharged during orgasm. This simplifies cleaning. This creates a stimulation
25 device which is improved with regard to hygiene in particular in comparison with conventional closed stimulation devices.

[0069] As shown in Fig. 5 and 6, the stimulation device comprises, in addition to the pressure field generating device 1, a control device 9 which can actuate a drive unit 6 and in which the modulation of the pressure field can be pre-stored. The control device 9 comprises at least one
30 control element 10, where the relevant modulation of the pressure field can be changed by means of the control element 10. The stimulation device also has a housing (not shown), which can comprise the control device 9, the drive unit 6, the pressure field generating device 1 and an internal battery 12, the stimulation device preferably being designed as a portable handheld device. The control device 9 allows a stimulation pattern to be set from the stimulation patterns

of the control device 9 by means of an operating element 10, and the drive unit 6 is actuated in accordance with the set stimulation pattern.

[0070] The drive unit 6 coupled to the flexible wall 5 of the pressure generating device 1 can consist, for example, of a rotating electric motor 13 with mechanical transmission. The mechanical transmission of the rotation of the electric motor 13 into a translatory movement of the flexible wall 5 of the pressure field generating device 1 can take place for example by means of an eccentric 14, as shown schematically in Fig. 7.

[0071] Fig. 7 schematically shows the drive unit 6 in the form of a rotating electric motor with mechanical transmission and coupling to the flexible wall 5 of the pressure field generating device. By means of the control current supplied by the rotating electric motor 13, for example in the form of direct current, the speed of the electric motor 13 and thus ultimately the frequency of the flexible wall 5 is varied or controlled. The flexible wall 5 can comprise a bead which mechanically follows the displacement of the flexible wall 5 to the greatest extent possible without mechanical stresses. The displacement of the flexible wall 5 is determined by the defined eccentric path. The fixed piston displacement means a fixed reduction and increase of the chamber volume dV and thus correspondingly a fixed pressure increase or pressure reduction, i.e. an approximately fixed amplitude of the alternating overpressure and underpressure.

[0072] Alternatively, the drive unit 6 coupled to the flexible wall 5 of the pressure generating device 1 can consist of a linear electric motor 15, as shown in Fig. 8 and 9. In the electromagnetic transducer shown in Fig. 8 and 9, the flexible wall 5 connected to a support 16 is moved back and forth by means of the control current in the air gap 18 with at least one oscillating or plunger coil 17 attached thereto in accordance with the coil supply.

[0073] The flexible wall 5 of the pressure field generating device 1 is attached to a support 16. The flexible wall 5 can comprise a bead which mechanically follows the displacement of the flexible wall 5 to the greatest extent possible without mechanical stresses. An oscillating coil 17 is wound around the support 16, which oscillating coil is fed by the control current from a control unit during operation. The oscillating coil 17 consists of electrical conductors made of a material that is as electrically conductive as possible (preferably copper), which conductors are insulated from one another and from the support 16 by an electrically insulating coating. The magnetic field is preferably generated in annular form by at least one permanent magnet 19.

[0074] The magnetic flow is guided by means of a rear pole plate 20 (preferably in the shape of a cylinder) to the cylindrical pole core 22 via the upper pole plate 21 (preferably in an annular

shape) via the preferably annular air gap. The rear pole plate 20 and the upper pole plate 21 are, like the pole core 22, made of magnetically highly permeable material (preferably a soft magnetic material alloy). Alternatively, a cylindrical permanent magnet can be used instead of the pole core 22 and, correspondingly, a ring pole instead of the permanent magnet 19.

5 **[0075]** The support 16 with the oscillating coil 17 is structurally centered and guided in the air gap 18 by at least one holder or mount 23 (preferably made of plastics material, textile fabric or paper) in order to prevent wobbling movements of the oscillating coil 17. The holder or mount 23 is attached to the frame.

10 **[0076]** In order to move the flexible wall 5, the oscillating coil 17 is fed with a control alternating current from a control unit. The oscillating coil 17 is moved upward or downward by the Lorentz force depending on the current direction or current polarity in the magnetic field of the air gap 18. The displacement of the deflection of the oscillating coil 17 is determined by the amplitude of the control current. The frequency of the alternating current corresponds to the frequency of the oscillating coil movement and thus the frequency of the piston or
15 membrane movement. The frequency and the displacement of the oscillating coil 17 and thus the movement of the flexible wall 5 can therefore be controlled comparatively easily and independently of one another by the current frequency and current amplitude. Due to the direct transmission, a wider frequency range of less than 1 Hz to several hundred Hz is possible with this principle. A direct current from a battery or an accumulator is converted to an alternating
20 current signal.

[0077] The sealing of the pressure chamber 2 against the surroundings, in other words the contact area 31 with the sealing device 32 resting on the penis, in particular the glans 4, and the formation of an at least largely closed flow system are decisive for the formation of the desired alternating pressure field, in particular with the underpressure and overpressure
25 mentioned in the order of magnitude of pressure differences of 20 mbar to 800 mbar. For this purpose, the contact area 31 and in particular the sealing device 32 are suitably designed in terms of shape and material, as described in the following with reference to preferred embodiments. Moreover, a contact pressure sufficient to build up said underpressure and overpressure can be applied to the sealing device 32, as will also be described below with
30 reference to preferred embodiments. It goes without saying that relevant features, in particular with regard to transmitting the alternating pressure field to the penis, are common to all embodiments and are not described with regard to each embodiment merely to avoid repetition.

[0078] Fig. 10 shows an embodiment of an applicator 11 which has, in addition to the sealing device 32, anatomically formed projections 33 in the contact area 31. In addition, the contact

area 31 is designed such that it has a surface shape that supports the seal. A sealing device 32 is provided, which surrounds the opening 3 of the pressure chamber 2 of the applicator 11. The sealing device 32 is designed as a rounded, flexible bulge around the opening 3 which can adapt to the shape of the penis when the applicator 11 is placed on the penis.

5 **[0079]** Moreover, projections 33 are provided which substantially follow the course of the glans furrow 25. This can support the sealing effect of the sealing device 32, so that the projections 33 can also be considered part of the sealing device 32. Due to their anatomical shape, the projections 33 can make it easier to correctly position the applicator 11 on the penis, in particular in such a way that the frenulum 24 is at least partially received in the pressure
10 chamber 2. The material of the sealing device 32 is preferably soft, for example a soft silicone or rubber. The projections 33 can be made of the same material or of a different, for example harder or softer, material. The opening 3 of the pressure chamber 2 is designed such that it can receive the frenulum 24 at least partially, so that the alternating pressure field in the pressure chamber 2 can act directly on the frenulum 24.

15 **[0080]** According to an embodiment, the contact pressure required for sealing can be applied by the user's own manual pressure. Fig. 11 schematically shows such an applicator 11, placed on a penis, in which the pressure chamber 2 is sealed against the glans 4 by means of the contact pressure applied by manual pressure. A holding device or gripping device in the form of arm-like extensions 23 is formed, which device the user can position on the penis or glans 4 in a
20 largely flexible manner. The sealing device is thus pressed against the penis. The opening 3 is designed to receive the frenulum 24 and parts of or the entire glans corona 25. In this embodiment, the pressure chamber 2 opens toward the opening 3, as can be seen in the sectional view in Fig. 11.

[0081] According to another embodiment, as shown in Fig. 12, the required contact pressure
25 can be achieved, for example, by a substantially annular holding device 26, where the material residual stresses occurring during elastic deformation of the ring 26 act on the penis and on the sealing device. Advantageously, the holding device 26 is open in the area of the tip of the glans 4. However, a cap-like structure closed at the tip is also conceivable, which, like the annular holding device 26, is elastically deformable and thus holds the applicator 11 on the glans 4. In
30 the embodiment shown in Fig. 12, the opening 3 of the pressure chamber 2 is sealed against the glans 4 after the annular holding device 26 has been stretched and placed in position, with the opening 3 receiving the frenulum 24 and part or all of the glans corona 25.

[0082] The annular and elastically deformable holding device 26 shown in Fig. 12 can be reinforced by a strap having a tightening mechanism 27, as shown in Fig. 13. Here, sealing is

achieved by means of the material residual stress during elastic deformation and additionally by a force applied by means of a strap against the glans 4 of the male member.

[0083] Alternatively, according to another embodiment the required contact pressure can be applied solely by a strap-like or band-like holding device 26 having a fixing or tightening mechanism 27, as shown in Fig. 14. The strip can be fixed and thus positioned on the glans corona 25 particularly easily. Moreover, this holding device 26 of the applicator 11 can be adapted particularly easily to different diameters of the male member in the area of the glans 4.

[0084] In another variant of the applicator, as shown in Fig. 15, the holding device can be formed separately from the applicator body 29. This means that by selecting a suitable holding device, the sealing can be improved even with different member or glans diameters and use can be simplified with regard to putting on and taking off the stimulation device and cleaning. This multi-piece design is shown in Fig. 15 by way of example on a strap seal system. A holding body 28, separate from the applicator body 29, with a strap is arranged above the applicator body 29 so that the required contact pressure can be applied to the sealing device. The two parts can be made of the same material or of different materials.

[0085] The embodiments shown in Fig. 10 to 15 are designed in particular for a stationary or non-moving use of the stimulation device or the applicator 11. In other words, the applicator 11 can be designed in terms of shape, in particular of the contact area 31 and the sealing device 32, such that it is placed on the penis and optionally attached by means of a holding device, but without being moved. In this case, the alternating pressure field is applied in particular to the frenulum 24 via the opening 3 for stimulation.

[0086] However, it may also be desired that the applicator can be moved over the penis shaft, the glans furrow 25, the glans corona and the glans 4. At the same time, however, when a contact pressure or pressure force is applied, a sealing connection is to be made in order to achieve the stimulation, as in the other embodiments, by applying the alternating pressure field via the opening 3. The applicator according to the embodiments in Fig. 16 to 21 is designed such that it can be moved along the penis shaft in particular by releasing or at least easing the contact pressure. However, movement may be possible even if the contact pressure is maintained.

[0087] For this purpose, the sealing device 32 is preferably designed in such a way that, on the one hand, it adapts to the surface of the glans furrow and other areas on the penis due to the imposed contact pressure and bulge-like lips around the opening 3 of the pressure chamber 2, and, on the other hand, it can be moved when the contact pressure is released or eased or when

a contact pressure is applied or maintained. Advantageously, the contact area 31 extends around the entire circumference of the penis and defines a circumferentially closed receiving space 34 (Fig. 16 to 20), although it can also be open on the circumference (Fig. 21). The holding devices described in the following are also suitable for fixing the applicator on the penis, but can also be loosened or released in order to allow movement of the applicator along the penis shaft. During movement, the alternating pressure field can continue to be generated or can be switched off. The sealing device can thus form a sliding seal, so that even during movement, at least a partial to the same or approximately the same sealing effect as during stationary operation can be achieved and the alternating pressure field can be formed in the pressure chamber 2 and applied to the penis via the opening 3.

[0088] Fig. 16 shows an embodiment of an applicator 111 which has a circumferentially continuous contact area 31 and thus a circumferentially closed receiving space 34 into which the penis can be inserted. Analogously to the embodiments described above, the applicator 111 has a connector 30 via which an alternating pressure field generated by a pressure field generating device 1 can be applied to a pressure chamber 2 of the applicator 111 and, finally, via the opening 3 to a part of the penis to be stimulated, such as the frenulum. In order to seal the pressure chamber 2 against the surroundings, a sealing device 32 is formed around the opening 3 in the contact area 31.

[0089] The applicator 111 comprises a rigid formwork which comprises the first part 45 with the connector 30 and an opposing second part 46. A soft insert 47, for example made of silicone, is arranged in the formwork, which insert has the contact area 31 and is placed on the penis during use. The parts 45, 46 of the formwork are spaced apart from one another in the unloaded state of the applicator 111 and can be moved toward one another by hand. As a result, the soft insert 47 is compressed, and therefore the contact pressure of the sealing device 32 on the penis is increased. Compressing the insert 47 can be made easier by providing one or more indentations 48. By applying a sufficient contact pressure, the pressure chamber 2 can be sealed against the surroundings and an alternating pressure field can be applied to the penis.

[0090] The sealing device 32 is also designed, for example soft and rounded, such that the applicator 111 can also be moved along the penis shaft. It is possible that sufficient contact pressure and thus sufficient sealing of the pressure chamber 2 for applying an alternating pressure field are achieved even during movement. However, if the contact pressure is too low, the formation of the alternating pressure field may be impaired. During use, a combined stimulation can thus be achieved; the applicator 111 can, for example, be moved in such a way that, in addition to the friction generated, it rests on the penis at least in phases in a sealing

position, so that in these positions pneumatic stimulation is generated by means of the pressure field. The sealing position can also be in motion depending on the location of the penis. For example, moving sealing may be easier in the area of the penis shaft than in the area of the glans. However, a user may want to turn off the pressure field generating device 1 and use the applicator for manual stimulation only. Structures such as protrusions, ribs and the like (not shown) may optionally be provided on the surface of the insert 47, i.e. in the contact area 31, to enhance stimulation by friction in this case.

[0091] Fig. 17 shows the applicator 111 connected to a pressure field generating device 1. The hand of a user is indicated, which holds the applicator 111 or optionally compresses it. Here, the pneumatic outlet 35 of the pressure field generating device 1 is directly connected to the connector 30 of the applicator 111. It goes without saying that, for connection, a connecting part 8, for example a tube, can be arranged as described above between the pressure field generating device 1 and the applicator 111.

[0092] Fig. 18 shows part of an embodiment of an applicator 111, which is otherwise similar to that shown in Fig. 16; an increase in the contact pressure is also achieved by manually compressing the two parts 45, 46 of the formwork. However, a fixing device is provided which fixes the formwork in a desired position and maintains the contact pressure after the applicator has been released. In particular, a latching mechanism 61 is provided, whereby the tensioning force produced by the compression is maintained even when no external force is applied to the formwork. This is achieved by interlocking of corresponding surface profiles, such as teeth. A mechanism 62 is provided which releases the latching mechanism 61 by suitable displacement of the surface profiles relative to one another.

[0093] In the embodiment of an applicator 111 shown in Fig. 19, which is otherwise similar to that shown in Fig. 16, an increase in the contact pressure is achieved by means of a tensioning device. By activating the tensioning device, for example by means of a rotary knob 60, pull cables 63 can be tensioned. The pull cables 63 may be located in a guide channel (not shown) in the two parts 45 and 46 of the formwork. A rotational movement of the rotary knob 60 tensions the pull cables 63, as a result of which the parts 45 and 46 are moved toward one another and the contact pressure on the penis is increased. The tensioning device preferably has a fixing device (not shown) with a latching function which prevents the applied tensioning force from being released unintentionally. Advantageously, a mechanism for releasing the latching function is provided.

[0094] In the embodiment of an applicator 111 shown in Fig. 20, which is otherwise similar to that shown in Fig. 16, an increase in the contact pressure is achieved by means of at least one

air cushion 64, which is arranged between the formwork 49, which is formed in one piece here, and the insert 47. By inflating the air cushion 64, in particular with air, the diameter of the receiving space 34 of the applicator 111 is reduced at least in sections and the contact pressure on the penis is increased. A one-way valve (not shown) can be provided in order to release the
5 air from the air cushion 64 and thus reduce the contact pressure again.

[0095] According to the embodiment shown in Fig. 21, the applicator 211 has an arm-like formwork with a first part 245 and a second part 246 which are connected to one another so as to be movable via a hinge 250, in particular pivotable. The contact area 31 does not completely enclose the penis. A torsion spring (not shown) is preferably provided which forces a
10 movement of the parts 245 and 246 of the formwork away from one another into an open position. A fixing device (not shown) with a latching function may be provided, which device fixes the applicator 211 in a constricted position caused by a user applying a force. A mechanism for releasing the latched position can also be provided.

[0096] Fig. 22 shows a coupling device 40, which acts in particular as a backflow closure. Due to hygienic aspects, when using a connecting part 8 in the form of a tube, care must be taken
15 to ensure that no secretion is drawn into the tube as a result of capillary action and deposited therein. The coupling device 40 is attached between the tube 8 and the applicator 11 or between two sections 38, 39 of the tube 8, the section 38 leading to the pressure field generating device 1, while the section 39 leads to the applicator 11. Advantageously, the coupling device 40 is
20 positioned close to the applicator 11, so that the section 39 of the tube 8 to be cleaned, which faces the applicator 11, is as short as possible.

[0097] The coupling device 40 has a membrane 41 which separates a cavity of the coupling device 40 into two chambers 42, 43, so that no fluid can enter the chamber 42 from the chamber 43, i.e. in the direction from the applicator 11 toward the pressure field generating device 1. A
25 change in pressure, in particular due to the alternating pressure field generated by the pressure field generating device 1, causes a deflection of the membrane 41, so that the alternating pressure field is transmitted despite the prevention of a fluid flow. For cleaning, in particular, the coupling device 40 can be disconnected by releasing a fastening mechanism 44 and the section 39 of the tube 8 with the applicator 11 can be cleaned. It is not necessary to clean the
30 section 38 of the tube 8, as no fluid can enter the section 38 due to the fluid-impermeable membrane 41.

[0098] Fig. 23 shows by way of example an embodiment of a connecting mechanism in the form of a fluid-tight plug connection. Any applicator 11, for example one of the applicators described above, can be directly connected to a pressure field generating device 1 by means of

the connecting mechanism. Alternatively, the connecting mechanism can be used to connect a connecting part 8, for example a tube, to an applicator 11 or a pressure field generating device 1 or both. A plug connection allows simple assembly of a stimulation device. The plug connection shown in Fig. 23 comprises a first part 51 with a receptacle into which an extension of a second part 52 can be inserted. For sealing, an O-ring, for example, can be provided in at least one of the plug parts or in both plug parts.

[0099] It goes without saying that any aspects of the preferred embodiments described above can be combined with one another in a suitable manner. In particular, the preferred embodiments are merely examples. For example, different aspects of the applicator, such as the sealing device, pressure chamber, opening, contact area, receiving space and holding device, can be combined in any desired manner in order to create an applicator according to the invention for applying an alternating pressure field to an area of a penis to be stimulated, in particular the glans, preferably the frenulum. The applicator can also, regardless of the specific design thereof, be directly connected or connectable to a pressure field generating device, or a connecting part such as a tube can be provided for this purpose. Furthermore, one or more of the described applicators or even several applicators of the same type can be provided in a set together with a pressure field generating device and optionally a suitable connecting part.

Patentkrav**1. Stimuleringsanordning til en mands penis, omfattende:**

- en applikator (11; 111; 211), omfattende
- et applikatorlegeme (29) med et kontaktområde (31), som er udformet til i det mindste delvist at lægge sig op ad penis, når det anbringes herpå;
- et trykkammer (2), som er udført på applikatorlegemet (29) og er udformet til at modtage et pneumatisk trykveksselfelt fra en trykfeltgenererende anordning (1), hvor trykkammeret (2) har en åbning (3) i kontaktområdet (31), sådan at trykveksselfeltet via åbningen (3) kan appliceres på et område af penis, som skal stimuleres; og
- en tætningsanordning (32), som er udført på applikatorlegemet (29) og er udformet til at tætnes trykkammeret (2) i forhold til omgivelserne, når applikatorlegemet (29) anbringes på penis; og
- en trykfeltgenererende anordning (1), som er udformet til at generere et pneumatisk trykveksselfelt og har en pneumatisk udgang (35), via hvilken der kan udsendes et genereret pneumatisk trykveksselfelt, hvor den pneumatiske udgang (35) er forbundet med applikatoren (11), sådan at det pneumatiske trykveksselfelt kan overføres fra den trykfeltgenererende anordning (1) til applikatorens (11) trykkammer (2), hvor trykveksselfeltet har vekslende undertryksfaser og overtryksfaser i forhold til det omgivende tryk.

2. Stimuleringsanordning ifølge krav 1, hvor tætningsanordningen (32) i kontaktområdet (31) er udført og udformet til i det mindste afsnitsvist at lægge sig op ad penis, når applikatorlegemet (29) anbringes herpå, for at tætnes trykkammeret (2) i forhold til omgivelserne.

3. Stimuleringsanordning ifølge krav 1 eller 2, hvor tætningsanordningen (32) er udformet i omkredsen rundt om trykkammerets åbning.

4. Stimuleringsanordning ifølge mindst et af de foregående krav, hvor der i applikatorlegemets (29) kontaktområde (31) er anbragt i det mindste et anatomisk formet fremspring (33).

5. Stimuleringsanordning ifølge krav 4, hvor det anatomisk formede fremspring (33) i det mindste afsnittsvist følger et forløb af en glansfure (25) på penis.

5 **6.** Stimuleringsanordning ifølge mindst et af de foregående krav, hvor trykkammeret (2) er udformet til i det mindste delvist at optage et frenulum (24) på penis, når applikatorlegemet (29) anbringes på penis.

10 **7.** Stimuleringsanordning ifølge mindst et af de foregående krav, hvor applikatorlegemets (29) kontaktområde (31) definerer et optagerum (34), som grænser op til kontaktområdet (31) og er udformet til i det mindste delvist at optage penis, sådan at kontaktområdet (31) lægger sig langs i det mindste en del af penisomkredsen.

15 **8.** Stimuleringsanordning ifølge mindst et af de foregående krav, hvor applikatoren desuden omfatter en holdeanordning (26), som er udformet til at holde applikatorlegemet (29) på penis, efter at det er anbragt herpå,

9. Stimuleringsanordning ifølge krav 8, hvor holdeanordningen (26) desuden er udformet til at øge et presstryk fra tætningsanordningen (32) på penis.

20 **10.** Stimuleringsanordning ifølge krav 8 eller 9, hvor holdeanordningen (26) strækker sig fra applikatorlegemet (29) og er udformet til at lægge sig op ad i det mindste en del af penisomkredsen.

25 **11.** Stimuleringsanordning ifølge et af kravene 8 til 10, hvor holdeanordningen (26) har en fikseringsanordning (27), som er udformet til at fikse holdeanordningen (27) i en ønsket position.

30 **12.** Stimuleringsanordning ifølge et af de foregående krav, hvor applikatoren (11; 111; 211) omfatter en tilslutning (30), som er fluidisk forbundet med trykkammeret (2) og kan forbindes eller er forbundet med den pneumatiske udgang (35), sådan at det pneumatiske trykveksselfelt kan overføres fra den trykfeltgenererende anordning (1) til applikatorens (11) trykkammer (2),

hvor stimuleringsanordningen desuden omfatter en forbindelsesdel (8) med en første tilslutning (36) udformet til at blive fluidisk forbundet med den pneumatiske udgang (35) på

den trykfeltgenererende anordning (1), og en anden tilslutning (37) udformet til at blive fluidisk forbundet med applikatorens (11) tilslutning (30), sådan at det pneumatiske trykveksselfelt ved hjælp af forbindelsesdelen (8) kan overføres fra den trykfeltgenererende anordning (1) til applikatorens (11) trykkammer (2).

5

13. Stimuleringsanordning ifølge krav 12, hvor der er udformet en fluidkanal (7) i applikatorlegemet (29), via hvilken tilslutningen (30) og trykkammeret (2) er fluidisk forbundet.

10

14. Stimuleringsanordning ifølge krav 12 eller 13, hvor forbindelsesdelen (8) har en koblingsanordning (40), som er anbragt mellem den første tilslutning (36) og den anden tilslutning (37) på forbindelsesdelen (8) og er udformet til at overføre det pneumatiske trykveksselfelt og forhindre en fluidstrøm, hvor koblingsanordningen (40) foretrukket har en fleksibel og ikke-fluidgennemtrængelig membran (41).

15

15. Artikel med

- en stimuleringsanordning til en mands penis ifølge mindst et af de foregående krav, hvor applikatoren (11; 111; 211) er en første applikator, og
- mindst en yderligere applikator (11; 111; 211) med kendetegnene ifølge mindst et af de foregående krav, som adskiller sig fra den første applikator.

20

FIG. 1

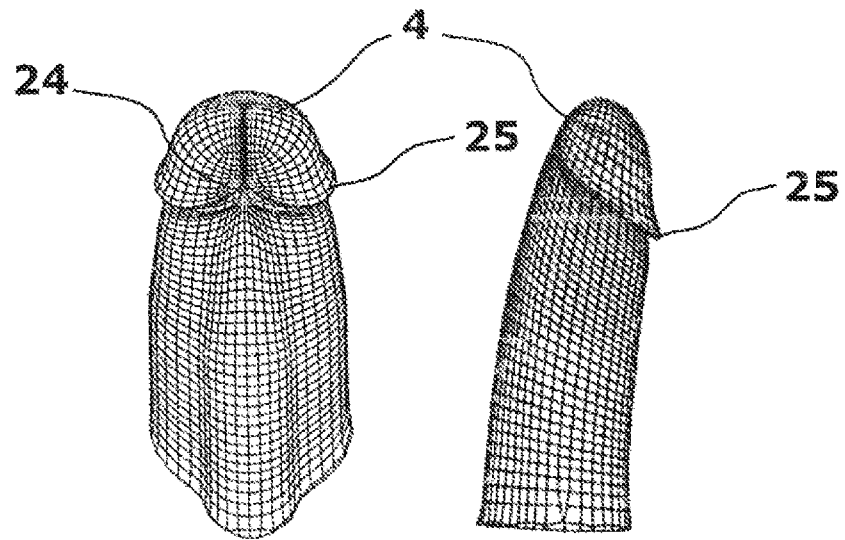


FIG. 2

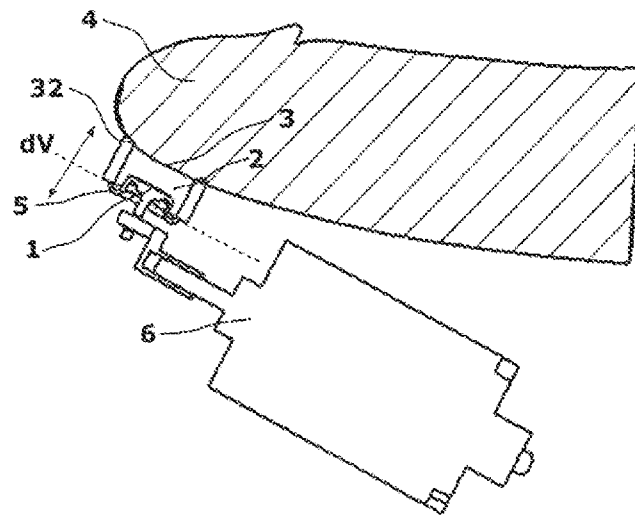


FIG. 3

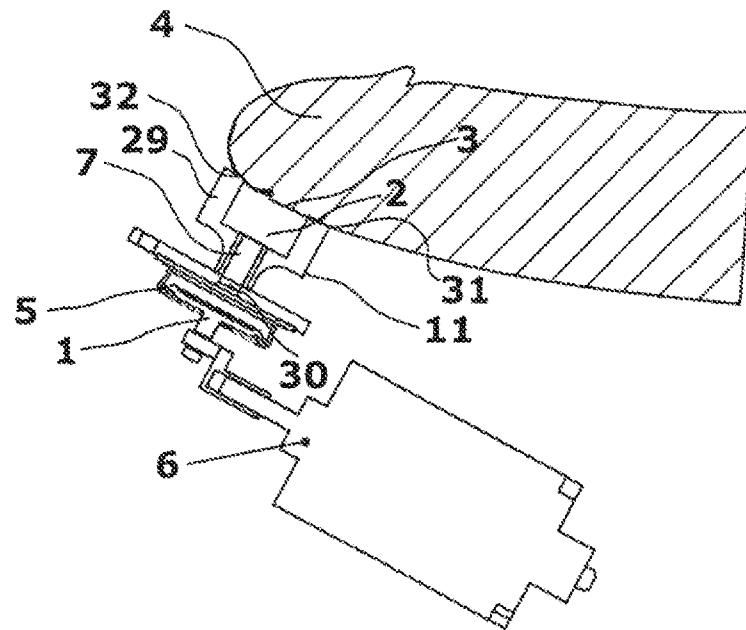


FIG. 4

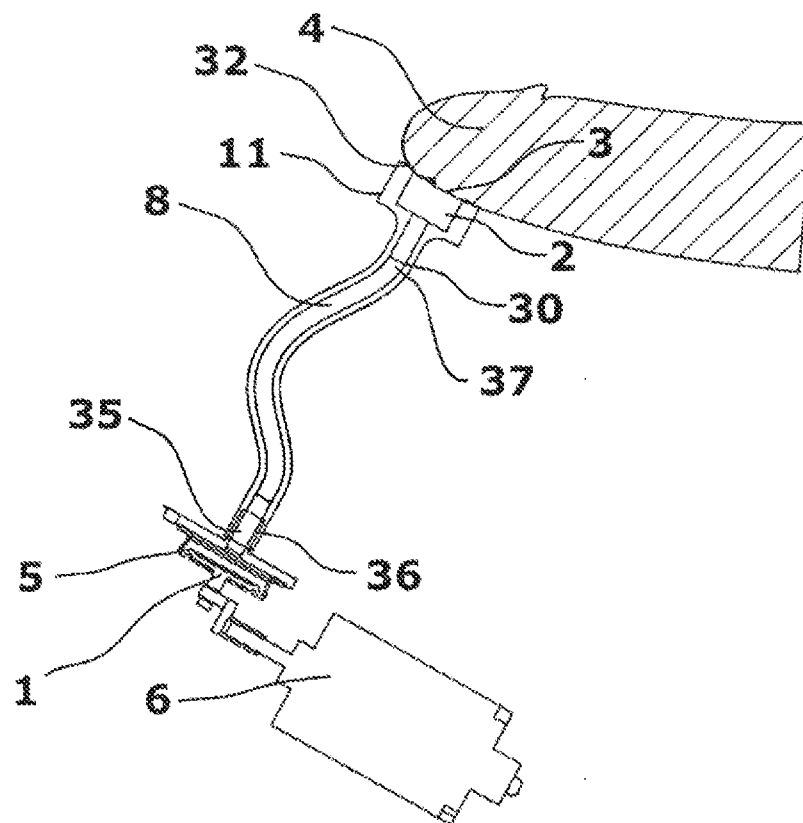


FIG. 5

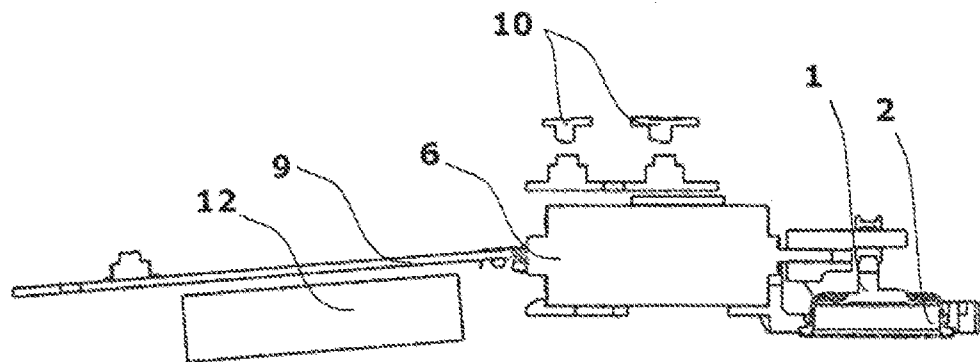


FIG. 6

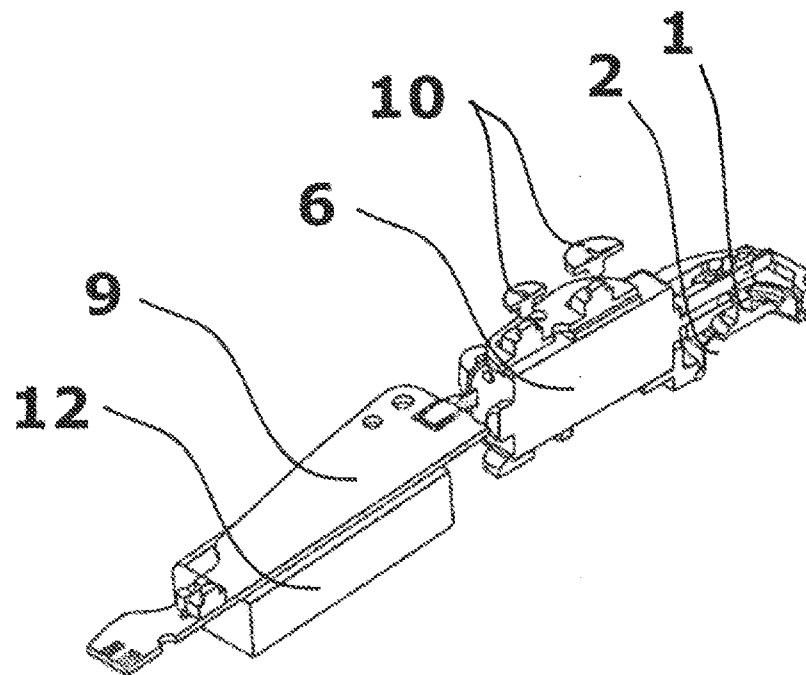


FIG. 7

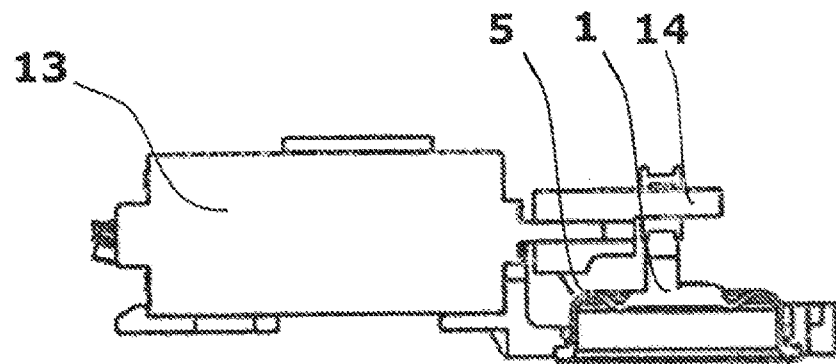


FIG. 8

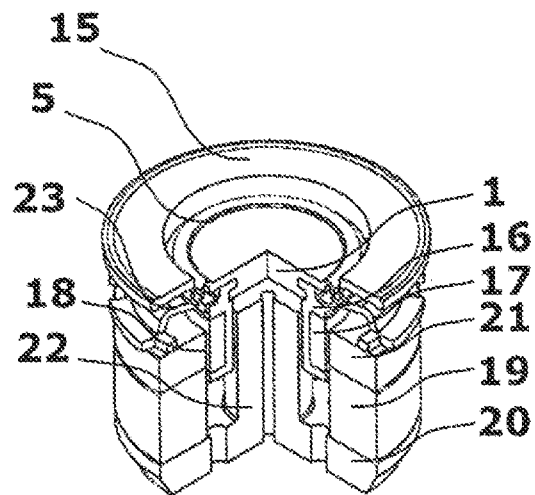


FIG. 9

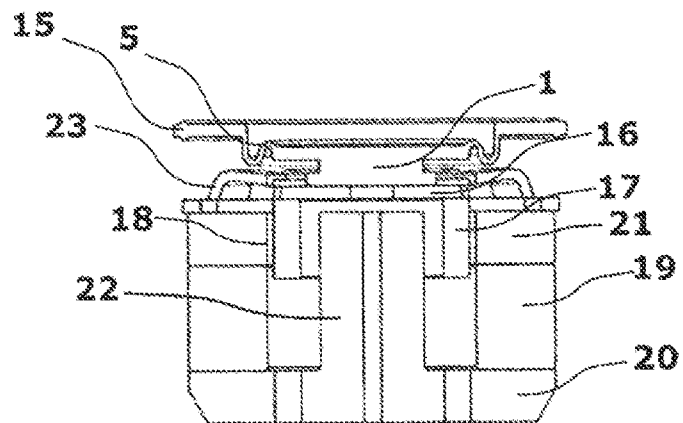


FIG. 10

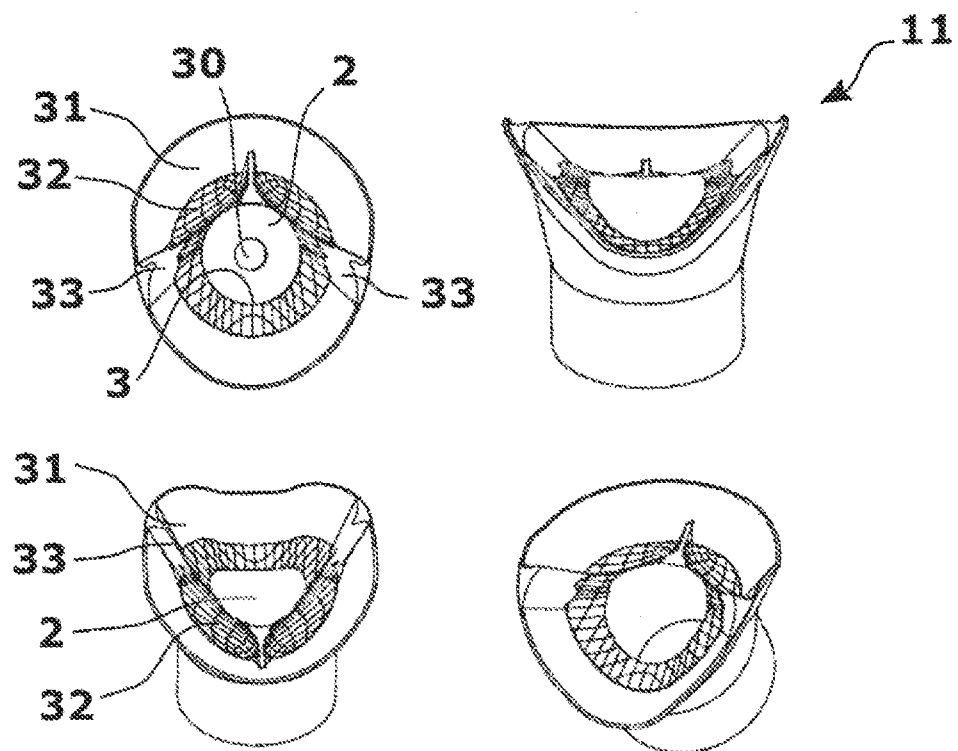


FIG. 11

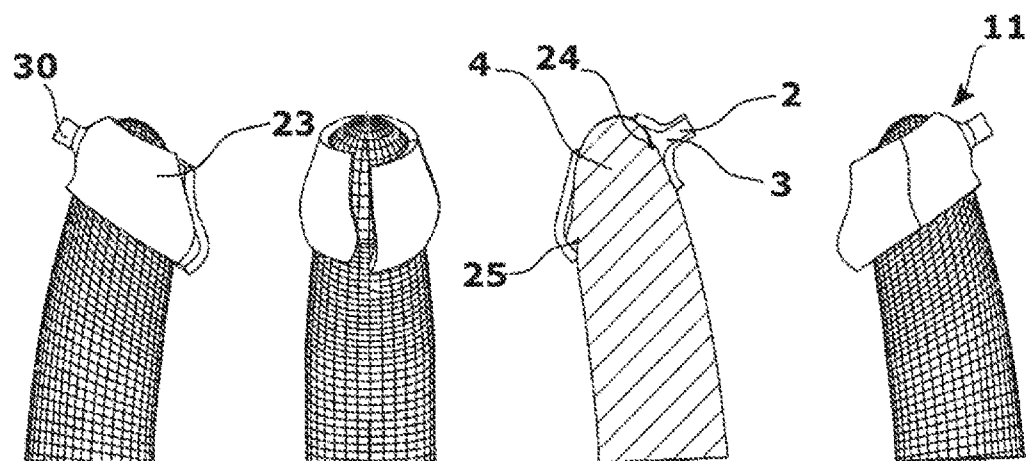


FIG. 12

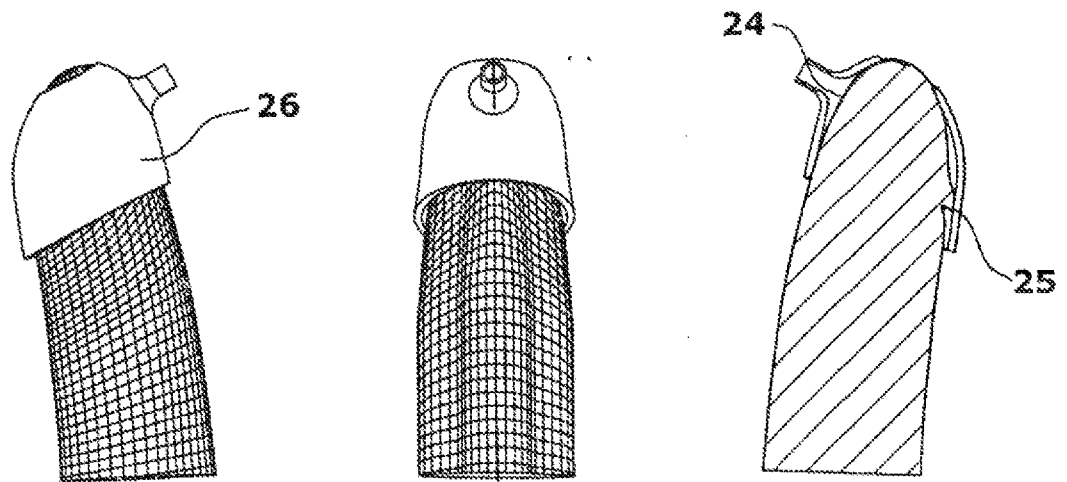


FIG. 13

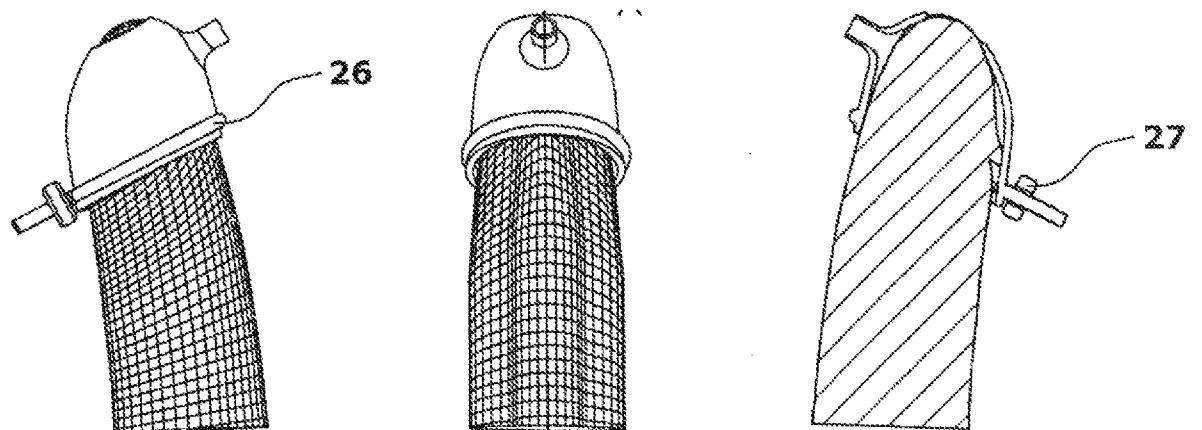


FIG. 14

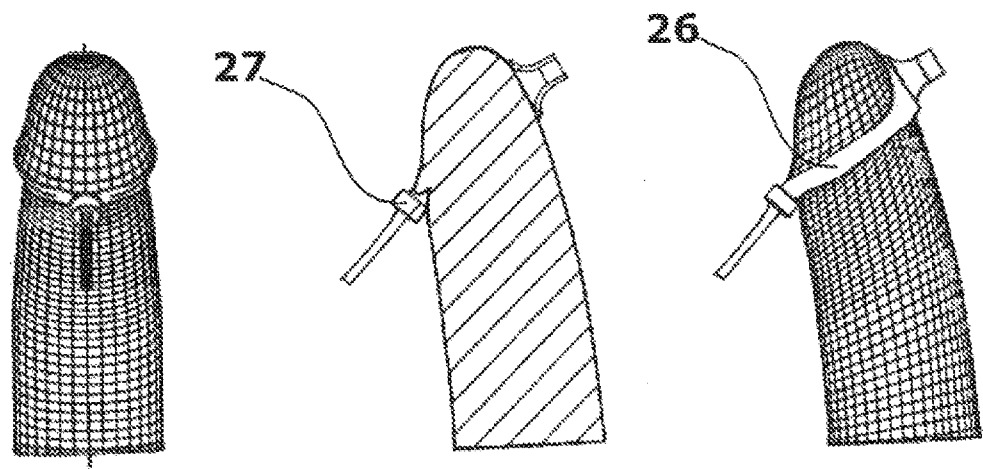


FIG. 15

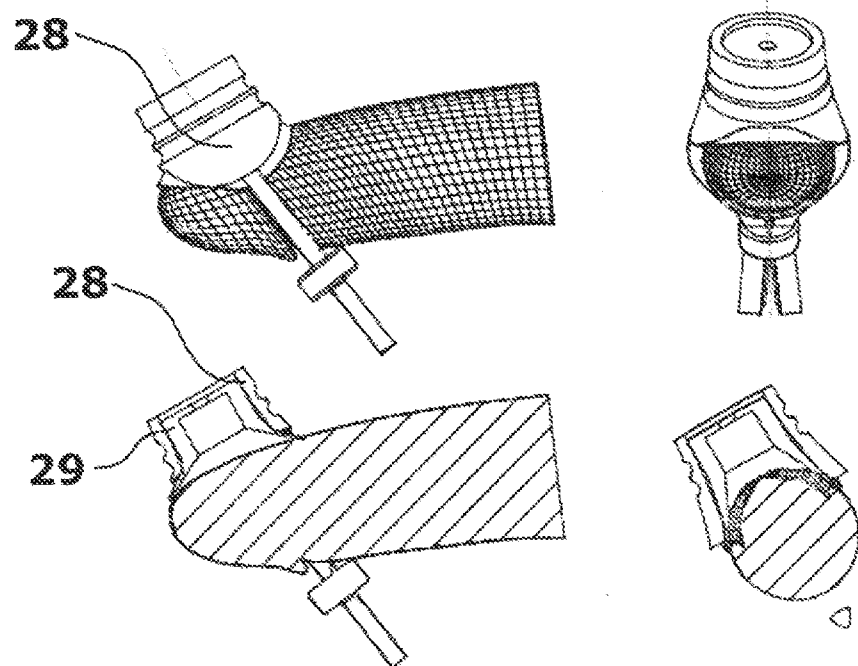


FIG. 16

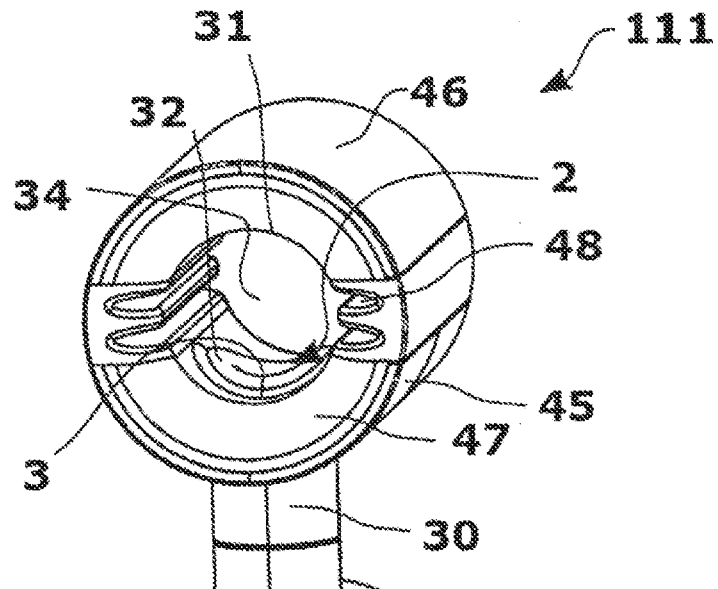


FIG. 17

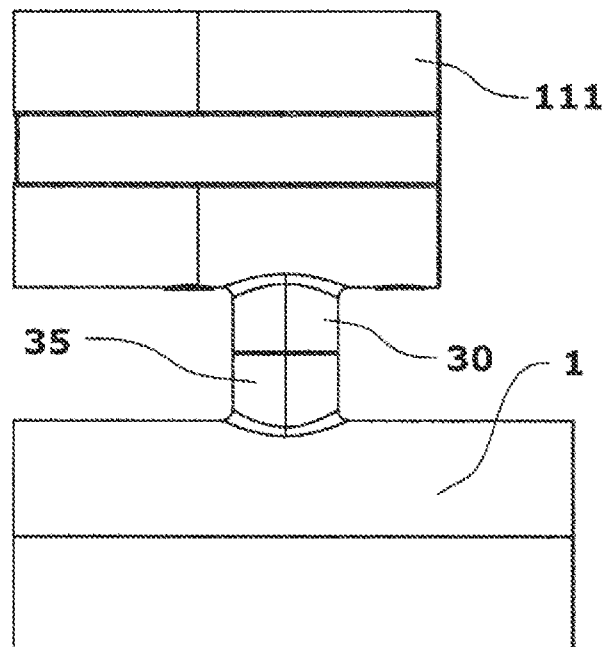


FIG. 18

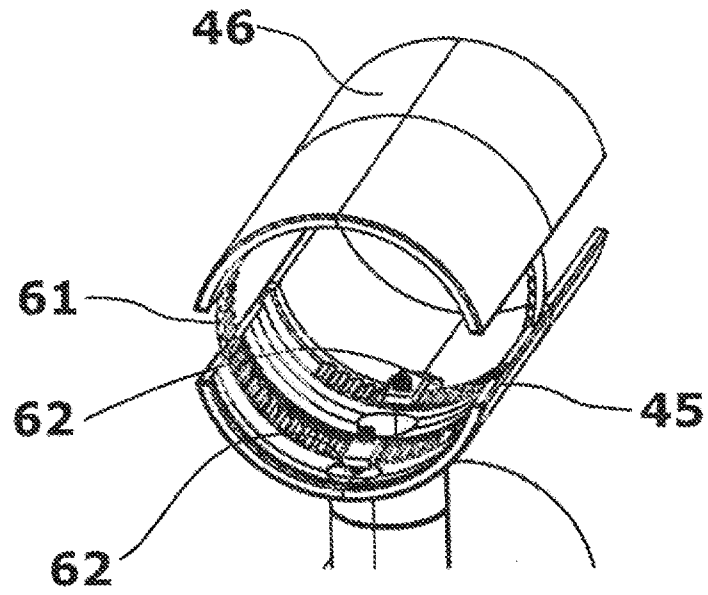


FIG. 19

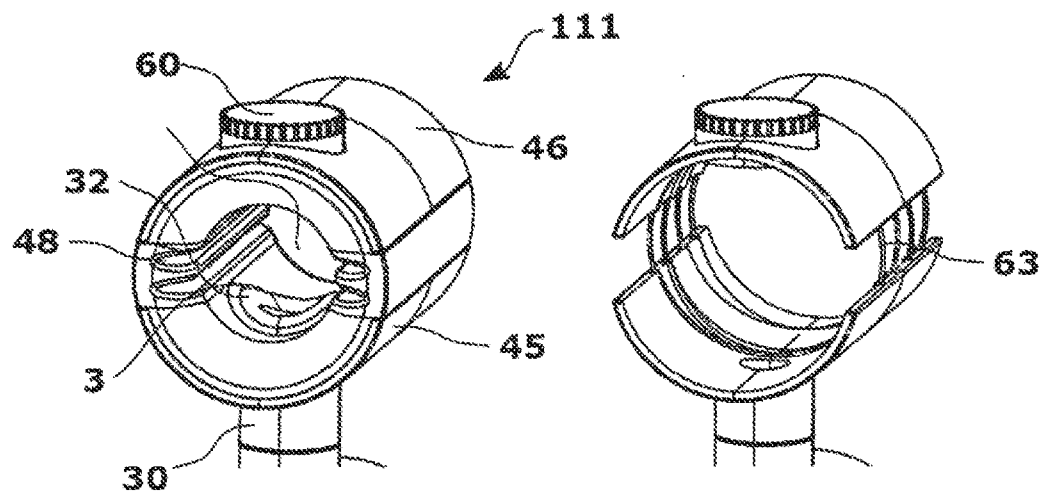


FIG. 20

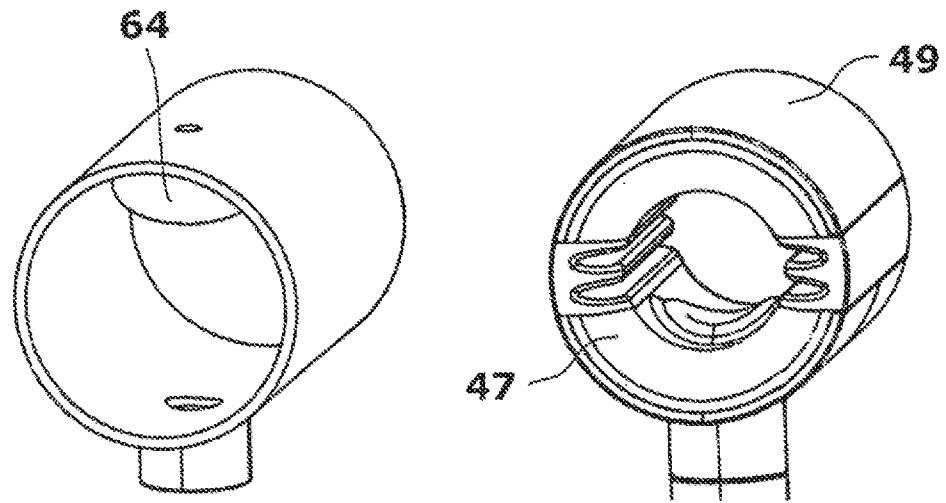


FIG. 21

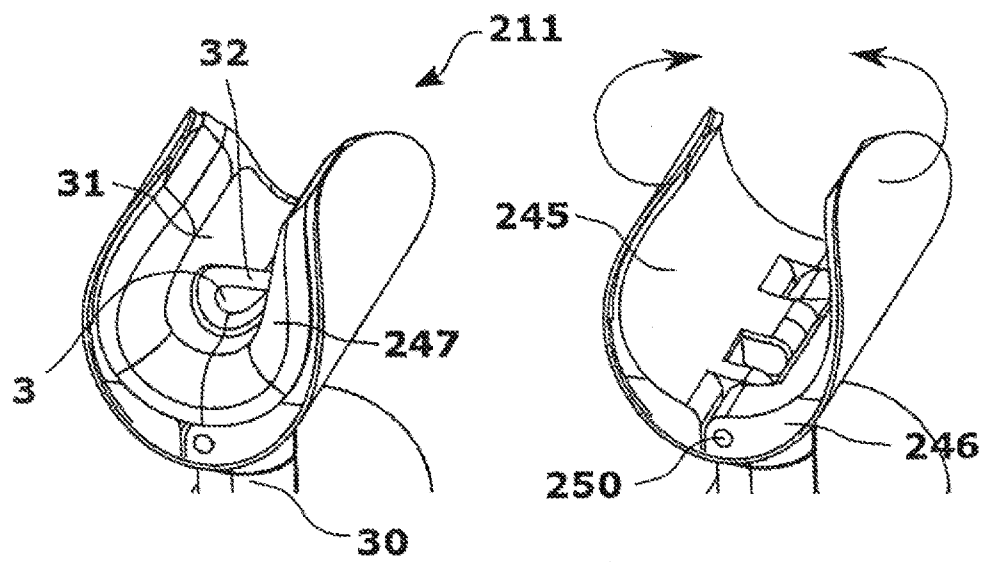


FIG. 22

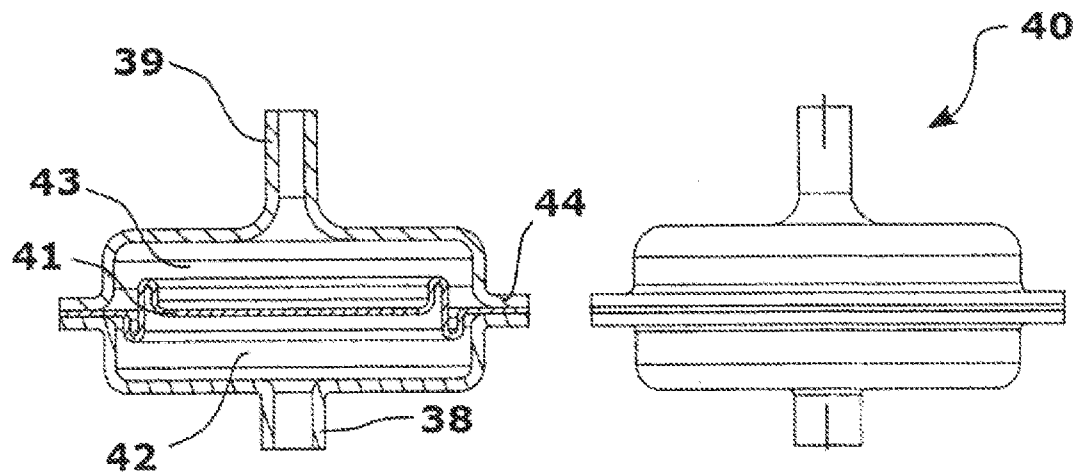


FIG. 23

