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(54) **Flexible Ring Pessary**

Flexibler Ringpessar

Pessaire annulaire souple

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Description

[0001] The present disclosure relates to an apparatus for determining at least one parameter in the vaginal channel of a user, in particular for determining ovulation in woman.

Introduction and related art

[0002] Fertility is one of the most important health care aspects in the society. Fertility and fecundity are associated with several factors such as psychological, environmental and chemical factors. The increasing influence of environmental factors and knowledge about the associated risks to such factors are leading to a growing need for methods by which the fertility of the population can be assessed without significant encroachment of the personal circumstances of test persons. The lack of available methods for fertility screening for women is referenced in Reproduction Toxicology (1990), Vol. 4, Pages 1-2. Measurement methods for the evaluation of the menstrual cycle and fertility of women are much needed that will not encroach on their daily routines.

[0003] Determining fertility either for family planning or for contraception is a critical approach of the female health care system and precise determination of ovulation is required. So far, some indirect methods to determine the ovulation in women are based on serum hormone levels or measurement of the basal body temperature. The method using serum hormone levels is reliable but the wide employment of laboratory diagnostic methods that are required for these measurements in urine leads to substantial costs. Otherwise, a postovulatory rise in the temperature of about 0.5°C (+/- 0,1 °C) has been documented in the evaluation of the course of the menstrual cycle. This temperature rise is due to the circadian variations of the body core temperature amount to $\pm$ 0.5 °C.

[0004] DE 3223657 C1 and DE 19524966 A1 describe a measurement of the temperature with an apparatus worn on the wrist of a user. The described devices are able to save the data values and to determine the ovulation. These methods and devices exhibit the following practical disadvantages: low reliability due to the disruptive influences of the ambient temperature. Additionally, these methods measure basal body temperature measured after waking-up in the morning. The experience with these methods has demonstrated a low efficacy of the data values considering the irregular daily routines of many patients.

[0005] The disruptive influences are avoided by measuring core body temperature in the vaginal canal. DE 9215558 U1 describes a device for measuring the basal body temperature in the vaginal canal which telemetrically transmits the collected data to an external memory medium.

[0006] A sensor that is connected to a processor which samples and stores the temperature data for determination of the ovulation condition is described in EP 0667118A1 and in DE 3211573A1. The basal body temperature in the vaginal canal of a user is determined and then transferred over a cable to an external memory unit.

[0007] US 5209238 describes a multi-sensor for ovulation monitoring positioned in the vaginal canal and thereby allows the measurement of LH concentration, pH value and density of vaginal secretion as well as the basal body temperature. An ovulation predictor based on redox potential in vaginal secretion is described in US 4753247. Likewise, US 4498481 describes an electrical conductivity of vaginal secretion detector. In US 4827946, a ring-formed pessary with polarized electrodes is suggested for contraception that would impede the advancement of male germs via the build-up of an electrical field.

[0008] Devices described above that can be placed in the vaginal canal (US 5209238, US 4577640 and US 4498481), although they avoid the disruptive influences, are non-comfortable for patients. Their form and size are not suitable for long-term use, because the flow of secretion is hindered in the vaginal canal. Even in short-term use, devices with inflexible casings (US 4827946) or with a higher weight reduce wearing comfort. Measuring methods that rely on discontinuously ascertained values in urine or in breath can be error-prone, if they are carried out by untrained personnel. Such methods are inherently deficient also in that the measurement interval cannot be selected to be arbitrarily small.

[0009] A medical device suggested for contraception is described in patent US 4292965. This intra-vaginal ring for use as a contraceptive comprised a medical layer to be placed inside the vagina during three weeks. Other intra-vaginal rings for contraception are described in US 4888074 and US 6544546. These intra-vaginal rings are based on the continuous release of a therapeutic agent, such as a hormone.

[0010] Patent DE 199 43 456 B4, which is regarded as the closest prior art, describes a telemetric ovulation monitoring system for women that determine ovulation in a comfortable medical device to be placed in the vagina and the transmission of data values from a sensor located near where the process of ovulation occurs. This ring pessary is placed anterior to the cervix without obstructing the cervix as described. Additionally, this ring pessary comprises a temperature sensor continuously transmitting data values to an external storage device.

[0011] The ring pessary presented in DE 199 43 456 B4 is a device for ovulation monitoring in women in such a manner, that it will be possible to reliably and confidently assess women's menstrual cycles in individual cases as well as in routine controls in a cost-effective manner. There is no equipment or devices that must be worn externally on the body. This ring pessary can be placed for up to 6 months. While this ring pessary is working very reliable over long time periods, the ring pessary changes optical appearance over time which is not accepted by some of the users.

[0012] The measurement system inside the ring pessary of DE 199 43 456 has to be tightly encapsulated and the ring pessary is used as a seal. The measurement system has to be exactly positioned inside the ring pessary during the manufacturing process requiring complex, precise and cost intensive manufacturing, wherein high pressures are required for encapsulation, this fact increases the likelihood to damage the ring during the manufacturing process.

[0013] The disclosure of WO 99/22680 describes a ring pessary for treatment of uterine prolapse and incontinence. The pessary comprises a cartridge that can be loaded in annular peassary for releasing drugs.

[0014] US 4,667,967 describes an intravaginal anchoring device for animals with an elongated body and expandable flanges.

[0015] US 4,377,157 describes a spider type intravaginal device for treatment of animals.

[0016] It is an object of the present invention to overcome at least some of the disadvantages of prior art.

Summary of the invention

[0017] The present disclosure suggests an apparatus for determining at least one parameter in the vaginal channel of a user. The apparatus comprises a flexible pessary and a measurement unit comprising at least one sensor for measuring the at least one vaginal parameter. The measurement unit is reversibly mountable to the flexible pessary. The flexible pessary ensures a high comfort and a high standard in terms of microbiological quality for the user and an easy insertion and removal from the vaginal channel. The reversibly mountable measurement unit makes it possible to re-use the measurement unit while the flexible pessary can be exchanged. It is also possible to replace a measurement unit while reusing the flexible pessary. The positioning of the measurement unit in the flexible pessary can be done after manufacture of the pessary and the measurement unit, which can be done in separate assembly and manufacturing steps.

[0018] The present disclosure also suggests a corresponding flexible pessary and a corresponding measurement unit.

[0019] The flexible pessary may have a substantially annular shape. The annular shape ensures save positioning and high comfort to the user when placed in the vaginal channel. The flexible annular pessary or ring pessary can be reversibly deformed by a user for easy and convenient placement in the vaginal channel. Insertion and removal or replacement in the vaginal channel can be done by user and no specific training is required. The flexible pessary may comprise a measurement unit receiving section in a section of the substantially annular shape for receiving and holding the measurement unit.

[0020] The measurement unit receiving section may comprise a socket for receiving the measurement unit in a section of the substantially annular shape. The measurement unit receiving section may comprise an opening in the substantially annular shape, wherein the opening or hole may substantially correspond to the dimension and/or shape of the measurement unit. This allows a precise and tight position of the measurement unit in the flexible pessary.

[0021] The measurement unit receiving section may be made from the flexible material of the pessary and may form a press fit for affixing the measurement unit. For example the shape of the socket and the dimension of the opening may somewhat smaller than the measurement unit and the opening of the flexible pessary is stretched around the measurement unit to fixedly hold the measurement unit in the pessary.

[0022] The socket may further comprise one or two lips or rims at the edges of the opening to fixedly hold the measurement unit in the opening 23. Alternatively or in addition the socket may comprise a rib or a raised portion that may be engaged with a groove in the housing of the measurement unit to keep the measurement unit inside the opening.

[0023] The flexible pessary may be made from a polymeric material. The polymeric material may be deformable by hand and may reversibly return to its initial annular shape after deformation. The measurement unit may comprise a substantially rigid housing. The rigid housing protects and covers the at least one sensor and optionally an energy source, a memory and further electronics required or desired for determining, storing and transmitting the determined parameters.

[0024] The present disclosure also suggests a method for determining at least one parameter in the vaginal channel of a user. The method comprises mounting a measurement unit comprising at least one sensor to a flexible pessary, placing the flexible pessary with the measurement unit in the vagina and determining the at least one parameter.

[0025] After use, the flexible pessary with the measurement unit can be removed from the vagina for readout or for replacement. The measurement unit can be removed or detached from the flexible pessary. The separated measurement unit can be placed in a reading device or the flexible pessary with the measurement unit can be read out.

[0026] After removal of the measurement unit from the flexible pessary, the measurement unit can be cleaned and inserted into a new flexible pessary for further use. No cleaning of the flexible pessary is required as a new pessary can be used each time. Cleaning of the sealed measurement unit can be easily done and the measurement unit can be reused as long as desired.

[0027] The determining the at least one parameter may comprise repetitively measuring the at least one parameter in pre-determined time intervals or continuously measuring the at least one parameter and storing a representation of the measured at least one parameter in a memory of the measurement unit. The repetitive measuring or the continuous measuring can be continued as long as desired and the parameter can be recorded over

time. If the at least one parameter is the temperature, circadian, circa-menstrual and/or circa-annual temperature curves can be determined. The repetitive measuring or the continuous measuring may be continued for at least 24 hours, the exact basal temperature can be directly determined. No estimation or evaluation is necessary. The repetitive measuring or the continuous measuring may be continued for several days, weeks or even months and a precise body temperature curve over one or more menstrual cycles of a woman can be determined.

[0028] Repeating measuring in intervals of about 1 minute to about 20 minutes gives sufficiently reliable temperature data. Intervals of about 5 minutes may be used.

Description of the figures

[0029] The invention may be better understood when reading the detailed description of examples of the present disclosure which is given with respect to the accompanying figures in which:

Figs. 1a to c show an assembled apparatus from three different perspectives;
Fig. 2a to e show the flexible ring pessary of Figure 1 without measurement unit in different perspectives;
Figs. 3a to d show the measurement unit removed from the apparatus; and
Fig. 4 shows a flow chart of a method according to the present disclosure.

Detailed description

[0030] Examples of the present disclosure will now be described in more detail. It is to be understood that the described examples and the examples shown in the figures are purely illustrative and a person skilled in the art will amend the examples according to specific requirements. It is not necessary to implement all features shown in the examples and a person skilled in the art will combine features shown with respect to one figure with examples shown in other figures.

[0031] Figures 1a b and c show an apparatus 2 from different perspectives that can be used for measuring at least one parameter inside the vaginal channel of a woman. The apparatus 2 comprises a ring pessary 20 and a measurement unit 10 wherein the measurement unit 10 is releasably and/or reversibly affixed or mounted to the ring pessary 20.

[0032] The measurement unit 10 contains in this example the at least one sensor, a transmitter unit and optionally a memory and/or an energy source for measuring, storing and transmitting at least one parameter measured in the vaginal channel. The electronic components that can be used in such a measurement unit of a ring pessary are known in the art, for example from DE 199 43 456 and DE 1030450282. The at least one parameter may comprise one or more of the temperature, LH concentration, pH value, density of vaginal secretion or others. The apparatus enables the measurement of these parameters directly in the vaginal channel. It is noted that the terms vagina and vaginal channel are used as synonyms herein.

[0033] When the ring pessary 20 is placed in the vaginal channel of the women, one or more temperature measurements can be taken. The temperature measurements inside the vagina represent the actual core body temperature and a therefore much more precise than a temperature measurement taken at the skin or elsewhere at the body. The measurement unit 10 may have a memory for storing a plurality of temperature measurements. This allows a continuous circadian, circa-menstrual, and/or circa-annual monitoring of the core body temperature. A continuous monitoring may comprise taking a temperature measurement every second, minute, or every 5, 10 or 20 minutes or in any other time interval. The core body temperature usually alters in a time scale of minutes to hours and measurements every minute or every 5 minute have been shown to deliver a precise representation of the temperature changes of the core body temperature over time. The measurements can be taken 24 hours a day, seven days a week without any interruption and are only limited by readout intervals or by the lifetime of the battery in the measurement unit. The temperature and the time and date of the measurement and optionally additional data may be stored in the memory for later readout. This continuous measurement enables the direct measurement of the basal temperature as well as a determination of the time when the body of the user is at the basal temperature. No estimation of calculation has to be done.

[0034] The housing of the measurement units 10 is sealed and may be made from a watertight or water-proof material. If necessary for the measurement, one or more measurement openings or windows can be provided in the housing. The housing is made from a rigid material. For example, a ceramic materials, metals or rigid polymeric material may be used. The measurement unit 10 has no electrical connections such as wires or plugs. The measured parameters or data are transmitted via a wireless transmission to an external receiver. The measurement unit 10 may also contain a memory for storing the measured data and the data may be transmitted in predetermined time-intervals. All electronic components are arranged inside the measurement unit 10.

[0035] The measurement unit 10 and the ring pessary 20 made from different materials and are separate elements that can be manufactured independently from each other. The measurement unit 10 and the ring pessary 20 have, however, a corresponding shape such that the measurement unit 20 can be repeatedly and reversibly mounted to and removed from the ring pessary 20. The measurement unit 10 may last for extended time periods and the maximum use time of the measurement unit 10 merely depends on the life time of the energy source. State of the art batteries allow the use of a meas-

urement unit 10 for several months or longer.

[0036] A user may, however, want to replace the polymeric ring pessary 20 from time to time. The apparatus 2 can then be removed from the vagina, for example during bleeding. The measurement unit 10 can be easily removed from the flexible ring pessary 20 and a new ring pessary can be mounted to the measurement unit 10 to reuse and reinsert the measurement unit 10. The removal and the mounting of the measurement unit is easy to handle and can be done by the user herself. No specific trained personnel is required.

[0037] The ring pessary 20 may be made from a flexible polymeric material to ensure safe and comfortable positioning to the user when placed anterior to the cervix without obstructing the cervix. The term flexible means that the flexible ring pessary can be deformed by hand. Deformation allows bringing the flexible ring to a more compact form allowing convenient and easy insertion into the vaginal channel. The flexible ring pessary is stable in from dimensionally stable and returns to its original annular shape after deformation. The ring pessary can thus be fixed in the vaginal channel.

[0038] The ring pessary 20 does not contain any electronics, wiring or sensors.

[0039] The ring pessary 20 may additionally contain a compound or substance that is released into the vagina. This may be an additional feature that may be added when desired but this is not required for measuring the temperature or any other parameter by the measurement unit 10. In contrast, the ring pessary 20 may be made from a material that is not open for diffusion and cannot release any drugs or therapeutic agents.

[0040] The ring pessary 20 has a substantially annular shape 22. A section of the ring pessary 20 is formed as a reception 21 for receiving the measurement unit 10. Despite the reception 21 the ring pessary 20 has the annular shape 22 with a substantially uniform radius and thickness.

[0041] Figs. 2a to e show the ring pessary 20 of Fig. 1 without measurement unit 10 from different perspectives.

[0042] The ring pessary 20 has a substantially annular form 22 and a measurement unit receiving section 21. The measurement unit receiving section comprises a socket 21 for the measurement unit 10 and is designed to position and fixedly support and hold the measurement unit in place. The socket 21 comprises an opening 23 in the ring pessary 20. The opening 23 corresponds substantially to the shape and dimension of the measurement unit 10. In this way the ring pessary 20 and the measurement unit 10 can be manufactured separately and can be assembled easily. No specific technical skills are required.

[0043] The dimensions of the opening 23 may, however, are chosen to be somewhat smaller than the dimensions of the measurement unit 10 to hold the measurement unit tightly in the flexible ring pessary 20. The flexible material may be used for clamping the measurement unit in the socket opening 23. The socket 21 may further comprise a lip 24 at one or both sides forming an edge of the opening 23. The lips 24 are made from the flexible material of the ring pessary and are integrally formed. The lips 24 may be used to fixedly hold the measurement unit 10. In the example shown, no specific fixation means such as screws, glue or their like are necessary. However, different ways to fix the measurement unit to the ring pessary 20 may be considered. In addition or alternatively to the lips a ridge or rib 25 is provided in the opening. The ridge 25 may engage with a corresponding groove 12 in the measurement unit 10, when the measurement unit is affixed to the ring pessary 20. The ridge 25 is made from the flexible material and is integrally formed in the ring pessary 20.

[0044] The pessary ring 20 and the measurement unit 10 have a substantially crack-free, edge-free and corner-free shape. This ensures wearing comfort for the user and can avoid infectious agents like bacteria or fungus.

[0045] The ring pessary 20 shown in the figures is integrally formed from a single piece made from one material. A polymeric material may be used. For example, at least one of rubber, latex, LDPE (low density polyethylene) and/or an ethylene-vinyl acetate-copolymer or others may be used. As one example a polymeric material sold under the trademark "flexaren" may be used as polymeric material ethylene-vinyl acetate-copolymer. A copolymer having an ethylene-vinyl acetate portion of about 1 to 40 %, or preferably about 10 to 25 % may be used. The flexible material may have a hardness of Shore type A of about 75 to 90, in particular about 82 to 87, and of Shore type D of about 20 to 40 in particular of about 25 to 35. The flexible material may have a tensile strength of about 5 to 15 MPa, for example 10 MPa. The above parameters have been found to provide and optimized easy and safe positioning of the pessary and a safe, but releasable fixation of the measurement unit in the pessary. Other flexible materials with different or similar properties, however, may be used allowing a reversible deformation of the ring pessary 20 into a compact shape allowing easy insertion/removal in the vaginal channel. The flexibility increases the wearing comfort for the user. Furthermore the flexibility of the material allows removably attaching and securing the measurement unit 10 to the reception section of the ring pessary 20. The material should be dimensionally stable and recover its original annular shape after deformation. The flexible material does not contain any electronics, batteries or the like, which are all arranged in the measurement unit 10.

[0046] The ring pessary may have a diameter of 50 to 60 mm and the thickness of the ring parameter may be in the range of a few millimeters.

[0047] Figs 3a to d show the measurement unit 10 removed from the apparatus 2 of Figure 1. The measurement unit 10 comprises a rigid housing 11 in which all sensors and all electronics are arranged, for example one or more temperature sensors, a memory, a controller, an energy source (battery) and a radio frequency transmitter or transceiver are arranged and sealed inside

the measurement unit. The rigid housing is made from a rigid material, as for example ceramics, metals or rigid polymeric material. The rigid measurement unit 10 is sealed and can therefore well protect the electronics and the battery from the body of the user and vice versa.

[0048] The rigid housing 11 of the measurement unit 10 comprises a groove 12. The groove 12 may come into mutual contact with the ridge 25 of the ring pessary 20 when the measurement unit 10 is mounted to the ring pessary 20.

[0049] The apparatus described above may be advantageously used over a long time period wherein the ring pessary 20 is replaced from time to time while the measurement unit 10 can be reused for a longer time period. For example, the ring pessary 20 can be exchanged during or after the bleeding of menstruation. In this way, the measurement unit 10 can be used over a longer period while keeping the system hygienic and user friendly.

[0050] Data comprising representations of the parameters measured by and stored in the memory of the measurement unit 10 may be read when the measurement unit 10 is removed from the vagina. The measurement unit 10 can be removed from the flexible pessary 20 and the measurement unit 10 may be placed in or in proximity of a reader for transmission of data stored in the memory of the measurement unit 10 to the reader. In one example, the measurement unit 10 remains in the pessary during transmission of the data. In another example, the flexible pessary with the measurement unit may remain in the vagina when transmitting the data to a reader. Reading out the data may comprise radio frequency transmission from the measurement unit 10 to the reader.

[0051] It is also possible to maintain the ring pessary 20 and to exchange the measurement unit 10 by a different measurement unit, for example if different parameters are to be measured or if maintenance of the measurement unit 10 is required.

[0052] The apparatus 2 also enables a save, simple and easy positioning of the measurement device 10 in the ring pessary 20. The positioning is also cost efficient as there is no need to place the measurement unit 10 inside the polymeric material of the ring pessary 20.

[0053] An electronically controlled drug release system may also be considered.

Claims

1. An apparatus (2) for determining at least one parameter in a vaginal channel, the apparatus (2) comprising:

   - a flexible pessary (20) having a substantially annular shape, and
   - a measurement unit (10) comprising at least one sensor for measuring the at least one parameter in the vaginal channel,

   characterized in that
   the measurement unit (10) is reversibly mountable to the flexible pessary (20).

2. The apparatus (2) of claim 1, wherein the flexible pessary (20) comprises a measurement unit receiving section (21) in a portion of the substantially annular shape.

3. The apparatus (2) of claim 2, wherein the measurement unit receiving section comprises a socket (21) for receiving the measurement unit (10) in the portion of the substantially annular shape.

4. The apparatus (2) of claim 2 or 3, wherein the measurement unit receiving section (21) comprises an opening (23) in the substantially annular shape, wherein the opening (23) corresponds substantially to the dimension and/or shape of the measurement unit (10).

5. The apparatus (2) of any one of claim 2 to 4, wherein the measurement unit receiving section (21) comprises a press fit for affixing the measurement unit (10).

6. The apparatus (2) of any one of the preceding claims, wherein the measurement unit (10) comprises a substantially rigid housing (11).

7. The apparatus (2) of any one of the preceding claims, wherein the at least one sensor is a temperature sensor.

8. A flexible pessary (20) with a substantially annular shape, wherein the flexible pessary comprises a measurement unit receiving section comprising a socket for receiving a measurement unit (10) in a section of the substantially annular shape, **characterized in that**
   the socket comprises at least one lip at an edge of an opening of the socket for reversibly mounting said measurement unit (10).

9. The flexible pessary (20) of claim 8, wherein the socket comprises a rib for keeping the measurement unit inside the opening.

10. The flexible pessary (20) of any one of claim 8 to 9, wherein the measurement unit receiving section comprises a press fit for holding the measurement unit.

11. The flexible pessary (20) of claim 10, wherein the socket and the pessary are made from a flexible polymeric material.

Patentansprüche

1. Vorrichtung (2) zur Bestimmung von zumindest einem Parameters in einem Vaginalkanal, wobei die Vorrichtung (2) umfasst :

   - ein flexibles Pessar (20), welches eine im Wesentlichen ringförmige Form aufweist, und
   - eine Messeinheit (10), welche zumindest einen Messfühler zum Messen des zumindest einen Parameters in dem Vaginalkanal aufweist,

   dadurch gekennzeichnet, dass
   die Messeinheit (10) reversibel an dem flexiblen Pessar (20) anordenbar ist.

2. Vorrichtung (2) gemäß Anspruch 1, wobei das flexible Pessar (20) einen Aufnahmeabschnitt (21) für die Messeinheit in einem Abschnitt der im Wesentlichen ringförmigen Form aufweist.

3. Vorrichtung (2) gemäß Anspruch 2, wobei der Aufnahmeabschnitt für die Messeinheit eine Aufnahme (21) zum Aufnehmen der Messeinheit (10) in dem Abschnitt der im Wesentlichen ringförmigen Form aufweist.

4. Vorrichtung (2) gemäß Anspruch 2 oder 3, wobei der Aufnahmeabschnitt (21) für die Messeinheit eine Öffnung (23) in der im Wesentlichen ringförmigen Form aufweist, wobei die Öffnung (23) im Wesentlichen der Dimension und/oder der Form der Messeinheit (10) entspricht.

5. Vorrichtung (2) gemäß einem der Ansprüche 2 bis 4, wobei der Aufnahmeabschnitt (21) für die Messeinheit einen Presssitz zum Halten der Messeinheit (10) aufweist.

6. Vorrichtung (2) gemäß einem der vorangehenden Ansprüche, wobei die Messeinheit (10) ein im Wesentlichen starres Gehäuse aufweist (11).

7. Vorrichtung (2) gemäß einem der vorangehenden Ansprüche, wobei der zumindest eine Messfühler ein Temperatursensor ist.

8. Flexibles Pessar (20) mit einer im Wesentlichen ringförmigen Form, wobei das flexible Pessar einen Aufnahmeabschnitt (21) für eine Messeinheit aufweist, welcher eine Aufnahme zum Aufnehmen der Messeinheit (10) umfasst,
   dadurch gekennzeichnet, dass
   die Aufnahme zumindest eine Lippe an einem Rand einer Öffnung der Aufnahme umfasst um die Messeinheit (10) reversibel anzuordnen.

9. Flexibles Pessar (20) gemäß Anspruch 8, wobei die Aufnahme eine Rippe umfasst um die Messeinheit in der Öffnung zu halten.

10. Flexibles Pessar (20) gemäß einem der Ansprüche 8 bis 9, wobei der Aufnahmeabschnitt für die Messeinheit einen Presssitz zum Halten der Messeinheit aufweist.

11. Flexibles Pessar (20) gemäß Anspruch 10, wobei die Aufnahme und das Pessar aus einem flexiblen Polymermaterial sind.

Revendications

1. Appareil (2) pour déterminer au moins un paramètre dans un canal vaginal, l'appareil (2) comprenant :

   - un pessaire souple (20) ayant une forme sensiblement annulaire, et
   - une unité de mesure (10) comprenant au moins un capteur pour mesurer l'au moins un paramètre dans le canal vaginal,

   caractérisé en ce que
   l'unité de mesure (10) est apte à être montée de façon réversible sur le pessaire souple (20).

2. Appareil (2) selon la revendication 1, le pessaire souple (20) comprenant une portion (21) destinée à recevoir l'unité de mesure dans une partie de la forme sensiblement annulaire.

3. Appareil (2) selon la revendication 2, la portion destinée à recevoir l'unité de mesure comprenant une douille (21) pour recevoir l'unité de mesure (10) dans la partie de la forme sensiblement annulaire.

4. Appareil (2) selon la revendication 2 ou 3, la portion (21) destinée à recevoir l'unité de mesure présentant une ouverture (23) dans la forme sensiblement annulaire, ladite ouverture (23) correspondant sensiblement à la dimension et/ou à la forme de l'unité de mesure (10).

5. Appareil (2) selon l'une des revendications 2 à 4, la portion (21) destinée à recevoir l'unité de mesure présentant un ajustement serré pour apposer l'unité de mesure (10).

6. Appareil (2) selon l'une des revendications précédentes, l'unité de mesure (10) comprenant une enveloppe sensiblement rigide (11).

7. Appareil (2) selon l'une des revendications précédentes, ledit au moins un capteur étant un capteur de température.

8. Pessaire souple (20) ayant une forme sensiblement annulaire, le pessaire souple comprenant une portion destinée à recevoir une unité de mesure qui comprend une douille pour recevoir ladite unité de mesure (10) dans une partie de la forme sensiblement annulaire,
caractérisé en ce que
la douille comprend au moins une lèvre au niveau d'un bord d'une ouverture de la douille pour monter de façon réversible ladite unité de mesure (10).

9. Pessaire souple (20) selon la revendication 8, la douille présentant une nervure pour maintenir l'unité de mesure à l'intérieur de l'ouverture.

10. Pessaire souple (20) selon l'une des revendications 8 à 9, la portion destinée à recevoir l'unité de mesure présentant un ajustement serré pour retenir l'unité de mesure.

11. Pessaire souple (20) selon la revendication 10, la douille et le pessaire étant réalisés à partir d'un matériau polymère souple.

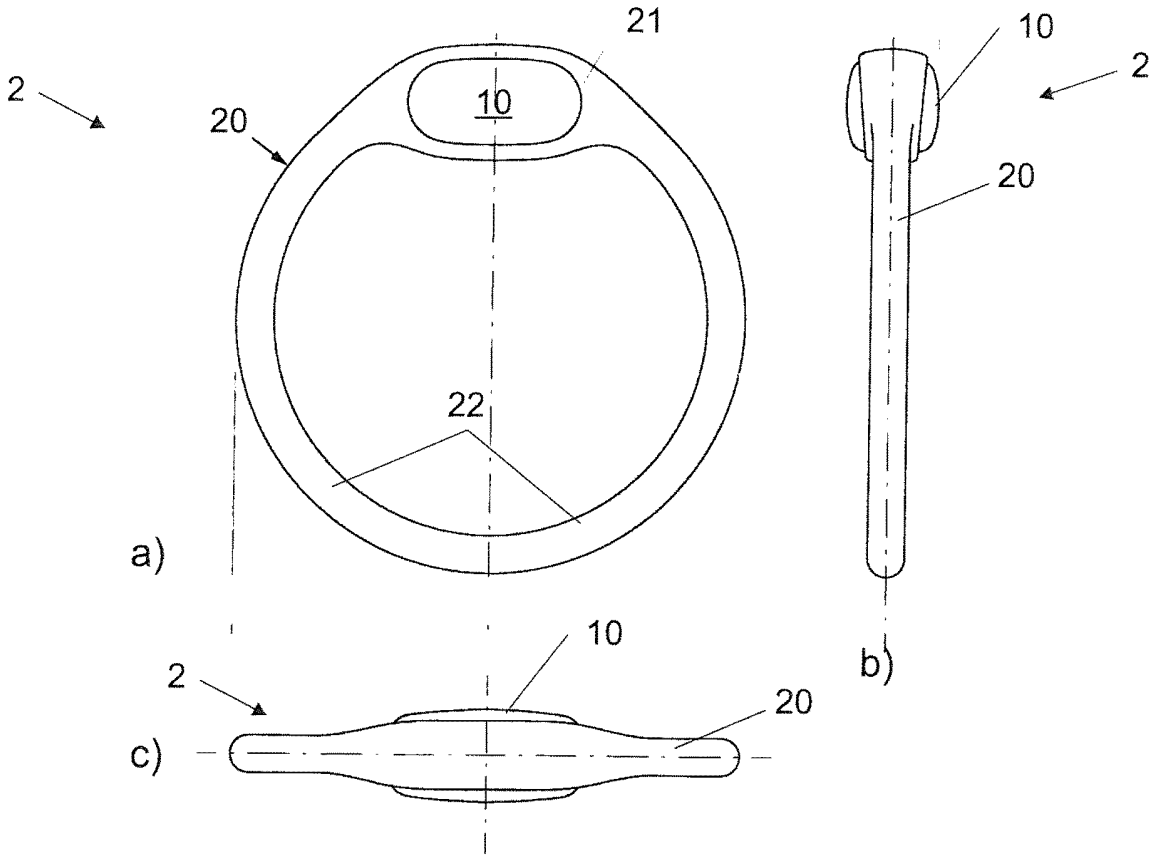

Fig. 1

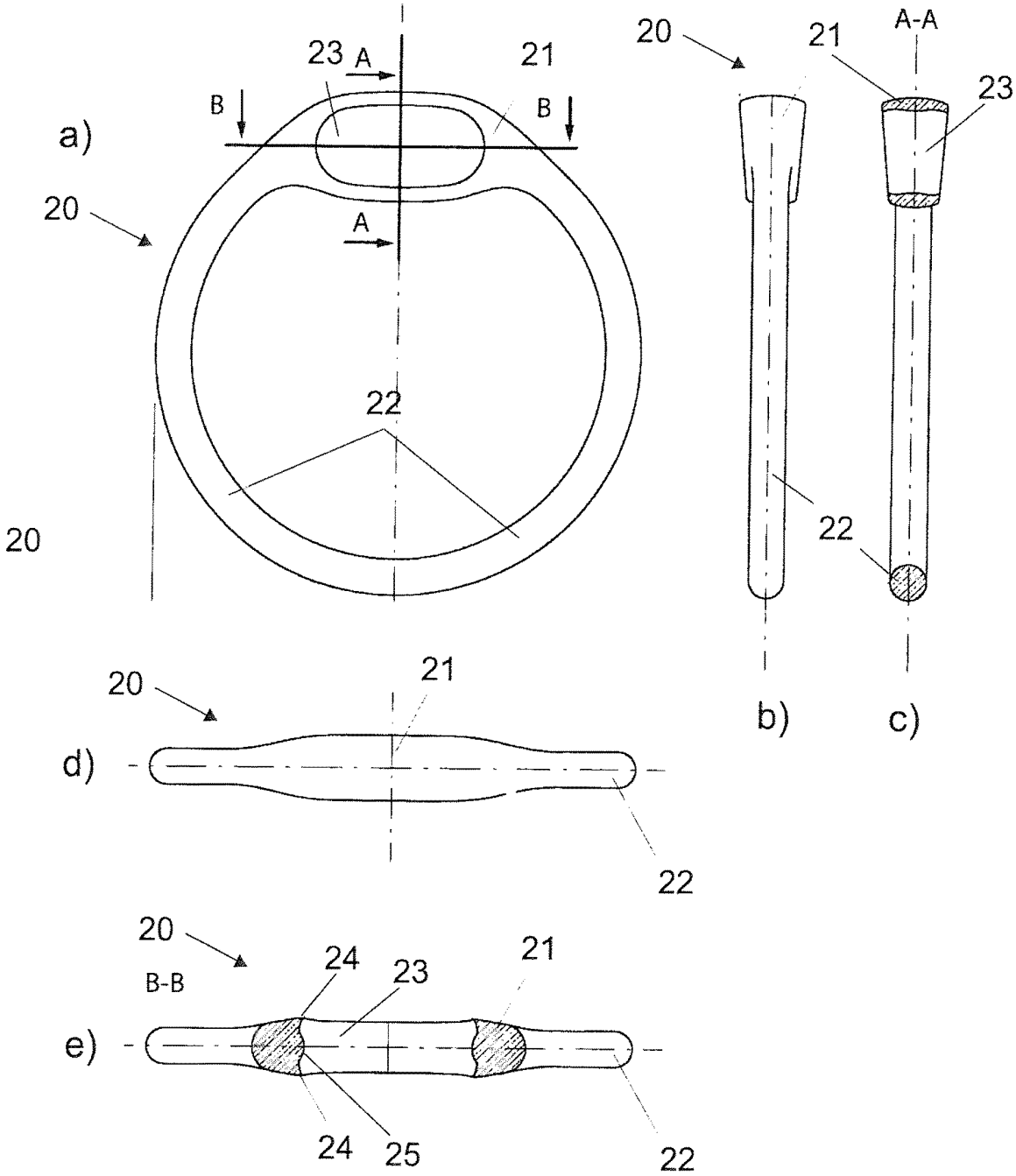
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Fig. 2

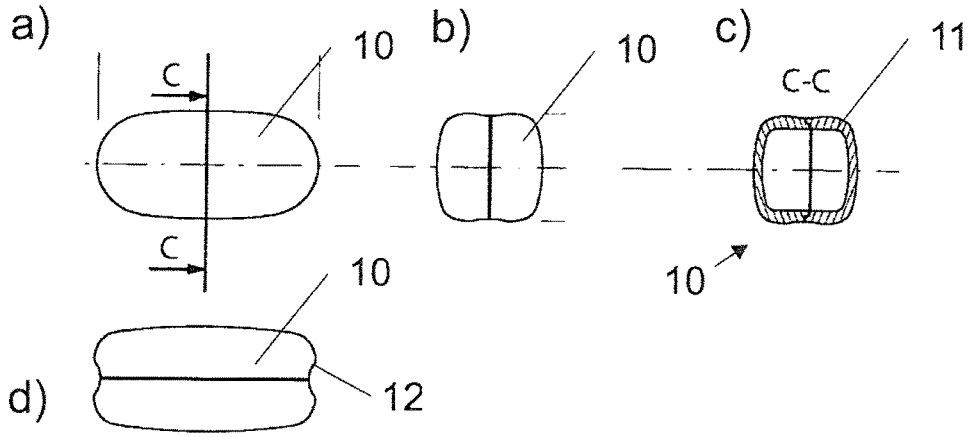

Fig. 3

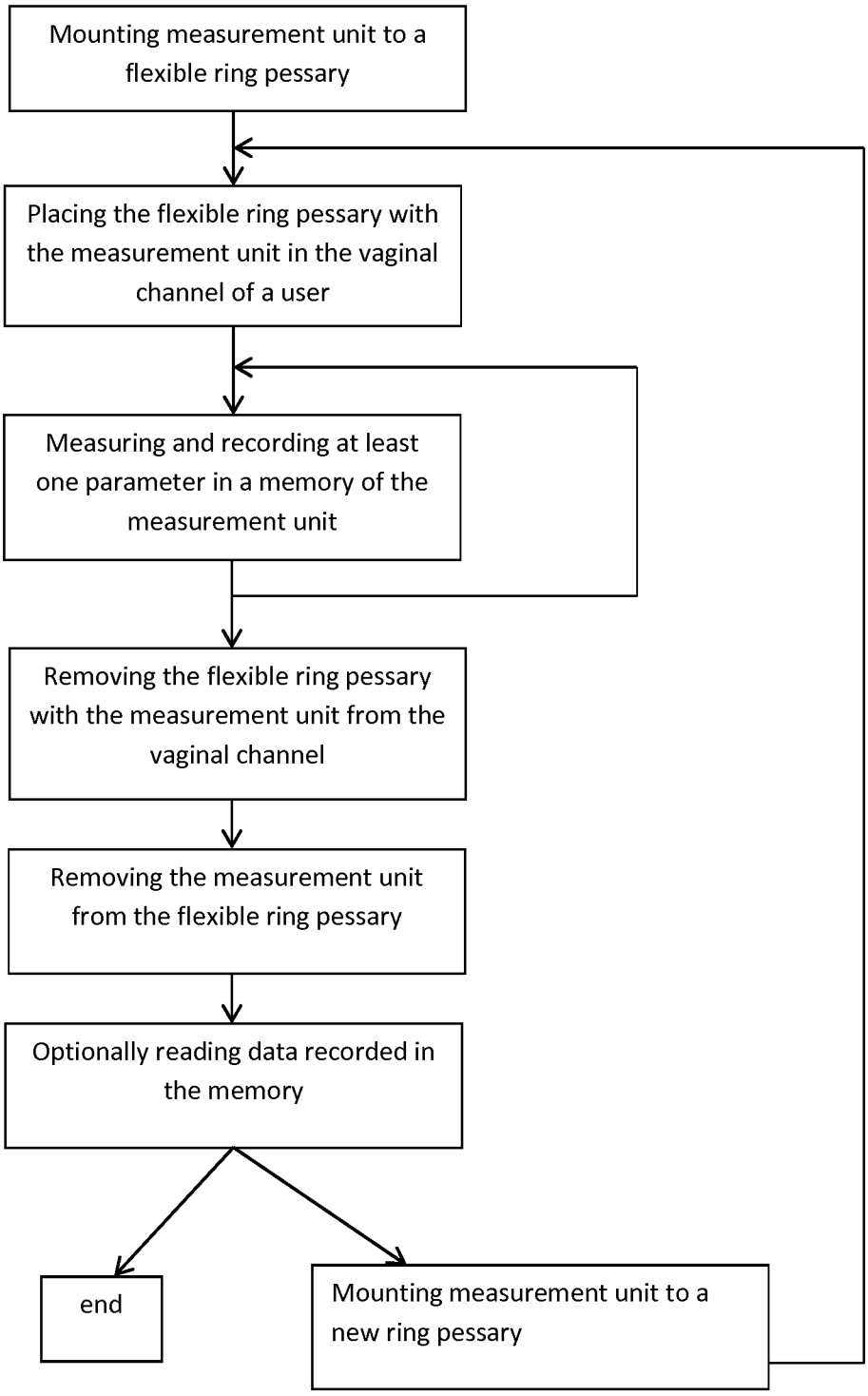
Mounting measurement unit to a flexible ring pessary
Placing the flexible ring pessary with the measurement unit in the vaginal channel of a user
Measuring and recording at least one parameter in a memory of the measurement unit
Removing the flexible ring pessary with the measurement unit from the vaginal channel
Removing the measurement unit from the flexible ring pessary
Optionally reading data recorded in the memory
end
Mounting measurement unit to a new ring pessary

Fig. 4

REFERENCES CITED IN THE DESCRIPTION

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专利名称(译)	灵活的戒指子宫托		
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[标]申请(专利权)人(译)	VIVOSENSMEDICAL		
申请(专利权)人(译)	VIVOSENSMEDICAL GMBH		
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优先权	2011015592 2011-09-09 GB		
其他公开文献	EP2567680A1		
外部链接	Espacenet		

摘要(译)

本公开提出了一种用于确定用户的阴道中的至少一个参数的装置。该装置包括柔性子宫托（20）和测量单元（10），测量单元（10）包括至少一个用于测量至少一个阴道参数的传感器。测量单元可以可逆地安装在柔性子宫托上。

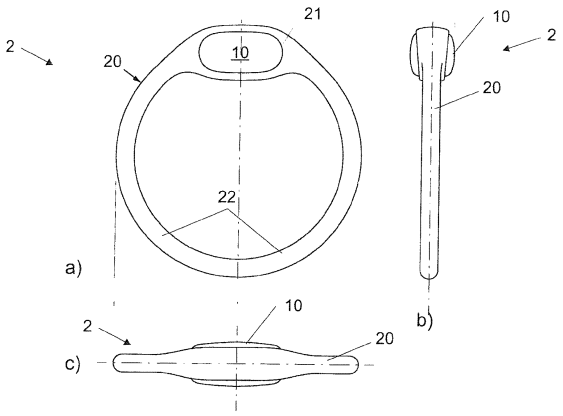

Fig. 1