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Stukanov

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(54) **INTRAVAGINAL DEVICE WITH WIRELESS SENSORS ON A CONTRACEPTIVE BARRIER**

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(51) **Int. Cl.**

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A61F 6/20	(2006.01)
A61B 5/00	(2006.01)
A61B 5/01	(2006.01)

(52) **U.S. Cl.**

USPC **128/830**; 128/832; 128/833; 128/839; 128/841; 600/301; 600/549; 600/587

(58) **Field of Classification Search**

USPC 600/551, 301, 549, 587; 128/844, 128/830–841; 12/551

See application file for complete search history.

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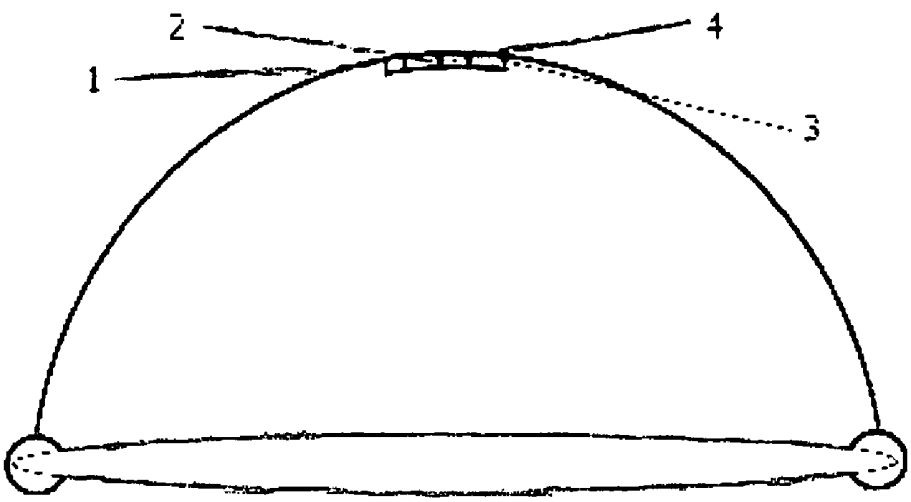
Primary Examiner — Sean Dougherty

(57) **ABSTRACT**

A convenient and highly accurate intravaginal device with wireless sensors for monitoring fertility and sexual health of humans and animals is proposed. Sensors in the intravaginal device measure fertility and sexual health and via wireless transmitter send this information to a terminal on which the information is processed and displayed in convenient form.

5 Claims, 2 Drawing Sheets



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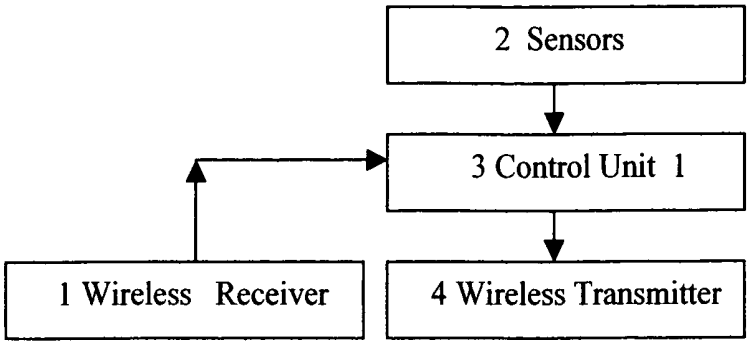

Fig. 1

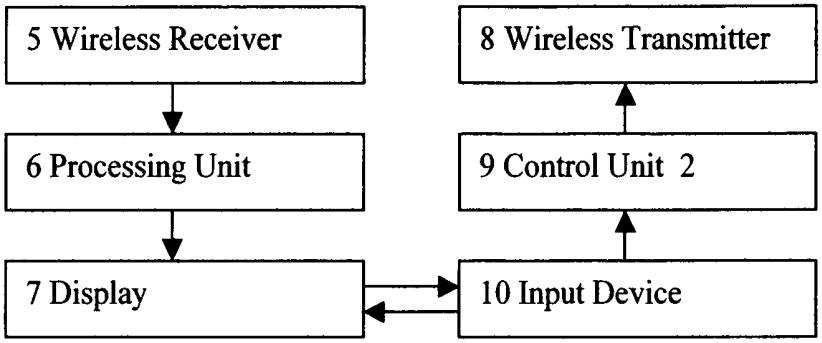

Fig. 2

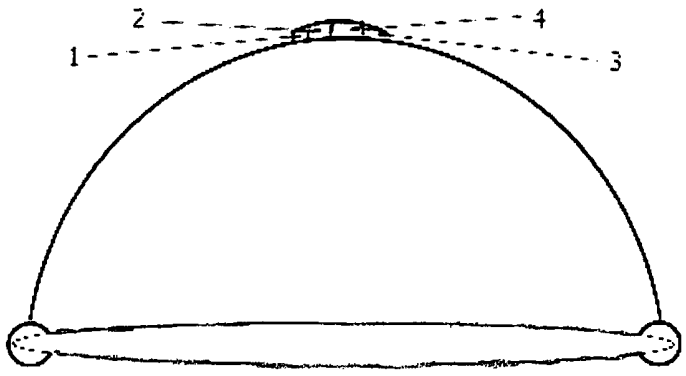

Fig. 3

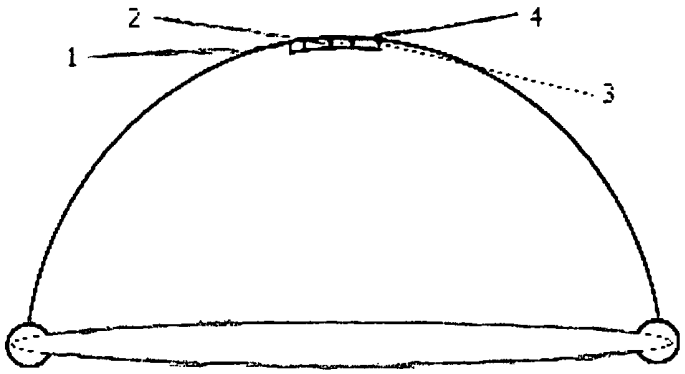

Fig. 4

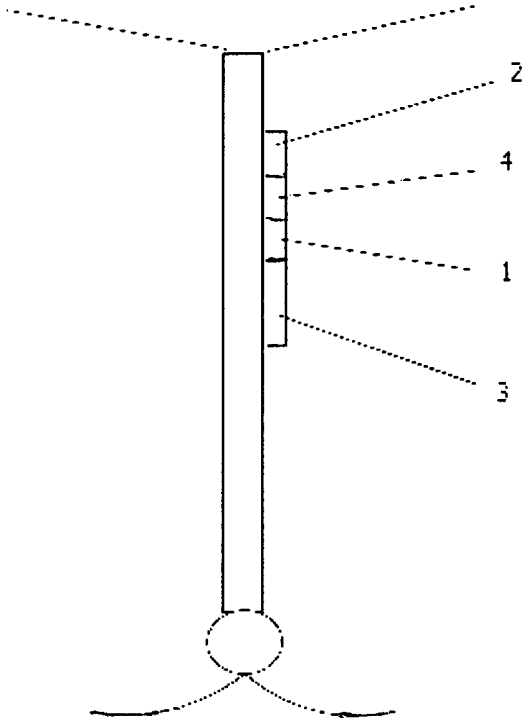

Fig. 5

INTRAVAGINAL DEVICE WITH WIRELESS SENSORS ON A CONTRACEPTIVE BARRIER

CROSS-REFERENCE TO RELATED APPLICATIONS

This application claims priority status of the provisional patent application 61/269,350 filed on Jun. 24, 2009

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

Not Applicable

REFERENCE TO A MICROFICHE APPENDIX

Not Applicable

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to devices for monitoring fertility and sexual health of human and animals.

2. Background Information

Cost of fertility and unwanted pregnancy related problems exceed one trillion of dollars today and continue to rise. Therefore, there is a need for cheap, safe, convenient and accurate methods to monitor fertility and sexual health.

Fertility kits available today are safe and cheap, but they are not convenient because they require taking samples of fluids from a human body every time to measure a fertility level; also they are not very accurate, because they rely not on direct indicators of fertility, but on non-direct indicators, which correlate with direct indicators. The degree of correlation depends on a set of other variables such as environmental impact, stress, diet, emotional condition, etc., which make the measurement of fertility less accurate.

Fertility monitors are more convenient, but they also not accurate for the same reasons as the fertility kits.

The purpose of the current invention is to suggest a device which allow to monitor fertility and sexual health in safe, cheap, convenient way with high accuracy.

BRIEF SUMMARY OF THE INVENTION

An intravaginal device which allow to monitor fertility and sexual health in safe, cheap, convenient way with high accuracy is proposed. The device consists of a contraceptive barrier such as cervical cap or diaphragm with wireless sensors of fertility indicators, a control unit with wireless transmitter and receiver, and a terminal for receiving, processing and displaying information about fertility and sexual health and controlling the device.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

FIG. **1**. A structural scheme of the intravaginal device with wireless sensors

FIG. **2**. A structural scheme of a terminal

FIG. **3**. A design with placement of the device's modules on the internal side of a contraceptive diaphragm.

FIG. **4**. A design with placement of the device's modules on the external side of a contraceptive diaphragm.

FIG. **5**. A design with placement of the device's modules on a contraceptive spiral/IUD.

DETAILED DESCRIPTION OF THE INVENTION

The present invention is directed to device, which allow to monitor fertility and sexual health in safe, cheap, convenient way with high accuracy.

FIG. **1** shows simplified scheme of the device, which include a contraceptive barrier such as cervical cap or diaphragm with wireless sensors of fertility indicators, a control unit with wireless transmitter and receiver.

Sensors on the internal side of the contraceptive barrier monitor female fertility and sexual health by measuring direct and indirect fertility indicators such as ultrasonic or infrared images of follicle collapse with egg release, vaginal temperature, physical and chemical properties of vaginal fluids, concentration of hormones and enzymes, folliculogenesis and other ovarian functions. Also these sensors monitor concentration of antibodies and harmful microorganisms for evaluation of sexual health of the female. Sensors on the external side of the contraceptive barrier monitor fertility parameters of the male's sperm (motility, count, morphology) and concentration of antibodies and harmful microorganisms for evaluation of sexual health of the male.

The information from the sensors is compressed by the control unit and is sent to the terminal via wireless transmitter.

The control unit is responsible for turning on/off and control of the sensors, receiver and transmitter. For example, the control unit may be programmed via the terminal to turn on every morning at 8:00 AM, measure the fertility indicators, compress this information, send it to the terminal and turn off the device till the next morning. With modern technology such cycle can be accomplished in a fraction of a second, therefore the total exposure of female vaginal system to electromagnetic radiation can be less than a second per year. As such technology are becoming better and better this time may be reduced in the future, which will make this device very safe with regards to exposure to electromagnetic radiation.

FIG. **2** shows simplified scheme of the terminal. The terminal receives information from the device via the wireless receiver, processes it by the processing unit according to a proprietary or known algorithm and displays it on the terminal's screen. The terminal may be any portable wireless device such as pc, netbook, notebook, smart phone, mobile phone, ipod, ipad, PDA, etc. The terminal also sends information and instructions to the control unit of the device via the wireless transmitter.

On FIG. **3** it is shown a design of the device where sensors (**2**), control unit (**3**), wireless receiver (**1**) and transmitter (**4**) are placed on the internal side of a contraceptive diaphragm or cap.

On FIG. **4** it is shown a design of the device where sensors (**2**), control unit (**3**), wireless receiver (**1**) and transmitter (**4**) are placed on the external side of a contraceptive diaphragm or cap.

On FIG. **5** it is shown a design of the device where sensors (**1**), control unit (**3**), wireless receiver (**1**) and transmitter (**4**) are placed on a contraceptive spiral/IUD.

The invention claimed is:

1. A device for wireless monitoring of fertility and sexual health of humans and animals comprising:

a female contraceptive barrier;

one or more sensors for measuring female fertility and sexual health, placed on an internal side of said barrier;

one or more sensors for measuring male fertility and sexual health, placed on an external side of said barrier;

a control unit, which turns on and off said device, compresses information from said sensors and sends the information to a terminal for processing the information and displaying results;

a wireless transmitter, where the information sent to the terminal for processing the information and displaying results is performed by the wireless transmitter;

a wireless receiver, where instructions to said control unit are received from the terminal by the wireless receiver.

2. The device as in claim **1**, where one of said sensors is capable of taking ultrasonic images of follicle collapse with egg release.

3. The device as in claim **1**, where one of said sensors is capable of taking infrared images of follicle collapse with egg release.

4. The device as in claim **1**, where one of said sensors is capable of measuring vaginal temperature.

5. The device as in claim **1**, where one of said sensors is capable of measuring concentration of enzymes.

* * * * *

专利名称(译)	在避孕屏障上使用无线传感器的阴道内装置		
公开(公告)号	US8656916	公开(公告)日	2014-02-25
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申请(专利权)人(译)	STUKANOV IGOR伊戈列维奇		
当前申请(专利权)人(译)	STUKANOV，IGOR		
[标]发明人	STUKANOV IGOR IGOREVICH		
发明人	STUKANOV, IGOR, IGOREVICH		
IPC分类号	A61F6/20 A61F6/00 A61B5/01 A61B5/00		
CPC分类号	A61F6/08 A61B2017/00221 A61B5/0008 A61B10/0012		
优先权	61/269350 2009-06-24 US		
其他公开文献	US20100331720A1		
外部链接	Espacenet USPTO		

摘要(译)

提出了一种方便且高度准确的阴道内装置，其具有用于监测人和动物的生育力和性健康的无线传感器。阴道内装置中的传感器测量生育能力和性健康，并且通过无线发射器将该信息发送到以便利的形式处理和显示信息的终端。