US 20080249535A1

(19) **United States**

(12) **Patent Application Publication**

(10) **Pub. No.: US 2008/0249535 A1**

(43) **Pub. Date: Oct. 9, 2008**

Valtchev

(54) **VAGINAL SPRING LOADED DELINEATOR**

(76) Inventor: **Konstantin Lazarov Valtchev**, Toronto (CA)

Correspondence Address:
Konstantin L. Valtchev
Suite 501
233 Beecroft Road
Toronto, ON M2N 6Z9 (CA)

(21) Appl. No.: **12/080,848**

(22) Filed: **Apr. 8, 2008**

Related U.S. Application Data

(63) Continuation of application No. 10/715,104, filed on Nov. 17, 2003, now abandoned.

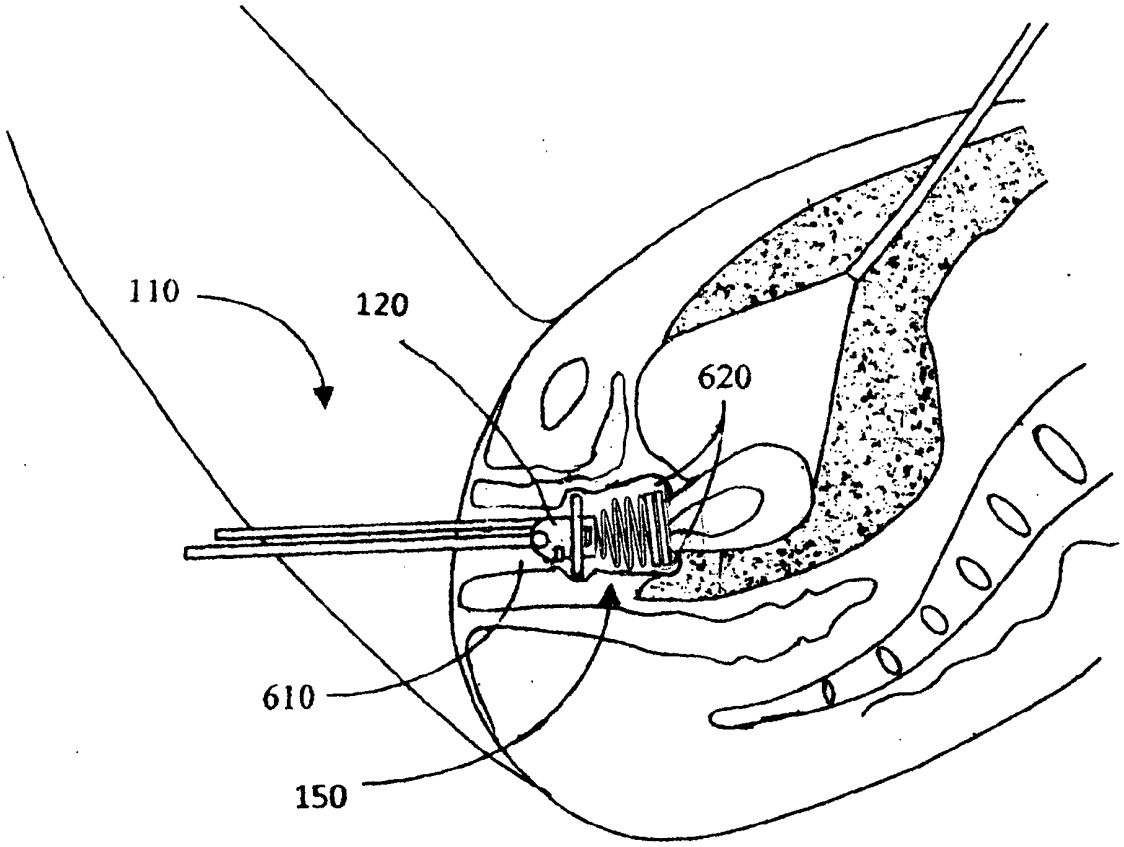
Publication Classification

(51) **Int. Cl.**
A61B 17/42 (2006.01)

(52) **U.S. Cl.** **606/119**

(57) **ABSTRACT**

A gynecological instrument for delineating the formix of the vagina during laparoscopic surgeries having a spring, which proximal end is affixed to a solid ring and the distal end is affixed to a base. The extension of the base can be inserted into the head of the Valtchev® Uterine Mobilizer and locked in place. The solid ring can be tilted in any direction, and can come closer to the base, allowing automatic adjustment for the angles of the formix of the vagina and the cervical length. An elastic plastic ring is provided, for placing on the solid ring, in order to protect the ring and instrument which is used to open the vagina laparoscopically.



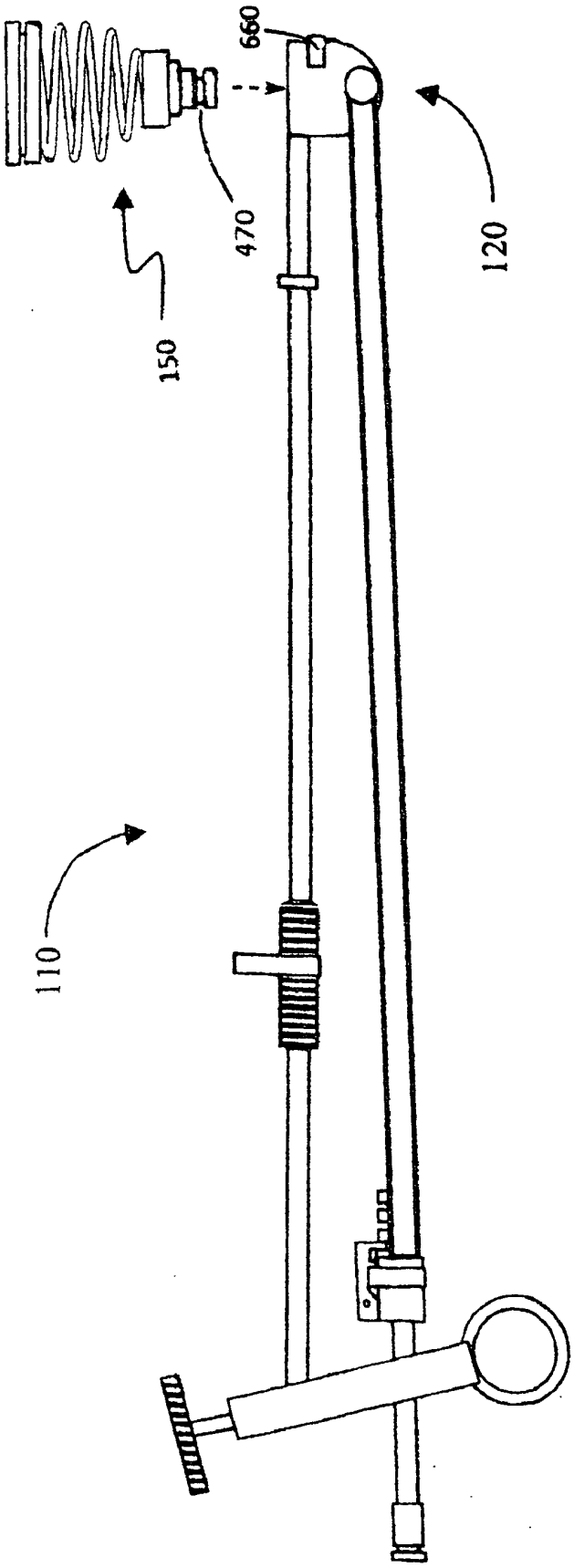


Fig. 1

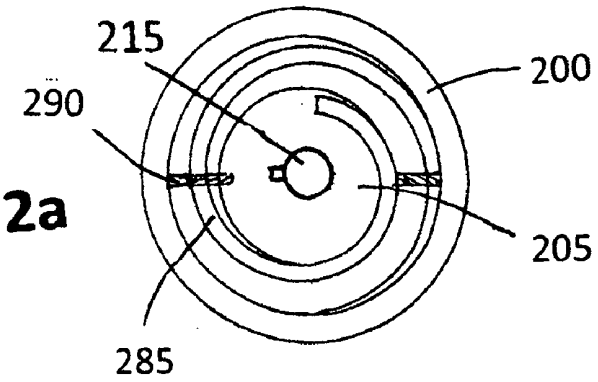


Fig. 2a

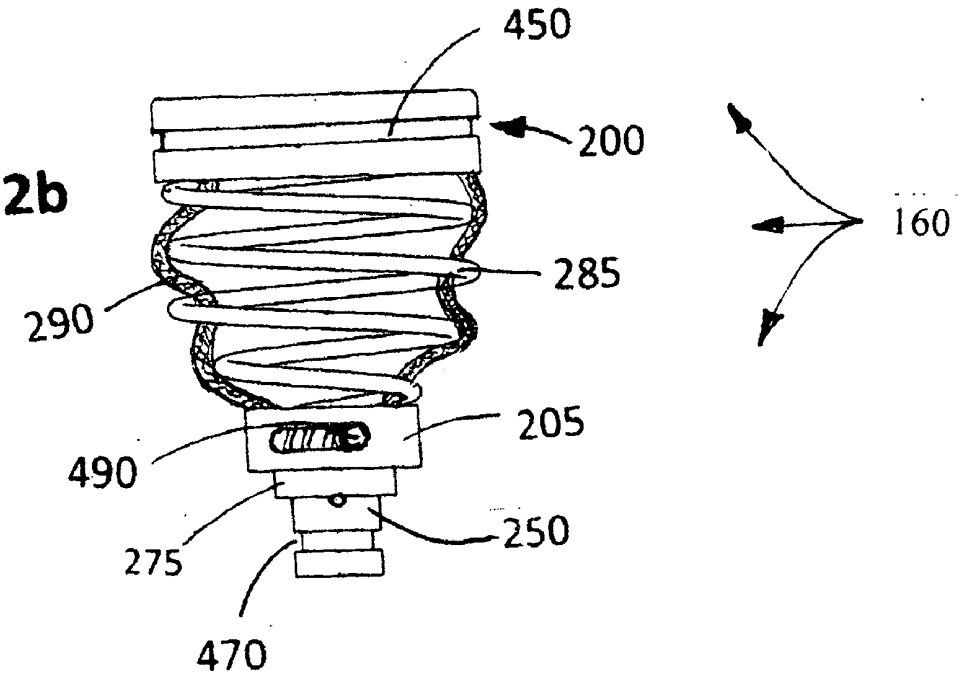


Fig. 2b

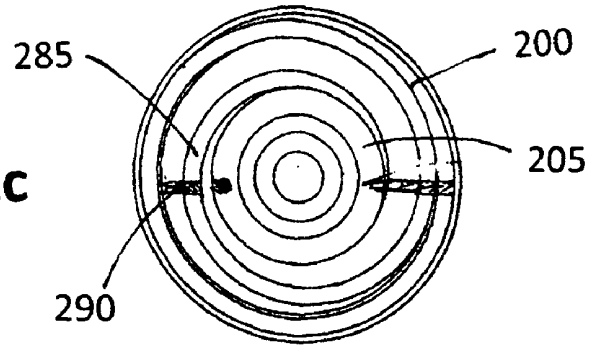
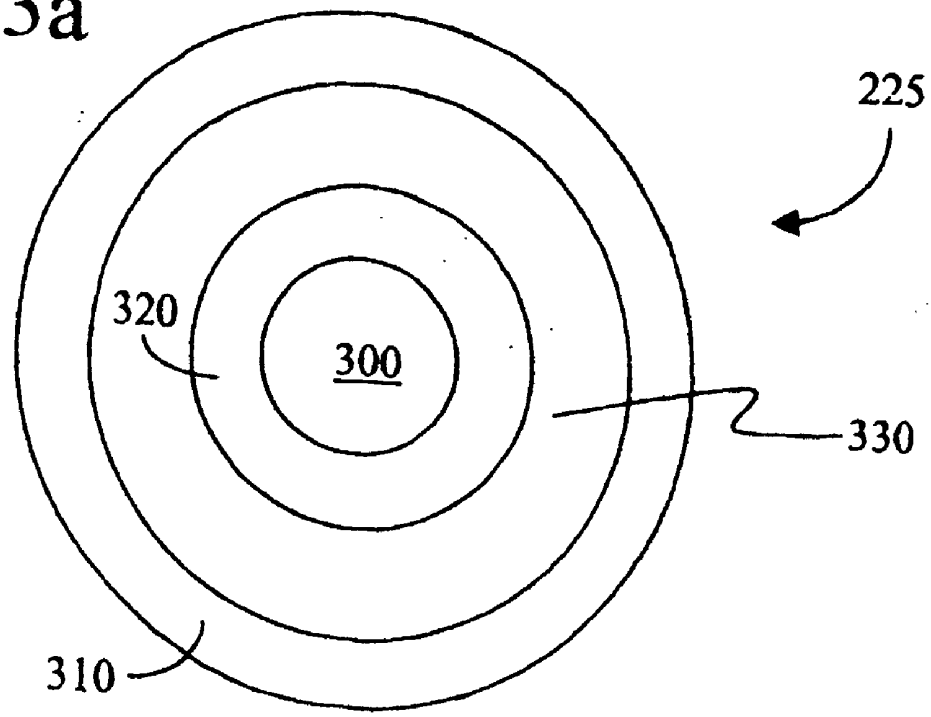


Fig. 2c

Fig. 3a



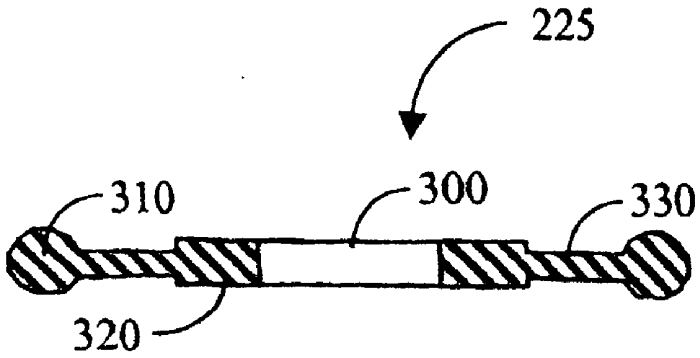


Fig. 3b

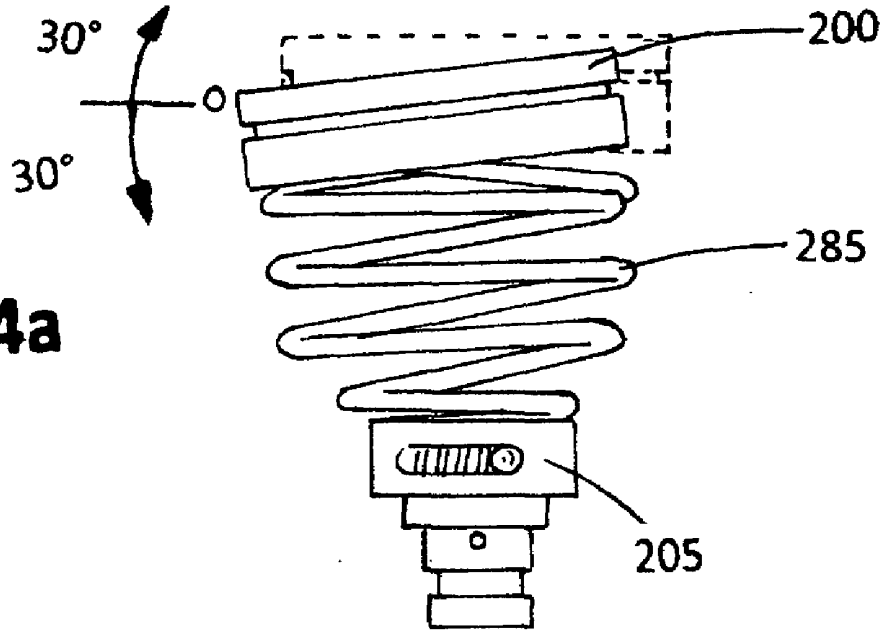


Fig. 4a

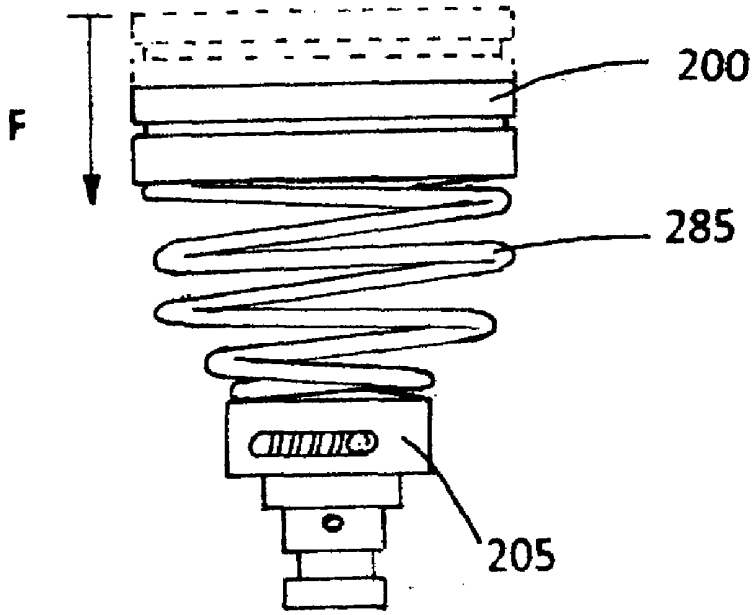
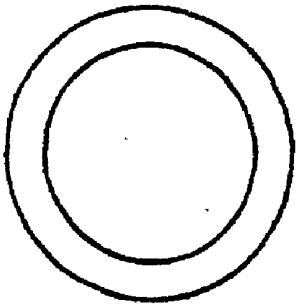


Fig. 4b

Fig. 5a



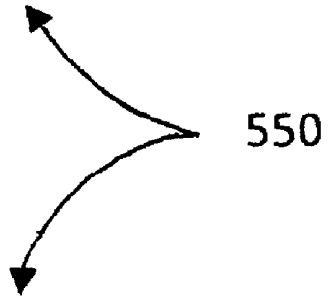


Fig. 5b

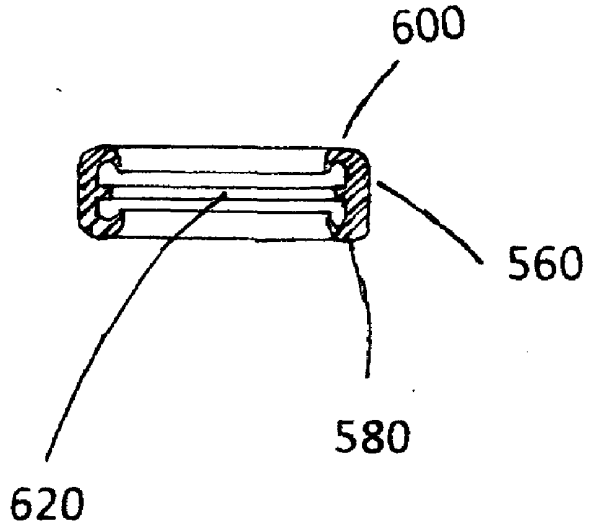


Fig. 6

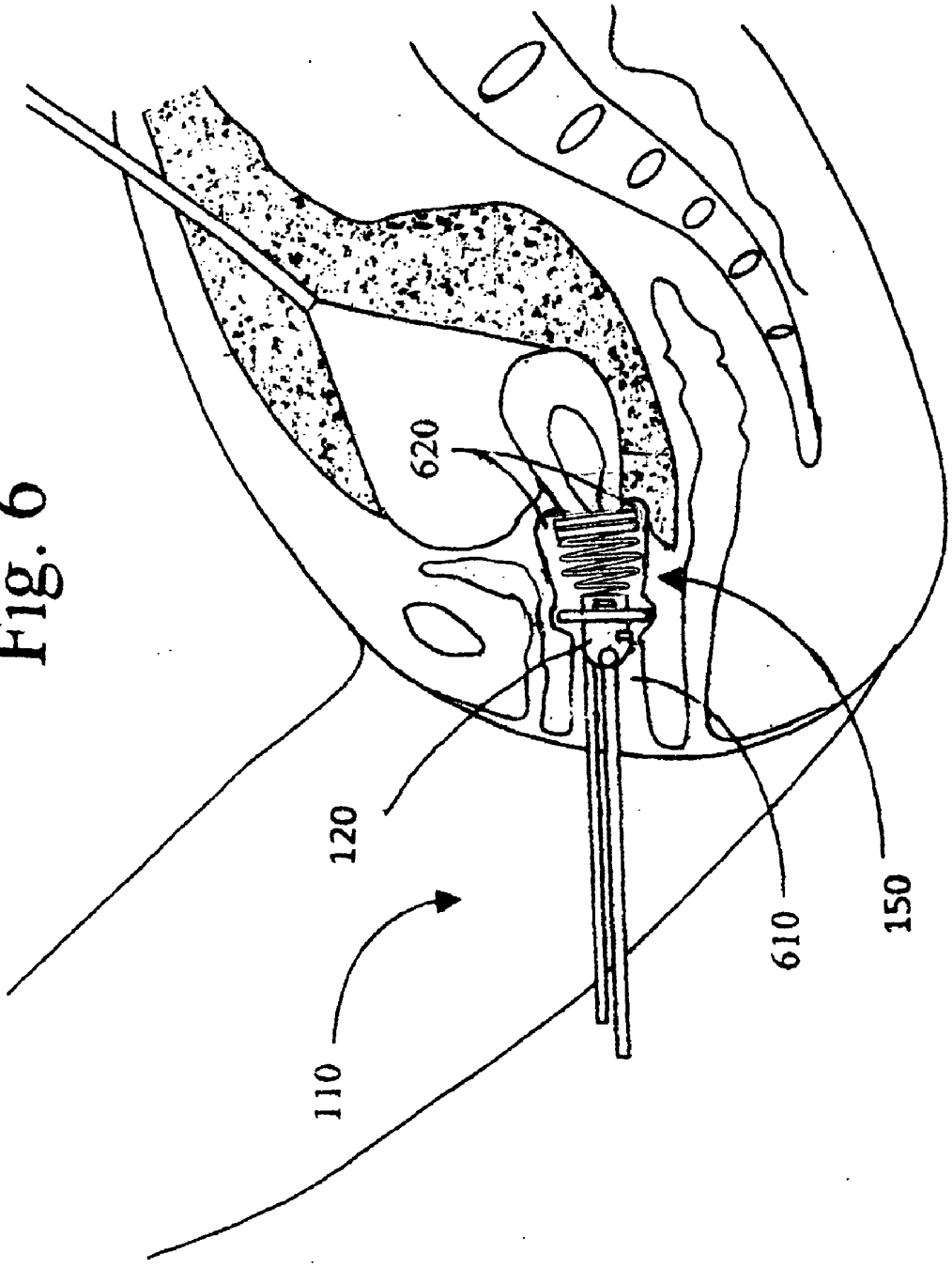


Fig. 7a

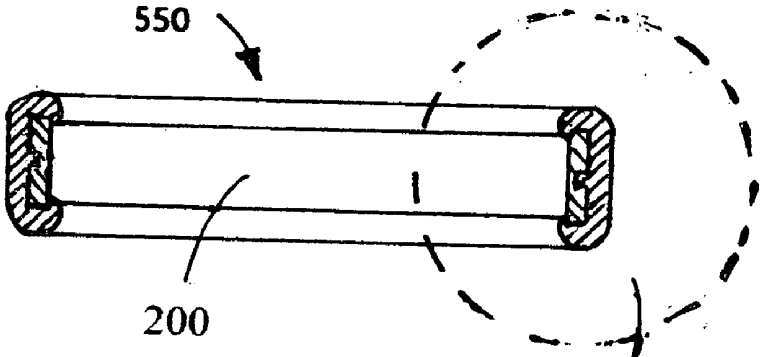
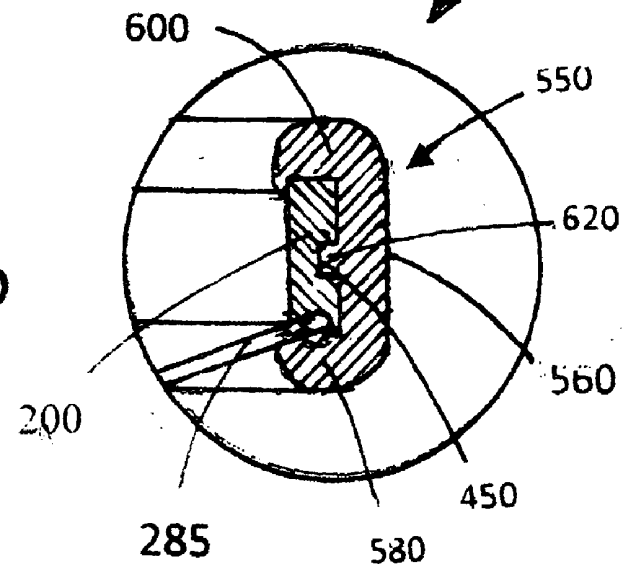


Fig. 7b



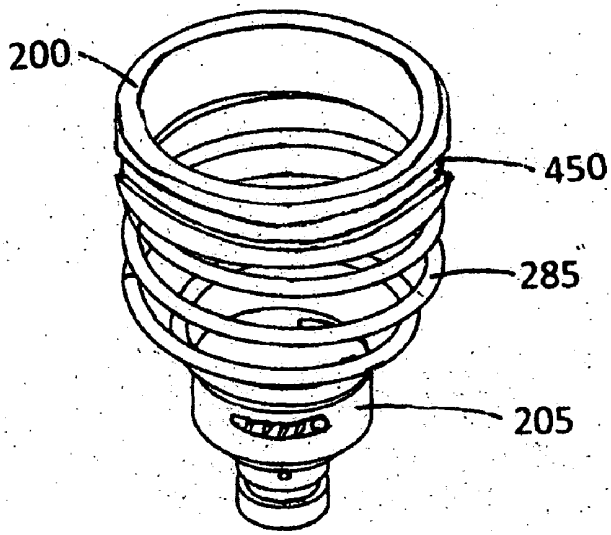
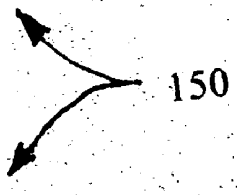


Fig. 8a



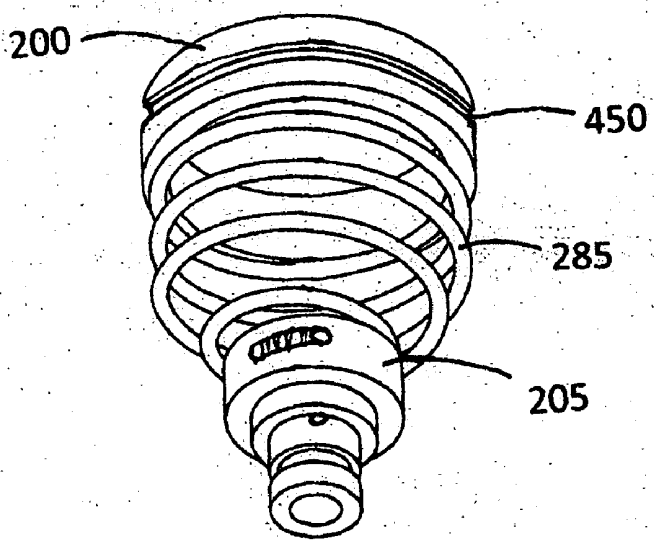


Fig. 8b

VAGINAL SPRING LOADED DELINEATOR

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The present invention relates generally to a gynaecological device. More particularly the present invention relates to a vaginal occlusion and self-adjusting delineation attachment for use with the uterine mobilizer.

[0003] 2. Background Art

[0004] Conventional hysterectomy surgical procedure typically involves one of four approaches: vaginal hysterectomy, total abdominal hysterectomy (TAH), total laparoscopic hysterectomy (TLH), and laparoscopically assisted vaginal hysterectomy (LAVH). Vaginal, TLH and LAVH have become more popular among surgeons because these approaches are less invasive than TAH, with TLH being the least invasive approach. TLH and LAVH are usually viewed as more preferable because each is less invasive when compared to major abdominal surgery. Thus, TLH and LAVH approaches usually result in shorter hospitalization and recovery times. Difficulties arise in TLH and LAVH, however, in identification of the formix of the vagina if the last is not well delineated. Another technicality is leakage of carbon dioxide from the peritoneal cavity when the vagina is opened laparoscopically.

[0005] Another problem, not appropriately addressed in the prior art, is that human bodies vary considerably. Any vaginal insertion device for surgical procedures must, therefore, be adjustable. Such devices are, preferably, self-adjusting.

[0006] There is therefore a need for a vaginal delineation device, attachable to a uterine mobilizer that also provides occlusion to the vagina to disallow leakage of carbon dioxide. There is a further need for a vaginal delineation and occluding device that is adjustable, and as self-adjusting as possible

BRIEF SUMMARY OF THE INVENTION

[0007] An objective of the present invention is to provide a vaginal delineator for use in gynaecological laparoscopic surgical procedures, which is attached to a uterine mobilizer, such as the Valtchev® Uterine Mobilizer, and is self adjusting to various lengths of cervixes and angles of formix.

[0008] The present invention is a device that inserts and locks into a uterine mobilizer, the device comprises a solid ring that adjusts in angle. The ring is made to bear against the vaginal formix, conforming to its angle and providing delineation of that part of the vagina for identification thereof.

[0009] The ring is also self-adjusting as to distance from the uterine mobilizer, to accommodate varying lengths of the cervix. This is effected by firmly attaching a solid ring to a spring, which has a similar diameter to the diameter of the solid ring. The opposed end of the spring is firmly attached to a base of the vaginal spring loaded delineator.

[0010] Another objective is to prevent leakage of carbon dioxide from the peritoneal cavity when the vagina is opened laparoscopically. An enlarged portion of an extension at the base of the vaginal spring loaded delineator, said enlarged portion is made to receive an elastic diaphragm made of an elastic material such as plastic: silicon, nylon, etc. The elastic diaphragm obstructs the vagina and prevents flow in any direction.

[0011] The extension of the base is made for insertion and locking into the head of the uterine mobilizer.

[0012] Another objective is to provide an elastic ring, made of plastic, which is put on the solid ring, and protects the ring as well as the instruments used to open the vagina laparoscopically, as may be the case with a harmonic scalpel, monopolar or bipolar electrosurgical instruments. Other objectives, advantages and novel features of the present invention will become apparent from the following detailed description of the invention when considered in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

[0013] FIG. **1** is a side elevation view of a uterine mobilizer and a vaginal spring loaded delineator;

[0014] FIG. **2***a* is a plan view from the top of the first embodiment of the vaginal spring loaded delineator;

[0015] FIG. **2***b* is a side elevation view of the first embodiment of the vaginal spring loaded delineator;

[0016] FIG. **2***c* is a plan view from the bottom of the first embodiment of the vaginal spring loaded delineator;

[0017] FIG. **3***a* is a plan view from the top of an elastic diaphragm for the vaginal spring loaded delineator;

[0018] FIG. **3***b* is a cross section of the elastic diaphragm for the vaginal spring loaded delineator;

[0019] FIG. **4***a* is a side elevation view of the second embodiment of the vaginal spring loaded delineator showing the tilting of the solid ring;

[0020] FIG. **4***b* is a side elevation view of the second embodiment of the vaginal spring loaded delineator, showing a change of the distance from the solid ring to the base;

[0021] FIG. **5***a* is a plan view of the top of an elastic ring for the vaginal spring loaded delineator;

[0022] FIG. **5***b* is a cross section of the elastic ring for the vaginal spring loaded delineator;

[0023] FIG. **6** is a cutaway view of a female pelvis, the vaginal spring loaded delineator, being inserted and locked to a uterine mobilizer and inserted into the vagina;

[0024] FIG. **7***a* is a cross section of the solid ring and the elastic ring put on the solid ring;

[0025] FIG. **7***b* is a partially enlarged cross section of the solid ring and the elastic ring put on the solid ring;

[0026] FIG. **8***a* is an oblique view from above of the second embodiment of the vaginal spring loaded delineator;

[0027] FIG. **8***b* is an oblique view from below of the second embodiment of the vaginal spring loaded delineator.

DETAILED DESCRIPTION OF THE INVENTION

[0028] A first embodiment **150** of a vaginal spring loaded delineator is shown in FIG. **1**, along with a uterine mobilizer **110** as disclosed in U.S. Pat. No. 5,562,679 which is hereby incorporated by reference. The first embodiment **150** is shown as well on FIG. **8***a-b*. The second embodiment **160** of the vaginal spring loaded delineator is shown in details in FIGS. **2***a-c*. An enlarged portion **275** has an extension **250**, which has a groove **470**. The extension **250** is inserted and locked into the head **120** of the uterine mobilizer **110**, FIG. **6**. A groove **470**, engages a lock **660** of the head **120** of the uterine mobilizer, see FIG. **1**. On the proximal surface of the base **205**, there is a hole **215** in which different length obturators can be inserted and locked in place by a lock **490**, see FIG. **2***a-b*. The proximal end of a spring **285** has a similar diameter to the diameter of the solid ring **200**, and is securely affixed to the distal end of a solid ring **200**. The solid ring can

have different diameters in order to fit the cervix, which has different diameters. The distal end of the spring has a similar diameter to the diameter of the base **205** and is securely affixed to the proximal end of the base. The base has a smaller diameter than the diameter of the solid ring. The distal end of the spring has a few turns which have diminishing diameters until the last turn has a similar diameter to the diameter of the base. The solid ring **200** is permitted to tilt on the spring **285** in any direction, to about 30°, see FIG. **4***a*. When the solid ring is pushed F toward the base, the spring is compressed, and the solid ring comes closer to the base, reducing the distance to about 50%, see FIG. **4***b*. The ability of the solid ring to be tilted in any direction permits automatic accommodation of the solid ring to the various angles of the vaginal formix **620**, FIG. **6**. The ability of the solid ring, when pushed, to come closer to the base, permits automatic accommodation of the cervices with different length.

[0029] Over stretching of the spring **285**, in the first embodiment **160** is prevented by securely affixing one end of a cable **290** (or chain, rope), to the solid ring **200** and the other end to the base **205**, FIG. **2***a-c*. The said cable **290** has the length of the spring **285**. The only difference between the first embodiment **150** and the second embodiment **160** is the presence of cables in the second embodiment **160**. The said cables prevent over stretching of the spring. An elastic ring **550**, FIG. **5***a-b* consists of a flat part **560** which distal end **580** and proximal end **600** are bended inward. There is an elevation **620** all around the inside surface of the elastic ring **550**. The elastic ring is made from an elastic plastic like silicon, nylon, etc. The elastic ring **550** has a smaller diameter than the solid ring **200**. The elastic ring has to be stretched before being put on the solid ring, this allows firm application of the elastic ring over the solid ring, see FIG. **7***a-b*. The elevation **620** of the elastic ring engages the groove **450** of the solid ring **200**, which makes it impossible for the elastic ring to come off during surgery, see FIG. **7***b*. The bended inward proximal **600** and distal **580** ends of the elastic ring, embrace the solid ring **200** and additionally keep the elastic ring firmly in place, preventing its dislodging during surgery, see FIG. **7***b*.

[0030] An elastic diaphragm **225** of elastic material such as plastic, nylon, silicon, etc., was described in the previous patent application Ser. No. 10/715,104, filed Nov. 17, 2003. It is shown in FIGS. **3***a-b*. and is presented here as a reference. Its use is to obstruct the vagina for the prevention of carbon dioxide leakage from the peritoneal cavity when the vagina is opened laparoscopically. The diaphragm **225** has a hole **300** in its center through which an enlarged portion **275** of the base **205** of the vaginal delineating and occluding device **100** passes. When the distal end of the base **205** is inserted in the uterine mobilizer **110**, the diaphragm **225** is held securely between the base **205** and the head of the mobilizer **110**. Various sizes of diaphragms **225** may be supplied to fit a variety of patients. The rim **310** and the annulus **320** are thicker than a membrane **330**, FIG. **3***a-b*.

[0031] The above embodiments are the preferred embodiments, but this invention is not limited thereto. It is, therefore, apparent that many modifications and variations of the present invention are possible in light of the above teachings. It is, therefore, to be understood that within the scope of the appended claims, the invention may be practiced otherwise than as specifically described.

I claim:

1. A method of constructing a vaginal spring loaded delineator comprising a solid ring, a spring, cables, an elastic ring and an extension of a base for inserting and locking said apparatus to a uterine mobilizer; said method comprising:

(a) securely affixing a proximal end of a spring to a solid ring; and

(b) securely affixing the distal end of the spring to the base;

(c) securely affixing cables, one end of the cable to the solid ring and the other end to the base.

2. A method of claim **1** wherein the solid ring has on its outside surface a groove around its circumference.

3. A method of claim **1** wherein the solid ring can tilt in any direction.

4. A method of claim **1** wherein the solid ring can come closer to the base.

5. A method of claim **1** wherein the solid ring is self-adjusting to the angle of the formix and the length of the cervix.

6. A method of claim **1** wherein one end of a spring is securely affixed to the distal end of the solid ring and the other end to the proximal end of the base.

7. A method of claim **6** wherein the proximal end of the spring has a similar diameter to the diameter of the solid ring.

8. A method of claim **6** wherein the distal end of the spring has a similar diameter to the diameter of the base.

9. A method of claim **6** wherein the last few turns of the spring have diminishing diameters until the last turn has a similar diameter to the diameter of the base.

10. A method of claim **1** wherein cables are securely affixed, to the distal end of the solid ring.

11. A method of claim **10** wherein cables are securely affixed to the proximal end of the base.

12. A method of claim **10** wherein the cables and the spring have the same length.

13. A method of claim **12** wherein the spring can not be stretched.

14. A method of claim **1** wherein by the extension of the base the vaginal spring loaded delineator can be inserted and locked to a uterine mobilizer.

15. An elastic ring for use with the vaginal spring loaded delineator comprising:

(a) an elevation on the inner surface of the elastic ring;

(b) a bended inside proximal and distal ends of the elastic ring;

(c) a diameter of the elastic ring is smaller than the diameter of the solid ring.

16. A method of claim **15** wherein the elevation of the elastic ring on its inside surface engages the groove on the outside surface of the solid ring.

17. A method of claim **15** wherein the bended inside proximal and distal ends of the elastic ring embrace the proximal and the distal ends of the solid ring.

* * * * *

专利名称(译)	阴道弹簧加载的Delineator		
公开(公告)号	US20080249535A1	公开(公告)日	2008-10-09
申请号	US12/080848	申请日	2008-04-08
[标]申请(专利权)人(译)	VALTCHEV KONSTANTIN LAZAROV		
申请(专利权)人(译)	VALTCHEV KONSTANTIN LAZAROV		
[标]发明人	VALTCHEV KONSTANTIN LAZAROV		
发明人	VALTCHEV, KONSTANTIN LAZAROV		
IPC分类号	A61B17/42 A61M29/00		
CPC分类号	A61B17/42 Y10T29/49826 A61B2017/4225 A61B17/4241		
其他公开文献	US8347888		
外部链接	Espacenet USPTO		

摘要(译)

一种妇科器械，用于在具有弹簧的腹腔镜手术期间描绘阴道的形状，所述弹簧的近端固定到实心环并且远端固定到基部。底座的延伸部分可以插入Valtchev®子宫动员器的头部并锁定到位。实心环可以在任何方向上倾斜，并且可以更靠近基部，允许自动调节阴道的形状和颈部长度的角度。提供弹性塑料环，用于放置在实心环上，以保护用于腹腔镜打开阴道的环和器械。