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(54) **AL-GEIZAWI LAPAROSCOPIC AUTO-KNOT SUTURES DEVICE**

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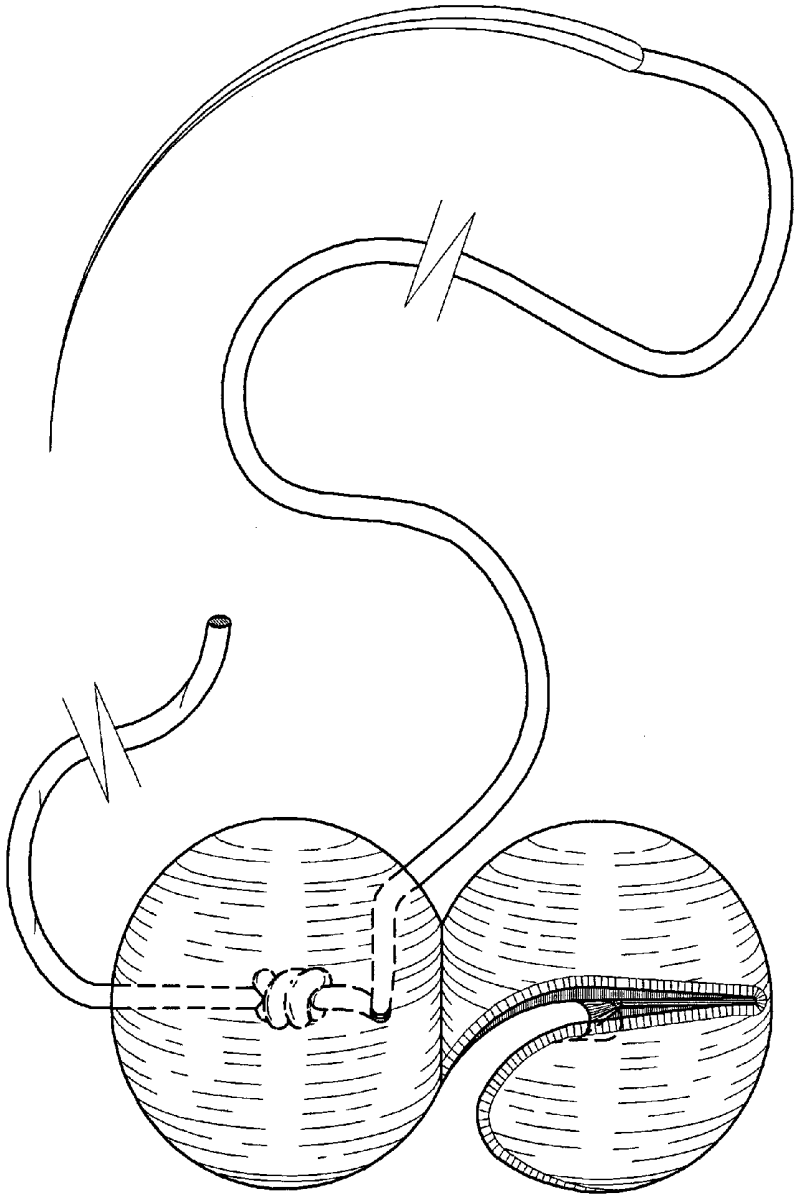
(57) **ABSTRACT**

The Auto-Knot Device will be used to make suture knots. Can be made of material not harmful to the human body. FIG. **2** shows the device with reference numbered arrows pointing to the components of the device. FIG. **7** shows the direction of movement of the suture thread (**6**) to make the knot and FIG. **8** shows the steps of making the knot. One surgeon using two needle holders will be capable of making a knot. Using the auxiliary thread (**4**) to adjust the device by rotating it clockwise and counter clockwise to the proper position to insert the suture thread (**6**) into the groove (**1**). As soon as the suture thread (**6**) is in the groove (**1**), he will complete the knot by pulling the suture thread (**6**) up and toward the end of the groove, while holding the auxiliary thread (**4**) in the opposite direction.



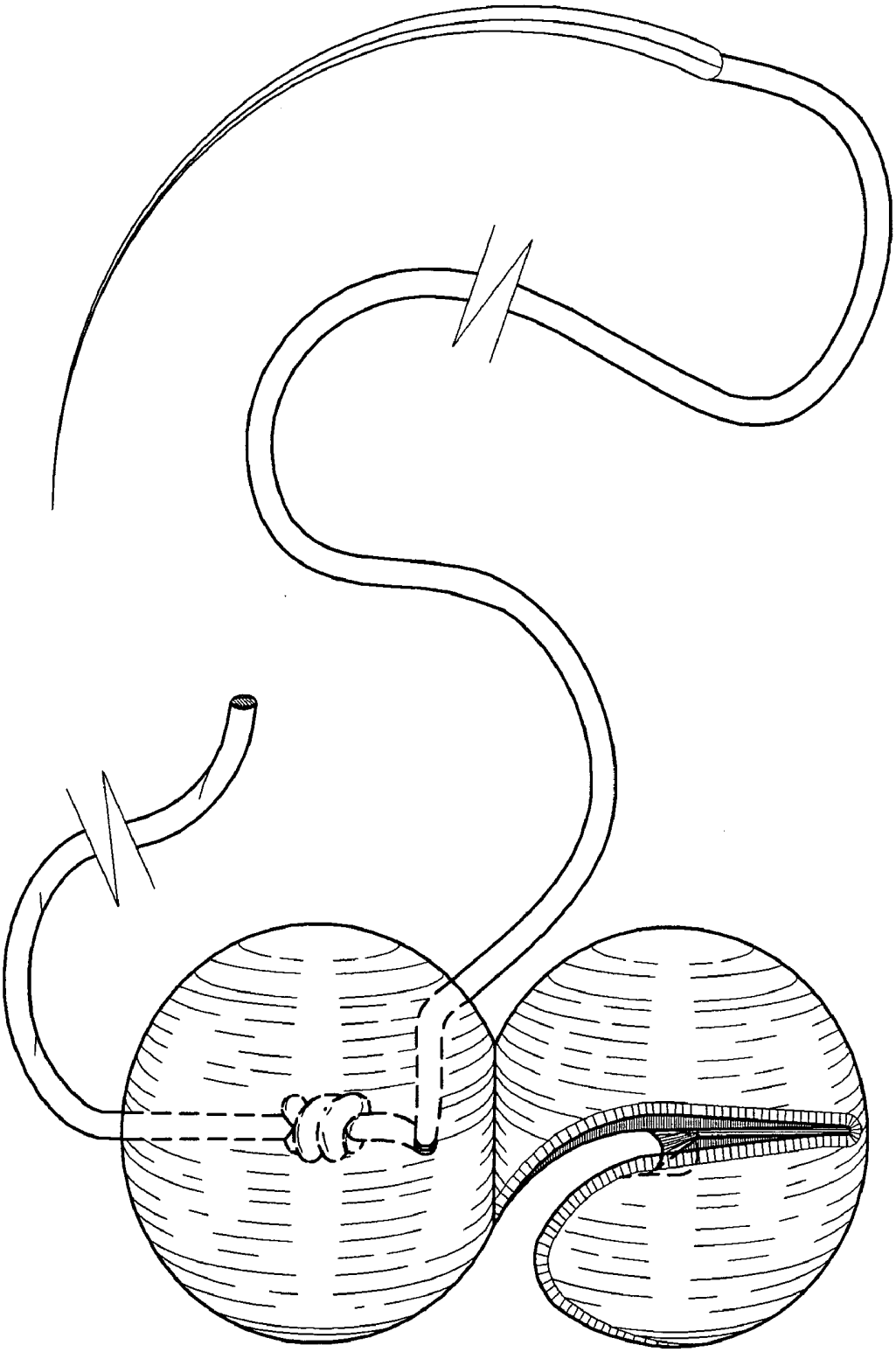


FIG.1

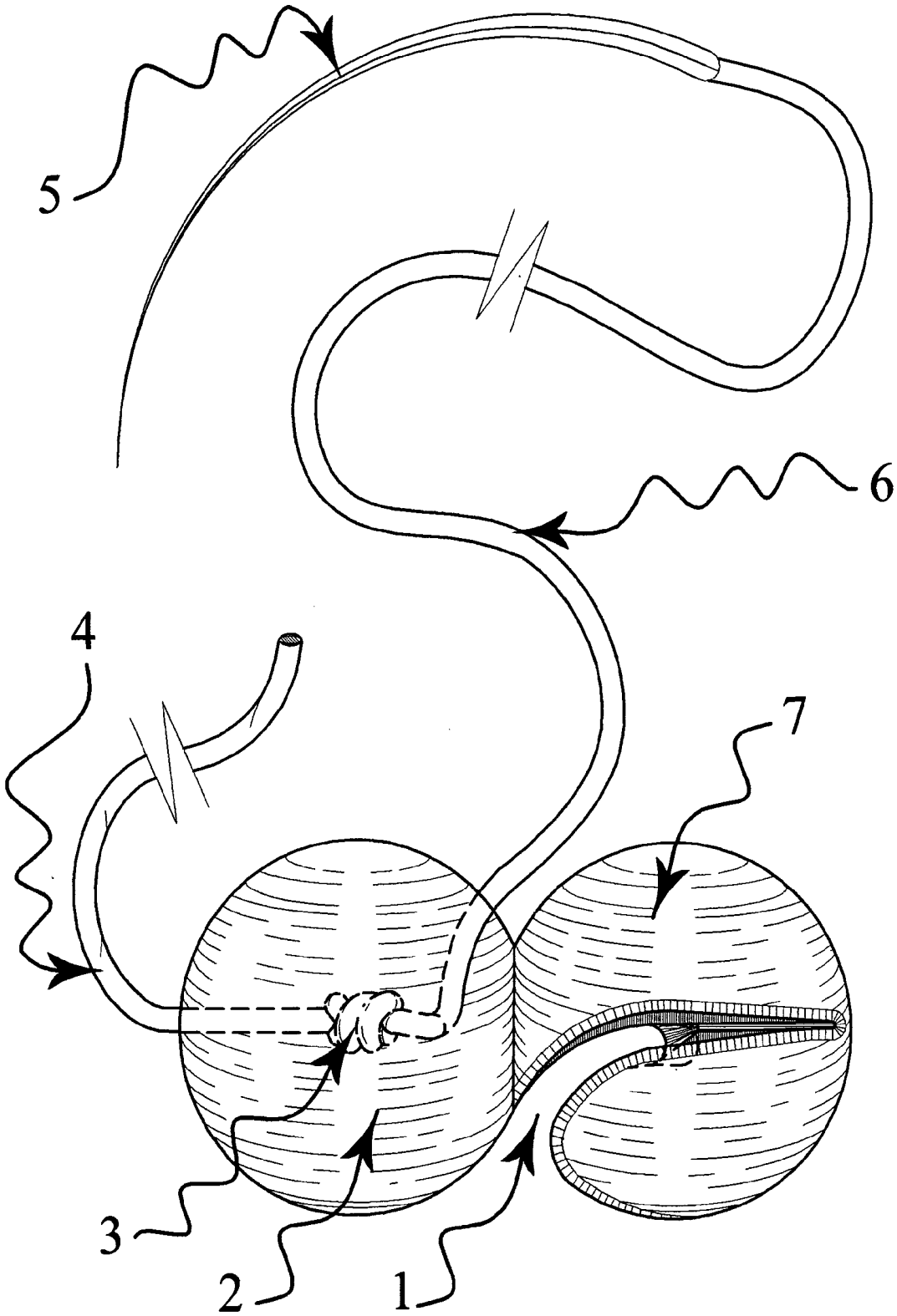


FIG.2

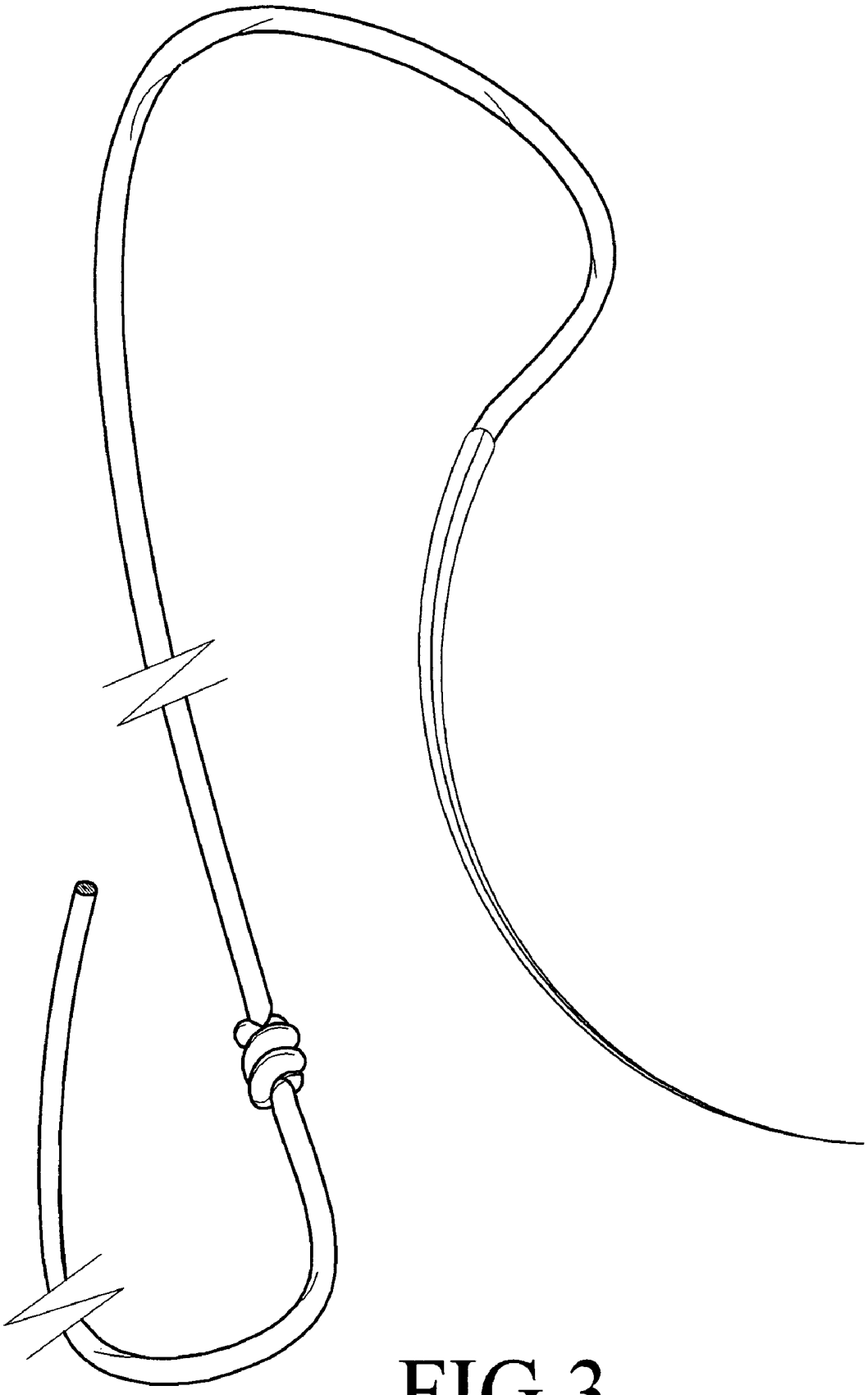


FIG.3

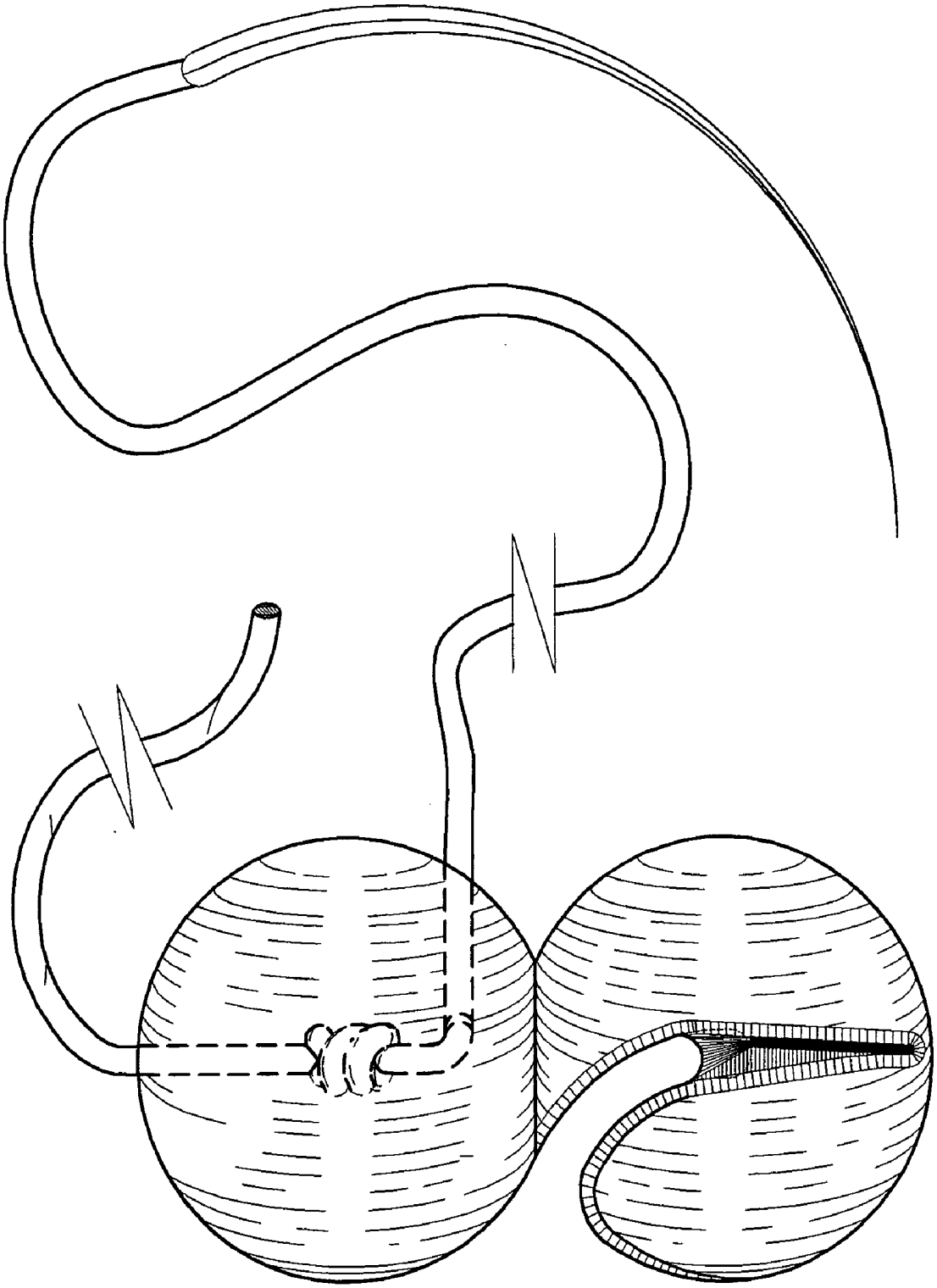


FIG.4

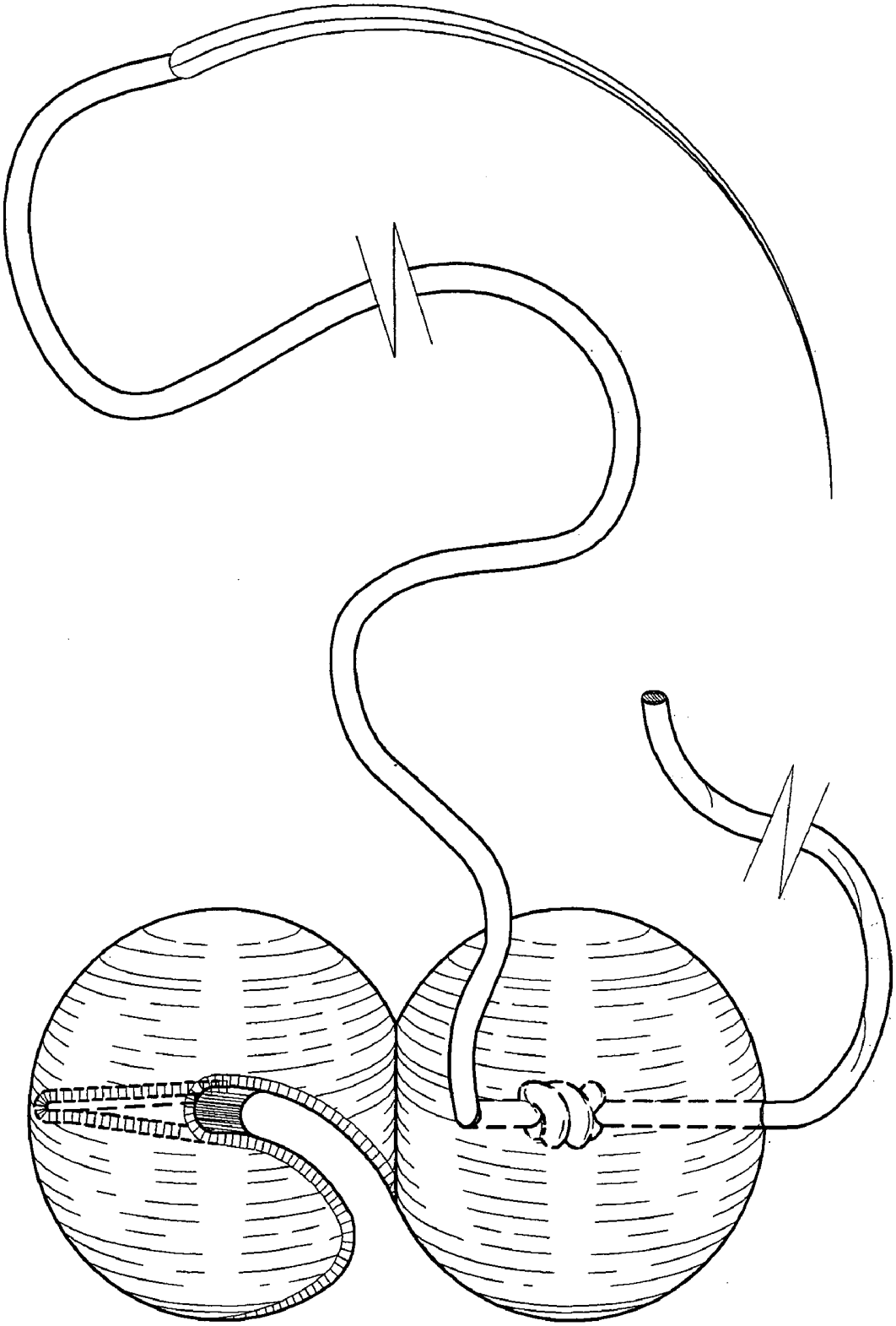


FIG.5

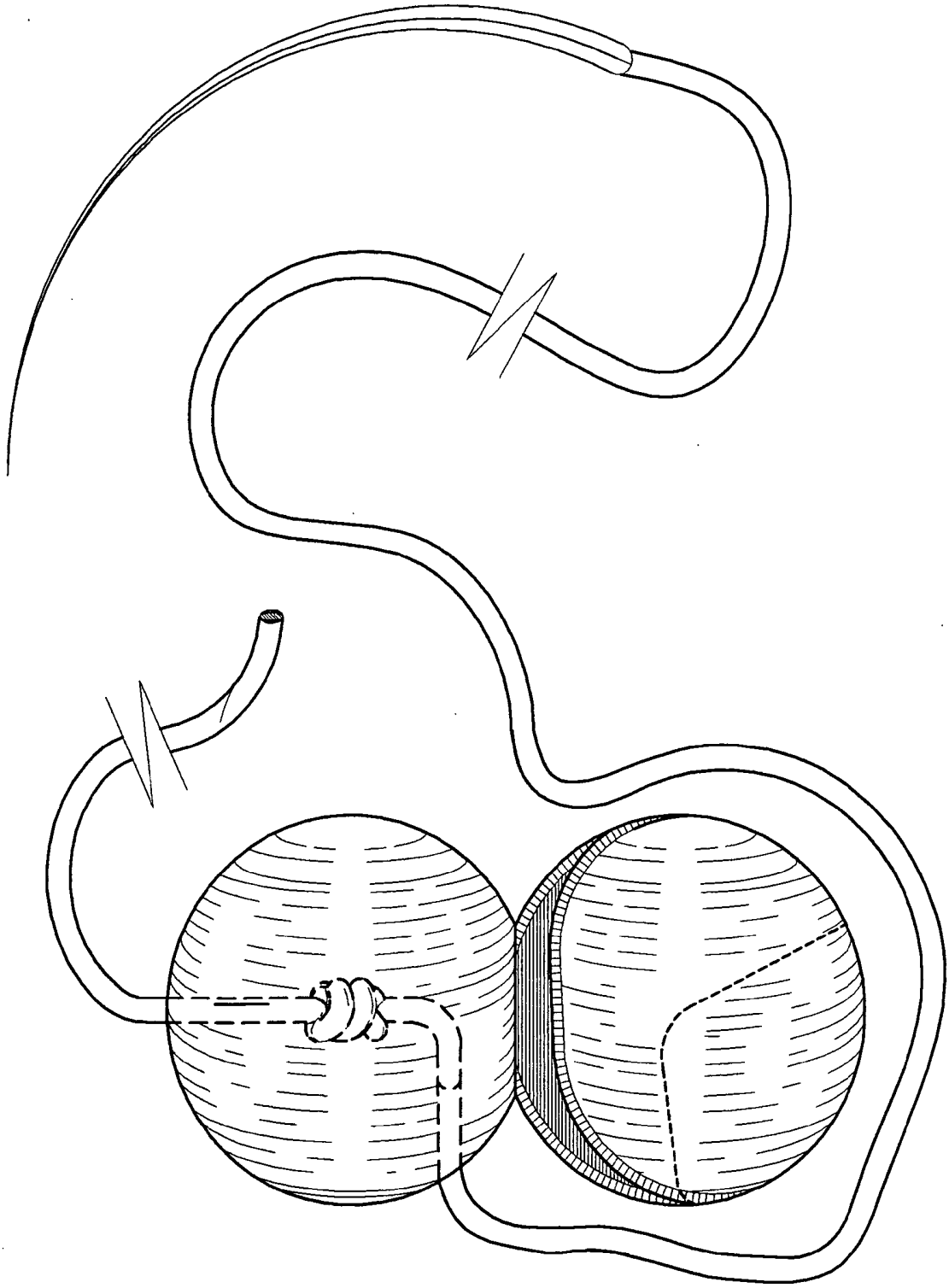


FIG.6

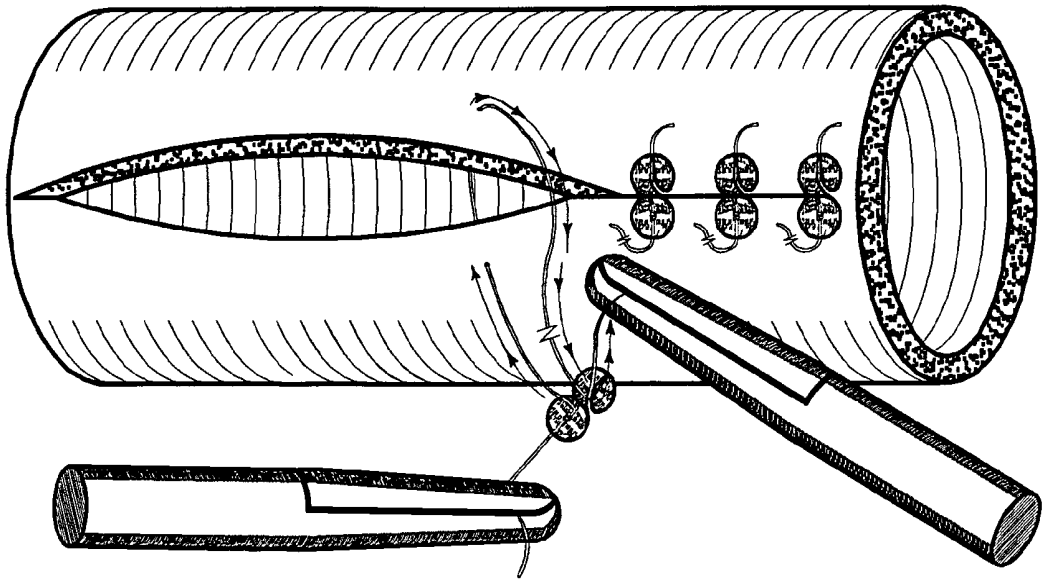


FIG.7

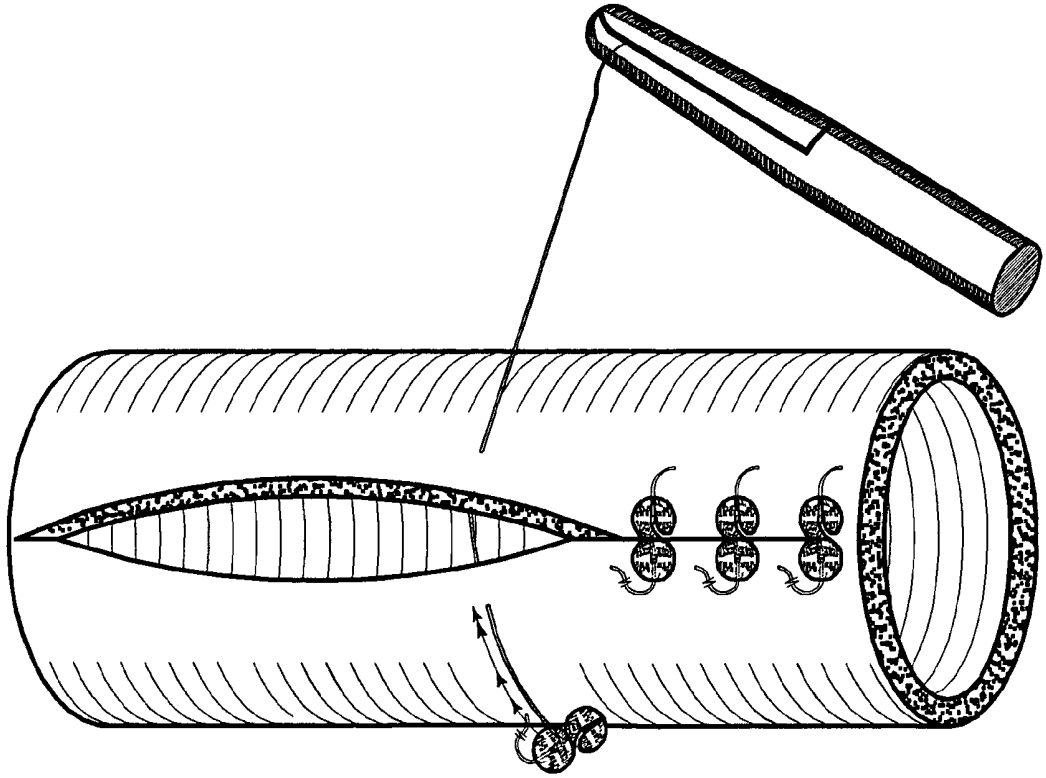


FIG.8

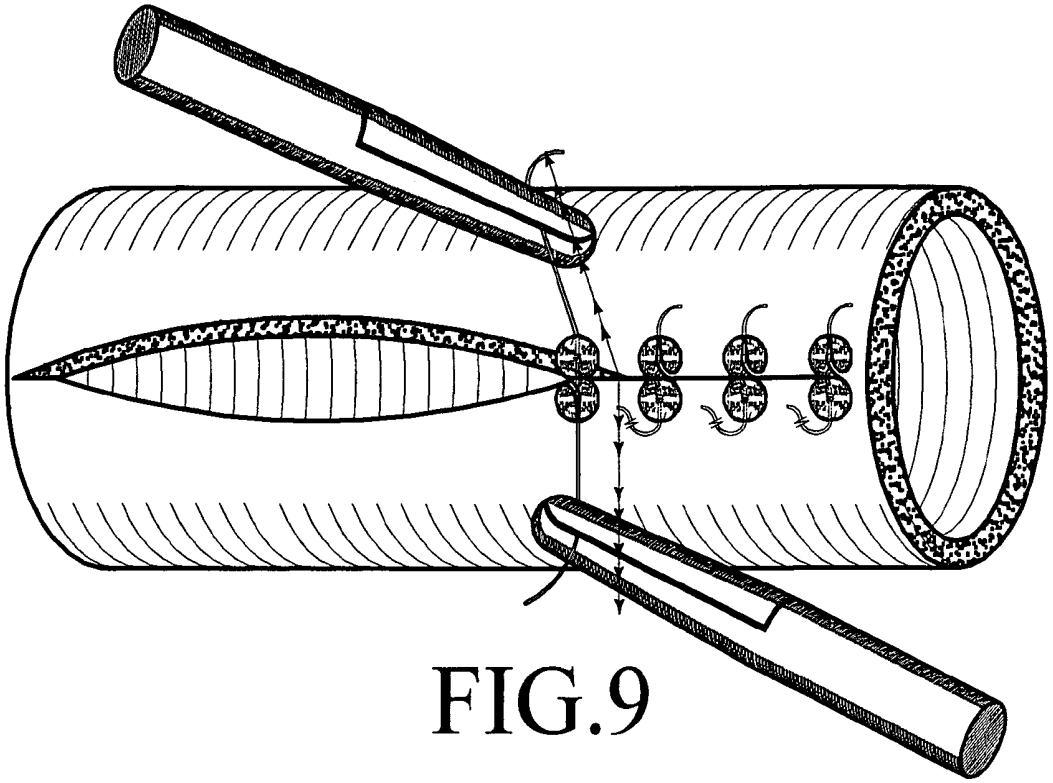


FIG.9

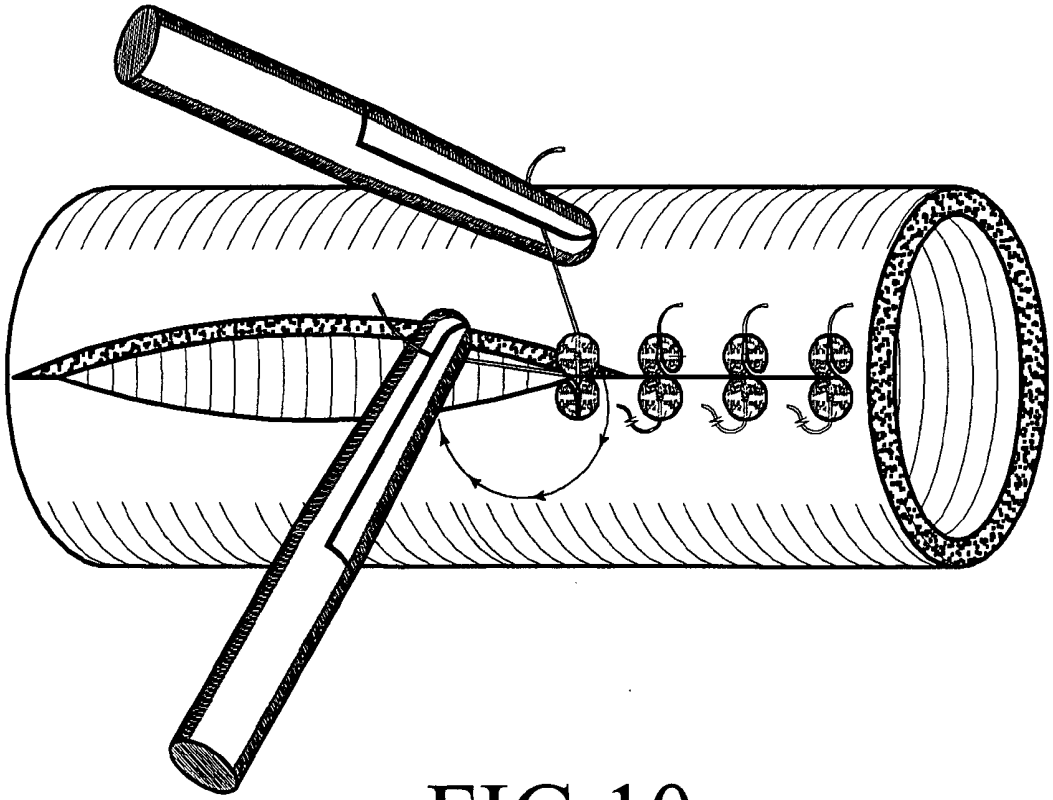


FIG.10

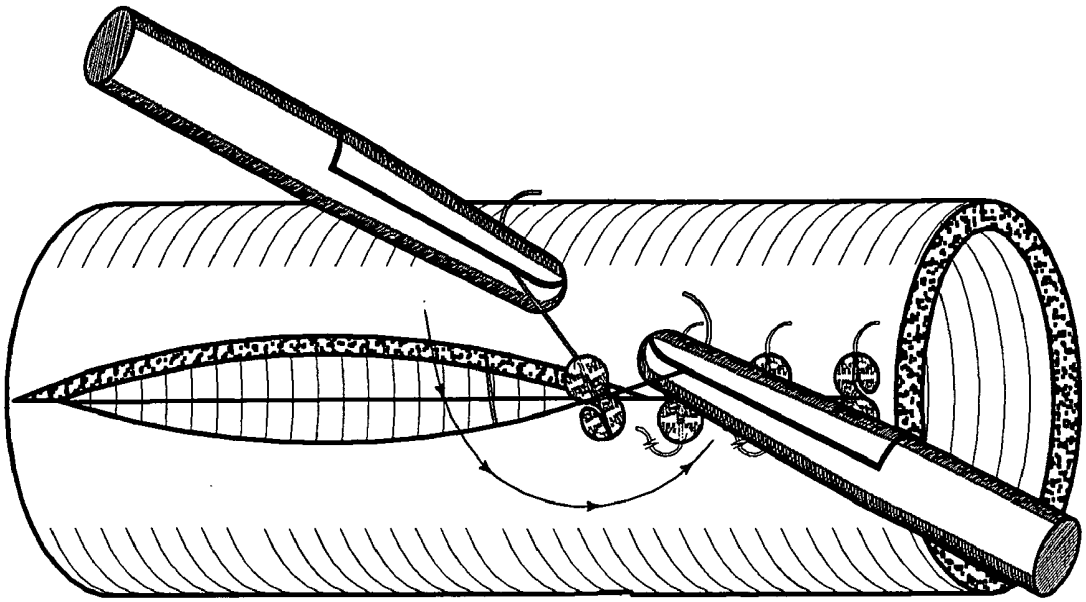


FIG.11

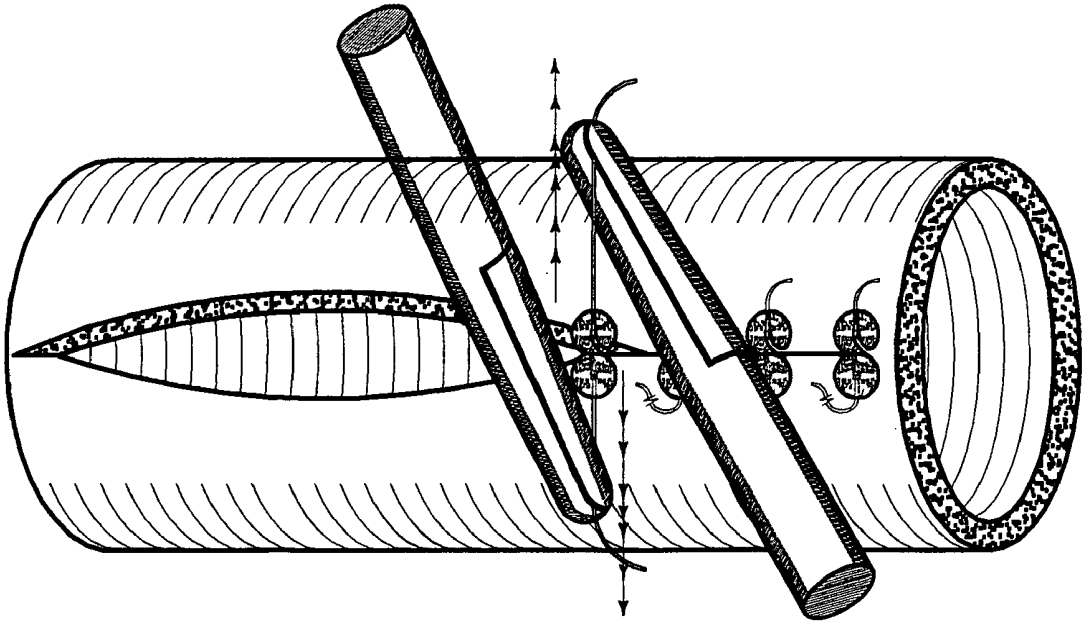


FIG.12

AL-GEIZAWI LAPAROSCOPIC AUTO-KNOT SUTURES DEVICE

BACKGROUND OF THE INVENTION

[0001] Laparoscopic suturing and knot tying are considered the most difficult laparoscopic skills to master. Many surgeons find difficulties in making knots after suturing due to limited space during laparoscopic surgery and since it is a technically demanding part of the procedure, in addition to the time needed to make such knots, most surgeons require training courses to be able to perform laparoscopic knots. The learning curve requires performing many operations before a surgeon becomes comfortable in mastering these knots. This devise will save time with less training.

BRIEF SUMMARY OF THE INVENTION

[0002] An easy built-in knotting mechanism (auto-knot device) attached to the auxiliary thread that will allow the device to be adjusted to the proper position to insert the suture thread into the groove and secure the knot by pulling the auxiliary thread and the suture thread in opposite directions to finish the knot. The device is two spheres fused together, one sphere has groove to secure suture thread and the other one has a knot to keep device in place a longer period of time during the absorbant stage in case absorbable material has been used. This device will reduce the time required to accomplish the task of laparoscopic suturing and knot tying by requiring only one surgeon to perform the surgery (See FIG. **7-12**, showing, in reduced scale, the steps of making the knot in the tissue using the device and needle holders). It will also make laparoscopic knots feasible for right and left handed surgeons and with fore-handed and back hand suturing. This device can be used with any size suture thread or any type of suture needle and can be manufactured from any material that is not harmful to the human body.

DESCRIPTION

[0003] FIG. **1** is a top, front, and right hand side perspective view of the Laparoscopic Suturing Auto-Knot Device.

[0004] FIG. **2** is same as FIG. **1**, but showing reference numbered arrows, **1-7**; pointed at the components of the device; which is: **1**—Groove, **2**—Left-hand Sphere, **3**—Knot, **4**—Auxiliary thread, **5**—Needle, **6**—Suture thread, and **7**—Right-hand sphere.

[0005] FIG. **3** is a perspective view of needle, suture thread, and auxiliary thread with the knot in between, before fusion into device.

[0006] FIG. **4** is top perspective view of the device thereof;

[0007] FIG. **5** is showing bottom perspective view thereof;

[0008] FIG. **6** showing front perspective view thereof;

[0009] FIG. **7** is a top, front, and right hand side perspective view showing direction of the suture thread being passed through the tissue, using two needle holders, one holding the suture thread needle and the other one holding the auxiliary thread in order to complete the knot by pulling the suture thread into the groove of the device.

[0010] FIG. **8** is a top, front, and right hand side perspective view showing step **1**—of making the knot by showing the suture thread being pulled forward throught the tissue in the direction of the arrows in order to put the device in place.

[0011] FIG. **9** is a top, front, and right hand side perspective view showing step **2**—of making the knot by showing the suture thread being pulled backwards and the auxiliary thread being pulled foreward both of them in the direction of the arrows.

[0012] FIG. **10** is a top, front, and right hand side perspective view showing step **3**—of making the knot by showing the suture thread being rotated underneath the device, about 100 degrees clockwise, in order to make the suture thread face the groove.

[0013] FIG. **11** is a top, front, and right hand side of perspective view showing step **4**—of making the knot by showing that the suture thread has been pulled up and placed in the groove to start rotating the device counter clockwise in the direction of the arrows.

[0014] FIG. **12** is a top, front, and right hand side perspective view showing the knot has been put in place and secured, by pulling the suture thread and the auxiliary thread in opposite directions to secure the suture thread at the end of the groove to complete the knot.

REFERENCE NUMERALS (AS SHOWN IN FIG. **2**)

[0015] **1**—Groove

[0016] **2**—Left Hand Sphere

[0017] **3**—Knot

[0018] **4**—Auxiliary Thread

[0019] **5**—Needle

[0020] **6**—Thread

[0021] **7**—Right Hand Sphere

1. What I claim as my invention is a Laparoscopic Suturing Auto-Knot Device, as shown and described.

* * * * *

专利名称(译)	Al-geizawi腹腔镜自动结缝线装置		
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申请号	US12/070349	申请日	2008-02-16
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发明人	ALJIZAWI, HAKIM MAHMOUD		
IPC分类号	A61B17/04		
CPC分类号	A61B17/0487 A61B17/062 A61B2017/06052 A61B2017/0496 A61B2017/00004		
其他公开文献	US8221453		
外部链接	Espacenet USPTO		

摘要(译)

Auto-Knot装置将用于缝合结。可以用对人体无害的材料制成。图。图2示出了具有指向设备的组件的参考编号箭头的设备。图。图7示出了缝合线（6）的移动方向以形成结。图8显示了制作结的步骤。一名使用两个持针器的外科医生将能够打结。使用辅助螺纹（4）通过顺时针和逆时针旋转设备调整设备到适当的位置，将缝合线（6）插入凹槽（1）。一旦缝合线（6）在凹槽（1）中，他将通过向上拉动缝合线（6）并朝向凹槽的端部完成结，同时将辅助线（4）保持在相对的位置方向。