(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 806 101 B1

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
22.06.2011 Bulletin 2011/25

(21) Application number: **05785718.7**

(22) Date of filing: **22.09.2005**

(51) Int Cl.:
A61B 17/00 *(2006.01)* ***A61B 17/12*** *(2006.01)*

(86) International application number:
PCT/JP2005/017462

(87) International publication number:
WO 2006/033385 (30.03.2006 Gazette 2006/13)

(54) **SURGICAL CLAMP FOR THE DIGESTIVE TRACT**

DARMKLEMME

PINCE A CLAMPER INTESTINALE

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI SK TR

(30) Priority: **24.09.2004 JP 2004276827**

(43) Date of publication of application:
11.07.2007 Bulletin 2007/28

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EP 1 806 101 B1

Printed by Jouve, 75001 PARIS (FR)

Description

[0001] The present invention relates to a surgical aid instrument to be used for a surgical operation on digestive organs in principal, more specifically, a clamp which is used for gut tract resection and used for completely pressure-closing the gut lumen.

[0002] In laparoscopic operations, according to improvement in the techniques and improvement of instruments, it has become possible to laparoscopically perform surgical operations such as partial resection of the stomach and the large intestine and removal of bile duct calculus and cancerous tissues which could be conventionally performed only by abdominal operations. In abdominal operations, a method is used in which the gut is clipped with intestinal forceps during an operation for intraoperative enema cleaning or an operation for resecting the stomach or the large intestine or removing bile duct calculus or cancerous tissues.

[0003] In a laparoscopic operation, a gas for pneumoperitoneum such as carbon dioxide is supplied into the abdominal cavity via a pneumoperitoneum needle puncturing the abdominal cavity to distend the abdominal cavity, whereby a space is secured in the abdominal cavity to secure the operative field. In the method of clipping with intestinal forceps or the like as described above, for using the instrument, it is necessary to secure a sufficient space around, and it was impossible to use this method in laparoscopic operations.

[0004] On the other hand, instead of clipping the gut with intestinal forceps during an operation, also available is a method in which the gut is tied with a silk thread or tightened with a string in a ringed manner. However, this damages the gut frequently, and is not appropriate.

[0005] A method is considered in which the gut is clipped with an instrument like a clothespin. However, to effectively clamp the gut, a clothespin with a high spring effect must be used, and a force is needed to open the clothespin to the clipping points, and this places an excessive burden on an operator. Furthermore, around the gut, there is fat, so that in many cases using the method for clipping with a clothespin, only a half of the gut is seized, and it is impossible to confirm whether the seizing is sufficient.

[0006] Generally, as an instrument for clamping or clipping, a bundling band like an instrument to be used for bundling cable wires together is available (for example, JP2003237823A). This bundling band tightens the gut in a ringed manner, and this is not appropriate. There is also available a bundling band for assisting joining of bone fragments (JP 2000 201941A).

[0007] Additionally, there are clip forceps for clipping a blood vessel in a human body which can be inserted in a neuroendoscope and remotely operated (JP9192137 A).

[0008] However, no matter which instrument is used, the gut is tightened in a ringed manner or the surrounding of the gut is partially clipped, and this is not appropriate.

[0009] Intraoperative dissemination due to operative maneuvers has come into question, and it is demanded that surgical operations are performed without contacting tumors.

[0010] From a medical perspective of prevention of intraluminal metastases, it is recognized as desirable that the gut is clamped around a tumor early in operative maneuvers.

[0011] Furthermore, as relates to intraoperative rectal lavage, in particular, in abdomino-perineal resection of the rectum, rectal lavage immediately before resection is necessary from the perspective of prevention of postoperative infection, and by clamping the rectum, it becomes possible to sufficiently clean the rectum from the anus, and as a result, the rectum can be resected at the sufficiently cleaned anus side.

[0012] From these circumstances, currently, a medical clamper which can easily, safely, and reliably clamp the gut during an operation for intraoperative enema cleaning or the like in the field of digestive surgery is demanded.

[0013] WO 8001752 discloses a surgical clamp according to the preamble of appended claim 1.

[0014] A clamp of the present invention was made in view of the above-described circumstances, and an object of the invention is to provide a convenient medical clamp which can easily clamp the gut during an operation even in a situation where a sufficient space necessary for using instruments cannot be secured around as in the case of a laparoscopic operation, has less limitation in a movable range, and is preferable for safely performing an operation in a narrow abdominal cavity.

[0015] Another object of the invention is to provide a medical clamp which, during clamping of the gut, enables an operator to maneuver the clamper without an excessive burden on the operator shown in the aforementioned example using a clothes pin, can clip the whole circumference instead of clipping a part of the circumference of the gut, and enables confirmation as to whether the clipping is sufficient.

[0016] Furthermore, in view of the problem in the method in which the gut is tightened by a bundling band in a ringed manner, and the gut is constricted and makes it difficult to identify a resection range in, for example, intestinal resection, still another object of the invention is to provide a medical clamp which can clip the gut by surfaces instead of tightening in a ringed manner, and can clamp the gut while widening the width of the gut.

[0017] The present inventors accumulated knowledge through experience of clipping the gut during actual operations at medical sites and repeated trial and error, and as a result, they completed the present invention. Hereinafter, means for achieving the objects will be described.

[0018] According to the present invention, a surgical clamp for the digestive tract is provided as set out in appended claim 1.

[0019] Herein, the belts with flexibility are made of, for example, a soft resin and can be wound around the gut like a band, and mean string-like members as well as

belt-like members.

[0020] The hard rod-like bodies are made of, for example, a hard resin, wood, or metal, and can clip the gut, and mean rod-like bodies with circular, oval, or polygonal sectional shapes.

[0021] The gutclamp according to the first aspect of the present invention clips the gut by using the two hard rod-like bodies by using the joint as a pivot. Different from the case where the gut is tightened in a ringed manner with a string or silk thread, this clipping method has the following advantages.

[0022] When clipping the gut by the rod-like bodies, the side surfaces of the rod-like bodies clip the gut, and as a result, the gut can be clipped while the width of the gut is pressed and widened, so that tearing of the gut due to excessive tightening as in the case of tightening in a ringed manner does not occur.

[0023] When tightening the gut in a ringed manner, the tightened portion is constricted like a banded bundle, so that due to the constricted portion, when observing the gut from the interior of the gut through a scope, it becomes difficult to accurately identify the resecting position, and as a result, extra portions may be resected in the gut resection. However, in the case of the gutclamper of the present invention, the gut is clipped by the rod-like bodies and the width of the gut is pressed and widened, and the constricted portion is reduced, so that extra portions are not resected.

[0024] Furthermore, by inserting one of the belts into the through hole of the other belt from tip end side, the two rod-like bodies can clip the gut by using the joint as a pivot, so that different from clipping with a clothespin, an excessive operating burden is not placed on the operator, and the whole circumference of the gut can be clamped while adjusting and confirming the degree of clamping.

[0025] By making the lengths of the two rod-like bodies different from each other, making a through hole in a belt connected to the shorter rod-like body, and positioning the through hole at the tip end of the longer rod-like body when the two rod-like bodies are put together by using the joint as a pivot, it becomes possible to fit and lock the tip end of the longer rod-like body into the through hole by inserting the whole of a belt connected to the other longer rod-like body into the through hole from the tip end side.

[0026] The surfaces of the rod-like bodies may be covered by covers made of a resin with flexibility. The surfaces of the rod-like bodies are covered by covers made of a resin with flexibility at the positions where the side surfaces of the rod-like bodies come into direct contact with the gut and clip it, and the covers are for protecting the surfaces of the gut from damage.

[0027] By integrally molding belts, covers, and joint by using a soft and bendable resin,

(1) connection of the belts to the hard rod-like bodies,

(2) covering on the surfaces of the hard rod-like bodies by a flexible resin, and

(3) joining of the rod-like bodies can be concurrently and conveniently performed.

[0028] Herein, as the soft, bendable, and elastic resin, a soft resin such as a urethane resin, low-density polyethylene, etc., can be used. Instead of the resin, natural rubber or synthetic rubber may also be used.

[0029] As the integral molding, heat fusion, injection molding, thermal compression molding or bonding can be used.

[0030] As the material of the rod-like bodies, a metal such as stainless steel or a hard resin such as plastic is used. To clip the gut by the rod-like bodies, the rod-like bodies need to have a certain degree of hardness and strength.

[0031] The sectional shape of the rod-like bodies is circular, oval, or polygonal. To avoid a sharp contact surface so as not to damage the surface of the gut, the sectional shape is desirably circular or oval, however, to improve engagement for clipping by the two rod-like bodies, the sectional shape may be a polygon with or without unevenness.

[0032] The lengths of the rod-like bodies are 30 to 70 millimeters in view of the whole circumferential length of the gut. When the length is more than 70 millimeters, a sufficient space cannot be secured around it in a laparoscopic operation, so that it becomes difficult to use the clamp. To completely clip the whole circumference of the gut, it is considered that at least 30 millimeters is necessary as the length of the rod-like bodies.

[0033] In the second aspect of the present invention, the length difference between the two rod-like bodies is predetermined by considering the widths of the belts, diameters of the rod-like bodies, the diameter and arrangement of the through hole. In the case of an aid instrument for clipping the gut in a laparoscopic operation or the like, the widths of the belts, the diameters of the rod-like bodies, and the diameter of the through hole are several millimeters, respectively, so that the length difference between the two rod-like bodies is appropriately 3 to 7 millimeters. It is preferably 5 millimeters. By arranging the through hole so as to be positioned at the tip end of the longer rod-like body when the two rod-like bodies are put together by using the joint as a pivot, the tip end of the longer rod-like body can be fit into the through hole and locked. The size of the through hole is set so that the belt can be inserted therein. In the embodiment described later, the through hole is arranged at the portion of the length difference between the two rod-like bodies.

[0034] When using the clamp of the present invention, in a laparoscopic operation, the belts of the gutclamper are handled via an instrument, so that in particular, the tip end of the belt to be inserted through the through hole is tapered so as to be easily inserted through the through hole.

[0035] In the clamp of the present invention, by providing the belts themselves with elasticity, the belt inserted through the through hole is made more difficult to come out from the through hole, however, by further providing at least one locking portion in a projecting shape on a part of the belt to be inserted through the through hole, the belt is made more difficult to come out from the through hole after it is inserted through the through hole.

[0036] Similarly, a serrated uneven portion is provided on a part of the belt to be inserted through the through hole so as to lock the belt, whereby the belt is made more difficult to come out from the through hole after it is inserted therein.

[0037] In the clamp of the present invention, the color of the belts is transparent or a complementary color of red, that is, for example, blue or green, etc. This makes it possible to clearly recognize the belts even under an environment in red of the interior of the aperture such as the gut and easily laparoscopically handle them.

[0038] Furthermore, in the clamp of the present invention, when clipping is released, the joint is seized and the one belt having the through hole is pulled, whereby the clipping can be released, and in this case, the two belts are colored differently from each other to prevent mistakes.

[0039] By using the clamp of the present invention, the procedure for completely pressure-closing the lumen of the gut by clipping the gut for gut tract resection under a situation where a sufficient space cannot be secured as in the case of a laparoscopic operation in digestive surgery can be conveniently, reliably, and safely performed. Of course, the clamp can also be used for clamping the duodenum in the case of gastric resection in a conventional general digestive surgical operation.

[0040] In addition, in the procedure for clipping the gut, there is no need for a force to open the clamper of the present invention to clipping points, and a force is needed only to insert the belt into the through hole and pull it, so that an excessive burden on the operator can be prevented when maneuvering the instrument.

[0041] In the clamp of the present invention, by clipping the gut by the rod-like bodies, the width of the gut can be clipped while being pressed and widened by the side surfaces of the rod-like bodies, so that the constricted portion is reduced, and confirmation as to whether the clipping is sufficient can be made.

[0042] Furthermore, different from tightening in a ringed manner with a bundling band, the constricted portion like bundled papers is not formed on the gut, and the resection range in the case of intestinal resection can be reliably identified.

[0043] Hereinafter, an embodiment of the present invention will be described with reference to the accompanying drawings. The present invention is not limited to the illustrated construction. The widths of the belts and the diameters and lengths of the rod-like bodies are set to optimal values according to the surgery site, and the shape and dimensions, etc., of the clamp of the present invention can be variously changed in design.

[0044] Hereinafter, an Example 1 of the embodiment of the present invention will be described with reference to the drawings.

[0045] Fig. 1 is an external view of Example 1 of a clamp of the present invention. As shown in Fig. 1, the clamp of the present invention has two hard rod-like bodies (4 and 5), and on one ends of the rod-like bodies, belts (1 and 2) with flexibility are provided, and the two rod-like bodies (4 and 5) are joined by a joint (6), and a through hole (3) is made in the belt (1).

[0046] The two rod-like bodies (4 and 5) are covered by covers (not shown) made of a resin with flexibility.

[0047] Herein, as the two hard rod-like bodies (4 and 5), columnar rods made of stainless steel are used.

[0048] Concerning the lengths of the rod-like bodies, the shorter rod-like body has a length of about 55 millimeters, and the longer rod-like body has a length of about 60 millimeters. The diameters of the rod-like bodies are both about 2 millimeters.

[0049] The length difference of about 5 millimeters between the rod-like body (4) and the rod-like body (5) is provided for smoothly fitting the tip end (5a) of the longer rod-like body (5) into the through hole as described later.

[0050] According to the clipping position on the gut, the lengths and diameters of the rod-like bodies are adjustable.

[0051] For the belts (1 and 2), a urethane resin that is soft and has bendability and elasticity is used. The belt (1) has the through hole (3), and has as a length of 70 to 90 millimeters.

[0052] On the other hand, the belt (2) is to be inserted through the through hole (3), and is made longer than the belt (1) for easy insertion by the operator, and has a length of 80 to 100 millimeters. The tip end (2a) of the belt (2) is tapered so as to be easily inserted through the through hole. Both belts (1 and 2) have a width of about 4 millimeters and a thickness of about 1 millimeter.

[0053] The lengths of the belts are adjustable so that handling of the belts becomes easy by considering the procedure for clipping the whole circumference of the gut in a laparoscopic operation.

[0054] Next, the manner of connecting the belt and the rod-like body and the manner of joining the two rod-like bodies will be described below. In this example, the belts, covers, and joint are integrally molded by means of heat fusion by using a urethane resin that is soft and has bendability and elasticity. Instead of the urethane resin, natural rubber or synthetic rubber or a soft resin such as low-density polyethylene may be used. Other than the heat fusion, injection molding, thermal compression molding or bonding may be used for integral molding.

[0055] The belts are colored by mixing a coloring pigment into the resin.

[0056] Fig. 2 through Fig. 5 illustrate a use image of Example 1 of the gutclamper of the present invention. Hereinafter, it is described step by step.

[0057] First, Fig. 2 shows a state in which the belt (2)

is inserted through the through hole (3). Into the through hole (3) made in one belt (1), the other belt (2) is inserted from the tip end, whereby the two rod-like bodies can clip the gut by using the joint (6) as a pivot. In Fig. 2, a circle is formed by the belt (1), the belt (2), the rod-like body (4), and the rod-like body (5), and the gut to be clipped is disposed in this ring. In other words, the belt (2) is inserted through the through hole (3) so as to surround the gut by the belt (1), the belt (2), the rod-like body (4), and the rod-like body (5).

[0058] Next, Fig. 3 shows a state that by seizing the tip end of the belt (1) and pulling the tip end of the belt (2), the whole belt (2) is inserted through the through hole (3), whereby the gut (not shown) is clipped by the rod-like body (4) and the rod-like body (5).

[0059] Fig. 4 shows a state that the tip end of the longer rod-like body is fitted in the through hole and locked. The two rod-like bodies are made different in length from each other, a through hole (3) is made in the belt (1) connected to the shorter rod-like body (4), in such a manner that the through hole is positioned at the tip end of the longer rod-like body (5) when the two rod-like bodies are put together by using the joint (6) as a pivot, so that as shown in Fig. 4, by inserting the whole belt (2) through the through hole (3) from the tip end side, the tip end (5a) of the longer rod-like body (5) can be fitted in the through hole and locked.

[0060] Next, a method for releasing the clipping state will be described.

[0061] To release the clipping state by displacement or the like of the clipping position of the gut, by seizing the joint (6) of the rod-like bodies and pulling the belt (1), the tip end (5a) of the rod-like body (5) comes out from the through hole (3) and the locked state can be released.

[0062] Fig. 5 shows a state that the joint (6) of the rod-like bodies is seized, the belt (1) is pulled to make the tip end (5a) of the longer rod-like body come out from the through hole (3), whereby the clipping state is released.

[0063] The belt (1) is flexible and elastic, so that the shape of the through hole (3) made in the belt (1) is also deformed into an oval shape in the pulling direction, and the tip end (5a) of the rod-like body is made easier to remove from the through hole (3). Unless the belt (1) is pulled, the tip end (5a) of the rod-like body does not come out from the through hole (3), and the state that the rod-like bodies clip the gut is reliably maintained.

[0064] Next, another Example 2 will be described.

[0065] When the belt is inserted through the through hole, it can be locked due to the respective elastic friction, however, when a further locking force is necessary, as in this Example 2, projections are provided on a part of the belt.

[0066] Fig. 6 is an external view of Example 2 of the clamp of the present invention, and as shown in Fig. 6, projections (7a through 7d) are provided on a part of the belt (2) to be inserted through the through hole (3) to lock the belt (2) so that the belt (2) becomes more difficult to come out from the through hole (3) after being inserted in the through hole (3). Various shapes such as spherical, semispherical, and rectangular shapes of the projections are possible.

[0067] The clamp of the present invention can easily and reliably clip the gut during an operation for intraoperative enema cleaning, resection of the stomach or the large intestine, or removal of bile duct calculus or cancerous tissues in the surgical field, and can be used as a medical aid instrument.

[0068]

[Fig. 1] is an external view of Example 1 of the clamp of the present invention;

[Fig. 2] is a view of a use image of Example 1 of the clamp of the present invention (a state that the belt is inserted through the through hole);

[Fig. 3] is a view of a use image of Example 1 of the clamp of the present invention (a state that the whole belt is inserted through the through hole);

[Fig. 4] is a view of a use image of Example 1 of the clamp of the present invention (a state that the tip end of the longer rod-like body is fitted in the through hole and locked);

[Fig. 5] is a view of a use image of Example 1 of the clamp of the present invention (a state that one belt is pulled to make the tip end of the longer rod-like body to come out from the through hole, whereby the clipping is released);

[Fig. 6] is an external view of Example 2 of the clamp of the present invention;

Description of Symbols

[0069]

1	belt (with a through hole)
2	belt (to be inserted through the through hole)
1a, 2a	tip end
1b, 2b	connected portion
3	through hole
3a, 3b, 3c	through hole
4	rod-like body (shorter)
5	rod-like body (longer)
5a	tip end of rod-like body (longer)

6	joint
7a, 7b, 7c, 7d	projection
8	serrated uneven portion

Claims

1. A surgical clamp for the digestive tract, comprising: two hard rod-like bodies (4, 5) each having a flexible belt (1, 2) extending from one end; a joint (6) at which the other ends of the rod-like bodies are joined, and at least one through hole (3) made in one belt (1), wherein by inserting the end of the other belt (2) into the through hole (3), the two rod-like bodies can clip the gut by using the joint (6) as a pivot, **characterised in that**
the two rod-like bodies (4, 5) are made different in length from each other, the position of the through hole (3) made in the belt (1) connected to the shorter rod-like body (4) being set so as to match with the end (5a) of the longer rod-like body (5) when the two rod-like bodies are put together by using the joint (6) as a pivot, such that by inserting the whole belt (2) connected to the longer rod-like body (5) through the through hole (3), the end (5a) of the longer rod-like body (5) can be fitted in the through hole and locked.

2. The surgical clamp according to Claim 1, wherein the surfaces of the rod-like bodies (4, 5) are covered by covers made of a flexibile resin.

3. The surgical clamp according to Claim 2, wherein the belts (1, 2), covers, and joint (6) are integrally molded by using a resin that is soft and has bendability.

4. The surgical clamp according to Claim 1, wherein the material of the rod-like bodies (4, 5) is a metal.

5. The surgical clamp according to Claim 1, wherein the material of the rod-like bodies (4, 5) is a hard resin.

6. The surgical clamp according to Claim 1, wherein the sectional shape of the rod-like bodies (4, 5) is circular, oval, or polygonal.

7. The surgical clamp according to Claim 1 wherein the lengths of the rod-like bodies (4, 5) are 30 to 70 millimeters.

8. The surgical clamp according to Claim 1, wherein the length difference between the two rod-like bodies (4, 5) is 3 to 7 millimeters.

9. The surgical clamp according to Claim 1, wherein the shape of the tip end of the belt (2a) to be inserted in the through hole (3) is tapered so that the belt (2) is easily inserted in through hole (3).

10. The surgical clamp according to Claim 1, wherein at least one projection (7, 7a, 7b, 7c, 7d) is provided on a part of the belt (2) to be inserted in the through hole (3) to lock the belt (2) so as to make the belt more difficult to come out from the through hole (3) after it is inserted in the through hole (3).

11. The surgical clamp according to Claim 1, wherein a serrated uneven portion (8) is formed on a part of the belt (2) to be inserted in the through hole (3) to lock the belt (2) so as to make the belt (2) more difficult to come out from the through hole (3) after it is inserted in the through hole (3).

12. The surgical clamp according to Claim 1, wherein the color of the belts (1, 2) is a complementary color of red.

13. The surgical clamp according to Claim 12, wherein the colors of the belts (1, 2) are different from each other.

14. The surgical clamp according to Claim 1, wherein the length of the belt (1) having the through hole (3) is shorter than the other belt (2).

Patentansprüche

1. Chirurgische Klemme für den Verdauungstrakt, die Folgendes umfasst: zwei harte stabartige Körper (4, 5), die jeweils einen flexiblen Gurt (1, 2) haben, der sich von einem Ende aus erstreckt, ein Verbindungsstück (6), an dem die anderen Enden der stabartigen Körper verbunden sind, und wenigstens ein in einem Gurt (1) hergestelltes Durchgangsloch (3), wobei die zwei stabartigen Körper durch Einsetzen des Endes des anderen Gurtes (2) in das Durchgangsloch (3) durch eine Verwendung des Verbindungsstücks (6) als Gelenk den Darm abklemmen können, **dadurch gekennzeichnet, dass**
die zwei stabartigen Körper (4, 5) in der Länge unterschiedlich voneinander hergestellt sind, wobei die Position des Durchgangslochs (3), das in dem mit dem kürzeren stabartigen Körper (4) verbundenen Gurt (1) hergestellt ist, so festgesetzt ist, dass es mit dem Ende (5a) des längeren stabartigen Körpers (5) zusammenpasst, wenn die zwei stabartigen Körper durch eine Verwendung des Verbindungsstücks (6) als Gelenk zusammengebracht werden, so dass durch Einsetzen des gesamten mit dem längeren stabartigen Körper (5) verbundenen Gurtes (2) durch das Durchgangsloch (3) das Ende (5a) des längeren stabartigen Körpers (5) in dem Durch-

gangsloch befestigt und arretiert werden kann.

2. Chirurgische Klemme für den Verdauungstrakt nach Anspruch 1, wobei die Oberflächen der stabartigen Körper (4, 5) durch aus einem flexiblen Harz hergestellte Abdeckungen abgedeckt sind.

3. Chirurgische Klemme für den Verdauungstrakt nach Anspruch 2, wobei die Gurte (1, 2), die Abdeckungen und das Verbindungsstück (6) integral durch eine Verwendung eines Harzes, das weich ist und eine Biegsamkeit hat, geformt sind.

4. Chirurgische Klemme für den Verdauungstrakt nach Anspruch 1, wobei der Werkstoff der stabartigen Körper (4, 5) ein Metall ist.

5. Chirurgische Klemme für den Verdauungstrakt nach Anspruch 1, wobei der Werkstoff der stabartigen Körper (4, 5) ein hartes Harz ist.

6. Chirurgische Klemme für den Verdauungstrakt nach Anspruch 1, wobei die Querschnittsform der stabartigen Körper (4, 5) kreisförmig, oval oder vieleckig ist.

7. Chirurgische Klemme für den Verdauungstrakt nach Anspruch 1, wobei die Längen der stabartigen Körper (4, 5) 30 bis 70 Millimeter betragen.

8. Chirurgische Klemme für den Verdauungstrakt nach Anspruch 1, wobei der Längenunterschied zwischen den zwei stabartigen Körpern (4, 5) 3 bis 7 Millimeter beträgt.

9. Chirurgische Klemme für den Verdauungstrakt nach Anspruch 1, wobei die Form des Spitzenendes des Gurtes (2a), das in das Durchgangsloch (3) einzuführen ist, verjüngt ist, so dass der Gurt (2) leicht in das Durchgangsloch (3) einzusetzen ist.

10. Chirurgische Klemme für den Verdauungstrakt nach Anspruch 1, wobei wenigstens ein Vorsprung (7, 7a, 7b, 7c, 7d) an einem Teil des Gurtes (2), der in das Durchgangsloch (3) einzusetzen ist, bereitgestellt wird, um den Gurt (2) zu arretieren, um es so schwieriger zu machen, dass der Gurt aus dem Durchgangsloch (3) herauskommt, nachdem er in das Durchgangsloch (3) eingesetzt ist.

11. Chirurgische Klemme für den Verdauungstrakt nach Anspruch 1, wobei ein gezahnter ungleichmäßiger Abschnitt (8) an einem Teil des Gurtes (2), der in das Durchgangsloch (3) einzusetzen ist, bereitgestellt wird, um den Gurt (2) zu arretieren, um es so schwieriger zu machen, dass der Gurt aus dem Durchgangsloch (3) herauskommt, nachdem er in das Durchgangsloch (3) eingesetzt ist.

12. Chirurgische Klemme für den Verdauungstrakt nach Anspruch 1, wobei die Farbe der Gurte (1, 2) eine Komplementärfarbe von Rot ist.

13. Chirurgische Klemme für den Verdauungstrakt nach Anspruch 12, wobei sich die Farben der Gurte (1, 2) voneinander unterscheiden.

14. Chirurgische Klemme für den Verdauungstrakt nach Anspruch 1, wobei die Länge des Gurtes (1), der das Durchgangsloch (3) hat, kürzer ist als der andere Gurt (2).

Revendications

1. Pince chirurgicale pour le tube digestif, comprenant : deux corps durs en forme de tiges (4, 5) comportant chacun une courroie flexible (1, 2) s'étendant depuis une extrémité ; une articulation (6) à laquelle sont reliées les autres extrémités des corps en forme de tiges, et au moins un trou traversant (3) pratiqué dans une courroie (1), dans laquelle en insérant l'extrémité de l'autre courroie (2) dans le trou traversant (3), les deux corps en forme de tiges peuvent pincer l'intestin en utilisant l'articulation (6) comme pivot, **caractérisée en ce que** :

les deux corps en forme de tiges (4, 5) sont de longueur différente, la position du trou traversant (3) formé dans la courroie (1) connectée au corps en forme de tige le plus court (4) étant établie de façon à correspondre avec l'extrémité (5a) du corps en forme de tige le plus long (5) quand les deux corps en forme de tiges sont rassemblés en utilisant l'articulation (6) comme pivot, de sorte qu'en insérant toute la courroie (2) connectée au corps en forme de tige le plus long (5) par le trou traversant (3), l'extrémité (5a) du corps en forme de tige le plus long (5) peut être insérée dans le trou traversant et bloquée.

2. Pince chirurgicale selon la revendication 1, dans laquelle les surfaces des corps en forme de tiges (4, 5) sont recouvertes d'une protection en résine souple.

3. Pince chirurgicale selon la revendication 2, dans laquelle les courroies (1, 2), les protections et l'articulation (6) sont moulées d'un seul tenant en employant une résine qui est molle et qui a de la flexibilité.

4. Pince chirurgicale selon la revendication 1, dans laquelle le matériau des corps en forme de tiges (4, 5) est un métal.

5. Pince chirurgicale selon la revendication 1, dans la-

quelle le matériau des corps en forme de tiges (4, 5) est une résine dure.

6. Pince chirurgicale selon la revendication 1, dans laquelle les corps en forme de tiges (4, 5) sont de section circulaire, ovale ou polygonale.

7. Pince chirurgicale selon la revendication 1, dans laquelle les longueurs des corps en forme de tiges (4, 5) sont de 30 à 70 millimètres.

8. Pince chirurgicale selon la revendication 1, dans laquelle la différence de longueur entre les deux corps en forme de tiges (4, 5) est de 3 à 7 millimètres.

9. Pince chirurgicale selon la revendication 1, dans laquelle la forme du bout d'extrémité de la courroie (2a) à insérer dans le trou traversant (3) présente un rétrécissement, de sorte que la courroie (2) peut être aisément insérée dans le trou traversant (3).

10. Pince chirurgicale selon la revendication 1, dans laquelle au moins une protubérance (7, 7a, 7b, 7c, 7d) est prévue sur une partie de la courroie (2) à insérer dans le trou traversant (3) pour bloquer la courroie (2) afin de rendre plus difficile la sortie de la courroie du trou traversant (3) après qu'elle a été insérée dans le trou traversant (3).

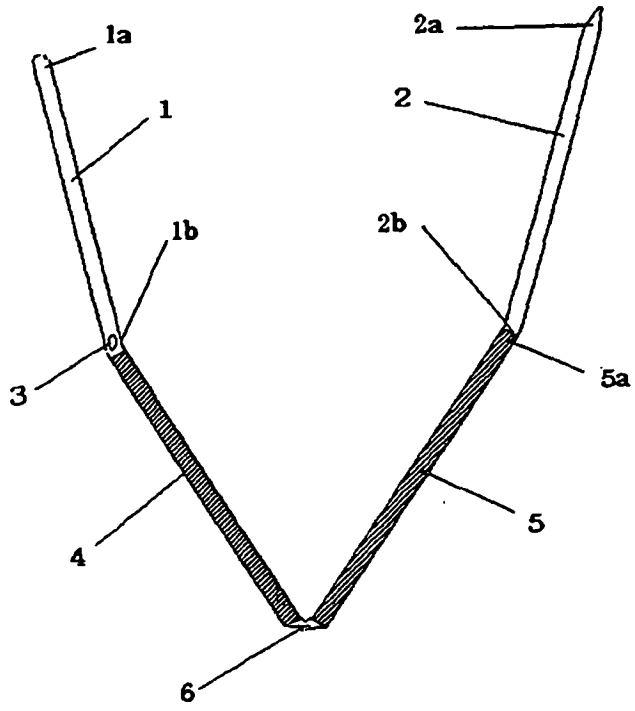
11. Pince chirurgicale selon la revendication 1, dans laquelle une partie irrégulière en dents de scie (8) est formée sur une partie de la courroie (2) à insérer dans le trou traversant (3) pour bloquer la courroie (2) afin de rendre plus difficile la sortie de la courroie (2) du trou traversant (3) après qu'elle a été insérée dans le trou traversant (3).

12. Pince chirurgicale selon la revendication 1, dans laquelle la couleur des courroies (1, 2) est une couleur complémentaire du rouge.

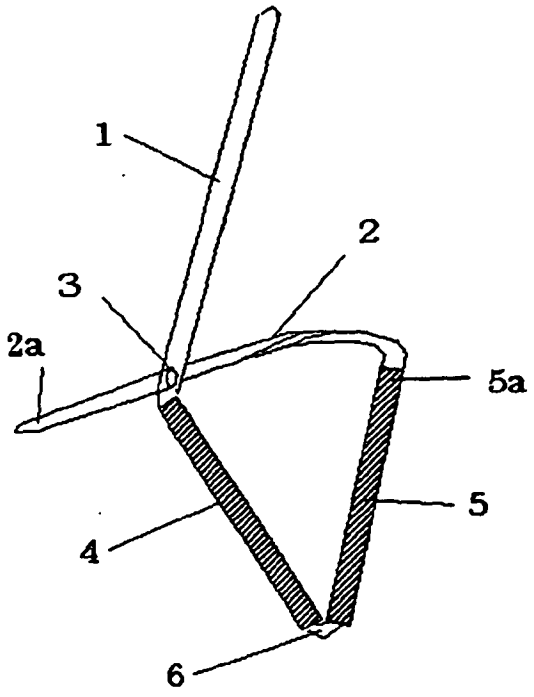
13. Pince chirurgicale selon la revendication 12, dans laquelle les couleurs des courroies (1, 2) sont différentes l'une de l'autre.

14. Pince chirurgicale selon la revendication 1, dans laquelle la longueur de la courroie (1) comportant le trou traversant (3) est inférieure à celle de l'autre courroie (2).

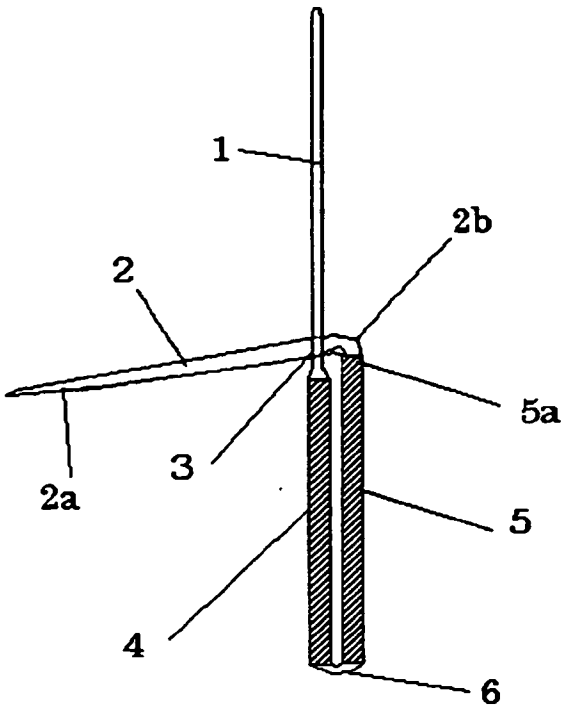
【Fig.1】



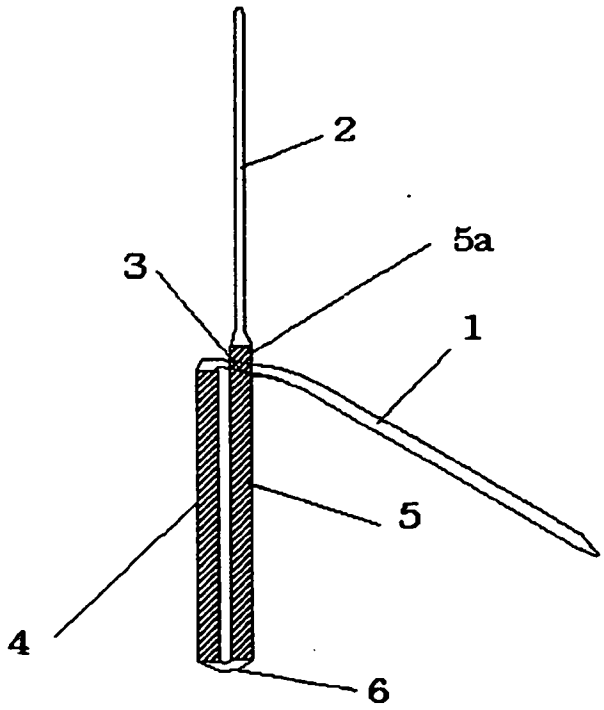
【Fig.2】



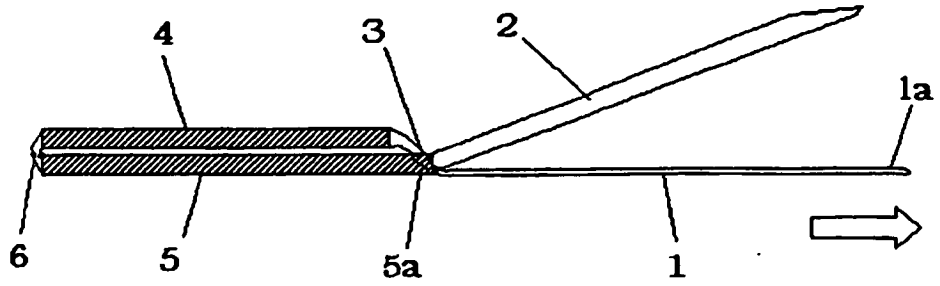
【Fig.3】



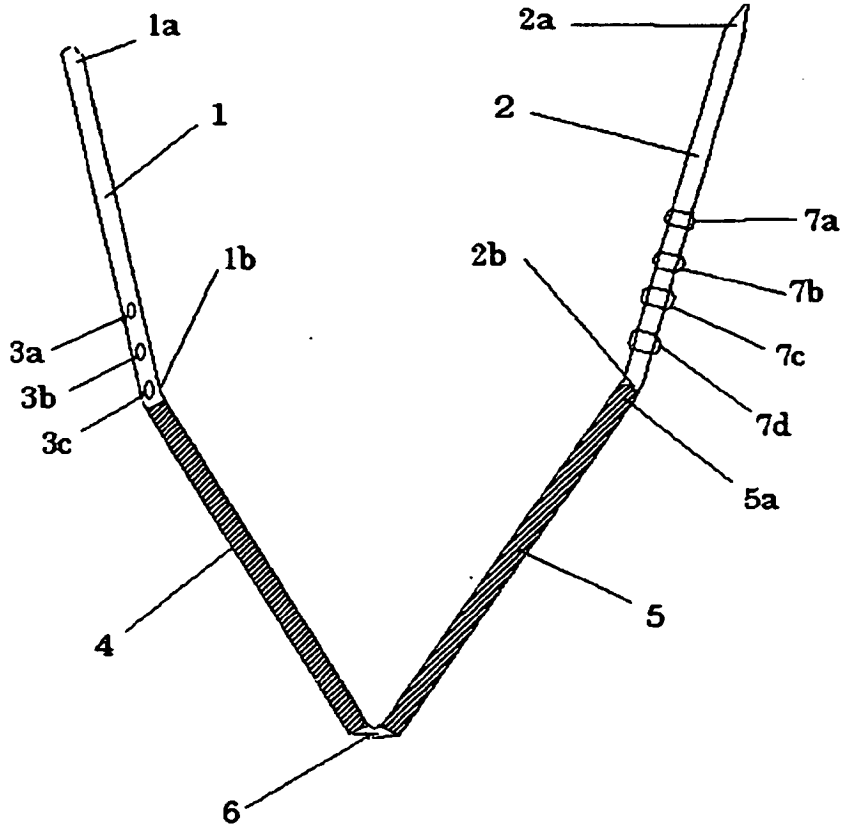
【Fig.4】



【Fig.5】



【Fig.6】



REFERENCES CITED IN THE DESCRIPTION

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专利名称(译)	好夹具		
公开(公告)号	EP1806101A4	公开(公告)日	2009-11-11
申请号	EP2005785718	申请日	2005-09-22
[标]申请(专利权)人(译)	国立大学法人神戸大学		
申请(专利权)人(译)	国家大学CORP.神户大学		
当前申请(专利权)人(译)	国家大学CORP.神户大学		
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IPC分类号	A61B17/00 A61B17/12		
CPC分类号	A61B17/12 A61B17/12009 A61B17/122 A61B17/132		
代理机构(译)	CASALONGA，AXEL		
优先权	2004276827 2004-09-24 JP		
其他公开文献	EP1806101B1 EP1806101A1		
外部链接	Espacenet		

摘要(译)

即使在如腹腔镜手术的情况下不能确保使用仪器所需的足够空间的周围的情况下，为了在操作期间容易且可靠地夹紧肠子，也提供了一种肠钳，其包括两个具有柔性带的硬杆状体。 在一端，连接有杆状体的接头，以及在其中一条皮带上形成的至少一个通孔，并以接头为枢轴，使用两个硬杆状体夹住肠腔。 通过用棒状体的侧面夹紧肠，可以在加压和加宽肠的宽度的同时将肠夹紧，从而可以防止肠被过度夹紧和撕裂。 另外，使两个杆状体的长度互不相同，在与较短的杆状体连接的皮带上形成通孔，并且将较长的杆状体的末端嵌入到杆状体中。 通孔并锁定，从而实现可靠的夹紧，而不会给操作员带来过多的负担。

【Fig.2】