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(54) **INSTALLATION METHOD AND GUIDING STRUCTURE FOR A CONNECTION OF A TUBELESS RIM**

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(57) **ABSTRACT**

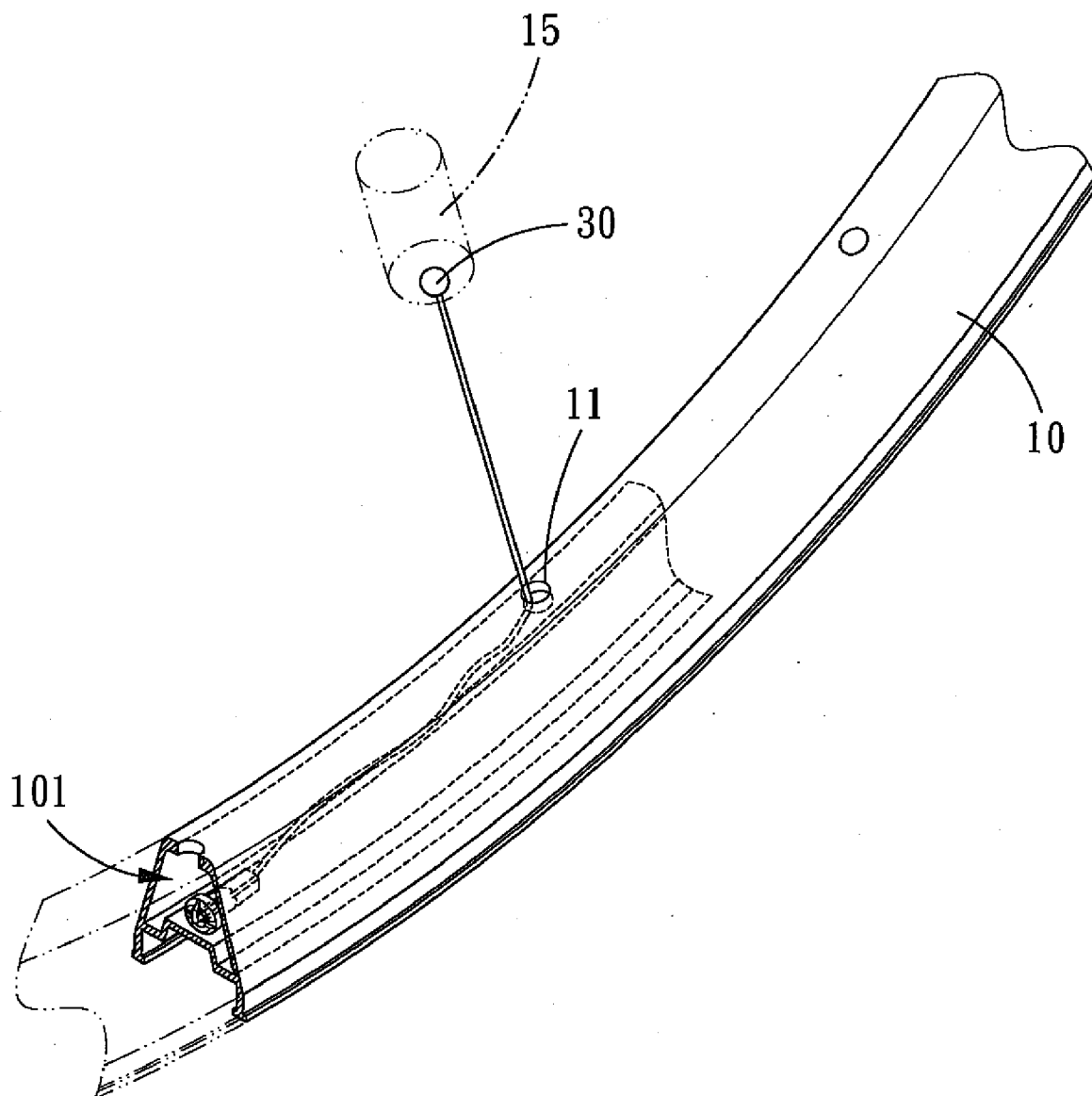
An installation method and a guiding structure for a connector of a tubeless rim, wherein the method is to use one end of a wire to fix a magnetic attraction element, and the other end of the wire to hook at a connector by an elastic hook which can disengage from the connector after being forced to deform. With the abovementioned method and the structure, the present invention can use the wire to quickly position the connector and quickly detach the wire. Hence, the installation of the connector of a tubeless rim can be greatly simplified and the connector can not be restricted by the raw edge or the installation direction.

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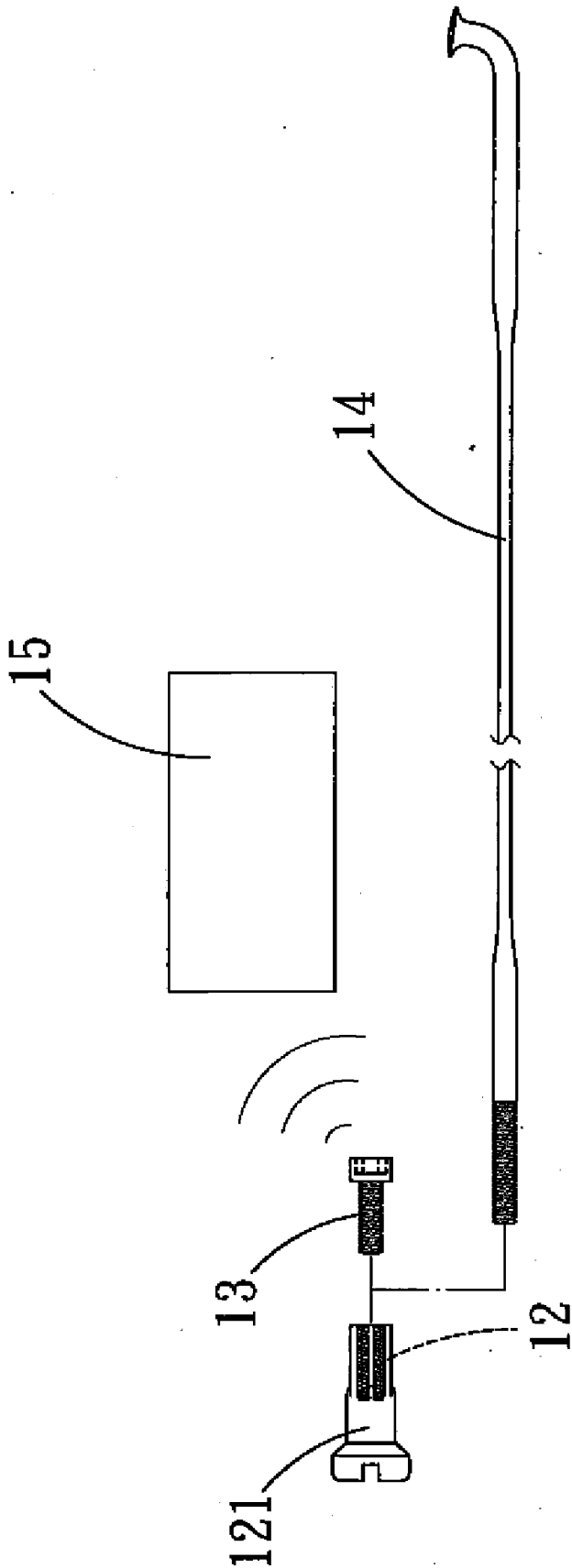
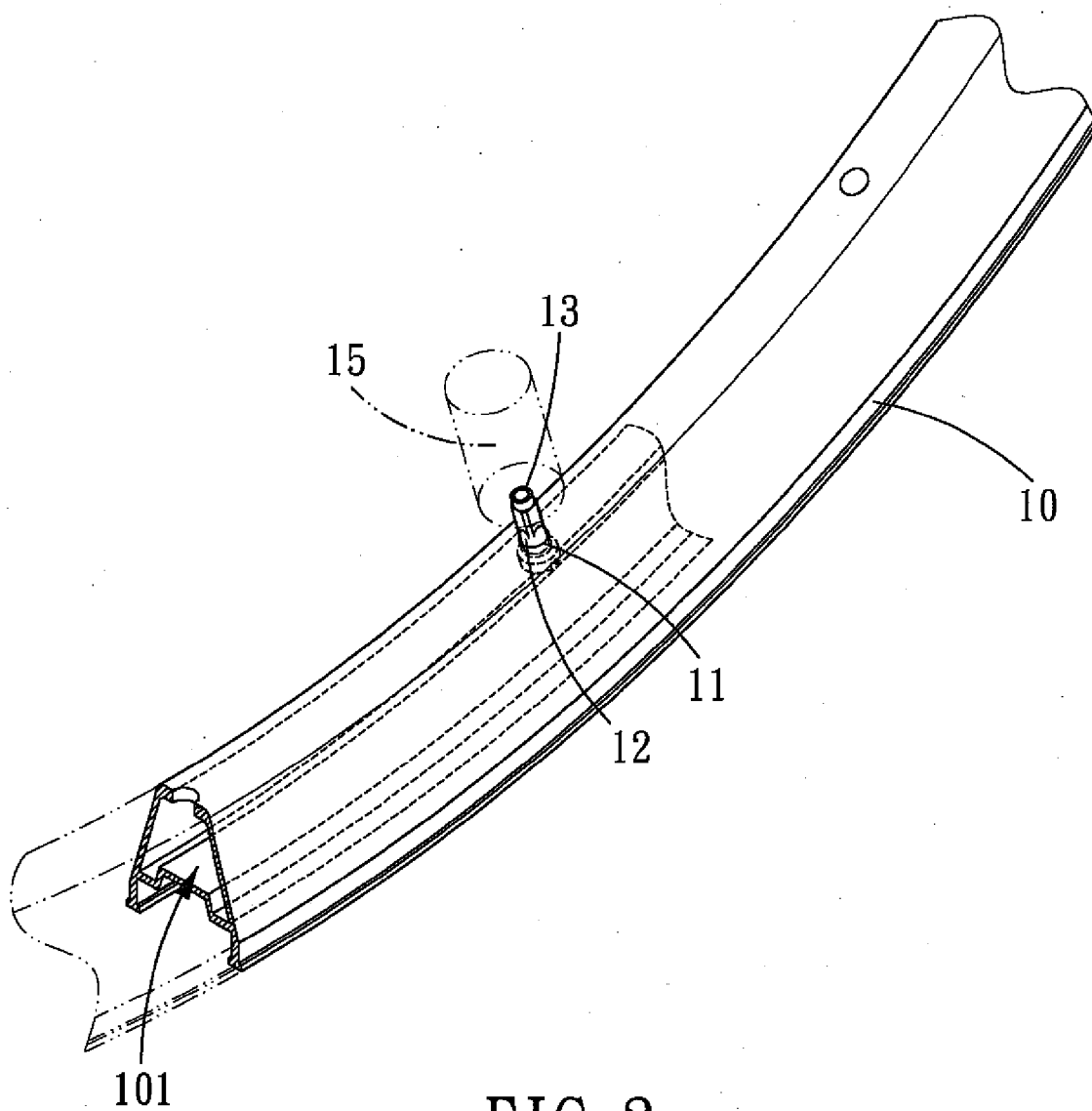


FIG. 1
PRIOR ART



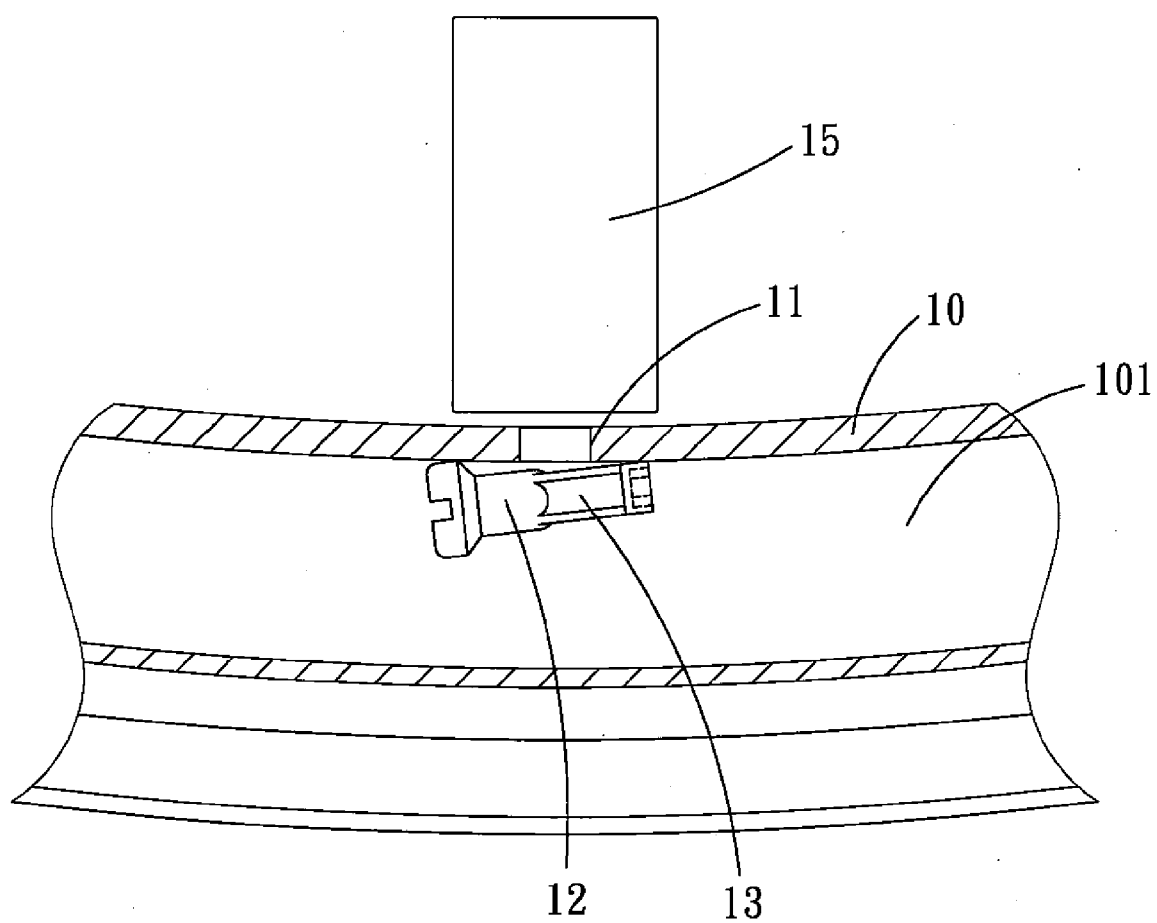


FIG. 3
PRIOR ART

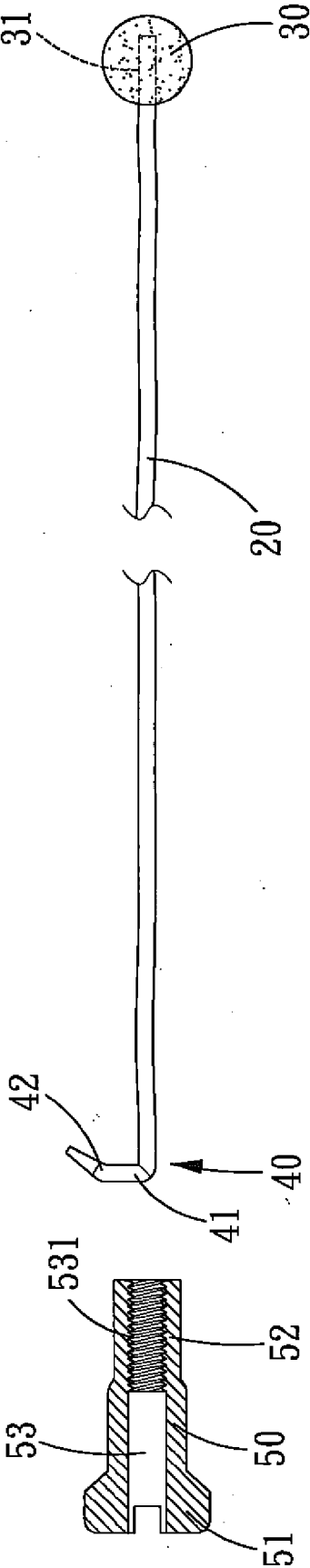


FIG. 4

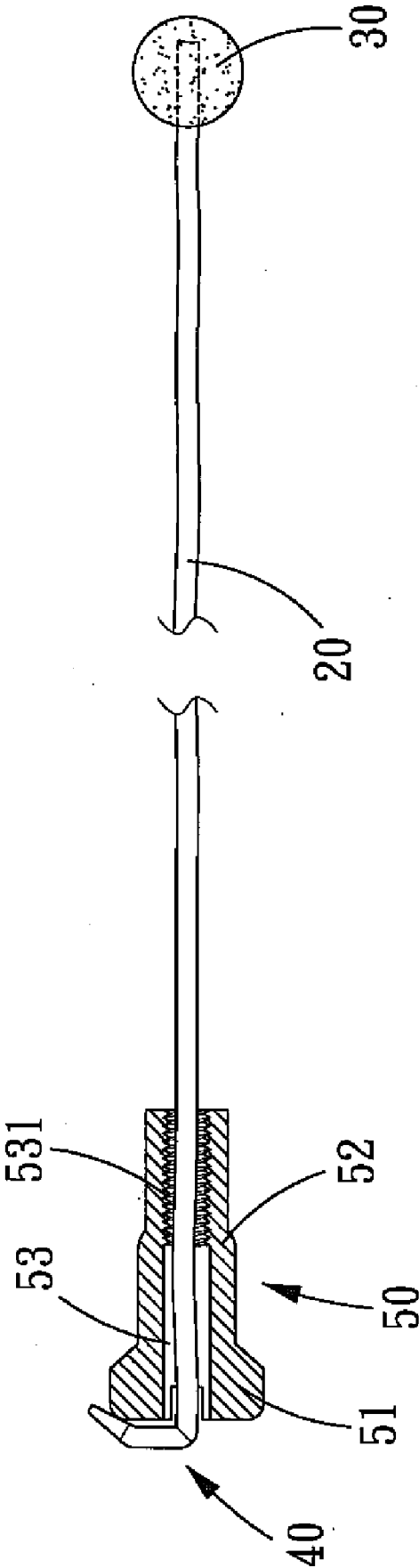


FIG. 5

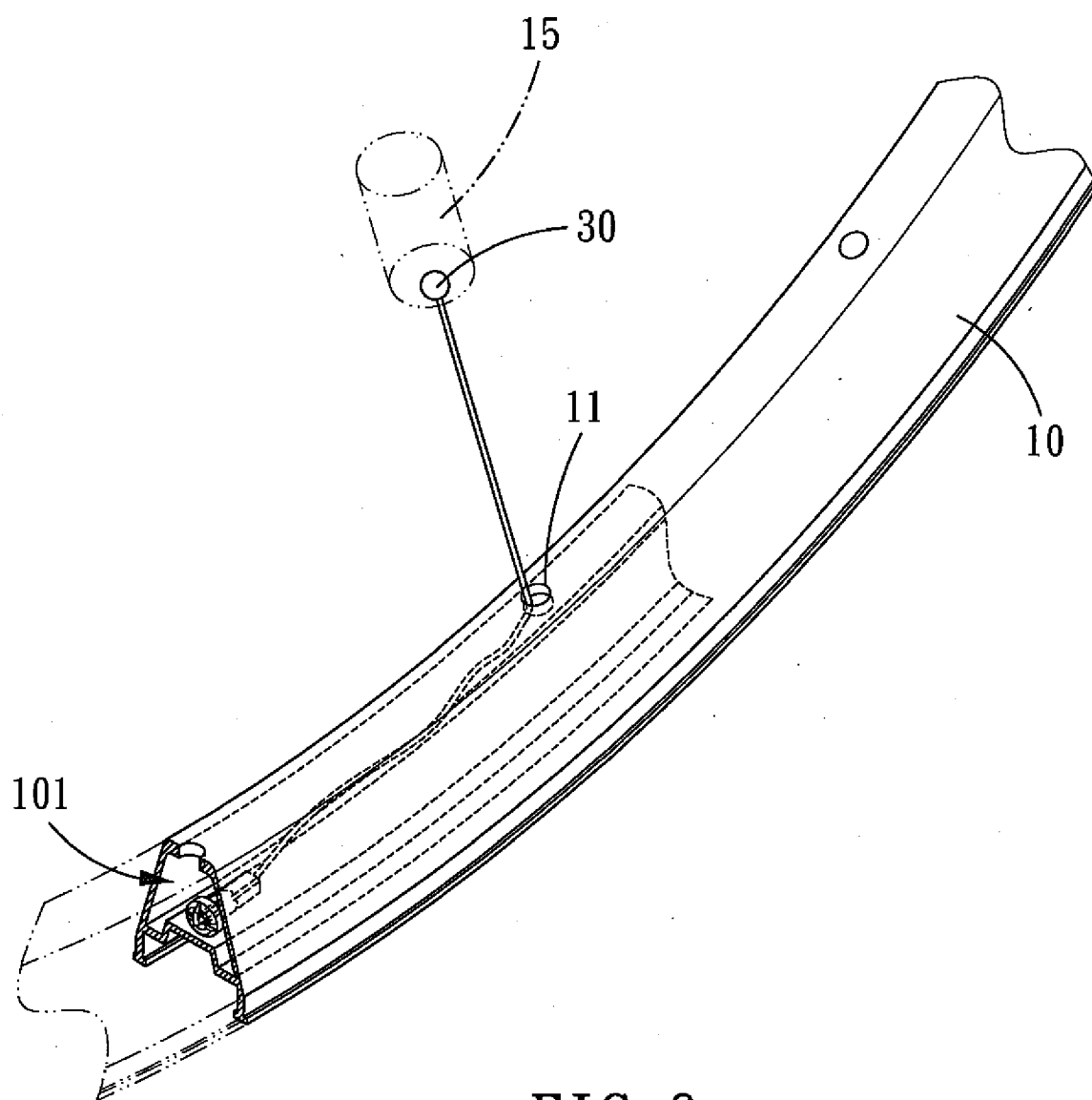


FIG. 6

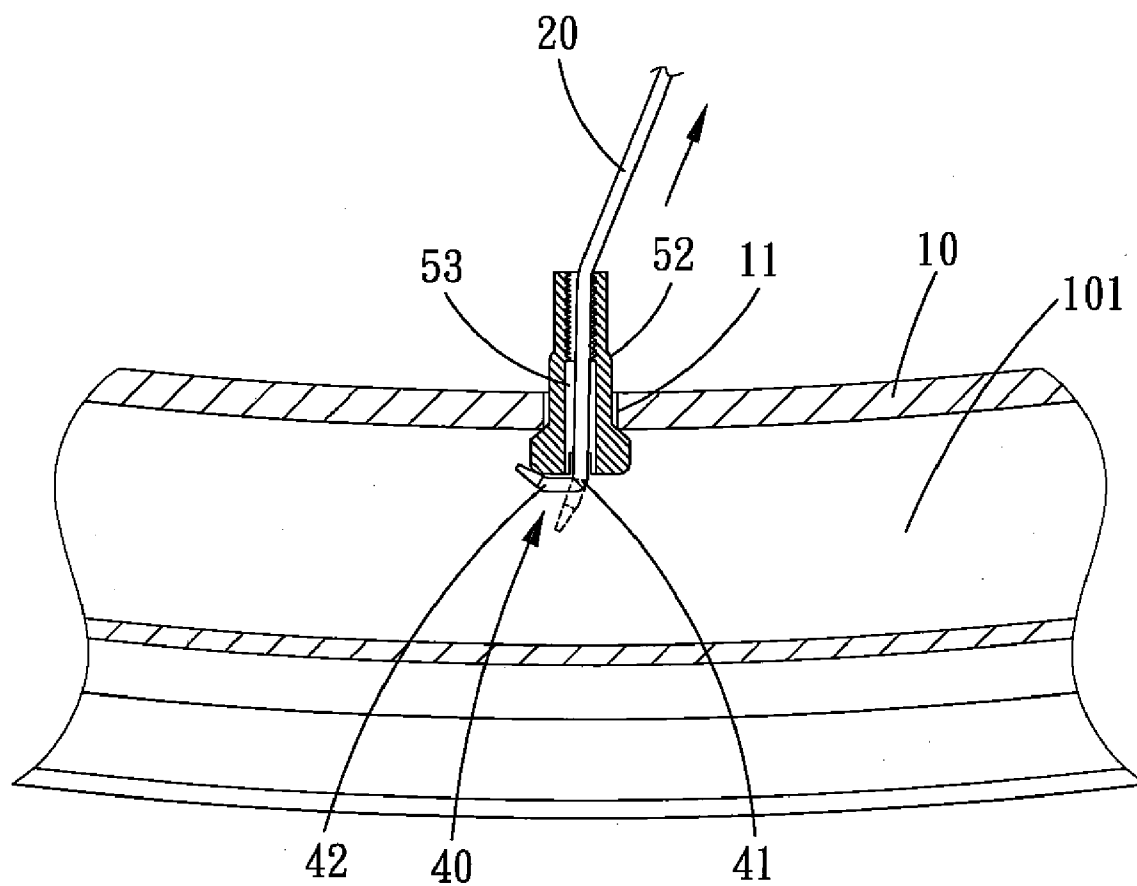


FIG. 7

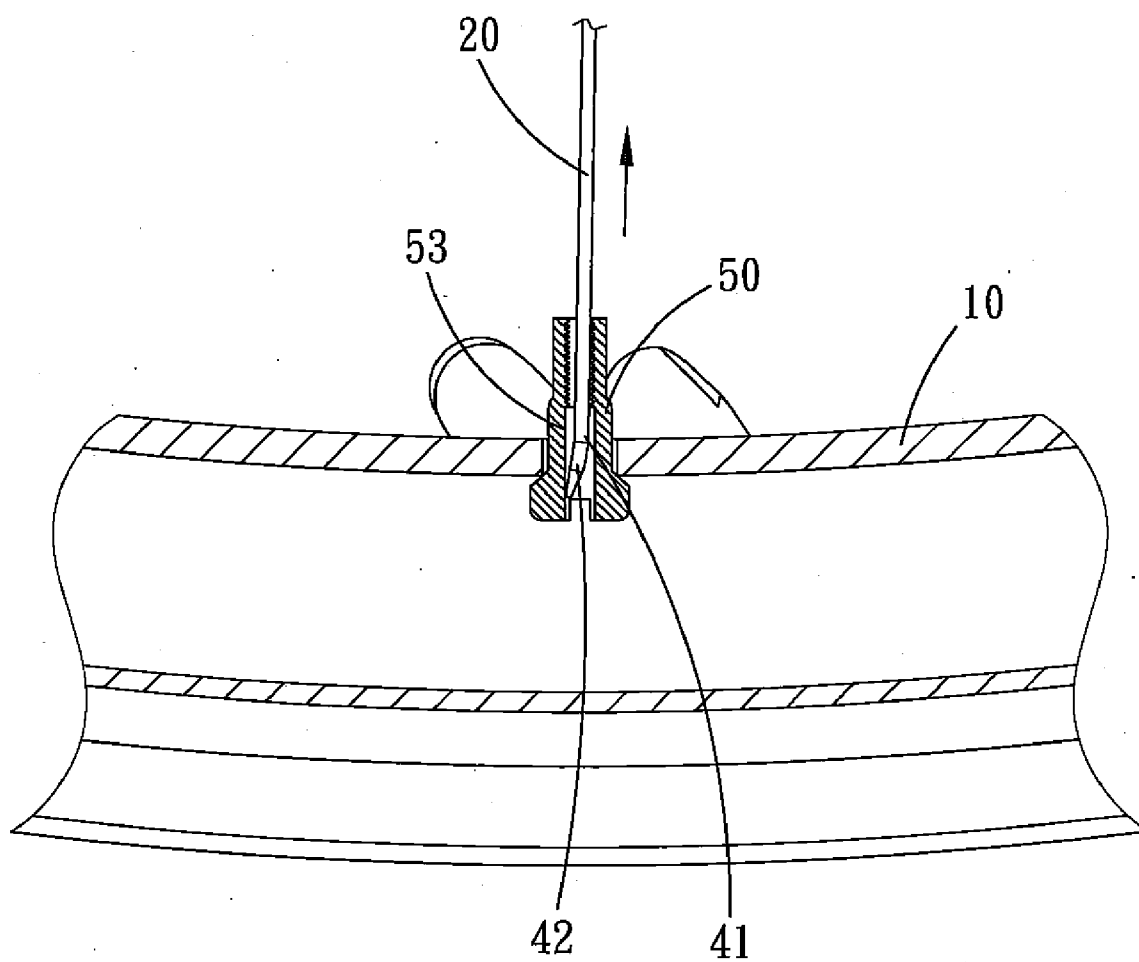


FIG. 8

INSTALLATION METHOD AND GUIDING STRUCTURE FOR A CONNECTION OF A TUBELESS RIM

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The present invention relates to an installation method and a guiding structure for a connector of a rim, and more particularly to an installation method and a guiding structure for a special connector of a tubeless bicycle rim which can greatly simplify the installation of the connector of the tubeless rim.

[0003] 2. Description of the Prior Art

[0004] The existing installation method and guiding structure for a connector of a tubeless bicycle rim are as shown in FIGS. 1-3, an inner space **101** of the tubeless rim **10** is closed, and the spoke-connecting hole located in the inner surface of the tubeless rim **10** doesn't have a space for facilitating the installation of the connector **12** (a copper connector for assembling the bicycle spokes to the rim), by such arrangements, the conventional installation of the connector **12** is quite difficult. The conventional installation method for the connector **12** and the relevant accessories are as follows:

[0005] 1. Firstly, screwing the magnetic attraction screw **13** into the thread hole **121** which is prepared to lock the spoke **14**;

[0006] 2. Putting the connector **12** locked with the magnetic attraction screw **13** in the inner space **101** of the tubeless rim **10** through a relatively large air valve hole (not shown);

[0007] 3. Utilizing gravity to make the connector **12** locked with the magnetic attraction screw **13** correspondingly drop down into a certain spoke-connecting hole **11**;

[0008] 4. Using a strong magnetic element **15** from the external of spoke-connecting hole **11** of the tubeless rim **10** to attract the magnetic attraction screw **13**, so as to drive the connector **12** to synchronously move into the spoke-connecting hole **11**;

[0009] 5. Grasping the connector **12** with one hand, and immediately removing the magnetic attraction screw **13**; and

[0010] 6. Locking the spoke **14** into the thread hole **121** of the connector **12**.

[0011] With the abovementioned installation method and structure, the assembly of the tubeless rim can be completed, but it also causes the following problems:

[0012] 1. The abovementioned installation method is complicated, and the experience of the operator is very important, or else the operation of grasping the connector **12** to remove the magnetic attraction screw **13** is likely to cause the unexpected disengagement problem of the connector **12**;

[0013] 2. The inner space **101** of the tubeless rim **10** is closed, so when the magnetic attraction screw **13** is attracted by the strong magnetic element **15** to drive the connector to move, there is not a fixed direction, hence after many times of attraction and movement, the respective connectors **12** can move into the spoke-connecting hole **11**, thus wasting time and causing inconvenience.

[0014] 3. The raw edge caused by making the spoke-connecting hole **11** of the tubeless rim **10** is hid inside the inner space **101**, so when the magnetic attraction screw **13** is attracted by the strong magnetic element **15**, the connector **12** cannot be successfully driven to synchronously move into the spoke-connecting hole **11**, thus forming the jammed state as shown in FIG. 3 and severely influencing the assembly operation.

[0015] In order to solve the abovementioned relevant problems, based on the accumulative research technology and experience in the field of the tubeless bicycle rim, from the angle of reducing error and improving convenience, the applicant of the present invention has developed a new installation method and guiding structure for a connector of a tubeless bicycle rim.

SUMMARY OF THE INVENTION

[0016] The primary objective of the present invention is to provide an installation method and a guiding structure for a connector of a tubeless rim which can make the connector be installed quickly and not be restricted by the raw edge or installation direction.

[0017] In order to achieve the abovementioned objective, the installation method for a connector of a tubeless rim comprises the steps of: a. using one end of the wire to fix a magnetic attraction element and using the elastic hook to hook the other end of wire to the connector, the elastic hook can release the connector after being applied a force; b. putting the wire, magnetic attraction element and connector into the inner space of the tubeless rim through a relatively large air valve hole, and then using a strong magnetic element to attract the magnetic attraction element to pull the wire to cause a directional movement of the connector. Hence, the present invention can quickly make the connector be positioned and not be restricted by the raw edge and installation direction.

[0018] In order to bring the abovementioned method into effect, a guiding structure of the present invention comprises a wire, a magnetic attraction element and a connector. One end of the wire is fixed to a magnetic element, and the other end of the wire is formed with an elastic hook. The elastic hook can deform to go through the axial through hole of the connector, and the wire utilizes the elastic hook to hook the connector. Moreover, the elastic hook of the wire has a pre-determined elastic deformation stress for being forced to deform by the operator to disengage from the axial through hole of the connector.

[0019] It is to be noted that, the magnetic attraction element in the abovementioned method and the guiding structure is used to be attracted by the strong magnetic element, so the magnetic attraction element is made of magnetic attraction material. In order to make the magnetic attraction element quickly pass through the raw material and the through hole, the magnetic attraction element can be a round, elliptic or cone-shaped structure, and the method of fixing the magnetic attraction element to the wire can adopt the general well-known bonding, pressing or welding technologies and so on.

[0020] In addition, the wire of the present invention can be made of plastic thread (such as, fishing line), metal thread, or composite thread. The curving portion of the elastic hook can be formed by permanent deformation of one end of the wire, and the curving portion of the wire is made of the material with the property of elastic deformation, such as plastic, metal, composite material and so on.

BRIEF DESCRIPTION OF THE DRAWINGS

[0021] FIG. 1 is an exploded view of a conventional guiding structure;

[0022] FIG. 2 shows a conventional installation method;

[0023] FIG. 3 shows a jammed state of a conventional connector;

[0024] FIG. 4 is an exploded view of a guiding structure for a connector of a tubeless rim in accordance with the present invention;

[0025] FIG. 5 is a perspective view of the guiding structure for a connector of a tubeless rim in accordance with the present invention;

[0026] FIG. 6 shows the installation method of attracting a magnetic element in accordance with the present invention;

[0027] FIG. 7 shows the installation method of positioning the connector in accordance with the present invention; and

[0028] FIG. 8 shows the installation method of releasing the elastic hook in accordance with the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0029] The present invention will be clearer from the following description when viewed together with the accompanying drawings, which show, for purpose of illustrations only, the preferred embodiment in accordance with the present invention.

[0030] Referring to FIGS. 4-5, a guiding structure for a connector of a tubeless rim in accordance with a preferred embodiment of the present invention is used together with a strong magnetic element 15 and comprises a wire 20, a magnetic attraction element 30, an elastic hook 40 and a connector 50.

[0031] The wire 20 is made of 0.66 mm elastic fishing line.

[0032] The magnetic attraction element 30 is a round steel structure and is formed with a through hole 31. After one end of the wire 20 goes through the through hole 31, a machine is used to press the through hole 31 of the round steel magnetic attraction element 30 for fixing the end of the wire into the through hole 31.

[0033] The elastic hook 40 is integrally formed at the other end of the wire 20 and includes a curving portion 41 and a hook portion 42. The curving portion 41 and the hook portion 42 are formed by permanent deformation of the end of the elastic hook 40.

[0034] The connector 50 is made of copper material, and both ends of the connector 50 are formed with a bigger head 51 and a connecting rod 52. The connector 50 is axially formed with a through hole 53 at the center thereof, and one end of the through hole 53 located correspondingly to the connecting rod 52 is formed with inner threads 531, and the through hole is used for the passage of the wire 20 and the elastic hook 40.

[0035] The aforementioned structure and technology are the key structure and configuration of the preferred embodiment in accordance with the present invention.

[0036] For a better understanding of the present invention, its technology detail, reference should be made to the following description.

[0037] An installation method for a connector of a tubeless rim comprises the steps of:

[0038] 1. Fixing a magnetic attraction element 30 to one end of a wire 20, and inserting the elastic hook 40 through a connector 50 to hook the other end of the wire 20 to the connector 50;

[0039] 2. Putting the wire 20 and the magnetic attraction element 30 into an inner space 101 of the tubeless rim 10 through a relatively large air valve hole, and then using a strong magnetic element 15 to attract the magnetic attraction element 30 to pass through the spoke-connecting hole 11, and

pulling the wire 20 to move the connecting rod 52 of the connector 50 smoothly into the spoke-connecting hole 11;

[0040] 3. Positioning the connector 50 with the finger of the operator and applying a predetermined pulling force to the wire 20, at this moment, the curving portion 41 of the elastic hook 40 of the wire 20 deforms to make the hook portion 42 slide into the axial through hole 53 of the connector 50, and allows the elastic hook 40 to quickly disengage from the connector 50, at this moment, the operator can conveniently screw the spoke (not shown) to the inner threads 531 of the through hole 53 of the connector 50.

[0041] With the abovementioned installation method and guiding structure for a connector of a tubeless rim, the magnetic attraction element cannot be restricted by the raw edge and be influenced by the direction of the connector, and the pull of the wire leads to a directional movement of the connector. Thereby, the connector can be quickly positioned and not be restricted by the raw edge and installation direction, thus effectively shortening the operation time, reducing the cost, and further avoiding the probability of the disengagement caused by operational error.

[0042] At last, the variation of the material and shape of the abovementioned magnetic attraction element and the fixed way of the wire is a general conventional technology. In addition, the variation of the wire material and the detailed structure and material of the elastic hook is also a general conventional technology, so detailed description is omitted here.

[0043] While we have shown and described various embodiments in accordance with the present invention, it is clear to those skilled in the art that further embodiments may be made without departing from the scope of the present invention.

What is claimed is:

1. A connector-installing method for a tubeless rim comprising the steps of:

- a. fixing a magnetic attraction element to one end of a wire and positioning a connector by an elastic hook of the other end of the wire;
- b. putting the wire and the magnetic attraction element into an inner space of a tubeless rim;
- c. using a strong magnetic element to attract the magnetic attraction element to go through a spoke-connecting hole; and
- d. using the wire to pull the connector to smoothly go into the spoke-connecting hole and pulling the wire with a predetermined force, so as to cause a curving portion of the wire to deform for quickly releasing the connector.

2. The installation method for a connector of a tubeless rim as claimed in claim 1, wherein the elastic hook is integrally formed on the wire, and the connector is formed with a through hole for a passage of the elastic hook to hook the wire to the connector.

3. The installation method for a connector of a tubeless rim as claimed in claim 2, wherein the connector is firstly positioned by finger of a operator after the wire is pulled to smoothly move into the spoke-connecting hole, and then a predetermined force is applied to pull the wire, at this moment, the elastic hook slides into the axial through hole of the connector and then disengages from the connector.

4. The installation method for a connector of a tubeless rim as claimed in claim 2, wherein the magnetic attraction element is formed with a through hole, and after one end of the

wire is inserted through the through hole, a tool is used to press the through hole to fix the end of the wire in the through hole.

5. A guiding structure for a connector of a tubeless rim comprising a wire, a magnetic attraction element, an elastic hook and a connector, wherein:

the magnetic attraction element is fixed on one end of the wire;

the elastic hook is fixed on the other end of the wire and includes a curving portion with elastic deformation property and a hook portion; and

the connector is axially formed with a through hole at a center thereof, and a surface of the through hole located correspondingly to a connecting rod is formed with inner threads, and the through hole is used for a passage of the wire and the elastic hook.

6. The guiding structure for a connector of a tubeless rim as claimed in claim 5, wherein the wire is made of 0.66 mm fishing line, and the other end of the wire is integrally formed with the elastic hook.

7. The guiding structure for a connector of a tubeless rim as claimed in claim 5, wherein the magnetic attraction element is a round, elliptic or cone-shaped structure.

8. The guiding structure for a connector of a tubeless rim as claimed in claim 5, wherein a method of fixing the elastic element to the wire adopts a bonding, pressing or welding technology.

9. The guiding structure for a connector of a tubeless rim as claimed in claim 5, wherein the wire is made of plastic, metal or composite material.

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