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

(11) **EP 3 156 105 B2**

(12) **NEW EUROPEAN PATENT SPECIFICATION**
After opposition procedure

(45) Date of publication and mention of the opposition decision:
01.09.2021 Bulletin 2021/35

(45) Mention of the grant of the patent:
01.11.2017 Bulletin 2017/44

(21) Application number: **15189351.8**

(22) Date of filing: **12.10.2015**

(51) Int Cl.:
F16D 1/00 *(2006.01)* ***A63B 5/11*** *(2006.01)*
A63B 21/02 *(2006.01)* ***A63B 71/02*** *(2006.01)*

(54) **TRAMPOLINE SUPPORT STRUCTURE**

TRAMPOLINSTÜTZSTRUKTUR

STRUCTURE DE SUPPORT DE TRAMPOLINE

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

(43) Date of publication of application:
19.04.2017 Bulletin 2017/16

(73) Proprietor: **Crowntec (Jiang Xi) Sports Technology Co. Ltd**
Jiujiang City, Jiangxi Province 360424 (CN)

(72) Inventor: **HSIANG, Hua-Lu**
330 Taoyuan Dist., Taoyuan City, (TW)

(74) Representative: **2K Patentanwälte Blasberg Kewitz & Reichel Partnerschaft mbB**
Schumannstrasse 27
60325 Frankfurt am Main (DE)

(56) References cited:
CN-Y- 2 930 768
CN-Y- 201 212 506
US-A1- 2006 189 441
US-A1- 2009 023 558
US-A1- 2010 240 496
US-B1- 7 220 218
US-B2- 7 494 444

EP 3 156 105 B2

Description

FIELD OF THE INVENTION

[0001] The present invention relates to a trampoline support structure and particularly to a trampoline support structure that employs a plurality of tubes coupled with one another to enhance structural strength.

BACKGROUND OF THE INVENTION

[0002] A conventional trampoline generally includes a trampoline frame to support a jumping mesh. The trampoline frame is constructed by assembling a plurality of support means. For instance, China patent No. CN2806855 discloses an improved weldless connection apparatus that includes a transverse connection tube and a longitudinal connection tube that cross each other to form a T-shaped structure. The transverse connection tube includes two opposing walls each includes an anchor hole formed thereon. During implementation a plurality of the weldless connection apparatus are connected to a trampoline frame, then a plurality of springs are connected to a rebounding surface located in the trampoline frame. The trampoline frame consists of a plurality of arched tubes. The transverse connection tube is inserted by two arched tubes. One of the arched tubes further passes through another arched tube. The two arched tubes include respectively a hole corresponding to the anchor hole that are fastened together via a connector to anchor any two arched tubes of the trampoline frame without falling apart due to stretching of the rebounding surface and the springs.

[0003] However, when users are jumping on the rebounding surface on jumping exercise, because there is no any protection measure around the trampoline frame, the users could rebound outside the trampoline frame and fall to the floor. To remedy such a problem Applicant has proposed an improvement of adding a encircled protection mesh disclosed in Chine patent No. CN202237001. It is a trampoline equipped with a encircled protection mesh. The trampoline includes a frame, a jumping portion, a reinforced connection portion and a encircled protection mesh. The frame includes an annular base rack, a plurality of support racks installed on the annular base rack and an encircled mesh support rack assembly installed on the support racks. The encircled protection mesh is connected to an inner side of the encircled mesh support rack assembly. Through the encircled protection mesh users can be protected from falling outside of the trampoline during rebounding from the jumping portion.

[0004] However, on CN202237001 the encircled mesh support rack assembly is anchored on the outer side of the support racks through screw fastening. The encircled mesh support rack assembly still is prone to loosening from the support racks due to stress or other factors generated by jumping of the users. To resolve the aforesaid problem another China patent No. CN201250829 discloses a trampoline frame tube connection structure which includes two frame tubes, a leg tube, a protection fence tube and a connection element. The connection element includes a longitudinal tube, a transverse tube welded to the longitudinal tube, a reinforced tube located in the transverse tube and exposed outside thereof, and a fastening hole located on the transverse tube communicating with the reinforced tube. During implementation of the trampoline frame tube connection structure the two frame tubes inserted into two opposing sides of the transverse tube, the protection fence tube runs through the reinforced tube, and the fastening hole is screwed via a screw to fasten the frame tubes and the protection fences tube, thereby enhance the structural strength between the protection fence tube and the connection element from loosening caused by shaking and vibration of the trampoline.

[0005] However, on CN201250829, although the trampoline frame connection structure has tried to overcome the loosening problem through mutual fastening of the transverse tube, the frame tube and the protection fence tube, the two frame tubes merely are supported by the transverse tube without one frame tube passing through another frame tube, and the leg tube and the protection fence tube also do not couple with each other. As a result, the two frame tubes, the leg tube and the protection fence tube are easily bent due to vibration of the trampoline or during transportation. In addition, because the transverse tube, the frame tube and the protection fence tube are fastened via a screw, the screw could fracture when subject to excessive stress during jumping and rebounding process of the users. Hence how to design a support structure to overcome the problem of inadequate structural strength that occurs to the conventional techniques is an issue yet to be resolved

[0006] CN 2 930 768 Y discloses a trampoline support structure. Further background prior art is disclosed e.g. in US 2010/240496 A1; US 2009/023558 A1; US 2006/189441 A1 or CN 201 212 506 Y.

SUMMARY OF THE INVENTION

[0007] The primary object of the present invention is to solve the problem of structural strength deficiency of the conventional techniques.

[0008] To achieve the foregoing object the present invention provides a trampoline support structure that includes a manifold, a first annular tube, a mesh encircled tube, a second annular tube and a support tube. The manifold includes a longitudinal installation portion and a transverse installation portion that are formed integrally and an installation hole located on the transverse installation portion and extended in the direction of the longitudinal installation portion. The first annular tube is assembled on the manifold and includes a first assembly section inserted into the transverse installation portion, a first connection section extended from the first assem-

bly section for installation of a jumping assembly and an anchor hole located on the first assembly section and opposed the installation hole when the first assembly section is inserted into the transverse installation portion. The mesh encircled tube is coupled on the manifold to support a encircled protection mesh. The mesh encircled tube includes an anchor section inserted into the installation hole and the anchor hole and extended into the longitudinal installation portion and an extended section extended from the anchor section for assembly of the encircled protection mesh. The second annular tube includes a second connection section for installation of the jumping assembly and a second assembly section extended from the second connection section and inserted into the first assembly section. The support tube is coupled on the longitudinal installation portion and butts a plane which is the ground to form an interval as a buffer space between the jumping assembly and the plane.

[0009] In the invention the manifold includes a buffer gap located on the transverse installation portion and extended in the direction of the longitudinal installation portion, and the longitudinal installation portion has a pre-assembly state without compressing the buffer gap and an assembly state coupled with the support tube to compress the buffer gap.

[0010] In another embodiment the manifold is formed by folding a plate in half.

[0011] In yet another embodiment the manifold includes at least one protrudent portion located on the longitudinal installation portion at one side of the buffer gap and an indented portion located at another side of the buffer gap facing the protrudent portion.

[0012] In yet another embodiment the manifold includes at least one first anchor hole located on the longitudinal installation portion, and the mesh encircled tube includes at least one second anchor hole located on the anchor section corresponding to the first anchor hole. The support tube includes at least one third anchor hole located coaxially with the first anchor hole and the second hole on a same axis after assembly to allow a fastener to run through in sequence thereof. Furthermore, one of the first, second and third anchor holes is elliptic.

[0013] In yet another embodiment the manifold includes a first detent wall surrounding the installation hole to aid support of the extended section.

[0014] In yet another embodiment the first annular tube includes a second detent wall surrounding the anchor hole to aid support of the anchor section.

[0015] In yet another embodiment the transverse installation portion, the first assembly section and the second assembly section are formed respectively at a tubular diameter such that the transverse installation portion is greater than the first assembly section which is greater than the second assembly section.

[0016] In yet another embodiment the manifold is a T-shaped tube.

[0017] Through the structure set forth above, the invention, compared with the conventional techniques, can provide advantageous features as follows:

By passing the second assembly section through the first assembly section the second annular tube can be anchored on the first annular tube. With the mesh encircled tube inserted into the installation hole, the anchor hole and the longitudinal installation portion, the mesh encircled tube can anchor the second annular tube on the longitudinal installation portion. With the support tube coupled on the longitudinal installation portion the anchor section, the longitudinal installation portion and the support tube form a multi-layer tubular structure, hence can solve the problem of inadequate structural strength happened to the conventional techniques.

[0018] The foregoing, as well as additional objects, features and advantages of the invention will be more readily apparent from the following detailed description, which proceeds with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0019]

FIG. 1 is a schematic view of the structure of an embodiment of the invention.
FIG. 2 is an exploded view of an embodiment of the invention.
FIG. 3 is a schematic view of an embodiment of the invention in assembly condition-1.
FIG. 4 is a schematic view of an embodiment of the invention in assembly condition-2.
FIG. 5 is a schematic view of an embodiment of the invention in assembly condition-3.
FIG. 6 is a schematic view of an embodiment of the invention in assembly condition-4.
FIG. 7 is a schematic view of an embodiment of the invention in assembly condition-5.
FIG. 8 is a perspective view of an embodiment of the invention adopted on a trampoline.
FIG. 9 is a perspective view of an embodiment of the invention adopted on another trampoline.
FIG. 10 is a schematic view of the structure of another embodiment of the invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0020] Please referring to FIG. 1, the present invention aims to provide a trampoline support structure that includes a manifold 1, a first annular tube 2, a mesh encircled tube 3, a second annular tube 4 and a support tube 5. Please also referring to FIG. 2, the manifold 1 includes a longitudinal installation portion 11 and a transverse installation portion 12 that are integrally formed and communicate with each other, and an installation hole 13 located on the transverse installation portion 12 and ex-

tended toward the longitudinal installation portion 11. The manifold 1 is a T-shaped tube. The first annular tube 2 includes a first assembly section 21, a first connection section 22 extended from the first assembly section 21 and an anchor hole 23 located on the first assembly section 21. The mesh encircled tube 3 includes an anchor section 31 and an extended section 32 extended from the anchor section 31. The second annular tube 4 includes a second connection section 42 and a second assembly section 41 extended from the second connection section 42.

[0021] Please referring to FIGS. 3 through 6, for assembly of the support structure, first, as shown in FIG. 3, the first assembly section 21 inserted into the transverse installation portion 12 with the anchor hole 23 aligned with the installation hole 13; namely the installation hole 13, the anchor hole 23 and the longitudinal installation portion 11 are coaxial on a same axis. Next, referring to FIG. 4, includes the anchor section 31 inserted into the installation hole 13, the anchor hole 23 and extended into the longitudinal installation portion 11 with the first assembly section 21 anchored in the transverse installation portion 12. Then, referring to FIG. 5, includes the second assembly section inserted into the first assembly section 21. Finally, referring to FIG. 6, couple the support tube 5 on the longitudinal installation portion 11. In addition, the longitudinal installation portion 11 has a tubular diameter smaller than that of the support tube 5. More specifically, the longitudinal installation portion 11 is coupled on an outer side of the anchor section 31, and the support tube 5 is coupled on the longitudinal installation portion 11. Therefore a multi-layer structure is formed to enhance the structural strength among the first annular tube, 2, the mesh encircled tube 3, the second annular tube 4 and the support tube 5, thus finished the assembly of the invention.

[0022] The first connection section 22 can have an outer diameter greater than that of the first assembly section 21. The first assembly section 21 is formed by extending the first connection section 22 in a gradually expanded manner or formed a step difference therewith. When the first assembly section 21 is inserted into the transverse installation portion 12 the first connection section 22 butts the perimeter of one side of the transverse installation portion 12. On the other hand, the extended section 32 also has an outer diameter greater than that of the anchor section 31 and is formed by extending the anchor section 31 in a gradually expanded manner or formed a step surface therewith. When the anchor section 31 is inserted into the installation hole 13, the anchor hole 23 and the longitudinal installation portion 11, the extended section 32 butts the rim of the installation hole 13. In addition, the second connection section 42 can have an outer diameter greater than that of the second assembly section 41 and be formed by extending the second assembly section 41 in a gradually expanded manner or formed a step surface therewith. When the second assembly section 41 is inserted into the first assembly section 21 the second connection section 42 butts the perimeter of the first assembly section 21.

[0023] Moreover, the anchor section 31 can be a tube with a coupling plane, and the installation hole 13 and the anchor hole 23 are respectively a square hole with a round angle so that after the anchor section 31 is inserted into the installation hole 13 and the anchor hole 23 it is not turnable. In addition, the transverse installation portion 12 is formed at a tubular diameter greater than that of the first assembly section 21, and the first assembly section 21 is formed at a tubular diameter greater than that of the second assembly section 41, and the transverse installation portion 12, the first assembly section 21 and the second assembly section 41 are respectively a square hole with a round angle so that after the first assembly section 21 is inserted into the transverse installation portion 12 it is not turnable, and after the second assembly section 41 is inserted into the first assembly section 21 it also is not turnable.

[0024] Please referring to FIGS. 8 and 9, to construct a trampoline through the invention, first provide a plurality of the support structure to assemble a trampoline frame 6; next, install a jumping assembly 7 and a encircled protection mesh 8. More specifically, couple the first annular tubes 2 and the second annular tubes 4 in an annular manner. The jumping assembly 7 includes a rebounding plane 71 and a plurality of elastic elements 72 (such as springs) installed on the circumference of the rebounding plane 71. The elastic elements 72 are connected to the first annular tubes 2 and the second annular tubes 4 to stretch the rebounding plane 71 on the inner side of the first annular tubes 2 and the second annular tubes 4. On the other hand, the support tube 5 butts a plane (not shown in the drawings) to allow the jumping assembly 7 and the plane to form a buffer space (also not shown in the drawings) between them. In addition, two neighboring support tubes 5 have their bottom connected to a leg 9 to increase the force receiving area of the bottom of the trampoline. Furthermore, the mesh encircled tubes 3 are extended upward from the rebounding plane 71, and the encircled protection mesh 8 is installed on an inner side of the mesh encircled tubes 3 around the upper zone of the rebounding plane 71.

[0025] When a user jumps on the rebounding plane 71 the elastic elements 72 are stretched by the rebounding plane 71 to generate deformation of extension and retraction. The first annular tubes 2 and the second annular tubes 4 provide a support force to the jumping assembly 7 to allow the user to maintain continuous jumping and rebounding on the rebounding plane 71. In addition, through the encircled protection mesh 8 surrounding the user the user can be prevented from rebounding outside the trampoline frame 6. In addition, through the second assembly section 41 inserted into the first assembly section 21 to anchor the first annular tube 2 on the second annular tube 4, and through the mesh encircled tube 3 inserted into the installation hole 13, the anchor hole 23 and the longitudinal installation portion 11 to anchor the

second annular tube 4 on the manifold 1, and with the support tube 5 coupled on the longitudinal installation portion 11, the anchor section 31, the longitudinal installation portion 11 and the support tube 5 form a multi-layer tubular structure, thus can solve the problem of inadequate support strength occurred to the conventional structures.

[0026] In addition, due to the longitudinal installation portion 11 and the transverse installation portion 12 are formed in an integrated manner, and the first annular tube 2, the mesh encircled tube 3, the second annular tube 4 and the support tube 5 are inserted and anchored on the longitudinal installation portion 11 and the transverse installation portion 12 rather than by welding, the manifold 1 can enhance the total assembly strength of the support structure of the trampoline, thereby also can resolve the problem of bending, separation or fracturing caused by prolonged stretching of the springs that might otherwise take place on the trampoline structure constructed by welding to anchor the mesh encircled tube.

[0027] More specifically, please referring to FIGS. 5 through 7, the second assembly section 41 is spaced from the anchor section 31 of the mesh encircled tube 3 at a distance 10, namely, the second annular tube 4 does not touch the mesh encircled tube 3 during assembly, thereby can prevent the second assembly section 41 from hitting the anchor section 31 while the user is jumping and rebounding on the rebounding plane 71.

[0028] Please referring to FIGS. 2 and 10, in one embodiment, as shown in FIG. 2, the longitudinal installation portion 11 is located at a middle spot of the transverse installation portion 12. In another embodiment, as shown in FIG. 10, the longitudinal installation portion 11 is located away from the middle spot of the transverse installation portion 12. In addition, one side of the transverse installation portion 12 to receive insertion of the first assembly section 21 can use less material to reduce fabrication cost of the manifold 1.

[0029] Please referring to FIG. 2 again, in the invention the manifold 1 includes a buffer gap 14 formed on the transverse installation portion 12 in the extended direction of the longitudinal installation portion 11. In this embodiment the manifold 1 is formed by folding a plate in half to form the buffer gap 14 on the transverse installation portion 12. Thus the longitudinal installation portion 11 has a preassembly state without compressing the buffer gap 14 and an assembly state with the support tube 5 coupled to compressing the buffer gap 14. When the support tube 5 is coupled on the longitudinal installation portion 11 at the assembly state the buffer gap 14 is compressed by an external force, but is relieved after assembly is finished, and is compacted in the support tube 5 to increase total strength of the support structure of the trampoline. Furthermore, the manifold 1 further includes at least one protrudent portion 15 located on the longitudinal installation portion 11 at one side of the buffer gap 14 and an indented portion 16 located at another side of the buffer gap 14 facing the protrudent portion 15, and when the support tube 5 is coupled on the longitudinal installation portion 11 and compresses the buffer gap 14 the protrudent portion 15 and the indented portion 16 are wedged together to further enhance the structural strength of the invention.

[0030] Please referring to FIGS. 2 and 4, in yet another embodiment the manifold 1 further includes a first detent wall 17 located annularly about the installation hole 13 to aid support of the extended section 32. On the other hand, the first annular tube 2 also includes a second detent wall 24 located annularly about the anchor hole 23 to aid support of the anchor section 31. More specifically, the first detent wall 17 is jutting outward to aid support of the extended section 32, while the second detent wall 24 is jutting inward to aid support of the anchor section 31, thereby can increase the support area of the mesh encircled tube 3 to reduce swaying thereof caused by shaking and vibration of the trampoline. Namely, the first detent wall 17 and the second detent wall 24 can enhance the structural strength among the transverse installation portion 12, the first assembly section 21 and the anchor section 31, and also provide firmer support for the support structure of the trampoline to enhance its steadiness when in use.

[0031] Please referring to FIGS. 6 and 7, in yet another embodiment the manifold 1 includes at least one first anchor hole 18 located on the longitudinal installation portion 11, and the mesh encircled tube 3 includes at least one second anchor hole 33 on the anchor section 31 corresponding to the first anchor hole 18, and the support tube 5 includes at least one third anchor hole 51. After the support tube 5 is coupled on the longitudinal installation portion 11 the first anchor hole 18, the second anchor hole 33 and the third anchor hole 51 are located coaxially on a same axis to allow a fastener to run sequentially through the first anchor hole 18, the second anchor hole 33 and the third anchor hole 51. In addition, one of the first anchor hole 18, the second anchor hole 33 and the third anchor hole 51 is elliptic so that the longitudinal installation portion 11, the mesh encircled tube 3 or the support tube 5 can be adjusted in position during implementation of the support structure of the trampoline to facilitate installation of the support structure.

[0032] As a conclusion, the trampoline support structure of the invention includes a manifold, a first annular tube, a mesh encircled tube, a second annular tube and a support tube. The manifold includes a longitudinal installation portion, a transverse installation portion and an installation hole located on the transverse installation portion. The first annular tube includes a first assembly section inserted into the transverse installation portion and an anchor hole located on the first assembly section. The mesh encircled tube includes an anchor section inserted into the installation hole, the anchor hole and the longitudinal installation portion. The second annular tube includes a second assembly section inserted into the first assembly section. The support tube is coupled on the longitudinal installation portion and coupled with the first

annular tube through the second annular tube. The mesh encircled tube is anchored on the transverse installation portion and the first annular tube. The anchor section, the longitudinal installation and the support tube form a multi-layer tubular structure, hence can solve the problem of inadequate structural strength occurred to the conventional techniques.

[0033] In summary there is disclosed a trampoline support structure including a manifold 1, a first annular tube 2, a mesh encircled tube 3, a second annular tube 4 and a support tube 5. The manifold 1 includes a longitudinal installation portion 11, a transverse installation portion 12 and an installation hole 13 located on the transverse installation portion 12. The first annular tube 2 includes a first assembly section 21 inserted into the transverse installation portion 12 and an anchor hole 23 located on the first assembly section 21. The mesh encircled tube 3 includes an anchor section 31 inserted into the installation hole 13, the anchor hole 23 and the longitudinal installation portion 11. The second annular tube 4 includes a second assembly section 41 inserted into the first assembly section 21. The support tube 5 is coupled on the longitudinal installation portion 11. By coupling the second annular tube 4 on the first annular tube 2, anchoring the mesh encircled tube 3 on the transverse installation portion 12 and the first annular tube 2, the anchor section 31, the longitudinal installation portion 11 and the support tube 5 form a multi-layer structure, thus can solve the problem of inadequate structural strength occurred to the conventional techniques.

Claims

1. A trampoline support structure to construct a trampoline frame (6) to allow a jumping assembly (7) and an encircled protection mesh (8) to be installed thereon, comprising:

   a manifold (1) including a longitudinal installation portion (11) and a transverse installation portion (12) that are integrally formed and an installation hole (13) located on the transverse installation portion (12) in an extended direction of the longitudinal installation portion (11);
   a first annular tube (2) which is assembled on the manifold (1) and includes a first assembly section (21) inserted into the transverse installation portion (12), a first connection section (22) extended from the first assembly section (21) for installation of the jumping assembly (7);
   a mesh encircled tube (3) which is assembled on the manifold (1) to support the encircled protection mesh (8);
   a second annular tube (4) including a second connection section (42) for installation of the jumping assembly (7); and
   a support tube (5) coupled on the longitudinal installation portion (11) and butted the ground to form an interval between the jumping assembly (7) and the ground;
   the manifold (1) includes a buffer gap (14) located on the transverse installation portion (12) and extended in the direction of the longitudinal installation portion (11), the longitudinal installation portion (11) including an preassembly state without compressing the buffer gap (14) and an assembly state coupled with the support tube (5) to compress the buffer gap (14),
   the first annular tube (2) includes an anchor hole (23) located on the first assembly section (21) and opposed the installation hole (13) when the first assembly section (21) is inserted into the transverse installation portion (12),
   the mesh encircled tube (3) includes an anchor section (31) inserted into the installation hole (13) and the anchor hole (23) and extended into the longitudinal installation portion (11) and an extended section (32) extended from the anchor section (31) for installation of the encircled protection mesh (8), and
   the second annular tube (4) includes a second assembly section (41) extended from the second connection section (42) and inserted into the first assembly section (21).

2. The trampoline support structure of claim 1, wherein the manifold (1) is formed by folding a plate in half.

3. The trampoline support structure of at least one of the preceding claims, wherein the manifold (1) includes at least one protrudent portion (15) on the longitudinal installation portion (11) at one side of the buffer gap (14) and an indented portion (16) opposing the protrudent portion (15) at another side of the buffer gap (14) to face the protrudent portion (15).

4. The trampoline support structure of at least one of the preceding claims, wherein the manifold (1) includes at least one first anchor hole (18) located on the longitudinal installation portion (11), the mesh encircled tube (3) including at least one second anchor hole (33) located on the anchor section (31) corresponding to the first anchor hole (18), the support tube (5) including at least one third anchor hole (51) coaxial with the first anchor hole (18) and the second anchor hole (33) on a same axis after assembly to allow a fastener to run through sequentially.

5. The trampoline support structure of claim 4, wherein one of the first anchor hole (18), the second anchor hole (33) and the third anchor hole (51) is elliptic.

6. The trampoline support structure of at least one of the preceding claims, wherein the manifold (1) in-

cludes a first detent wall (17) encircled the installation hole (13) to aid support of the extended section (32).

7. The trampoline support structure of at least one of the preceding claims, wherein the first annular tube (2) includes a second detent wall (24) encircled the anchor hole (23) to aid support of the anchor section (31).

8. The trampoline support structure of at least one of the preceding claims, wherein the transverse installation portion (12), the first assembly section (21) and the second assembly section (41) are formed at diameters in such a fashion that the transverse installation portion (12) is greater than the first assembly section (21) which is further greater than the second assembly section (41).

9. The trampoline support structure of at least one of the preceding claims, wherein the manifold (1) is a T-shaped tube.

Patentansprüche

1. Trampolin-Stützstruktur zum Aufbau eines Trampolin-Rahmens (6), um einer Sprunganordnung (7) und einem umlaufenden Schutznetz (8) zu ermöglichen, darauf montiert zu werden, umfassend:

einen Rohrverzweiger (1) mit einem Längsmontageabschnitt (11) und einem einstückig ausgebildeten Quermontageabschnitt (12) und einer Montageöffnung (13), die an dem Quermontageabschnitt (12) in einer ausgedehnten Richtung des Längsmontageabschnitts (11) angeordnet ist; und
ein erstes ringförmiges Rohr (2), das auf dem Rohrverzweiger (1) montiert ist und einen ersten Montageabschnitt (21) aufweist, der in den Quermontageabschnitt (12) eingeführt ist, wobei ein erster Anschlussbereich (22) sich von dem ersten Montageabschnitt (21) für die Montage der Sprungvorrichtung (7) erstreckt; und
ein von dem Netz umfasstes Rohr (3), das auf dem Rohrverzweiger (1) montiert ist, um das umlaufende Schutznetz (8) zu stützen;
ein zweites ringförmiges Rohr (4) mit einem zweiten Anschlussbereich (42) für die Montage der Sprungvorrichtung (7); und
ein Stützrohr (5), das an den Längsmontageabschnitt (11) angekoppelt ist und auf den Boden stößt, um einen Abstand zwischen der Sprunganordnung (7) und dem Boden zu bilden;
wobei der Rohrverzweiger (1) einen Pufferspalt (14) aufweist, der auf dem querlaufenden Montageabschnitt (12) angeordnet ist und sich in Richtung des Längsmontageabschnitts (11) erstreckt, wobei der Längsmontageabschnitt (11) einen Vormontagezustand aufweist, ohne den Pufferspalt (14) zu komprimieren, und einen Montagezustand aufweist, der mit dem Stützrohr (5) gekoppelt ist, um den Pufferspalt (14) zu komprimieren,
das erste ringförmige Rohr (2) ein Verankerungsloch (23) aufweist, das auf dem ersten Montageabschnitt (21) angeordnet ist und dem Montageloch (13) gegenüberliegt, wenn der erste Montageabschnitt (21) in den Quermontageabschnitt (12) eingeführt wird, und
das von dem Netz umfasstes Rohr (3) einen Verankerungsabschnitt (31) aufweist, der in das Montageloch (13) und das Verankerungsloch (23) eingeführt ist und sich in den Längsmontageabschnitt (11) erstreckt, und einen verlängerten Bereich (32) aufweist, der sich von dem Verankerungsabschnitt (31) für die Montage des umlaufenden Schutznetzes (8) erstreckt, und
wobei das zweite ringförmige Rohr (4) einen zweiten Montageabschnitt (41) aufweist, der sich von dem zweiten Anschlussbereich (42) erstreckt und in den ersten Montageabschnitt (21) eingeführt wird.

2. Trampolin-Stützstruktur nach mindestens einem der vorhergehenden Ansprüche, wobei der Rohrverzweiger (1) durch Falten einer Platte in hälftige Abschnitte gebildet ist.

3. Trampolin-Stützstruktur nach mindestens einem der vorhergehenden Ansprüche, wobei der Rohrverzweiger (1) mindestens einen vorstehenden Abschnitt (15) auf dem Längsmontageabschnitt (11) an einer Seite des Pufferspaltes (14) und einen eingerückten Abschnitt (16) aufweist, der dem vorspringenden Abschnitt (15) auf einer anderen Seite des Pufferspaltes (14) gegenüberliegt, um dem vorspringenden Abschnitt (15) gegenüberzustehen.

4. Trampolin-Stützstruktur nach mindestens einem der vorhergehenden Ansprüche, wobei der Rohrverzweiger (1) mindestens ein erstes Verankerungsloch (18) aufweist, das auf dem Längsmontageabschnitt (11) angeordnet ist, wobei das von dem Netz umfasste Rohr (3) mindestens ein zweites Verankerungsloch (33) aufweist, das auf dem Verankerungsabschnitt (31) angeordnet ist, das zu dem ersten Verankerungsloch (18) passt, und das Stützrohr (5) mindestens ein drittes Verankerungsloch (51) aufweist, das koaxial mit dem ersten Verankerungsloch (18) und dem zweiten Verankerungsloch (33) auf derselben Achse nach der Montage ist, um ein Verbindungselement sequentiell durchlaufen zu lassen.

5. Trampolin-Stützstruktur nach Anspruch 4, wobei ei-

nes des ersten Verankerungslochs (18), des zweiten Verankerungslochs (33) und des dritten Verankerungslochs (51) elliptisch ist.

6. Trampolin-Stützstruktur nach mindestens einem der vorhergehenden Ansprüche, wobei der Rohrverzweiger (1) eine erste Rastungswand (17) aufweist, die das Montageloch (13) umgibt, um die Stützung des verlängerten Bereiches (32) zu unterstützen.

7. Trampolin-Stützstruktur nach mindestens einem der vorhergehenden Ansprüche, wobei das erste ringförmige Rohr (2) eine zweite Rastungswand (24) aufweist, die das Verankerungsloch (23) umgibt, um die Stützung des Verankerungsabschnittes (31) zu unterstützen.

8. Trampolin-Stützstruktur nach mindestens einem der vorhergehenden Ansprüche, wobei der Quermontageabschnitt (12), der erste Montageabschnitt (21) und der zweite Montageabschnitt (41) in Durchmessern derart ausgebildet sind, dass der Quermontageabschnitt (12) größer ist als der erste Montageabschnitt (21), der ferner größer ist als der zweite Montageabschnitt (41).

9. Trampolin-Stützstruktur nach mindestens einem der vorhergehenden Ansprüche, wobei der Rohrverzweiger (1) ein T-förmiges Rohr ist.

Revendications

1. Une structure de support de trampoline pour construire un cadre de trampoline (6) permettant l'installation d'un ensemble de saut (7) et d'une maille de protection encerclée (8) à installer sur celui-ci, comprenant:

un collecteur (1) comprenant une partie d'installation longitudinale (11) et un une partie d'installation transversale (12) formées intégralement et un trou d'installation (13) situé sur la partie d'installation transversale (12) suivant une direction prolongée de la partie d'installation longitudinale (11);
un premier tube annulaire (2) qui est assemblé sur le collecteur (1) et qui comprend une première section d'assemblage (21) insérée dans la partie d'installation transversale (12), une première section de connexion (22) prolongée depuis la première section d'assemblage (21) pour l'installation de l'ensemble de saut (7);
un tube de cerclage de maille (3) qui est assemblé sur le collecteur (1) pour supporter la maille de protection encerclée (8);
un deuxième tube annulaire (4) comprenant une seconde section d'assemblage (42) pour l'installation de l'ensemble de saut (7); et
un tube de support (5) couplé à la partie d'installation longitudinale (11) et aboutant le sol pour former un espace tampon entre l'ensemble de saut (7) et le sol;
dans laquelle le collecteur (1) comprend un espace tampon (14) situé sur la partie d'installation transversale (12) et prolongé dans la direction de la partie d'installation longitudinale (11), la partie d'installation longitudinale (11) comprenant un état de préassemblage sans compression de l'intervalle de tampon (14) et un état d'assemblage couplé au tube de support (5) pour comprimer l'espace tampon (14),
le premier tube annulaire (2) comporte un trou d'ancrage (23) situé sur la première section d'assemblage (21) et opposé au trou d'installation (13) lorsque la première section d'assemblage (21) est insérée dans la partie d'installation transversale (12),
le tube de cerclage de maille (3) comporte une section d'ancrage (31) insérée dans le trou d'installation (13) et le trou d'ancrage (23) et prolongé dans la partie d'installation longitudinale (11) et une section étendue (32) s'étendant à partir de la section d'ancrage (31) pour l'installation de la maille de protection encerclée (8); et
le second tube annulaire (4) comporte et une seconde section d'assemblage (41) s'étendant depuis la seconde section de connexion (41) et insérée dans la première section d'assemblage (21).

2. La structure de support de trampoline selon au moins une des revendications précédentes, dans laquelle le collecteur (1) est formé par le pliage en deux d'une plaque.

3. La structure de support de trampoline selon au moins l'une des revendications précédentes, dans laquelle le collecteur (1) comprend au moins une partie en saillie (15) sur la partie d'installation longitudinale (11) d'un côté de l'espace tampon (14) et une partie indentée (16) opposée à la partie saillante (15) sur un autre côté de l'espace tampon (14) pour faire face à la partie saillante (15).

4. La structure de support de trampoline selon au moins l'une des revendications précédentes, dans laquelle le collecteur (1) comprend au moins un premier trou d'ancrage (18) situé sur la partie d'installation longitudinale (11), le tube (3) entouré de maille comprenant au moins un second trou d'ancrage (33) situé sur la section d'ancrage (31) correspondant au premier trou d'ancrage (18), le tube de support (5) comprenant au moins un troisième trou d'ancrage (51) coaxial au premier trou d'ancrage (18) et le deuxième trou d'ancrage (33) sur un même axe après l'as-

semblage pour permettre un déplacement séquentiel d'une attache.

5. La structure de support de trampoline de la revendication 4, dans laquelle l'un parmi le premier trou d'ancrage (18), le second trou d'ancrage (33) et le troisième trou d'ancrage (51) est elliptique.

6. La structure de support de trampoline selon au moins l'une des revendications précédentes, dans laquelle le collecteur (1) comprend une première paroi de retenue (17) entourant du trou d'installation (13) pour faciliter le support de la section étendue (32).

7. La structure de support de trampoline selon au moins l'une des revendications précédentes, dans laquelle le premier tube annulaire (2) comprend une seconde paroi de retenue (24) entourant du trou d'ancrage (23) pour faciliter le support de la section d'ancrage (31).

8. La structure de support de trampoline selon au moins l'une des revendications précédentes, dans laquelle la partie d'installation transversale (12), la première section d'assemblage (21) et la seconde section d'assemblage (41) sont formées à des diamètres de sorte que la partie d'installation transversale (12) est supérieure à la première section d'assemblage (21) qui est en outre supérieure à la seconde section d'assemblage (41).

9. La structure de support de trampoline selon au moins l'une des revendications précédentes, dans laquelle le collecteur (1) est un tube en forme de T.

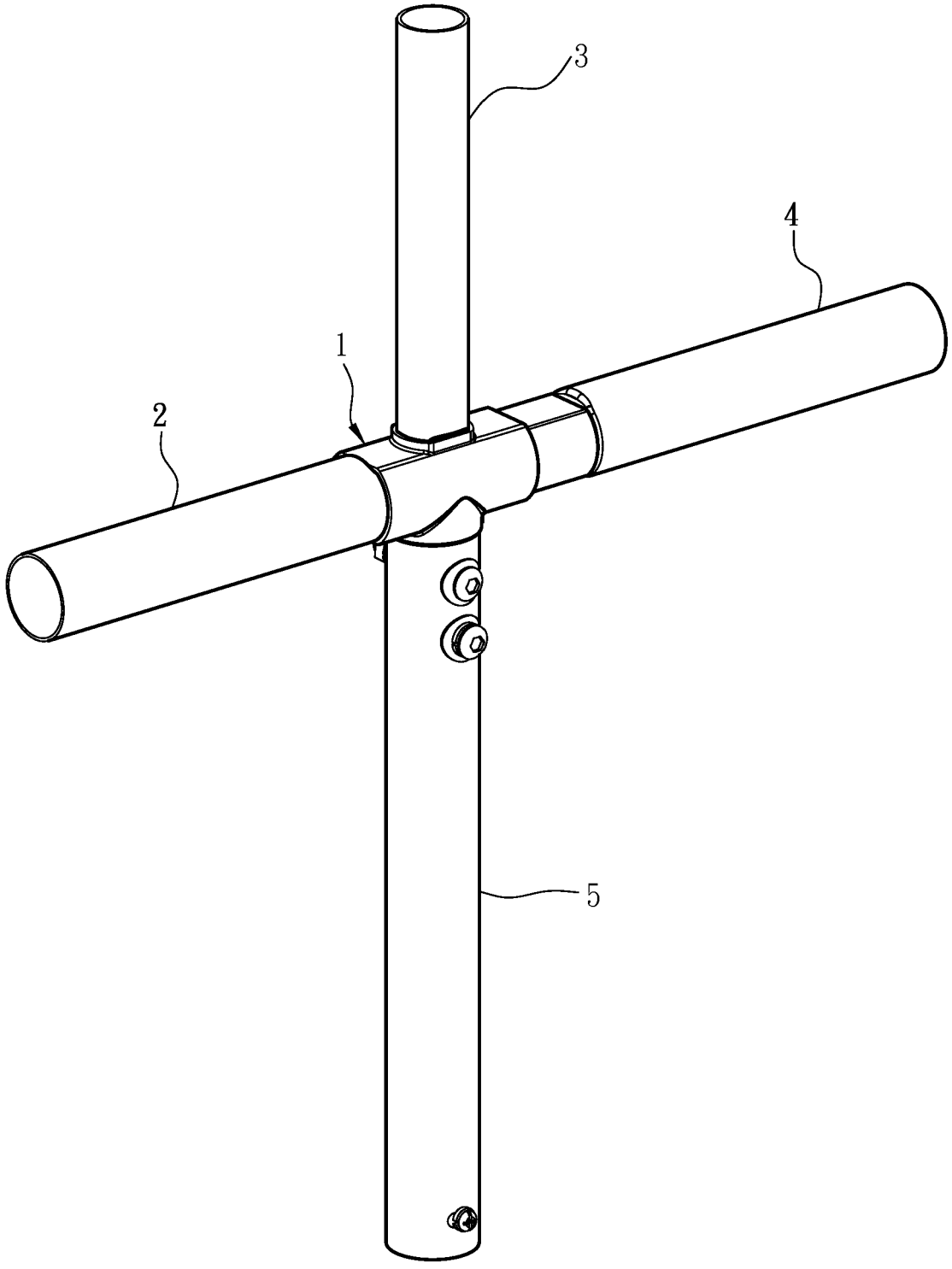

Fig. 1

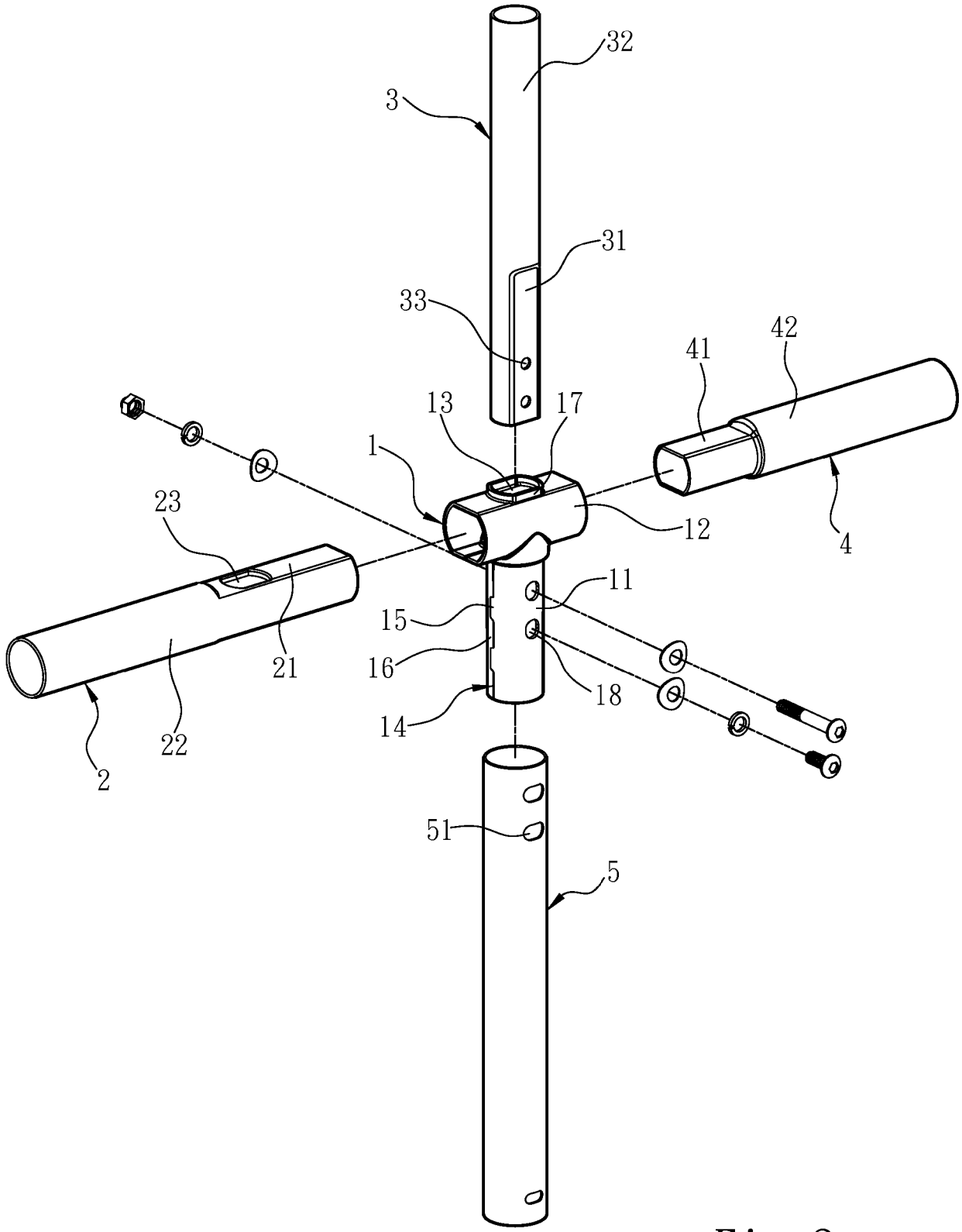

Fig. 2

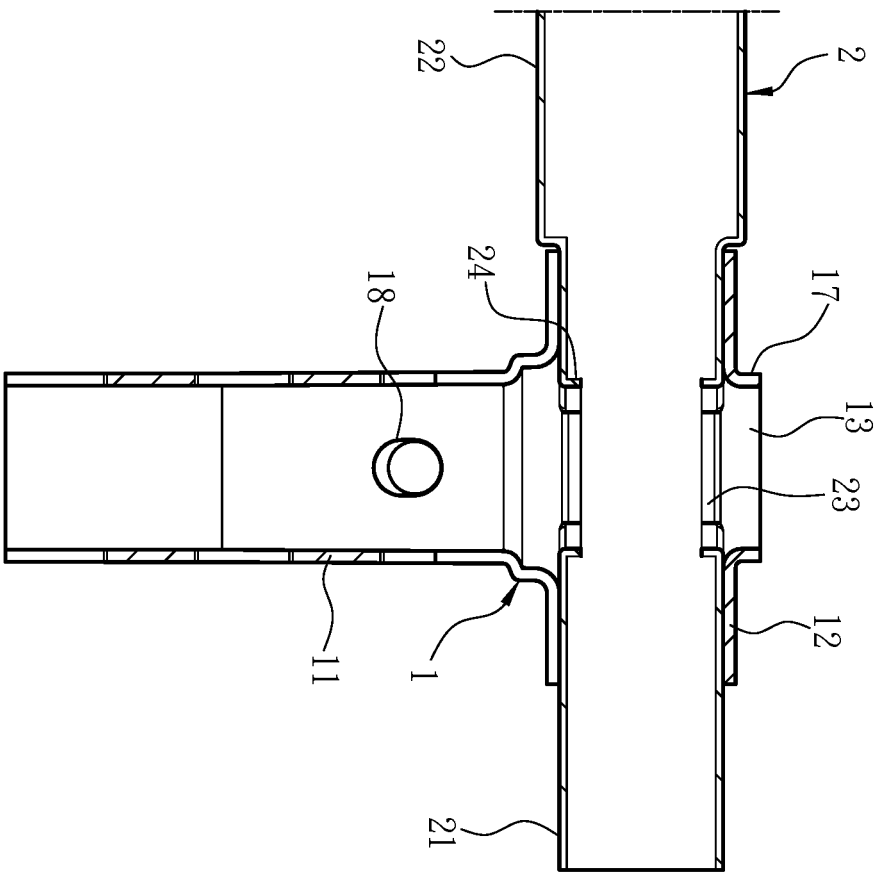

Fig. 3

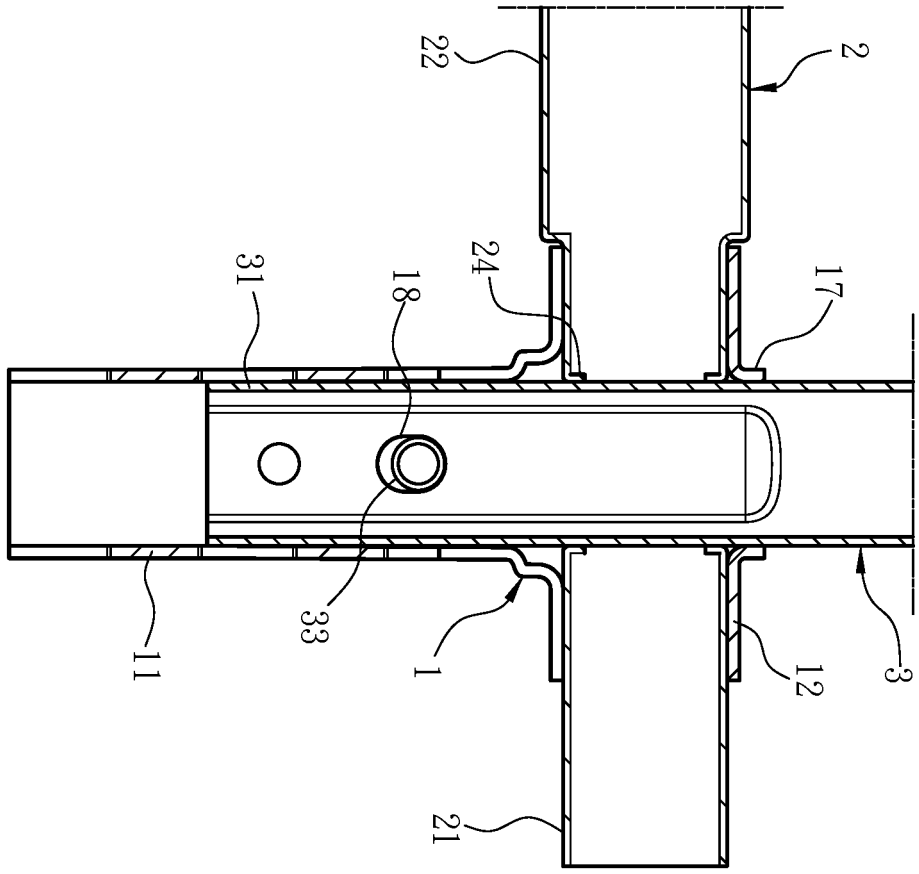

Fig. 4

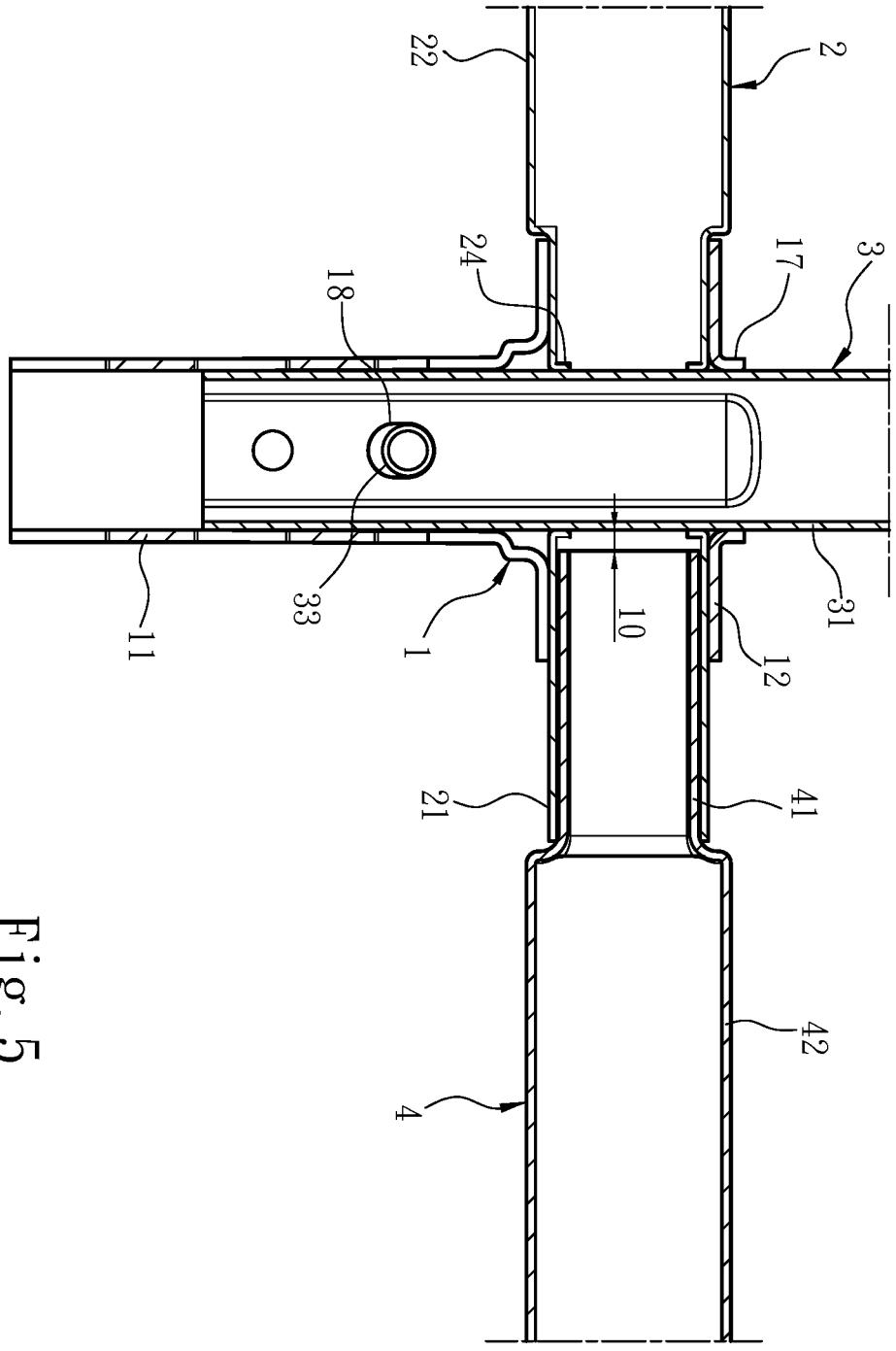

Fig. 5

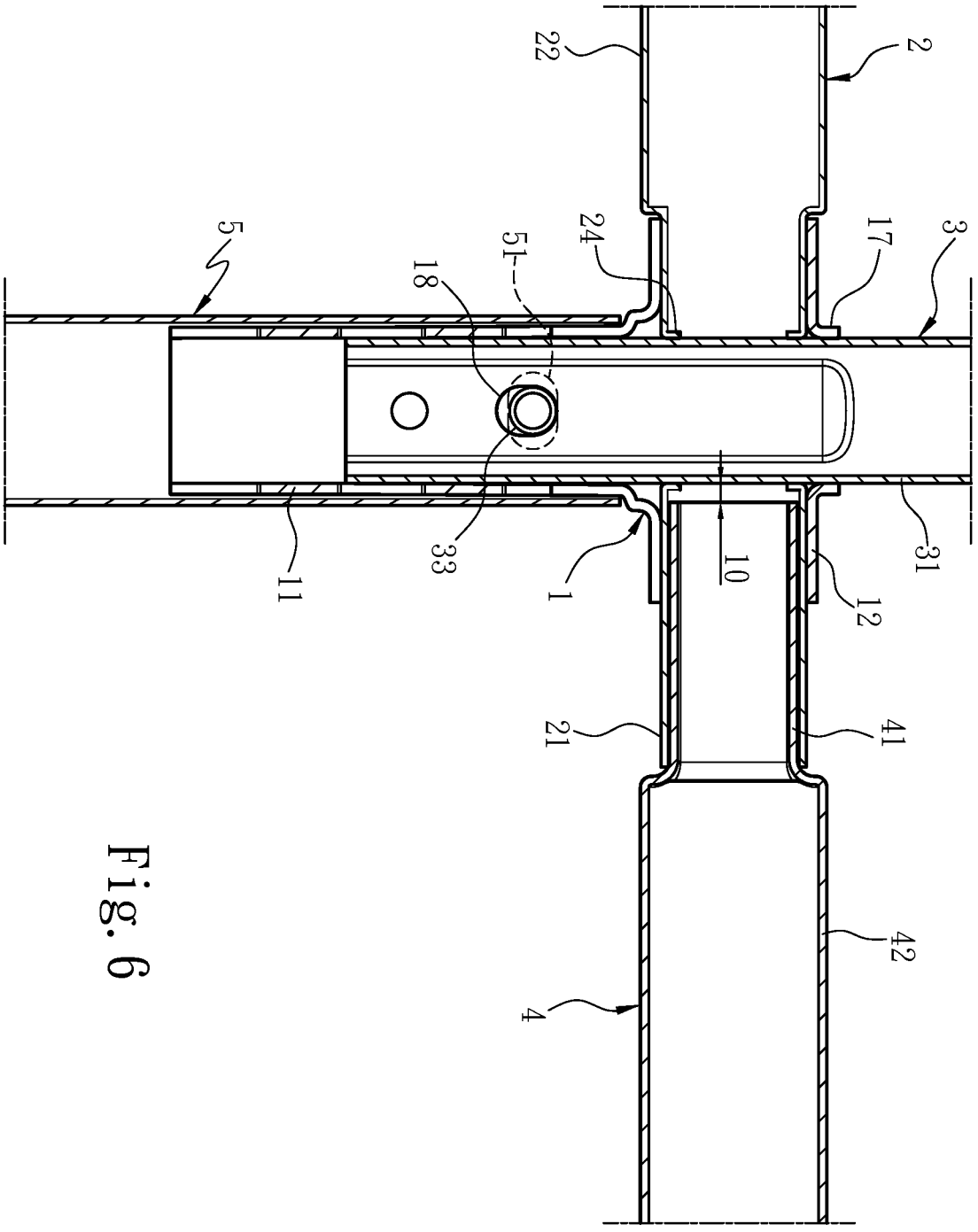

Fig. 6

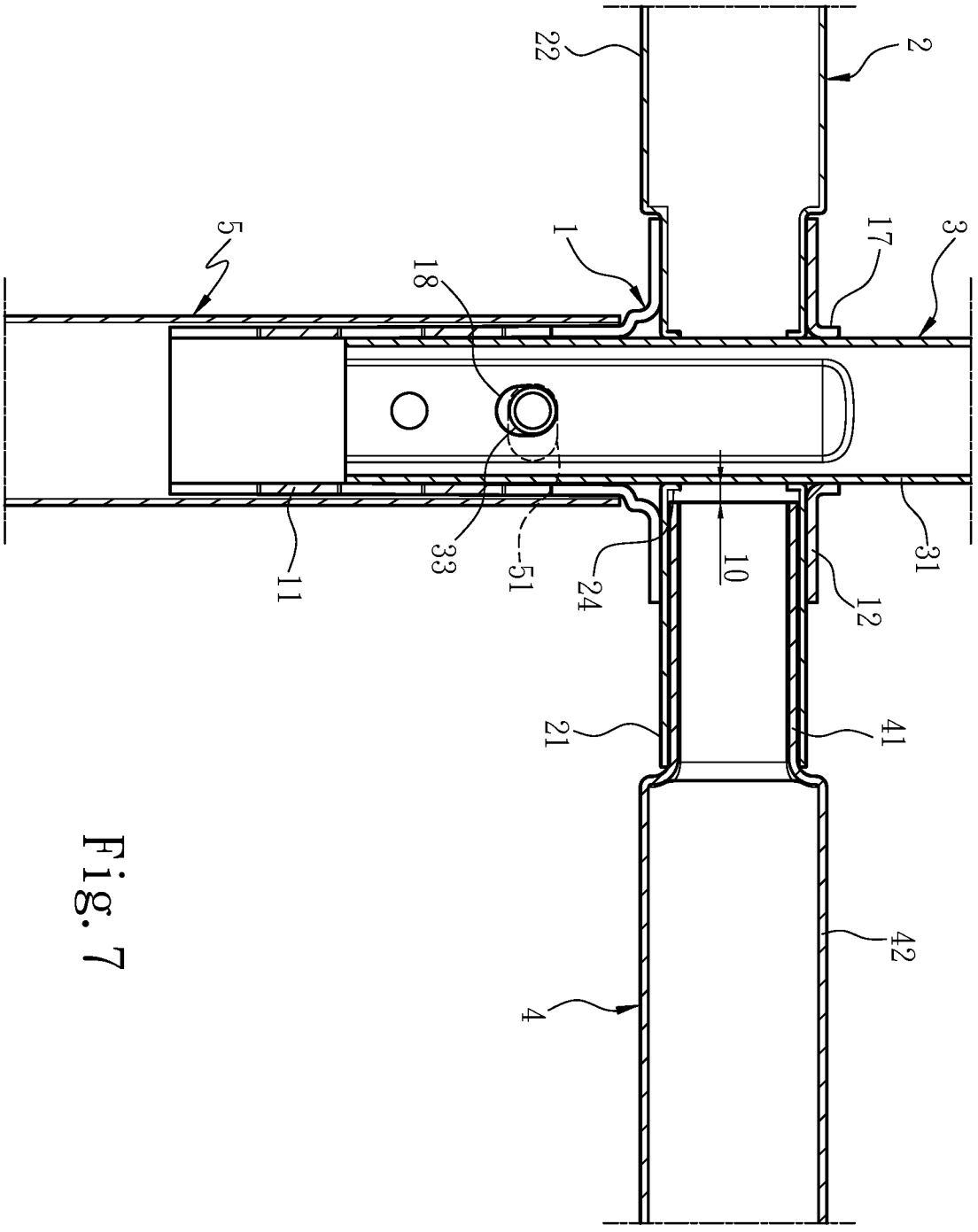

Fig. 7

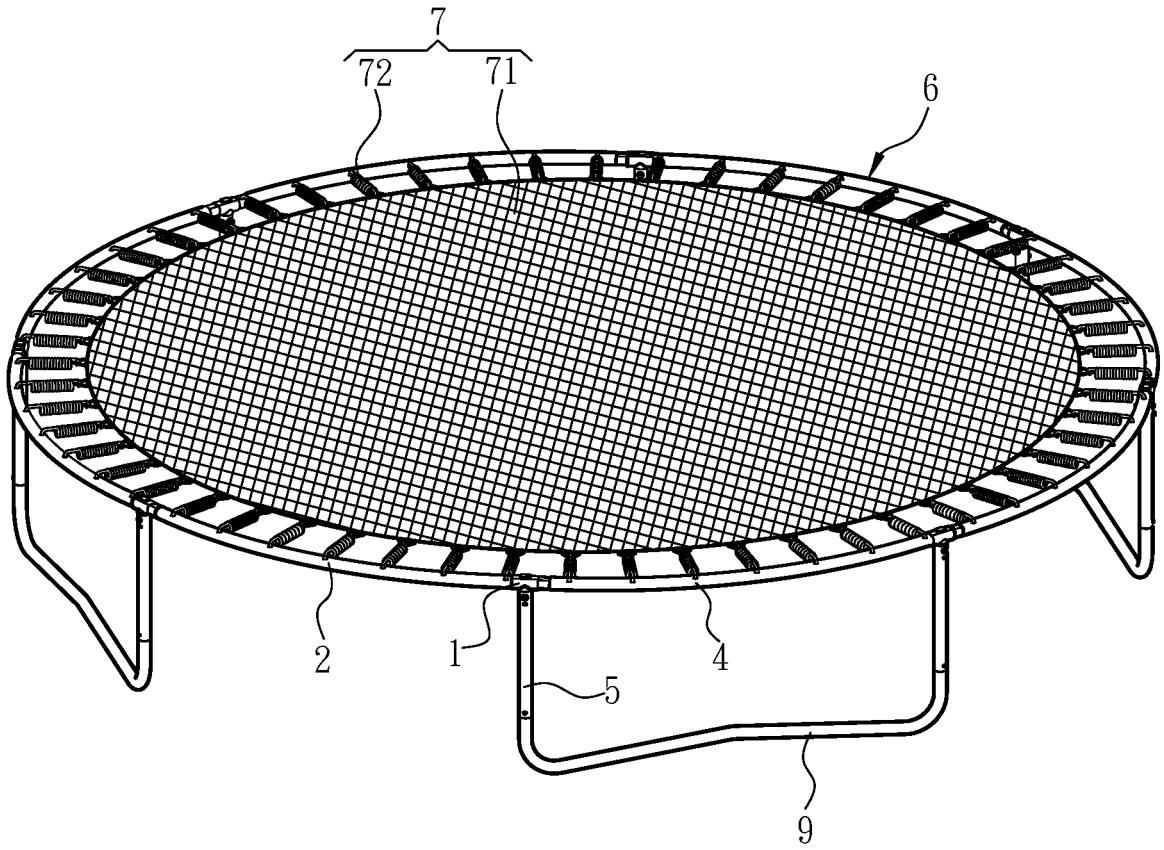

Fig. 8

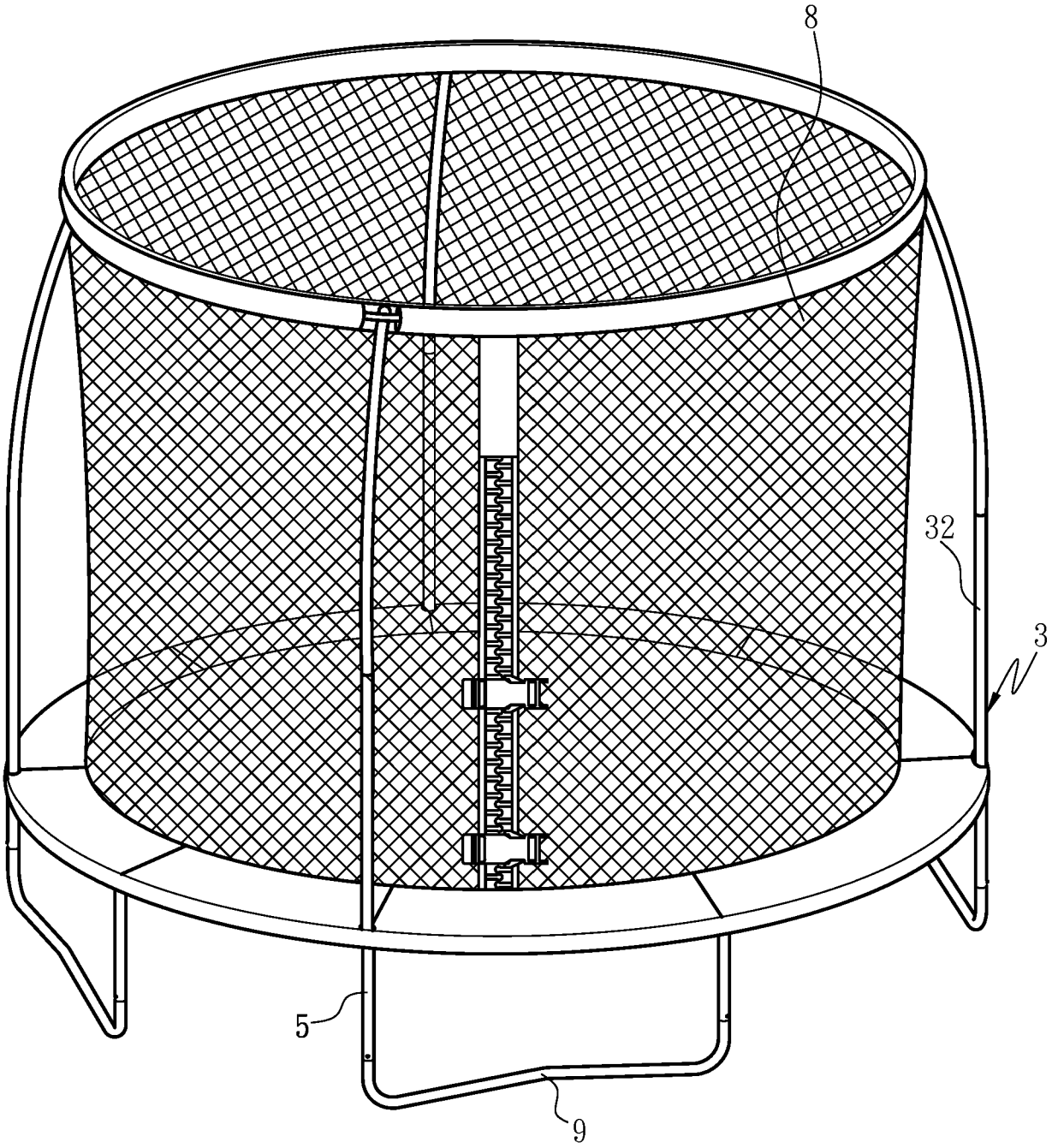

Fig. 9

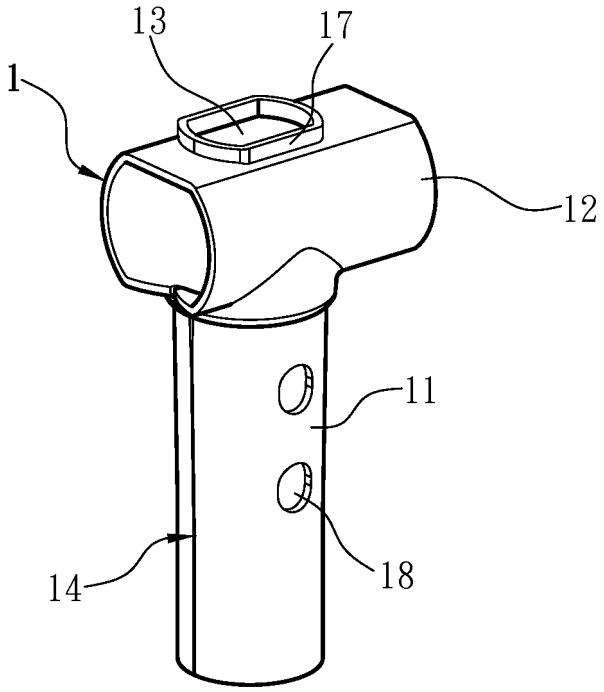

Fig. 10

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- CN 2806855 **[0002]**
- CN 202237001 **[0003] [0004]**
- CN 201250829 **[0004] [0005]**
- CN 2930768 Y **[0006]**
- US 2010240496 A1 **[0006]**
- US 2009023558 A1 **[0006]**
- US 2006189441 A1 **[0006]**
- CN 201212506 Y **[0006]**