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LONG JUMP FLYING TRAINING APPARATUS AND USING METHOD.

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The present invention relates to a long jump flying training apparatus and a using method. The long jump flying training apparatus comprises a first track: supported by a plurality of support frames, comprising a run-up section, a flying section and a landing section connected in sequence; a run-up mechanism: located directly below the run-up section, comprising a first power trolley, the first power trolley being connected to a second track in a sliding manner, a braking plate being provided at a trainee's take-off position of the second track, a locking mechanism being mounted on the first power trolley and the braking plate; and a suspension mechanism: comprising a second power trolley connected to the first track in a sliding manner, a rope mechanism being connected to the bottom of the second power trolley, the rope mechanism being used to suspend a trainee, the length of the rope mechanism satisfying that the trainee is in the air when the trainee is located at the flying section. The training apparatus can effectively train the trainee's flying action, and is convenient to use.

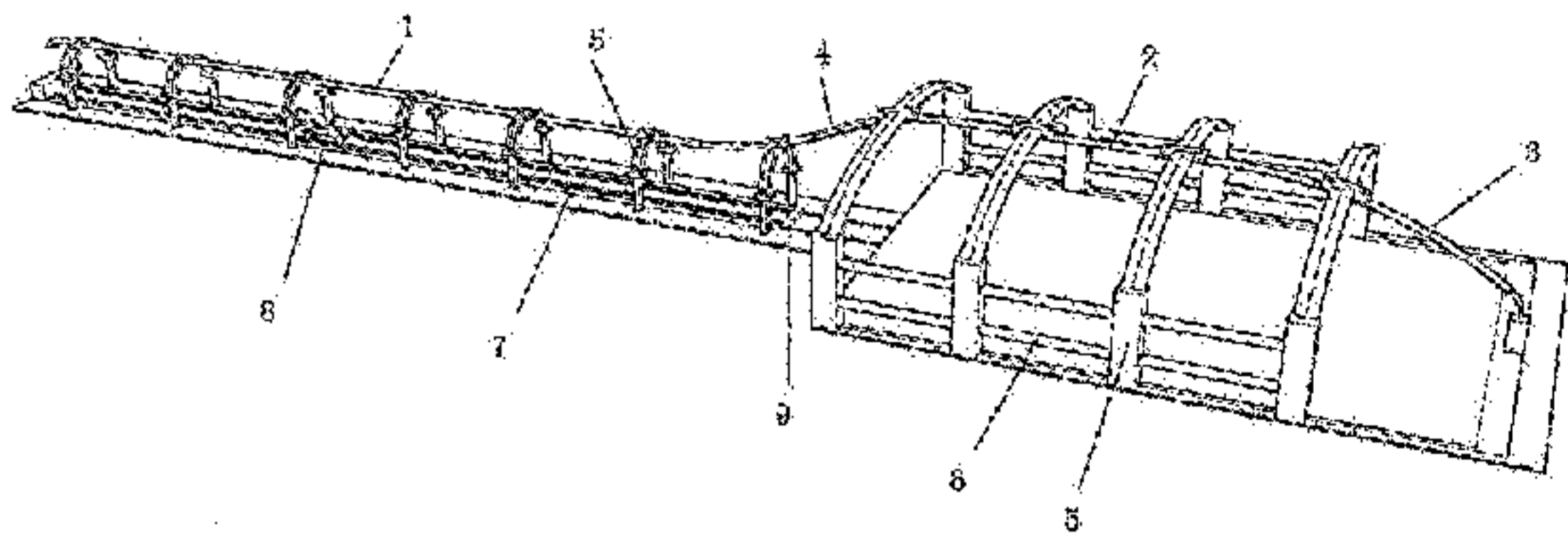


Fig. 1

## LONG JUMP FLYING TRAINING APPARATUS AND USING METHOD

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### Field of the Invention

The present invention relates to the technical field of sports training equipment,  
5 specifically to a long jump flying training apparatus and a using method.

### Background of the Invention

Long jump, also known as dash broad jump, is a jumping event of athletics. The long  
jump consists of run-up, take-off, flying and landing. An athlete runs up along a  
10 straight line, takes off with one foot behind a leading edge of a take-off plate, flies in  
air, and then lands with double feet falling in the jumping pit. The competition rank is  
determined by the jumping distance.

The flying action of long jump includes squatting, stand-up and walking. The athlete  
walks two steps and a half or three steps during flying. The walking requires large  
15 actions of forward and backward stepping and leg change while cooperating with two  
arms.

The inventors found, during present long jump training, a trainee cannot maintain  
enough flying time due to the trainee's ability, so the flying action of the walking long  
jump cannot be trained, and the standard flying action of the walking long jump  
20 cannot be mastered.

### Summary of the invention

The present invention is directed to overcome the shortcomings of the prior art, and  
provides a long jump flying training apparatus, which can increase the trainee's flying  
25 time during training and effectively assist the trainee in training of flying.

In order to achieve the above objective, the present invention adopts the following  
technical solution:

A long jump flying training apparatus, including:

a first track: supported by a plurality of support frames, including a run-up section, a  
30 flying section and a landing section connected in sequence, the flying section being

higher than the run-up section, the end where the landing section is connected with the flying section being higher than the other end;

a run-up mechanism: located directly below the run-up section, used to drive a trainee to run up, including a first power trolley, the first power trolley being connected to a second track in a sliding manner, a braking plate being provided at a trainee's take-off position of the second track, a locking mechanism for braking the first power trolley being mounted on the first power trolley and the braking plate; and

a suspension mechanism: used to suspend the trainee over the flying section to increase the trainee's flying time, including a second power trolley connected to the first track in a sliding manner, a rope mechanism being connected to the bottom of the second power trolley, the rope mechanism being used to suspend the trainee, the length of the rope mechanism satisfying that the trainee is in the air when the trainee is located at the flying section.

The present invention also discloses a using method of the long jump flying training apparatus, including the following steps:

step 1: the first power trolley carries a trainee, and the rope mechanism is tied with the trainee;

step 2: the first power trolley and the second power trolley move synchronously; when the first power trolley moves to the vicinity of the braking plate, the trainee runs up and takes off on the first power trolley; after the trainee takes off, the first power trolley is braked under the action of the locking mechanism, and the second power trolley decelerates within the flying section and the landing section of the first track in sequence; when the second power trolley moves within the flying section of the first track, the rope mechanism suspends the trainee in the air, and the trainee practices flying; and

step 3: after the trainee lands, the rope mechanism is released, and the first power trolley and the second power trolley return to original positions for next training.

**Beneficial effects of the invention:**

1. The long jump flying training apparatus of the present invention is simple in

structure and convenient to use. With the flying section of the first track, the rope mechanism and the second power trolley, the trainee's flying time during long jump training can be prolonged, the flying training is facilitated, and the training needs of trainees of various abilities are met.

- 5 2. According to the long jump flying training apparatus of the present invention, the first power trolley is used for run-up to adjust the initial take-off speed of the trainee, so that the trainee can experience different initial take-off speeds, the run-up time can be saved, and the training efficiency can be improved.

### 10 Brief Description of the Drawings

The accompanying drawings constituting a part of the present application are used for providing a further understanding on the present application, and the schematic embodiments of the present application and the descriptions thereof are used for interpreting the present application, rather than constituting improper limitations to  
15 the present application.

Fig. 1 is a schematic diagram of an overall structure according to an embodiment of the present invention;

Fig. 2 is a schematic structural diagram of a first power trolley according to an embodiment of the present invention;

- 20 Fig. 3 is a schematic diagram of the first power trolley unlocked according to an embodiment of the present invention;

Fig. 4 is a schematic diagram of the first power trolley locked according to an embodiment of the present invention;

- 25 Fig. 5 is a schematic structural diagram of a suspension mechanism according to an embodiment of the present invention;

Fig. 6 is a schematic structural diagram of a second power trolley according to an embodiment of the present invention;

Fig. 7 is a schematic structural diagram of a full body safety belt according to an embodiment of the present invention;

- 30 In which, 1 run-up section, 2 flying section, 3 landing section, 4 transition section, 5

support frame, 6 cross beam, 7 second track, 8 first power trolley, 8-1 first trolley plate, 8-2 first traveling wheel, 8-3 first control mechanism, 8-4 armrest, 8-5 take-off plate, 8-6 rotating shaft, 8-7 take-off spring, 9 braking plate, 10 locking pin, 10-1 hemispherical structure, 10-2 locking port, 11 locking groove, 12 first spring, 13 locking block, 13-1 lifting block, 13-2 braking block, 14 second spring, 15 pedal supporting rod, 16 pedal, 17 lifting groove, 18 infrared radiation sensor, 19 second power trolley, 19-1 second trolley plate, 19-2 second traveling wheel, 19-3 second control mechanism, 20 suspension rope, 21 full body safety belt, 22 slit.

## 10 Detailed Description of Embodiments

It should be pointed out that the following detailed descriptions are all exemplary and aim to further illustrate the present application. Unless otherwise specified, all technical and scientific terms used in the descriptions have the same meanings generally understood by those of ordinary skill in the art of the present application.

15 It should be noted that the terms used herein are merely for describing specific embodiments, but are not intended to limit exemplary embodiments according to the present application. As used herein, unless otherwise explicitly pointed out by the context, the singular form is also intended to include the plural form. In addition, it should also be understood that when the terms "include" and/or "comprise" are used  
20 in the specification, they indicate features, steps, operations, devices, components and/or their combination.

For the sake of description, the terms "upper" and "lower" in the present invention only indicate the upper and lower directions of the drawings, do not limit the structure, are only for the convenience of description and the simplification of  
25 description, do not indicate or imply that the devices or elements must have specific directions or be constructed and operated in specific directions, and therefore cannot be understood as limitations to the present invention.

As introduced in the background, during long jump training at present, because of the trainee's ability problem, the flying time is often short, and the flying action cannot be  
30 trained. In view of the above problem, the present application proposes a long jump

flying training apparatus.

In a typical embodiment of the present application, as shown in Figs. 1-7, a long jump flying training apparatus includes a first track, a run-up mechanism and a suspension mechanism.

5 The first track includes a run-up section 1, a flying section 2 and a landing section 3 connected in sequence, the flying section is higher than the run-up section, an arc-shaped transition section 4 is provided between the flying section and the run-up section, and the end where the landing section is connected with the flying section is higher than the other end.

10 The first track is supported by a plurality of U-shaped support frames 5, and a cross beam 6 is provided between two adjacent support frames of the flying section to enhance the structural strength.

The run-up mechanism is provided below the run-up section of the first track, the run-up mechanism includes a second track 7, the starting end of the second track is  
15 located at the starting end of the run-up section, the tail end of the second track is located at the tail end of the run-up section and is a take-off position for a trainee, a first power trolley 8 is connected to the second track in a sliding manner, and the first power trolley can move along the second track to drive the trainee to run up.

The first power trolley includes a first trolley plate 8-1, the length of the first trolley  
20 plate is 3 to 4 meters, two first traveling wheels 8-2 are respectively mounted at two ends of the bottom of the first trolley plate, the four first traveling wheels are embedded into the second track and can roll along the second track, the two first traveling wheels on the rear side of the first trolley plate in the advancing direction of the first power trolley during operation are respectively connected to a first driving  
25 mechanism, the first driving mechanism provides power for advancing of the first power trolley, the first driving mechanism may be a first driving motor, an output shaft of the first driving motor is connected to the first traveling wheels, the driving motor is connected to a first control mechanism 8-3 fixed on the first trolley plate, the first control mechanism includes a first controller, the first controller is connected to  
30 the first driving motor through a first frequency converter, and the first controller can

control the rotation speed of the first driving motor through the first frequency converter, and then control the advancing speed of the first power trolley.

An armrest 8-4 is also fixed on the first trolley plate. When the trainee moves with the first power trolley, the trainee can hold the armrest, so that the trainee's safety during  
5 run-up acceleration is ensured. A take-off mechanism is provided at the front end of the first trolley plate, the take-off mechanism includes an inclined take-off plate 8-5, one end of the take-off plate is rotatably connected to the first trolley plate through a rotating shaft 8-6 disposed on the first trolley plate, the other end is fixedly connected to one end of a take-off spring 8-7, and the other end of the take-off spring is fixedly  
10 connected to the first trolley plate.

The trainee can run up a short distance on the first trolley plate, and then take off by means of the take-off mechanism.

A braking plate 9 is fixed at the tail end of the second track, that is, at the trainee's take-off position, a locking mechanism is provided at the front end of the first trolley  
15 plate and on the braking plate, the first power trolley can be braked by the locking mechanism, the locking mechanism includes a locking pin 10 fixed on the front end face of the first trolley plate, one end of the locking pin is fixedly connected to the first trolley plate, the other end of the locking pin is of a hemispherical structure 10-1, a locking port 10-2 is provided at the bottom of the circumferential side of the locking  
20 pin, the braking plate is provided with a locking groove 11 matching the locking pin, the locking pin can be inserted into the locking groove, a first spring 12 is disposed in the locking groove, the locking pin can strike the first spring, the first spring is used for buffering the braking of the first power trolley, a braking groove perpendicular to the locking groove is provided in the braking plate, a locking block 13 is disposed in  
25 the braking groove, the shape of the locking block matches the shape of the locking port, the locking block can be inserted into the locking port to brake the first power trolley, the locking block is connected to the bottom groove surface of the braking groove through a second spring 14, and the locking block can be inserted into the locking port by means of the elastic force of the second spring and braked.

30 The locking block includes a lifting block 13-1 and a braking block 13-2 integrally

connected, the braking block is inserted into the locking port and braked, the end face of the braking block that can be in contact with the hemispherical end face of the locking pin is a first arc surface, the end face opposite to the first arc surface is a first plane, correspondingly, the locking port has a second arc surface matching the first arc surface and a second plane matching the first plane, the lifting block is fixedly connected to a pedal 16 through a pedal supporting rod 15, and the pedal supporting rod protrudes to the outside of the braking plate through a lifting groove 17 provided on the braking plate, and the pedal can drive the lifting block to ascend and descend.

An infrared radiation sensor 18 is disposed on one side of the braking plate, the infrared radiation sensor is disposed on the side where the first power trolley is located, a transmitting portion and a receiving portion of the infrared radiation sensor are respectively disposed on two sides of the second track, and the infrared radiation sensor is connected to the first controller through a wireless transmission module.

The braking principle of the first power trolley is: when the first power trolley moves near the tail end of the second track, the first power trolley cuts off the infrared signal transmitted from the transmitting portion of the infrared radiation sensor to the receiving portion, the infrared radiation sensor transmits a signal to the first controller through the wireless transmission module, the first controller controls the first driving motor to stop, the first power trolley continues to move under the action of inertia, the locking pin is inserted into the locking groove, the hemispherical structure is in contact with the braking block through the arc surface, the locking pin gradually presses the braking block to move down with the movement of the locking pin, the second spring is compressed, the locking pin continues to move and is in contact with the first spring, the first spring buffers the movement of the locking pin, the second spring drives the locking block to move up when the locking port is aligned with the braking block, the braking block is inserted into the locking port, and the first power trolley is braked.

The pedal is driven to move down to disengage the braking block from the locking port, and the first power trolley can be disengaged from the braking plate and return to the initial position.

The first track is connected with a suspension mechanism for suspending the trainee at the flying section, thereby increasing the flying time for the trainee, and facilitating the training of the flying action.

The suspension mechanism includes a second power trolley 19 disposed inside the cavity of the first track and connected to the first track in a sliding manner, the second power trolley includes a second trolley plate 19-1, second traveling wheels 19-2 are provided at two ends of the second trolley plate, the second traveling wheels are connected to the first track in a sliding manner, the two second traveling wheels on the rear side are respectively connected to a second driving mechanism fixed to the second trolley plate, the second driving mechanism is a second driving motor, an output shaft of the second driving motor is connected to the second traveling wheels, the second driving motor can drive the second traveling wheels to roll along the first track so as to drive the second power trolley to move along the first track, the second driving motor is connected to a second control mechanism 19-3 disposed on the second trolley plate, the second control mechanism includes a second controller, and the second controller is connected to the second driving motor through a second frequency converter, and can control the rotation speed of the second driving motor through the second frequency converter, and then control the traveling speed of the second power trolley.

Stop blocks are also provided in the run-up section and the landing section of the first track to prevent the first power trolley from sliding out and falling off in the first track.

A rope mechanism is fixedly connected to the bottom of the second trolley plate, the rope mechanism includes a suspension rope 20 with one end fixedly connected to the second trolley plate, the suspension rope protrudes to the outside of the first track through a slit 22 provided at the bottom of the first track, the end of the suspension rope protruding to the outside of the first track is connected to a full body safety belt 21 for tying the trainee, and the length of the suspension rope satisfies that, when the second power trolley drives the trainee to be located at the flying section of the first track, the trainee can still be in the air, which prolongs the trainee's flying time and

facilitates the training of the trainee's flying action.

This embodiment also discloses a using method of the long jump flying training apparatus, including the following steps:

5 Step 1: the trainee stands on the first trolley plate, is tied with the suspension rope through the full body safety belt, and holds the armrest on the first trolley plate with double hands.

Step 2: the first driving motor and the second driving motor are started to drive the first power trolley and the second power trolley to move synchronously, the moving speeds of the first power trolley and the second power trolley may be preset in the  
10 first controller and the second controller, and the first controller and the second controller control the first power trolley and the second power trolley through the first frequency converter and the second frequency converter respectively to move at variable speeds that are set by pre-programming in the first controller and the second controller, wherein the setting method is a relatively mature existing technology, and  
15 details are not described herein again.

When the first power trolley and the second power trolley move to the vicinity of the tail end of the second track, the coach can send an instruction to the trainee, the trainee runs up a short distance on the first trolley plate and takes off by means of the take-off mechanism, then the first power trolley is braked under the action of the  
20 locking mechanism to stop, the first power trolley drives the trainee through the rope mechanism to move along the flying section of the first track, the first power trolley decelerates in a preset way, and the trainee does not immediately land under the action of the suspension rope, so the flying time is prolonged and the flying action can be trained.

25 Step 3: the first power trolley moves within the landing section of the first track, the trainee is gradually lowered till landing, the trainee unfastens the full body safety belt when the training of one flying action is completed, and the first power trolley and the second power trolley return to the initial positions for next training.

In this embodiment, with the rope mechanism and the flying section of the first track,  
30 the trainee's flying time can be prolonged, and the flying action can be practiced

conveniently; and with the first power trolley, different initial take-off speeds can be applied to the trainee, the trainee can feel the impact of different initial take-off speeds on flying, the trainee's run-up time can also be reduced, the trainee's physical strength is saved, and the training efficiency is improved.

- 5 Although the specific embodiments of the present invention are described above in combination with the accompanying drawings, the protection scope of the present invention is not limited thereto. It should be understood by those skilled in the art that various modifications or variations could be made by those skilled in the art based on the technical solution of the present invention without any creative effort, and these
- 10 modifications or variations shall fall into the protection scope of the present invention.

## Claims

1. A long jump flying training apparatus, comprising:

a first track: supported by a plurality of support frames, comprising a run-up section, a  
5 flying section and a landing section connected in sequence, the flying section being  
higher than the run-up section, the end where the landing section is connected with the  
flying section being higher than the other end;

a run-up mechanism: located directly below the run-up section, used to drive a trainee  
to run up, comprising a first power trolley, the first power trolley being connected to a  
10 second track in a sliding manner, a braking plate being provided at a trainee's take-off  
position of the second track, a locking mechanism for braking the first power trolley  
being mounted on the first power trolley and the braking plate; and

a suspension mechanism: used to suspend the trainee over the flying section to  
increase the trainee's flying time, including a second power trolley connected to the  
15 first track in a sliding manner, a rope mechanism being connected to the bottom of the  
second power trolley, the rope mechanism being used to suspend the trainee, the  
length of the rope mechanism satisfying that the trainee is in the air when the trainee  
is located at the flying section.

2. The long jump flying training apparatus according to claim 1, wherein the first  
20 power trolley comprises a first trolley plate, first traveling wheels are mounted at two  
ends of the bottom of the first trolley plate, the first traveling wheels are connected to  
the second track in a sliding manner, the first traveling wheels at one end are  
connected to a first driving mechanism, the first driving mechanism is used to drive  
the rotation of the first traveling wheels, the first driving mechanism is connected to a  
25 first control mechanism, and the first control mechanism controls the movement of the  
first driving mechanism.

3. The long jump flying training apparatus according to claim 2, wherein an armrest  
held by the trainee when the first power trolley drives the trainee to move is disposed  
on the first trolley plate.

30 4. The long jump flying training apparatus according to claim 2, wherein a take-off

mechanism for trainee's take-off is mounted on the first trolley plate, the take-off mechanism comprises an inclined take-off plate, one end of the take-off plate is rotatably connected to the first trolley plate, the other end of the take-off plate is connected to one end of a take-off spring, and the other end of the take-off spring is  
5 connected to the first trolley plate.

5. The long jump flying training apparatus according to claim 1, wherein the locking mechanism comprises a locking pin fixed to an end of the first power trolley, the locking pin is provided with a locking port, the braking plate is provided with a locking groove matching the locking pin, the locking pin can be inserted into the  
10 locking groove, a first spring is disposed in the locking groove, the first spring is in contact with the locking pin to buffer the braking, a braking groove perpendicular to the locking groove is provided in the braking plate, a locking block matching the locking port is disposed in the braking groove, the locking block is connected to a second spring disposed in the braking groove, and the second spring can push the  
15 locking block into the locking port to brake the first power trolley.

6. The long jump flying training apparatus according to claim 5, wherein the end of the locking pin inserted into the locking groove is of a hemispherical structure, the locking block comprises a lifting block connected to the second spring and a braking block inserted into the locking port, the end face of the braking block that can be in  
20 contact with the end of the locking pin is a first arc surface, the end face opposite to the first arc surface is a first plane, the locking port is provided with a second arc surface matching the first arc surface and a second plane matching the first plane, the lifting block is provided with a pedal protruding to the outside of the braking block, the pedal is used to disengage the braking block from the locking port, and the  
25 braking plate is provided with a lifting groove for lifting of the pedal.

7. The long jump flying training apparatus according to claim 1, wherein a radiation sensor is disposed on one side of the braking plate, the radiation sensor is located on the side where the first power trolley is located, and a transmitting portion and a receiving portion of the radiation sensor are located on two sides of the second track.

30 8. The long jump flying training apparatus according to claim 1, wherein the second

power trolley is located within the first track and comprises a second trolley plate, second traveling wheels are mounted at two ends of the bottom of the second trolley plate, the second traveling wheels are connected to the first track in a sliding manner, the second traveling wheels are connected to a second driving mechanism fixed on the second trolley plate, the second driving mechanism is connected to a second control mechanism fixed on the second trolley plate, and the second control mechanism can control the second driving mechanism to drive the rotation of the second traveling wheels.

9. The long jump flying training apparatus according to claim 1, wherein the rope mechanism comprises a suspension rope fixedly connected to the second power trolley, the suspension rope protrudes to the outside of the first track through a slit provided at the bottom of the first track, a full body safety belt is fixed to the end of the suspension rope protruding to the outside of the first track, and the length of the suspension rope satisfies that the trainee is in the air when the suspension rope suspends the trainee at the flying section of the first track.

10. A using method of the long jump flying training apparatus according to any one of claims 1-9, comprising the following steps:

- step 1: the first power trolley carries a trainee, and the rope mechanism is tied with the trainee;
- step 2: the first power trolley and the second power trolley move synchronously; when the first power trolley moves to the vicinity of the braking plate, the trainee runs up and takes off on the first power trolley; after the trainee takes off, the first power trolley is braked under the action of the locking mechanism, and the second power trolley decelerates within the flying section and the landing section of the first track in sequence; when the second power trolley moves within the flying section of the first track, the rope mechanism suspends the trainee in the air, and the trainee practices flying; and
- step 3: after the trainee lands, the rope mechanism is released, and the first power trolley and the second power trolley return to original positions for next training.

## Revendications

1. Un appareil d'entraînement au vol pour le saut en longueur, comprenant :  
  
une première piste : supportée par une pluralité de cadres de support, comprenant une section d'élan, une section volante et une section d'atterrissage reliées en séquence, la  
5 section volante étant plus haute que la section d'élan, l'extrémité où la section d'atterrissage est reliée à la section volante étant plus haute que l'autre extrémité ;  
  
un mécanisme d'accélération : situé directement sous la section d'accélération, utilisé pour entraîner un stagiaire à accélérer, comprenant un premier chariot moteur, le premier chariot moteur étant relié à une deuxième voie de manière coulissante, une  
10 plaque de freinage étant prévue à la position de décollage du stagiaire de la deuxième voie, un mécanisme de verrouillage pour le freinage du premier chariot moteur étant monté sur le premier chariot moteur et la plaque de freinage ; et  
  
un mécanisme de suspension : utilisé pour suspendre le stagiaire au-dessus de la section volante afin d'augmenter le temps de vol du stagiaire, comprenant un  
15 deuxième chariot moteur relié à la première voie de manière coulissante, un mécanisme de corde étant relié au bas du deuxième chariot moteur, le mécanisme de corde étant utilisé pour suspendre le stagiaire, la longueur du mécanisme de corde satisfaisant au fait que le stagiaire est en l'air lorsque le stagiaire se trouve à la section volante.
- 20 2. Appareil d'entraînement au saut en longueur selon la revendication 1, dans lequel le premier chariot motorisé comprend une première plaque de chariot, des premières roues mobiles sont montées aux deux extrémités du fond de la première plaque de chariot, les premières roues mobiles sont reliées à la deuxième piste de manière coulissante, les premières roues mobiles à une extrémité sont reliées à un premier  
25 mécanisme d'entraînement, le premier mécanisme d'entraînement est utilisé pour entraîner la rotation des premières roues mobiles, le premier mécanisme d'entraînement est relié à un premier mécanisme de commande, et le premier

mécanisme de commande commande le mouvement du premier mécanisme d'entraînement.

3. Appareil d'entraînement au saut en longueur selon la revendication 2, dans lequel un accoudeur tenu par le stagiaire lorsque le premier chariot moteur entraîne le stagiaire à se déplacer est disposé sur la première plaque du chariot.  
5
4. Appareil d'entraînement au vol pour le saut en longueur selon la revendication 2, dans lequel un mécanisme de décollage pour le décollage de l'élève est monté sur la première plaque de chariot, le mécanisme de décollage comprend une plaque de décollage inclinée, une extrémité de la plaque de décollage est reliée de manière  
10 rotative à la première plaque de chariot, l'autre extrémité de la plaque de décollage est reliée à une extrémité d'un ressort de décollage, et l'autre extrémité du ressort de décollage est reliée à la première plaque de chariot.
5. Appareil d'entraînement au vol pour le saut en longueur selon la revendication 1, dans lequel le mécanisme de verrouillage comprend une goupille de verrouillage fixée  
15 à une extrémité du premier chariot motorisé, la goupille de verrouillage est munie d'un orifice de verrouillage, la plaque de freinage est munie d'une rainure de verrouillage correspondant à la goupille de verrouillage, la goupille de verrouillage peut être insérée dans la rainure de verrouillage, un premier ressort est disposé dans la rainure de verrouillage, le premier ressort est en contact avec la goupille de verrouillage pour  
20 amortir le freinage, une rainure de freinage perpendiculaire à la rainure de verrouillage est prévue dans le plateau de freinage, un bloc de verrouillage correspondant à l'orifice de verrouillage est disposé dans la rainure de freinage, le bloc de verrouillage est relié à un second ressort disposé dans la rainure de freinage, et le second ressort peut pousser le bloc de verrouillage dans l'orifice de verrouillage pour  
25 freiner le premier chariot moteur.
6. Appareil d'entraînement au vol pour le saut en longueur selon la revendication 5, dans lequel l'extrémité de la goupille de verrouillage insérée dans la rainure de verrouillage est de structure hémisphérique, le bloc de verrouillage comprend un bloc

- de levage relié au second ressort et un bloc de freinage inséré dans l'orifice de verrouillage, la face d'extrémité du bloc de freinage qui peut être en contact avec l'extrémité de la goupille de verrouillage est une première surface d'arc, la face d'extrémité opposée à la première surface d'arc est un premier plan, l'orifice de verrouillage est pourvu d'une deuxième surface d'arc correspondant à la première surface d'arc et d'un deuxième plan correspondant au premier plan, le bloc de levage est pourvu d'une pédale dépassant à l'extérieur du bloc de freinage, la pédale est utilisée pour désengager le bloc de freinage de l'orifice de verrouillage, et la plaque de freinage est pourvue d'une rainure de levage pour soulever la pédale.
- 5
- 10 7. Appareil d'entraînement au vol pour le saut en longueur selon la revendication 1, dans lequel un capteur de rayonnement est disposé sur un côté du plateau de freinage, le capteur de rayonnement est situé sur le côté où se trouve le premier chariot moteur, et une partie émettrice et une partie réceptrice du capteur de rayonnement sont situées sur deux côtés de la deuxième piste.
- 15 8. Appareil d'entraînement au saut en longueur selon la revendication 1, dans lequel le second chariot motorisé est situé à l'intérieur de la première piste et comprend une seconde plaque de chariot, des secondes roues mobiles sont montées aux deux extrémités du fond de la seconde plaque de chariot, les secondes roues mobiles sont reliées à la première piste de manière coulissante, les secondes roues mobiles sont
- 20 reliées à un second mécanisme d'entraînement fixé sur la seconde plaque de chariot, le second mécanisme d'entraînement est relié à un second mécanisme de commande fixé sur la seconde plaque de chariot, et le second mécanisme de commande peut commander le second mécanisme d'entraînement pour entraîner la rotation des secondes roues mobiles.
- 25 9. Appareil d'entraînement au vol pour le saut en longueur selon la revendication 1, dans lequel le mécanisme de corde comprend une corde de suspension reliée de manière fixe au deuxième chariot moteur, la corde de suspension dépasse à l'extérieur de la première piste par une fente prévue au bas de la première piste, une ceinture de sécurité intégrale est fixée à l'extrémité de la corde de suspension dépassant à

l'extérieur de la première piste, et la longueur de la corde de suspension satisfait au fait que le stagiaire est dans les airs lorsque la corde de suspension suspend le stagiaire à la section volante de la première piste.

10. Méthode d'utilisation de l'appareil d'entraînement au saut en longueur selon l'une  
5 quelconque des revendications 1 à 9, comprenant les étapes suivantes :

étape 1 : le premier chariot motorisé transporte un stagiaire, et le mécanisme de corde est attaché avec le stagiaire ;

étape 2 : le premier chariot motorisé et le deuxième chariot motorisé se déplacent de manière synchrone ; lorsque le premier chariot motorisé se déplace jusqu'à proximité  
10 de la plaque de freinage, l'élève court et décolle sur le premier chariot motorisé ; après le décollage de l'élève, le premier chariot motorisé est freiné sous l'action du mécanisme de verrouillage, et le deuxième chariot motorisé décélère dans la section de vol et la section d'atterrissage de la première piste en séquence ; lorsque le deuxième chariot motorisé se déplace dans la section de vol de la première piste, le  
15 mécanisme à cordes suspend l'élève dans les airs, et l'élève s'exerce à voler ; et

étape 3 : après l'atterrissage du stagiaire, le mécanisme de la corde est relâché, et le premier chariot électrique et le deuxième chariot électrique retournent à leurs positions initiales pour la prochaine formation.

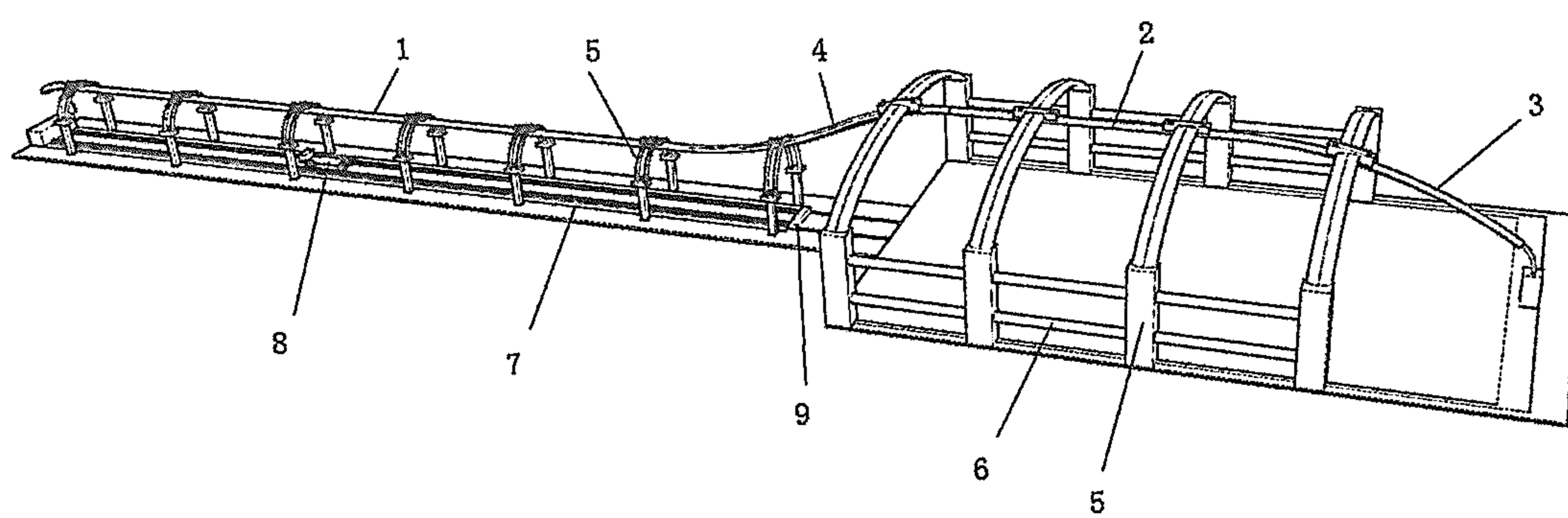


Fig. 1

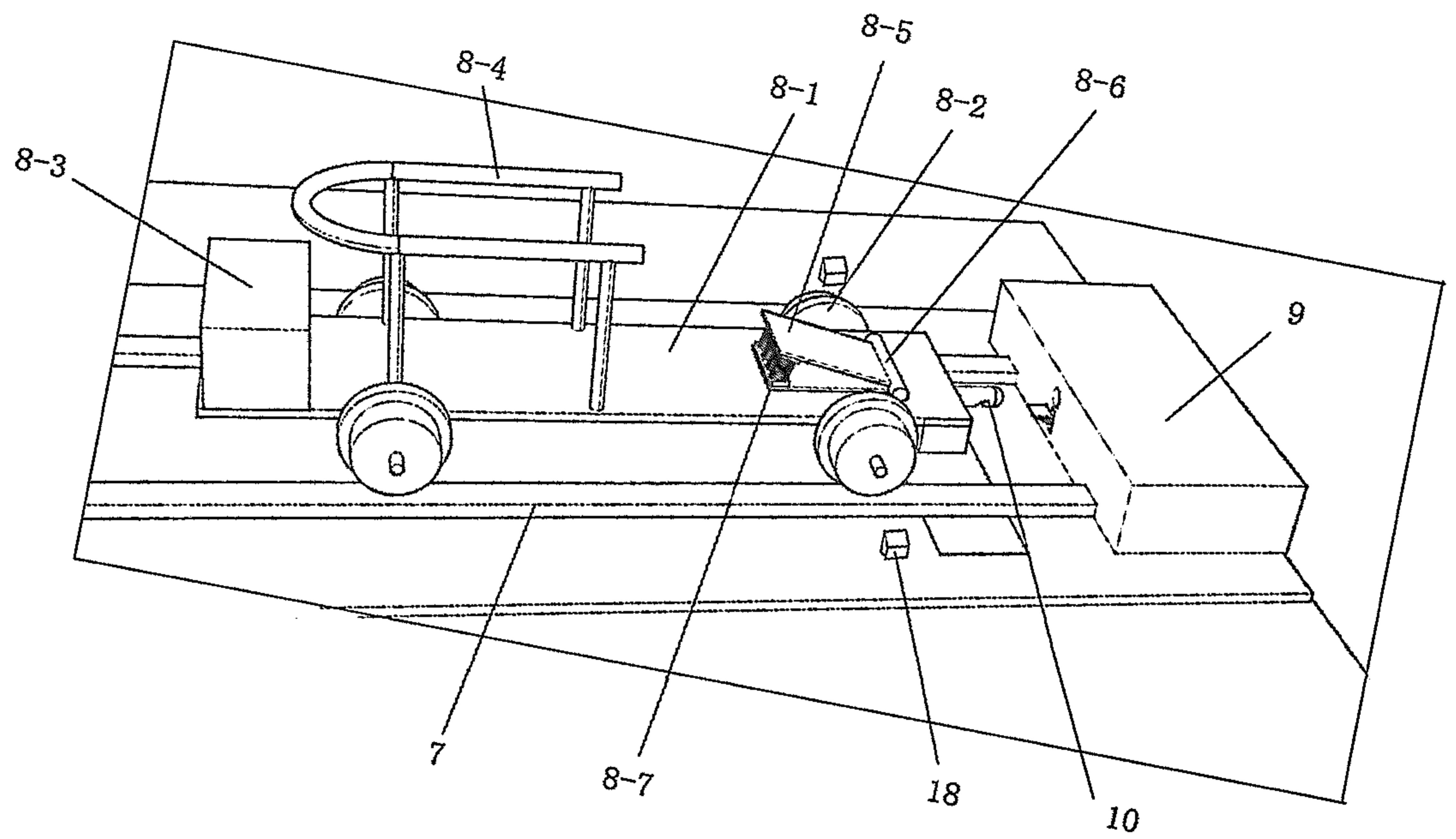


Fig. 2

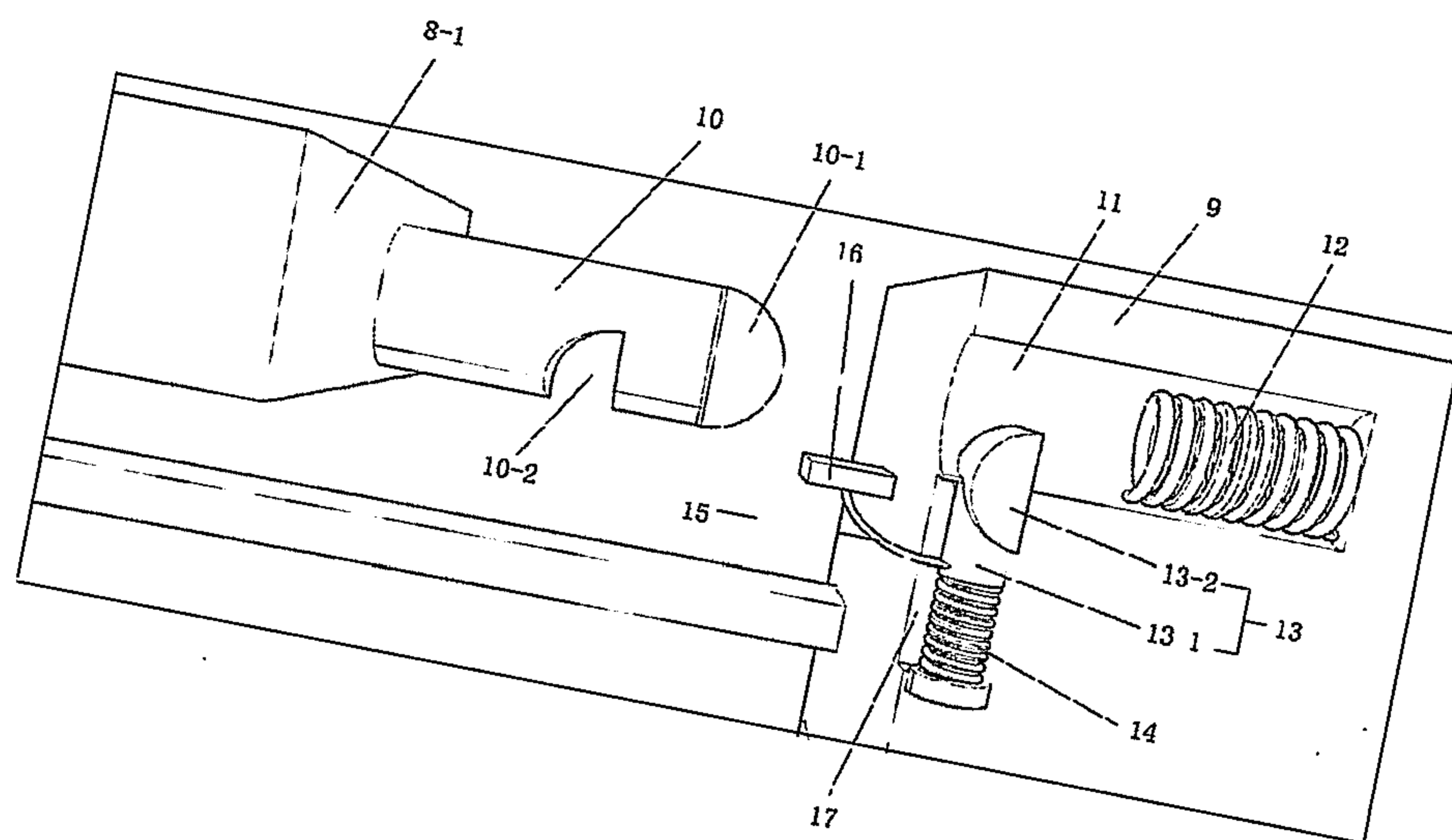


Fig. 3

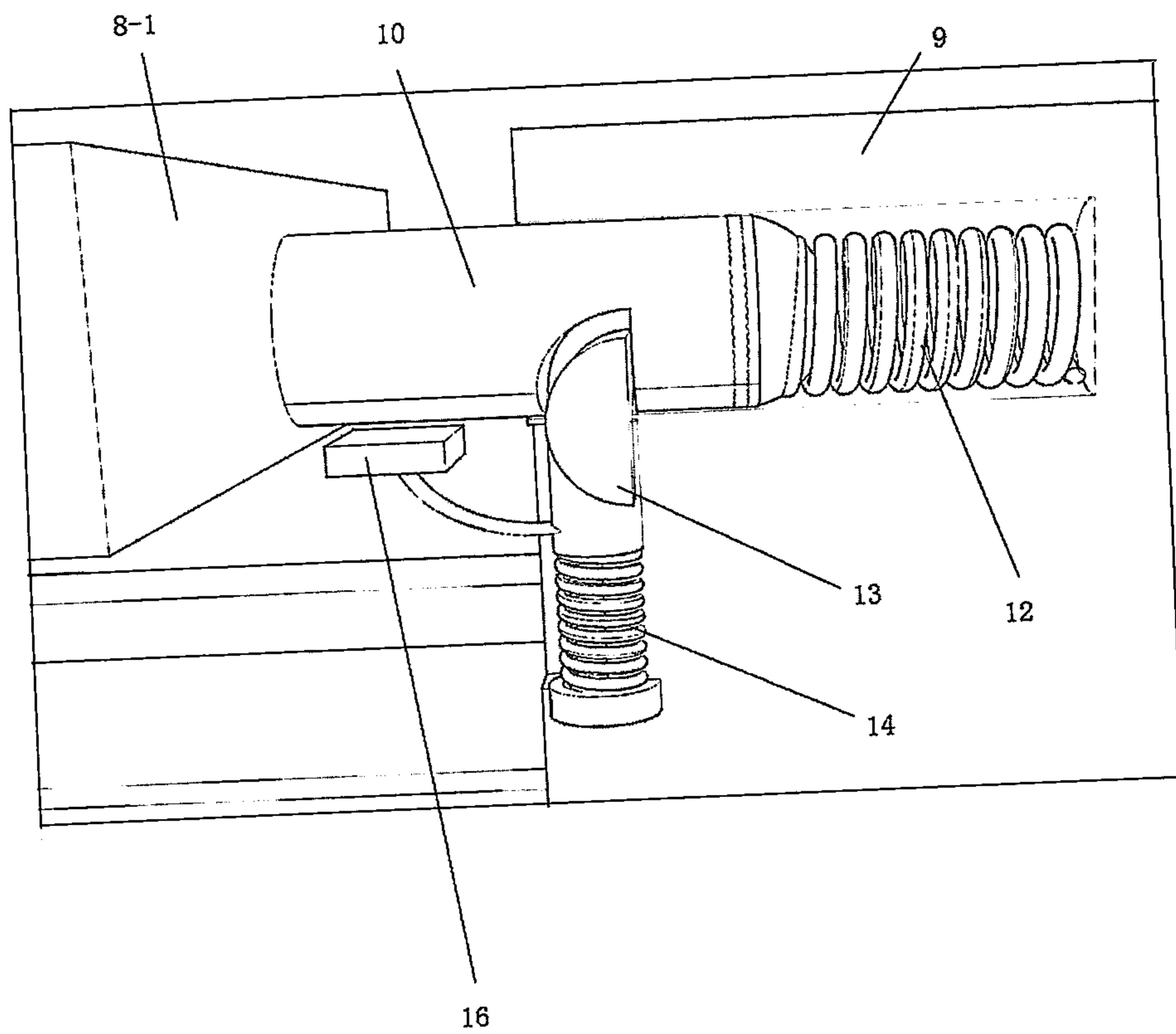


Fig. 4

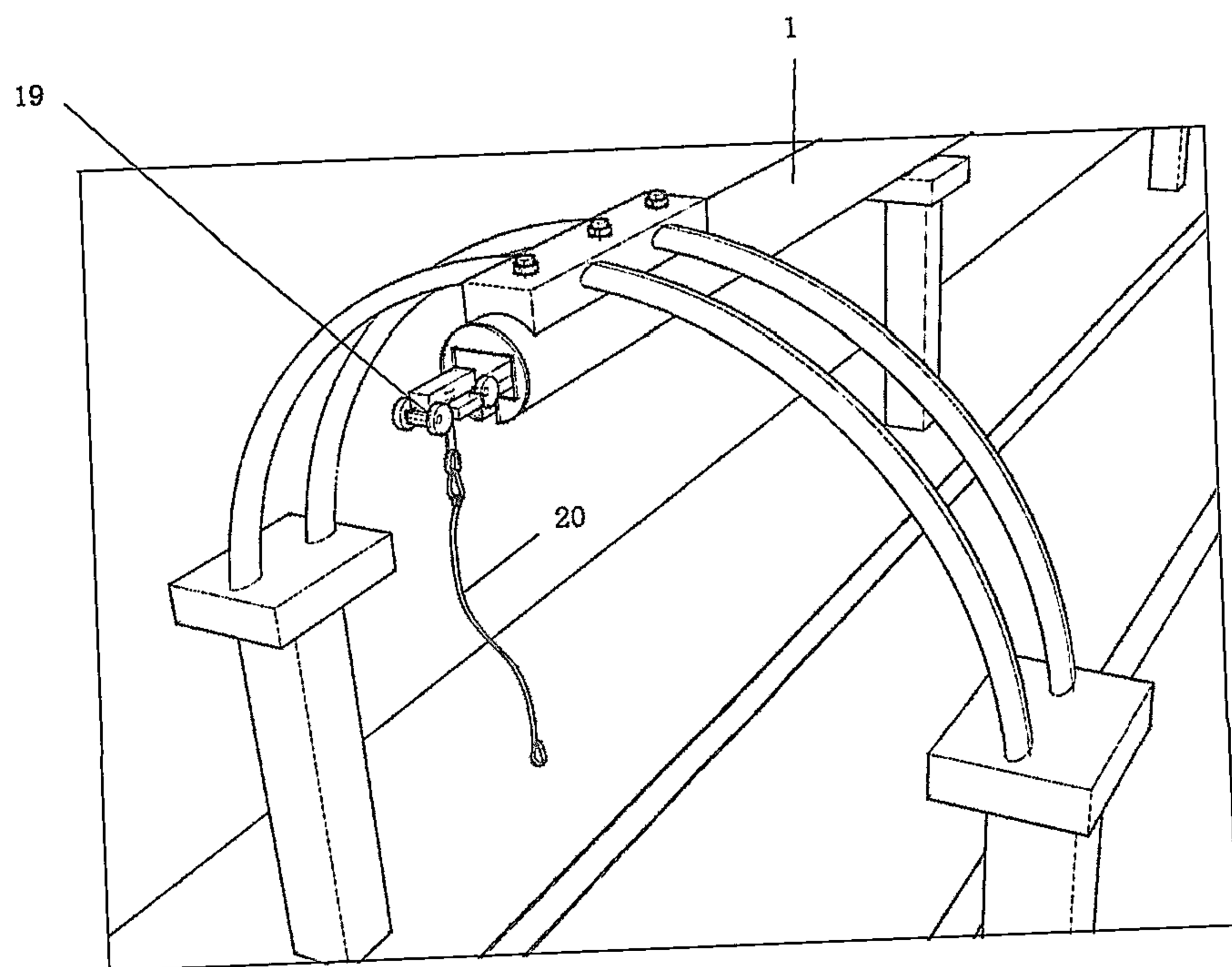


Fig. 5

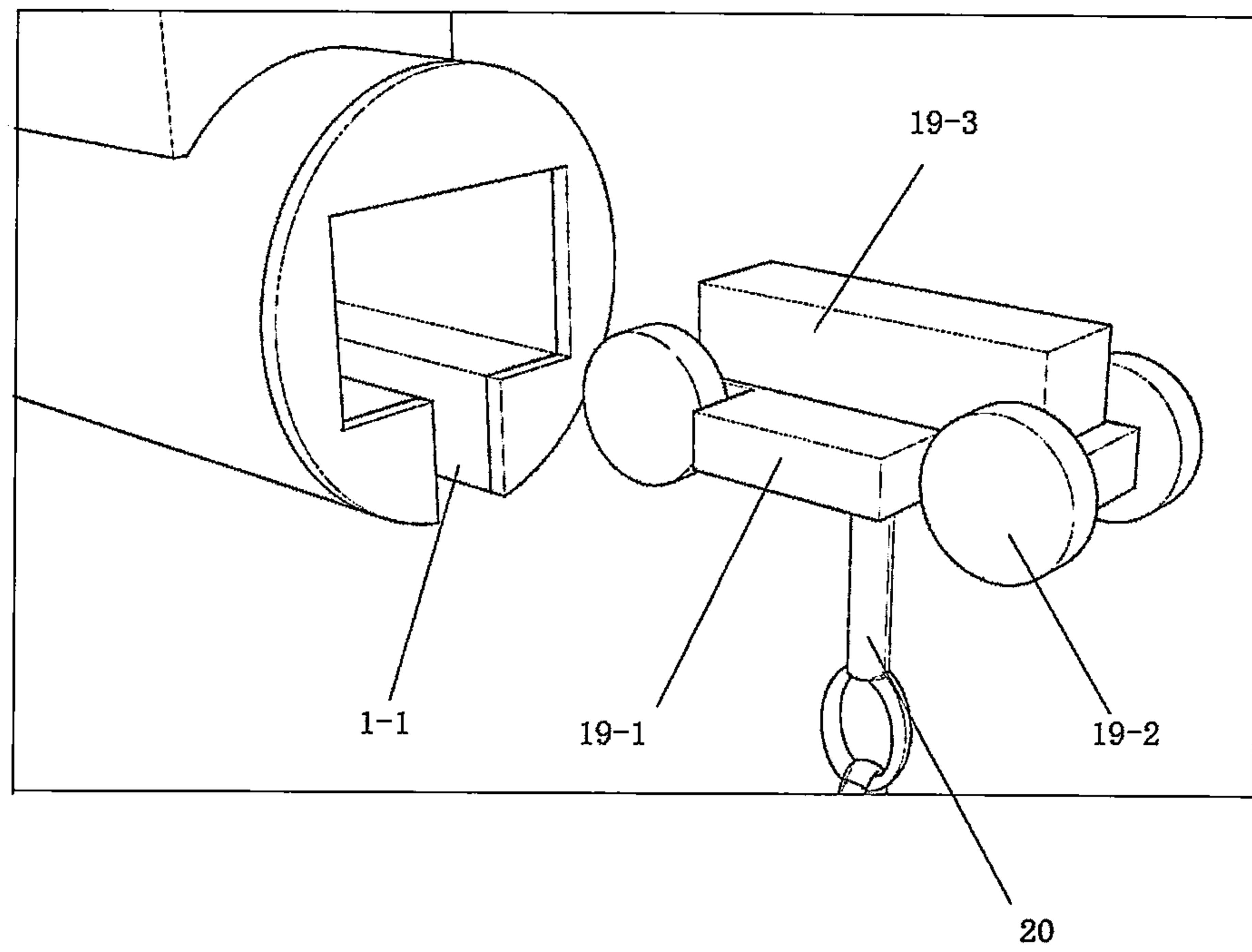


Fig. 6

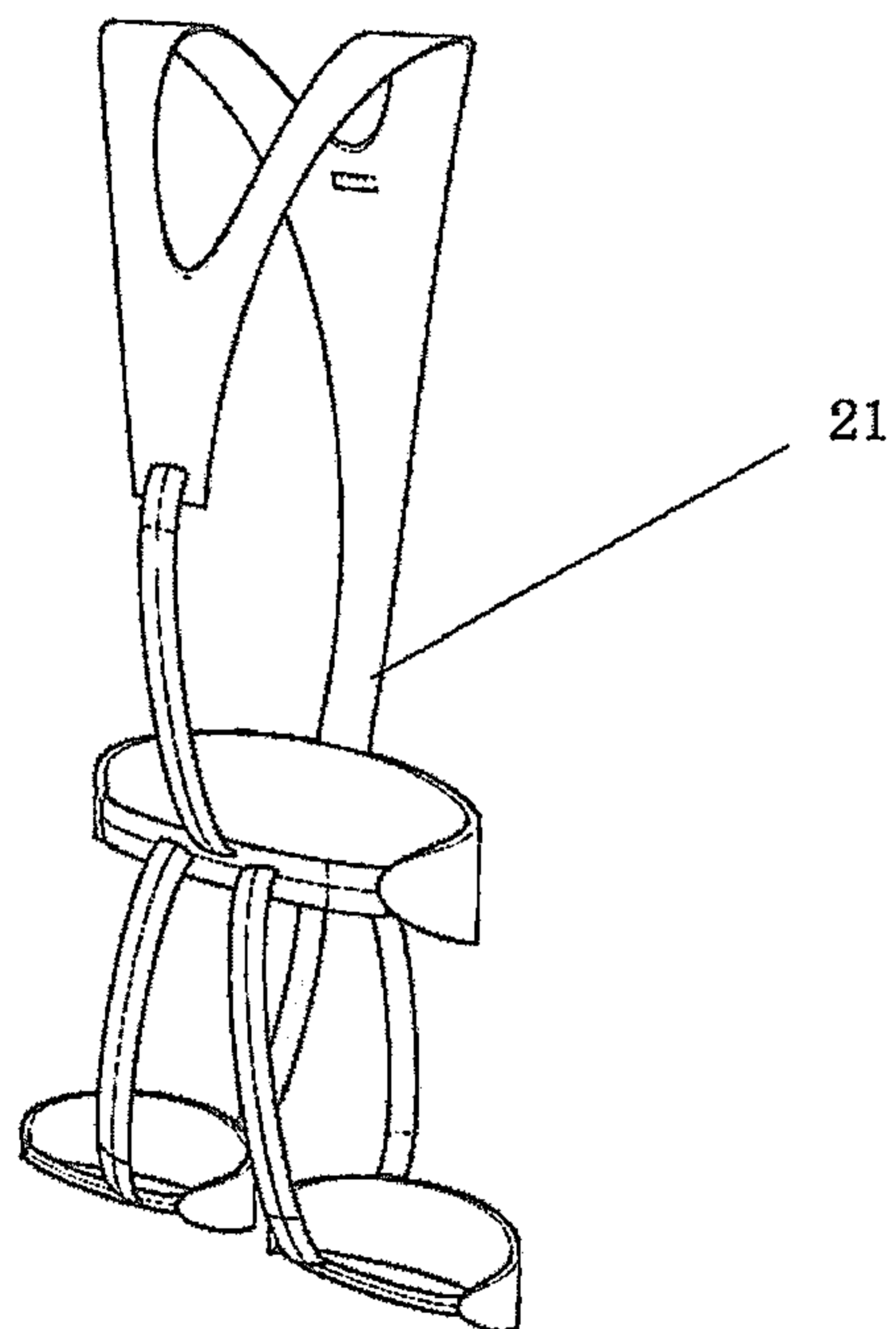


Fig. 7