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Convenient and Reliable High Shooting Bracket for Forest Canopy Images

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ABSTRACT

The invention discloses a convenient and reliable high shooting bracket for forest canopy images, which comprises a bracket body and a suitcase. The bracket body can be placed in the suitcase. The bracket body comprises a tripod, a telescopic tower ruler, a mobile phone fixing component and automatic retraction tension coils. The tower ruler component penetrates through the tripod, the mobile phone fixing component is connected with the top end of the telescopic tower ruler, and the automatic retraction tension coils are respectively connected with the tripod and the mobile phone fixing component. The invention has the advantages of simple operation, convenient carrying, firm structure and stable shooting.

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FIGURES

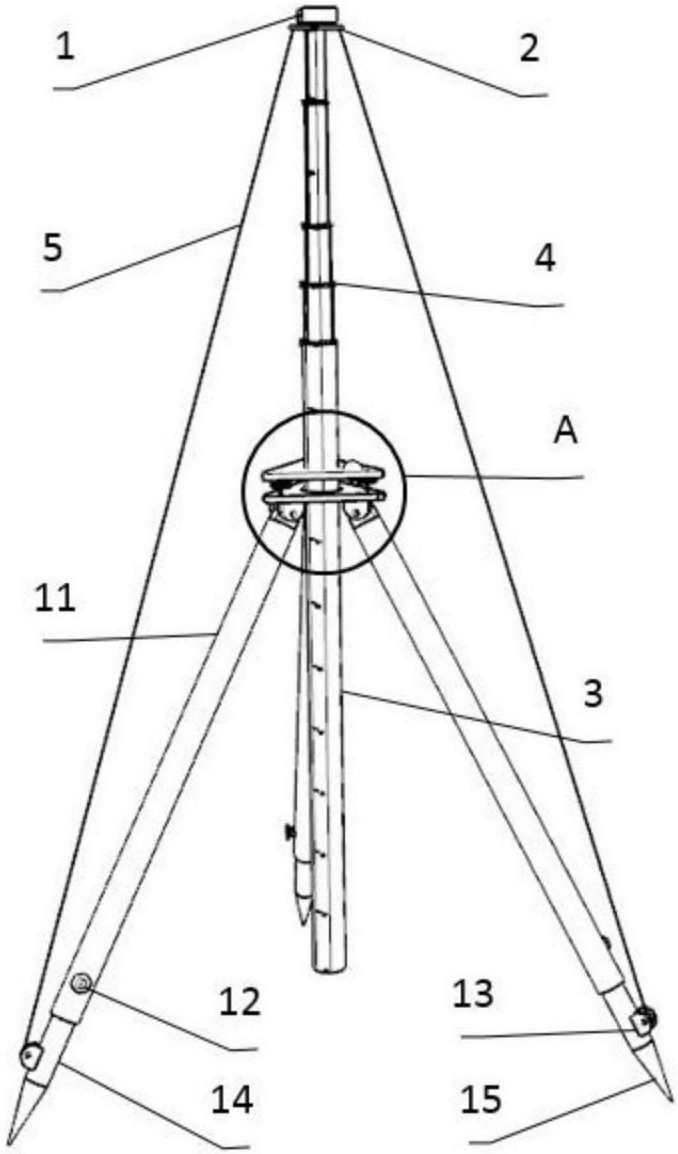

Figure 1

Convenient and Reliable High Shooting Bracket for Forest Canopy Images

TECHNICAL FIELD

The invention relates to the technical field of shooting brackets, particularly to a convenient and reliable high shooting bracket for forest canopy images.

BACKGROUND

Shooting qualified forest canopy images and analyzing ideal gaps and coverage areas are the most basic work in forest canopy image analysis. When the scientific examiners shoot the canopy, they need to use the bracket to put digital shooting equipments such as mobile phones at a height of several meters in the air to shoot the canopy. At present, most of the brackets used are traditional tripods or telescopic tower rulers. Although the structures are simple, they are inconvenient to carry, low in lifting height and poor in stability, which affects the image quality during shooting. Therefore, there is a need for a high shooting bracket with simple operation, convenient carrying, reliable structure and stable shooting.

SUMMARY

The purpose of this invention is to provide a convenient and reliable high shooting bracket for forest canopy images, so as to solve the problems in the prior art, and make the high shooting bracket for forest canopy images simple in operation, convenient to carry, firm in structure and stable in shooting.

In order to achieve the above purpose, the invention provides the following scheme. The invention provides a convenient and reliable high shooting bracket for forest canopy images, which comprises a bracket body and a suitcase. The bracket body can be placed in the suitcase. The bracket body comprises a tripod, a telescopic tower ruler, a mobile

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phone fixing component and automatic retraction tension coils. The tower ruler component penetrates through the tripod, the mobile phone fixing component is connected with the top end of the telescopic tower ruler, and the automatic retraction tension coils are respectively connected with the tripod and the mobile phone fixing component.

Preferably, the tripod comprises three support legs. The bottom side walls of the support legs are threadedly connected with fixing screws. The support legs are sleeved with sliding rods and are in sliding connection with the sliding rods.The fixing screws penetrate through the support legs and are in abutting connection with the sliding rods. Rotating seats are rotatably connected to the tops of the three support legs. A first support plate is fixedly connected to the tops of the three rotating seats. The top of the first support plate is threadedly connected with a plurality of foot screws. A second support plate is rotatably connected to the tops of the plurality of foot screws. The first support plate and the second support plate are both provided with through holes at the central positions. The telescopic tower ruler penetrates through the through holes and is in sliding connection with the through holes.

Preferably, the top surface of the second support plate is embedded with a leveling bubble.

Preferably, sharp cones are fixed at the bottom ends of the sliding rods.

Preferably, the telescopic tower ruler comprises a plurality of telescopic joints. A tower ruler fixing ring is arranged between two adjacent telescopic joints. The telescopic joint at the bottom is in sliding connection with the through hole. The telescopic joint at the top is fixedly connected with the mobile phone fixing component.

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Preferably, the mobile phone fixing component comprises a third support plate. The third support plate is fixedly connected with the top end of the telescopic joint at the top, and the top of the third support plate is rotatably connected with a mobile phone fixing frame.

Preferably, the automatic retraction tension coils comprise automatic winding coils. The automatic winding coils are fixedly connected with the support legs. Nylon ropes are wound around the automatic winding coils, and the nylon ropes are fixedly connected with the third support plate.

Preferably, the telescopic tower ruler is marked with scales.

Preferably, the suitcase comprises a lower box. One side of the suitcase is rotatably connected with an upper box through hinges, and the other side of the suitcase is detachably connected with the upper box through hasps. A box handle is fixed on the lower box.

The invention discloses the following technical effects.

In the invention, the tripod, the telescopic tower ruler and the mobile phone fixing frame are structurally integrated, so that the operation is simple, the use is convenient, the time is saved, and the tripod can be rapidly unfolded and folded. When in use, the tripod and the telescopic tower ruler can be unfolded, the lifting height can be adjusted according to requirements, the tripod and the telescopic tower ruler cooperate to improve the stability of the device. The mechanism is firm, the shooting is stable, and the shooting quality is effectively improved. After folding, the mechanism is small in size, convenient to carry and suitable for field operation.

When used in the field, the suitcase can protect the bracket body and is convenient to carry.

BRIEF DESCRIPTION OF THE FIGURES

In order to explain the embodiment of the invention or the technical scheme in the prior art more clearly, the drawings used in the embodiment will be briefly introduced below. Obviously, the drawings in the following description are only some embodiments of the invention. For ordinary technicians in the field, other drawings can be obtained according to these drawings without paying creative labor.

Figure 1 An expanded view of a bracket body

Figure 2 A folded view of the bracket body

Figure 3 A storage state diagram of the convenient and reliable high shooting bracket for forest canopy images

Figure 4 A partial enlarged view of part A in Figure 1

In the drawing: 1- mobile phone fixing frame, 2- third support plate, 3- telescopic tower ruler, 4- tower ruler fixing ring, 5- nylon rope, 6- second support plate, 7- first support plate, 8- rotating seat, 9- leveling bubble, 10- foot screw, 11- support leg, 12- fixing screw, 13- automatic winding coil, 14- sliding rod, 15- sharp cone, 16- upper box, 17- hasp, 18- box handle, 19- lower box, 20- hinge.

DESCRIPTION OF THE INVENTION

In the following, the technical scheme in the embodiment of the invention will be described clearly and completely with reference to the drawings in the embodiment of the invention. Obviously, the described embodiments are only part of the embodiments of the invention, not all embodiments. Based on the embodiments in this invention, all other embodiments obtained by ordinary technicians in this field without creative labor belong to the protection scope of this invention.

In order to make the above objects, features and advantages of the invention more obvious and easy to understand, the invention will be further explained in detail with reference to the attached drawings and specific embodiments.

The invention provides a convenient and reliable high shooting bracket for forest canopy images, which comprises a bracket body and a suitcase. The bracket body can be placed in the suitcase. The bracket body comprises a tripod, a telescopic tower ruler 3, a mobile phone fixing component and automatic retraction tension coils. The tower ruler component penetrates through the tripod, the mobile phone fixing component is connected with the top end of the telescopic tower ruler 3. The automatic retraction tension coils are respectively connected with the tripod and the mobile phone fixing component. The tripod and telescopic tower ruler 3 are made of aluminum alloy. This material is firm, lightweight, excellent in heat resistance and cold resistance, difficult to deform, convenient to carry, and beneficial to field operation.

In a further optimization scheme, the tripod comprises three support legs 11. The bottom side walls of the support legs 11 are screwed with fixing screws 12. The support legs 11 are sleeved with sliding rods 14 and are in sliding connection with the sliding rods 14. The support legs 11 and the sliding rods 14 are cylindrical tubes. The fixing screws 12 penetrate through the support legs 11 and are in abutting connection with the sliding rods 14. The tops of the three support legs 11 are all rotatably connected with rotating seats 8, and the tops of the three rotating seats 8 are fixedly connected with a first support plate 7. The top of the first support plate 7 is threadedly connected with a plurality of foot screws 10, and the tops of the plurality of foot screws 10 are rotatably connected with a second support plate 6. The first support plate 7 and the second support plate 6 are both provided

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with through holes at the central positions. The telescopic tower ruler 3 penetrates through the through holes and is in sliding connection with the through holes. Open the support legs 11, pull out the sliding rods 14 to proper positions, and tighten the fixing screws 12 to unfold the tripod.

In a further optimization scheme, a leveling bubble 9 is embedded in the top surface of the second support plate 6. The leveling bubble 9 is spherical, and the second support plate 6 can be leveled by rotating the foot screws 10.

In a further optimization scheme, sharp cones 15 are fixed at the bottom ends of the sliding rods 14. The sharp cones 15 are convenient to be inserted into the ground to stabilize the bracket.

In a further optimization scheme, the telescopic tower ruler 3 comprises a plurality of telescopic joints, a tower ruler fixing ring 4 is installed between two adjacent telescopic joints. The bottom telescopic joint is in sliding connection with the through hole, and the top telescopic joint is fixedly connected with the mobile phone fixing component. The telescopic tower ruler 3 is made of an aluminum alloy shell, which consists of five aluminum alloy tubes with different diameters, and the outermost one is in sliding connection with the through holes at the center positions of the first support plate 7 and the second support plate 6.

In a further optimization scheme, the mobile phone fixing component comprises a third support plate 2. The third support plate 2 is fixedly connected with the top end of the top telescopic joint, and the top of the third support plate 2 is rotatably connected with a mobile phone fixing frame 1. The mobile phone fixing frame 1 is composed of a fixing frame made of polytetrafluoroethylene, an aluminum alloy bolt under the fixing frame, a

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movable frame slidably connected at one end of the fixing frame, and a reset tension spring arranged between the movable frame and the fixing frame. The mobile phone can be clamped on the mobile phone fixing frame 1, and the mobile phone fixing frame 1 can be rotated to adjust the direction.

In a further optimization scheme, the automatic retraction tension coils include automatic winding coils 13. The automatic winding coils 13 are fixedly connected with the support legs 11. Nylon ropes 5 are wound around the automatic winding coils 13. The nylon ropes 5 are fixedly connected with the third support plate 2. The automatic winding coils 13 are composed of winding reels made of polytetrafluoroethylene, coil springs made of metal and nylon ropes 5 made of nylon. When the device is deployed, the nylon ropes 5 of the automatic winding coils 13 will be extended and automatically tightened along with the extension of the tripod 11 and the telescopic tower ruler 3, thus enhancing the stability of the device. When the device is retracted, the coil springs in the automatic winding coils 13 will automatically roll back to the nylon ropes 5.

In a further optimization scheme, the telescopic tower ruler 3 is marked with scales, therefore it is convenient for viewing the height of the telescopic tower ruler 3.

In a further optimization scheme, the suitcase has a lower box 19. One side of the lower box 19 is rotatably connected with an upper box 16 through hinges 20, and the other side of the lower box 19 is detachably connected with the upper box 16 through hasps 17. The upper box 16 can be opened by opening the hasps 17. A box handle 18 is fixed on the lower box 19 for portability.

When in use, put the suitcase on the ground, open the hasps 17, turn over the upper box 16, take out the bracket body from the lower box 19. According to the photographing

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requirement, open the support legs 11, pull out the sliding rods 14 to proper positions. When the leveling bubble 9 is approximately centered, tighten the fixing screws 12, turn on the Bluetooth of the mobile phone to switch to the photographing interface and put the mobile phone into the mobile phone fixing frame 1, manually rotate the foot screws 10 to center the circular leveling bubble 9, and loosen all the tower ruler fixing rings 4. Pull out the telescopic tower ruler 3 and fix the tower ruler fixing ring 4 of the corresponding section in sequence, and pull out the telescopic tower ruler 3 to the required height. In this process, the nylon ropes 5 of the automatic winding coils 13 will extend and automatically tighten along with the extension of the tripod 11 and the telescopic tower ruler 3. Then fix all the tower ruler fixing rings 4, that is, use the mobile phone remote controller connected with the mobile phone through Bluetooth to take pictures of the crown. After taking pictures, loosen the tower ruler fixing rings 4 in turn. Each section of the telescopic tower ruler 3 can automatically shrink under the action of gravity. In this process, the coil springs in the automatic winding coils 13 will automatically roll back the nylon ropes 5. Take off the mobile phone from the mobile phone fixing frame 1. Loose the fixing screws 12 in turn to shrink the sliding rods 14 into the support leg 11 and tighten the fixing screws 12. Close the bracket body and put it into the lower box 19, then close the upper box 16 and lock the hasps 17, so that the suitcase handle 18 can reach the next crown photo point.

In the description of the invention, it should be understood that the orientation or positional relationship indicated by the terms "longitudinal", "transverse", "upper", "lower", "front", "rear", "left", "right", "vertical", "horizontal", "top", "bottom", "inside" and "outside" is based on the orientation or positional relationship shown in the drawings,

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which is only for convenience of describing the invention, but does not indicate or imply that the referred devices or elements must have a specific orientation, as well as specific orientation structure and operation. Therefore it cannot be understood as a limitation of the invention.

The above embodiments only describe the preferred mode of the invention, but do not limit the scope of the invention. On the premise of not departing from the design spirit of the invention, all kinds of modifications and improvements made by ordinary technicians in the field to the technical scheme of the invention shall fall within the protection scope determined by the claims of the invention.

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THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A convenient and reliable high shooting bracket for forest canopy images is characterized by comprising a bracket body and a suitcase, the bracket body can be placed in the suitcase; the bracket body comprises a tripod, a telescopic tower ruler (3), a mobile phone fixing component and automatic retraction tension coils, the tower ruler component penetrates through the tripod, the mobile phone fixing component is connected with the top end of the telescopic tower ruler (3), and the automatic retraction tension coils are respectively connected with the tripod and the mobile phone fixing component.

2. According to claim 1, the convenient and reliable high shooting bracket for forest canopy images is characterized in that the tripod comprises three support legs (11), the bottom side walls of the support legs (11) are screwed with fixing screws (12), the support legs (11) are sleeved with sliding rods (14) and are in sliding connection with the sliding rods (14), the fixing screws (12) penetrate through the support legs (11) and are in abutting connection with the sliding rods (14); the tops of the three support legs (11) are rotatably connected with rotating seats (8), and the tops of the three rotating seats (8) are fixedly connected with a first support plate (7), the top of the first support plate (7) is threadedly connected with a plurality of foot screws (10), and a second support plate (6) is rotatably connected to the tops of the plurality of foot screws (10), the first support plate (7) and the second support plate (6) are both provided with through holes at the central positions, and the telescopic tower ruler (3) penetrates through the through holes and is in sliding connection with the through holes.

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3. According to claim 2, the convenient and reliable high shooting bracket for forest canopy images is characterized in that a leveling bubble (9) is embedded on the top surface of the second support plate (6).

4. According to claim 2, the convenient and reliable high shooting bracket for forest canopy images is characterized in that sharp cones (15) are fixed at the bottom ends of the sliding rods (14).

5. According to claim 2, the convenient and reliable high shooting bracket for forest canopy images is characterized in that the telescopic tower ruler (3) comprises a plurality of telescopic joints, a tower ruler fixing ring (4) is installed between two adjacent telescopic joints, the telescopic joint at the bottom is in sliding connection with the through hole, and the telescopic joint at the top is fixedly connected with the mobile phone fixing component.

6. According to claim 5, the convenient and reliable high shooting bracket for forest canopy images is characterized in that the mobile phone fixing component comprises a third support plate (2) which is fixedly connected with the top end of the telescopic joint at the top, and the top of the third support plate (2) is rotatably connected with the mobile phone fixing frame (1).

7. According to claim 6, the convenient and reliable high shooting bracket for forest canopy images is characterized in that the automatic retraction tension coils comprise automatic winding coils (13) which are fixedly connected with the support legs (11), and nylon ropes (5) are wound around the automatic winding coils (13), and the nylon ropes (5) are connected with the third support plate (2).

8. According to claim 1, the convenient and reliable high shooting bracket for forest canopy images is characterized in that scales are marked on the telescopic tower ruler (3).

9. According to claim 1, the convenient and reliable high shooting bracket for forest canopy images is characterized in that the suitcase comprises a lower box (19), one side of the lower box (19) is rotatably connected with an upper box (16) through hinges (20), and the other side of the lower box (19) is detachably connected with the upper box (16) through hasps (17), and a box handle (18) is fixed on the lower box (19).

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FIGURES

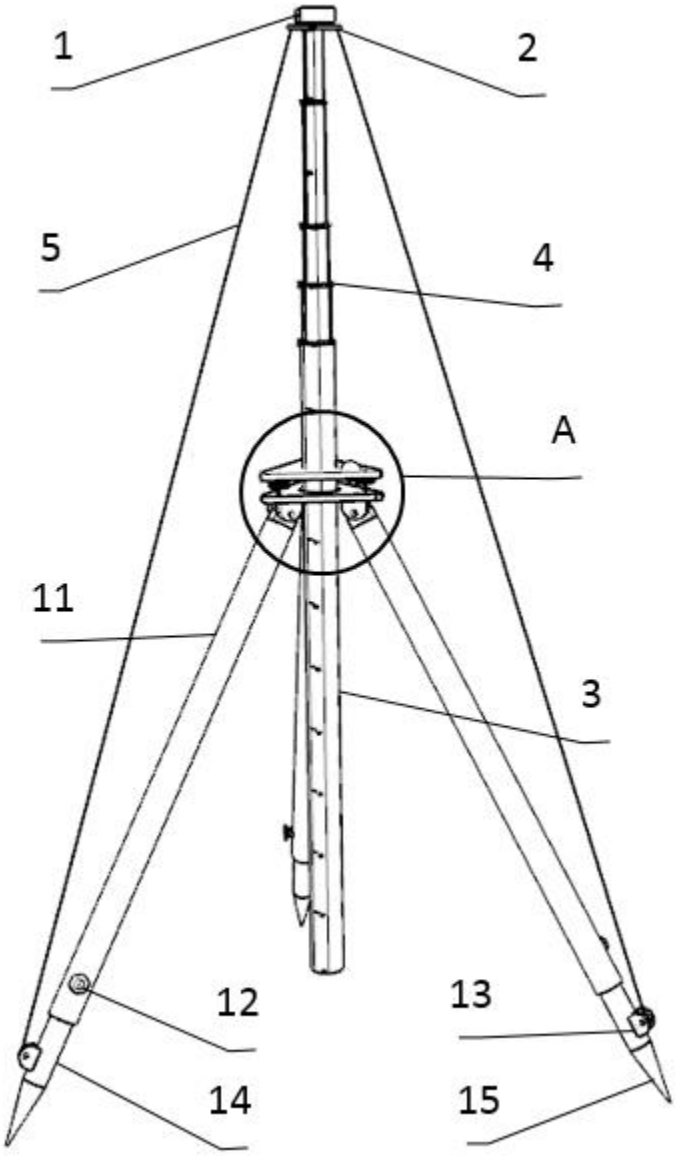

Figure 1

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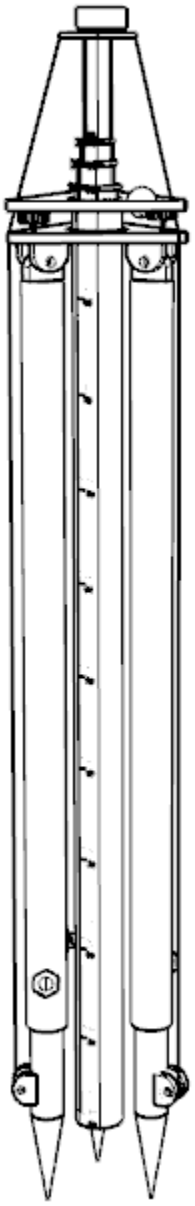

Figure 2

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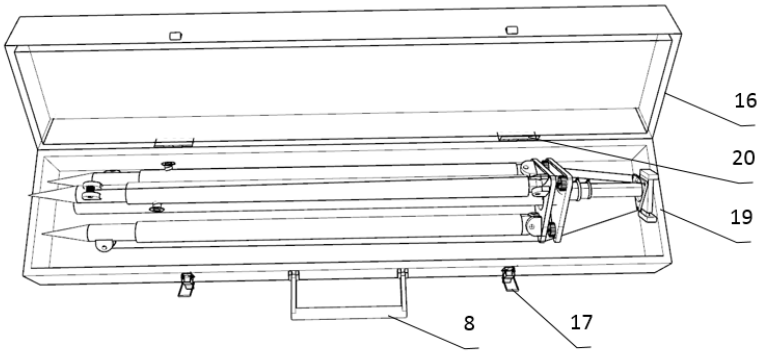

Figure 3

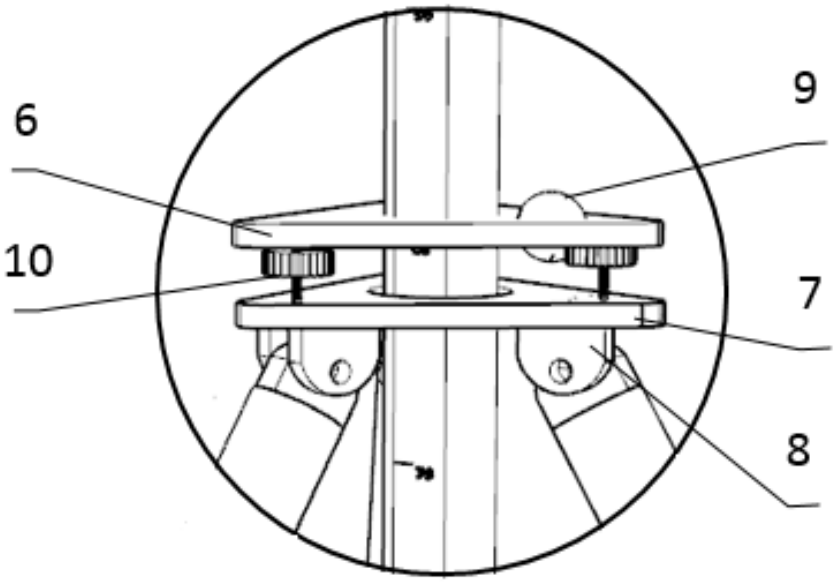

Figure 4