(19) LE GOUVERNEMENT
DU GRAND-DUCHÉ DE LUXEMBOURG
Ministère de l'Économie

(11) N° de publication : **LU508262**

(12) **BREVET D'INVENTION** **B1**

(21) N° de dépôt: LU508262

(51) Int. Cl.:
F16M 1/00, G03B 1/00, H04N 23/00

(22) Date de dépôt: 12/09/2024

(30) Priorité:

(43) Date de mise à disposition du public: 13/03/2025

(47) Date de délivrance: 13/03/2025

(73) Titulaire(s):
XIAMEN UNIVERSITY OF TECHNOLOGY –
361024 Xiamen (China)

(72) Inventeur(s):
HE Shengjie – China

(74) Mandataire(s):
IP SHIELD – 1616 Luxembourg (Luxembourg)

(54) **FILM SHOOTING ON-SITE EQUIPMENT.**

(57) The present invention discloses a film shooting on-site equipment, including a shooting assembly. The shooting assembly consists of a tripod, a first damper, a first spring, a telescopic frame, a second damper, a second spring, a camera base, a rotating member, a rotating base, a first cylinder, a support member, a camera, and a propulsion cylinder. The tripod is closely attached to the floor, with a first damper closely attached to the floor. The first spring is fixedly connected to the first damper, and one end of the first damper is fixedly connected to the telescopic frame, which is slidably connected to the tripod. A second cylinder of the monitoring assembly is fixedly connected to the floor. The invention avoids image shake during filming caused by vibrations by using the shooting assembly and provides a convenient support function for the camera. The monitor's position can be changed according to specific conditions using the monitoring assembly, expanding the monitoring range and improving the user experience.

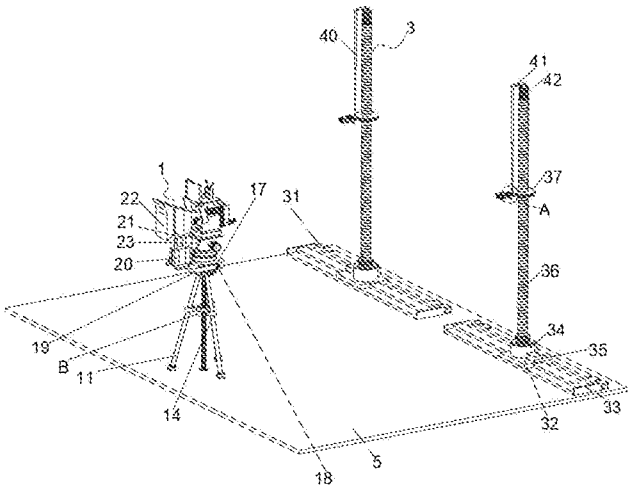

FIG.1

LU508262

FILM SHOOTING ON-SITE EQUIPMENT

Technical Field

The present invention relates to the technical field of film shooting, specifically to a film shooting on-site equipment.

Background Technology

As a form of visual and auditory art, films combine moving images and sound to tell stories, convey emotions, and communicate values, becoming a significant source of public entertainment. The filming process is a crucial foundation that determines the presentation effect of a film. However, the existing on-site equipment for film shooting still has deficiencies. First, in current film shooting on-site equipment, the main filming camera often experiences image shake during filming due to vibrations, and the camera lacks a support function that is convenient for storage. Second, in current film shooting on-site equipment, the position of the monitor cannot be adjusted based on specific situations, limiting the monitoring range and affecting the user experience.

Summary of the Invention

The objective of the present invention is to provide a film shooting on-site equipment to address the problems in existing film shooting on-site equipment where the main filming camera experiences image shake due to vibrations, lacks a convenient support function for storage, and the position of the monitor cannot be adjusted according to specific situations, limiting the monitoring range and affecting the user experience.

To resolve the above technical issues, the present invention provides the following technical solution: A film shooting on-site equipment, comprising a shooting assembly, wherein the shooting assembly consists of a tripod, a first damper, a first spring, a telescopic frame, a second damper, a second spring, a camera base, a rotating

member, a rotating base, a first cylinder, a support member, a camera, and a propulsion cylinder. The tripod is closely attached to the floor, with the first damper closely attached to the floor. A first spring is fixedly connected to the first damper, and one end of the first damper is fixedly connected to the telescopic frame, with the telescopic frame being slidably connected to the tripod. The second cylinder in the monitoring assembly is fixedly connected to the floor, and the output end of the second cylinder is fixedly connected to the sliding base, which is slidably connected to the rail, with the rail being fixedly connected to the floor.

As a further technical solution of the present invention, a second damper is fixedly connected to the telescopic frame, and a second spring is fixedly connected to the second damper. One end of the second damper is fixedly connected to the camera base, and the camera base is rotatably connected to the tripod.

As a further technical solution of the present invention, the camera base is symmetrically and rotatably connected to rotating members, with rotating bases fixedly connected to the rotating members. A first cylinder is fixedly connected to the rotating base, and the output end of the first cylinder is fixedly connected to the support member. The support member is closely attached to the camera, which is placed on the camera base. The propulsion cylinder is rotatably connected to the camera base, with its output end rotatably connected to the rotating base.

As a further technical solution of the present invention, the monitoring assembly consists of a second cylinder, a sliding base, a rail, a worm-gear reducer, a first motor, a screw rod, a first connecting member, a sliding groove, a sliding piece, a telescopic member, a second connecting member, a second motor, a third connecting member, a third motor, a first transmission wheel, a transmission belt, a second transmission wheel, and a monitor. The sliding base is fixedly connected to the worm-gear reducer, with the input end of the worm-gear reducer fixedly connected to the output end of the first motor, which is fixedly connected to the sliding base.

As a further technical solution of the present invention, the output end of the worm-gear reducer is fixedly connected to the screw rod, and the screw rod is internally embedded with a ball nut, which is connected to the first connecting

member. A sliding groove is formed on the first connecting member, with a sliding piece slidably connected to the groove. The sliding piece is fixedly connected to a telescopic member, one end of which is fixedly connected to the second connecting member. The second connecting member is fixedly connected to the output end of the second motor, which is fixedly connected to the screw rod.

As a further technical solution of the present invention, the first connecting member is fixedly connected to the third connecting member, and the third connecting member is fixedly connected to the third motor. The output end of the third motor is fixedly connected to the first transmission wheel, with the transmission belt closely attached to the first transmission wheel and to the second transmission wheel.

As a further technical solution of the present invention, the second transmission wheel is rotatably connected to the third connecting member, which is rotatably connected to the monitor, and the monitor is fixedly connected to the second transmission wheel.

The film shooting on-site equipment provided by the present invention has the following advantages: The vibration from the floor is absorbed by the cooperation of the first damper and the first spring, and the vibration on the tripod is absorbed by the cooperation of the second damper and the second spring. The propulsion cylinder drives the rotating base to rotate, and once in the correct position, the output of the first cylinder places the support member under the camera, preventing image shake caused by vibrations and providing a convenient support function for the camera. The output of the second cylinder drives the sliding base, the worm-gear reducer, and the first motor to move along the rail. The output of the first motor drives the worm-gear reducer, which in turn moves the screw rod, causing the first connecting member and the sliding piece to move along the screw rod. The output of the second motor drives the second connecting member, the telescopic member, and the sliding piece, allowing the sliding piece and the third connecting member to move within the sliding groove. At the same time, the output of the third motor drives the first transmission wheel, the transmission belt, and the second transmission wheel, which rotates the monitor. The monitor's position can be adjusted based on specific conditions, expanding the

monitoring range and improving the user experience.

Description of the Drawings

To better illustrate the technical solutions of the embodiments of the present invention or the prior art, a brief introduction to the accompanying drawings is provided below. It is evident that the accompanying drawings described below are some embodiments of the present invention. For those skilled in the art, other drawings can be obtained based on these drawings without creative work.

FIG.1 is a schematic diagram of the overall structure of the present invention;

FIG.2 is an enlarged partial structural diagram of area A in FIG.1;

FIG.3 is an enlarged partial structural diagram of area B in FIG.1;

FIG.4 is a side view structural diagram of the present invention;

FIG.5 is an enlarged partial structural diagram of area C in FIG.4.

In the figures: 1. Shooting assembly; 3. Monitoring assembly; 5. Floor; 11. Tripod; 12. First damper; 13. First spring; 14. Telescopic frame; 15. Second damper; 16. Second spring; 17. Camera base; 18. Rotating member; 19. Rotating base; 20. First cylinder; 21. Support member; 22. Camera; 23. Propulsion cylinder; 31. Second cylinder; 32. Sliding base; 33. Rail; 34. Worm-gear reducer; 35. First motor; 36. Screw rod; 37. First connecting member; 38. Sliding groove; 39. Sliding piece; 40. Telescopic member; 41. Second connecting member; 42. Second motor; 43. Third connecting member; 44. Third motor; 45. First transmission wheel; 46. Transmission belt; 47. Second transmission wheel; 48. Monitor.

Specific Embodiments

To make the objectives, technical solutions, and advantages of the embodiments of the present invention clearer, the technical solutions in the embodiments of the present invention will be described clearly and completely in conjunction with the drawings in the embodiments of the present invention. It is obvious that the described embodiments are only a part of the embodiments of the present invention, not all of them. Based on the embodiments of the present invention, all other embodiments

obtained by ordinary skilled persons in the art without creative work shall fall within the scope of protection of the present invention.

In the description of the present invention, it should be noted that unless otherwise clearly specified and limited, the terms “install,” “connect,” and “link” should be interpreted broadly, for example, they may be fixed connections, detachable connections, or integral connections; they may be mechanical connections or electrical connections; they may be directly connected or indirectly connected through intermediate media, and they may be internal communication between two components. For those skilled in the art, the specific meanings of the above terms in the present invention can be understood according to specific situations.

Please refer to FIGs. 1 to 5. An embodiment of the present invention provides: a film shooting on-site equipment, including a shooting assembly 1. The shooting assembly 1 consists of a tripod 11, a first damper 12, a first spring 13, a telescopic frame 14, a second damper 15, a second spring 16, a camera base 17, a rotating member 18, a rotating base 19, a first cylinder 20, a support member 21, a camera 22, and a propulsion cylinder 23. The tripod 11 is closely attached to the floor 5, and the first damper 12 is closely attached to the floor 5. The first spring 13 is fixedly connected to the first damper 12, and one end of the first damper 12 is fixedly connected to the telescopic frame 14, which is slidably connected to the tripod 11. The second cylinder 31 in the monitoring assembly 3 is fixedly connected to the floor 5, and the output end of the second cylinder 31 is fixedly connected to the sliding base 32, which is slidably connected to the rail 33, and the rail 33 is fixedly connected to the floor 5. A second damper 15 is fixedly connected to the telescopic frame 14, and a second spring 16 is fixedly connected to the second damper 15. One end of the second damper 15 is fixedly connected to the camera base 17, which is rotatably connected to the tripod 11. The camera base 17 is symmetrically and rotatably connected to rotating members 18, and rotating bases 19 are fixedly connected to the rotating members 18. The rotating base 19 is fixedly connected to the first cylinder 20, and the output end of the first cylinder 20 is fixedly connected to the support member 21. The support member 21 is closely attached to the camera 22, which is placed on the camera base 17. The

propulsion cylinder 23 is rotatably connected to the camera base 17, and its output end is rotatably connected to the rotating base 19. The monitoring assembly 3 consists of a second cylinder 31, a sliding base 32, a rail 33, a worm-gear reducer 34, a first motor 35, a screw rod 36, a first connecting member 37, a sliding groove 38, a sliding piece 39, a telescopic member 40, a second connecting member 41, a second motor 42, a third connecting member 43, a third motor 44, a first transmission wheel 45, a transmission belt 46, a second transmission wheel 47, and a monitor 48. The sliding base 32 is fixedly connected to the worm-gear reducer 34, and the input end of the worm-gear reducer 34 is fixedly connected to the output end of the first motor 35, which is fixedly connected to the sliding base 32. The output end of the worm-gear reducer 34 is fixedly connected to the screw rod 36. A ball nut is internally embedded and connected to the first connecting member 37 on the screw rod 36. A sliding groove 38 is formed on the first connecting member 37, with the sliding piece 39 slidably connected to the groove. The sliding piece 39 is fixedly connected to a telescopic member 40, and one end of the telescopic member 40 is fixedly connected to the second connecting member 41, which is fixedly connected to the output end of the second motor 42. The second motor 42 is fixedly connected to the screw rod 36. The first connecting member 37 is fixedly connected to the third connecting member 43, which is fixedly connected to the third motor 44. The output end of the third motor 44 is fixedly connected to the first transmission wheel 45, and the transmission belt 46 is closely attached to the first transmission wheel 45 and the second transmission wheel 47. The second transmission wheel 47 is rotatably connected to the third connecting member 43, and the monitor 48 is rotatably connected to the third connecting member 43. The monitor 48 is used to monitor the site and is fixedly connected to the second transmission wheel 47, which drives the monitor 48 to move.

Specifically, during use, first, the tripod 11 is opened and fixed to the floor 5. The telescopic frame 14 is slid to secure it to the tripod 11, and at the same time, the vibration from the floor 5 is absorbed through the cooperation of the first damper 12 and the first spring 13. The vibration on the tripod 11 is absorbed through the cooperation of the second damper 15 and the second spring 16. The propulsion

cylinder 23 drives the rotating base 19 to rotate, and once in the correct position, the output of the first cylinder 20 places the support member 21 under the camera 22, preventing image shake caused by vibrations and providing a convenient support function for the camera 22. The second cylinder 31 drives the sliding base 32, the worm-gear reducer 34, and the first motor 35 to move along the rail 33. The output of the first motor 35 drives the worm-gear reducer 34 to work, which moves the screw rod 36, causing the first connecting member 37 and the sliding piece 39 to move along the screw rod 36. The second motor 42 drives the second connecting member 41, the telescopic member 40, and the sliding piece 39 to move, allowing the sliding piece 39 and the third connecting member 43 to move within the sliding groove 38. Meanwhile, the third motor 44 drives the first transmission wheel 45, the transmission belt 46, and the second transmission wheel 47, which drives the monitor 48 to rotate. The position of the monitor 48 can be adjusted according to specific conditions, expanding the monitoring range and improving the user experience.

In the description of the present invention, it should be noted that unless otherwise clearly specified and limited, the terms “install,” “connect,” and “link” should be interpreted broadly, for example, they may be fixed connections, detachable connections, or integral connections; they may be mechanical connections or electrical connections; they may be directly connected or indirectly connected through intermediate media, and they may be internal communication between two components. For those skilled in the art, the specific meanings of the above terms in the present invention can be understood according to specific situations.

The device embodiments described above are merely illustrative. The units described as separate components may be or may not be physically separated. The parts displayed as units may or may not be physical units, meaning they may be located in one place or distributed across multiple network units. Some or all of the modules may be selected to achieve the objectives of the embodiments depending on actual needs. Those skilled in the art can understand and implement without creative work.

Finally, it should be noted that the above embodiments are only intended to illustrate the technical solutions of the present invention, not to limit them. Although

the present invention has been described in detail with reference to the above embodiments, those skilled in the art should understand that they can still modify the technical solutions described in the above embodiments or replace some of the technical features with equivalents. These modifications or replacements do not depart from the spirit and scope of the technical solutions of the present invention.

CLAIMS

1. A film shooting on-site equipment, comprising a shooting assembly (1), characterized in that: the shooting assembly (1) consists of a tripod (11), a first damper (12), a first spring (13), a telescopic frame (14), a second damper (15), a second spring (16), a camera base (17), a rotating member (18), a rotating base (19), a first cylinder (20), a support member (21), a camera (22), and a propulsion cylinder (23), wherein the tripod (11) is closely attached to the floor (5), with the first damper (12) closely attached to the floor (5). The first spring (13) is fixedly connected to the first damper (12), and one end of the first damper (12) is fixedly connected to the telescopic frame (14), which is slidably connected to the tripod (11). The second cylinder (31) of the monitoring assembly (3) is fixedly connected to the floor (5), and the output end of the second cylinder (31) is fixedly connected to the sliding base (32), which is slidably connected to the rail (33). The rail (33) is fixedly connected to the floor (5).

2. The film shooting on-site equipment according to claim 1, characterized in that: the telescopic frame (14) is fixedly connected to the second damper (15), the second damper (15) is fixedly connected to the second spring (16), and one end of the second damper (15) is fixedly connected to the camera base (17), which is rotatably connected to the tripod (11).

3. The film shooting on-site equipment according to claim 2, characterized in that: the camera base (17) is symmetrically and rotatably connected to rotating members (18), the rotating members (18) are fixedly connected to the rotating base (19), and the rotating base (19) is fixedly connected to the first cylinder (20). The output end of the first cylinder (20) is fixedly connected to the support member (21), which is closely attached to the camera (22). The camera (22) is placed on the camera base (17), and the camera base (17) is rotatably connected to the propulsion cylinder (23), the output end of which is rotatably connected to the rotating base (19).

4. The film shooting on-site equipment according to claim 1, characterized in that: the monitoring assembly (3) consists of a second cylinder (31), a sliding base (32), a rail (33), a worm-gear reducer (34), a first motor (35), a screw rod (36), a first connecting member (37), a sliding groove (38), a sliding piece (39), a telescopic member (40), a second connecting member (41), a second motor (42), a third connecting member (43), a third motor (44), a first transmission wheel (45), a transmission belt (46), a second transmission wheel (47), and a monitor (48). The sliding base (32) is fixedly connected to the worm-gear reducer (34), and the input end of the worm-gear reducer (34) is fixedly connected to the output end of the first motor (35), which is fixedly connected to the sliding base (32).

5. The film shooting on-site equipment according to claim 4, characterized in that: the output end of the worm-gear reducer (34) is fixedly connected to the screw rod (36), and the screw rod (36) is connected to a ball nut embedded within the first connecting member (37). A sliding groove (38) is formed on the first connecting member (37), and the sliding piece (39) is slidably connected to the groove. The sliding piece (39) is fixedly connected to the telescopic member (40), and one end of the telescopic member (40) is fixedly connected to the second connecting member (41), which is fixedly connected to the output end of the second motor (42). The second motor (42) is fixedly connected to the screw rod (36).

6. The film shooting on-site equipment according to claim 5, characterized in that: the first connecting member (37) is fixedly connected to the third connecting member (43), and the third connecting member (43) is fixedly connected to the third motor (44). The output end of the third motor (44) is fixedly connected to the first transmission wheel (45), and the transmission belt (46) is closely attached to the first transmission wheel (45) and the second transmission wheel (47).

7. The film shooting on-site equipment according to claim 6, characterized in that: the second transmission wheel (47) is rotatably connected to the third connecting

member (43), and the monitor (48) is rotatably connected to the third connecting member (43). The monitor (48) is fixedly connected to the second transmission wheel (47).

REVENDICATIONS

1. Un équipement de tournage de film sur site, comprenant un ensemble de tournage (1), caractérisé en ce que : l'ensemble de tournage (1) se compose d'un trépied (11), d'un premier amortisseur (12), d'un premier ressort (13), d'un cadre télescopique (14), d'un second amortisseur (15), d'un second ressort (16), d'une base de caméra (17), d'un élément rotatif (18), d'une base rotative (19), d'un premier vérin (20), d'un élément de support (21), d'une caméra (22) et d'un vérin de propulsion (23), où le trépied (11) est fixé de manière rapprochée au sol (5), avec le premier amortisseur (12) fixé de manière rapprochée au sol (5). Le premier ressort (13) est relié de manière fixe au premier amortisseur (12), et une extrémité du premier amortisseur (12) est fixée au cadre télescopique (14), lequel est relié de manière coulissante au trépied (11). Le second vérin (31) de l'ensemble de surveillance (3) est fixé de manière fixe au sol (5), et l'extrémité de sortie du second vérin (31) est fixée de manière fixe à la base coulissante (32), qui est reliée de manière coulissante au rail (33). Le rail (33) est fixé de manière fixe au sol (5).

2. L'équipement de tournage de film sur site selon la revendication 1, caractérisé en ce que : le cadre télescopique (14) est relié de manière fixe au second amortisseur (15), le second amortisseur (15) est relié de manière fixe au second ressort (16), et une extrémité du second amortisseur (15) est fixée à la base de caméra (17), laquelle est reliée de manière rotative au trépied (11).

3. L'équipement de tournage de film sur site selon la revendication 2, caractérisé en ce que : la base de caméra (17) est reliée de manière symétrique et rotative aux éléments rotatifs (18), les éléments rotatifs (18) sont fixés de manière fixe à la base rotative (19), et la base rotative (19) est fixée de manière fixe au premier vérin (20). L'extrémité de sortie du premier vérin (20) est fixée de manière fixe à l'élément de support (21), lequel est fixé de manière rapprochée à la caméra (22). La caméra (22) est placée sur la base de caméra (17), et la base de caméra (17) est reliée de manière rotative au vérin de propulsion (23), dont l'extrémité de sortie est reliée de manière rotative à la base rotative (19).

4. L'équipement de tournage de film sur site selon la revendication 1, caractérisé en ce que : l'ensemble de surveillance (3) se compose d'un second vérin (31), d'une base coulissante (32), d'un rail (33), d'un réducteur à vis sans fin (34), d'un premier moteur (35), d'une tige filetée (36), d'un premier élément de liaison (37), d'une rainure coulissante (38), d'une pièce coulissante (39), d'un élément télescopique (40), d'un second élément de liaison (41), d'un second moteur (42), d'un troisième élément de liaison (43), d'un troisième moteur (44), d'une première roue de transmission (45), d'une courroie de transmission (46), d'une seconde roue de transmission (47) et d'un moniteur (48). La base coulissante (32) est fixée de manière fixe au réducteur à vis sans fin (34), et l'extrémité d'entrée du réducteur à vis sans fin (34) est fixée de manière fixe à l'extrémité de sortie du premier moteur (35), lequel est fixé de manière fixe à la base coulissante (32).

5. L'équipement de tournage de film sur site selon la revendication 4, caractérisé en ce que : l'extrémité de sortie du réducteur à vis sans fin (34) est fixée de manière fixe à la tige filetée (36), et la tige filetée (36) est reliée à un écrou à billes intégré dans le premier élément de liaison (37). Une rainure coulissante (38) est formée sur le premier élément de liaison (37), et la pièce coulissante (39) est reliée de manière coulissante à la rainure. La pièce coulissante (39) est fixée de manière fixe à l'élément télescopique (40), et une extrémité de l'élément télescopique (40) est fixée de manière fixe au second élément de liaison (41), lequel est fixé de manière fixe à l'extrémité de sortie du second moteur (42). Le second moteur (42) est fixé de manière fixe à la tige filetée (36).

6. L'équipement de tournage de film sur site selon la revendication 5, caractérisé en ce que : le premier élément de liaison (37) est fixé de manière fixe au troisième élément de liaison (43), et le troisième élément de liaison (43) est fixé de manière fixe au troisième moteur (44). L'extrémité de sortie du troisième moteur (44) est fixée de manière fixe à la première roue de transmission (45), et la courroie de transmission (46) est fixée de manière rapprochée à la première roue de transmission (45) et à la seconde roue de transmission (47).

7. L'équipement de tournage de film sur site selon la revendication 6, caractérisé en ce que : la seconde roue de transmission (47) est reliée de manière rotative au troisième élément de liaison (43), et le moniteur (48) est relié de manière rotative au troisième élément de liaison (43). Le moniteur (48) est fixé de manière fixe à la seconde

roue de transmission (47).

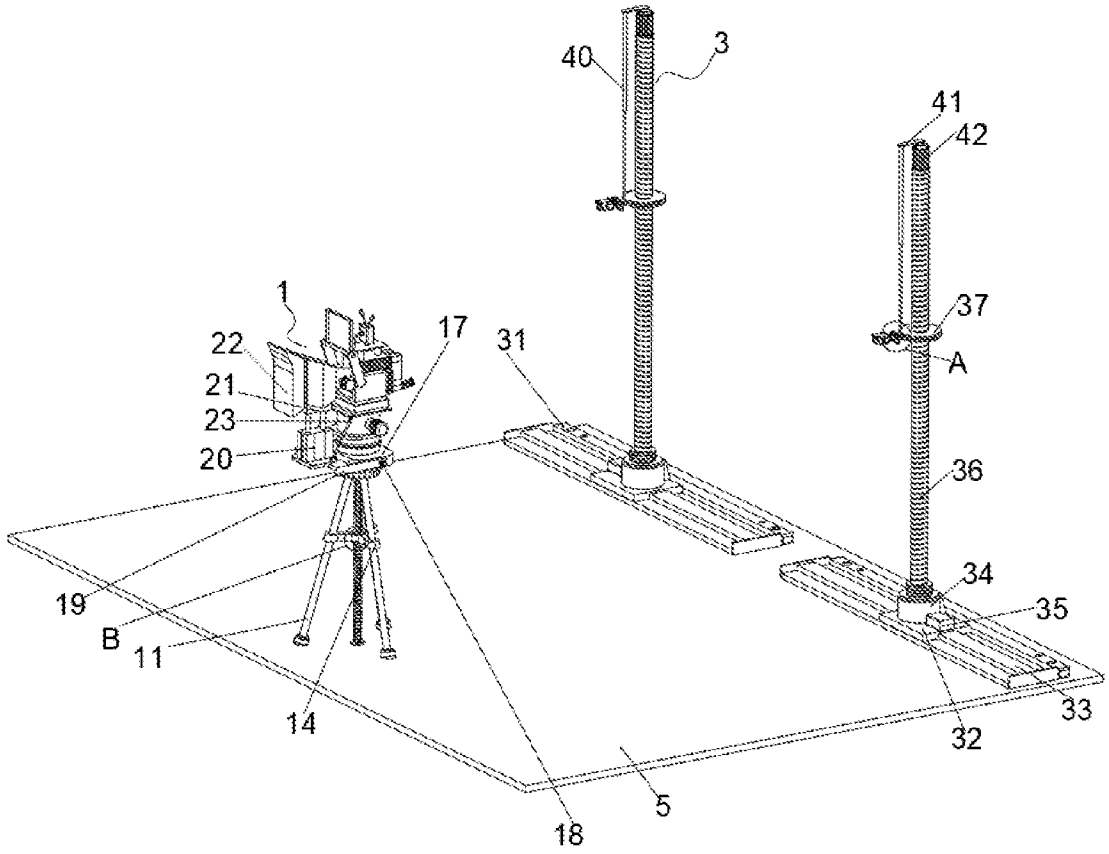

FIG.1

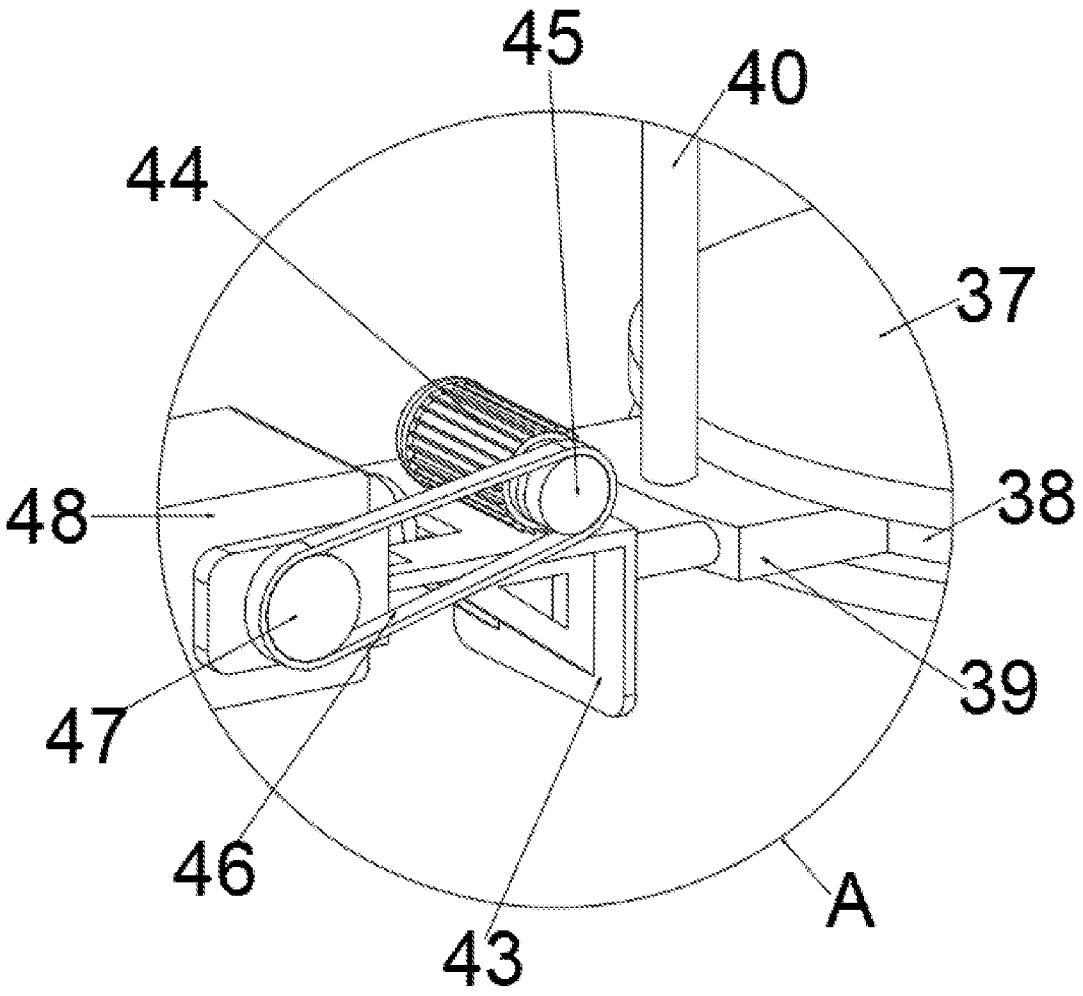

FIG.2

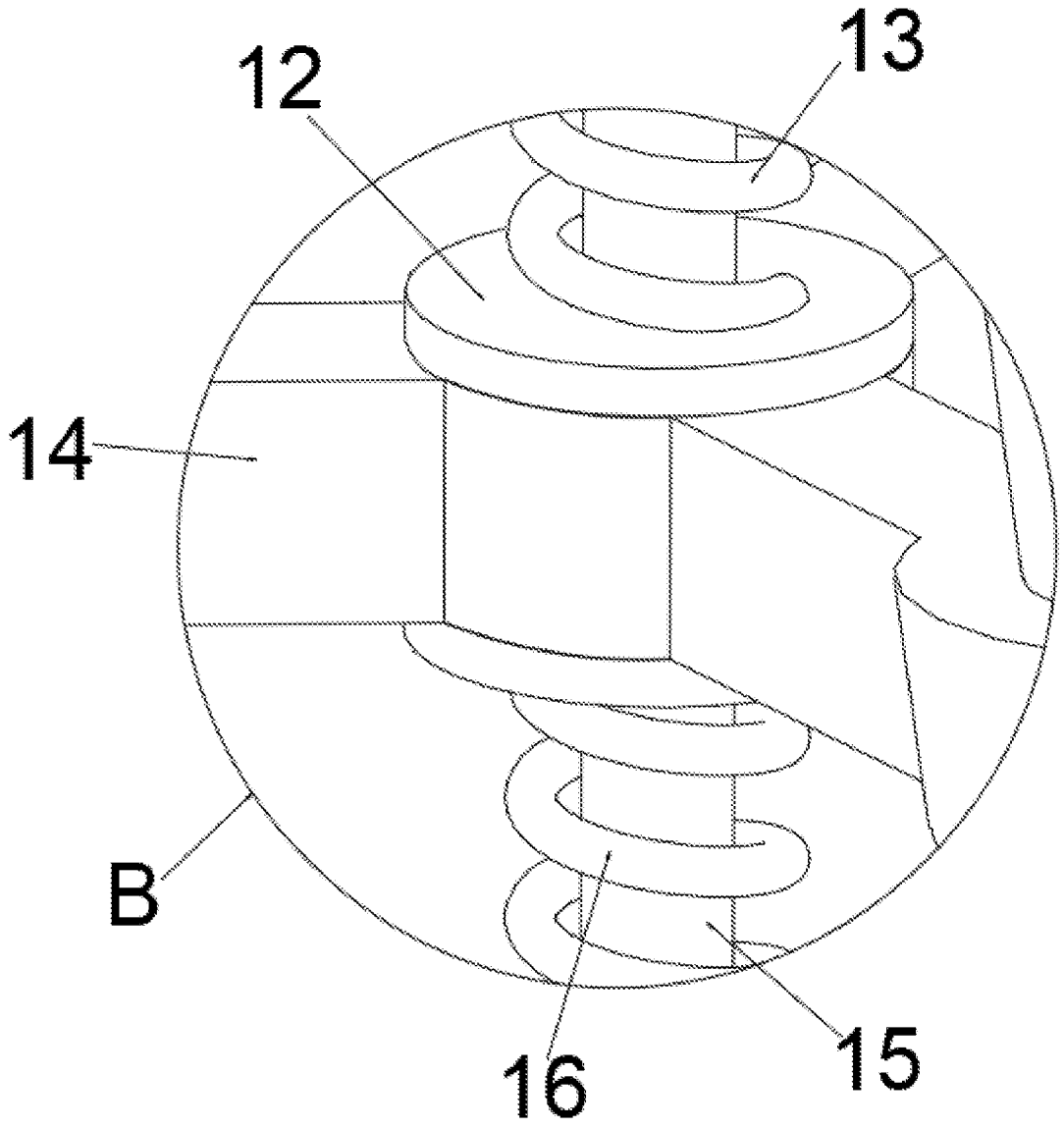

FIG.3

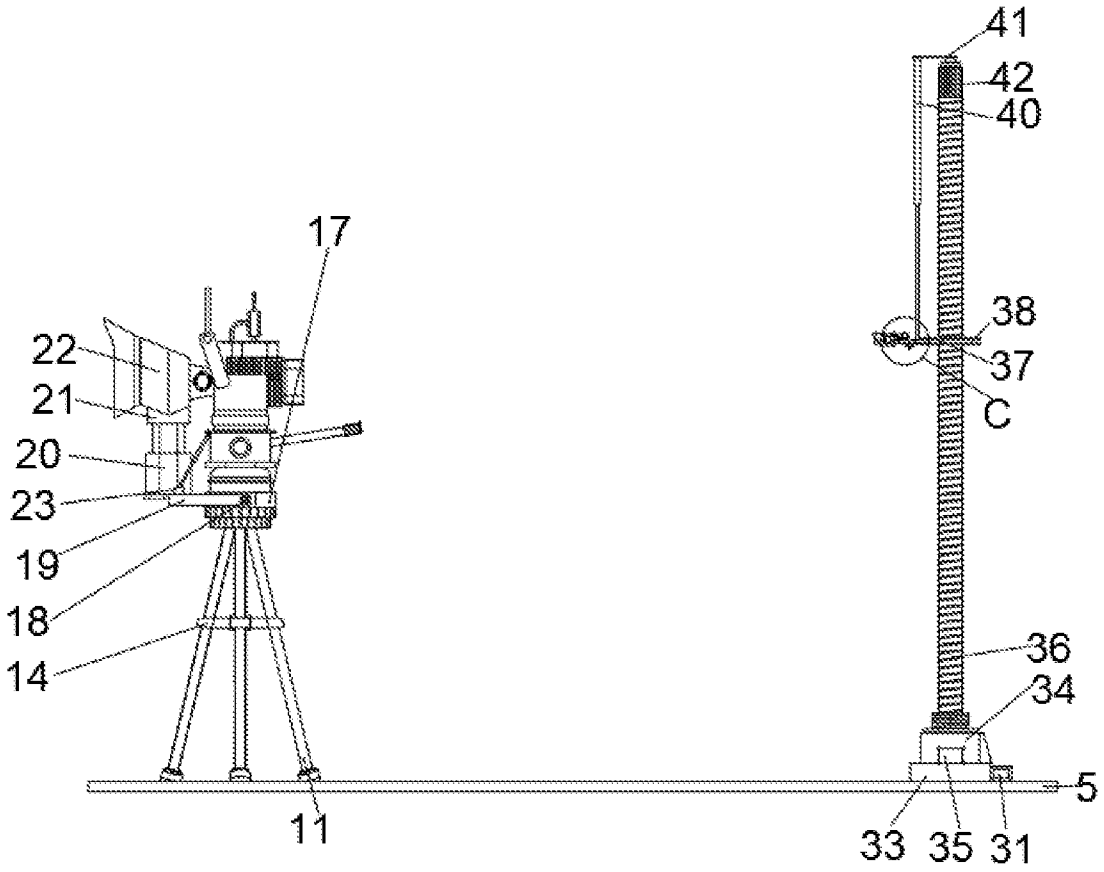

FIG.4

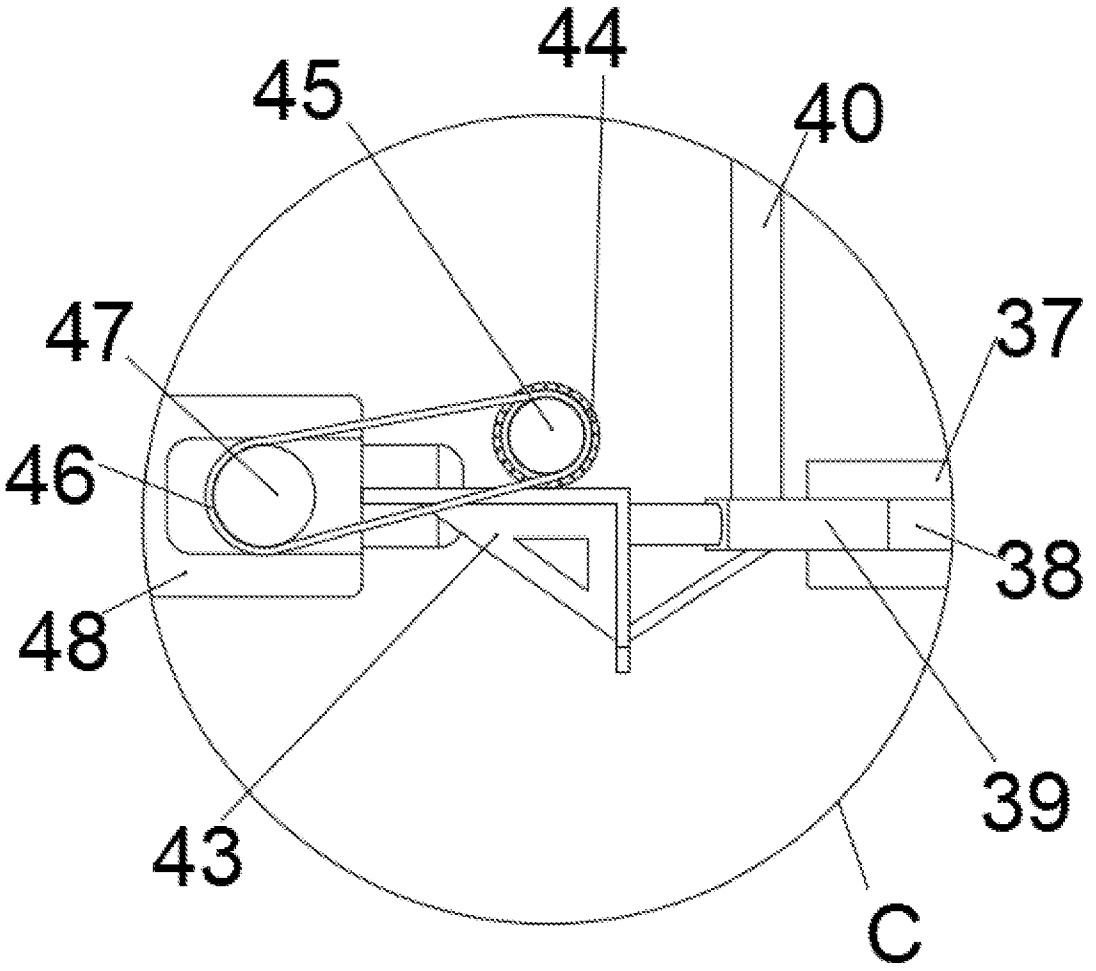

FIG.5