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Inventeur(s):

GAO Jiansen - Chine, CUI Lei - Chine

(43)

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Mandataire(s):

Patent42 SA - 4081 Esch-sur-Alzette (Luxembourg)

(47)

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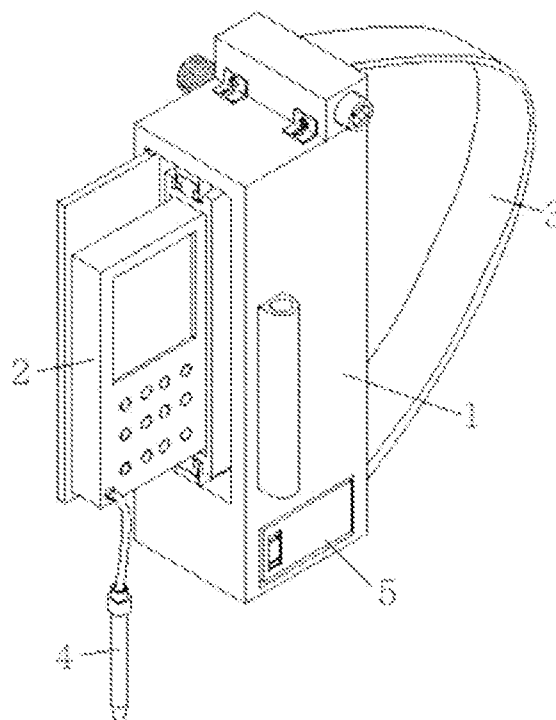
SUQIAN UNIVERSITY - 223800 Suqian City,
Jiangsu (Chine)

(54)

A portable measuring and controlling device.

(57)

This invention provides a portable measuring and controlling device for intelligent manufacturing that comprises protective storage device and measuring and controlling device, wherein the protective storage device comprises protective hull; the upper and lower surfaces of the inner cavity of the protective hull are provided with T-shaped chutes which correspond to each other; two T-shaped chutes are slidably connected with T-shaped sliders; a moving block is arranged between the two T-shaped chutes; an opening on one side of the moving block is connected with the measuring and controlling device in a clamping way; the upper side of the outer wall of the protective hull is provided with a portable winding device which comprises an outer hull; and the lower side of the outer wall of the outer hull is connected with the upper surface of the outer wall of the protective hull.

**Figure 1**

Description

A portable measuring and controlling device

Technical field

The invention mainly relates to the technical field of intelligent manufacturing detection, particularly relates to a portable measuring and controlling device.

Background

Intelligent manufacturing originates from the research of artificial intelligence. It is generally believed that intelligence is the sum of knowledge and intelligence. The former is the foundation of intelligence, while the latter refers to the ability to acquire and apply knowledge to solve problems. Intelligent manufacturing should include intelligent manufacturing technology and intelligent manufacturing system. Intelligent manufacturing system can not only enrich knowledge base continuously in practice, but also have the ability to collect and understand environmental information and its own information, and make analysis and judgment and plan its own behavior. In the process of intelligent manufacturing, it is necessary to use measuring and controlling device to test each machine.

At present, the existing measuring and controlling devices for intelligent manufacturing, such as the technical structure of specification of Chinese patent CN200920098838.3, including an aluminum alloy chassis with an external dimension of $\leq 400 \times 300 \times 300 \text{mm}$, and with an adjustable four-legged base, four digital printed circuit boards are embedded in the chassis, namely, power plug-in, AC measurement plug-in, CPU plug-in and logic plug-in. Although the device realizes the detection of intelligent manufacturing equipment, the display screen of the equipment is exposed, and it could bump or accidentally fall when not in use or in moving, which will cause the display screen on the equipment to be damaged. Moreover, the equipment itself has a certain quality, which is inconvenient to carry.

Based on this, it is necessary to develop a portable measuring and controlling device for intelligent manufacturing, so that when not in use, the measuring and controlling device can be put into the protective hull, so that the display screen can be prevented from being exposed, thus reducing the probability of damage. Moreover, the measuring and controlling device can be slanted over the shoulder, so it is easy to carry, low in cost, light in texture, and has certain practical value.

Summary

This invention provides a portable measuring and controlling device for intelligent manufacturing, in order to solve the technical problems exist in the prior art. LU502365

This invention provides technical solutions as follows:

A portable measuring and controlling device for intelligent manufacturing comprises the protective storage device and the measuring and controlling device are characterized in that the protective storage device comprises a protective hull, and the upper and lower surfaces of the inner cavity of the protective hull are provided with T-shaped chutes which correspond to each other, and two T-shaped chutes are connected with T-shaped sliders in a sliding way. A moving block is arranged between the two T-shaped sliders, the opening at one side of the moving block is connected with the measuring and controlling device in a clamping way, and a portable winding device is arranged on the upper side of the outer wall of the protective hull, the portable winding device comprises an outer hull, the lower side of the outer wall of the outer hull is connected with the upper surface of the outer wall of the protective hull; installation seats are respectively arranged at the upper and lower sides of the inner cavity of the protective hull in the protective storage device, and the same positive and negative double-threaded screw is rotatably connected between two installation seats, and nut seats are arranged in different thread intervals of the positive and negative double-threaded screw, one side of the outer wall of each nut seat is hinged with a transmission rod, and the front end of each transmission rod is rotationally connected with the moving block; a rotating rod is arranged in the outer hull of the portable winding device, a spring and a limiting rod at the upper end of the spring are arranged in the groove at the top of the rotating rod, the upper end of the limiting rod is provided with a rotating disk, and the center of the upper surface of the rotating disk is provided with a cylindrical press block, which passes through the round hole on the outer hull, and the outer wall of the rotating rod is wound with an elastic bandage.

Preferably, a winding motor is arranged at the bottom of the inner cavity of the outer casing, the lower side of the outer casing wall of the winding motor is connected with the inner casing wall of the outer casing, and the output end of the winding motor is connected with the bottom end of the rotating rod.

Preferably, the eccentric position of the upper surface of the rotating disk is surrounded by a plurality of limit blocks at equal intervals, and each limit block is matched with a

spacing groove, and the spacing grooves are surrounded on the upper surface of the inner cavity of the outer hull at equal intervals. LU502365

Preferably, a smooth coating is arranged on the side of the cylindrical pressing block far away from the rotating disk.

Preferably, twist knob is arranged in a round hole on the side wall of the protective hull, and a first gear is arranged at the front end of the twist knob, and the first gear is meshed with the second gear which is arranged on the positive and negative double-threaded screw.

Preferably, the upper side of the outer wall of the protective hull is connected with the outer hull by bolts.

Preferably, one side of the outer wall of the protective cover is provided with a detection pen storage tube.

Preferably, a protective cover is hinged at the opening of the side wall of the protective hull.

Preferably, the interface of the measuring and controlling device is connected with a detecting pen body through a wire, and the maximum radius of the cross section of the detecting pen is smaller than the radius of the detecting pen storage tube.

Compared with the prior art, this invention has the beneficial effects as follows:

According to the invention, through the protective storage device, the measuring and controlling device can be stored in the protective hull when it is not used, so that the display screen is prevented from being exposed, thus reducing the damage probability, and isolating the device from the external dust effectively; moreover, the operation of the device is convenient and its structure is stable; and through the portable winding device, the elastic bandage can be pulled out of the outer casing, making the device be obliquely slanted on the shoulder instead of being held by hand, which is convenient to carry. Furthermore, the device is low in cost, light in texture and has certain practical value. Through the detection pen storage tube, the detection pen body can be put into the detection pen storage tube when the equipment is not in use, which reduces the occupied space, it is easy to find, and it reduces the probability of loss. Through the spare battery block, the standby power supply for the measuring and controlling device is realized, which is very convenient.

Brief Description Of The Figures

Hereinafter, the present invention will be explained in detail with reference to the drawings and specific embodiments.

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

Fig. 2 is a structural diagram of the protective storage device of the present invention;

Fig. 3 is a schematic cross-sectional view of the inside of the protective hull of the present invention;

Fig. 4 is a schematic cross-sectional view of the partial connection between the first gear and the second gear of the present invention;

Fig. 5 is a schematic structural diagram of the portable winding device of the present invention;

Fig. 6 is a schematic cross-sectional view of the internal structure of the outer hull of the present invention;

Fig. 7 is an enlarged schematic diagram of area 6A in Fig. 6.

Wherein, 1. protective storage device; 11. protective hull; 11. protective cover; 12. T-shaped chute; 11. T-shaped slider; 13. moving block; 14. installation seat; 15. positive and negative double threaded screw; 151, nut seat; 16, transmission rod; 17, twist knob; 171, the first gear; 172, the second gear; 18, detection pen storage tube; 2, the measuring and controlling device; 3, portable winding device; 31, outer hull; 311, limit groove; 32, rotating rod; 33, spring; 34, limit rod; 35, rotating disc; 351, limit block; 36, cylindrical press block; 361, smooth coating; 37. elastic bandage; 38. winding motor; 4. detection pen; 5. back up battery block.

Description of the present invention

In order to facilitate the understanding of the present invention, the present invention will be described more fully below with reference to the relevant drawings, in which several embodiments of the present invention are given. However, the present invention can be implemented in different forms and is not limited to the embodiments described in the text. On the contrary, these embodiments are provided to make the disclosure of the present invention more thorough and comprehensive.

It should be noted that when an element is called "fixed" to another element, it may be directly on another element or there may be an intermediate element. When an element is

considered as "connected" to another element, it may be directly connected to another element or there may be an intermediate element at the same time. The terms "vertical", "horizontal", "left", "right" and similar expressions are used in this paper.

Unless otherwise defined, all technical and scientific terms used herein have the same meanings as those commonly connected to those skilled in the technical field of the present invention. The terminology used in the specification of the present invention herein is for the purpose of describing specific embodiments, and is not intended to limit the present invention. The term "and/or" used herein includes any and all combinations of one or more related listed items.

Embodiment 1

As shown in Fig.1-7, a portable measuring and controlling device for intelligent manufacturing comprises the protective storage device 1 and the measuring and controlling device 2 are characterized in that the protective storage device 1 comprises a protective hull 11, and the upper and lower surfaces of the inner cavity of the protective hull 11 are provided with T-shaped chutes 12 which correspond to each other, and two T-shaped chutes 12 are connected with T-shaped sliders 121 in a sliding way. A moving block 13 is arranged between the two T-shaped sliders 121, the opening at one side of the moving block 13 is connected with the measuring and controlling device 2 in a clamping way, and a portable winding device 3 is arranged on the upper side of the outer wall of the protective hull 11, the portable winding device 3 comprises an outer hull 31, the lower side of the outer wall of the outer hull 31 is connected with the upper surface of the outer wall of the protective hull 11; installation seats 14 are respectively arranged at the upper and lower sides of the inner cavity of the protective hull 11 in the protective storage device 1, and the same positive and negative double-threaded screw 15 is rotatably connected between two installation seats 14, and nut seats 151 are arranged in different thread intervals of the positive and negative double-threaded screw 15, one side of the outer wall of each nut seat 151 is hinged with a transmission rod 16, and the front end of each transmission rod 16 is rotationally connected with the moving block 13; a rotating rod 32 is arranged in the outer hull 31 of the portable winding device 3, a spring 33 and a limiting rod 34 at the upper end of the spring 33 are arranged in the groove at the top of the rotating rod 32, the upper end of the limiting rod 34 is provided with a rotating disk 35, and the center of the upper surface

of the rotating disk 35 is provided with a cylindrical press block 36, which passes through the round hole on the outer hull 31, and the outer wall of the rotating rod 32 is wound with an elastic bandage 37.

Embodiment 2

With reference to Fig 1, 2, 3 and 4, a twist knob 17 is arranged in a circular hole on the side wall of the protective hull 11, and the front end of the twisting knob 17 is provided with a first gear 171, which is meshed with a second gear 172, and the second gear 172 is arranged on the positive and negative double-threaded screw 15, user can turn the twisting knob 17, in order to make the first gear 171 which is arranged on the twisting knob 17 drive the second gear 172 to rotate.

And the second gear 172 is connected with the positive and negative double-threaded screw 15, so as to provide driving force for the rotation of the positive and negative double-threaded screw 15. The interface of the measuring and controlling device 2 is connected with the detecting pen 4 through a wire, and the maximum radius of the cross section of the detecting pen 4 is smaller than the radius of the detecting pen storage tube 18. Through the detecting pen 4, the intelligent manufacturing equipment can be detected. One side of the outer wall of the protective hull 11 is provided with the detecting pen storage tube 18. Through the detection pen storage tube 18, the detection pen 4 can be placed in the detection pen storage tube 18 when the equipment is not in use, which reduces the occupied space, is easy to find and reduces the probability of loss. A spare battery block 5 is arranged near the detection pen storage tube 18, and the spare battery block 5 is embedded in the groove on the side wall of the protective hull 11. Through the spare battery block 5, the spare power supply for the measuring and controlling device 2 can be provided, which is very convenient, the opening of the side wall of the protective hull 11 is hinged with a protective cover 111, and the opening of the protective hull 11 is sealed by the protective cover 111.

Embodiment 3

Referring to Figures 5, 6 and 7. The bottom of the cavity of the outer hull 31 is provided with a winding motor 38. The lower side of the outer shell wall of the winding motor 38 is connected with the inner wall of the outer shell 31, and the output end of the winding motor 38 is connected with the bottom end of the rotating rod 32. Through the winding motor 38,

the driving force is provided for the rotation of the rotating rod 32, and the pulled elastic bandage 37 is wound on the rotating rod 32 again without manual winding, which is very convenient and saves space, the eccentric position of the upper surface of the rotating disk 35 is surrounded by a plurality of limit blocks 351 at equal intervals, and each limit block 351 is matched with the limit grooves 311, and the limit grooves 311 are surrounded on the upper surface of the inner cavity of the outer shell 31 at equal intervals. Through the mutual matching between the limit blocks 351 and the limit grooves 311, thus realizing the limit of the number of turns of the rotating rod 32, which is convenient for the user to pull out an appropriate length from the outer hull 31 and hang it on the shoulder. The side of the cylindrical pressing block 36 away from the rotating disk 35 is provided with a smooth coating 361, by the smooth coating 361, the sliding friction between the cylindrical pressing block 36 and the user's contact surface can be reduced, which facilitates the synchronous rotation of the rotary lever 32 and the cylindrical press block 36. There is only a linear displacement change between the limiting lever 34 and the rotary lever 32, and there is no relative rotation between them.

First, place the whole device on a horizontal plane, then check whether there is any damage in each part of the whole device. After it is confirmed that there is no damage, open the protective cover 111, then turn the twist knob 17, then the first gear 171 connected with the twist knob 17 drives the second gear 172 to rotate, then the second gear 172 drives the positive and negative double threaded screw 15 to rotate, and then the nut seat 151 drives one end of the transmission rod 16 to approach the middle of the positive and negative double threaded screw 15, the included angle between the two transmission rods 16 changes, hence pushing the measuring and controlling device 2 that is engaged with the moving block 13 to move linearly, until pushing it out of the protective hull 11. As the T-shaped slide block 121 and the T-shaped chute 12 cooperate with each other, the moving stability of the measuring and controlling device 2 is improved. Then, the detecting pen 4 is pulled out of the detecting pen storage tube 18, and connected to the measuring and controlling device 2 through wires, and then test intelligent manufacturing equipment.

After that, the measuring and controlling device 2 is put into the protective hull 11, and then the cylindrical press block 36 is pressed, so that the spring 33 is compressed, and the limit block 351 is separated from the limit groove 311. At the same time, the elastic

bandage 37 is pulled out of the outer hull 31 with one hand, and then the cylindrical press^{LU502365} block 36 is released, and the spring 33 is reset, and the limit block 351 is clamped into the limit groove 311, so that the rotating rod 32 can be positioned on the shoulder.

To fold, the cylindrical press block 36 is pressed again, and the winding motor 38 is turned on to drive the rotating rod 32 to rotate, and the cylindrical pressing block 36 rotates synchronously with the rotating rod 32, then the elastic bandage 37 pulled out before is wound on the rotating rod 32, and then the cylindrical pressing block 36 is released, and the rotating rod 32 is repositioned by the limit block 351.

The invention has been described by way of example with reference to the above drawings. Obviously, the specific implementation of the invention is not limited by the above way. As long as the immaterial improvement of the method concept and technical scheme of the invention is adopted, or the idea and technical scheme of the invention are directly applied to other occasions without improvement, it is within the scope of protection of the invention.

Claims

1. A portable measuring and controlling device comprises the protective storage device (1) and the measuring and controlling device (2) are characterized in that the protective storage device (1) comprises a protective hull (11), and the upper and lower surfaces of the inner cavity of the protective hull (11) are provided with T-shaped chutes (12) which correspond to each other, and two T-shaped chutes (12) are connected with T-shaped sliders (121) in a sliding way; a moving block (13) is arranged between the two T-shaped sliders (121), the opening at one side of the moving block (13) is connected with the measuring and controlling device (2) in a clamping way, and a portable winding device (3) is arranged on the upper side of the outer wall of the protective hull (11), the portable winding device (3) comprises an outer hull (31), the lower side of the outer wall of the outer hull (31) is connected with the upper surface of the outer wall of the protective hull (11); installation seats (14) are respectively arranged at the upper and lower sides of the inner cavity of the protective hull (11) in the protective storage device (1), and the same positive and negative double-threaded screw (15) is rotatably connected between two installation seats (14), and nut seats (151) are arranged in different thread intervals of the positive and negative double-threaded screw (15), one side of the outer wall of each nut seat (151) is hinged with a transmission rod (16), and the front end of each transmission rod (16) is rotationally connected with the moving block (13); a rotating rod (32) is arranged in the outer hull (31) of the portable winding device (3), a spring (33) and a limiting rod (34) at the upper end of the spring (33) are arranged in the groove at the top of the rotating rod (32), the upper end of the limiting rod (34) is provided with a rotating disk (35), and the center of the upper surface of the rotating disk (35) is provided with a cylindrical press block (36), which passes through the round hole on the outer hull (31), and the outer wall of the rotating rod (32) is wound with an elastic bandage (37).

2. A portable measuring and controlling device, according to claim 1, is character in that a winding motor (38) is arranged at the bottom of the inner cavity of the outer casing (31), the lower side of the outer casing wall of the winding motor (38) is connected with the inner casing wall of the outer casing (31), and the output end of the winding motor (38) is connected with the bottom end of the rotating rod (32).

3. A portable measuring and controlling device, according to claim 1, is characterized in that the eccentric position of the upper surface of the rotating disk (35) is surrounded by a plurality of limit blocks (351) at equal intervals, and each limit block (351) is matched with a spacing groove (311), and the spacing grooves (311) are surrounded on the upper surface of the inner cavity of the outer hull (31) at equal intervals.

4. A portable measuring and controlling device, according to claim 1, is characterized in that a smooth coating (361) is arranged on the side of the cylindrical pressing block (36) far away from the rotating disk (35).

5. A portable measuring and controlling device, according to claim 1, is characterized in that twist knob (17) is arranged in a round hole on the side wall of the protective hull (11), and a first gear (171) is arranged at the front end of the twist knob (17), and the first gear (171) is meshed with the second gear (172) which is arranged on the positive and negative double-threaded screw (15).

6. A portable measuring and controlling device, according to claim 5, is characterized in that the upper side of the outer wall of the protective hull (11) is connected with the outer hull (31) by bolts.

7. A portable measuring and controlling device, according to claim 6, is characterized in that one side of the outer wall of the protective cover (11) is provided with a detection pen storage tube (18).

8. A portable measuring and controlling device, according to claim 7, is characterized in that a backup battery block (5) is arranged at one side close to the detection pen storage tube (18), and the backup battery block (5) is embedded in a groove on the side wall of the protective hull (11).

9. A portable measuring and controlling device, according to claim 8, is characterized in that a protective cover (111) is hinged at the opening of the side wall of the protective hull (11).

10. A portable measuring and controlling device, according to claim 7, is characterized in that the interface of the measuring and controlling device (2) is connected with a detecting pen body (4) through a wire, and the maximum radius of the cross section of the detecting pen (4) is smaller than the radius of the detecting pen storage tube (18).

Revendications

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1. Un appareil portable de mesure et de contrôle comprenant le dispositif de stockage de protection (1) et le dispositif de mesure et de contrôle (2) sont caractérisés en ce que le dispositif de stockage de protection (1) comprend une coque de protection (11), et les surfaces supérieure et inférieure du cavité intérieure de la coque de protection (11) sont pourvues de goulottes en forme de T (12) qui se correspondent, et deux goulottes en forme de T (12) sont reliées à des glissières en forme de T (121) d'une manière coulissante, un bloc mobile (13) est agencé entre les deux coulisseaux en forme de T (121), l'ouverture d'un côté du bloc mobile (13) est reliée au dispositif de mesure et de contrôle (2) d'une manière serrée, et un dispositif portable dispositif d'enroulement (3) est agencé sur la face supérieure de la paroi externe de la coque de protection (11), le dispositif portable dispositif d'enroulement (3) comprend une coque extérieure (31), la face inférieure de la paroi externe de la coque extérieure (31) est reliée à la surface supérieure de la paroi externe de la coque de protection (11) ; des sièges d'installation (14) sont disposés respectivement sur les côtés supérieur et inférieur de la cavité intérieure de la coque de protection (11) dans le dispositif de stockage de protection (1), et la même vis à double filetage positif et négatif (15) est reliée de manière rotative entre deux sièges d'installation (14), et des sièges d'écrou (151) sont agencés dans différents intervalles de filetage de la vis à double filetage positif et négatif (15), un côté de la paroi extérieure de chaque siège d'écrou (151) est articulé avec un tige de transmission (16), et l'extrémité avant de chaque tige de transmission (16) est reliée en rotation au bloc mobile (13); une tige rotative (32) est disposée dans la coque extérieure (31) du dispositif d'enroulement portable (3), un ressort (33) et une tige de limitation (34) à l'extrémité supérieure du ressort (33) sont disposés dans la rainure au sommet de la tige rotative (32), l'extrémité supérieure de la tige de limitation (34) est pourvue d'un disque rotatif (35), et le centre de la surface supérieure du disque rotatif (35) est pourvu d'un bloc de presse cylindrique (36), qui traverse le trou rond sur la coque extérieure (31), et la paroi extérieure de la tige rotative (32) est enroulée avec un bandage élastique (37).

2. Un appareil portable de mesure et de contrôle, selon la revendication 1, est caractérisé en ce qu'un moteur d'enroulement (38) est disposé au fond de la cavité

interne du coque extérieure (31), le côté inférieur de la paroi du boîtier externe de la 502365
 moteur d'enroulement (38) est relié à la paroi de boîtier interne du coque extérieure (31),
 et l'extrémité de sortie du moteur d'enroulement (38) est reliée à l'extrémité inférieure de
 la tige rotative (32).

3. Un appareil portable de mesure et de contrôle, selon la revendication 1, se caractérise par le fait que la position excentrée de la surface supérieure du disque rotatif (35) est entourée d'une pluralité de blocs de limite (351) à intervalles égaux, et chaque bloc de limite (351) correspond à une rainure d'espacement (311), et les rainures d'espacement (311) sont entourées sur la surface supérieure de la cavité interne de la coque externe (31) à intervalles égaux.

4. Un appareil portable de mesure et de contrôle, selon la revendication 1, se caractérise par le fait qu'un revêtement lisse (361) est agencé sur le côté du bloc presse cylindrique (36) éloigné du disque rotatif (35).

5. Un appareil portable de mesure et de contrôle, selon la revendication 1, est caractérisé en ce que le bouton de torsion (17) est agencé dans un trou rond sur la paroi latérale de la coque de protection (11), et un premier engrenage (171) est agencé à l'extrémité avant de le bouton de torsion (17), et le premier engrenage (171) est en prise avec le deuxième engrenage (172) qui est agencé sur la vis à double filetage positif et négatif (15).

6. Un appareil portable de mesure et de contrôle, selon la revendication 5 est caractérisé en ce que la face supérieure de la paroi extérieure de la coque de protection (11) est reliée à la coque extérieure (31) par des boulons.

7. Un appareil portable de mesure et de contrôle, selon la revendication 6, est caractérisé en ce qu'un côté de la paroi externe du coque de protection (11) est muni d'un tube de stockage du stylo de détection (18).

8. Un appareil portable de mesure et de contrôle, selon la revendication 7, est caractérisé en ce qu'un bloc de batterie de secours (5) est disposé d'un côté à proximité du tube de stockage du stylo de détection (18), et le bloc de batterie de secours (5) est

encastré dans une rainure sur la paroi latérale de la coque de protection (11).

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9. Un appareil portable de mesure et de contrôle, selon la revendication 8, est caractérisé en ce qu'un capot de protection (111) est articulé au niveau de l'ouverture de la paroi latérale de la coque de protection (11).

10. Un appareil portable de mesure et de contrôle, selon la revendication 7, est caractérisé en ce que l'interface du dispositif de mesure et de contrôle (2) est reliée à un corps de stylo détecteur (4) par un fil, et le rayon maximal de la section transversale du stylo détecteur (4) est plus petit que le rayon du tube de stockage du stylo détecteur (18).

Figures

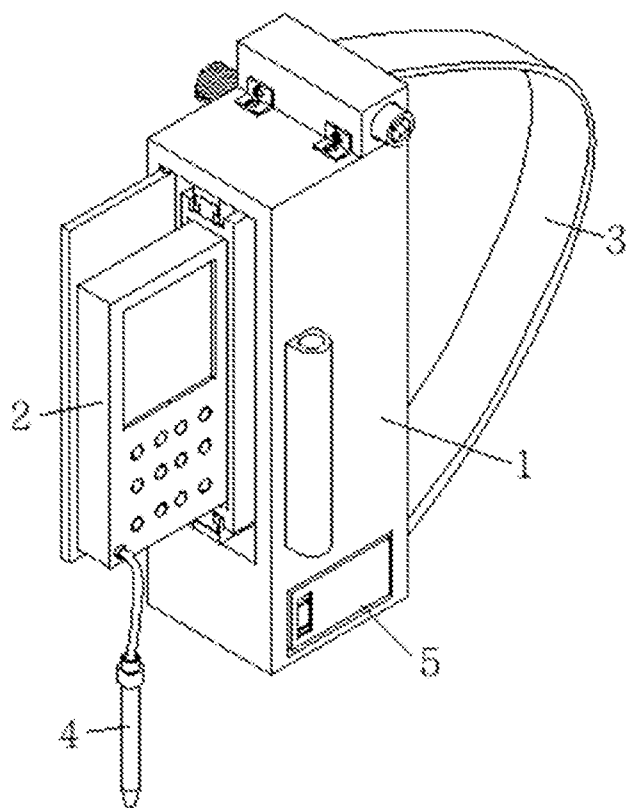
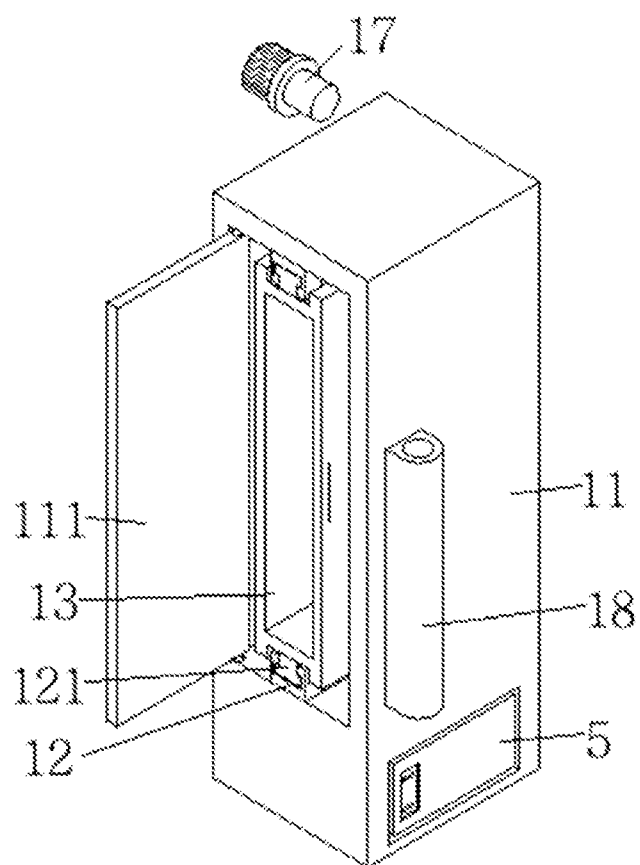


Figure 1

**Figure 2**

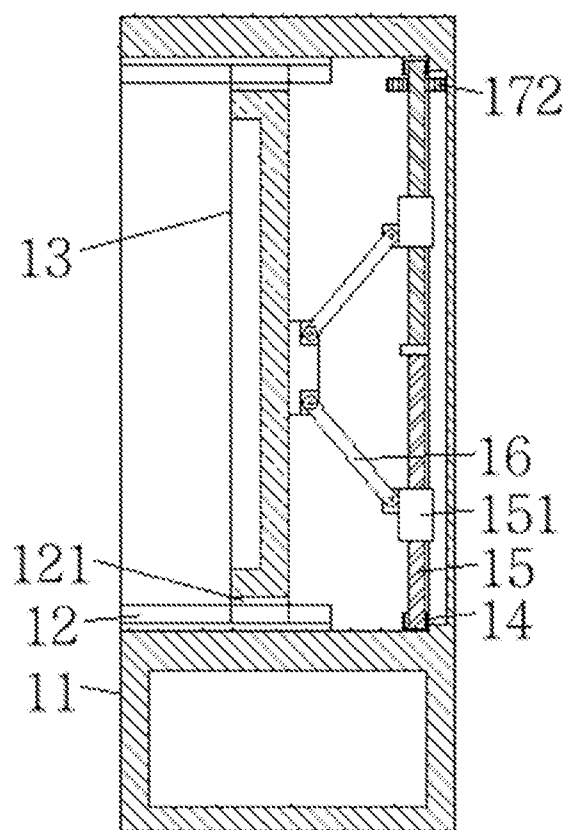


Figure 3

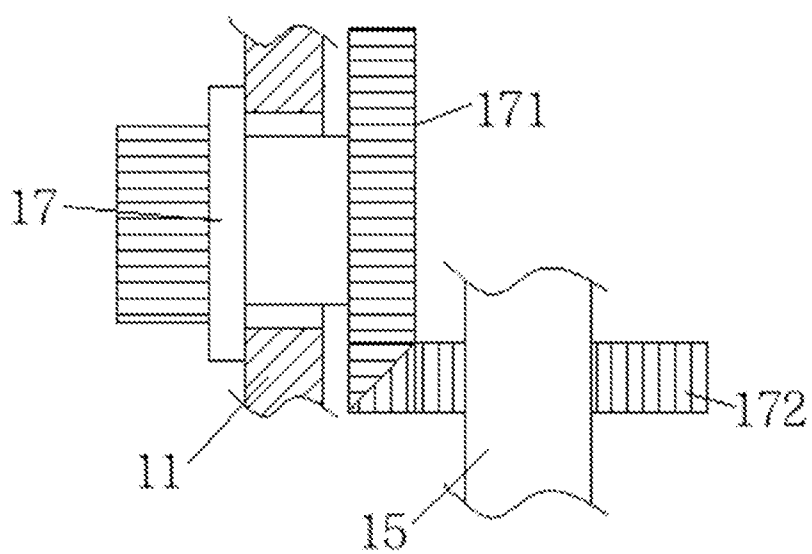
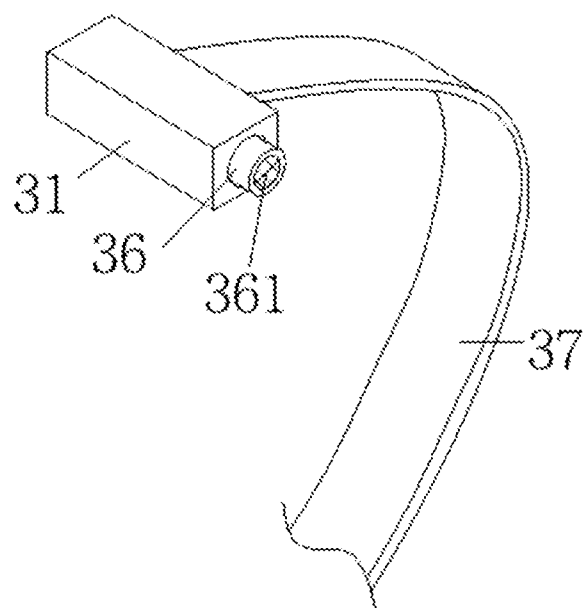
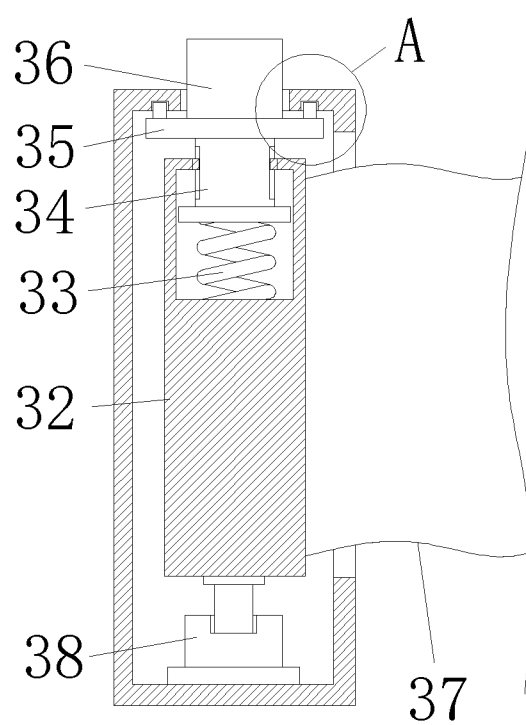


Figure 4

**Figure 5****Figure 6**

