

(19)



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

(11)

N° de publication :

LU508358

(12)

BREVET D'INVENTION**B1**

(21)

N° de dépôt: LU508358

(51)

Int. Cl.:

G07C 1/00, G06Q 10/00, G06F 3/06

(22)

Date de dépôt: 25/09/2024

(30)

Priorité:

(72)

Inventeur(s):

WANG Jun – China

(43)

Date de mise à disposition du public: 25/03/2025

(74)

Mandataire(s):

IP SHIELD – 1616 Luxembourg (Luxembourg)

(47)

Date de délivrance: 25/03/2025

(73)

Titulaire(s):

HUANGHUI UNIVERSITY –
463000 Zhumadian (China)

(54)

NATIONAL PARK MONITORING DATA AUTOMATIC COLLECTION AND STORAGE DEVICE.

(57)

The present invention relates to the field of data storage technology and discloses a national park monitoring data automatic collection and storage device. The device includes a chassis, wherein a motherboard is installed at the rear end inside the chassis. Two sets of CPUs are installed at the bottom front side of the motherboard, with multiple sets of memory sticks fixedly connected to both sides of the CPUs. Two sets of PCIe modules are installed at the top front side of the motherboard. A battery is installed at the left top side inside the chassis. Two sets of air inlets are provided at the rear end of the chassis, and an automatic dehumidification mechanism is provided on the outer side of the chassis. During use, the first and second fans blow the heat inside the chassis into an air collection chamber. The hot air is guided into a heat dissipation chamber through an air duct, with copper plates installed at both the top and bottom ends of the heat dissipation chamber. The hot air is cooled through the copper plates and expelled through an air outlet, achieving air discharge. The first and second dehumidification plates are connected to the copper plates, absorbing the heat from the copper plates, keeping the dehumidification plates dry. FIG.1

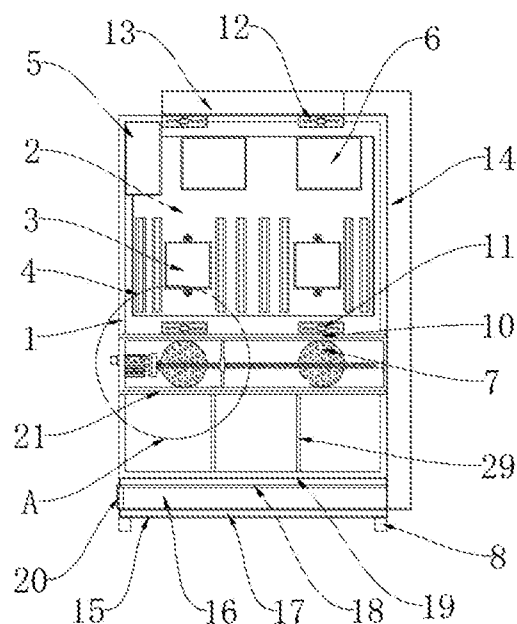


FIG.1

NATIONAL PARK MONITORING DATA AUTOMATIC COLLECTION AND STORAGE DEVICE

Technical Field

5 The present invention relates to the technical field of data storage, specifically to a national park monitoring data automatic collection and storage device.

Background Technology

 The national park monitoring system is a comprehensive system that integrates
10 data collection, transmission, processing, and display, aiming to monitor and assess the ecological environment quality within the park in real time, providing scientific basis for park management and visitor services.

 Data automatic collection and storage devices are usually simple cabinet structures, storing data on hard drives and connecting to servers for data aggregation.
15 Given the generally high humidity in parks, existing data storage devices on the market lack automatic dehumidification functions. When storage devices are placed on the ground within parks, they are easily affected by moisture, which can, in turn, reduce the device's lifespan.

 The present invention proposes a national park monitoring data automatic
20 collection and storage device to solve the aforementioned problems.

Summary of the Invention

 The objective of the present invention is to provide a national park monitoring data automatic collection and storage device to address the problem of lacking

automatic dehumidification functions as raised in the background technology.

To achieve the aforementioned objective, the present invention provides the following technical solution: a national park monitoring data automatic collection and storage device, comprising a chassis, wherein a motherboard is installed at the rear
5 end inside the chassis, two sets of CPUs are installed at the bottom front side of the motherboard, and multiple sets of memory sticks are fixedly connected to both sides of the two sets of CPUs. Two sets of PCIe modules are installed at the top front side of the motherboard. A battery is installed at the left top side inside the chassis. Two sets of air inlets are provided at the rear end of the chassis. Four sets of support legs are
10 provided beneath the chassis. A connection port is provided at the front end on the left side of the chassis. A first support plate is fixedly connected inside the chassis, and an automatic dehumidification mechanism is provided on the outer side of the chassis.

The automatic dehumidification mechanism includes an air duct, the air duct is fixedly connected to the right side of the chassis, and two sets of first fans are installed
15 at the top end of the first support plate. Two sets of second fans are installed at the top inside the chassis. An air collection chamber is provided at the top of the chassis. A base is fixedly connected at the bottom of the chassis, and a first dehumidification plate is installed at the bottom inside the base. A second dehumidification plate is installed at the top inside the base. Copper plates are fixedly connected between the
20 top of the first dehumidification plate and the bottom of the second dehumidification plate. A heat dissipation chamber is provided between the copper plates. An air outlet is provided on the right side of the base.

Preferably, the battery, motherboard, CPU, memory sticks, and connection port are electrically connected. The first fans and second fans are electrically connected to

the motherboard.

Preferably, the first support plate is made of grille-type metal material, and the interior of the chassis, air collection chamber, and air duct are interconnected.

Preferably, the air outlet is made of mesh-like metal material, and the air inlet is
5 made of mesh-like metal material.

Preferably, a second support plate is provided below the first support plate, and a dust removal chamber is installed between the first support plate and the second support plate. A servo motor is installed on the left side inside the dust removal chamber. A screw rod is movably connected to the right side of the servo motor, and
10 a movable seat is sleeved on the outside of the screw rod. A cleaning brush is installed at the rear end of the movable seat. A first handle is installed on the left side of the dust removal chamber.

Preferably, the output end of the servo motor is connected to the screw rod, and the rear end of the cleaning brush is tightly attached to the chassis. The dust removal
15 chamber can slide left and right between the second support plate and the first support plate.

Preferably, two sets of metal doors are hinged at the bottom front side of the chassis, and a second handle is installed on the outer side of the metal doors. Two sets of partitions are provided at the bottom inside the chassis.

Preferably, the outer side of the metal doors is made of mesh-like metal material,
20 and the partitions can slide back and forth inside the chassis.

The beneficial effects of the present invention compared to the existing technology are: this national park monitoring data automatic collection and storage device not only realizes the automatic dehumidification function but also achieves

cleaning of the air inlet and categorized data placement.

(1) By setting the first support plate, first fan, second fan, air collection chamber, air duct, base, heat dissipation chamber, first dehumidification plate, copper plate, second dehumidification plate, and air outlet, when in use, the first fan and second fan
5 blow the heat inside the chassis into the air collection chamber. The air duct guides the hot air into the heat dissipation chamber. Copper plates are installed at both the top and bottom ends of the heat dissipation chamber. The hot air is cooled through the copper plates and is expelled through the air outlet, thereby achieving air
10 expulsion. The first and second dehumidification plates are connected to the copper plates, allowing the copper plates to absorb heat, keeping the dehumidification plates dry.

(2) By setting the second support plate, dust removal chamber, servo motor, screw rod, movable seat, and cleaning brush, when in use, the servo motor is activated to drive the screw rod to rotate, causing the movable seat to slide left and right on the
15 screw rod. The cleaning brush tightly adheres to the air inlet, thereby cleaning the air inlet.

(3) By setting metal doors, partitions, and second handle, when in use, partitions can be used to categorize and store hard drives, facilitating data retrieval. The partitions can be pulled out from the chassis, and the metal doors can be opened with
20 the second handle, allowing for cleaning of the bottom inside the chassis.

Description of the Drawings

FIG.1 is a front cross-sectional structural diagram of the present invention;

FIG.2 is a front structural diagram of the present invention;

FIG.3 is a right-side structural diagram of the present invention;

FIG.4 is a partial cross-sectional structural diagram of the A area in FIG.1 of the present invention;

FIG.5 is a left-side structural diagram of the present invention;

5 FIG.6 is a rear structural diagram of the present invention.

In the drawings: 1, chassis; 2, motherboard; 3, CPU; 4, memory stick; 5, battery; 6, PCIe module; 7, air inlet; 8, support leg; 9, connection port; 10, first support plate; 11, first fan; 12, second fan; 13, air collection chamber; 14, air duct; 15, base; 16, heat dissipation chamber; 17, first dehumidification plate; 18, copper plate; 19, second dehumidification plate; 20, air outlet; 21, second support plate; 22, dust removal chamber; 23, servo motor; 24, screw rod; 25, movable seat; 26, cleaning brush; 27, first handle; 28, metal door; 29, partition; 30, second handle.

Specific Embodiments

15 The following describes the technical solutions of the embodiments of the present invention in a clear and complete manner, with reference to the accompanying drawings in the embodiments of the present invention. It is evident that the described embodiments are merely a part of the embodiments of the present invention and not all of them. Based on the embodiments of the present invention, all other
20 embodiments that those skilled in the art can obtain without making inventive efforts fall within the scope of protection of the present invention.

Embodiment 1: Please refer to FIGs. 1-6, a national park monitoring data automatic collection and storage device, including a chassis 1, wherein a motherboard 2 is installed at the rear end inside the chassis 1, two sets of CPUs 3 are installed at the

bottom front side of the motherboard 2, and multiple sets of memory sticks 4 are fixedly connected to both sides of the two sets of CPUs 3. Two sets of PCIe modules 6 are installed at the top front side of the motherboard 2. A battery 5 is installed at the left top side inside the chassis 1. Two sets of air inlets 7 are provided at the rear end of the chassis 1. Four sets of support legs 8 are provided beneath the chassis 1. A connection port 9 is provided at the front end on the left side of the chassis 1. A first support plate 10 is fixedly connected inside the chassis 1, and an automatic dehumidification mechanism is provided on the outer side of the chassis 1.

Please refer to FIGs. 1-6, a national park monitoring data automatic collection and storage device also includes an automatic dehumidification mechanism, wherein the automatic dehumidification mechanism includes an air duct 14, and the air duct 14 is fixedly connected to the right side of the chassis 1. Two sets of first fans 11 are installed at the top end of the first support plate 10, and two sets of second fans 12 are installed at the top inside the chassis 1. An air collection chamber 13 is provided at the top of the chassis 1. A base 15 is fixedly connected at the bottom of the chassis 1, and a first dehumidification plate 17 is installed at the bottom inside the base 15. A second dehumidification plate 19 is installed at the top inside the base 15. Copper plates 18 are fixedly connected between the top of the first dehumidification plate 17 and the bottom of the second dehumidification plate 19, and a heat dissipation chamber 16 is provided between the copper plates 18. An air outlet 20 is provided on the right side of the base 15.

The battery 5, motherboard 2, CPUs 3, memory sticks 4, and connection port 9 are electrically connected. The first fans 11 and second fans 12 are electrically connected to the motherboard 2. The first support plate 10 is made of grille-type metal

material. The interior of the chassis 1, air collection chamber 13, and air duct 14 are interconnected. The air outlet 20 is made of mesh-like metal material, and the air inlet 7 is made of mesh-like metal material.

Specifically, as shown in FIGs. 1, 2, 3, 5, and 6, during use, the first fans 11 and
5 second fans 12 blow the heat inside the chassis 1 into the air collection chamber 13. By setting the air duct 14, the hot air is guided into the heat dissipation chamber 16. Copper plates 18 are installed at both the top and bottom ends of the heat dissipation chamber 16. The hot air is cooled through the copper plates 18 and expelled through the air outlet 20, thereby achieving air expulsion. The first dehumidification plate 17
10 and the second dehumidification plate 19 are connected to the copper plates 18, allowing the copper plates 18 to absorb heat, keeping the first dehumidification plate 17 and the second dehumidification plate 19 dry.

Embodiment 2: A second support plate 21 is provided below the first support plate 10, and a dust removal chamber 22 is installed between the first support plate
15 10 and the second support plate 21. A servo motor 23 is installed on the left side inside the dust removal chamber 22. A screw rod 24 is movably connected to the right side of the servo motor 23. A movable seat 25 is sleeved on the outside of the screw rod 24. A cleaning brush 26 is installed at the rear end of the movable seat 25. A first handle 27 is installed on the left side of the dust removal chamber 22. The output end of the
20 servo motor 23 is connected to the screw rod 24. The rear end of the cleaning brush 26 is tightly attached to the chassis 1. The dust removal chamber 22 can slide left and right between the second support plate 21 and the first support plate 10.

Specifically, as shown in FIGs. 1, 2, 4, 5, and 6, during use, the servo motor 23 is activated to drive the screw rod 24 to rotate, causing the movable seat 25 to slide left

and right on the screw rod 24. The cleaning brush 26 tightly adheres to the air inlet 7, thereby cleaning the air inlet 7.

Embodiment 3: Two sets of metal doors 28 are hinged at the bottom front side of the chassis 1, and a second handle 30 is installed on the outer side of the metal doors 28. Two sets of partitions 29 are provided at the bottom inside the chassis 1. The outer side of the metal doors 28 is made of mesh-like metal material, and the partitions 29 can slide back and forth inside the chassis 1;

Specifically, as shown in FIGs. 1 and 2, during use, the partitions 29 can be used to categorize and store hard drives, facilitating data retrieval. The partitions 29 can be pulled out from the chassis 1, and the metal doors 28 can be opened with the second handle 30, allowing for cleaning of the bottom inside the chassis 1.

Working Principle: When in use, firstly, the first fans 11 and second fans 12 blow the heat inside the chassis 1 into the air collection chamber 13. By setting the air duct 14, the hot air is guided into the heat dissipation chamber 16. Copper plates 18 are installed at both the top and bottom ends of the heat dissipation chamber 16. The hot air is cooled through the copper plates 18 and expelled through the air outlet 20, thereby achieving air expulsion. The first dehumidification plate 17 and the second dehumidification plate 19 are connected to the copper plates 18, allowing the copper plates 18 to absorb heat, keeping the first dehumidification plate 17 and the second dehumidification plate 19 dry. Secondly, the servo motor 23 is activated to drive the screw rod 24 to rotate, causing the movable seat 25 to slide left and right on the screw rod 24. The cleaning brush 26 tightly adheres to the air inlet 7, thereby cleaning the air inlet 7. During use, the partitions 29 can be used to categorize and store hard drives, facilitating data retrieval. The partitions 29 can be pulled out from the chassis 1, and

the metal doors 28 can be opened with the second handle 30, allowing for cleaning of the bottom inside the chassis 1.

For those skilled in the art, it is evident that the present invention is not limited to the details of the above exemplary embodiments, and other specific forms of implementation can be achieved without departing from the spirit or basic characteristics of the present invention. Therefore, the embodiments should be regarded as illustrative and not limiting, and the scope of the present invention is defined by the appended claims rather than the foregoing description. It is intended that all modifications falling within the meaning and scope of the claims are included within the present invention. Any reference numerals in the claims should not be considered as limiting the claims to the specific features they relate to.

CLAIMS

1. A national park monitoring data automatic collection and storage device, comprising a chassis (1), characterized in that: a motherboard (2) is installed at the rear end inside the chassis (1), two sets of CPUs (3) are installed at the bottom front
 5 side of the motherboard (2), and multiple sets of memory sticks (4) are fixedly connected to both sides of the two sets of CPUs (3). Two sets of PCIe modules (6) are installed at the top front side of the motherboard (2). A battery (5) is installed at the left top side inside the chassis (1). Two sets of air inlets (7) are provided at the rear end of the chassis (1). Four sets of support legs (8) are provided beneath the chassis (1). A
 10 connection port (9) is provided at the front end on the left side of the chassis (1). A first support plate (10) is fixedly connected inside the chassis (1), and an automatic dehumidification mechanism is provided on the outer side of the chassis (1);

The automatic dehumidification mechanism comprises an air duct (14), the air duct (14) is fixedly connected to the right side of the chassis (1), two sets of first fans
 15 (11) are installed at the top end of the first support plate (10), two sets of second fans (12) are installed at the top inside the chassis (1), an air collection chamber (13) is provided at the top of the chassis (1), and a base (15) is fixedly connected at the bottom of the chassis (1), with a first dehumidification plate (17) installed at the bottom inside the base (15) and a second dehumidification plate (19) installed at the
 20 top inside the base (15). Copper plates (18) are fixedly connected between the top of the first dehumidification plate (17) and the bottom of the second dehumidification plate (19), and a heat dissipation chamber (16) is provided between the copper plates (18). An air outlet (20) is provided on the right side of the base (15).

2. The national park monitoring data automatic collection and storage device according to claim 1, characterized in that: the battery (5), motherboard (2), CPUs (3), memory sticks (4), and connection port (9) are electrically connected, and the first fans (11) and second fans (12) are electrically connected to the motherboard (2).

5

3. The national park monitoring data automatic collection and storage device according to claim 1, characterized in that: the first support plate (10) is made of grille-type metal material, and the interiors of the chassis (1), air collection chamber (13), and air duct (14) are interconnected.

10

4. The national park monitoring data automatic collection and storage device according to claim 1, characterized in that: the air outlet (20) is made of mesh-like metal material, and the air inlet (7) is made of mesh-like metal material.

15

5. The national park monitoring data automatic collection and storage device according to claim 1, characterized in that: a second support plate (21) is provided below the first support plate (10), and a dust removal chamber (22) is installed between the first support plate (10) and the second support plate (21). A servo motor (23) is installed on the left side inside the dust removal chamber (22), a screw rod (24) is movably connected to the right side of the servo motor (23), and a movable seat (25) is sleeved on the outside of the screw rod (24). A cleaning brush (26) is installed at the rear end of the movable seat (25), and a first handle (27) is installed on the left side of the dust removal chamber (22).

20

6. The national park monitoring data automatic collection and storage device according to claim 5, characterized in that: the output end of the servo motor (23) is connected to the screw rod (24), the rear end of the cleaning brush (26) is tightly attached to the chassis (1), and the dust removal chamber (22) can slide left and right
5 between the second support plate (21) and the first support plate (10).

7. The national park monitoring data automatic collection and storage device according to claim 1, characterized in that: two sets of metal doors (28) are hinged at the bottom front side of the chassis (1), and a second handle (30) is installed on the
10 outer side of the metal doors (28). Two sets of partitions (29) are provided at the bottom inside the chassis (1).

8. The national park monitoring data automatic collection and storage device according to claim 7, characterized in that: the outer side of the metal doors (28) is
15 made of mesh-like metal material, and the partitions (29) can slide back and forth inside the chassis (1).

REVENDICATIONS

1. Dispositif de collecte et de stockage automatique des données de surveillance d'un parc national, comprenant un châssis (1), caractérisé en ce que : une carte mère (2) est installée à l'extrémité arrière à l'intérieur du châssis (1), deux ensembles de processeurs (3) sont installés à l'avant de la partie inférieure de la carte mère (2), et plusieurs ensembles de barrettes de mémoire (4) sont fixés de manière fixe de chaque côté des deux ensembles de processeurs (3). Deux ensembles de modules PCLE (6) sont installés à l'avant de la partie supérieure de la carte mère (2). Une batterie (5) est installée sur le côté supérieur gauche à l'intérieur du châssis (1). Deux ensembles d'entrées d'air (7) sont disposés à l'arrière du châssis (1). Quatre ensembles de pieds de support (8) sont disposés sous le châssis (1). Un port de connexion (9) est prévu à l'avant du côté gauche du châssis (1). Une première plaque de support (10) est fixée à l'intérieur du châssis (1), et un mécanisme de déshumidification automatique est disposé sur la face extérieure du châssis (1) ;

Le mécanisme de déshumidification automatique comprend un conduit d'air (14), le conduit d'air (14) est fixé sur le côté droit du châssis (1), deux ensembles de premiers ventilateurs (11) sont installés à l'extrémité supérieure de la première plaque de support (10), deux ensembles de seconds ventilateurs (12) sont installés en haut à l'intérieur du châssis (1), une chambre de collecte d'air (13) est prévue en haut du châssis (1), et une base (15) est fixée au bas du châssis (1), avec une première plaque de déshumidification (17) installée au bas à l'intérieur de la base (15) et une

deuxième plaque de déshumidification (19) installée en haut à l'intérieur de la base (15). Des plaques de cuivre (18) sont fixées entre le haut de la première plaque de déshumidification (17) et le bas de la deuxième plaque de déshumidification (19), et une chambre de dissipation de chaleur (16) est prévue entre les plaques de cuivre (18).

5 Une sortie d'air (20) est prévue sur le côté droit de la base (15).

2. Dispositif de collecte et de stockage automatique des données de surveillance d'un parc national selon la revendication 1, caractérisé en ce que : la batterie (5), la carte mère (2), les processeurs (3), les barrettes de mémoire (4), et le port de connexion (9) sont connectés électriquement, et les premiers ventilateurs (11) et les seconds ventilateurs (12) sont connectés électriquement à la carte mère (2).

3. Dispositif de collecte et de stockage automatique des données de surveillance d'un parc national selon la revendication 1, caractérisé en ce que : la première plaque de support (10) est fabriquée en matériau métallique de type grille, et l'intérieur du châssis (1), la chambre de collecte d'air (13), et le conduit d'air (14) sont interconnectés.

4. Dispositif de collecte et de stockage automatique des données de surveillance d'un parc national selon la revendication 1, caractérisé en ce que : la sortie d'air (20) est en matériau métallique de type grille, et l'entrée d'air (7) est en matériau métallique de type grille.

5. Dispositif de collecte et de stockage automatique des données de surveillance

d'un parc national selon la revendication 1, caractérisé en ce que : une deuxième plaque de support (21) est prévue sous la première plaque de support (10), et une chambre de dépoussiérage (22) est installée entre la première plaque de support (10) et la deuxième plaque de support (21). Un servomoteur (23) est installé sur le côté gauche à l'intérieur de la chambre de dépoussiérage (22), une tige filetée (24) est connectée de manière mobile au côté droit du servomoteur (23), et un siège mobile (25) est monté autour de la tige filetée (24). Une brosse de nettoyage (26) est installée à l'extrémité arrière du siège mobile (25), et une première poignée (27) est installée sur le côté gauche de la chambre de dépoussiérage (22).

6. Dispositif de collecte et de stockage automatique des données de surveillance

d'un parc national selon la revendication 5, caractérisé en ce que : l'extrémité de sortie du servomoteur (23) est connectée à la tige filetée (24), l'extrémité arrière de la brosse de nettoyage (26) est étroitement fixée au châssis (1), et la chambre de dépoussiérage (22) peut glisser de gauche à droite entre la deuxième plaque de support (21) et la première plaque de support (10).

7. Dispositif de collecte et de stockage automatique des données de surveillance

d'un parc national selon la revendication 1, caractérisé en ce que : deux ensembles de portes métalliques (28) sont articulés sur la partie avant inférieure du châssis (1), et une deuxième poignée (30) est installée à l'extérieur des portes métalliques (28). Deux ensembles de séparations (29) sont prévues à l'intérieur de la partie inférieure

du châssis (1).

8. Dispositif de collecte et de stockage automatique des données de surveillance d'un parc national selon la revendication 7, caractérisé en ce que : l'extérieur des
- 5 portes métalliques (28) est en matériau métallique de type grille, et les séparations (29) peuvent coulisser d'avant en arrière à l'intérieur du châssis (1).

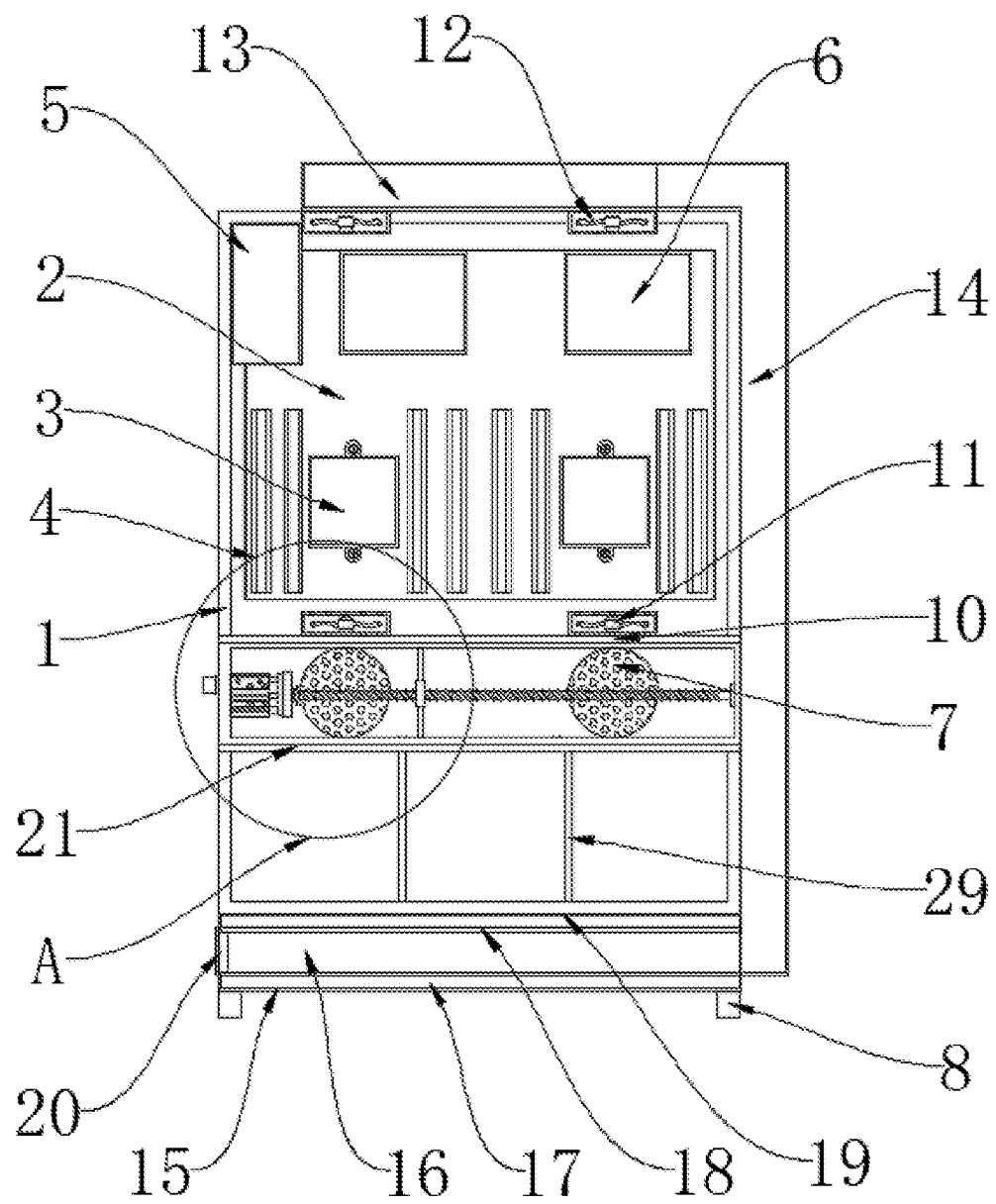


FIG.1

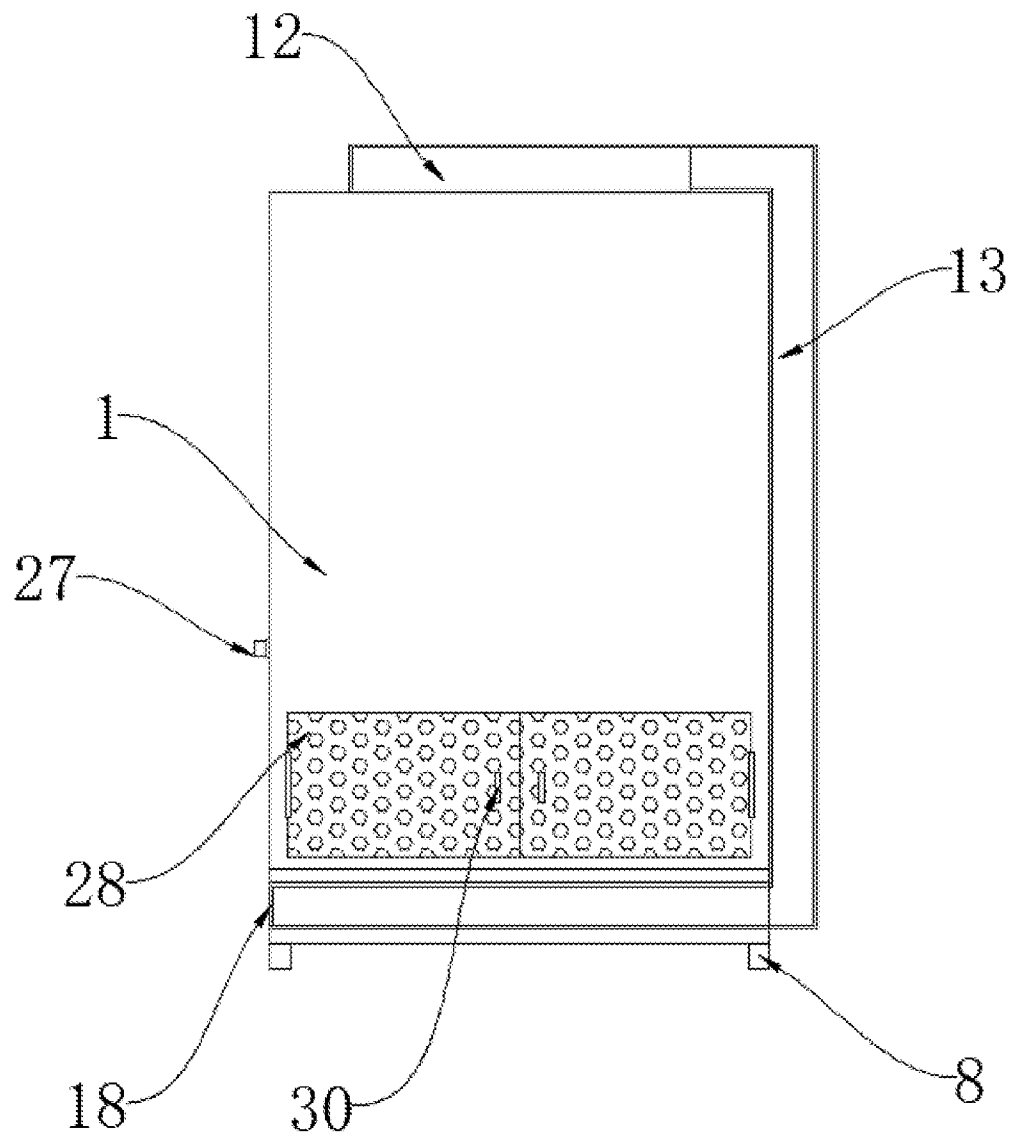


FIG.2

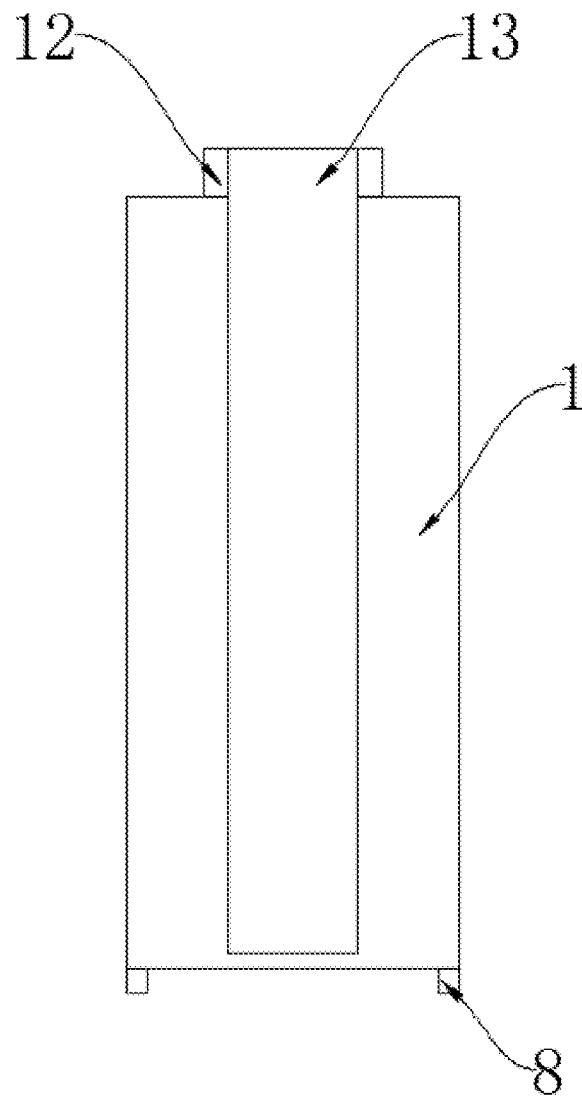


FIG.3

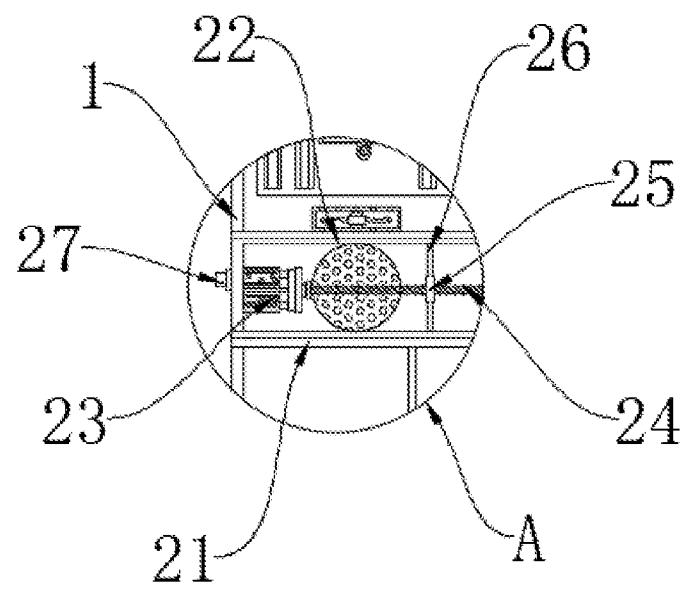


FIG. 4

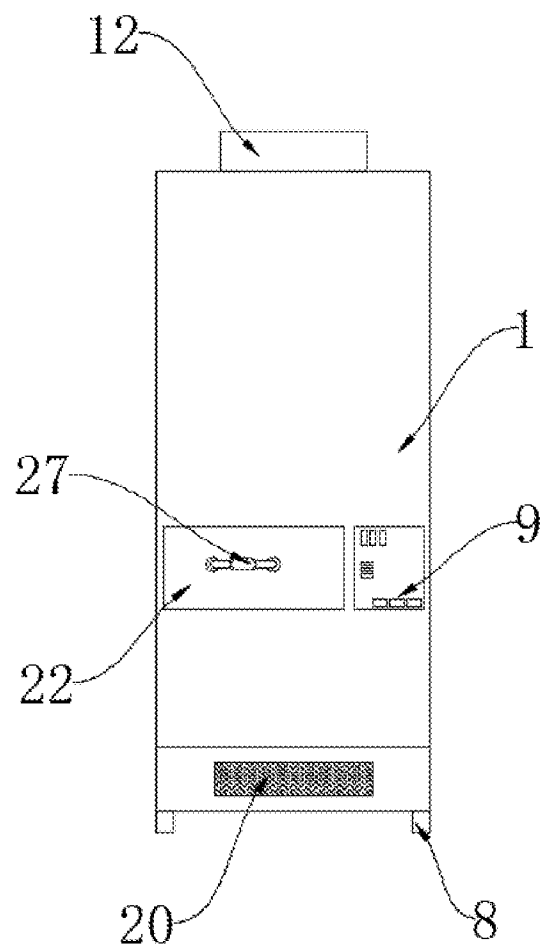


FIG. 5

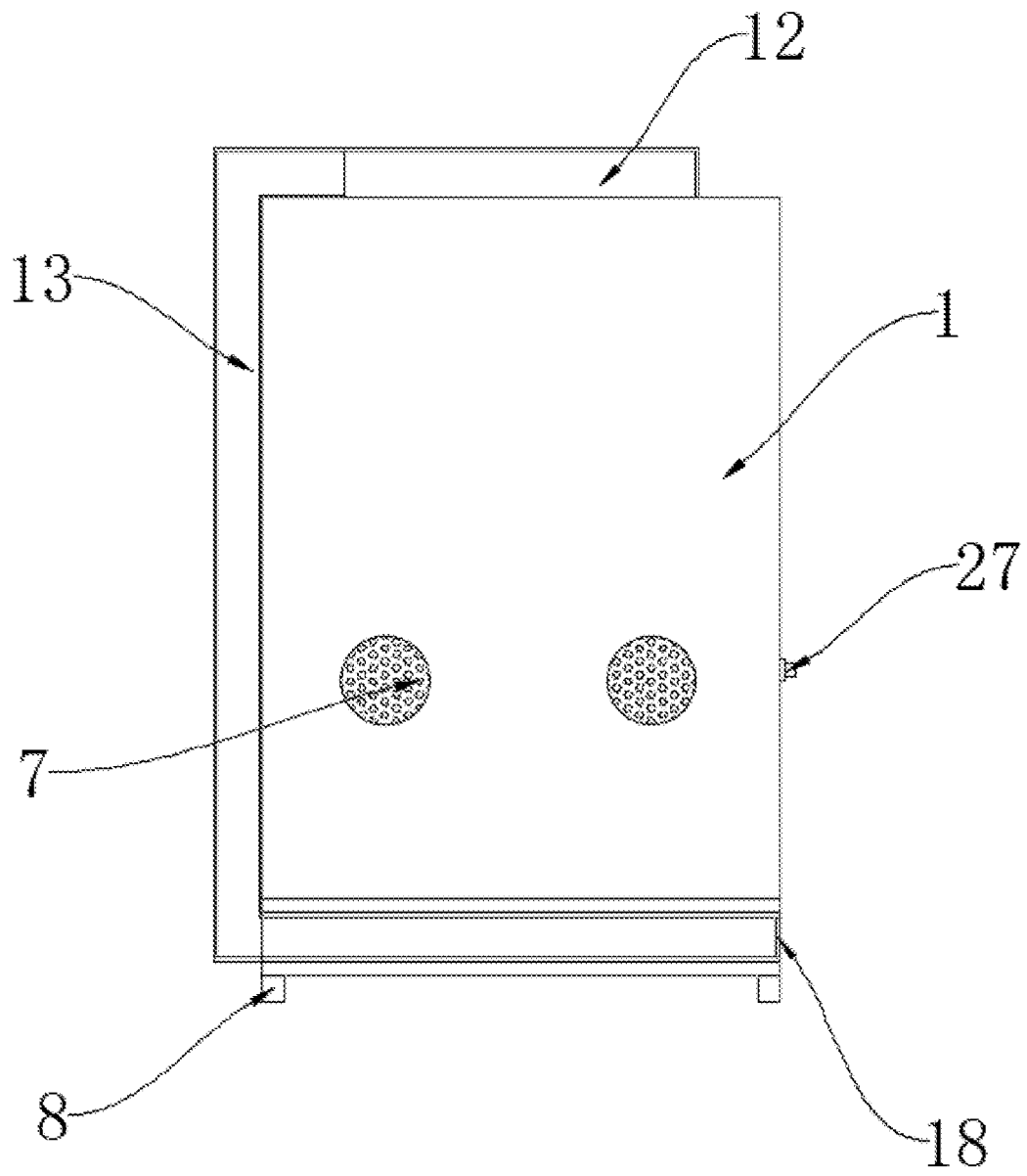


FIG.6