

19



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

11

N° de publication :

LU503720

12

BREVET D'INVENTION**B1**

21

N° de dépôt: LU503720

51

Int. Cl.:

B03C 3/017, B01D 46/12, B01D 46/681, B01D 46/76

22

Date de dépôt: 24/03/2023

30

Priorité:

27/05/2022 CN 202210584455.7

43

Date de mise à disposition du public: 30/11/2023

47

Date de délivrance: 30/11/2023

73

Titulaire(s):

HUANENG POWER INTERNATIONAL INC. YINGKOU
POWER PLANT - 115000 Yingkou, Liaoning (Chine)

72

Inventeur(s):

HE Zhi - Chine, LI Yuanxu - Chine, SHA Xin - Chine,
ZHAO Yun - Chine, ZHANG Jun - Chine, ZHANG Jian -
Chine, REN Yi - Chine, SUN Siyang - Chine, DAI
Shiyang - Chine, ZHU Yan - Chine, REN Chengxin -
Chine, WANG Chong - Chine

74

Mandataire(s):

VALET PATENT SERVICES LIMITED - 80687
München (Allemagne)

54

HIGH-EFFICIENCY ELECTROSTATIC PRECIPITATOR FOR POWER PLANT.

57

A high-efficiency electrostatic precipitator for a power plant is provided, which includes a precipitator body, where a gas exhaust pipe is mounted at the top of the precipitator body, and an activated carbon layer is mounted inside the gas exhaust pipe. By providing the dust cleaning assembly, the user can start the motor when the dust needs to be discharged from the dust discharge pipe, the motor operates to drive the screw rod to rotate, to further drive the threaded sleeve to move, and further drive the dust cleaning plate to move, the dust cleaning plate scrapes off the dust attached to the first filter screen, so as to prevent the dust from blocking the first filter screen, and the dust falls onto the dust guide table. In addition, the screw rod drives the driving bevel gear to rotate during rotation, the driving bevel gear rotates to drive the driven bevel gear to rotate, to further drive the connecting shaft to rotate, and further drive the driving pulley to rotate, so as to drive the driven pulley to rotate through the driving belt to further drive the rotating shaft to rotate, and the rotating shaft drives the dust cleaning bracket to rotate, so that the duct cleaning bracket removes the dust attached to the inner wall of the dust guide table.

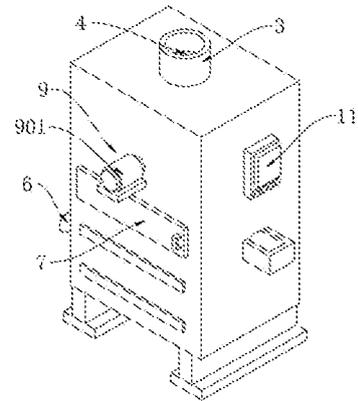


FIG. 1

HIGH-EFFICIENCY ELECTROSTATIC PRECIPITATOR FOR POWER PLANT

FIELD

5 [0001] The present application relates to the technical field of power plants, and in particular to a high-efficiency electrostatic precipitator for a power plant.

BACKGROUND

10 [0002] A power plant converts energy in some forms into electric energy for fixed facilities or transportation, and includes thermal, hydraulic, steam, diesel or nuclear power plants. Since most of the equipment in the power plant is precise and requires a dust-free operation environment, a precipitator is generally mounted in the equipment room of the power plant to eliminate dust in the air.

15 [0003] Chinese patent publication NO. CN212548856U discloses a power plant dust collector, which increases the convenience of replacing a dust collector box. After the dust collector box is mounted, a hook can firmly cooperate with a clamping block under the action of an elastic member, which increases the stability. Dust in air may fall to an internal lower portion of the dust collector after being filtered, this part of dust is difficult to be cleaned or to be forced to enter a dust discharge pipe, such that this part of dust cannot be collected by a collection bag, and adheres to an interior of the dust collector, thus reducing the discharge efficiency of the dust. In addition, a filter screen is generally used by most dust collectors to filter the dust in the gas, but a filter surface of the filter screen is attached with a large amount of dust after a long time of filtering, and this part of dust adheres to the filter screen and is difficult to be cleaned in time, resulting in the blockage of the filter screen, which affects the filter efficiency of the filter screen and reduces the gas flow rate.

25

SUMMARY

30 [0004] In view of the above, a high-efficiency electrostatic precipitator for a power plant is provided according to the present application, so as to solve the technical problem of the accumulated dust at an internal lower portion of the precipitator and the inconvenience to clean the dust on a surface of a filter screen in time.

[0005] In order to achieve the above object, the following technical solution is provided according to the present application: a high-efficiency electrostatic precipitator for a power plant includes a precipitator body, a gas exhaust pipe is mounted at the top of the precipitator body, an activated carbon layer is mounted inside the gas exhaust pipe, a dust guide table is fixed at an internal lower portion of the precipitator body, a gas inlet pipe is connected at a lower portion of one side of the precipitator body, two mounting plates are respectively fixed on internal two sides of the precipitator body, a second filter screen is mounted between the two mounting plates, a dust cleaning assembly and an anti-blocking assembly are provided inside the precipitator body, and a sealing door is mounted on an outer surface of the precipitator body.

[0006] By using the above technical solution, the filtered gas is purified by the activated carbon layer by using the absorption function of the activated carbon layer, and is discharged through the gas exhaust pipe, the second filter screen can filter the air again, and the arrangement of the sealing door is convenient to improving the sealing of precipitator body.

[0007] Further, the dust cleaning assembly includes a motor which is mounted on one side of the precipitator body, a position-limiting rod which is fixed inside the precipitator body, a first fixed plate and a second fixed plate, a rotating shaft is connected at the bottom of the second fixed plate by a bearing, a duct cleaning bracket is connected at a bottom end of the rotating shaft, a driven pulley is sleeved on an outer wall of the rotating shaft, an output end of the motor is connected with a screw rod which extends into the precipitator body, a threaded sleeve is sleeved on an outer wall of the screw rod, a dust cleaning plate is fixed at the top of the threaded sleeve, a driving bevel gear is mounted on one side of an outer surface of the screw rod, a connecting shaft is connected at the top and the bottom of the first fixed plate by bearings, a driving pulley is mounted at a bottom end of the connecting shaft, a driving belt is sleeved on the driving pulley and the driven pulley, and a driven bevel gear is mounted at a top end of the connecting shaft.

[0008] By using the above technical solution, the user can start the motor when the dust needs to be discharged from the dust discharge pipe, and the motor operates to drive the screw rod to rotate, to further drive the threaded sleeve to move, and further drive the dust cleaning plate to move, the dust cleaning plate scrapes off the dust attached to the first filter screen, and the dust falls onto the dust guide table and is discharged through the dust discharge pipe.

[0009] Further, the driving bevel gear is meshed with the driven bevel gear, the duct cleaning bracket is located inside the dust guide table, and two sides of the duct cleaning bracket are in contact with an inner wall of the dust guide table.

5 [0010] By using the above technical solution, the driving bevel gear rotates to drive the driven bevel gear to rotate, to further drive the connecting shaft to rotate, and further drive the driving pulley to rotate, and at the same time, the duct cleaning bracket removes the dust attached to the inner wall of the dust guide table.

10 [0011] Further, the anti-blocking assembly includes a driving motor which is mounted on the outer surface of the precipitator body and sliding grooves which are defined on the internal two sides of the precipitator body, a spring is fixed at an internal lower portion of each sliding groove, a sliding plate is provided inside each sliding groove, a first filter screen is connected between the two sliding plates, an output end of the driving motor is connected with a driving shaft which extends into the precipitator body, and multiple rotating plates are fixed on an outer wall of the driving shaft.

15 [0012] By using the above technical solution, the user can start the driving motor when the dust in the gas is filtered, the driving motor can drive the rotating plates to rotate, to remove the dust on the second filter screen; meanwhile, when the rotating plates rotate to be in contact with the first filter screen, the rotating plates pushes the first filter screen to move downward as the rotating plates continue to rotate, and the first filter screen drives the sliding
20 plate to move downward and compress the spring, so that the spring is compressed by force; when the rotating plates continue to rotate and are no longer in contact with the first filter screen, the spring recovers and pushes the first filter screen to move upward, so that the first filter screen can vibrate by such reciprocating, which prevents the dust from accumulating on the first filter screen and causing blockage.

25 [0013] Further, the top of one rotating plate is in contact with the second filter screen, the second filter screen is semi-circular, the first filter screen is slidably connected with the sliding groove through the sliding plate, and the bottom of the sliding plate is in contact with a top end of the spring.

30 [0014] By using the above technical solution, the rotating plates can remove the dust attached to the second filter screen during rotating, so as to prevent the second filter screen from blocking; and the first filter screen moves to drive the sliding plate to move, so that the

sliding plate slides in the sliding groove.

5 [0015] Further, the position-limiting rod penetrates through the threaded sleeve, one end of the screw rod is connected with an inner wall of the precipitator body by a bearing, the top of the dust cleaning plate is in contact with the bottom of the first filter screen, and a length of the dust cleaning plate is the same as a width of the first filter screen.

[0016] By using the above technical solution, the position-limiting rod can limit a position of the threaded sleeve, so as to prevent the threaded sleeve from rotating freely; and the dust cleaning plate moves to remove the dust attached to the bottom of the first filter screen, so as to prevent a large amount of dust from being attached to the bottom of the first filter screen.

10 [0017] Further, the second filter screen is directly above the first filter screen, and a mesh diameter of the second filter screen is smaller than a mesh diameter of the first filter screen.

[0018] By using the above technical solution, the first filter screen can primarily filter the dust in the air, and the second filter screen can filter the dust in the air again, thus improving the dust removal effect.

15 [0019] Further, a handle is mounted on one side of an outer surface of the sealing door, a dust discharge pipe is connected at the middle of the bottom of the precipitator body, and a discharge valve is mounted on an outer surface of the dust discharge pipe.

20 [0020] By using the above technical solution, the user can open or close the sealing door by the handle, and the dust can be discharged through the dust discharge pipe. When the discharge valve is closed, the dust or air inside the precipitator body cannot be discharged from the dust discharge pipe.

[0021] Further, an operation panel is mounted at an upper portion of one side of the precipitator body, a bracket is mounted around the bottom of the precipitator body, and the operation panel is electrically connected with a motor and a driving shaft.

25 [0022] By using the above technical solution, the user can start or stop the motor and the driving motor through the operation panel, and the bracket can support the precipitator body, thus improving the stability of the precipitator body.

[0023] In summary, the present application mainly has the following beneficial effects:

[0024] 1. according to the present application, by providing the dust cleaning assembly, the

user can start the motor when the dust needs to be discharged from the dust discharge pipe, the motor operates to drive the screw rod to rotate, to drive the threaded sleeve to move, and further drive the dust cleaning plate to move; the dust cleaning plate scrapes off the dust attached to the first filter screen, so as to prevent the dust from blocking the first filter screen, and the dust falls onto the dust guide table; in addition, the screw rod drives the driving bevel gear to rotate during rotating, the driving bevel gear rotates to drive the driven bevel gear to rotate, to further drive the connecting shaft to rotate, and further drive the driving pulley to rotate, so as to drive the driven pulley to rotate through the driving belt, to further drive the rotating shaft to rotate, and the rotating shaft drives the dust cleaning bracket to rotate, so that the duct cleaning bracket removes the dust attached to the inner wall of the dust guide table, and the dust falls into the dust discharge pipe and is discharged through the dust discharge pipe, which improves the discharge efficiency of the dust, improve the cleaning efficiency of the dust, and prevent dust from accumulating at the internal lower portion of the precipitator body, which is difficult to be removed;

[0025] 2. according to the present application, by providing the anti-blocking assembly, the user can start the driving motor when the dust in the gas is filtered, the driving motor drives the rotating plates to rotate, to remove the dust on the second filter screen, so as to prevent the dust from blocking the second filter screen; meanwhile, when the rotating plates rotate to be in contact with the first filter screen, the rotating plates push the first filter screen to move downward as the rotating plates continue to rotate, and the first filter screen drives the sliding plate to move downward and compress the spring, so that the spring is compressed by force; when the rotating plates continue to rotate and are no longer in contact with the first filter screen, the spring recovers and pushes the first filter screen to move upward, so that the first filter screen can vibrate by such reciprocating, which prevents the dust from accumulating on the first filter screen and causing blockage, so that the flow efficiency of air flow after the first filter screen is improved, and the first filter screen and the second filter screen can continuously filter the air, thus improving the use effect of the first filter screen and second filter screen.

30 BRIEF DESCRIPTION OF THE DRAWINGS

[0026] FIG. 1 is an overall schematic perspective view of the present application;

[0027] FIG. 2 is an overall schematic cross-sectional view of the present application;

[0028] FIG. 3 is a partial schematic perspective view of a dust cleaning plate of the present application;

[0029] FIG. 4 is a partial schematic perspective view of a dust guide table of the present application;

[0030] FIG. 5 is an enlarged view of portion A in FIG. 2 of the present application; and

[0031] FIG. 6 is an enlarged view of portion B in FIG. 2 of the present application.

[0032] Reference numerals are as follows:

- | | | |
|----|-----------------------------|----------------------------|
| | 1, precipitator body; | 2, dust discharge pipe; |
| 10 | 3, gas exhaust pipe; | 4, activated carbon layer; |
| | 5, dust guide table; | 6, gas inlet pipe; |
| | 7, sealing door | 8, dust cleaning assembly; |
| | 801, motor; | 802, screw rod; |
| | 803, position-limiting rod; | 804, dust cleaning plate; |
| 15 | 805, threaded sleeve; | 806, driving bevel gear; |
| | 807, driven bevel gear; | 808, first fixed plate; |
| | 809, connecting shaft; | 810, driving pulley; |
| | 811, driving belt; | 812, second fixed plate; |
| | 813, rotating shaft; | 814, driven pulley; |
| 20 | 815, duct cleaning bracket; | 9, anti-blocking assembly; |
| | 901, driving motor; | 902, rotating plate; |
| | 903, driving shaft; | 904, sliding groove; |
| | 905, sliding plate; | 906, spring; |
| | 10, first filter screen; | 11, operation panel; |
| 25 | 2, mounting plate; | 13, second filter screen. |

DETAILED DESCRIPTION OF EMBODIMENTS

[0033] The technical solutions in embodiments of the present application are described clearly and completely in conjunction with the drawings in embodiments of the present application hereinafter. The embodiments described below with reference to the drawings are only exemplary embodiments which are used to explain the present application, and should not be construed to limit the present application.

[0034] The embodiment of the present application is described below according to the overall structure of the present application.

[0035] As shown in FIG. 1, FIG. 2 and FIG. 4, a high-efficiency electrostatic precipitator for a power plant includes a precipitator body 1, a gas exhaust pipe 3 is mounted at the top of the precipitator body 1, an activated carbon layer 4 is mounted inside the gas exhaust pipe 3, where filtered gas is purified by the activated carbon layer 4 by using the absorption function of the activated carbon layer 4, and is discharged through the gas exhaust pipe 3. A dust guide table 5 is fixed at an internal lower portion of the precipitator body 1, a gas inlet pipe 6 is connected at a lower portion of one side of the precipitator body 1, two mounting plates 12 are respectively fixed on internal two sides of the precipitator body 1, and a second filter screen 13 is mounted between the two mounting plates 12, where the second filter screen 13 is located directly above the first filter screen 10, a mesh diameter of the second filter screen 13 is smaller than a mesh diameter of the first filter screen 10. The first filter screen 10 can primarily filter the dust in the air, and the second filter screen 13 can filter the dust in the air again, thus improving the dust removal effect. A dust cleaning assembly 8 and an anti-blocking assembly 9 are provided inside the precipitator body 1. A sealing door 7 is mounted on an outer surface of the precipitator body 1, and a handle is mounted on one side of an outer surface of the sealing door 7, where the user can open or close the sealing door 7 by the handle. A dust discharge pipe 2 is connected at the middle of the bottom of the precipitator body 1, and a discharge valve is mounted on an outer surface of the dust discharge pipe 2, where dust can be discharged through the dust discharge pipe 2. When the discharge valve is closed, the dust or air inside the precipitator body 1 cannot be discharged from the dust discharge pipe 2. An operation panel 11 is mounted at an upper portion of one side of the precipitator body 1, a bracket is mounted around the bottom of the precipitator body 1, and the operation panel 11 is electrically connected with a motor 801 and a driving

motor 901 respectively, where the user can start or stop the motor 801 and driving motor 901 through the operation panel 11, and the bracket can support the precipitator body 1, thus improving the stability of the precipitator body 1.

[0036] Referring to FIG. 2, FIG. 3, FIG. 5 and FIG. 6, the dust cleaning assembly 8 includes a motor 801 which is mounted on one side of the precipitator body 1, a position-limiting rod 803 which is fixed inside the precipitator body 1, a first fixed plate 808 and a second fixed plate 812, a rotating shaft 813 is connected at the bottom of the second fixed plate 812 by a bearing, a duct cleaning bracket 815 is connected at a bottom end of the rotating shaft 813, a driven pulley 814 is sleeved on an outer wall of the rotating shaft 813, an output end of the motor 801 is connected with a screw rod 802 which extends into the precipitator body 1, a threaded sleeve 805 is sleeved on an outer wall of the screw rod 802, a dust cleaning plate 804 is fixed at the top of the threaded sleeve 805. The user can start the motor 801 when the dust needs to be discharged from the dust discharge pipe 2, and the motor 801 operates to drive the screw rod 802 to rotate, to further drive the threaded sleeve 805 to move, and further drive the dust cleaning plate 804 to move. The dust cleaning plate 804 scrapes off the dust attached to the first filter screen 10, and the dust falls onto the dust guide table 5 and is discharged through the dust discharge pipe 2. The position-limiting rod 803 penetrates through the threaded sleeve 805, one end of the screw rod 802 is connected with an inner wall of the precipitator body 1 by a bearing, the top of the dust cleaning plate 804 is in contact with the bottom of the first filter screen 10 and a length of the dust cleaning plate 804 is the same as a width of the first filter screen 10. The position-limiting rod 803 can limit a position of the threaded sleeve 805, so as to prevent the threaded sleeve 805 from rotating freely. A driving bevel gear 806 is mounted on one side of an outer surface of the screw rod 802, a connecting shaft 809 is connected at the top and the bottom of the first fixed plate 808 by bearings, a driving pulley 810 is mounted at a bottom end of the connecting shaft 809, a driving belt 811 is sleeved on the driving pulley 810 and the driven pulley 814, and a driven bevel gear 807 is mounted at a top end of the connecting shaft 809. The driving bevel gear 806 is meshed with the driven bevel gear 807, the duct cleaning bracket 815 is located inside the dust guide table 5, the driving bevel gear 806 rotates to drive the driving bevel gear 807 to rotate, to further drive the connecting shaft 809 to rotate. Two sides of the duct cleaning bracket 815 are in contact with an inner wall of the dust guide table 5.

[0037] Referring to FIG. 1 and FIG. 2, the anti-blocking assembly 9 includes a driving

motor 901 which is mounted on the outer surface of the precipitator body 1 and sliding grooves 904 which are defined on the internal two sides of the precipitator body 1, a spring 906 is fixed at an internal lower portion of each sliding groove 904, a sliding plate 905 is provided inside each sliding groove 904, a first filter screen 10 is connected between the two sliding plates 905, an output end of the driving motor 901 is connected with a driving shaft 903 which extends into the precipitator body 1. The user can start the driving motor 901 when the dust in the gas is filtered, the driving motor 901 operates to drive the rotating plates 902 to rotate, the rotating plates 902 can remove the dust on the second filter screen 13 when rotating. Meanwhile, when the rotating plates 902 rotate to be in contact with the first filter screen 10, the rotating plates 902 push the first filter screen 10 to move downward as the rotating plates 902 continue to rotate, and the first filter screen 10 drives the sliding plate 905 to move downward and compresses the spring 906, so that the spring 906 is compressed by force; when the rotating plates 902 continue to rotate and are no longer in contact with the first filter screen 10, the spring 906 recovers and pushes the first filter screen 10 to move upward, so that the first filter screen 10 can vibrate by such reciprocating, which prevents the dust from accumulating on the first filter screen 10 and causing blockage. Multiple rotating plates 902 are fixed on an outer wall of the driving shaft 903, the top of one rotating plate 902 is in contact with the second filter screen 13, the second filter screen 13 is semi-circular, the first filter screen 10 is slidably connected with sliding groove 904 through the sliding plate 905, and the bottom of the sliding plate 905 is in contact with a top end of the spring 906. The rotating plates 902 can remove the dust attached to the second filter screen 13 during rotation, so as to prevent the second filter screen 13 from being blocked.

[0038] The implementation principle of this embodiment is as follows: firstly, the user mounts the precipitator and turns on the power supply, gas enters the precipitator body 1 through the gas inlet pipe 6, and is preliminarily filtered by the first filter screen 10, the filtered gas continues to flow upward and is filtered by the second filter screen 13, the gas enters the gas exhaust pipe 3 after being filtered by the second filter screen 13, and then is discharged after being purified by the activated carbon layer 4 by using the absorption function of the activated carbon layer 4, the user can start the driving motor 901 during gas filtration, the driving motor 901 can work to drive the rotating plates 902 to rotate, the rotating plates 902 can remove the dust on the second filter screen 13 when rotating, so as to prevent the dust from blocking the second filter screen 13; in addition, when the rotating

plates 902 rotate to be in contact with the first filter screen 10, the rotating plates 902 push the first filter screen 10 to move downward as the rotating plates 902 continue to rotate, and the first filter screen 10 drives the sliding plate 905 to move downward and compresses the spring 906, so that the spring 906 is compressed by force; when the rotating plates 902 continue to rotate and are no longer in contact with the first filter screen 10, the spring 806 recovers and pushes the first filter screen 10 to move upward, so that the first filter screen 10 can vibrate by such reciprocating, which prevents the dust from accumulating on the first filter screen 10 and causing blockage; when the dust needs to be discharged from the dust discharge pipe 2, the user can open the discharge valve and start the motor 801, and the motor 801 operates to drive the screw rod 802 to rotate, to further drive the threaded sleeve 805 to move, and further drive the dust cleaning plate 804 to move, the dust cleaning plate 804 scrapes off the dust attached to the first filter screen 10, and the dust falls onto the dust guide table 5; the screw rod 802 drives the driving bevel gear 806 to rotate during rotation, the driving bevel gear 806 rotates to drive the driven bevel gear 807 to rotate, to further drive the connecting shaft 809 to rotate, and further drive the driving pulley 810 to rotate, so as to drive the driven pulley 814 to rotate through the driving belt 811 to further drive the rotating shaft 813 to rotate, and the rotating shaft 813 drives the dust cleaning bracket 815 to rotate, so that the duct cleaning bracket 815 removes the dust attached to the inner wall of the dust guide table 5, and the dust falls into the dust discharge pipe 2 and is discharged through the dust discharge pipe 2.

[0039] Although embodiments of the present application have been shown and described, this specific embodiment is only an explanation of the present application and is not a limitation of the present application, the specific features, structures, materials or characteristics described may be combined in any one or more embodiments or examples in a suitable manner; after reading this specification, those skilled in the art can make modifications, substitutions and modifications to the embodiments with no creative contributions as needed without departing from the principles and purposes of the present application, as long as these modifications, substitutions and variations are within the scope of the claims of the present application, they are protected by the patent law.

CLAIMS

1. A high-efficiency electrostatic precipitator for a power plant, comprising a precipitator body (1), wherein a gas exhaust pipe (3) is mounted at the top of the precipitator body (1), an
5 activated carbon layer (4) is mounted inside the gas exhaust pipe (3), a dust guide table (5) is fixed at an internal lower portion of the precipitator body (1), a gas inlet pipe (6) is connected at a lower portion of one side of the precipitator body (1), two mounting plates (12) are respectively fixed on internal two sides of the precipitator body (1), a second filter screen (13) is mounted between the two mounting plates (12), a dust cleaning assembly (8) and an
10 anti-blocking assembly (9) are provided inside the precipitator body (1), and a sealing door (7) is mounted on an outer surface of the precipitator body (1).

2. The high-efficiency electrostatic precipitator for the power plant according to claim 1, wherein the dust cleaning assembly (8) comprises a motor (801) which is mounted on one
15 side of the precipitator body (1), a position-limiting rod (803) which is fixed inside the precipitator body (1), a first fixed plate (808) and a second fixed plate (812), a rotating shaft (813) is connected at the bottom of the second fixed plate (812) by a bearing, a duct cleaning bracket (815) is connected at a bottom end of the rotating shaft (813), a driven pulley (814) is sleeved on an outer wall of the rotating shaft (813), an output end of the motor (801) is
20 connected with a screw rod (802) which extends into the precipitator body (1), a threaded sleeve (805) is sleeved on an outer wall of the screw rod (802), a dust cleaning plate (804) is fixed at the top of the threaded sleeve (805), a driving bevel gear (806) is mounted on one side of an outer surface of the screw rod (802), a connecting shaft (809) is connected at the top and the bottom of the first fixed plate (808) by bearings, a driving pulley (810) is mounted
25 at a bottom end of the connecting shaft (809), a driving belt (811) is sleeved on the driving pulley (810) and the driven pulley (814), and a driven bevel gear (807) is mounted at a top end of the connecting shaft (809).

3. The high-efficiency electrostatic precipitator for the power plant according to claim 2, wherein the driving bevel gear (806) is meshed with the driven bevel gear (807), the duct
30 cleaning bracket (815) is located inside the dust guide table (5), and two sides of the duct

cleaning bracket (815) are in contact with an inner wall of the dust guide table (5).

4. The high-efficiency electrostatic precipitator for the power plant according to claim 2, wherein the anti-blocking assembly (9) comprises a driving motor (901) which is mounted on
5 the outer surface of the precipitator body (1) and sliding grooves (904) which are defined on the internal two sides of the precipitator body (1), a spring (906) is fixed at an internal lower portion of each sliding groove (904), a sliding plate (905) is provided inside each sliding groove (904), a first filter screen (10) is connected between the two sliding plates (905), an
10 output end of the driving motor (901) is connected with a driving shaft (903) which extends into the precipitator body (1), and a plurality of rotating plates (902) are fixed on an outer wall of the driving shaft (903).

5. The high-efficiency electrostatic precipitator for the power plant according to claim 4, wherein the top of one of the plurality of rotating plates (902) is in contact with the second
15 filter screen (13), the second filter screen (13) is semi-circular, the first filter screen (10) is slidably connected with the sliding groove (904) by the sliding plate (905), and the bottom of the sliding plate (905) is in contact with a top end of the spring (906).

6. The high-efficiency electrostatic precipitator for the power plant according to claim 2,
20 wherein the position-limiting rod (803) penetrates through the threaded sleeve (805), one end of the screw rod (802) is connected with an inner wall of the precipitator body (1) by a bearing, the top of the dust cleaning plate (804) is in contact with the bottom of the first filter screen (10), and a length of the dust cleaning plate (804) is the same as a width of the first filter screen (10).

25

7. The high-efficiency electrostatic precipitator for the power plant according to claim 4, wherein the second filter screen (13) is directly above the first filter screen (10), and a mesh diameter of the second filter screen (13) is smaller than a mesh diameter of the first filter screen (10).

30

8. The high-efficiency electrostatic precipitator for the power plant according to claim 1, wherein a handle is mounted on one side of an outer surface of the sealing door (7), a dust discharge pipe (2) is connected at the middle of the bottom of the precipitator body (1), and a discharge valve is mounted on an outer surface of the dust discharge pipe (2).

5

9. The high-efficiency electrostatic precipitator for the power plant according to claim 1, wherein an operation panel (11) is mounted at an upper portion of one side of the precipitator body (1), a bracket is mounted around the bottom of the precipitator body (1), and the operation panel (11) is electrically connected with a motor (801) and a driving shaft (901).

10

Ansprüche

1. Hocheffizienter elektrischer Staubentferner für ein Kraftwerk, umfassend einen Staubentferner-Hauptkörper (1), dadurch gekennzeichnet, dass auf der Oberseite des Staubentferner-Hauptkörpers (1) ein Entlüftungsrohr (3) montiert ist, innerhalb dessen eine Aktivkohleschicht (4) montiert ist, auf der inneren Unterseite des Staubentferner-Hauptkörpers (1) unten ein Staubleittisch (5) fixiert ist, an eine Seite des Staubentferner-Hauptkörpers (1) unten ein Lufteinlassrohr (6) angeschlossen ist, auf beiden Innenseiten des Staubentferner-Hauptkörpers (1) jeweils eine Montageplatte (12) montiert ist, zwischen den beiden Montageplatten (12) ein zweites Filtersieb (13) montiert ist, innerhalb des Staubentferner-Hauptkörpers (1) jeweils eine Staubreinigungsbaugruppe (8) und eine Antiblockierungsbaugruppe (9) angeordnet sind, auf der äußeren Oberfläche des Staubentferner-Hauptkörpers (1) eine Dichtungstür (7) montiert ist.
2. Hocheffizienter elektrischer Staubentferner für ein Kraftwerk nach Anspruch 1, dadurch gekennzeichnet, dass die Staubreinigungsbaugruppe (8) eine Elektromaschine (801), die auf einer Seite des Staubentferner-Hauptkörpers (1) montiert ist, eine Begrenzungsstange (803), die innerhalb des Staubentferner-Hauptkörpers (1) fixiert ist, eine erste Fixierplatte (808) und eine zweite Fixierplatte (812) umfasst, an deren Unterseite eine Drehwelle (813) durch ein Lager angeschlossen ist, an ein unteres Ende der Drehwelle (813) ein Entstaubungsgestell (815) angeschlossen ist, an die Außenwand der Drehwelle (813) eine Abtriebsriemenscheibe (814) hülsenartig angeschlossen ist, an ein Ausgangsende der Elektromaschine (801) eine sich ins Innere des Staubentferner-Hauptkörpers (1) erstreckende Spindel (802) angeschlossen ist, an deren Außenwand eine Gewindehülse (805) hülsenartig angeschlossen ist, auf deren Oberseite eine Entstaubungsplatte (804) fixiert ist, auf einer Seite der äußeren Oberfläche der Spindel (802) ein Antriebskegelzahnrad (806) montiert ist, an die Oberseite und die Unterseite der ersten Fixierplatte (808) durch ein Lager eine Verbindungswelle (809) angeschlossen ist, an deren unteren Ende eine Antriebsriemenscheibe (810) montiert ist, zwischen der Antriebsriemenscheibe (810) und der Abtriebsriemenscheibe (814) ein Riemen (811) hülsenartig angeschlossen ist, am oberen Ende der Verbindungswelle (809) ein Abtriebskegelzahnrad (807) montiert ist.
3. Hocheffizienter elektrischer Staubentferner für ein Kraftwerk nach Anspruch 2, dadurch

gekennzeichnet, dass das Antriebskegelzahnrad (806) mit dem Abtriebskegelzahnrad (807) kämmt, sich das Entstaubungsgestell (815) innerhalb des Staubleittisches (5) befindet, beide Seiten des Entstaubungsgestells (815) jeweils in Kontakt mit der Innenwand des Staubleittisches (5) stehen.

5

4. Hocheffizienter elektrischer Staubentferner für ein Kraftwerk nach Anspruch 2, dadurch gekennzeichnet, dass die Antiblockierungsbaugruppe (9) eine an der äußeren Oberfläche des Staubentferner-Hauptkörpers (1) montierte Antriebselektromaschine (901) und eine auf beiden Innenseiten des Staubentferner-Hauptkörpers (1) angeordnete Kulisse (904) umfasst, auf deren inneren Unterseite eine Feder (906) fixiert ist, und innerhalb der Kulisse (904) eine Gleitplatte (905) angeordnet ist, zwischen den beiden Gleitplatten (905) ein erstes Filtersieb (10) angeschlossen ist, an ein Ausgangsende der Antriebselektromaschine (901) eine sich ins Innere des Staubentferner-Hauptkörpers (1) erstreckende Antriebswelle (903) angeschlossen ist, an deren Außenwand mehrere rotierende Platten (902) fixiert sind.

15

5. Hocheffizienter elektrischer Staubentferner für ein Kraftwerk nach Anspruch 4, dadurch gekennzeichnet, dass die Oberseite einer der rotierenden Platten (902) in Kontakt mit dem zweiten Filtersieb (13) steht, das halbkreisförmig ist, das erste Filtersieb (10) gleitend mit der Kulisse (904) durch die Gleitplatte (905) verbunden ist, deren Unterseite mit dem oberen Ende der Feder (906) in Kontakt steht.

20

6. Hocheffizienter elektrischer Staubentferner für ein Kraftwerk nach Anspruch 2, dadurch gekennzeichnet, dass die Begrenzungsstange (803) die Gewindehülse (805) durchsetzt, ein Ende der Spindel (802) mit der Innenwand des Staubentferner-Hauptkörpers (1) durch ein Lager verbunden ist, die Oberseite der Entstaubungsplatte (804) in Kontakt mit der Unterseite des ersten Filtersiebs (10) steht, die Länge der Entstaubungsplatte (804) der Breite des ersten Filtersiebs (10) gleich ist.

25

7. Hocheffizienter elektrischer Staubentferner für ein Kraftwerk nach Anspruch 4, dadurch gekennzeichnet, dass sich das zweite Filtersieb (13) direkt über dem ersten Filtersieb (10) befindet, und der Maschendurchmesser des zweiten Filtersiebs (13) kleiner ist als der Maschendurchmesser des ersten Filtersiebs (10).

30

8. Hocheffizienter elektrischer Staubentferner für ein Kraftwerk nach Anspruch 1, dadurch gekennzeichnet, dass auf einer Seite der äußeren Oberfläche der Dichtungstür (7) ein

35

Griff montiert ist, an die Mittelposition der Unterseite des Staubentferner-Hauptkörpers (1) ein Abflussrohr (2) angeschlossen ist, auf dessen äußeren Oberfläche ein Abflussventil montiert ist.

- 5 9. Hocheffizienter elektrischer Staubentferner für ein Kraftwerk nach Anspruch 1, dadurch gekennzeichnet, dass über einer Seite des Staubentferner-Hauptkörpers (1) ein Bedienpanel (11) montiert ist, auf der Unterseite des Staubentferner-Hauptkörpers (1) allseitig Träger montiert sind, das Bedienpanel (11) jeweils mit der Elektromaschine (801) und der Antriebselektromaschine (901) elektrisch verbunden ist.

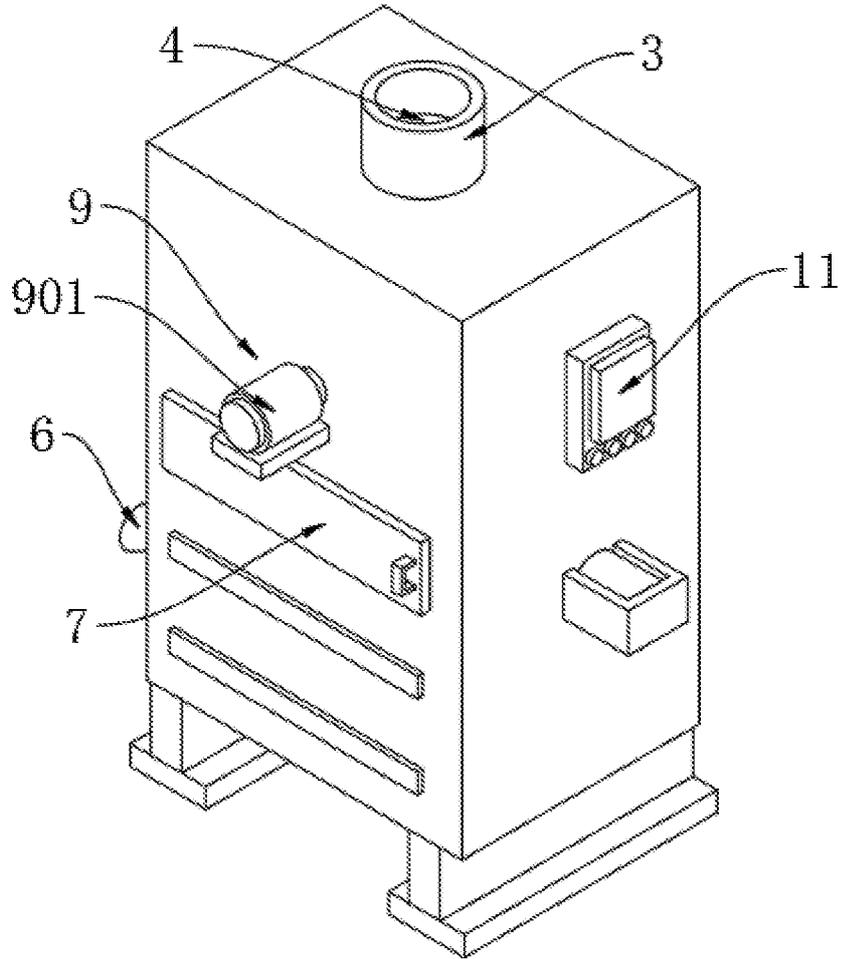


FIG. 1

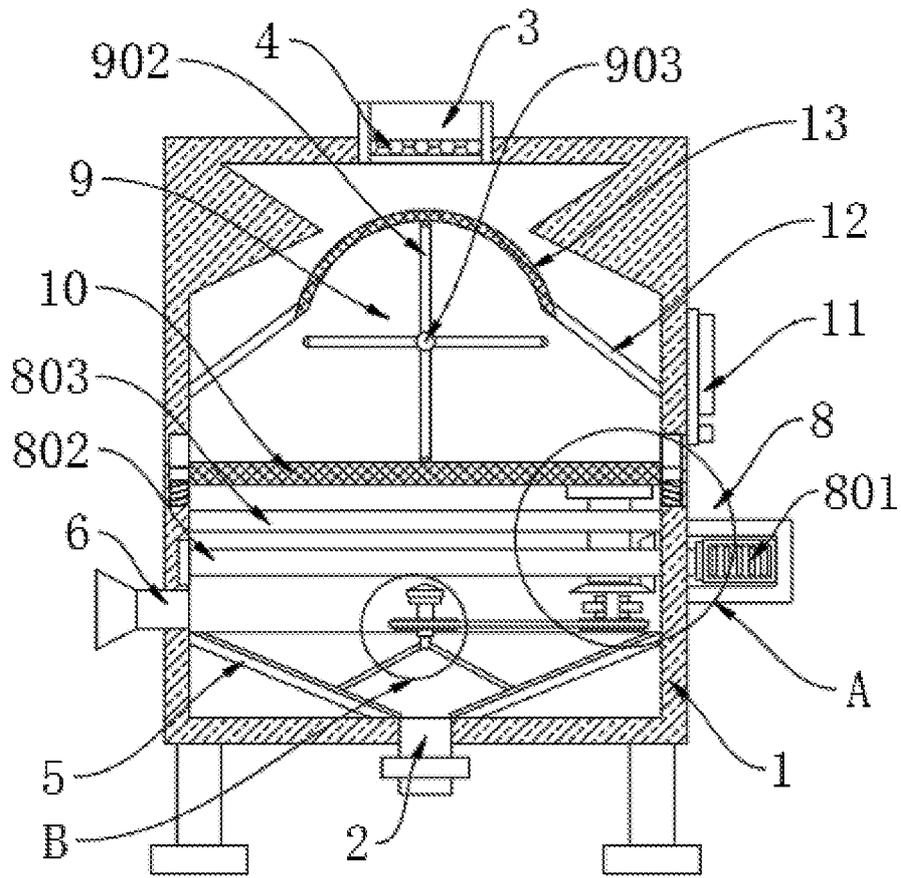


FIG. 2

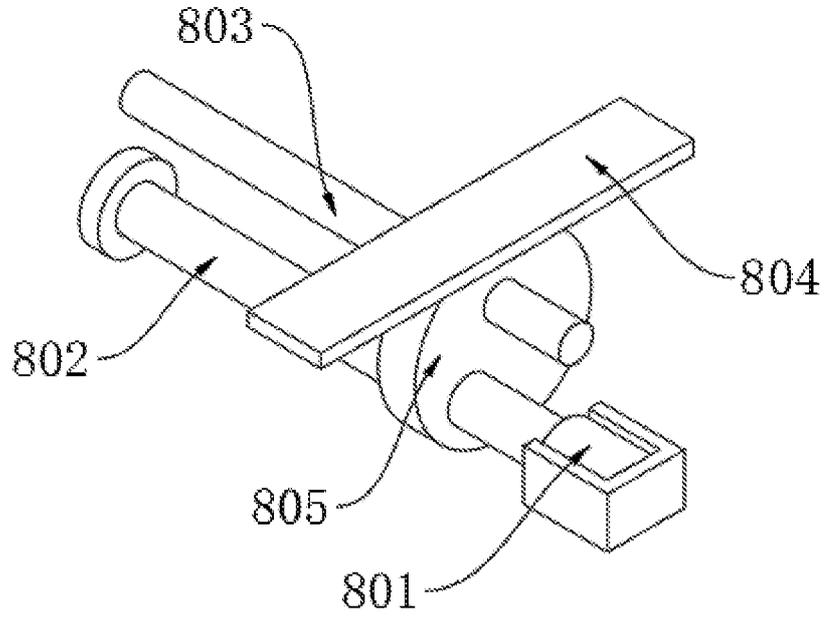


FIG. 3

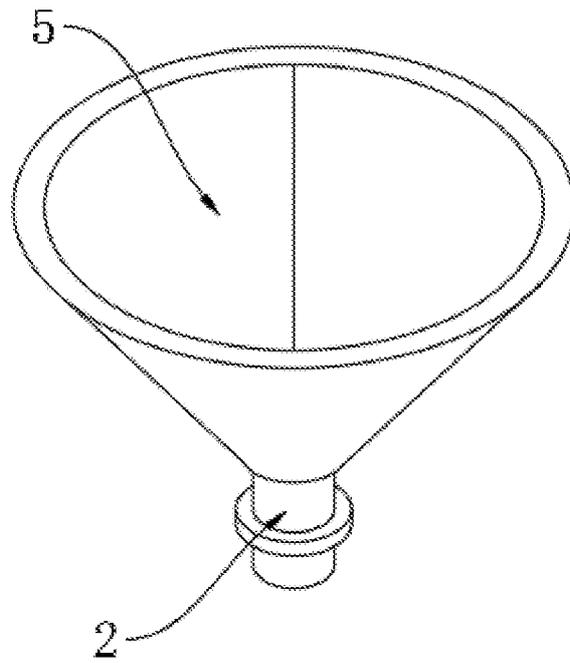


FIG. 4

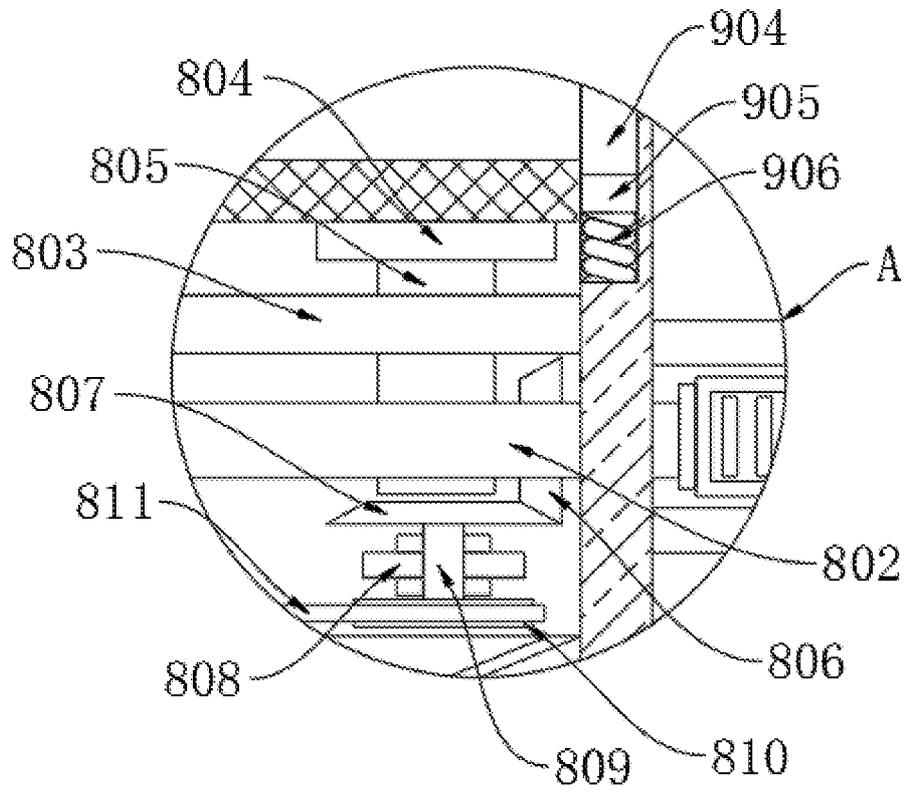


FIG. 5

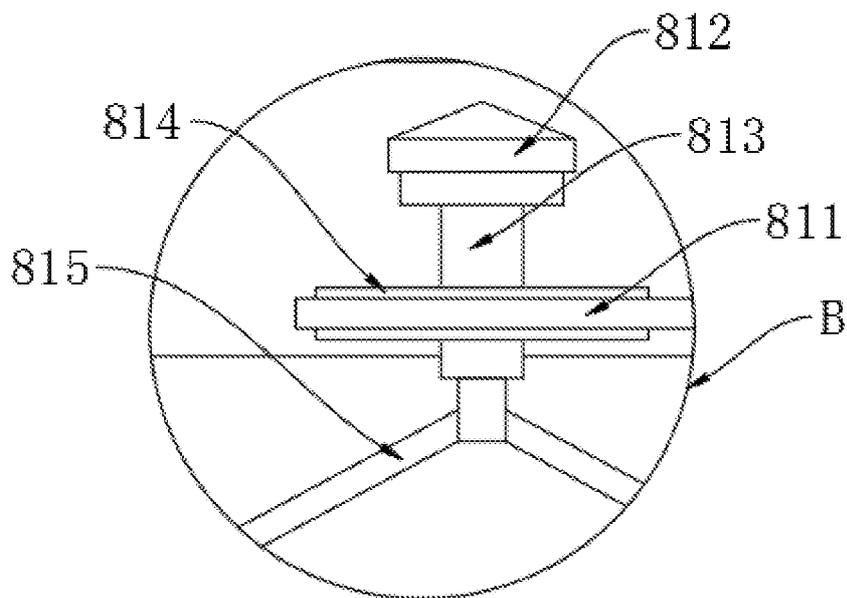


FIG. 6