

AN EASY-TO-ASSEMBLE-AND-DISASSEMBLE AIR SUPPLY OUTLET

Utility Model Patent — English Translation

English translation prepared for reference only. In case of any discrepancy, the original Chinese patent publication (CN 208382489 U) shall prevail.

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(57) ABSTRACT

The present utility model provides an easy-to-assemble-and-disassemble air supply outlet, comprising a cylindrical box body, a filter, and a regulating valve. The cylindrical box body comprises an inner cavity; a filter holder frame matching the inner cavity is provided on the inner cavity and is slidably connected to a side wall of the inner cavity. A socket matching the shape of the filter is defined through the filter holder frame and communicates with the inner cavity, and the filter is fixedly connected to the socket. A motor is fixedly connected to the top of the inner cavity and is in screw-drive connection with the filter holder frame. A diffuser plate is hinged to the bottom of the cylindrical box body via a torsion spring, and a plurality of air discharge ducts are defined through the diffuser plate. When maintenance or replacement of the filter is required, the diffuser plate is opened, and the motor drives the filter holder frame to move downward; the filter holder frame slides downward along the side wall of the inner cavity to a required height position, and the filter is then removed from the socket for maintenance or replacement. The structure is simple and the operation is simple and convenient, and the convenience of assembling and disassembling the filter can be improved and the efficiency of filter replacement or maintenance enhanced.

CLAIMS

1. An easy-to-assemble-and-disassemble air supply outlet, comprising a cylindrical box body (1), a filter (2), and a regulating valve (3), the regulating valve (3) being fixedly connected at an air inlet of the cylindrical box body (1), characterized in that the cylindrical box body (1) comprises an inner cavity (100);
a filter holder frame (4) matching the inner cavity (100) is provided on the inner cavity (100), and the filter holder frame (4) is slidably connected to a side wall of the inner cavity (100);
a socket (40) matching the shape of the filter (2) is defined through the filter holder frame (4), the socket (40) communicates with the inner cavity (100), and the filter (2) is fixedly connected to the socket (40);
a motor (5) is fixedly connected to the top of the inner cavity (100), and the motor (5) is in screw-drive connection with the filter holder frame (4);
and a diffuser plate (6) is hinged to the bottom of the cylindrical box body (1) via a torsion spring, with a plurality of air discharge ducts (60) defined through the diffuser plate (6).
2. The easy-to-assemble-and-disassemble air supply outlet according to claim 1, characterized in that guide rods (7) are fixedly connected to both opposite sides of the filter holder frame (4), guide slots (101) matching the guide rods (7) are provided on the cylindrical box body (1), and the guide rods (7) are inserted in the guide slots (101) and slidably connected therewith.
3. The easy-to-assemble-and-disassemble air supply outlet according to claim 1, characterized in that a limiting ring (41) is provided on the filter holder frame (4) at one side of the socket (40), and the top of the filter (2) abuts against the bottom of the limiting ring (41).
4. The easy-to-assemble-and-disassemble air supply outlet according to claim 1, characterized in that eccentric stop wheels (8) are rotatably connected to both opposite sides of the bottom of the filter holder frame (4), and the tops of the eccentric stop wheels (8) abut against the bottom of the filter (2).
5. The easy-to-assemble-and-disassemble air supply outlet according to claim 3, characterized in that a cushioning gasket (9) matching the shape of the limiting ring (41) is bonded to the bottom of the limiting ring (41).
6. The easy-to-assemble-and-disassemble air supply outlet according to claim 1, characterized in that a clasp hook (10) is hinged to one side of the diffuser plate (6), and a clasp handle (11) matching the clasp hook (10) is fixedly connected to one side of the cylindrical box body (1).

DESCRIPTION

An Easy-to-Assemble-and-Disassemble Air Supply Outlet

TECHNICAL FIELD

[0001] The present utility model relates to the technical field of air purification equipment, and in particular discloses an easy-to-assemble-and-disassemble air supply outlet.

BACKGROUND ART

[0002] Air supply outlets are widely used in the prevention and control of indoor air pollution in various public places, and are widely used in the new construction and renovation of clean projects in the pharmaceutical, health, electronics, chemical and other industries; air filtered through the air supply outlets is delivered indoors, which effectively ensures that indoor air quality reaches an ideal state. An air supply outlet mainly consists of a box body, a diffuser plate, a filter, and a regulating valve, among which the filter is a consumable requiring periodic replacement. At present, most air supply outlets are installed on indoor ceilings, and the filter is fixedly installed in the box body; when replacing the filter, a ladder is required for the operation, and the replacement process is cumbersome with low efficiency.

SUMMARY OF THE UTILITY MODEL

[0003] In view of this, it is necessary, in addressing the problems of the prior art, to provide an easy-to-assemble-and-disassemble air supply outlet having a unique structure, by which the assembly and disassembly of the filter are simpler and more convenient, and the efficiency of filter replacement or maintenance is improved.

[0004] To solve the problems of the prior art, the present utility model discloses an easy-to-assemble-and-disassemble air supply outlet, comprising a cylindrical box body, a filter, and a regulating valve, the regulating valve being fixedly connected at an air inlet of the cylindrical box body; the cylindrical box body comprises an inner cavity; a filter holder frame matching the inner cavity is provided on the inner cavity and is slidably connected to a side wall of the inner cavity; a socket matching the shape of the filter is defined through the filter holder frame and communicates with the inner cavity, and the filter is fixedly connected to the socket; a motor is fixedly connected to the top of the inner cavity and is in screw-drive connection with the filter holder frame; a diffuser plate is hinged to the bottom of the cylindrical box body via a torsion spring, and a plurality of air discharge ducts are defined through the diffuser plate.

[0005] Preferably, guide rods are fixedly connected to both opposite sides of the filter holder frame, guide slots matching the guide rods are provided on the cylindrical box body, and the guide rods are inserted in the guide slots and slidably connected therewith.

[0006] Preferably, a limiting ring is provided on the filter holder frame at one side of the socket, and the top of the filter abuts against the bottom of the limiting ring.

[0007] Preferably, eccentric stop wheels are rotatably connected to both opposite sides of the bottom of the filter holder frame, and the tops of the eccentric stop wheels abut against the bottom of the filter.

[0008] Preferably, a cushioning gasket matching the shape of the limiting ring is bonded to the bottom of the limiting ring.

[0009] Preferably, a clasp hook is hinged to one side of the diffuser plate, and a clasp handle matching the clasp hook is fixedly connected to one side of the cylindrical box body.

[0010] The present utility model has the following beneficial effects: the present utility model discloses an easy-to-assemble-and-disassemble air supply outlet having a unique structure; when maintenance or replacement of the filter is required, the diffuser plate is opened, and the motor drives the filter holder frame to move downward; the filter holder frame slides downward along the side wall of the inner cavity to a required height position, and the filter is then removed from the socket for maintenance or replacement. After the filter replacement is completed, the motor drives the filter holder frame to rise back into the inner cavity to achieve

resetting, and the diffuser plate is closed so that the air supply outlet enters a usable state again. The structure is simple and the operation is simple and convenient; the convenience of assembling and disassembling the filter can be improved and the efficiency of filter replacement or maintenance enhanced. When the motor drives the filter holder frame to slide up and down along the side wall of the inner cavity, the guide rods slide up and down along the guide slots, improving the movement stability of the filter holder frame. The limiting ring provided at one side of the socket can limit the installation position of the filter and prevent the filter from shifting during use. Before removing the filter from the socket, the eccentric stop wheels are rotated to remove the support of the eccentric stop wheels for the filter; after a new filter is loaded into the socket, the eccentric stop wheels are rotated so that the eccentric stop wheels support the filter, preventing the filter from falling off the socket. The cushioning gasket is bonded to the bottom of the limiting ring, and after the filter is loaded into the socket, the top of the filter abuts against the cushioning gasket, reducing vibration between the filter and the filter holder frame during use. After the filter replacement is completed, the clasp hook is fastened onto the clasp handle, improving the mounting stability of the diffuser plate and reducing vibration between the diffuser plate and the cylindrical box body.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] FIG. 1 is a schematic cross-sectional structural view of the air supply outlet of the present utility model.

[0012] FIG. 2 is a schematic external structural view of the air supply outlet of the present utility model.

[0013] FIG. 3 is a schematic structural view of the filter holder frame of the present utility model.

[0014] The reference numerals are as follows: cylindrical box body 1; inner cavity 100; guide slot 101; filter 2; regulating valve 3; filter holder frame 4; socket 40; limiting ring 41; motor 5; diffuser plate 6; air discharge duct 60; guide rod 7; eccentric stop wheel 8; cushioning gasket 9; clasp hook 10; clasp handle 11.

DETAILED DESCRIPTION OF EMBODIMENTS

[0015] To enable a further understanding of the features, technical means, and the specific objectives and functions achieved by the present utility model, the present utility model is described in further detail below in conjunction with the accompanying drawings and the detailed description of embodiments.

[0016] Reference is made to FIG. 1 through FIG. 3.

[0017] An embodiment of the present utility model discloses an easy-to-assemble-and-disassemble air supply outlet, comprising a cylindrical box body 1, a filter 2, and a regulating valve 3, the regulating valve 3 being fixedly connected at an air inlet of the cylindrical box body 1; the cylindrical box body 1 comprises an inner cavity 100; a filter holder frame 4 matching the inner cavity 100 is provided on the inner cavity 100 and is slidably connected to a side wall of the inner cavity 100; a socket 40 matching the shape of the filter 2 is defined through the filter holder frame 4, the socket 40 communicates with the inner cavity 100, and the filter 2 is fixedly connected to the socket 40; a motor 5 is fixedly connected to the top of the inner cavity 100 and is in screw-drive connection with the filter holder frame 4; a diffuser plate 6 is hinged to the bottom of the cylindrical box body 1 via a torsion spring, and a plurality of air discharge ducts 60 are defined through the diffuser plate 6.

[0018] In specific use, when maintenance or replacement of the filter 2 is required, the diffuser plate 6 is opened, and the motor 5 drives the filter holder frame 4 to move downward; the filter

holder frame 4 slides downward along the side wall of the inner cavity 100 to a required height position, and the filter 2 is then removed from the socket 40 for maintenance or replacement. After the replacement of the filter 2 is completed, the motor 5 drives the filter holder frame 4 to rise back into the inner cavity 100 to achieve resetting, and the diffuser plate 6 is closed so that the air supply outlet enters a usable state again. The structure is simple and the operation is simple and convenient; the convenience of assembling and disassembling the filter 2 can be improved and the efficiency of replacement or maintenance of the filter 2 enhanced.

[0019] Based on the above embodiment, guide rods 7 are fixedly connected to both opposite sides of the filter holder frame 4, guide slots 101 matching the guide rods 7 are provided on the cylindrical box body 1, and the guide rods 7 are inserted in the guide slots 101 and slidably connected therewith. When the motor 5 drives the filter holder frame 4 to slide up and down along the side wall of the inner cavity 100, the guide rods 7 slide up and down along the guide slots 101, improving the movement stability of the filter holder frame 4.

[0020] Based on the above embodiment, a limiting ring 41 is provided on the filter holder frame 4 at one side of the socket 40, and the top of the filter 2 abuts against the bottom of the limiting ring 41. The limiting ring 41 provided at one side of the socket 40 can limit the installation position of the filter 2 and prevent the filter 2 from shifting during use.

[0021] Based on the above embodiment, eccentric stop wheels 8 are rotatably connected to both opposite sides of the bottom of the filter holder frame 4, and the tops of the eccentric stop wheels 8 abut against the bottom of the filter 2. Before removing the filter 2 from the socket 40, the eccentric stop wheels 8 are rotated to remove the support of the eccentric stop wheels 8 for the filter 2; after a new filter 2 is loaded into the socket 40, the eccentric stop wheels 8 are rotated so that the eccentric stop wheels 8 support the filter 2, preventing the filter 2 from falling off the socket 40.

[0022] Based on the above embodiment, a cushioning gasket 9 matching the shape of the limiting ring 41 is bonded to the bottom of the limiting ring 41. By bonding the cushioning gasket 9 to the bottom of the limiting ring 41, after the filter 2 is loaded into the socket 40, the top of the filter 2 abuts against the cushioning gasket 9, reducing vibration between the filter 2 and the filter holder frame 4 during use.

[0023] Based on the above embodiment, a clasp hook 10 is hinged to one side of the diffuser plate 6, and a clasp handle 11 matching the clasp hook 10 is fixedly connected to one side of the cylindrical box body 1. After the replacement of the filter 2 is completed, the clasp hook 10 is fastened onto the clasp handle 11, improving the mounting stability of the diffuser plate 6 and reducing vibration between the diffuser plate 6 and the cylindrical box body 1.

[0024] The above embodiments merely express one implementation of the present utility model, and the description thereof is relatively specific and detailed, but it should not be construed as limiting the patent scope of the present utility model. It should be noted that, for a person of ordinary skill in the art, various modifications and improvements may further be made without departing from the concept of the present utility model, and such modifications and improvements all fall within the protection scope of the present utility model. Therefore, the protection scope of the present utility model patent shall be subject to the appended claims.

DRAWINGS

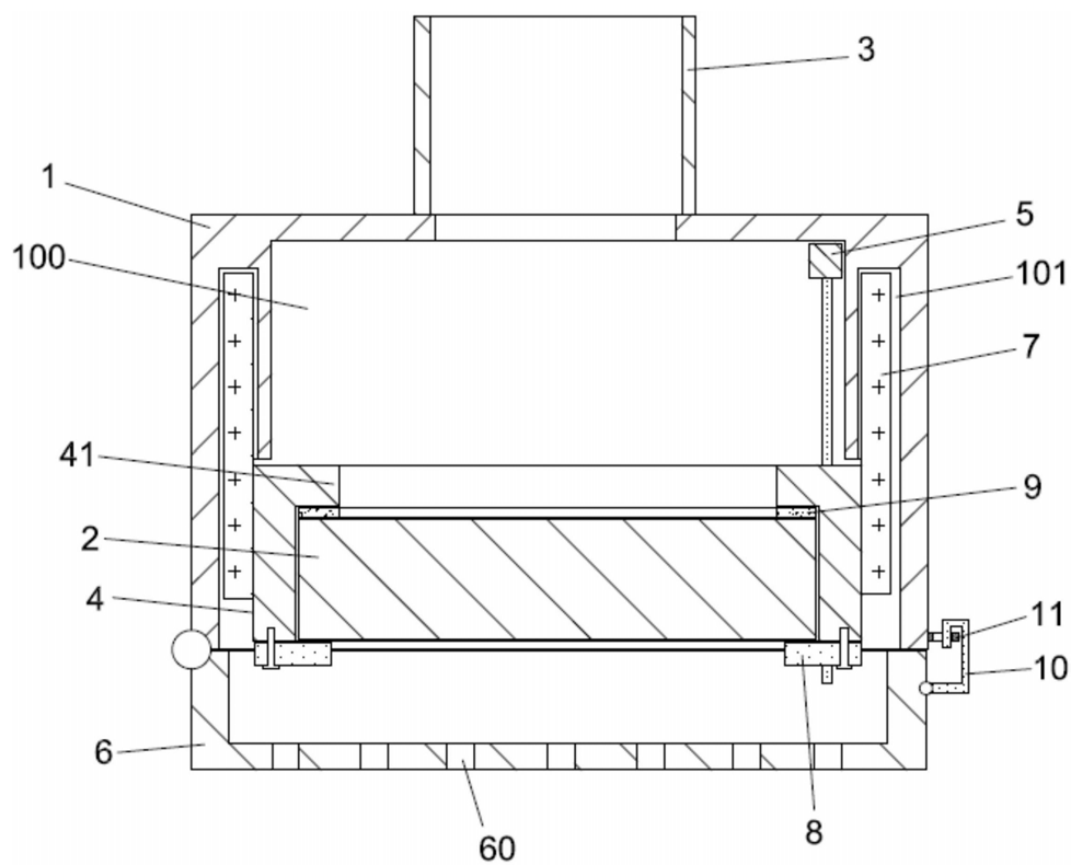


FIG. 1 — Schematic cross-sectional structural view of the air supply outlet

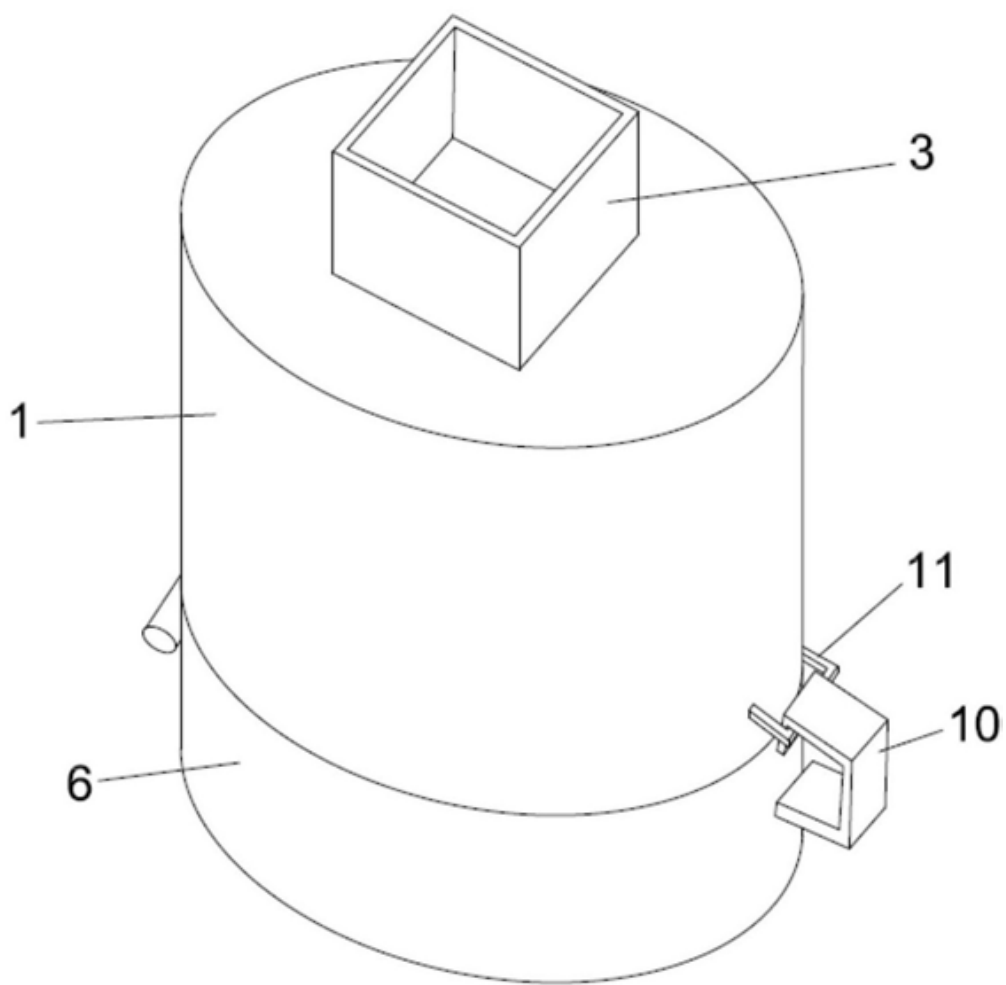


FIG. 2 — Schematic external structural view of the air supply outlet

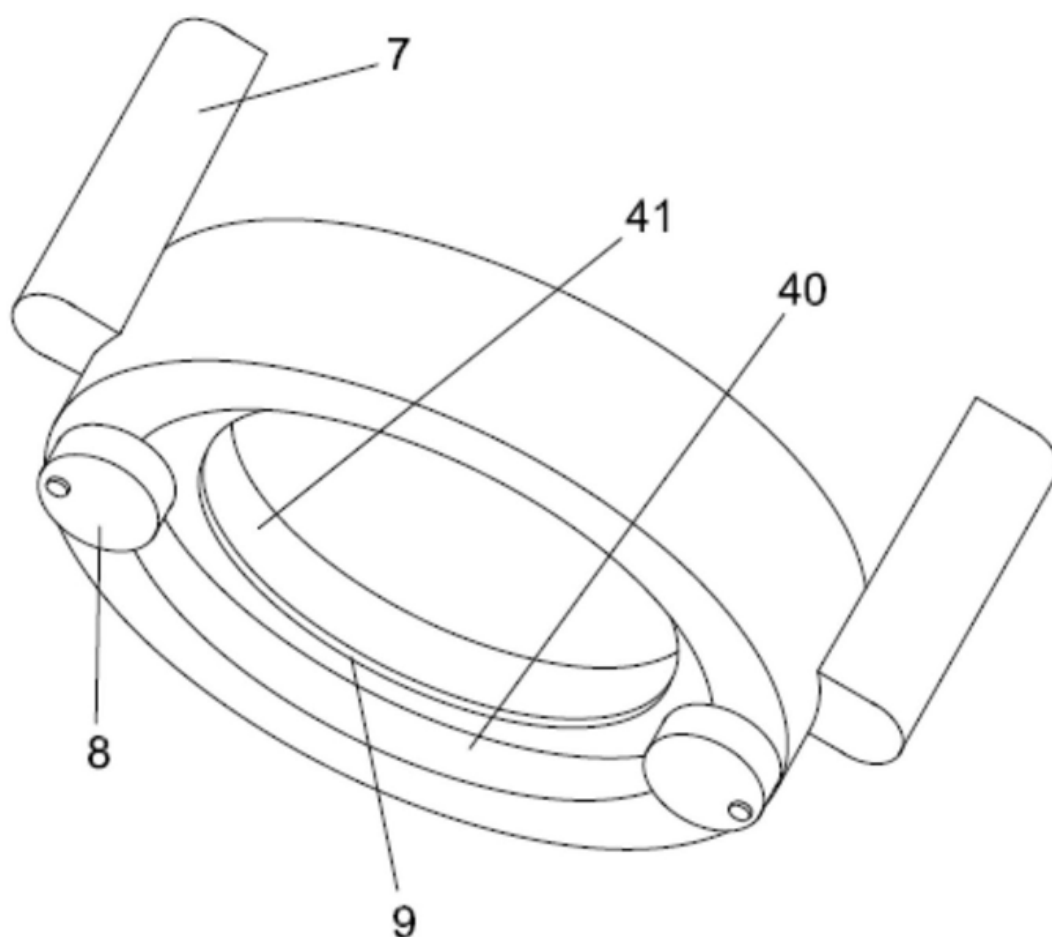


FIG. 3 — Schematic structural view of the filter holder frame