Description of the invention

Invention Title: Filtering Powdered Medicament Inhaler and Application

Technical field

[1] The present invention relates to a medical device, in particular to a filtering powder inhaler and its application. Specially this filtering powder inhaler is solely used or combined with powder nozzle to form a new inhaler.

Background of the invention

[2] Inhalation treatment of asthma using present dry powder inhaler has a GINA cure rate as low as 5%. The medicinal powder particles used for inhaling are easy to congregate and difficult to separate; its dosage for each time is too little for split charging, resulting in a lactose content as high as 98.8% in the dry powder. However, long-term inhalation of lactose has some side effects, while reducing inhalation of dry powder for alleviating lactose intake will lead to reduction of dosage of the medicinal powder, thereby lead to poor treatment effect.

Disclosure of the invention

Technical issues

[3] The object of the present invention is separating the medicinal powder from the dry powder, which results in inhalation with high speed and sufficient amount, removing lactose and achieving significant effect.

Technical Solutions

[4] The present invention achieves its object in such a way:

A filtering medicinal powder inhaler, comprising a bottom base (1), an upper base (2), wherein, a capsule chamber (4) is arranged in the bottom base (1), in the lower part (81) of the chamber there is an upward half-moon-shaped groove, on each end of the chamber there is a triangular bayonet (6), which is equipped with buttons (5, 5a) and return spring respectively; the upper base (2) is flexibly installed on the bottom base (1) via an axis in the hole (64) at one side, meets or leaves the bottom base (1) via a fixation hook (2a) on the other side; a fence (66) is arranged in the mouth of the channel (18) in the upper base (2), wherein:

[5] a) a partition plate (62) is arranged in the upper base (2), which is connected at the lower end with a pressure groove (63), and in the lower part (82) of the groove there is a downward half-moon-shaped groove.

[6] b) an outer connector (10) of the hollow tube arranged in the upper base (2) matches the suction tube (131), the hollow tube (19a) is connected with the chamber (9) on one side of the partition plate (62) via the channel (18); or the hollow tube (19a) extends about 8 cm to form a nozzle;

[7] c) the chamber (9) in the upper base (2) is equipped with a filter part (121);

[8] d) said bottom base (1) is equipped with a base hood (72) at outside, the hood (72) has frames (73) at the façade, covers the button (5a) and prevents air volume from entering the chamber (9), this structure can keep the inhaling channel relatively closed and facilitate suction of medicinal powder.

[9] In the present invention, several suction tubes including suction tube (131) and suction tube (132) are connected one by one to form a nozzle, or at least two small suction tubes (131a) are connected on the suction tube (131) to form a nozzle, or filter part (121) including filter cup is arranged in the suction tube, mesh number, shape, size, and layers of the filter part are set according to need, for instance, the mesh could prevent particles with a diameter of bigger than 6 microns.

[10] In the present invention, the hollow tube (19a) has an inserting tube (67), a sphere body (68) and a fence.

[11] In the present invention, the upper base (2) is equipped with a nozzle hood (71), which covers the suction tube (131), or on which a medicine stocking chamber (74) is arranged.

Beneficial effects

[12] The present invention has the following advantages: the base hood (72) keeps the inhaling channel relatively closed, and the air flow can bring the powder out when passing through the capsule during inhalation and filter out the medicinal powder, achieving a sufficient inhalation amount and good effect.

Description of the drawings

[13] Figure 1 shows the sectional view of the bottom base (1) and upper base (2).

[14] Figure 2 is the schematic view of the base hood (72).

[15] Figure 3 shows slope schematic view of the partition plate (62) and the pressure groove (63) of the upper base (2).

[16] Figure 4 shows bottom view of the inner side of the upper base (2).

[17] Figure 5 shows longitudinal sectional view of the bottom base (1) and upper base (2).

[18] Figure 6 shows sectional view of the bottom base (1) equipped with a hood (72) at outside, and the hollow tube (19a) extending into a nozzle.

[19] Figure 7 shows the sectional view of two small tubes (131a) of the suction tube (131) for nasal use.

[20] Figure 8 shows the schematic view for the connection of the upper base (2) with the suction tube (131, 132) and the jacket tube (3a) outside of the nozzle.

[21] Figure 9 shows the schematic view of the upper base (2) equipped with a hood (71) and the medicine stocking chamber (74).

Embodiments of the present invention

[22] Hereinafter the present invention will be further described with reference to the drawings.

[23] Example 1:

[24] The filtering inhaler (see Figure 6) is composed of the bottom base (1) and the upper base (2). The hollow tube of the upper base (2) extends for about 8cm to form a nozzle, the tube chamber (19a) is the inlet for medicinal powder, and a filter bag (121) is arranged in the hollow chamber (9) of the upper base (2). Upon use, remove the base hood (72), press the hook (2a) to open the upper base (2), place the capsule (8) into the capsule chamber (4), and then close the upper base (2) to meet the bottom base (1). Then, with two fingers simultaneously press two buttons (5, 5a), puncture the capsules, then push the base hood (72) from the button (5a) side. When the medicinal powder is sucked from the outlet (19a), the air from the inlet (7a) flows into the hollow chamber (7) and passes through the puncture site (8a) to the capsule (8), the air flow brings the dry powder from the puncture site (8b) to the filter bag of the hollow chamber (9). For example, lactose particles bigger than 10 microns are blocked in the filter bag and medicinal powder particles smaller than 5 microns are sucked into the human airway quickly. Unpick and wash the inhaler after use, blow dry for next use.

[25] Functions of the partition plate (62) and pressure groove (63) of the upper base (2) are as follows: 1. separating the hollow chamber of the upper base (2) into hollow chambers (7) and (9), allowing the air flow to take dry powder from the capsule to the hollow chamber (9); 2. pressing the capsule and forcing the air in it to both sides for facilitating puncture; 3. The capsule touched by hand, whose contaminated portion at surface is pressed by the up and down grooves, should avoid contact with air flow and the dry powder so as to prevent cross-infection.

[26] Example 2:

[27] A filtering medicinal powder inhaler (see Figure 8), comprising a filter bag (121) in the nozzle chamber. The chamber (19a) can accommodate the inserting tube (67) and sphere body (68), and the suction tube (131) is connected with the hollow tube (10). When sucking the air, the dry power is vibrated by the sphere body (68), the lactose particles are impacted and leave the medicinal powder particles, and facilitating filtration. Inadvertent expiration through the inhaler may cause the sphere body (68) to block narrow part of the inserting tube and finally to prevent medicinal powder from being forced out.

[28] The parts involved by the present invention in embodiment can be made by plastic injection or metal, ceramic, new materials, and match with each other for connection.

Claims

[Claim 1] A filtering medicinal powder inhaler, comprising a bottom base (1), an upper base (2), a capsule chamber (4) is arranged in the bottom base (1), in the lower part (81) of the chamber there is an upward half-moon-shaped groove, on each end of the chamber there is a triangular bayonet (6) equipped with button (5), buttons (5a) and return spring respectively; the upper base (2) is flexibly installed on the bottom base (1) via an axis in the hole (64) at one side, meets or leaves the bottom base (1) via a fixation hook (2a) on the other side; a fence (66) is arranged in the channel (18) mouth of the upper base (2), wherein:

a) a partition plate (62) is arranged in the upper base (2) and connected with a pressure groove (63) at the lower end, in the lower part (82) of the groove there is half-moon-shaped downward groove;

b) an outer connector (10) of the hollow tube arranged in the upper base (2) matches the suction tube (131), the hollow tube (19a) is connected with the chamber (9) on one side of the partition plate (62) via the channel (18); or the hollow tube (19a) extends about 8 cm to form a nozzle;

c) the hollow chamber (9) in the upper base (2) is equipped with a filter part (121);

d) said base (1) is equipped at the outside with a base hood (72), whose facade has frames (73), the hood covering the button (5a) and preventing air from entering the hollow chamber (9), this structure can keep the inhaling channel relatively closed and facilitate suction of medicinal powder.

[Claim 2] The filtering medicinal powder inhaler according to claim 1, wherein, the suction tubes including suction tube (131) and suction tube (132) are connected one by one to form a nozzle, or at least two small suction tubes (131a) are connected on the suction tube (131) to form a nozzle, or filter part (121) including filter cup is installed in the suction tube, the mesh number, shape, size, and layers of the filtering part are set according to need, for instance, the mesh could prevent particles bigger than 6 microns.

[Claim 3] The filtering medicinal powder inhaler according to claim 1, wherein, the hollow tube (19a) has an inserting tube (67), a sphere body (68) and a fence.

[Claim 4] The filtering medicinal powder inhaler according to claim 1, wherein, the upper base (2) is equipped with a nozzle hood (71) covering the suction tube (131), or a medicine stocking chamber (74) is arranged on the nozzle hood (71).