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(54) **STEAM BRUSH HEAD AND CLEANING APPARATUS**

(57) A steam brush head and a cleaning apparatus. The steam brush head comprises: a brush seat assembly, which is provided with a chamber communicated with the outside, and a first channel and a second channel which are communicated with the outside, a plurality of notches (14) being formed on an outer edge of an opening end of the brush seat assembly; and a brush head assembly, provided in the chamber of the brush seat assembly and communicated with the second channel. The first channel is used for forming a dust removal channel (3); the second channel is used for forming a cleaning channel (4) for conveying steam or cleaning water; the opening end of the brush seat assembly can be pressed to cover a surface to be cleaned, such that the chamber and said surface cooperate to define a cleaning chamber (15); the notches (14) and said surface cooperate to define air vents communicated with the cleaning chamber; the second channel and the first channel are both communicated with the cleaning chamber (15); steam or cleaning water sprayed out from the second channel enters the cleaning chamber (15) to clean said surface; and waste steam or wastewater after cleaning is completed flows into the first channel through the cleaning chamber

(15).

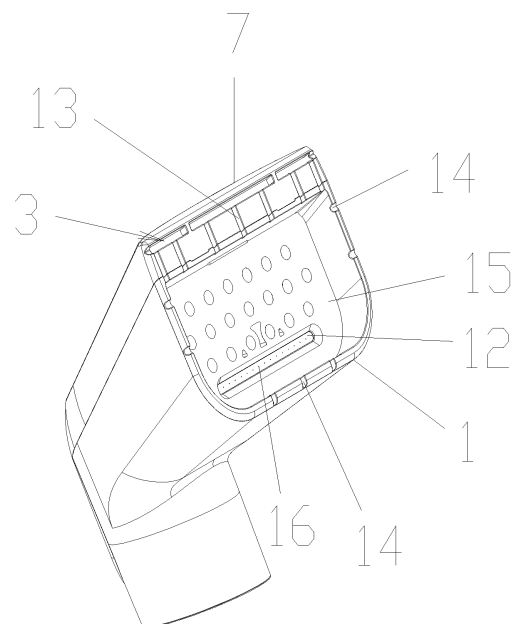


Figure 3

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Description

TECHNICAL FIELD

[0001] This invention generally relates to the technical field of cleaning, and more particularly, to a steam brush head and a cleaning apparatus.

BACKGROUND

[0002] Conventional cleaning apparatuses used to clean the surface of an object (e.g., a fabric cleaning machine or other types of surface cleaning apparatuses) normally only have a water spray function. Namely, the cleaning apparatus only sprays water onto the surface to be cleaned for washing and cleaning. To achieve steam cleaning or disinfection, additional steam pipelines need to be added, and the process is complex. Due to the structural limitation, conventional fabric cleaning machines often directly spray steam onto the surface to be cleaned, resulting in quick dissipation of steam. Moreover, the speed of spraying steam is slow, failing to meet the cleaning needs. Therefore, it's difficult for conventional cleaning apparatuses to achieve ideal steam cleaning effect.

SUMMARY

[0003] The purpose of the present invention is to provide a steam brush head that has a simple and compact structure and high cleaning performance, as well as a cleaning apparatus having the said steam brush head.

[0004] To achieve the above purpose, the present invention adopts the following technical solution: a steam brush head comprises: a brush seat assembly, which is provided with a chamber communicated with the outside, and a first channel and a second channel which are communicated with the outside, a plurality of notches being formed on an outer edge of an opening end of the brush seat assembly; and a brush head assembly, provided in the chamber of the brush seat assembly and communicated with the second channel; the first channel is used for forming a dust removal channel; the second channel is used for forming a cleaning channel for conveying steam or cleaning water; the opening end of the brush seat assembly is capable of being pressed to cover a surface to be cleaned, such that the chamber and the surface to be cleaned cooperate to define a cleaning chamber; the notches and the surface to be cleaned cooperate to define air vents communicated with the cleaning chamber; the second channel and the first channel are both communicated with the cleaning chamber; steam or cleaning water sprayed out from the second channel enters the cleaning chamber to clean the surface to be cleaned; and waste steam or wastewater after cleaning is completed flows into the first channel through the cleaning chamber.

[0005] In another embodiment of the present invention,

the brush seat assembly comprises a brush seat, wherein a chamber is provided inside the brush seat, and the plurality of notches are provided at the opening end of the brush seat; and a dust cover, wherein the dust cover covers the brush seat and is provided with a channel slot for cooperating with the outer side wall of the brush seat to define the first channel with two opening ends.

[0006] In another embodiment of the present invention, a backflow channel is arranged for communicating one side of the brush seat and one side of the dust cover that face the surface to be cleaned. Two ends of the backflow channel are respectively in communication with the cleaning chamber and the dust removal channel. The waste steam or waste water in the cleaning chamber flows into the dust removal channel through the backflow channel and is discharged therefrom.

[0007] In another embodiment of the present invention, the opening end of the brush seat comprises a plurality of side edges, the backflow channel on the brush seat goes through a first side edge of the opening end to extend into the dust cover, and the plurality of notches are respectively arranged at side edges other than the first side edge.

[0008] In another embodiment of the present invention, a nozzle assembly is arranged in the second channel in the brush seat for spraying steam or cleaning water, and steam or cleaning water sprayed by the nozzle assembly is sprayed from the brush head assembly to a surface to be cleaned.

[0009] In another embodiment of the present invention, the brush head assembly comprises a brush head having a plurality of clusters of bristles, the brush head is installed in the chamber and adjacent to the opening end, the brush head is provided with a through hole, and the second channel, the nozzle assembly and the cleaning chamber are both in communication with the through hole.

[0010] In another embodiment of the present invention, the nozzle assembly comprises a connecting nozzle connected to a port of the second channel, a steam connector cover connected to the brush head and the connecting nozzle, and a steel sheet fixed at a position where the through hole of the brush head is located. The steel sheet is provided with a plurality of spray holes, and the plurality of spray holes are arranged in a linear shape.

[0011] In another embodiment of the present invention, the steam brush head comprises a handle rod that has a hollow structure and is connected to the brush seat assembly, wherein the first channel is communicated with the handle rod to form the dust removal channel; and a water pipe assembly that extends into the handle rod and is communicated with the second channel to form the cleaning channel for delivering steam or cleaning water.

[0012] In another embodiment of the present invention, the water pipe assembly comprises a water pipe and a water pipe joint assembly, and the water pipe extends into the handle rod through the water pipe joint assembly

to communicate with the brush seat and the second channel to form the cleaning channel.

[0013] The present invention also provides a cleaning apparatus comprising the steam brush head in any one of above embodiments.

[0014] Compared with the prior art, the present invention has the following advantages: by providing the first channel and the second channel, a dust removal channel and a cleaning channel are respectively formed by the two channels; the cleaning channel is capable of delivering steam or cleaning water, achieving two-in-one function; in this way, it is unnecessary to arrange two different pipelines, which greatly saves costs and installation space while significantly improving structural compactness; furthermore, the chamber of the brush seat assembly and the surface to be cleaned cooperate to define the cleaning chamber, the first channel and the second channel are in communication with the cleaning chamber, the plurality of notches are formed on the opening end of the brush seat assembly, and the notches form air vents communicated with the cleaning chamber; at this point, the pressure difference between the interior and exterior of the cleaning chamber is zero, which effectively ensures that the steam smoothly enters the dust removal channel from the cleaning channel; meanwhile, the quick dissipation of steam is avoided, enabling the steam to stay in the cleaning chamber for a prolonged period of time for cleaning the surface to be cleaned, thereby further improving the cleaning strength.

[0015] Other features and advantages of the present invention are elaborated in the following and may become partially apparent from the specification or be understood through the implementation of the present invention. The purpose and other advantages of the present invention may be achieved and obtained through the structure specifically described in the specification, claims, and drawings of the present invention.

[0016] Drawings and embodiments are combined hereinafter to further elaborate the technical solution of the present invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] The drawings are a part of the specification for allowing the present invention to be better understood, which are used to elaborate the present invention together with the embodiments of the present invention and do not constitute a limitation to the present invention.

Figure 1 is a schematic diagram illustrating an exemplary structure of the steam brush head in the embodiment of the present invention;

Figure 2 is a schematic diagram illustrating an explosive view of the steam brush head in the embodiment of the present invention;

Figure 3 is a schematic diagram illustrating a partial structure of the steam brush head in the embodiment of the present invention;

Figure 4 is a schematic diagram illustrating a sectional view of the steam brush head in the embodiment of the present invention;

Figure 5 is a schematic diagram illustrating a partial structure of the steam brush head in the embodiment of the present invention;

Figure 6 is a schematic diagram illustrating a use state of the steam brush head in the embodiment of the present invention;

Figure 7 is a schematic diagram illustrating a partial structure of the steam brush head in the embodiment of the present invention.

[0018] In Figures: 1-Brush Seat, 2-Brush Head, 3-Dust Removal Channel, 4-Cleaning Channel, 5-Handle Rod, 6- Water Pipe Assembly, 7-Dust Cover, 8-Channel Slot, 9-Water Pipe Joint, 10-Connecting Nozzle, 11-Steam Connector Cover, 12-Steel Sheet, 13-Backflow Channel, 14-Notch, 15-Cleaning Chamber, 16-Spray Hole.

DETAILED DESCRIPTION

[0019] Drawings are combined hereinafter to further illustrate specific embodiments of the present invention but are not intended to limit the present invention.

[0020] It should be understood that various modifications may be made to the embodiments disclosed herein. Therefore, the following description should not be taken as a limitation but merely as an exemplary embodiment. Other modifications may be made by those skilled in the art within the scope and spirit of the present invention.

[0021] The drawings included in and forming part of the specification illustrate embodiments of the present invention and are used together with the general description of the present invention provided above and the detailed description of the embodiments provided below to explain the principles of the present invention.

[0022] These and other features of the present invention may become apparent from the following description of preferred embodiments given as non-limiting examples with reference to the drawings.

[0023] It should also be understood that although the present invention has been described with reference to some specific embodiments, those skilled in the art may determine many other equivalent forms of the present invention, which have the features in the claims and shall therefore fall into the scope defined by the claims herein.

[0024] The above and other aspects, features and advantages of the present invention may become more apparent in combination with the detailed description and drawings.

[0025] Specific embodiments of the present invention are described hereinafter with reference to the drawings. However, it should be understood that the disclosed embodiments are merely examples of the present invention, which may be implemented in a plurality of manners. Known and/or repeated functions and structures have not been described in detail to avoid unnecessary or re-

dundant details that obscure the present invention. Therefore, specific structural and functional details disclosed herein are not intended to be limiting, but merely as a representative basis for the claims to teach those skilled in the art to variously employ the present invention in virtually any suitable detailed structure.

[0026] This specification may use the phrase "in one embodiment", "in the other embodiment", "in another embodiment" or "in other embodiments", which may each refer to one or more of the same or different embodiments in accordance with the present invention.

[0027] Drawings are combined hereinafter to elaborate the embodiments of the present invention.

[0028] Referring to Figures 1-2, the present invention provides a steam brush head. The steam brush head comprises: a brush seat assembly, which is provided with a chamber communicated with the outside, and a first channel and a second channel which are communicated with the outside, a plurality of notches 14 being formed on an outer edge of an opening end of the brush seat assembly; and a brush head assembly, provided in the chamber of the brush seat assembly and communicated with the second channel. The first channel is used for forming a dust removal channel 3; the second channel is used for forming a cleaning channel 4 for conveying steam or cleaning water; the opening end of the brush seat assembly can be pressed to cover a surface to be cleaned, such that the chamber and the surface to be cleaned cooperate to define a cleaning chamber 15; the notches 14 and the surface to be cleaned cooperate to define air vents communicated with the cleaning chamber; the second channel and the first channel are both communicated with the cleaning chamber 15; steam or cleaning water sprayed out from the second channel enters the cleaning chamber 15 to clean the surface to be cleaned; and waste steam or wastewater after cleaning is completed flows into the first channel through the cleaning chamber 15.

[0029] For instance, in this embodiment, the steam brush head may be applied to a cleaning apparatus having a steam function. The steam brush head has a simple structure comprising a brush seat assembly and a brush head assembly. The cleaning chamber 15 is defined by the brush seat assembly and the surface to be cleaned, and the plurality of notches 14 formed in the opening end of the brush seat assembly cooperate with the surface to be cleaned to define air vents in communication with the cleaning chamber 15. By means of the aforesaid design, the sprayed steam or cleaning water are restricted in the cleaning chamber 15 for cleaning, and the duration of contact (namely, the cleaning time) between the steam and the surface to be cleaned is prolonged. Thus, the cleaning strength is improved, and the waste steam or waste water are prevented from overflowing. Meanwhile, the waste steam or waste water may flow into the first channel (namely, the dust removal channel 3) from the cleaning chamber 15 and is discharged from the dust removal channel 3.

[0030] By providing the first channel and the second channel, a dust removal channel and a cleaning channel are respectively formed by the two channels. The cleaning channel is capable of delivering steam or cleaning water, achieving two-in-one function. In this way, it is unnecessary to arrange two different pipelines, which greatly saves costs and installation space while significantly improving structural compactness. Furthermore, the chamber of the brush seat assembly and the surface to be cleaned cooperate to define the cleaning chamber, the first channel and the second channel are in communication with the cleaning chamber, the plurality of notches are formed on the opening end of the brush seat assembly, and the notches form air vents communicated with the cleaning chamber. At this point, the pressure difference between the interior and exterior of the cleaning chamber is zero, which effectively ensures that the steam smoothly enters the dust removal channel from the cleaning channel. Meanwhile, the quick dissipation of steam is avoided, enabling the steam to stay in the cleaning chamber for a prolonged period of time for cleaning the surface to be cleaned, thereby further improving the cleaning strength. In addition, in this embodiment, after the cleaning water or the steam is conveyed to the cleaning chamber 15 for cleaning the surface to be cleaned, the cleaning water or the steam flows into the dust removal channel 3 from the cleaning chamber 15 for being discharged, which effectively prevents the surface to be cleaned from a secondary pollution, avoiding the manual cleaning and significantly improving the use convenience.

[0031] Further, in this embodiment, the brush seat assembly comprises a brush seat 1, wherein a chamber is provided inside the brush seat 1, and the plurality of notches are provided at the opening end of the brush seat 1; and a dust cover 7, wherein the dust cover covers the brush seat 1 and is provided with a channel slot 8 for cooperating with the outer side wall of the brush seat to define the first channel with two opening ends.

[0032] In this embodiment, the brush seat 1 has a head portion and a tail portion, and a connection angle is formed between the head portion and the tail portion. Referring to Figure 3, the head portion and the tail portion communicating with each other through a chamber. The dust cover 7 resembles the brush seat 1 and is capable of serving as a cover for covering the whole outer side wall of the brush seat 1, and a side of the dust cover 7 facing the brush seat 1 is provided with the channel slot 8. After the dust cover 7 covers the outside of the brush seat 1, the brush seat 1 cooperates with the channel slot 8 to form the first channel with two opening ends.

[0033] Further, in this embodiment, a side of the brush head 2 facing the surface to be cleaned is provided with a plurality of clusters of bristles, and the plurality of clusters of bristles are arranged in the cleaning chamber 15. In addition, in this embodiment, a nozzle assembly is arranged in the cleaning channel 4, namely, the nozzle assembly being in communication with the second chan-

nel. The nozzle assembly allows steam or cleaning water to be sprayed onto the brush head assembly, thereby facilitating the cleaning of the surface to be cleaned.

[0034] Further, referring to Figures 2, 3 and 5, the brush head assembly is arranged in the chamber of the brush seat 1. The opening end of the brush seat is arranged on the surface to be cleaned, and the outer edge of the opening end of the brush seat abuts against the surface to be cleaned, thereby forming the cleaning chamber 15 between the chamber of the brush seat 1 and the surface to be cleaned. To prevent the pressures between the interior and exterior of the cleaning chamber 15 from being consistent such that the steam or cleaning water does not flow, in this embodiment, the outer edge of the opening end of the brush seat 1 is further provided with notches 14 in communication with the cleaning chamber 15. There are a plurality of notches 14, and each of the notches 14 may be arranged on each edge, wherein the notch 14 may be a gap formed on the edge for cooperating with the surface to be cleaned to form a closed hole body, namely, an air vent. Alternatively, the notch may also be an air hole directly formed at the edge, which is not specifically determined.

[0035] A backflow channel 13 is arranged for communicating one side of the brush seat 1 and one side of the dust cover 7 that face the surface to be cleaned. In actual use, there may be a plurality of backflow channels 13. Two ends of the backflow channel 13 are respectively in communication with the cleaning chamber 15 and the dust removal channel 3. Namely, the backflow channel 13 may penetrate through the brush seat 1 and the dust cover 7 and is respectively in communication with the cleaning chamber 15 and the dust removal channel 3. The waste steam or waste water in the cleaning chamber 15 flows into the dust removal channel through the backflow channel and is discharged therefrom. Referring to Figure 4, in this embodiment, the brush head assembly comprises a brush head 2, and the brush head 2 is installed at the opening end of the chamber of the brush seat 1. The brush head 2 has a through hole, and the second channel, the cleaning chamber 15 and the nozzle assembly are in communication with the through hole.

[0036] Referring to Figure 3, in this embodiment, the opening end of the brush seat 1 is configured to be rectangular. The opening end of the brush seat 1 comprises a first side edge connected to the dust cover 7 and provided with the backflow channel 13, and a second side edge connected to the first side edge to form a rectangular frame. The plurality of notches 14 are respectively arranged on the second side edge.

[0037] Further, in this embodiment, the steam brush head comprises a handle rod 5 that has a hollow structure and is connected to the brush seat assembly, wherein the first channel is communicated with the handle rod 5 to form the dust removal channel 3; and a water pipe assembly 6 that extends into the handle rod 5 and is communicated with the second channel to form the cleaning channel 4 for delivering steam or cleaning water,

wherein the handle rod 5 and the brush seat 1 are detachably connected.

[0038] Referring to Figures 4 and 6, in this embodiment, the water pipe assembly 6 comprises a water pipe and a water pipe joint assembly, wherein the water pipe joint assembly further comprises a water pipe joint 9 and a connecting pipe connected to the water pipe and the water pipe joint. The water pipe extends into the handle rod 5 through the water pipe joint assembly and is connected to the brush seat 1 while being communicated with the second channel, thereby forming the cleaning channel 4. Namely, at least the water pipe assembly 6 and the second channel cooperate to form the cleaning channel 4.

[0039] Further, referring to Figure 7, the nozzle assembly comprises a connecting nozzle 10 connected to a port of the second channel, a steam connector cover 11 connected to the brush head 2 and the connecting nozzle 10, and a steel sheet 12 fixed at a through hole of the brush head 2.

[0040] The steel sheet 12 is provided with a plurality of spray holes 16, and the plurality of spray holes are arranged in a linear shape. Certainly, the spray holes may also be arranged in other manners.

[0041] More specifically, preferred embodiments are combined hereinafter to better describe the steam brush head of the present invention.

[0042] Referring to Figures 3 and 6, in this embodiment, the dust cover 7 and the channel slot 8 in the brush seat 1 cooperate to define the dust removal channel, which serves as a dust suction pipeline. The dust cover 7 and the brush seat 1 are installed on the handle rod 5 and are fixed by using buckles. The water pipe 6 is connected to the water pipe joint 9. The cleaning water or steam flows through the water pipe 6, the second channel, the water pipe joint 9 and the connecting nozzle 10, and finally enters the brush head 2 through the through hole in the brush head 2. The steel sheet 12 is arranged at the position where the through hole is located, so that the cleaning water or steam is sprayed out from the spray hole in the steel sheet 12 to the outside. In this embodiment, the diameter of the spray hole ranges from 0.2-0.4. On the premise of ensuring the flow rate of steam or cleaning water, a small diameter ensures the sufficient pressure of steam or water flow such that a proper sprayed strength is achieved. The steel sheet 12, the brush seat 1 and the handle rod 5 have high temperature resistance, ensuring the functional life of the nozzle and achieving high use safety. In addition, the steel sheet 12 is provided with a row of spray holes, which not only ensures the flow rate, but also ensures that the flow rate within the standard time is sufficient to meet the cleaning requirements.

[0043] Referring to Figure 6 again, when in use, the dust removal channel is closely attached to the surface to be cleaned such that the dust removal effect is significantly improved. When the steam function or the water spray function is used, because the brush seat 1 is tightly

attached to the surface to be cleaned to form a closed chamber, the closed chamber is filled with steam or water. The closed chamber is a recessed space formed by inserting the brush head 2 into the brush seat 1. The closed chamber is used for assisting in improving the steam effect or the water spray effect (especially the steam effect). If it is not a closed chamber, leakage of steam may occur, resulting in poor cleaning effect and damage to the user. The closed chamber ensures high use safety and ideal cleaning effect.

[0044] Another preferred embodiment of the present invention provides a cleaning apparatus comprising the steam brush head in any one of above embodiments.

[0045] The above embodiments are merely exemplary embodiments of the present invention and are not intended to limit the present invention. The scope of the present invention is defined by the claims. Those skilled in the art may make various modifications or equivalent replacements to the present invention within the spirit and scope of the present invention, and therefore, these modifications or equivalent replacements shall fall within the scope defined by the claims of the present invention.

Claims

1. A steam brush head, **characterized by** comprising:

a brush seat assembly, and
a brush head assembly, wherein the brush seat assembly is provided with a chamber communicated with the outside, and a first channel and a second channel which are communicated with the outside, wherein a plurality of notches (14) being formed on an outer edge of an opening end of the brush seat assembly, wherein the brush head assembly is provided in the chamber of the brush seat assembly and is communicated with the second channel, wherein the first channel is used for forming a dust removal channel (3), wherein the second channel is used for forming a cleaning channel (4) for conveying steam or cleaning water, wherein the opening end of the brush seat assembly is capable of being pressed to cover a surface to be cleaned, such that the chamber and the surface to be cleaned cooperate to define a cleaning chamber (15), wherein the notches (14) and the surface to be cleaned cooperate to define air vents communicated with the cleaning chamber, wherein the second channel and the first channel are both communicated with the cleaning chamber (15), wherein steam or cleaning water sprayed out from the second channel enters the cleaning chamber (15) to clean the surface to be cleaned, and wherein waste steam or wastewater after cleaning is completed flows into the first channel through the cleaning chamber (15).

2. The steam brush head of claim 1, wherein the brush seat assembly comprises:

a brush seat (1) and a dust cover (7), wherein a chamber is provided inside the brush seat (1), and the plurality of notches (14) are provided at the opening end of the brush seat (1), wherein the dust cover (7) covers the brush seat (1) and is provided with a channel slot (8) for cooperating with the outer side wall of the brush seat (1) to define the first channel with two opening ends.

3. The steam brush head of claim 2, wherein a backflow channel (13) is arranged for communicating one side of the brush seat (1) and one side of the dust cover (7) that face the surface to be cleaned, wherein two ends of the backflow channel (13) are respectively in communication with the cleaning chamber (15) and the dust removal channel (3), and wherein the waste steam or waste water in the cleaning chamber (15) flows into the dust removal channel through the backflow channel and is discharged therefrom.

4. The steam brush head of claim 3, wherein the opening end of the brush seat (1) comprises: a plurality of side edges, the backflow channel (13) on the brush seat (1) goes through a first side edge of the opening end to extend into the dust cover (7), and wherein the plurality of notches are respectively arranged at side edges other than the first side edge.

5. The steam brush head of claim 2, wherein a nozzle assembly is arranged in the second channel in the brush seat (1) for spraying steam or cleaning water, and wherein steam or cleaning water sprayed by the nozzle assembly is sprayed from the brush head assembly to a surface to be cleaned.

6. The steam brush head of claim 5, wherein the brush head assembly comprises: a brush head (2) having a plurality of clusters of bristles, wherein the brush head (2) is installed in the chamber and adjacent to the opening end, wherein the brush head (2) is provided with a through hole, and wherein the second channel, the nozzle assembly and the cleaning chamber (15) are both in communication with the through hole.

7. The steam brush head of claim 6, wherein the nozzle assembly comprises:

a connecting nozzle (10) connected to a port of the second channel, wherein a steam connector cover (11) connected to the brush head (2) and the connecting nozzle (10), wherein a steel sheet (12) fixed at a position where the through hole of the brush head (2) is located, and wherein the steel sheet (12) is provided with a plurality of spray holes (16), and the plurality of spray holes (16) are arranged in a linear shape.

8. The steam brush head of claim 2, wherein the steam brush head comprises:
a handle rod (5) and a water pipe assembly (6),
wherein the handle rod (5) has a hollow structure
and is connected to the brush seat assembly, where- 5
in the first channel is communicated with the handle
rod (5) to form the dust removal channel (3), and
wherein the water pipe assembly (6) extends into
the handle rod (5) and is communicated with the sec- 10
ond channel to form the cleaning channel (4) for de-
livering steam or cleaning water.
9. The steam brush head of claim 8, wherein the water
pipe assembly (6) comprises:
a water pipe and a water pipe joint assembly, and 15
wherein the water pipe extends into the handle rod
(5) through the water pipe joint assembly to commu-
nicate with the brush seat (1) and the second channel
to form the cleaning channel (4). 20
10. A cleaning apparatus, **characterized by** comprising
the steam brush head of claims 1-9.

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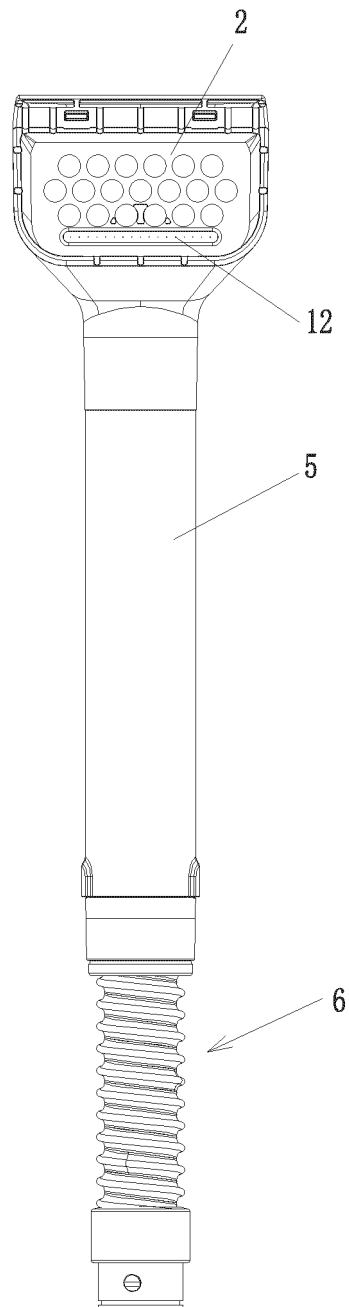


Figure 1

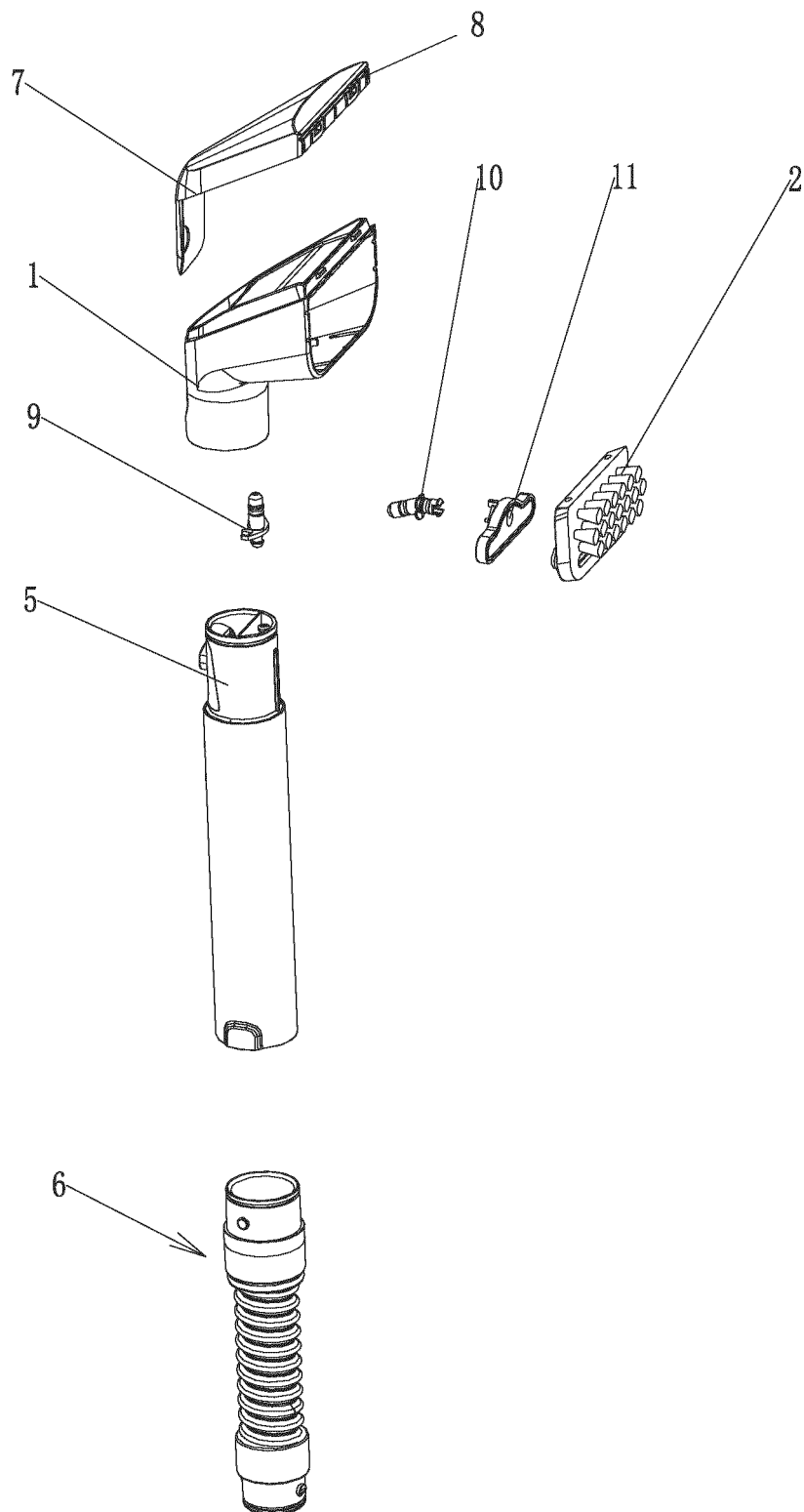


Figure 2

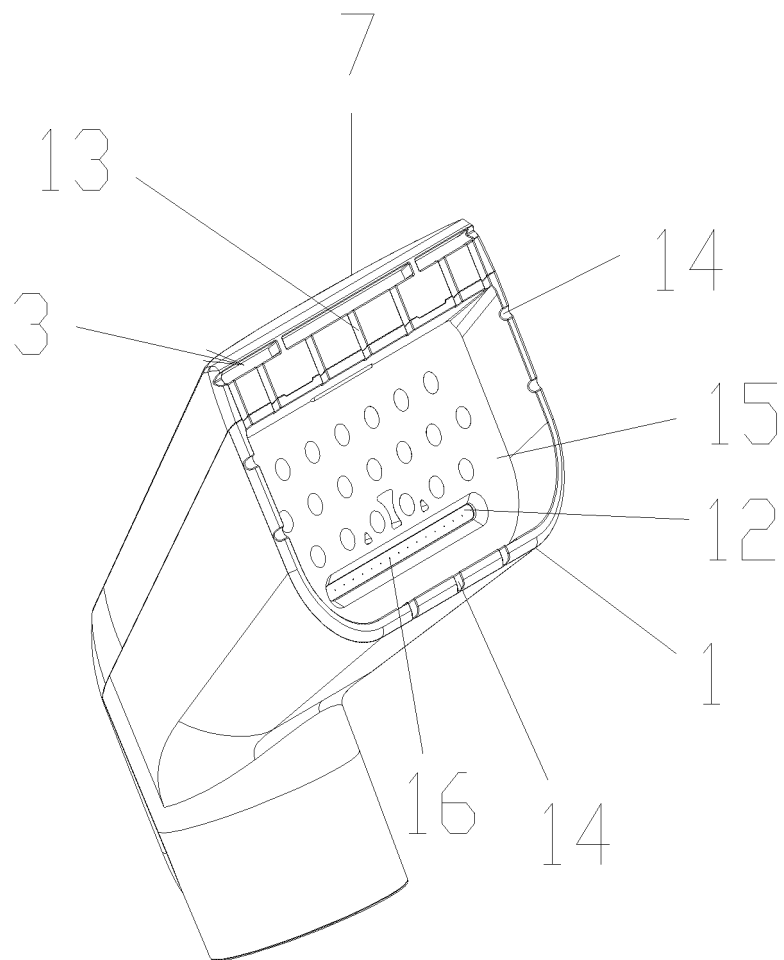


Figure 3

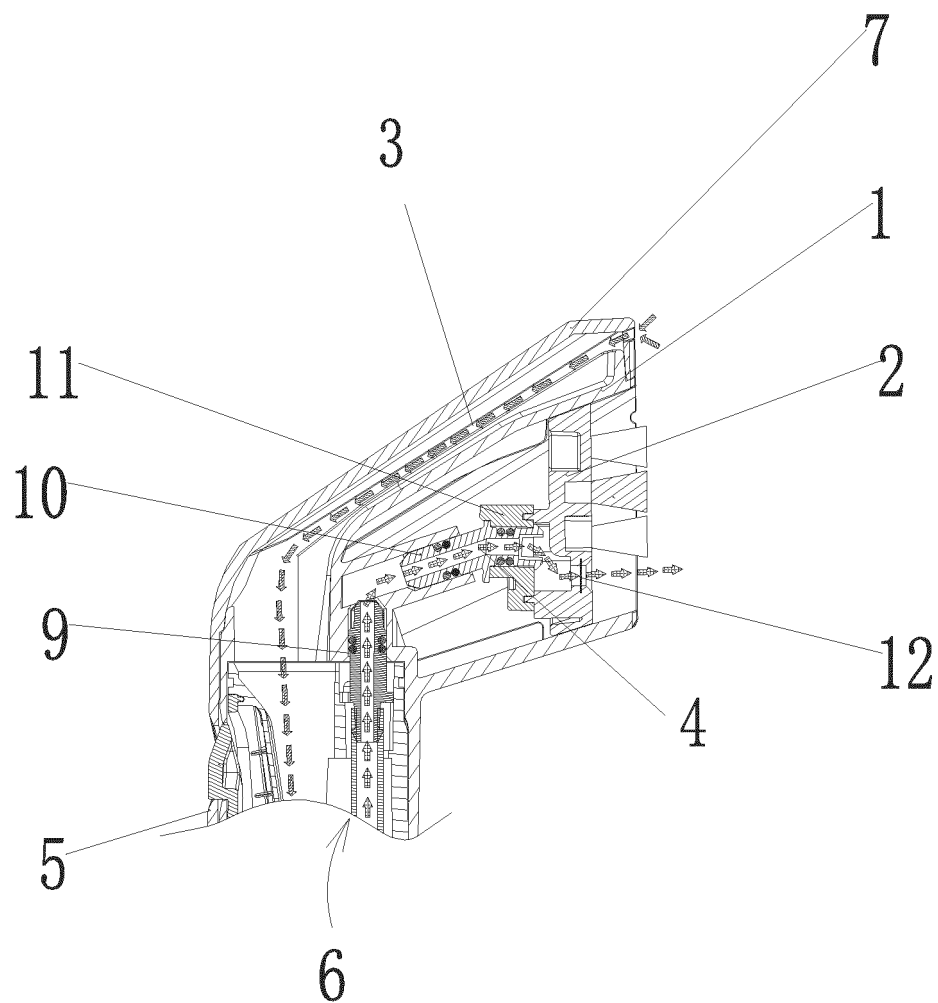


Figure 4

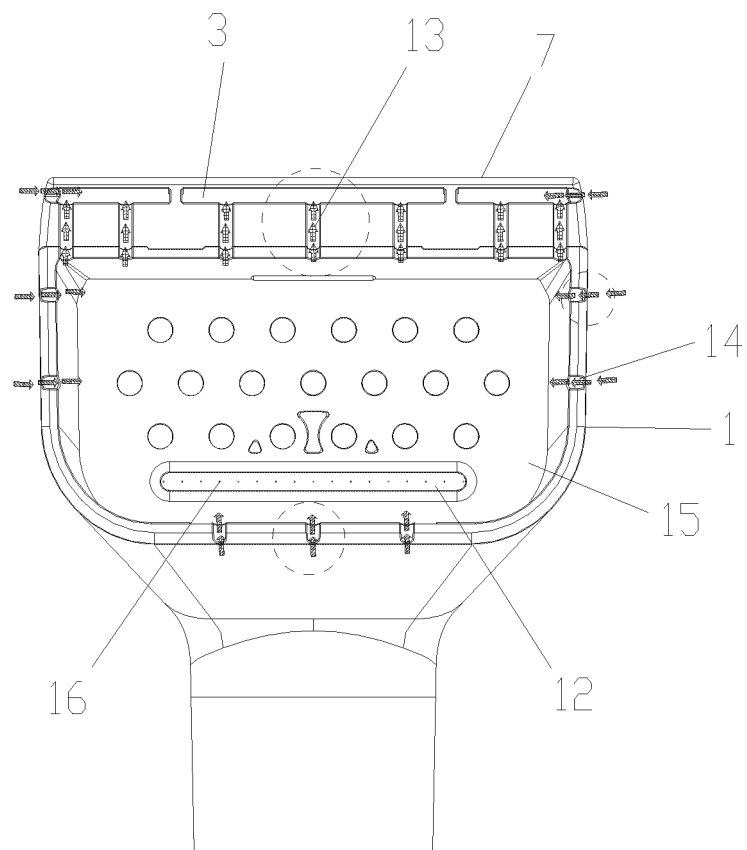


Figure 5

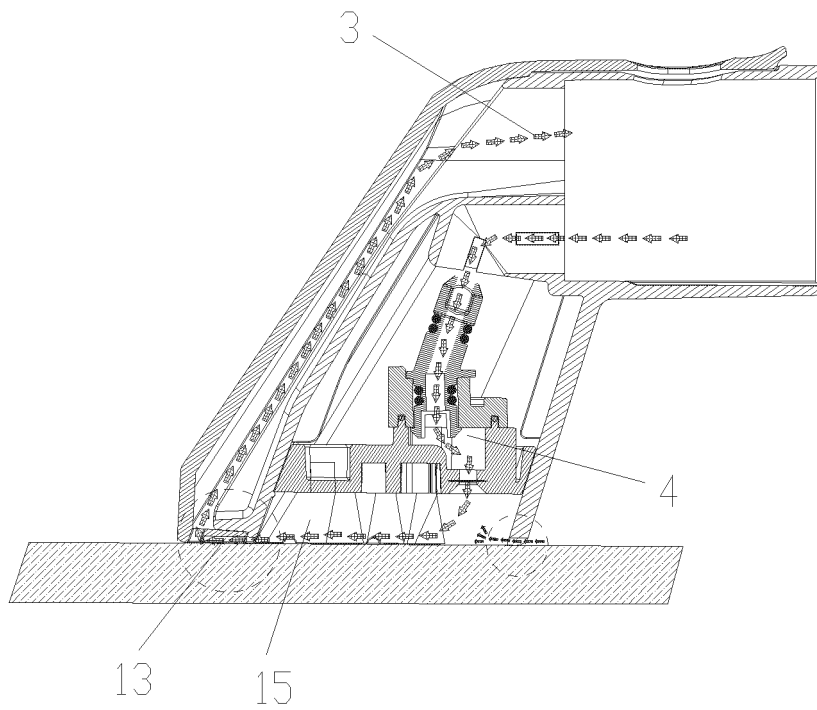


Figure 6

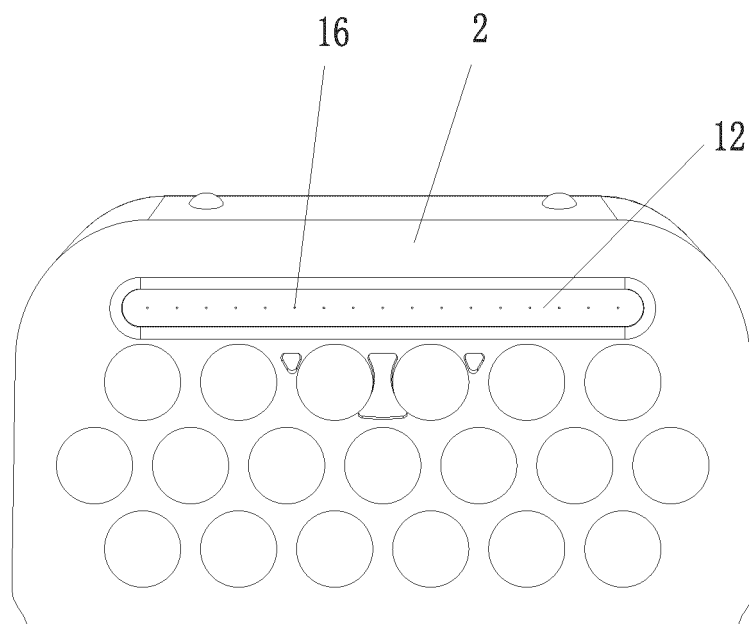


Figure 7

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2022/108460

A. CLASSIFICATION OF SUBJECT MATTER B08B 1/00(2006.01)i; B08B 3/02(2006.01)i; A46B 11/06(2006.01)i According to International Patent Classification (IPC) or to both national classification and IPC																					
B. FIELDS SEARCHED																					
Minimum documentation searched (classification system followed by classification symbols) B08B,A46B																					
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched																					
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) CNTXT, ENTXT, VEN, CNKI: 蒸汽, 刷头, 毛刷, 清洁, 清洗, 除尘, 吸尘, 集尘, 通道; steam, brush, cleaning, dust, channel																					
C. DOCUMENTS CONSIDERED TO BE RELEVANT																					
<table border="1"> <thead> <tr> <th>Category*</th> <th>Citation of document, with indication, where appropriate, of the relevant passages</th> <th>Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td>PX</td> <td>CN 217165422 U (GUANGDONG DONLIM ELECTRICAL APPLIANCE CO., LTD.) 12 August 2022 (2022-08-12) claims 1-10</td> <td>1-10</td> </tr> <tr> <td>A</td> <td>CN 2637007 Y (CHEN HUANQIANG) 01 September 2004 (2004-09-01) description, specific embodiments, and figures 1 and 2</td> <td>1-10</td> </tr> <tr> <td>A</td> <td>CN 216040331 U (SHANGHAI FLYCO ELECTRICAL APPLIANCE CO., LTD.) 15 March 2022 (2022-03-15) entire document</td> <td>1-10</td> </tr> <tr> <td>A</td> <td>CN 206666895 U (NINGBO CHANGLI PLASTIC ELECTRIC APPLIANCE CO., LTD.) 24 November 2017 (2017-11-24) entire document</td> <td>1-10</td> </tr> <tr> <td>A</td> <td>CN 208050460 U (NINGBO ANKE ELECTRICAL TECHNOLOGY CO., LTD.) 06 November 2018 (2018-11-06) entire document</td> <td>1-10</td> </tr> <tr> <td>A</td> <td>CN 113974481 A (GUANGDONG POWER GRID CO., LTD. et al.) 28 January 2022 (2022-01-28) entire document</td> <td>1-10</td> </tr> </tbody> </table>	Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	PX	CN 217165422 U (GUANGDONG DONLIM ELECTRICAL APPLIANCE CO., LTD.) 12 August 2022 (2022-08-12) claims 1-10	1-10	A	CN 2637007 Y (CHEN HUANQIANG) 01 September 2004 (2004-09-01) description, specific embodiments, and figures 1 and 2	1-10	A	CN 216040331 U (SHANGHAI FLYCO ELECTRICAL APPLIANCE CO., LTD.) 15 March 2022 (2022-03-15) entire document	1-10	A	CN 206666895 U (NINGBO CHANGLI PLASTIC ELECTRIC APPLIANCE CO., LTD.) 24 November 2017 (2017-11-24) entire document	1-10	A	CN 208050460 U (NINGBO ANKE ELECTRICAL TECHNOLOGY CO., LTD.) 06 November 2018 (2018-11-06) entire document	1-10	A	CN 113974481 A (GUANGDONG POWER GRID CO., LTD. et al.) 28 January 2022 (2022-01-28) entire document	1-10
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Date of the actual completion of the international search 08 January 2023	Date of mailing of the international search report 20 January 2023																				
Name and mailing address of the ISA/CN China National Intellectual Property Administration (ISA/CN) No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing 100088, China Facsimile No. (86-10)62019451	Authorized officer Telephone No.																				

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