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(54) **GARMENT STEAMER**

(57) The present application discloses a garment steamer (1) having a host (2) and a nozzle (4) connected with the host (2) by using a gas pipeline (3), where the garment steamer (1) is provided thereon with a plasma generator (5), where plasmas generated by the plasma generator (5) are released through a plasma outlet (41) disposed on the nozzle (4). By means of the present invention, a problem that a garment steamer in the prior art cannot implement both odor removal and sterilization is resolved, and the garment steamer has functions of sterilization and odor removal.

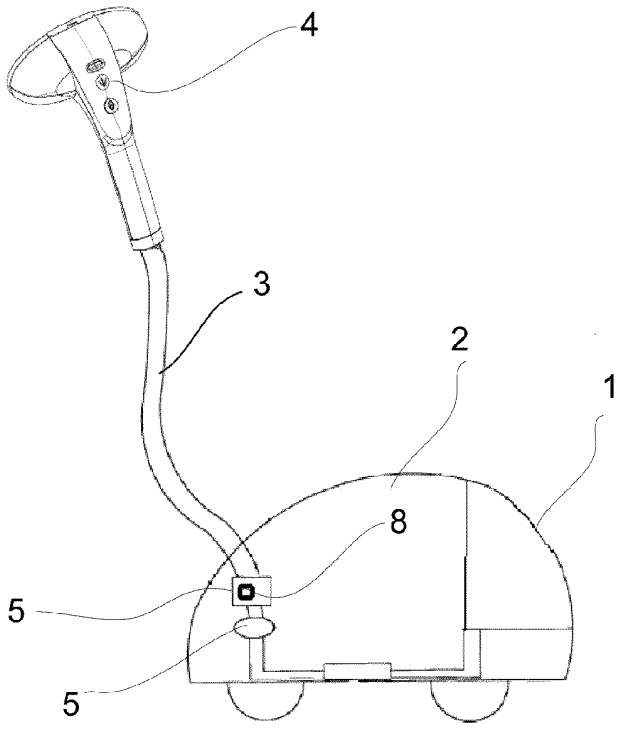

FIG. 1

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Description

Technical Field

[0001] The present utility model relates to the field of household appliances, and specifically, to a garment steamer.

Related Art

[0002] A garment steamer has been a household appliance commonly used by people. The working principle of the garment steamer is mainly generating steam in a host and discharging the steam from a nozzle through a gas pipeline, to iron clothes by using the steam.

[0003] Some clothes inevitably have bacteria as long exposed in external environments. Users generally conduct disinfection by using a disinfectant fluid. However, the disinfectant fluid has an odor and damages clothes to some extent. In the prior art, a garment steamer involved with a negative ion technology has been provided, and the garment steamer disinfects clothes by using a negative ion generator. However, negative ions achieve good effects in aspects such as odor cleaning and dust removal, but do not have an obvious sterilization effect.

[0004] Currently, for the problem that the garment steamer in the prior art cannot implement both odor removal and sterilization, an effective solution has not yet been provided.

SUMMARY

[0005] The present utility model provides a garment steamer, to resolve at least a problem that a garment steamer in the prior art cannot implement both odor removal and sterilization.

[0006] To resolve the problem, one aspect of the present utility model provides a garment steamer, having a host and a nozzle connected with the host by using a gas pipeline, where the garment steamer is provided thereon with a plasma generator, where plasmas generated by the plasma generator are released through a plasma outlet disposed on the nozzle. The plasma generator mainly includes a positive electrode, a negative electrode, and a housing, and the electrode includes such a structure as a metal wire shape, a zigzag shape, or a sharp needle shape. When ionizing air, the plasma generator generates lots of positive ions and negative ions, the negative ions are more than the positive ions, and a certain amount of ozone is also generated. The negative ions can achieve effects of dust removal and odor removal and promote human health. The generated ozone can kill bacteria quickly.

[0007] Preferably, the nozzle is provided thereon with a steam outlet, where the steam outlet and the plasma outlet are the same structure. A separate plasma outlet may be disposed, or the steam outlet and the plasma outlet may be disposed as the same structure, so that the structure is simpler.

[0008] Preferably, the plasma generator is disposed on the host, where the plasmas generated by the plasma generator are sent onto the nozzle through the gas pipeline. The plasma generator may be disposed in a steam generator or an atomization device in the host, and the generated plasmas are conveyed into the nozzle through the gas pipeline.

[0009] Preferably, the plasma generator is disposed in a part where the nozzle is bonded to the gas pipeline. Such disposition can avoid loss of plasmas during conveying, and improve utilization of the plasmas.

[0010] Preferably, the plasma generator is disposed in the nozzle, and the nozzle is internally provided with a conveying device that sends the plasmas generated by the plasma generator to the plasma outlet. The plasma generator is a separate device, may be controlled separately, and can still be used when a steaming function of the garment steamer is not used, so that a function of disinfection and sterilization at a low temperature is achieved for some clothes that cannot be ironed at a high temperature.

[0011] Preferably, the conveying device includes a channel and a fan, where one end of the channel is aligned with the plasma outlet. The separate conveying device, such as the fan and the channel, is disposed to send the plasmas out of the plasma outlet.

[0012] Preferably, the garment steamer is provided thereon with a control device that controls the plasma generator to work.

[0013] Preferably, the control device is provided with a plasma generator switch and a steam switch. The plasma generator may be used together with the steaming function of the garment steamer, or may be used separately.

[0014] Preferably, the control device is disposed on the nozzle, where the control device is connected with the host by using an electric wire disposed on the gas pipeline. The control device is disposed on the nozzle, and connected with the host by using an electric wire, which facilitates an instant operation of a user.

[0015] Preferably, the plasma generator switch and the steam switch are disposed on a gripping portion of the nozzle. Switch buttons are disposed on the gripping portion of the nozzle, which is more humanized and facilitates a user operation.

[0016] By means of the present utility model, a problem that a garment steamer in the prior art cannot implement both odor removal and sterilization is resolved, the garment steamer has functions of sterilization and odor removal, and the functions can be used separately from a steaming function of the garment steamer.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] The accompanying drawings described herein are intended to provide further understanding of the present utility model and are composition part of this ap-

plication. The exemplary embodiments of the present utility model and descriptions thereof are intended to explain the present utility model, and not to constitute an improper limitation to the present utility model. In the accompanying drawings:

FIG. 1 is a schematic diagram of a garment steamer in a first embodiment;

FIG. 2 is a schematic diagram (1) of a nozzle in the first embodiment;

FIG. 3 is a schematic diagram (2) of the nozzle in the first embodiment;

FIG. 4 is a schematic diagram of a nozzle in a second embodiment; and

FIG. 5 is a schematic diagram of a control device in a second embodiment.

DETAILED DESCRIPTION

[0018] The following describes in detail the present utility model with reference to the accompanying drawings by using embodiments. In should be noted that, as long as no conflict is caused, the embodiments of this application and features in the embodiments may be combined.

[0019] In a first embodiment, a garment steamer is provided. FIG. 1 is a schematic diagram of the garment steamer in the first embodiment. FIG. 2 is a schematic diagram (1) of a nozzle in the first embodiment. As shown in FIG. 1 and FIG. 2:

[0020] The garment steamer 1 has a host 2 and a nozzle 4 connected with the host 2 by using a gas pipeline 3, where the garment steamer 1 is provided thereon with a plasma generator 5. When ionizing air, the plasma generator 5 generates lots of positive ions and negative ions, the negative ions are more than the positive ions, and a certain amount of ozone is also generated. The negative ions can achieve effects of dust removal and odor removal and promote human health. The generated ozone can kill bacteria quickly.

[0021] Specifically, as shown in FIG. 2, the plasma generator 5 is disposed on the host 2, where plasmas generated by the plasma generator 5 are sent onto the nozzle 4 through the gas pipeline 3. The plasma generator 5 may be disposed in a steam generator or an atomization device on the host 2, and the generated plasmas are conveyed into the gas pipeline 3 and released through a plasma outlet 41 disposed on the nozzle 4, where a steam outlet 42 and the plasma outlet 41 are disposed separately, to work separately.

[0022] Preferably, FIG. 3 is a schematic diagram (2) of the nozzle in the first embodiment. As shown in FIG. 3, the nozzle 4 is provided thereon with a steam outlet 42, where the steam outlet 42 and the plasma outlet 41 are the same structure, so that the structure is simpler and more convenient.

[0023] In a second embodiment, a garment steamer 1 is provided, having a host 2 and a nozzle 4 connected with the host 2 by using a gas pipeline 3 (referring to FIG. 1).

[0024] FIG. 4 is a schematic diagram (1) of the nozzle in the second embodiment. As shown in FIG. 4, a plasma generator 5 is disposed in the nozzle 4 of the garment steamer 1, and the nozzle 4 is internally provided with a conveying device 7 that sends plasmas generated by the plasma generator 5 to a plasma outlet 41. The plasma generator 5 is a separate device, may be controlled separately, and can still be used when a steaming function of the garment steamer is not used, so that a function of disinfection and sterilization at a low temperature is achieved for some clothes that cannot be ironed.

[0025] Specifically, as shown in FIG. 4, the plasma generator 5 is disposed in a part 6 where the nozzle 4 is bonded to the gas pipeline 3. Such disposition in the part can avoid loss of plasmas during conveying, and improve efficiency.

[0026] Specifically, as shown in FIG. 4, the conveying device 7 includes a channel 8 and a fan 9, where one end 8a of the channel 8 is aligned with the plasma outlet 41. The separate conveying device 7, such as the fan 9 and the channel 8, is disposed to send the plasmas out of the plasma outlet 41.

[0027] Preferably, in the first embodiment and the second embodiment, the garment steamer 1 is provided thereon with a control device 10 that controls the plasma generator 5 to work, where the control device 10 is provided with a plasma generator switch 11 and a steam switch 12. By means of such disposition, the plasma generator may be used together with the steaming function of the garment steamer, or may be used separately.

[0028] FIG. 5 is a schematic diagram of the control device in the second embodiment. As shown in FIG. 5, the control device 10 is disposed on the nozzle 4, where the control device 10 is connected with the host 2 by using an electric wire 13 (not shown in the figure) disposed on the gas pipeline 3, and the plasma generator switch 11 and the steam switch 12 are disposed on a gripping portion 43 of the nozzle 4, which is more humanized and facilitates a user operation.

[0029] By means of the present utility model, a problem that a garment steamer in the prior art cannot implement both odor removal and sterilization is resolved, the garment steamer has functions of sterilization and odor removal, and the function can be operated separately from a steaming function of the garment steamer.

[0030] Various specific embodiments described in the foregoing and shown in accompanying drawings are only used for illustrating the present utility model, and are not entirety of the present utility model. Within the scope of the basic technical thought of the present utility model, any types of modification ions for the present utility model made by persons ordinarily skilled in the art fall within

the scope of the present utility model.

Claims

1. A garment steamer (1), having a host (2) and a nozzle (4) connected with the host by using a gas pipeline (3), **characterized in that**,
the garment steamer (1) is provided thereon with a plasma generator (5), wherein plasmas generated by the plasma generator (5) are released through a plasma outlet (41) disposed on the nozzle (4).

2. The garment steamer according to claim 1, **characterized in that**,
the nozzle (4) is provided thereon with a steam outlet (42);
wherein the steam outlet (42) and the plasma outlet (41) are the same structure.

3. The garment steamer according to claim 1, **characterized in that**,
the plasma generator (5) is disposed on the host (2), wherein the plasmas generated by the plasma generator (5) are sent onto the nozzle (4) through the gas pipeline (3).

4. The garment steamer according to claim 1, **characterized in that**,
the plasma generator (5) is disposed in a part (6) where the nozzle (4) is bonded to the gas pipeline (3).

5. The garment steamer according to claim 1, **characterized in that**,
the plasma generator (5) is disposed in the nozzle (4), and the nozzle (4) is internally provided with a conveying device (7) that sends the plasmas generated by the plasma generator (5) to the plasma outlet (41).

6. The garment steamer according to claim 2, **characterized in that**,
the conveying device (7) comprises a channel (8) and a fan (9), wherein one end (8a) of the channel (8) is aligned with the plasma outlet (41).

7. The garment steamer according to claim 1, **characterized in that**,
the garment steamer (1) is provided thereon with a control device (10) that controls the plasma generator (5) to work.

8. The garment steamer according to claim 7, **characterized in that**,
the control device (10) is provided with a plasma generator switch (11) and a steam switch (12).

9. The garment steamer according to claim 8, **characterized in that**,
the control device (10) is disposed on the nozzle (4); wherein the control device (10) is connected with the host (1) by using an electric wire (13) disposed on the gas pipeline (3).

10. The garment steamer according to claim 9, **characterized in that**,
the plasma generator switch (11) and the steam switch (12) are disposed on a gripping portion (43) of the nozzle (4).

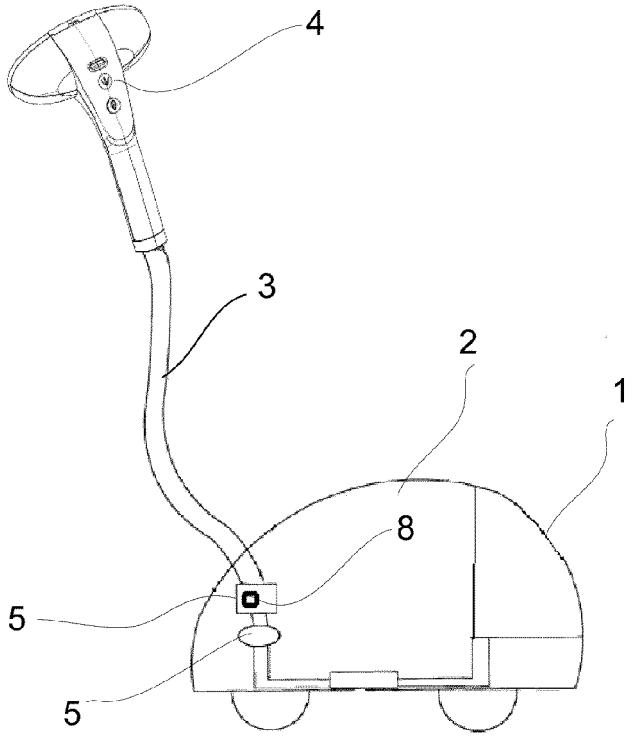

FIG. 1

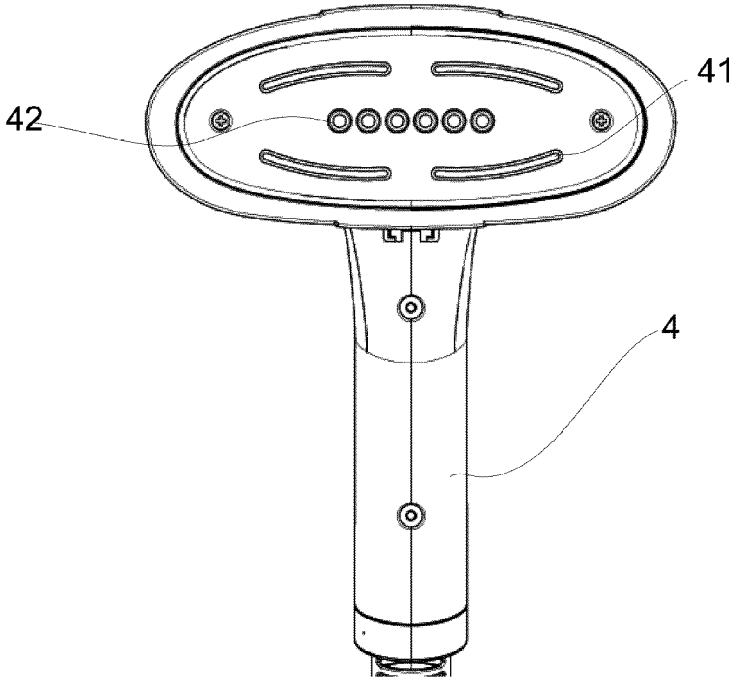

FIG. 2

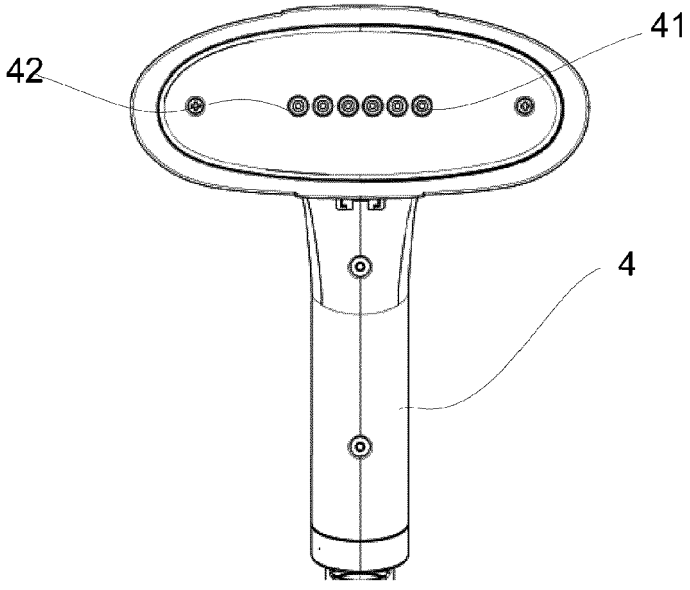

FIG. 3

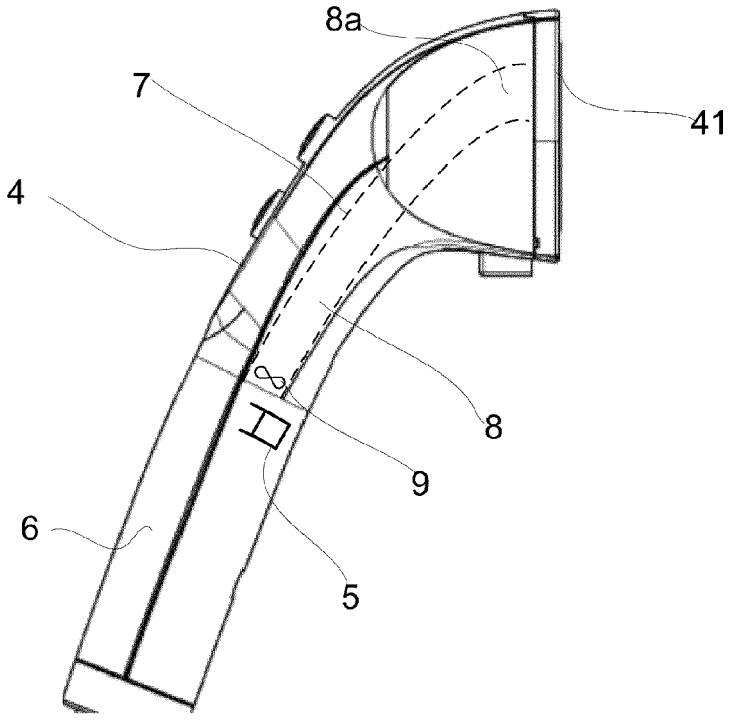

FIG. 4

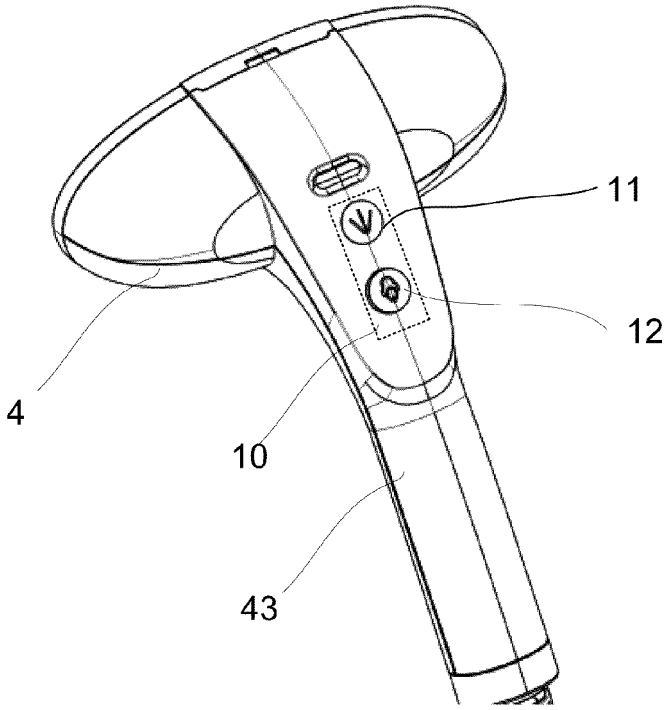

FIG. 5

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EUROPEAN SEARCH REPORT

Application Number
EP 17 15 1281

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X A	JP 2005 224757 A (SHARP KK) 25 August 2005 (2005-08-25) * paragraph [0005] - paragraph [0007] * * paragraph [0035] - paragraph [0046]; figures 1-3 *	1,2,4,5, 7,8 3,6,9,10	INV. D06F87/00
X A	EP 1 897 986 A1 (ELECTROLUX HOME PROD CORP [BE]) 12 March 2008 (2008-03-12) * paragraph [0018] - paragraph [0020] * * paragraph [0021] - paragraph [0041]; figure 1 * * paragraph [0048] - paragraph [0050]; figure 3 *	1,2,5-8 3,4,9,10	
A	US 2004/050118 A1 (CARRUBBA PAUL J [US] ET AL) 18 March 2004 (2004-03-18) * paragraph [0035]; figures 1, 2 * * paragraph [0044]; figure 2 * * paragraph [0047] *	1-10	

TECHNICAL FIELDS SEARCHED (IPC)

D06F
A47L

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	21 April 2017	Sabatucci, Arianna

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 17 15 1281

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21-04-2017

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP 2005224757 A	25-08-2005	JP 4194505 B2	10-12-2008
		JP 2005224757 A	25-08-2005
EP 1897986 A1	12-03-2008	AT 472004 T	15-07-2010
		EP 1897986 A1	12-03-2008
		ES 2346076 T3	08-10-2010
		RU 2009112400 A	20-10-2010
		WO 2008028565 A1	13-03-2008
US 2004050118 A1	18-03-2004	AU 2003270425 A1	30-04-2004
		CA 2498709 A1	25-03-2004
		EP 1558804 A2	03-08-2005
		US 2004050118 A1	18-03-2004
		US 2005132761 A1	23-06-2005
		WO 2004023957 A2	25-03-2004

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