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Spray gun

Abstract

A spray gun includes a spray gun body and an atomization hood arranged at an outlet of the spray gun body, and a pipeline is arranged in the spray gun body; the spray gun further includes a cleaning joint and a straw component that are installed on the spray gun body, the atomization hood and the cleaning joint are detachably installed at the outlet of the spray gun body, and the atomization hood and the cleaning joint are used alternately; the cleaning joint is connected with one end of the pipeline, and the straw component is correspondingly connected with the other end of the pipeline.

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References Cited

U.S. PATENT DOCUMENTS

Patent No.	Issued Date	Patentee Name	U.S. Cl.	CPC
3255972	12/1965	Hultgren	239/323	A01C 23/042
5853102	12/1997	Jarrett	220/23.87	B44D 3/122
5865341	12/1998	Martin	221/312A	B23K 9/202
5894927	12/1998	Bennett	206/804	B65D 83/005
5900293	12/1998	Zettle	220/666	B29C 49/04
5918815	12/1998	Wu	285/361	B05B 7/2478
5938389	12/1998	Shore	413/69	B21D 22/28
5975346	12/1998	Imperato	220/834	B44D 3/127

FOREIGN PATENT DOCUMENTS

Patent No.	Application Date	Country	CPC
207013187	12/2017	CN	N/A

OTHER PUBLICATIONS

CN207013187 English translation by Google (Year: 2018). cited by examiner

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Background/Summary

TECHNICAL FIELD

(1) The present invention relates to the technical field of spraying equipment, in particular to a spray gun that is convenient to clean.

BACKGROUND

(2) The spray gun is a piece of spraying equipment for performing atomization treatment on liquid, and for spraying an object to obtain a uniform and aesthetically pleasing coating layer.

(3) The existing Chinese patent with No. CN207013187U discloses a direct current spray gun, which includes a gun body, a material storage bucket, a shell, a trigger and a handle. A nozzle and an atomization hood arranged outside the nozzle are respectively arranged at the front end of the gun body, a needle plug mounting chamber is arranged in the gun body, a needle plug is movably arranged in the needle plug mounting chamber, and the gun body is formed with a transfusion pipeline. One end of the transfusion pipeline is connected with a suction pipe arranged in the material storage barrel and the other end is communicated with the needle plug mounting chamber. A fan is arranged at the tail end of the shell, a first air duct communicating with an atomization channel is arranged in the gun body, and the handle is respectively provided with a power supply for supplying power to the fan and a trigger switch for controlling the on/off of the power supply. A second air duct communicating with the material storage barrel and a control valve for controlling

the on/off of the second air duct are also arranged in the gun body, and the trigger switch, the needle plug and the control valve are in link fit with the trigger. During the use process, the liquid flowing out from the nozzle is immediately blown away by air pressure around the atomization hood to form an atomization effect, namely, the spraying process may be realized.

(4) However, the above direct current spray gun has the following disadvantages: the front end of the gun body is only provided with the atomization hood, which only allows the spraying gun to have a spraying function but does not allow the spaying gun to have the function of cleaning the passage during the use process.

SUMMARY

(5) The purpose of the present invention is to provide a spray gun convenient to clean, with the effects of multi-purpose and more functions.

(6) The above purpose of the utility model is achieved by the following technical solution: a spray gun that can include a spray gun body and an atomization hood arranged at an outlet of the spray gun body, and a pipeline is arranged in the spray gun body. The spray gun further includes a cleaning joint and a straw component that are installed on the spray gun body, the atomization hood and the cleaning joint are detachably installed at the outlet of the spray gun body, and the atomization hood and the cleaning joint are used alternately. The cleaning joint is connected with one end of the pipeline, and the straw component is correspondingly connected with the other end of the pipeline.

(7) By adopting the above technical solution, when the present invention is used for spraying, the atomization hood is installed at the front outlet of the spray gun body, and air pressure blowing to the direction of the atomization hood is formed in the spray gun body, so as to perform the spraying process. When the utility model is used for cleaning, the atomization hood can be removed from the spray gun body, and then the cleaning joint is correspondingly installed at the original position for installing the atomization hood. After the other end of the cleaning joint is connected with a water pipe, the water flowing quickly in the water pipe can flow into the pipeline in the spray gun body by the cleaning joint, then access into the straw component along the pipeline, so as to achieve the effects of cleaning the passage, self-cleaning, multi-purpose and more functions.

(8) The further setting of the utility model is as follows: the cleaning joint or the atomization hood are installed on the spray gun body by a compression nut, one end of the cleaning joint extends externally to form a limited bulge loop, the compression nut includes a stop end face, an external thread is arranged on the outer wall of the front end of the spray gun body, the compression nut is in threaded connection with the external thread, and the stop end face fits with the stopper of the limited bulge loop.

(9) By adopting the above technical solution, when the cleaning joint or the atomization hood is installed on the spray gun body, one end of the cleaning joint can pass through the compression nut, so that the stop end face resists to the limited bulge hoop, and then the compression nut is in threaded connection with the front end of the spray gun body. Quick installation may be achieved through the compression nut, and the disassembly and replacement are convenient. In addition, the same compression nut is adopted for fixing, so as to reduce the quantity of accessories and achieve the purpose of saving the cost.

(10) The further setting of the utility model is as follows: the cleaning joint includes a screw cleaning joint, an internal thread is arranged on the inner wall of the screw cleaning joint, a first connecting pipe is integrally formed in the screw cleaning joint, and the first connecting pipe is connected with the port of the pipeline.

(11) By adopting the above technical solution, when the screw cleaning joint is installed on the spray gun body, the first connecting pipe is connected with the pipeline, and the screw cleaning joint may be in fit connection with the screw connecting water pipe.

(12) The further setting of the utility model is as follows: the cleaning joint includes a quick connecting cleaning joint, a quick connecting neck and an annular groove are arranged on the outer

wall of the quick connecting cleaning joint, a second connecting pipe is integrally formed in the quick connecting cleaning joint, and the second connecting pipe is connected with the port of the pipeline.
(13) By adopting the above technical solution, when the quick connecting cleaning joint is installed on the spray gun body, the second connecting pipe is connected with the pipeline, and the quick connecting cleaning joint may be in fit connection with the quick connecting water pipe, so as to achieve quick connection.
(14) The further setting of the utility model is as follows: a limited lug boss is arranged on the outer wall of the spray gun body, and the limited lug boss is in resisting fit with the compression nut.
(15) By adopting the above technical solution, the limited lug boss can achieve a better limiting effect on the compression nut, so as to prevent the damage caused by excessive tightening of the compression nut during the installation process.
(16) The further setting of the utility model is as follows: the pipeline is T-shaped, the T-shaped pipeline includes a horizontal channel and a vertical channel, one end of the horizontal channel is sealed and the other end is opened and connected with the cleaning joint; and one end of the vertical channel is communicated with the horizontal channel and the other end is connected with the straw component.
(17) The further setting of the utility model is as follows: the straw component includes a straw body and a support cover integrally formed on the outer wall of the straw body, and one end of the straw body is inserted into the pipeline, so that the cleaning joint is communicated with the straw body through the pipeline.
(18) By adopting the above technical solution, during use, the water in the water pipe flows into the pipeline through the cleaning joint, and flows into the straw body from the pipeline, so as to achieve the cleaning process of the pipeline inner wall.
(19) The further setting of the utility model is as follows: the support cover is provided with a reinforcing rib.
(20) The further setting of the utility model is as follows: an extending cover is integrally formed on the spray gun body, an annular caulking groove is formed on the outer wall of the support cover, a sealing ring is arranged between the extending cover and the support cover, an inner ring of the sealing ring is embedded into the annular caulking groove, and an outer wall of the sealing ring resists to an inner wall of the extending cover.
(21) In conclusion, the utility model has the following beneficial effects:
(22) 1. The manner that the cleaning joint capable of replacing the atomization hood is arranged on the spray gun body not only has the spraying function, but also can realize the self-cleaning process, to clean the pipeline and expand the using range and the using scenario greatly, so the spray gun has effects of multi-purpose and more functions.
(23) 2. The same compression nut is adopted to lock the atomization hood on the spray gun body and lock and fix the cleaning joint on the spray gun body, and the same compression nut is adopted for fixing, so as to reduce the quantity of the accessories and achieve the purpose of saving the cost.

Description

BRIEF DESCRIPTION OF THE DRAWINGS
(1) FIG. **1** is a relationship diagram of an installation structure for spraying in embodiment 1 or embodiment 2.
(2) FIG. **2** is a relationship diagram of an installation structure for cleaning in embodiment 1.
(3) FIG. **3** is an exploded drawing of embodiment 1.
(4) FIG. **4** is a section view of a connecting water pipe in embodiment 1.
(5) FIG. **5** is a relationship diagram of an installation structure for cleaning in embodiment 2.

(6) FIG. **6** is an exploded drawing of embodiment 2.
(7) FIG. **7** is a section view of a connecting water pipe in embodiment 2.
(8) In the drawing: **1**. Spray gun body; **11**. Outlet; **12**. Pipeline; **121**. Horizontal channel; **122**. Vertical channel; **13**. Host; **14**. External thread; **15**. Limited lug boss; **16**. Extending cover; **2**. Atomization hood; **21**. Cleaning joint; **3**. Compression nut; **31**. Stop end face; **4**. Straw component; **41**. Straw body; **42**. Support cover; **421**. Reinforcing rib; **422**. Annular caulking groove; **5**. Limited bulge loop; **6**. Screw cleaning joint; **61**. Internal thread; **62**. First connecting pipe; **63**. Screw connecting water pipe; **7**. Sealing ring; **8**. Connecting cleaning joint; **81**. Connecting neck; **82**. Annular groove; **83**. Second connecting pipe; **84**. Connecting water pipe.

DETAILED DESCRIPTION OF THE EMBODIMENTS

(9) The utility model is further described in combination with drawings below.

Embodiment 1

(10) A spray gun convenient to clean, as shown in FIGS. **1-4**, includes a spray gun body **1**, the front end of the spray gun body **1** is provided with an outlet **11** while the rear end of the spray gun body **1** is provided with a host **13**, an atomization hood **2** and a cleaning joint **21** are detachably installed at the front end of the spray gun body **1**, and the cleaning joint **21** and the atomization hood **2** are detachably installed at the outlet **11** of the spray gun body **1**, and the cleaning joint **21** and the atomization hood **2** are used alternately, so as to achieve the purposes of multi-function and multi-purpose.
(11) As shown in FIG. **3** and FIG. **4**, a pipeline **12** is arranged in the spray gun body **1**. In this embodiment, the pipeline **12** is T-shaped, the T-shaped pipeline includes a horizontal channel **121** and a vertical channel **122**, one end of the horizontal channel **121** is sealed and the other end is opened and connected with the cleaning joint **21**; when the atomization hood **2** is installed on the spray gun body **1**, a nozzle is installed at the opening of the horizontal channel **121**; and one end of the vertical channel **122** is communicated with the horizontal channel **121** and the other end is connected with a straw component **4**.
(12) As shown in FIG. **4**, the cleaning joint **21** or the atomization hood **2** is installed on the spray gun body **1** by a compression nut **3**, one end of the cleaning joint **21** extends externally to form a limited bulge loop **5**, the compression nut **3** includes a stop end face **31**, an external thread **14** is arranged on the outer wall of the front end of the spray gun body **1**, the compression nut **3** is in threaded connection with the external thread **14**, and the stop end face **31** fits with the stopper of the limited bulge loop **5**. A limited lug boss **15** is arranged on the outer wall of the spray gun body **1**, and the limited lug boss **15** is in resisting fit with the compression nut **3**. When the cleaning joint **21** or the atomization hood **2** is installed on the spray gun body **1**, one end of the cleaning joint **21** can pass through the compression nut **3**, so that the stop end face **31** resists to the limited bulge hoop **5**, and then the compression nut **3** is in threaded connection with the front end of the spray gun body **1**. Quick installation may be achieved through the compression nut **3**, and the disassembly and replacement are convenient. In addition, the same compression nut **3** is adopted for fixing, so as to reduce the quantity of accessories and achieve the purpose of saving the cost. The limited lug boss **15** can achieve a better limiting effect on the compression nut **3**, so as to prevent the damage caused by excessive tightening of the compression nut **3** during the installation process.
(13) As shown in FIG. **3** and FIG. **4**, the cleaning joint **21** includes a screw cleaning joint **6**, an internal thread **61** is arranged on the inner wall of the screw cleaning joint **6**, a first connecting pipe **62** is integrally formed in the screw cleaning joint **6**, and the first connecting pipe **62** is connected with the front port of the pipeline **12**.
(14) As shown in FIG. **3** and FIG. **4**, the straw component **4** includes a straw body **41** and a support cover **42** integrally formed on the outer wall of the straw body **41**, the support cover **42** is provided with a reinforcing rib **421**, and one end of the straw body **41** is inserted into the pipeline **12**, so that the cleaning joint **21** is communicated with the straw body **41** through the pipeline **12**. An

extending cover **16** is integrally formed on the spray gun body **1**, an annular caulking groove **422** is formed on the outer wall of the support cover **42**, a sealing ring **7** is arranged between the extending cover **16** and the support cover **42**, an inner ring of the sealing ring **7** is embedded into the annular caulking groove **422**, and an outer wall of the sealing ring **7** resists to an inner wall of the extending cover **16**.

(15) The basic working principle of the utility model is as follows: when the utility model is used for spraying, the atomization hood **2** is installed at the front outlet **11** of the spray gun body **1**, and air pressure blowing to the direction of the atomization hood **2** is formed in the spray gun body **1**, so as to perform the spraying process; and the spray gun is widely used for spraying the surface spraying decoration, such as machines, parts, equipment, furniture, daily necessities as well as insecticide, disinfectant, freshener spraying. When the spray gun is used for cleaning, the atomization hood **2** can be removed from the spray gun body **1**, and then the screw cleaning joint **6** is correspondingly installed at the original position for installing the atomization hood **2**, the first connecting pipe **62** is connected with the pipeline **12**, after the other end of the screw cleaning joint **6** is connected with a screw connecting water pipe **63**, the water flowing quickly in the water pipe can flow into the pipeline **12** in the spray gun body **1** by the cleaning joint **21**, then access into the straw component **4** along the pipeline **12**, so as to achieve the effects of cleaning the passage, self-cleaning, multi-purpose and more functions.

(16) Since the basic structure of the spray gun body **1** is the same as that in the prior art, detail description is not made herein.

Embodiment 2

(17) A spray gun convenient to clean, as shown in FIGS. **5-7**, the difference between this embodiment and the embodiment 1 is as follows: the cleaning joint **21** is set as a connecting cleaning joint **8**, of which the outer wall is provided with a connecting neck **81** and an annular groove **82**, a second connecting pipe **83** is integrally formed in the connecting cleaning joint **8**, and the second connecting pipe **83** is connected with the port of the pipeline **12**. When the connecting cleaning joint **8** is installed on the spray gun body **1**, the second connecting pipe **83** is connected with the pipeline **12**, and the connecting cleaning joint **8** may be in fit connection with the connecting water pipe **84**, so as to achieve the purpose of quick connection.

(18) The above embodiments are the better embodiments of the utility model, and the equivalent change or modification made based on the structure, feature and principle in the application scope of the utility model fall into the patent application scope of the utility model.

Claims

1. A spray gun, comprising: a spray gun body having an outlet and an atomization hood, wherein the atomization hood is arranged at the outlet of the spray gun body; a pipeline is arranged in the spray gun body, wherein the pipeline comprises a horizontal channel and a vertical channel; and a cleaning joint and a straw component, wherein the straw component is installed under the spray gun body, wherein the outlet of the spray gun body is detachably equipped with the atomization hood for spraying and the cleaning joint for cleaning, when spraying is required the atomization hood is installed and the cleaning joint is removed from the spray gun body, and when cleaning is required the cleaning joint is installed at the outlet of the spray gun body and the atomization hood is removed, wherein the cleaning joint is connected with the horizontal channel of the pipeline, and the straw component is connected with the vertical channel of the pipeline.

2. The spray gun according to claim 1, wherein the cleaning joint or the atomization hood is installed on the spray gun body through a compression nut, wherein one end of the cleaning joint extends externally to form a limited bulge loop, wherein the compression nut comprising a stop end face, wherein an external thread is arranged on an outer wall of a front end of the spray gun body, wherein the compression nut is in threaded connection with the external thread, and wherein the

stop end face fits with a stopper of the limited bulge loop.
3. The spray gun according to claim 1 or 2, wherein the cleaning joint is set as a screw cleaning joint, wherein an internal thread is arranged on an inner wall of the screw cleaning joint, wherein a first connecting pipe is integrally formed in the screw cleaning joint, and wherein the first connecting pipe is connected with a port of the pipeline.
4. The spray gun according to claim 2, wherein a limited lug boss is arranged on the outer wall of the spray gun body, and wherein the limited lug boss is in resisting fit with the compression nut.
5. The spray gun according to claim 1, wherein the cleaning joint is set as a connecting cleaning joint, wherein a connecting neck and an annular groove are arranged on the outer wall of the connecting cleaning joint, wherein a second connecting pipe is integrally formed in the connecting cleaning joint, and wherein the second connecting pipe is connected with the port of the pipeline.
6. The spray gun according to claim 1, wherein the pipeline is T-shaped, and the horizontal channel has two ends, one end of the horizontal channel is sealed and another end of the horizontal channel is open and connected with the cleaning joint and the vertical channel has two ends, one end of the vertical channel is connected with the horizontal channel and another end of the vertical channel is connected with the straw component.
7. The spray gun according to claim 1, wherein the straw component comprise a straw body and a support cover integrally formed on an outer wall of the straw body, and wherein one end of the straw body is inserted into the pipeline, so that the cleaning joint is connected with the straw body through the pipeline.
8. The spray gun according to claim 7, wherein the support cover is provided with a reinforcing rib.
9. The spray gun according to claim 7, wherein an extending cover is integrally formed on the spray gun body, wherein an annular caulking groove is formed on the outer wall of the support cover, wherein a sealing ring is arranged between the extending cover and the support cover, wherein an inner ring of the sealing ring is embedded into the annular caulking groove, and wherein an outer wall of the sealing ring resists to an inner wall of the extending cover.