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(54) **FLEXIBLE TUBE CONNECTING STRUCTURE, AND VACUUM CLEANER EMPLOYING SAME**
FLEXIBLE SCHLAUCHVERBINDUNGSSTRUKTUR UND STAUBSAUGER DAMIT
STRUCTURE DE LIAISON DE TUBE SOUPLE, ET ASPIRATEUR L'UTILISANT

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Description

Technical Field

[0001] The present disclosure relates to a technical field of connectors, and more particularly to a hose connecting structure for vacuum cleaners and a vacuum cleaner employing the same.

Background

[0002] A main unit and handle of a vacuum cleaner are connected by a hose, and the hose can be rotated by providing a collar at an end portion of the hose. Meanwhile, for most vacuum cleaners, only the hose at the handle end can be rotated while the hose at an end connected with the main unit cannot be rotated.

[0003] In the related art, a structure for realizing a rotation of the hose is: before an end portion of the hose is glued to fix a hose coupler, a collar having an elastic buckle is sleeved, wherein the collar may be rotated relative to the hose. Then, the elastic buckle is matched with a buckle position on a handle body to realize the mounting of the collar on the handle body. Because the hose and the collar are rotatably connected, the hose and the hose structure can be rotated in the handle body.

[0004] The above-mentioned structure for realizing the rotation of the hose has the following problems: the first problem is that because only the hose at the handle body can be rotated, the hose is still twisted when a user uses the vacuum cleaner; the second problem is that because the hose is sleeved with the collar having the elastic buckle before the hose coupler is fixed, if a user forget to assemble the collar before the hose coupler is fixed, due to structural factors of the collar, the hose having the hose coupler cannot be matched with the collar.

[0005] For the above-mentioned problem, a hose connecting structure and a vacuum cleaner employing the same are provided, which can solve a problem in the related art that a hose cannot be sleeved with a collar after a hose coupler is mounted at an end portion of the hose.

The document FR 2824382 A1 provides a connection between two parts of a suction circuit of a waste recovery system, each part includes a cylindrical end which is inserted in the second end. The first end has a transverse shoulder and the second end includes a split elastic collar housed in an end groove. The collar has a radial lug passing through an end opening for engaging behind the first end shoulder when inserted in the second end. A collar spacing part is housed in one of the ends.

Summary

[0006] Some embodiments of the present disclosure provide a hose connecting structure for vacuum cleaners, which may solve the problem in the related art that a hose cannot be sleeved with a collar after a hose coupler is

mounted at an end portion of the hose.

[0007] Some embodiments of the present disclosure also provide a vacuum cleaner, employing the above-mentioned hose connecting structure.

[0008] According to the embodiments of the present disclosure, the following technical solution is adopted:

A hose connecting structure includes a hose coupler fixedly disposed at an end portion of a hose, and an collar rotatably connected with the hose under limiting limitation of the hose coupler, wherein the collar includes an collar body and an elastic limiting portion provided at one end of the collar body, and an inner diameter of the collar body is not smaller than an outer diameter of the hose coupler.

[0009] When the collar passes into the hose through the hose coupler, the elastic limiting portion is elastically deformed to expand outward. After the collar passes through the hose coupler, the elastic limiting portion restores to an original state and is matched with the hose coupler to limit the collar.

[0010] In an exemplary embodiment, the elastic limiting portion is a plurality of elastic arm structures evenly distributed at one end of the collar body, and a diameter of a circumference surrounded by inner walls of the elastic arm structures is larger than an outer diameter of the hose coupler in the presence of elastic deformation and is smaller than the outer diameter of the hose coupler in the absence of elastic deformation.

[0011] In an exemplary embodiment, each of the elastic arm structures includes an elastic arm main body inclined toward a center of the collar.

[0012] In an exemplary embodiment, a free end of the elastic arm main body is provided with a baffle structure perpendicular to an end portion of the elastic arm main body.

[0013] In an exemplary embodiment, an inner side of a junction between the elastic arm main body and the baffle structure is an arc-shaped structure.

[0014] In an exemplary embodiment, the hose coupler is fixedly connected with the hose through glue.

[0015] A vacuum cleaner includes a hose, wherein at least one end of the hose is provided with the above-mentioned hose connecting structure.

[0016] In an exemplary embodiment, the vacuum cleaner further includes a handle and a main unit. Both ends of the hose are provided with the hose connecting structure separately. The hose is connected with the handle and the main unit through the hose connecting structures respectively.

[0017] In an exemplary embodiment, the main unit and the handle are provided with a connector separately, and the connector is fixedly connected with a collar body of a collar.

[0018] In an exemplary embodiment, the connector is fixedly connected with the collar body of the collar through the cooperation of an elastic buckle and a limiting hole.

[0019] The beneficial effects of some embodiments of the present disclosure are: in some embodiments of the

present disclosure, the elastic limiting portion is provided at one end of the collar body of the collar, and when the hose having the hose coupler needs to be sleeved with the collar, the collar is covered around the hose and is limited in cooperation with the hose coupler by means of the deformation and restoration of the elastic limiting portion. Therefore, the hose having the hose coupler can be sleeved with the collar.

Brief Description of the Drawings

[0020]

Fig. 1 is a structural schematic view of a hose connecting structure provided by an exemplary embodiment of the present disclosure;

Fig. 2 is a structural schematic view of a hose connecting structure provided by an exemplary embodiment of the present disclosure in cooperation with a connector;

Fig. 3 is a structural schematic view of a hose assembly provided by an exemplary embodiment of the present disclosure; and

Fig. 4 is a local enlarged view of a part "I" in Fig. 3.

[0021] In the drawings,

1: hose; 2: hose coupler; 3: collar; 4: handle; 5: connector;

31: collar body; 32: elastic limiting portion;

51: limiting hole;

311: elastic buckle;

321: elastic arm main body; 322: baffle structure.

Detailed Description of the Embodiments

[0022] The technical solutions of the present disclosure will be further described below with reference to the accompanying drawings and exemplary implementation manners.

[0023] As shown in Fig. 1 to Fig. 4, the present implementation manner provides a hose connecting structure, comprising a hose coupler 2 fixedly provided at an end portion of a hose 1, and a collar 3 rotatably connected with the hose 1 under a limitation of the hose coupler 2, wherein the collar 3 includes a collar body 31 and an elastic limiting portion 32 provided at one end of the collar body 31, and an inner diameter of the collar body 31 is not smaller than an outer diameter of the hose coupler 2. When the collar 3 passes into the hose 1 through the hose coupler 2, the elastic limiting portion is elastically deformed to expand outward. After the collar 3 passes through the hose coupler 2, the elastic limiting portion 32 restores to an original state and is matched with the hose coupler 2 to limit the collar 3.

[0024] In the present implementation manner, the elastic limiting portion 32 is provided at one end of the collar body 31 of the collar 3, and when the hose having the

hose coupler 2 needs to be sleeved with the collar 3, the collar 3 sleeves the hose 1 and is limited in cooperation with the hose coupler 2 under the deformation and restoration of the elastic limiting portion 32. Therefore, the hose 1 having the hose coupler 2 can be sleeved with the collar 3.

[0025] In an exemplary embodiment, the elastic limiting portion 32 is a plurality of elastic arm structures evenly distributed at one end of the collar body 31, and a diameter of a circumference surrounded by inner walls of the elastic arm structures is larger than an outer diameter of the hose coupler 2 in the presence of elastic deformation and is smaller than the outer diameter of the hose coupler 2 in the absence of elastic deformation.

[0026] The diameter of the circumference is larger than the outer diameter of the hose coupler 2 in the presence of elastic deformation and is smaller than the outer diameter of the hose coupler 2 in the absence of elastic deformation. By means of the elastic deformation of the elastic arm structure, the hose 1 having the hose coupler 2 can be sleeved with the collar 3. By means of the restoration of the elastic arm structure, the collar 3 can be limited in cooperation with the hose coupler 2.

[0027] The presence of elastic deformation refers to that the elastic limiting portion 32 is opened under an action of the hose coupler 2. The absence of elastic deformation refers to that the elastic limiting portion 32 is restored to an original state after passing through the hose coupler 2. The original state here refers to a state where the elastic limiting portion 32 is located usually.

[0028] In an exemplary implementation, the elastic arm structure includes an elastic arm main body 321 inclined toward a center of the collar 3. By using the simple structure, the above-mentioned elastic deformation and restoration functions can be achieved.

[0029] A free end of the elastic arm main body 321 is provided with a baffle structure 322 perpendicular to an end portion thereof. By providing the baffle structure 322, a contact area between the elastic arm and the hose coupler 2 can be increased, thereby improving the structural strength of the elastic arm and the rotation stability of the collar 3.

[0030] The inner side of a junction between the elastic arm main body 321 and the baffle structure 322 is an arc-shaped structure. The inner side here refers to one side of the collar 3 contacted with the hose coupler 2. By setting the part as the arc-shaped structure, the rotation stability of the collar 3 can be further improved.

[0031] The hose coupler 2 is fixedly connected with the hose 1 through glue. The hose coupler 2 and the hose 1 are fixedly connected through glue, so that the convenience, firmness and sealing property of connection therebetween can be improved. Of course, it does not rule out the use of other connection manners such as threaded connection.

[0032] In the present implementation manner, a vacuum cleaner is also provided. The vacuum cleaner includes a hose 1, wherein at least one end of the hose 1

is provided with the above-mentioned hose connecting structure.

[0033] In an exemplary implementation, the vacuum cleaner further includes a handle 4 and a main unit. Both ends of the hose 1 are provided with the hose connecting structure separately. The hose is connected with the handle 4 and the main unit through the hose connecting structures respectively. The hose 1 is connected with the main unit and the handle 4 through the hose connecting structures respectively, and therefore the handle end and main unit end of the hose 1 may be rotated. Thus, in the process of using the vacuum cleaner, the problem of hose winding can be prevented.

[0034] An exemplary manner of cooperation of the hose connecting structure with the main unit and the handle 4 is that: the main unit and the handle 4 are provided with a connector 5 separately, wherein the connector 5 on the handle 4 and the handle 4 are connected together and form a whole structure, and the connector 5 on the main unit is an independent connecting member. The connector 5 is fixedly connected with a collar body 31 of a collar 3. In an exemplary implementation, the connector 5 is fixedly connected with the collar body 31 of the collar 3 through the cooperation of an elastic buckle 311 and a limiting hole 5. By means of the cooperation of the elastic buckle 311 and the limiting hole 5, the connector 5 and the collar 3 can be conveniently connected and detached. Further preferably, an operation button connected with the elastic buckle 311 is also comprised. By pressing the operation button, the elastic buckle 311 and the limiting hole 5 can be disengaged, thereby further facilitating detaching of the connector 5 and the collar 3. As a preferred manner, the elastic buckle 311 is provided on the collar body 31, and the limiting hole is provided on the connector 5.

[0035] The technical principle of the present disclosure has been described above with reference to exemplary embodiments. These descriptions are only for explaining the principle of the present disclosure, and cannot be interpreted in any way as limiting the scope of the present disclosure. Based on the explanation herein, those skilled in the art may associate other exemplary embodiments of the present which fall within the scope of protection as defined by the appended claims.

Claims

1. A hose connecting structure for a vacuum cleaner, comprising a hose coupler (2) fixedly provided at an end portion of a hose (1), and a collar (3) rotatably connected with the hose (1) under a limitation of the hose coupler (2), wherein the collar (3) comprises a collar body (31) and an elastic limiting portion (32) provided at one end of the collar body (31), and an inner diameter of the collar body (31) is not smaller than an outer diameter of the hose coupler (2); and

when the collar (3) passes into the hose (1) through the hose coupler (2), the elastic limiting portion (32) is elastically deformed to expand outward, and after the collar (3) passes through the hose coupler (2), the elastic limiting portion (32) restores to an original state and is matched with the hose coupler (2) to limit the collar (3); wherein

the elastic limiting portion (32) is a plurality of elastic arm structures evenly distributed at one end of the collar body (31), and a diameter of a circumference surrounded by inner walls of the elastic arm structures is larger than an outer diameter of the hose coupler (2) in the presence of elastic deformation and is smaller than the outer diameter of the hose coupler (2) in the absence of elastic deformation; each of the elastic arm structures comprises an elastic arm main body (321) inclined toward a center of the collar (3); and a free end of the elastic arm main body (321) is provided with a baffle structure (322) perpendicular to an end portion of the elastic arm main body (321).

2. The hose connecting structure for the vacuum cleaner as claimed in claim 1, wherein an inner side of a junction between the elastic arm main body (321) and the baffle structure (322) is of an arc-shaped structure.
3. The hose connecting structure for the vacuum cleaner as claimed in claim 1, wherein the hose coupler (2) is fixedly connected with the hose (1) through glue.
4. A vacuum cleaner, comprising a hose, wherein at least one end of the hose (1) is provided with the hose connecting structure as claimed in any one of claims 1 to 3.
5. The vacuum cleaner as claimed in claim 4, further comprising a handle (4) and a main unit, wherein both ends of the hose (1) are provided with the hose connecting structure separately, and the hose is connected with the handle (4) and the main unit through the hose connecting structures respectively.
6. The vacuum cleaner as claimed in claim 5, wherein the main unit and the handle (4) are provided with a connector (5) separately, and the connector (5) is fixedly connected with a collar body (31) of a collar (3).
7. The vacuum cleaner as claimed in claim 6, wherein the connector (5) is fixedly connected with the collar

body (31) of the collar (3) through a cooperation of an elastic buckle (311) and a limiting hole (51).

Patentansprüche

1. Schlauchverbindungsstruktur für einen Staubsauger, umfassend eine Schlauchkupplung (2), die an einem Endteil eines Schlauchs (1) fest vorgesehen ist, und einen Kragen (3), der mit dem Schlauch (1) unter einer Begrenzung der Schlauchkupplung (2) drehbar verbunden ist, wobei der Kragen (3) einen Kragenkörper (31) und einen elastischen begrenzenden Teil (32) umfasst, bereitgestellt an einem Ende des Kragenkörpers (31), und ein Innendurchmesser des Kragenkörpers (31) nicht kleiner als ein Außendurchmesser der Schlauchkupplung (2) ist; und

wenn der Kragen (3) durch die Schlauchkupplung (2) in den Schlauch (1) durchtritt, wird der elastische begrenzende Teil (32) elastisch verformt, um sich nach außen auszuweiten, und nachdem der Kragen (3) durch die Schlauchkupplung (2) durchgetreten ist, stellt der elastische begrenzende Teil (32) seinen ursprünglichen Zustand wieder her und wird mit der Schlauchkupplung (2) zusammengepasst, um den Kragen (3) zu begrenzen; wobei

der elastische begrenzende Teil (32) eine Mehrheit von elastischen Armstrukturen ist, die an einem Ende des Kragenkörpers (31) gleichmäßig verteilt sind, und ein Durchmesser eines Umfangs, der von inneren Wänden der elastischen Armstrukturen umgeben ist, in Gegenwart einer elastischen Verformung größer als ein Außendurchmesser der Schlauchkupplung (2) und in Abwesenheit einer elastischen Verformung kleiner als der Außendurchmesser der Schlauchkupplung (2) ist;

jede der elastischen Armstrukturen einen elastischen Armhaupte Körper (321) umfasst, der zum Mittelpunkt des Kragens (3) hin geneigt ist; und

ein freies Ende des elastischen Armhaupte Körpers (321) mit einer Leitstruktur (322) senkrecht zu einem Endteil des elastischen Armhaupte Körpers (321) versehen ist.

2. Schlauchverbindungsstruktur für den Staubsauger nach Anspruch 1, wobei eine Innenseite einer Verbindungsstelle zwischen dem elastischen Armhaupte Körper (321) und der Leitstruktur (322) von einer bogenförmigen Struktur ist.

3. Schlauchverbindungsstruktur für den Staubsauger

nach Anspruch 1, wobei die Schlauchkupplung (2) durch Klebstoff mit dem Schlauch (1) fest verbunden ist.

4. Staubsauger, umfassend einen Schlauch, wobei mindestens ein Ende des Schlauchs (1) mit der Schlauchverbindungsstruktur nach einem der Ansprüche 1 bis 3 versehen ist.

5. Staubsauger nach Anspruch 4, weiter umfassend einen Griff (4) und eine Haupteinheit, wobei beide Enden des Schlauchs (1) getrennt mit der Schlauchverbindungsstruktur versehen sind, und der Schlauch mit dem Griff (4) bzw. der Haupteinheit durch die Schlauchverbindungsstrukturen verbunden sind.

6. Staubsauger nach Anspruch 5, wobei die Haupteinheit und der Griff (4) getrennt mit einem Verbinder (5) versehen sind, und der Verbinder (5) mit einem Kragenkörper (31) eines Kragens (3) fest verbunden ist.

7. Staubsauger nach Anspruch 6, wobei der Verbinder (5) durch ein Zusammenwirken einer elastischen Schnalle (311) und eines begrenzenden Lochs (51) mit dem Kragenkörper (31) des Kragens (3) fest verbunden ist.

Revendications

1. Structure de raccordement de tuyau pour un aspirateur, comprenant un coupleur de tuyau (2) prévu de manière fixe à une partie d'extrémité d'un tuyau (1), et un collier (3) relié de manière rotative au tuyau (1) sous une limitation du coupleur de tuyau (2), le collier (3) comprenant un corps de collier (31) et une partie de limitation élastique (32) prévue à une extrémité du corps de collier (31), et un diamètre intérieur du corps de collier (31) qui n'est pas inférieur à un diamètre extérieur du coupleur de tuyau (2); et

lorsque le collier (3) passe dans le tuyau (1) à travers le coupleur de tuyau (2), la partie de limitation élastique (32) est déformée élastiquement pour se dilater vers l'extérieur, et après que le collier (3) passe à travers le coupleur de tuyau (2), la partie de limitation élastique (32) revient à un état d'origine et est adaptée au coupleur de tuyau (2) pour limiter le collier (3); dans laquelle

la partie de limitation élastique (32) est une pluralité de structures de bras élastiques uniformément réparties à l'une extrémité du corps de collier (31), et un diamètre d'une circonférence entourée par des parois in-

- ternes des structures de bras élastiques est supérieur à un diamètre extérieur du coupleur de tuyau (2) en présence d'une déformation élastique et est inférieur au diamètre extérieur du coupleur de tuyau (2) en l'absence d'une déformation élastique ;
 chacune des structures de bras élastiques comprend un corps principal de bras élastique (321) incliné vers un centre du collier (3) ; et
 une extrémité libre du corps principal de bras élastique (321) est pourvue d'une structure déflecteur (322) perpendiculaire à une partie d'extrémité du corps principal de bras élastique (321).
2. Structure de raccordement de tuyau pour un aspirateur selon la revendication 1, dans laquelle un côté intérieur d'une jonction entre le corps principal de bras élastique (321) et la structure déflecteur (322) est d'une structure en forme d'arc.
 3. Structure de raccordement de tuyau pour un aspirateur selon la revendication 1, dans laquelle le coupleur de tuyau (2) est relié de manière fixe au tuyau (1) par de la colle.
 4. Aspirateur comprenant un tuyau, dans lequel au moins une extrémité du tuyau (1) est pourvue de la structure de raccordement de tuyau selon l'une quelconque des revendications 1 à 3.
 5. Aspirateur selon la revendication 4, comprenant en outre une poignée (4) et une unité principale, dans lequel les deux extrémités du tuyau (1) sont pourvues de la structure de raccordement de tuyau séparément, et le tuyau est relié respectivement à la poignée (4) et l'unité principale à travers les structures de raccordement de tuyau.
 6. Aspirateur selon la revendication 5, dans lequel l'unité principale et la poignée (4) sont pourvues d'un connecteur (5) séparément, et le connecteur (5) est relié de manière fixe à un corps de collier (31) d'un collier (3).
 7. Aspirateur selon la revendication 6, dans lequel le connecteur (5) est relié de manière fixe au corps de collier (31) du collier (3) par une coopération d'une boucle élastique (311) et d'un trou de limitation (51).

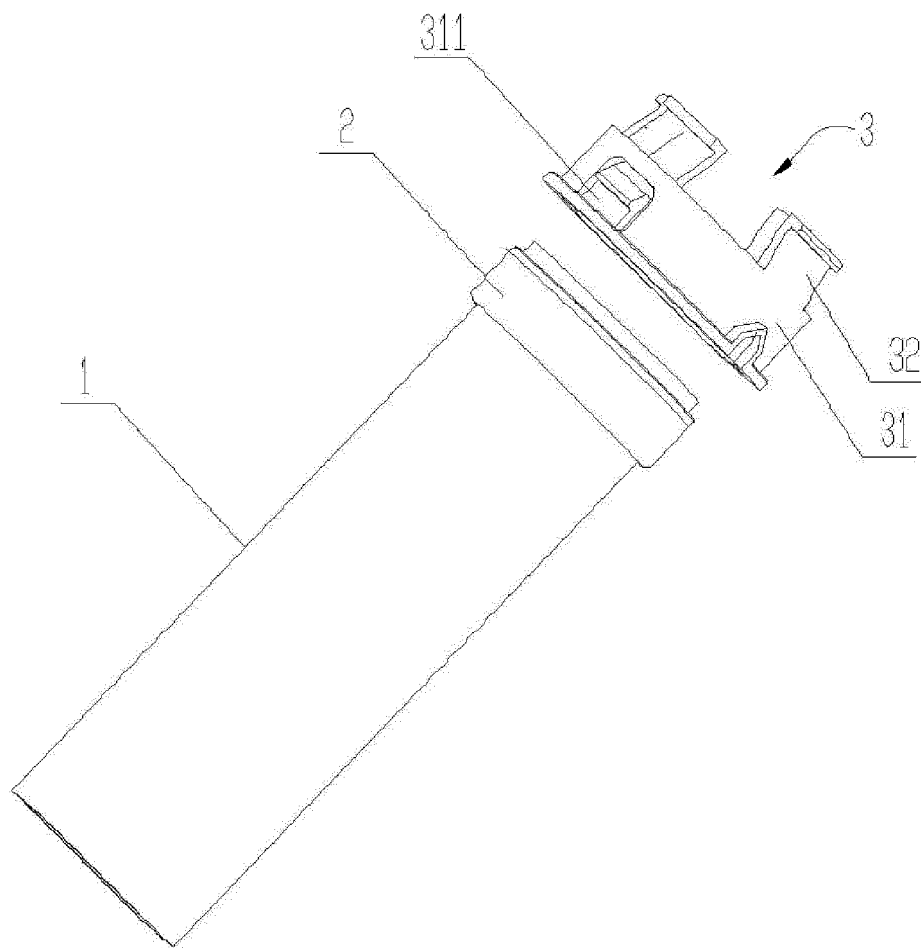


Fig. 1

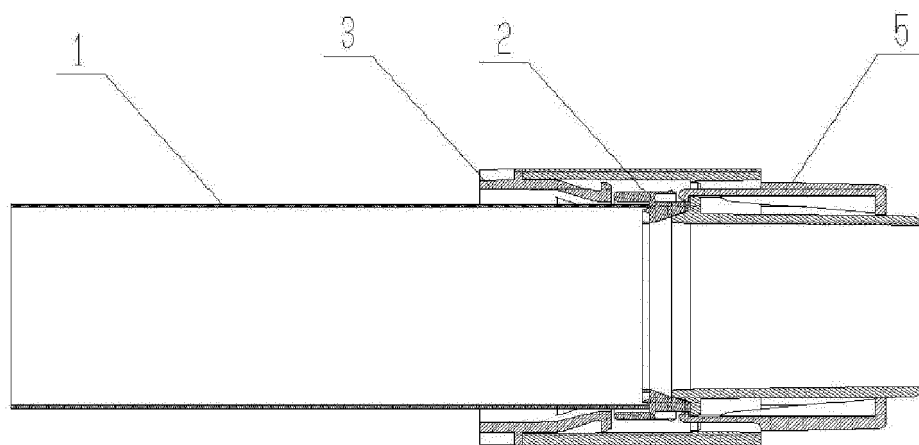


Fig. 2

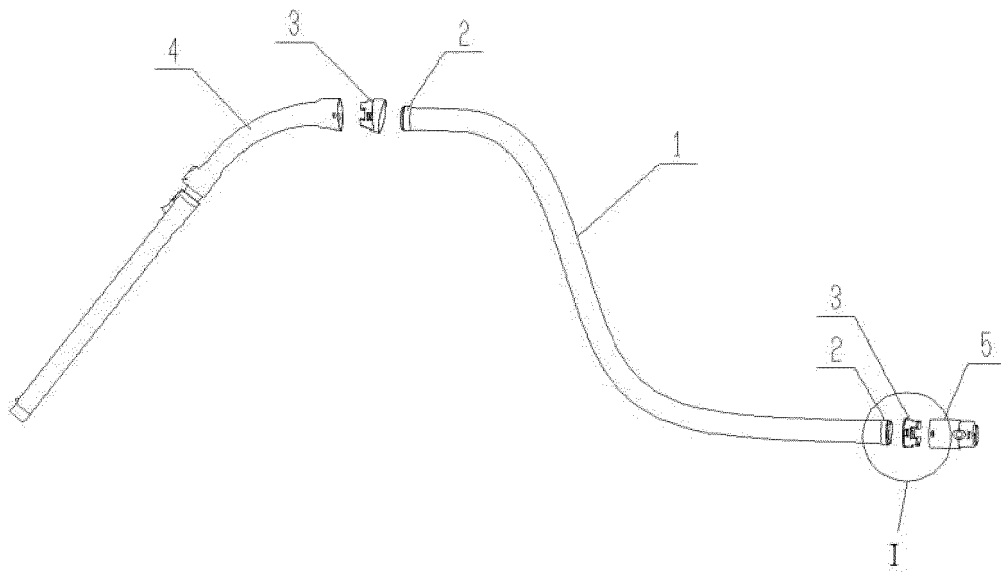


Fig. 3

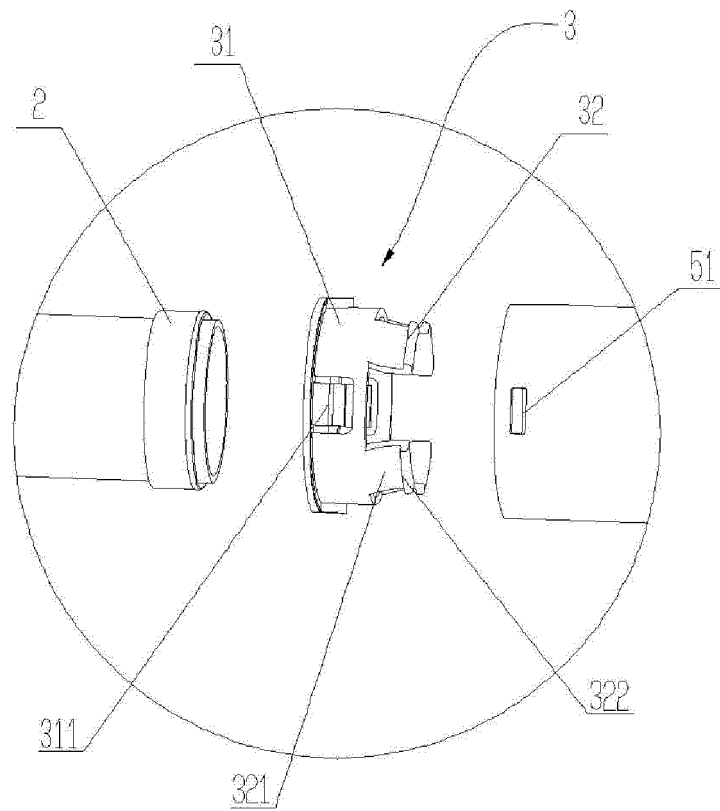


Fig. 4

REFERENCES CITED IN THE DESCRIPTION

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