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(54) **Funnel assembly**

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Description

BACKGROUND OF THE INVENTION

Field of the invention

[0001] A funnel assembly is placed in a oil fill hole and used for pouring motor oil into cars or motorcycles. Thus the motor oil is poured into containers with the oil fill hole smoothly, without being spilled.

Descriptions of Related Art

[0002] A funnel is used to channel liquid or fine-grained substances into containers with a small opening. Without a funnel, the liquid may be spilled.

[0003] However, the positions of the oil fill holes on oil containers of various cars or motorcycles are different. The oil fill hole may be arranged at an upper or a lower place of the engine case. For users, it may be difficult to insert a stem of the funnel into the oil fill hole. The stem of the funnel is generally linear and there are various types of funnel, such as those revealed in Pat. No. ES1119986 and Pat. App. Pub. No. US2012152408. These funnels can be applied to oil fill holes at different positions. A flexible hose is connected to the funnel and a ball valve is arranged at the stem of the funnel so that the funnel can be rotated to different directions.

[0004] The shortcoming of the funnel revealed in Pat. App. Pub. No. US2012152408 is in that a flexible and bendable hose is used as the stem of the funnel. However, the flexible hose is difficult to be fixed and positioned. The flexibility also causes trouble in use. The hose is easy to twist and is unable to be fixed. Once users don't hold the hose properly, the hose is easy to be released from the oil fill hole and the motor oil is spilled.

[0005] As to Pat. ES 1119986, the ball valve on the stem is connected to a cap. After the cap being covered on the oil fill hole, the vector of phase of the funnel can be adjusted. The disadvantage of the device is in that the funnel is unable to be fixed at the position after adjustment. This is due to that there is no positioning member between the ball valve and the cap. Thus users need to hold the funnel with one hand while the other hand is used for pouring the motor oil. The funnel revealed in the Pat. US2012152408 also got the same problem. A funnel assembly according to the preamble of claim 1 is disclosed in US20140196816.

SUMMARY OF THE INVENTION

[0006] Therefore it is a primary object of the present invention to provide a funnel assembly able to be inserted into oil fill holes of various cars and allowing users to change assembly angle of the funnel assembly easily. Moreover, the funnel assembly is positioned right after the adjustment of the assembly angle. Thus the user can pour the motor oil conveniently, without spilling the motor oil out of the funnel assembly or the oil fill hole.

[0007] In order to achieve the above object, a funnel assembly used for adding motor oil into cars or motorcycles of the present invention is defined in claim 1 and includes a main body, a first sleeve, an extension tube, a second sleeve and a cover. All the components are detachable.

[0008] The main body (funnel) includes a receiving portion while the receiving portion having a first open end and a second open end.

[0009] The first sleeve consists of a first axial part and a second axial part.

[0010] The second sleeve is composed of a third axial part and a fourth axial part.

[0011] The extension tube includes a first opening and a second opening.

[0012] The cover includes a base and a threaded part. The base is arranged with a mounting hole.

[0013] The second open end of the main body (funnel) is connected to the first axial part of the first sleeve and the second axial part of the first sleeve is assembled with the first opening of the extension tube. The second opening of the extension tube is connected to the third axial part of the second sleeve while the fourth axial part of the second sleeve is assembled with the mounting hole of the cover.

[0014] The extension tube can be connected to and positioned with the first sleeve and the second sleeve at different angles for being adjusted to the direction required. The second sleeve and the cover can be connected to and positioned with each other at different angles.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] The structure and the technical means adopted by the present invention to achieve the above and other objects can be best understood by referring to the following detailed description of the preferred embodiments and the accompanying drawings, wherein:

Fig. 1 is an explosive view of an embodiment according to the present invention;
Fig. 2 is an explosive view of the embodiment in Fig. 1 viewed from another angle according to the present invention;
Fig. 3 is another explosive view of an embodiment according to the present invention;
Fig. 4 is an assembled embodiment in use according to the present invention;
Fig. 5 is another assembled embodiment in use according to the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0016] Please refer to following embodiments for details, features and effects of the present invention.

[0017] Refer from Fig. 1 to Fig. 4, the assembly includes a main body (funnel) 5, an extension tube 1, a first sleeve 2, a second sleeve 3 and a cover 4.

[0018] The main body (funnel) 5 consists of a receiving portion 51, a guide tube 52, at least one seal ring 53 fitted over an outer surface of the guide tube 52. The receiving portion 51 has a first open end 51a while the guide tube 52 has a second open end 52a. A first channel 511 is extended from the first open end 51a to the second open end 52a.

[0019] The first sleeve 2 is composed of a first axial part 21 and a second axial part 22. The first axial part 21 has a first opening end 21a while the second axial part 22 has a second opening end 22a. The second axial part 22 is formed by extension and bending of the first axial part 21. A second channel 211a is extended from the first opening end 21a to the second opening end 22a. A plurality of stopping slots 221 is disposed around an inner surface wall of the second opening end 22a at a certain interval.

[0020] The second sleeve 3 is formed by a third axial part 31 and a fourth axial part 32. The third axial part 31 has a first opening end 31a and the first opening ends 31a is arranged with positioning slots 311 while the fourth axial part 32 has a second opening end 32a. The third axial part 31 is extended and bent to form the fourth axial part 32. A fourth channel 311a is extended from the first opening ends 31a to the second opening end 32a. A step portion 321 with a projecting block 321a is set between the third axial part 31 and the fourth axial part 32. At least one seal ring 322 is fitted over the fourth axial part 32.

[0021] The extension tube 1 includes a first opening 12 and a second opening 13. A third channel 12a is extended from the first opening 12 to the second opening 13. A plurality of axial long ribs 11a, and short ribs 11b is arranged in turn around the surface of the extension tube 1 at a certain interval. A circular groove 121 is set on the outer surface of the extension tube 1 close to the first opening 12 and a seal ring 14 is fitted on the circular groove 121. A circular groove 131 is mounted on the outer surface of the extension tube 1 close to the second opening 13 and a seal ring 15 is fitted on the circular groove 131.

[0022] As shown in Fig. 3, the cover 4 includes a base 41 and a threaded part 42. The base 41 is arranged with a mounting hole 411 and a plurality of concave parts 411a is disposed around an inner surface of the mounting hole 411 at a certain interval. A fifth channel 42a (not shown in figure) is extended from the mounting hole 411 to the threaded part 42. The threaded part 42 is used for connection to a oil fill hole.

[0023] The funnel assembly of the present invention is assembled by the following way. First the second open end 52a of the main body (funnel) 5 is mounted into the first axial part 21 of the first sleeve 2. Then one of the long ribs 11a on the first opening 12 of the extension tube 1 is aligned with one of the stopping slots 221 on the second opening end 22a of the second axial part 22 and then the extension tube 1 and the first sleeve 2 are connected to each other. Moreover, one of the long ribs 11a on the second opening 13 of the extension tube 1 is aligned with one of the positioning slots 311 on the third axial part 31 of the second sleeve 3 and then the extension tube 1 and the second sleeve 3 are connected. At last, the projecting block 321a of the fourth axial part 32 of the second sleeve 3 is aligned with one of the concave parts 411a of the cover 4 and then the second sleeve 4 and the cover 4 are mounted and positioned with each other. Thereby the first sleeve 2 and the extension tube 1 are assembled and positioned with each other at a plurality of radial angles, and so are the second sleeve 3 and the cover 4.

[0024] The funnel is used in the following manner for adding motor oil. Refer to Fig. 4, the threaded part 42 of the cover 4 is engaged with an inner diameter of the oil fill hole (on a oil container of cars or motorcycles). After confirming the position of the oil fill role at an engine case, assembly and locate the fourth axial part 32 of the second sleeve 3 according to the position of the oil fill hole. And the extension tube 1 is connected to the second sleeve 3. Then determine the optimal position of the second axial part 22 of the first sleeve 2, connect and position the second axial part 22 of the first sleeve 2 to the extension tube 1. At last, the guide tube 52 of the main body (funnel) 5 is mounted into the first axial part 21 of the first sleeve 2. The assembly of the funnel assembly with the oil fill hole(on the oil container of cars or motorcycles) has been completed. Users can pour motor oil into the receiving portion 51 of the main body (funnel) 5. The motor oil flows through the first channel 511, the second channel 211a, the third channel 12a, the fourth channel 31a, and the fifth channel 42a and then into the oil container.

[0025] It should be noted that both the first sleeve 2 and the second sleeve 3 have the bending design. The angle between the first axial part 21 and the second axial part 22 of the first sleeve 2 is no less than 90 degrees. The first sleeve 2 is defined as a tube bent at an angle ranging from 90 degrees to 120 degrees. The angle between the third axial part 31 and the fourth axial part 32 of the second sleeve 3 is no less than 90 degrees. The second sleeve 3 is defined as a tube bent at an angle ranging from 90 degrees to 120 degrees. By the first sleeve 2 and the second sleeve 3 being connected to the extension tube 1, the tube formed has different pathways bent in different directions.

[0026] The funnel assembly of the present invention can be adjusted to various directions according to the following three-stage adjustment. The cover 4 is used for being fastened on the oil fill hole. The mounting hole 411 and the second sleeve 3 are connected to form a first adjustment portion for first-stage direction adjustment. The second sleeve 3 and the extension tube 1 are connected to form a second adjustment potion for second-stage direction adjustment while the extension tube 1 and the first sleeve 2 are assembled to form a third adjustment potion for third-stage direction adjustment. By

the above three-stage adjustment, the funnel assembly can be assembled at different angles and adjusted to various directions.

[0027] The funnel assembly of the present invention has following advantages.

1. As shown in Fig. 4, a schematic drawing showing the assembled funnel assembly. Refer to Fig. 5, when the first sleeve 2 and the extension tube 1 are aligned with each other at different angle so that the first axial part 21 is toward another direction. The first sleeve 2 includes the first axial part 21 and the second axial part 22 while the second sleeve 3 includes the third axial part 31 and the fourth axial part 32. By changing angles of the second axial part 22, the third axial part 31, the first axial part 21 and the fourth axial part 32 being assembled with the extension tube 1, a tube formed by the sleeves 2, 3 and the extension tube 1 is bent toward different directions.

2. By the stopping slots 221 on the second opening end 22a of the first sleeve 2 and the positioning slots 311 on the first opening ends 31a of the second sleeve 3, the long ribs 11a of the extension tube 1 are connected to and positioned with each other at different radial angles, without shaking or rotation.

3. The concave parts 411a disposed on the mounting hole 411 of the cover 4 are selectable. After the projecting block 321a of the fourth axial part 32 of the second sleeve 3 is aligned with one of the concave parts 411a of the cover 4 selected. Thereby the second sleeve 3 can be connected and positioned at different angles, without shaking or rotation.

[0028] The funnel assembly of the present invention can be placed into the oil fill hole at different positions of oil containers of various cars. Thus users can easily change the assembly angle of the funnel assembly. The funnel assembly is also positioned just after the adjustment the assembly angle. No shaking or rotation occurs. The user can operate the funnel assembly conveniently and the motor oil is poured into engines smoothly, without being spilled out of the funnel or the oil fill hole.

[0029] Additional advantages and modifications will readily occur to those skilled in the art. Therefore, the invention in its broader aspects is not limited to the specific details, and representative devices shown and described herein. Accordingly, various modifications may be made without departing from the scope of the general inventive concept as defined by the appended claims.

Claims

1. A funnel assembly comprising:

a main body/funnel (5) having a first open end (51a) and a guide tube (52); the guide tube (52) having a second open end (52a) and the first open end (51a) is communicating with the second open end (52a);

a first sleeve (2) including a first axial part (21) and a second axial part (22); the first axial part (21) having a first opening end (21a) while the second axial part (22) having a second opening end (22a); wherein the second axial part (22) is formed by extension and
bending of the first axial part (21);

a second sleeve (3) including a third axial part (31) and a fourth axial part (32); the third axial part (31) having a first opening end (31a) and the fourth axial part (32) having a second opening end (32a); wherein the third axial part (31) is extended and bent to form the fourth axial part (32);

an extension tube (1) including a first opening (12) and a second opening (13), wherein
the first opening (12) and the second opening (13) are communicating with each other;

a cover (4) including a threaded part (42) and a base (41) arranged with a mounting hole (411); wherein the threaded part (42) is used for connection to a oil fill hole;

wherein the second open end (52a) of the main body/funnel (5) is mounted into the first axial part (21) of the first sleeve (2);

characterize in that

a plurality of stopping slots (221) is disposed around an inner surface wall of the second opening end (22a) with a certain interval between two adjacent stopping slots (221);

a step portion (321) arranged with a projecting block (321a) is set between the third axial part (31) and the fourth axial part (32);

a plurality of axial ribs (11a, 11b) is arranged around a surface of the extension tube (1) at a certain interval; and

a plurality of concave parts (411a) disposed around an inner surface of the mounting hole (411) of the cover (4) at a certain interval;

wherein one of the ribs (11a) on the first opening (12) of the extension tube (1) is aligned with one of the stopping slots (221) of the second axial part (22) and then the extension tube (1) and the first sleeve (2) are connected to and positioned with each other at a plurality of radial angles;

wherein one of the ribs (11a) on the second opening (13) of the extension tube (1) is aligned with one of the positioning slots (311) on the third axial part (31) of the second sleeve (3) and then the extension tube (1) and the second sleeve (3) are connected; and wherein the projecting block (321a) of the fourth axial part (32)

of the second sleeve (3) is aligned with one of the concave parts (411a) of the cover (4) and the second sleeve (3) and the cover (4) are connected to and positioned with each other at a plurality of radial angles.

2. The funnel assembly as claimed in claim 1, wherein an angle between the first axial part (21) and the second axial part (22) of the first sleeve (2) is no less than 90 degrees.

3. The funnel assembly as claimed in claim 1, wherein an angle between the third axial part (31) and the fourth axial part (32) of the second sleeve (3) is no less than 90 degrees.

4. The funnel assembly as claimed in claim 1, wherein the first sleeve (2) is a tube bent at an angle ranging from 90 degrees to 120 degrees.

5. The funnel assembly as claimed in claim 1, wherein the second sleeve (3) is a tube bent at an angle ranging from 90 degrees to 120 degrees.

6. The funnel assembly according to claim 1, wherein:

the main body/funnel (5) further comprises a receiving portion (51) and at least one seal ring (53) fitted over an outer surface of the guide tube (52); wherein the receiving portion (51) including the first open end (51a) and the guide tube (52) having the second open end (52a); wherein a first channel (511) is extended from the first open end (51a) to the second open end (52a);
a second channel (211a) is extended from the first opening end (21a) to the second opening end (22a) of the first sleeve (2); a fourth channel (311a) is extended from the first opening end (31a) to the second opening end (32a) of the second sleeve (3); the extension tube (1) further includes at least two seal rings (14); wherein a third channel (12a) is extended from the first opening (12) to the second opening (13) of the extension tube (1); wherein one of the seal rings (14) is set on an outer surface of the extension tube (1) close to the first opening (12) while the other seal ring (14) is fitted on an outer surface of the extension tube (1) close to the second opening (13); a fifth channel (42a) is extended from the mounting hole (411) to the threaded part (42) of the cover (4).

7. The funnel assembly as claimed in claim 6, wherein an angle between the first axial part (21) and the second axial part (22) of the first sleeve (2) is no less than 90 degrees.

8. The funnel assembly as claimed in claim 6, wherein an angle between the third axial part (31) and the fourth axial part (32) of the second sleeve (3) is no less than 90 degrees.

9. The funnel assembly as claimed in claim 6, wherein the first sleeve (2) is a tube bent at an angle ranging from 90 degrees to 120 degrees.

10. The funnel assembly as claimed in claim 6, wherein the second sleeve (3) is a tube bent at an angle ranging from 90 degrees to 120 degrees.

11. The funnel assembly according to claim 1, wherein the mounting hole (411) of the cover (4) and the second sleeve (3) are connected to form a first adjustment portion for first-stage direction adjustment; wherein the second sleeve (3) and the extension tube (1) are connected to form a second adjustment portion for second-stage direction adjustment while the extension tube (1) and the first sleeve (2) are assembled to form a und adjustment portion for third-stage direction adjustment; so that the funnel assembly is able to be assembled in various directions by the three-stage direction adjustment.

Patentansprüche

1. Trichteranordnung, umfassend:

einen Hauptkörper/ Trichter (5) mit einem ersten offenen Ende (51a) und einem Führungsrohr (52), wobei das Führungsrohr (52) ein zweites offenes Ende (52a) aufweist, wobei das erste offene Ende (51a) mit dem zweiten offenen Ende (52a) in Verbindung steht,
eine erste Hülse (2), die ein erstes Achsenstück (21) und ein zweites Achsenstück (22) beinhaltet, wobei das erste Achsenstück (21) ein erstes Öffnungsende (21a) aufweist, während das zweite Achsenstück (22) ein zweites Öffnungsende (22a) aufweist, wobei das zweite Achsenstück (22) durch Verlängerung und Umbiegen des ersten Achsenstücks (21) ausgebildet ist,
eine zweite Hülse (3), die ein drittes Achsenstück (31) und ein viertes Achsenstück (32) beinhaltet, wobei das dritte Achsenstück (31) ein erstes Öffnungsende (31a) aufweist, wobei das vierte Achsenstück (32) ein zweites Öffnungsende (32a) aufweist, wobei das dritte Achsenstück (31) verlängert und gebogen ist, um das vierte Achsenstück (32) zu bilden,
ein Verlängerungsrohr (1), das eine erste Öffnung (12) und eine zweite Öffnung (13) aufweist, wobei die erste Öffnung (12) und die zweite Öffnung (13) miteinander in Verbindung stehen,
einen Deckel (4), der ein Gewindeteil (42) und eine Basis (41) umfasst, die mit einem Monta-

geloch (411) versehen ist, wobei das Gewindeteil (42) zur Verbindung mit einer Ölbefüllungsöffnung verwendet wird,
wobei das zweite offene Ende (52a) des Hauptkörpers/Trichters (5) in dem ersten Achsenstück (21) der ersten Hülse (2) angebracht ist,
dadurch gekennzeichnet, dass
eine Mehrzahl von Sperrschlitzen (221) um eine Innenseitenwand des zweiten Öffnungsendes (22a) herum angeordnet ist, wobei ein bestimmter Abstand zwischen zwei benachbarten Sperrschlitzen (221) vorhanden ist,
ein Stufenabschnitt (321), der mit einem hervorstehenden Block (321a) versehen ist, zwischen dem dritten Achsenstück (31) und dem vierten Achsenstück (32) angeordnet ist,
eine Mehrzahl von axialen Rippen (11a, 11b) in einem bestimmten Abstand voneinander um eine Oberfläche des Verlängerungsrohrs (1) angeordnet ist, und
eine Mehrzahl von konkaven Bereichen (411a) um eine Innenfläche des Montagelochs (411) des Deckels (4) herum in einem bestimmten Abstand angeordnet ist,
wobei eine der Rippen (11a) an der ersten Öffnung (12) des Verlängerungsrohrs (1) entsprechend einem der Sperrschlitze (221) des zweiten Achsenstücks (22) ausgerichtet wird und das Verlängerungsrohr, (1) und die erste Hülse (2) dann verbunden werden und zueinander in einer Mehrzahl von radialen Winkeln positioniert werden können,
wobei eine der Rippen (11a) an der zweiten Öffnung (13) des Verlängerungsrohrs (1) entsprechend einem der Positionierschlitze (311) an dem dritten Achsenstück (31) der zweiten Hülse (3) ausgerichtet wird und das Verlängerungsrohr (1) und die zweite Hülse (3) dann verbunden werden, und
wobei der hervorstehende Block (321a) des vierten Achsenstücks (32) der zweiten Hülse (3) entsprechend einem der konkaven Bereiche (411a) des Deckels (4) ausgerichtet ist und die zweite Hülse (3) und der Deckel (4) verbunden sind und zueinander in einer Mehrzahl von radialen Winkeln positioniert werden können.

2. Trichteranordnung nach Anspruch 1, bei welcher ein Winkel zwischen dem ersten Achsenstück (21) und dem zweiten Achsenstück (22) der ersten Hülse (2) nicht weniger als 90 Grad beträgt.

3. Trichteranordnung nach Anspruch 1, bei welcher ein Winkel zwischen dem dritten Achsenstücks (31) und dem vierten Achsenstücks (32) der zweiten Hülse (3) nicht weniger als 90 Grad beträgt.

4. Trichteranordnung nach Anspruch 1, bei welcher die erste Hülse (2) ein Rohr ist, das in einem Winkel, der zwischen 90 Grad und 120 Grad beträgt, gebogen ist.

5. Trichteranordnung nach Anspruch 1, bei welcher die zweite Hülse (3) ein Rohr ist, das in einem Winkel, der zwischen 90 Grad und 120 Grad beträgt, gebogen ist.

6. Trichteranordnung nach Anspruch 1, bei welcher:

der Hauptkörper/ Trichter (5) ferner einen Aufnahmeabschnitt (51) und wenigstens einen Dichtungsring (53) umfasst, der um eine Außenfläche des Führungsrohrs (52) montiert ist, wobei der Aufnahmeabschnitt (51) das erste offene Ende (51a) umfasst und das Führungsrohr (52) das zweite offene Ende (52a) aufweist, wobei sich ein erster Kanal (511) von dem ersten offenen Ende (51a) zu dem zweiten offenen Ende (52a) erstreckt, wobei sich ein zweiter Kanal (211a) von dem ersten Öffnungsende (21a) zu dem zweiten Öffnungsende (22a) der ersten Hülse (2) erstreckt, und wobei sich ein vierter Kanal (311a) von dem ersten Öffnungsende (31a) zu dem zweiten Öffnungsende (32a) der zweiten Hülse (3) erstreckt,
wobei das Verlängerungsrohr (1) ferner wenigstens zwei Dichtungsringe (14) umfasst, wobei sich ein dritter Kanal (12a) von der ersten Öffnung (12) zu der zweiten Öffnung (13) des Verlängerungsrohrs (1) erstreckt, wobei einer der Dichtungsringe (14) an einer Außenfläche des Verlängerungsrohrs (1) in der Nähe der ersten Öffnung (12) angebracht ist, während der andere Dichtungsring (14) auf eine Außenfläche des Verlängerungsrohrs (1) in der Nähe der zweiten Öffnung (13) aufgesteckt ist,
wobei sich ein fünfter Kanal (42a) von dem Montageloch (411) zu dem Gewindeteil (42) des Deckels (4) erstreckt.

7. Trichteranordnung nach Anspruch 6, bei welcher ein Winkel zwischen dem ersten Achsenstück (21) und dem zweiten Achsenstück (22) der ersten Hülse (2) nicht weniger als 90 Grad beträgt.

8. Trichteranordnung nach Anspruch 6, bei welcher ein Winkel zwischen dem dritten Achsenstück (31) und dem vierten Achsenstück (32) der zweiten Hülse (3) nicht weniger als 90 Grad beträgt.

9. Trichteranordnung nach Anspruch 6, bei welcher die erste Hülse (2) ein Rohr ist, das in einem Winkel, der zwischen 90 Grad und 120 Grad beträgt, gebogen ist.

10. Trichteranordnung nach Anspruch 6, bei welcher die

zweite Hülse (3) ein Rohr ist, das in einem Winkel, der zwischen 90 Grad und 120 Grad beträgt, gebogen ist.

11. Trichteranordnung nach Anspruch 1, bei welcher das Montageloch (411) des Deckels (4) und die zweite Hülse (3) verbunden sind, um einen ersten Anpassungsabschnitt für eine erste Stufe der Richtungseinstellung zu bilden, wobei die zweite Hülse (3) und das Verlängerungsrohr (1) verbunden sind, um einen zweiten Anpassungsabschnitt für eine zweite Stufe der Richtungseinstellung zu bilden, während das Verlängerungsrohr (1) und die erste Hülse (2) aneinander montiert sind, um einen dritten Anpassungsabschnitt für eine dritte Stufe der Richtungseinstellung zu bilden, sodass die Trichteranordnung durch die Dreistufen - Richtungseinstellung in unterschiedlichen Ausrichtungen zusammengebaut werden kann.

Revendications

1. Ensemble à entonnoir, comprenant:

un corps principal/entonnoir (5) possédant une première extrémité ouverte (51a) et un tube de guidage (52); le tube de guidage (52) possédant une seconde extrémité ouverte (52a) et la première extrémité ouverte (51a) communiquant avec la seconde extrémité ouverte (52a);
un premier manchon (2) incluant une première partie axiale (21) et une deuxième partie axiale (22); la première partie axiale (21) possédant une première extrémité d'ouverture (21a) alors que la deuxième partie axiale (22) possède une seconde extrémité d'ouverture (22a) ; dans lequel la deuxième partie axiale (22) est formée par extension et cintrage de la première partie axiale (21);
un second manchon (3) incluant une troisième partie axiale (31) et une quatrième partie axiale (32); la troisième partie axiale (31) possédant une première extrémité d'ouverture (31a) et la quatrième partie axiale (32) possédant une seconde extrémité d'ouverture (32a); dans lequel la troisième partie axiale (31) est étendue et cintrée pour former la quatrième partie axiale (32);
un tube d'extension (1) incluant une première ouverture (12) et une seconde ouverture (13), dans lequel la première ouverture (12) et la seconde ouverture (13) communiquent l'une avec l'autre;
un couvercle (4) incluant une partie filetée (42) et une base (41) agencée avec un trou de montage (411);
dans lequel la partie filetée (42) est utilisée pour le raccordement à un trou de remplissage d'huile;
dans lequel la seconde extrémité ouverte (52a) du corps principal/entonnoir (5) est montée dans la première partie axiale (21) du premier manchon (2);
caractérisé en ce que
une pluralité de fentes d'arrêt (221) est disposée autour d'une paroi de surface intérieure de la seconde extrémité d'ouverture (22a) avec un certain intervalle entre deux fentes d'arrêt adjacentes (221);
une portion à épaulement (321) agencée avec un bloc saillant (321a) est placée entre la troisième partie axiale (31) et la quatrième partie axiale (32);
une pluralité de nervures axiale (11a, 11b) est agencée autour d'une surface du tube d'extension (1) à un certain intervalle; et
une pluralité de parties concaves (411a) est disposée autour d'une surface intérieure du trou de montage (411) du couvercle (4) à un certain intervalle;
dans lequel une des nervures (11a) sur la première ouverture (12) du tube d'extension (1) est alignée avec une des fentes d'arrêt (221) de la deuxième partie axiale (22) et alors le tube d'extension (1) et le premier manchon (2) sont raccordés l'un à l'autre et positionnés l'un par rapport à l'autre à une pluralité d'angles radiaux;
dans lequel une des nervures (11a) sur la seconde ouverture (13) du tube d'extension (1) est alignée avec une des fentes de positionnement (311) sur la troisième partie axiale (31) du second manchon (3) et alors le tube d'extension (1) et le second manchon (3) sont raccordés; et
dans lequel le bloc saillant (321a) de la quatrième partie axiale (32) du second manchon (3) est aligné avec une des parties concaves (411a) du couvercle (4) et
le second manchon (3) et le couvercle (4) sont raccordés l'un à l'autre et positionnés l'un par rapport à l'autre à une pluralité d'angles radiaux.

2. Ensemble à entonnoir selon la revendication 1, dans lequel un angle entre la première partie axiale (21) et la deuxième partie axiale (22) du premier manchon (2) n'est pas inférieur à 90 degrés.

3. Ensemble à entonnoir selon la revendication 1, dans lequel un angle entre la troisième partie axiale (31) et la quatrième partie axiale (32) du second manchon (3) n'est pas inférieur à 90 degrés.

4. Ensemble à entonnoir selon la revendication 1, dans lequel le premier manchon (2) est un tube cintré à un angle variant de 90 degrés à 120 degrés.

5. Ensemble à entonnoir selon la revendication 1, dans

lequel le second manchon (3) est un tube cintré à un angle variant de 90 degrés à 120 degrés.

6. Ensemble à entonnoir selon la revendication 1, dans lequel le corps principal/entonnoir (5) comprend en outre une portion de réception (51) et au moins une bagues d'étanchéité (53) ajustée sur une surface extérieure du tube de guidage (52) ; dans lequel la portion de réception (51) inclut la première extrémité ouverte (51a) et le tube de guidage (52) possède la seconde extrémité ouverte (52a) ; dans lequel un premier canal (511) est étendu la première extrémité ouverte (513) à la seconde extrémité ouverte (52a); un deuxième canal (211a) est étendu de la première extrémité d'ouverture (21a) à la seconde extrémité d'ouverture (22a) du premier manchon (2) ; un quatrième canal (311a) est étendu de la première extrémité d'ouverture (31a) à la seconde extrémité d'ouverture (32a) du second manchon (3);
le tube d'extension (1) inclut en outre au moins deux bagues d'étanchéité (14) ; dans lequel un troisième canal (12a) est étendu de la première ouverture (12) à la seconde ouverture (13) du tube d'extension (1); dans lequel une des bagues d'étanchéité (14) est placée sur une surface extérieure du tube d'extension (1) près de la première ouverture (12) alors que l'autre bague d'étanchéité (14) est ajustée sur une surface extérieure du tube d'extension (1) près de la seconde ouverture (13);
un cinquième canal (42a) est étendu du trou de montage (411) à la partie filetée (42) du couvercle (4).

7. Ensemble à entonnoir selon la revendication 6, dans lequel un angle entre la première partie axiale (21) et la deuxième partie axiale (22) du premier manchon (2) n'est pas inférieur à 90 degrés.

8. Ensemble à entonnoir selon la revendication 6, dans lequel un angle entre la troisième partie axiale (31) et la quatrième partie axiale (32) du second manchon (3) n'est pas inférieur à 90 degrés.

9. Ensemble à entonnoir selon la revendication 6, dans lequel le premier manchon (2) est un tube cintré à un angle variant de 90 degrés à 120 degrés.

10. Ensemble à entonnoir selon la revendication 6, dans lequel le second manchon (3) est un tube cintré à un angle variant de 90 degrés à 120 degrés.

11. Ensemble à entonnoir selon la revendication 1,
dans lequel le trou de montage (411) du couvercle (4) et le second manchon (3) sont raccordés pour former une première partie d'ajustement pour ajustement de direction de premier stade;
dans lequel le second manchon (3) et le tube d'extension (1) sont raccordés pour former une deuxième partie d'ajustement pour ajustement de direction de deuxième stade alors que le tube d'extension (1) et le premier manchon (2) sont assemblés pour former une troisième partie d'ajustement pour ajustement de direction de troisième stade ; pour que l'ensemble à entonnoir puisse être assemblé dans diverses directions par l'ajustement de direction de troisième stade.

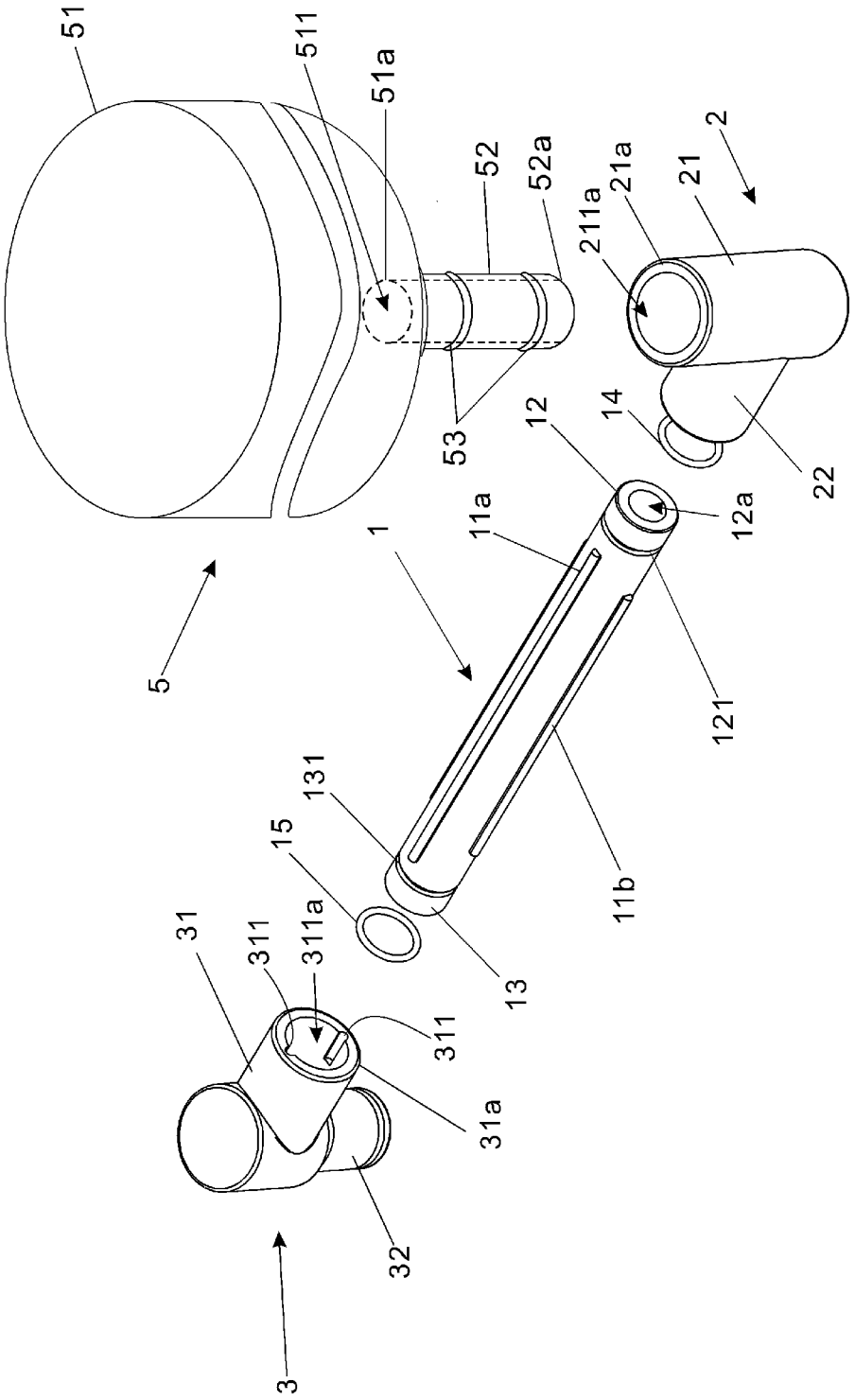

51
511
51a
52
52a
211a
21a
21
2
53
12
14
22
11a
12a
1
5
121
131
15
11b
13
31
311
311a
311
31a
32
3

Fig. 1

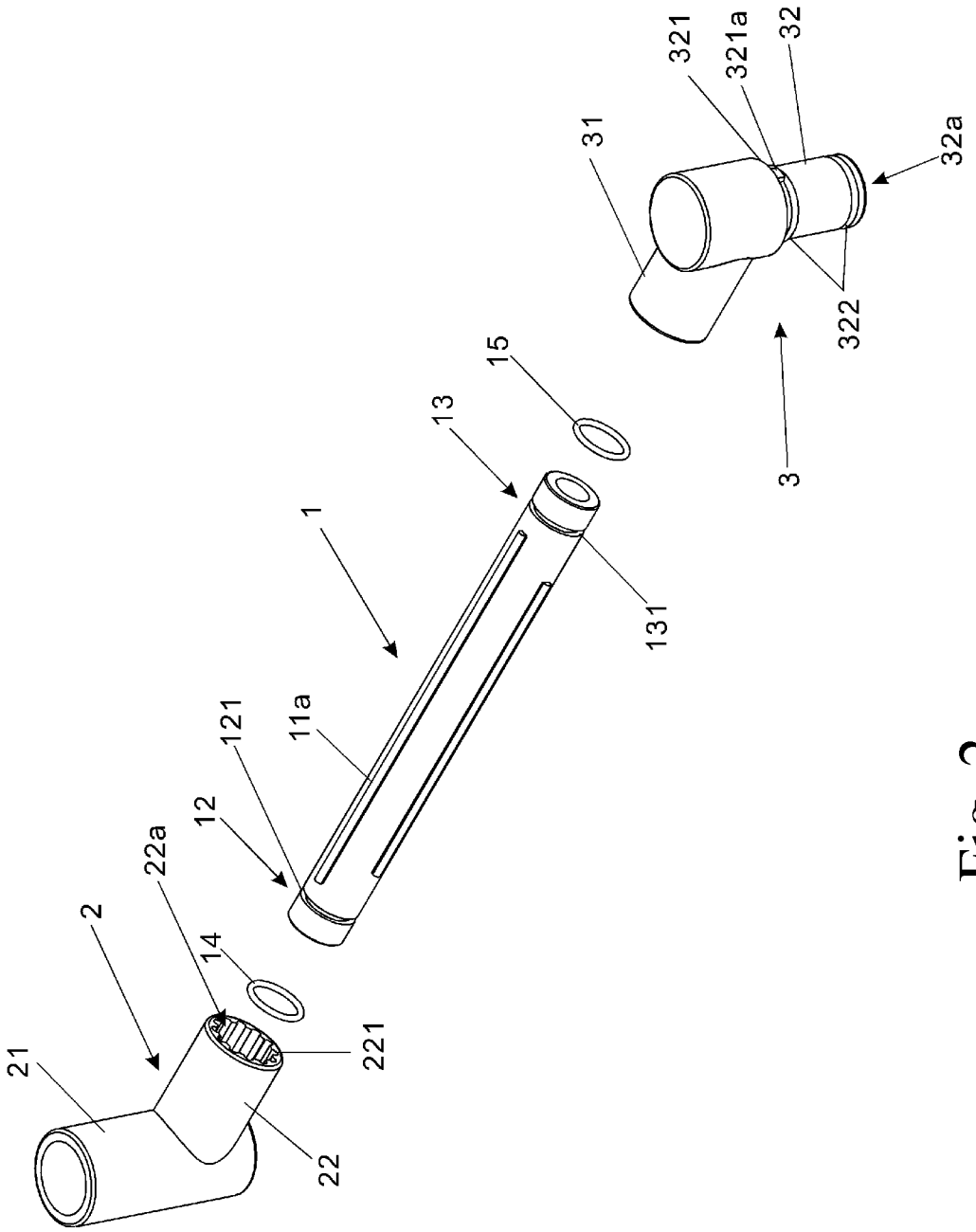


Fig. 2

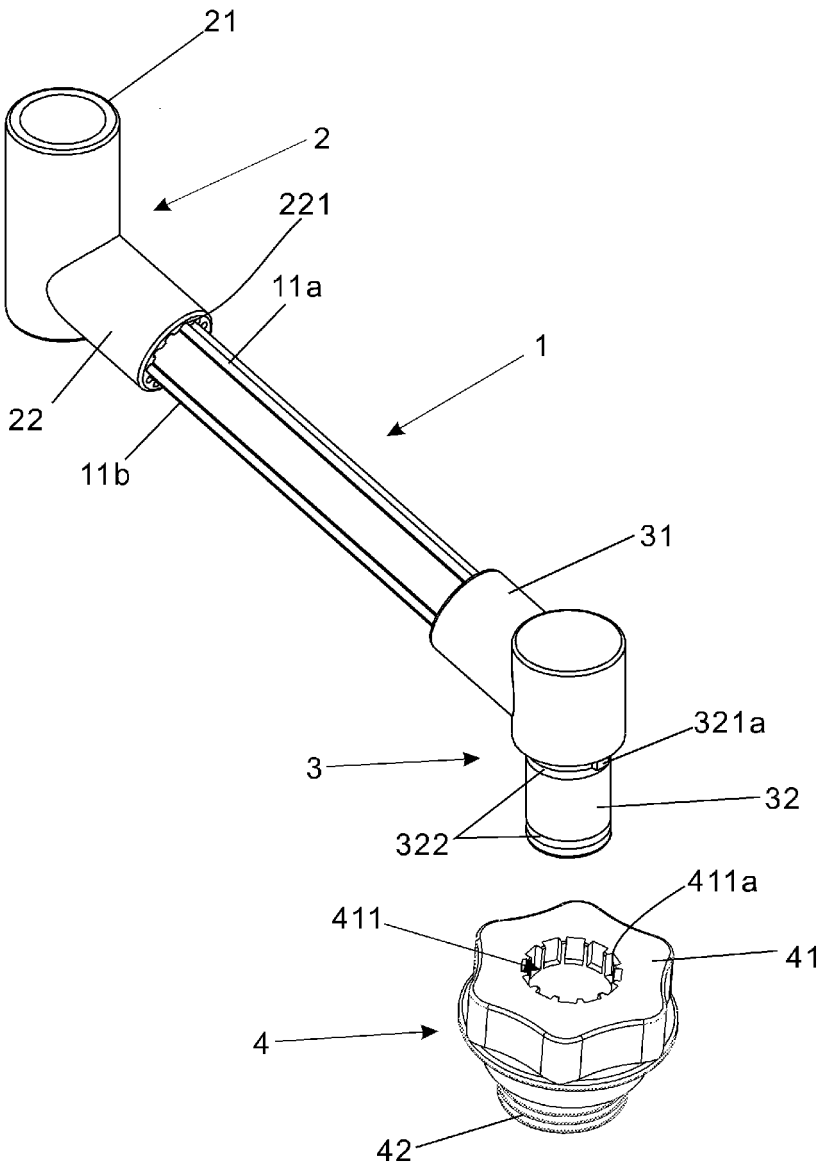


Fig. 3

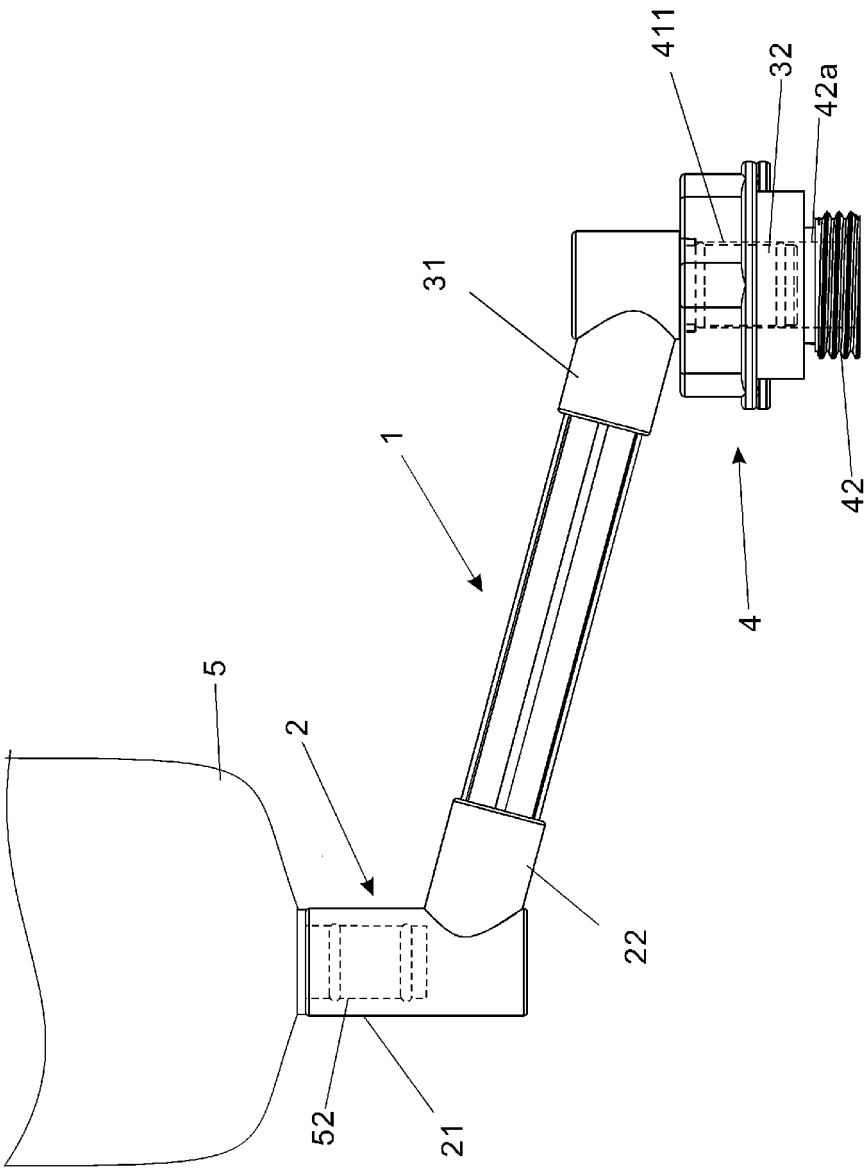


Fig. 4

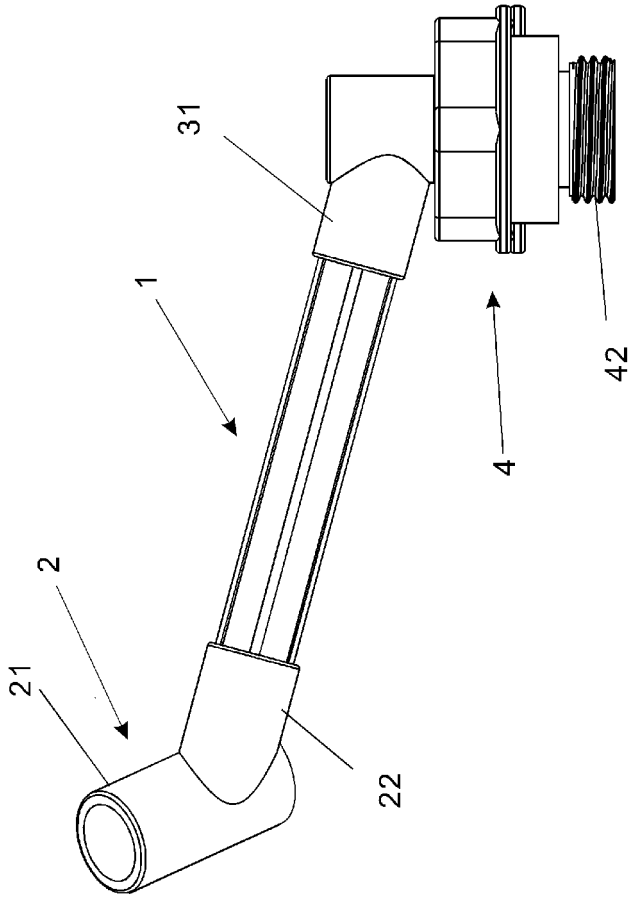


Fig. 5

REFERENCES CITED IN THE DESCRIPTION

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