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Remarks:

Amended claims in accordance with Rule 137(2) EPC.

(54) **HANDHELD SPRAY NOZZLE**

(57) A handheld spray nozzle includes a nozzle body (1) with a water outlet portion (11), a control portion (12) controlling the water outlet portion (11) to spray and a handle (3). A post (4) is disposed on the nozzle body (1). A first component (311) and a second component (312) are connected to form the handle (3). The handle (3) has

a bed (6) connected with the post (4). The bed (6) has a restricting member. The post (4) includes a positioning member (5) selectively connecting to or leaving the restricting member so that the handle (3) is capable of being fixed on the nozzle body (1) or being turned relative to the nozzle body (1).

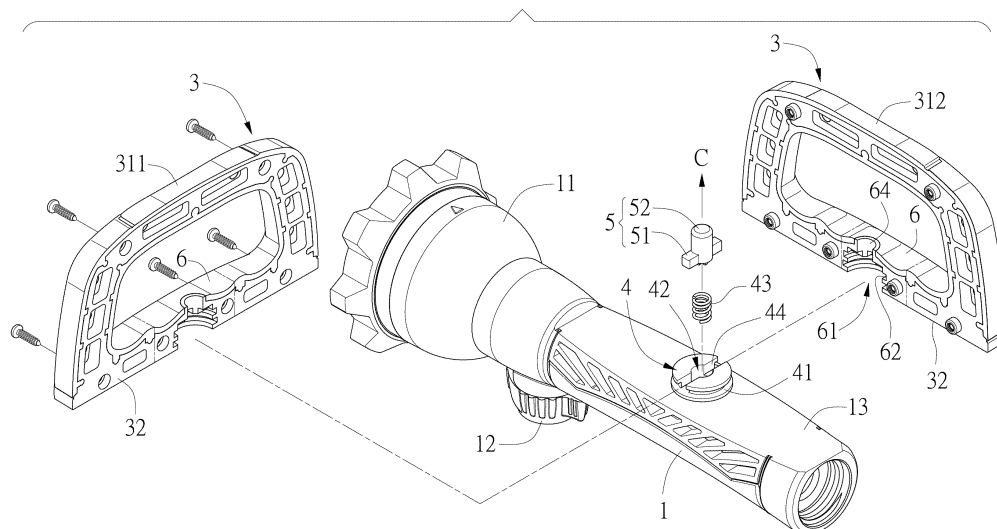


FIG. 2

Description

BACKGROUND OF THE INVENTION

1. Technical Field

[0001] The present invention relates to a spray nozzle and more particularly to a spray nozzle with a handheld handle.

2. Description of Related Art

[0002] A spray nozzle is often used in gardening work. To be held in user's hand, the spray nozzle sprays water in any direction as user moves. A conventional spray nozzle, as shown in FIG. 15, includes a handle 71 for user to hold. However, based on the handle 71 being aligned with the nozzle body 72, user must twist his wrist to force the nozzle body 72 to face forward for spraying. This hand position is not ergonomic so as to cause discomfort in the wrist after maintaining this hand position for a long time.

[0003] Moreover, a bow portion 73 for hand protection is disposed at a side of the handle 71. User's hand, however, actually holds the handle 71 rather than the bow portion 73. As a result, the bow portion 73 has no effect on the operation of the spray nozzle and is not helpful to improve the wrist discomfort as well.

BRIEF SUMMARY OF THE INVENTION

[0004] The primary objective of the present invention is to provide a handheld spray nozzle which is capable of turning the handle for users to hold the handle in a variety of ergonomic hand positions, especially suitable for the elderly or disabled, so as to improve wrist discomfort caused by prolonged use.

[0005] To achieve the above objective, the present invention provides a handheld spray nozzle including a nozzle body with a water outlet portion, a control portion controlling the water outlet portion to spray and a handle. A post is disposed on the nozzle body. A first component and a second component are connected to form the handle. The handle includes a bed connected with the post, the bed including a restricting member. The post includes a positioning member selectively connecting to or leaving the restricting member so that the handle is capable of being fixed on the nozzle body or being turned relative to the nozzle body.

[0006] In one embodiment, the post protrudes in an axial direction from a side surface of the nozzle body. A peripheral surface of the post is provided with an annular slot. The bed includes a recess accommodating the post with an annular flange inserting into the annular slot.

[0007] In addition, the handle includes a bottom surface movably abutting against the side surface of the nozzle body. The bottom surface and the side surface are flat.

[0008] Preferably, a top surface of the post is provided with a hole extending in the axial direction and a groove connected with the hole. The positioning member includes an axial column portion accommodated in the hole and a radial column portion accommodated in the groove. The recess is provided with an opening portion for the axial column portion to protrude out of the handle. The restricting member is formed as a cross-shaped slot for the radial column portion to selectively insert into.

[0009] Preferably, the positioning member is driven by an elastic member accommodated in the hole.

[0010] Preferably, the control portion is disposed at an opposite side of the nozzle body relative to the handle.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

[0011]

FIG. 1 is a perspective view of the present invention in a first using embodiment;
FIG. 2 is an exploded perspective view of the present invention;
FIG. 3 is a sectional view of the present invention shows the cross-shaped slot;
FIG. 4 is a top view of the present invention in the first using embodiment;
FIG. 5 is a partial sectional view of the present invention seen from the line A-A in FIG. 4, showing that the positioning member has not been pressed;
FIG. 6 is a partial sectional view of the present invention seen from the line B-B in FIG. 4, showing that the positioning member has not been pressed;
FIG. 7 is a partial sectional view of the present invention seen from the line B-B in FIG. 4, showing that the positioning member has been pressed;
FIG. 8 is a perspective view of the present invention in a second using embodiment;
FIG. 9 is a top view of the present invention in the second using embodiment;
FIG. 10 is a partial sectional view of the present invention seen from the line C-C in FIG. 9, showing that the positioning member has not been pressed;
FIG. 11 is a partial sectional view of the present invention seen from the line D-D in FIG. 9, showing that the positioning member has not been pressed;
FIG. 12, FIG. 13 and FIG. 14 are perspective views showing how user holds the handle; and
FIG. 15 is a plan view of a conventional spray nozzle.

DETAILED DESCRIPTION OF THE INVENTION

[0012] Referring to FIG. 1, 2 and 3, the handheld spray nozzle according to the present invention includes a nozzle body 1. A handle 3 is provided on the top of the nozzle body 1 and is able to be turned relative to the nozzle body 1. A water outlet portion 11, as well as a control portion 12 controlling the water outlet portion 11, is provided at

the front of the nozzle body 1. The control portion 12 is disposed on the bottom of the nozzle body 1 so as not to hinder the rotation of the handle 3.

[0013] A flat side surface 13 is formed on the top of the nozzle body 1, and an upward axial direction C is defined thereon. A post 4 protruding in the axial direction C is erected on the side surface 13. An annular slot 41 is disposed on a peripheral surface of the post 4. A top surface of the post 4 is provided with a hole 42 extending in the axial direction C and a linear groove 44 connected with the hole 42. A spring 43 is accommodated in the hole 42. A positioning member 5 is accommodated in the groove 44.

[0014] The positioning member 5 abovementioned includes an axial column portion 52 and a radial column portion 51. The radial column portion 51 is accommodated and restricted in the groove 44, while the axial column portion 52 is accommodated and restricted in the hole 42. The spring 43 abuts against the axial column portion 52 to push it to move upwardly. The radial column portion 51 is also moved upwardly but not leaves the groove 44.

[0015] The handle 3 is assembled with a first component 311 and a second component 312, which are the left and right halves of the handle 3 respectively. A flat bottom surface 32 is formed on the assembled handle 3 to abut against the side surface 13 of the nozzle body 1. The handle 3 has a bed 6 with a recess 61 for the post 4 to enter. An annular flange 62 is disposed around the recess 61 to insert into the annular slot 41. Therefore, the handle 3 is connected to the nozzle body 1 with rotational mobility. Rotation of the handle 3 relative to the nozzle body 1 is smooth due to the flat bottom surface 32 and side surface 13.

[0016] A bottom of the recess 61 is provided with a restricting member which is formed as a cross-shaped slot 63 in this embodiment. The cross-shaped slot 63 includes a first groove portion 631, a second groove portion 632 that is perpendicular to the first groove portion 631 and a through hole 64 located at the junction thereof. The axial column portion 52 penetrates the through hole 64 to stick out of the handle 3. In the case of the handle 3 at a particular orientation, the positioning member 5 is normally pushed by the spring 43, and then the radial column portion 51 selectively enters the first groove portion 631 or the second groove portion 632. So the handle 3 is fixed on the nozzle body 1 since the positioning member 5 is restricted in the cross-shaped slot 63.

[0017] Based on the structure abovementioned, the handle 3 can be turned to positions parallel and perpendicular to the nozzle body 1 for practical use, as shown in FIG. 1 and FIG. 8. When the handle 3 is turned to a position parallel to the nozzle body 1, referring to FIG. 4, 5 and 6, the positioning member 5 is normally pushed by the spring 43, and then the radial column portion 51 enters the second groove portion 632 so that the handle 3 is fixed. According to this, user may choose to carry the handle 3 in a hand position shown in FIG. 12 or to grip the handle 3 in a hand position shown in FIG. 13 to spray

water.

[0018] Referring to FIG. 7, after pressing the axial column portion 52, the positioning member 5 moves down for the radial column portion 51 leaving the second groove portion 632. At this moment, the handle 3 can be turned relative to the nozzle body 1 as a result of the radial column portion 51 not being restricted in the cross-shaped slot 63. When the handle 3 is turned to a position perpendicular to the nozzle body 1, referring to FIG. 9, 10 and 11, by stopping pressing the axial column portion 52, the positioning member 5 is pushed by the spring 43 to move up for the radial column portion 51 entering the first groove portion 631. At this moment, the handle 3 is fixed again on the nozzle body 1 since the positioning member 5 is restricted in the cross-shaped slot 63. According to this, user may carry the handle 3 in a hand position shown in FIG. 14 to spray water.

[0019] Through the two orientations of the handle 3 relative to the nozzle body 1, user can hold the handle 3 to operate spray nozzle in various hand positions such as carrying, gripping, lifting, and pulling. Each of the hand positions is ergonomic so as to prevent hand or wrist from discomfort after long time use.

[0020] Moreover, for the elderly or disabled users whose hand movement is not delicate to perform detailed operations, change in the handle orientation is helpful to operate spray nozzle. So the present invention is suitable for such users.

Claims

1. A handheld spray nozzle including a nozzle body (1) with a water outlet portion (11), a control portion (12) controlling the water outlet portion (11) to spray and a handle (3), **characterized by** comprising:

a post (4) disposed on the nozzle body (1);
wherein a first component (311) and a second component (312) are connected to form the handle (3) having a bed (6) connected with the post (4), wherein the bed (6) includes a restricting member;

wherein the post (4) includes a positioning member (5) selectively connecting to or leaving the restricting member so that the handle (3) is capable of being fixed on the nozzle body (1) or being turned relative to the nozzle body (1).

2. The handheld spray nozzle of claim 1, wherein the post (4) protrudes in an axial direction (C) from a side surface (13) of the nozzle body (1), a peripheral surface of the post (4) being provided with an annular slot (41); wherein the bed (6) includes a recess (61) accommodating the post (4) with an annular flange (62) inserting into the annular slot (41).
3. The handheld spray nozzle of claim 2, wherein the

handle (3) includes a bottom surface (32) movably abutting against the side surface (13) of the nozzle body (1), the bottom surface (32) and the side surface (13) being flat.

4. The handheld spray nozzle of claim 2, wherein a top surface of the post (4) is provided with a hole (42) extending in the axial direction (C) and a groove (44) connected with the hole (42); wherein the positioning member (5) includes an axial column portion (52) accommodated in the hole (42) and a radial column portion (51) accommodated in the groove (44); wherein the recess (61) is provided with an opening portion (64) for the axial column portion (52) to stick out of the handle (3); wherein the restricting member is formed as a cross-shaped slot (63) for the radial column portion (51) to selectively insert into.
5. The handheld spray nozzle of claim 4, wherein the positioning member (5) is driven by an elastic member (43) accommodated in the hole (42).
6. The handheld spray nozzle of claim 1, wherein the control portion (12) is disposed at an opposite side of the nozzle body (1) relative to the handle (3).

face (13) being flat.

3. The handheld spray nozzle of claim 1, wherein a top surface of the post (4) is provided with a hole (42) extending in the axial direction (C) and a groove (44) connected with the hole (42); wherein the positioning member (5) includes an axial column portion (52) accommodated in the hole (42) and a radial column portion (51) accommodated in the groove (44); wherein the recess (61) is provided with an opening portion (64) for the axial column portion (52) to stick out of the handle (3); wherein the restricting member is formed as a cross-shaped slot (63) for the radial column portion (51) to selectively insert into.
4. The handheld spray nozzle of claim 3, wherein the positioning member (5) is driven by an elastic member (43) accommodated in the hole (42).
5. The handheld spray nozzle of claim 1, wherein the control portion (12) is disposed at an opposite side of the nozzle body (1) relative to the handle (3).

Amended claims in accordance with Rule 137(2) EPC.

1. A handheld spray nozzle including a nozzle body (1) with a water outlet portion (11), a control portion (12) controlling the water outlet portion (11) to spray and a handle (3), **characterized by** comprising:

a post (4) disposed on the nozzle body (1); wherein a first component (311) and a second component (312) are connected to form the handle (3) having a bed (6) connected with the post (4), wherein the bed (6) includes a restricting member; wherein the post (4) includes a positioning member (5) selectively connecting to or leaving the restricting member so that the handle (3) is capable of being fixed on the nozzle body (1) or being turned relative to the nozzle body (1), wherein the post (4) protrudes in an axial direction (C) from a side surface (13) of the nozzle body (1), a peripheral surface of the post (4) being provided with an annular slot (41); wherein the bed (6) includes a recess (61) accommodating the post (4) with an annular flange (62) inserting into the annular slot (41).

2. The handheld spray nozzle of claim 1, wherein the handle (3) includes a bottom surface (32) movably abutting against the side surface (13) of the nozzle body (1), the bottom surface (32) and the side sur-

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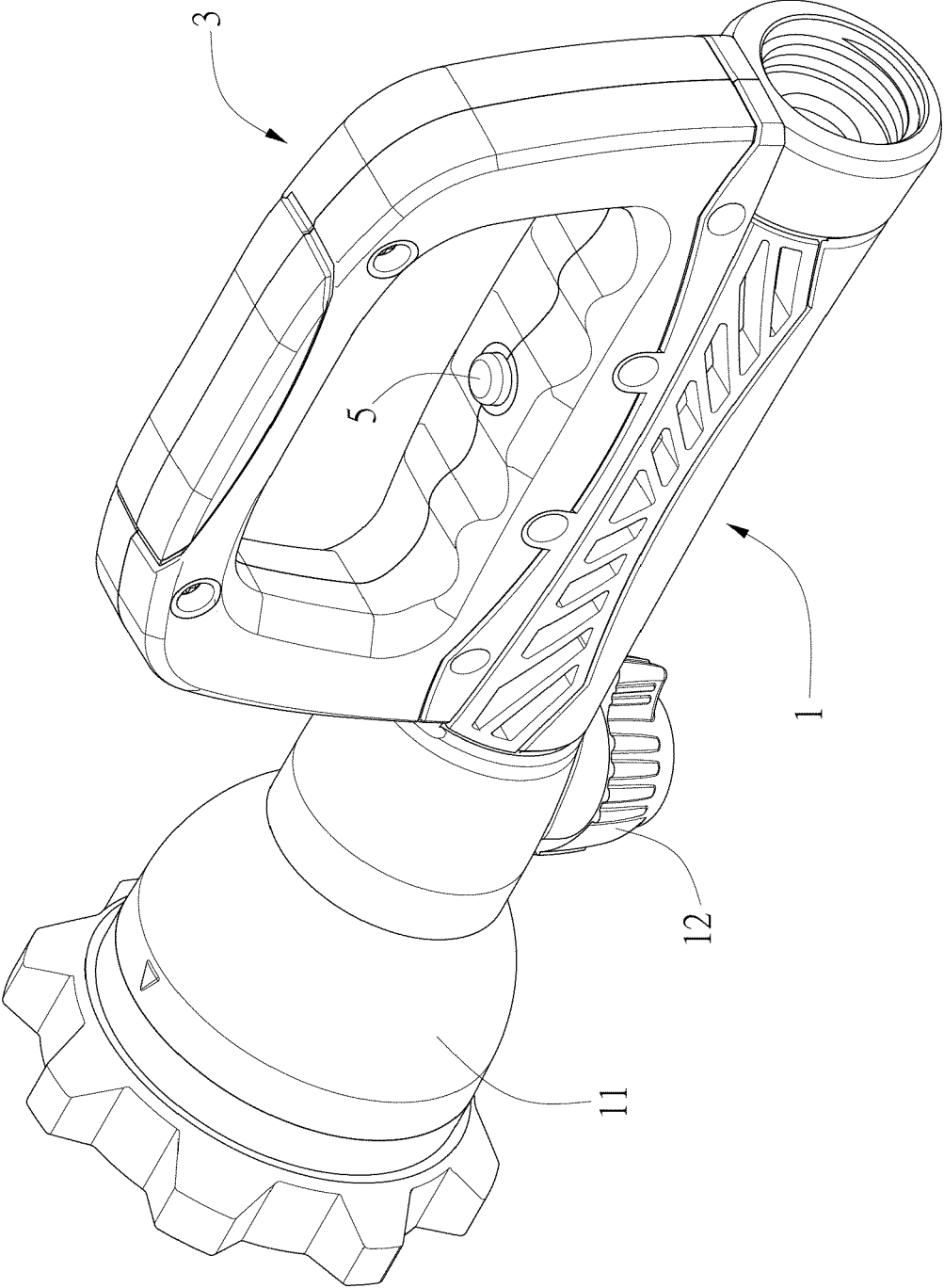


FIG. 1

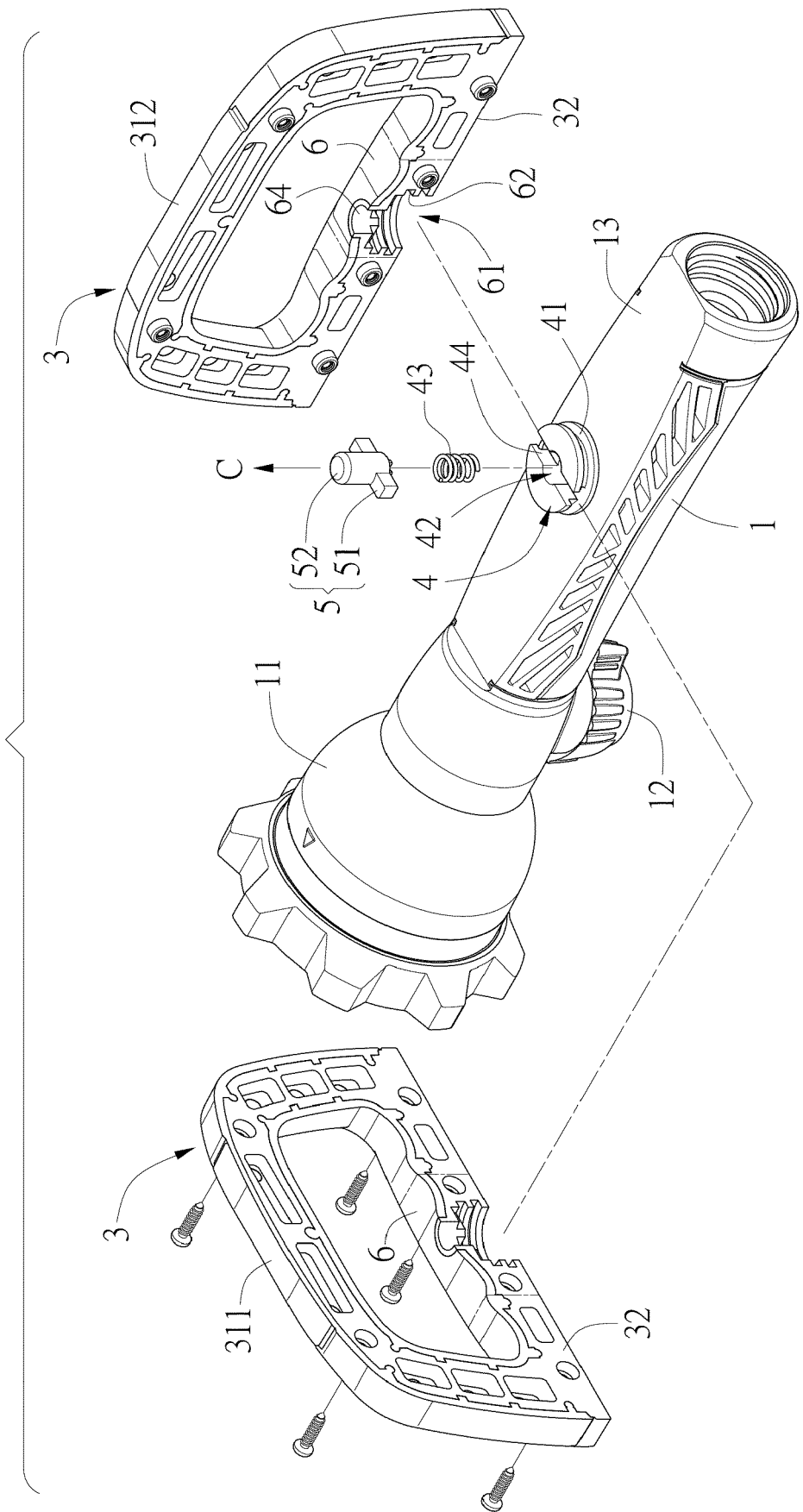


FIG. 2

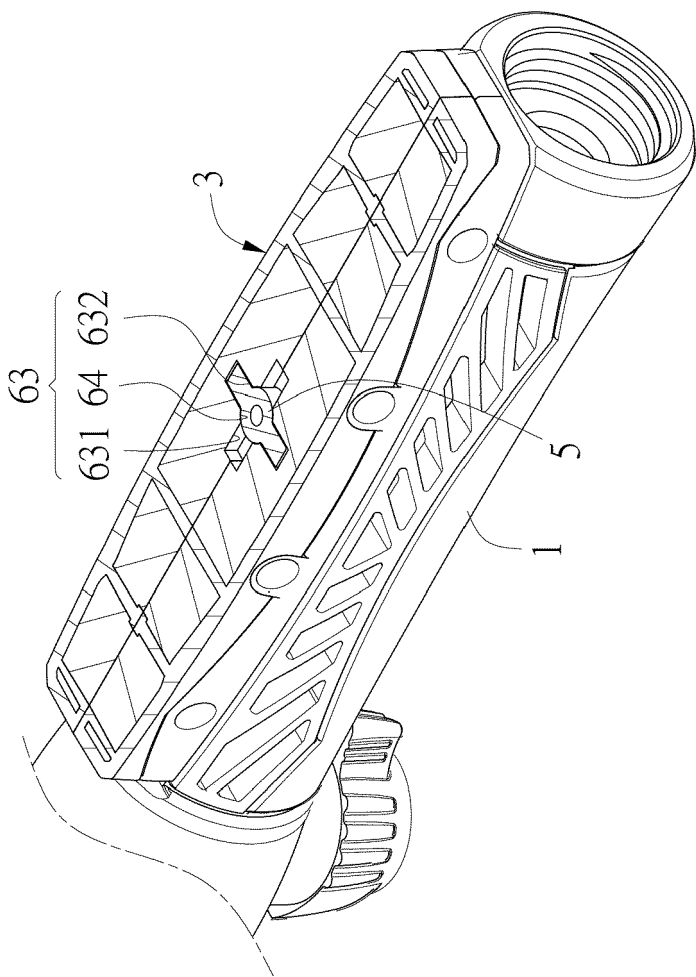


FIG. 3

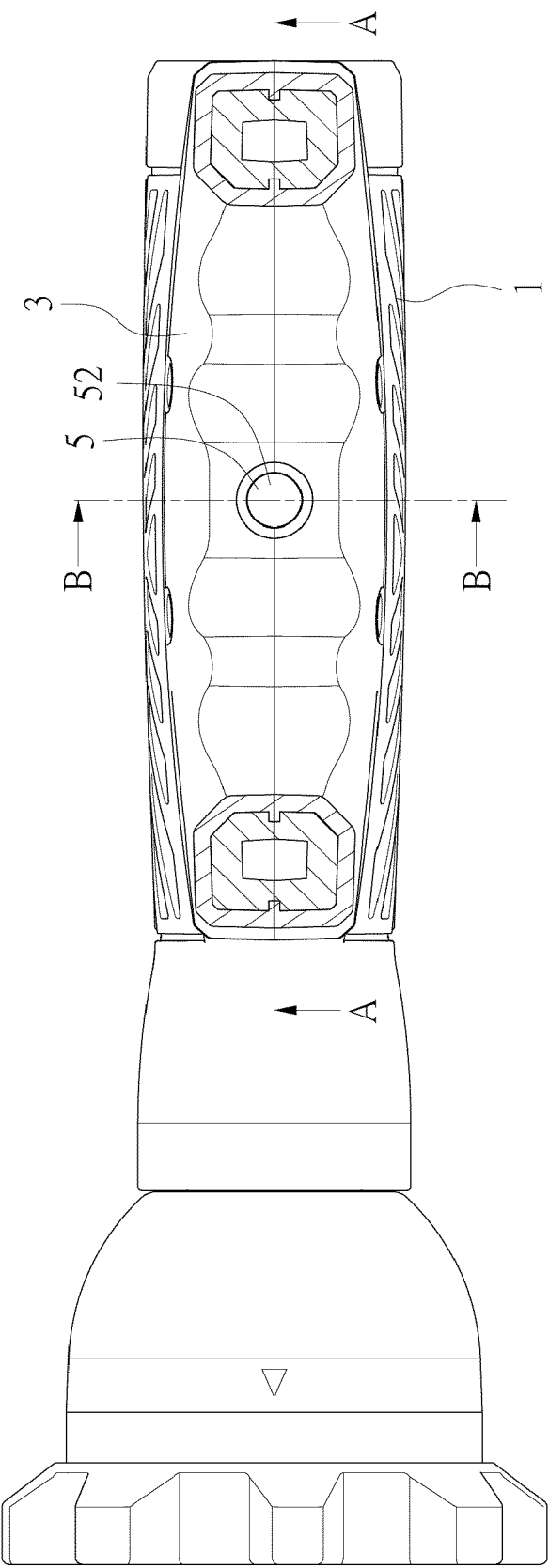


FIG. 4

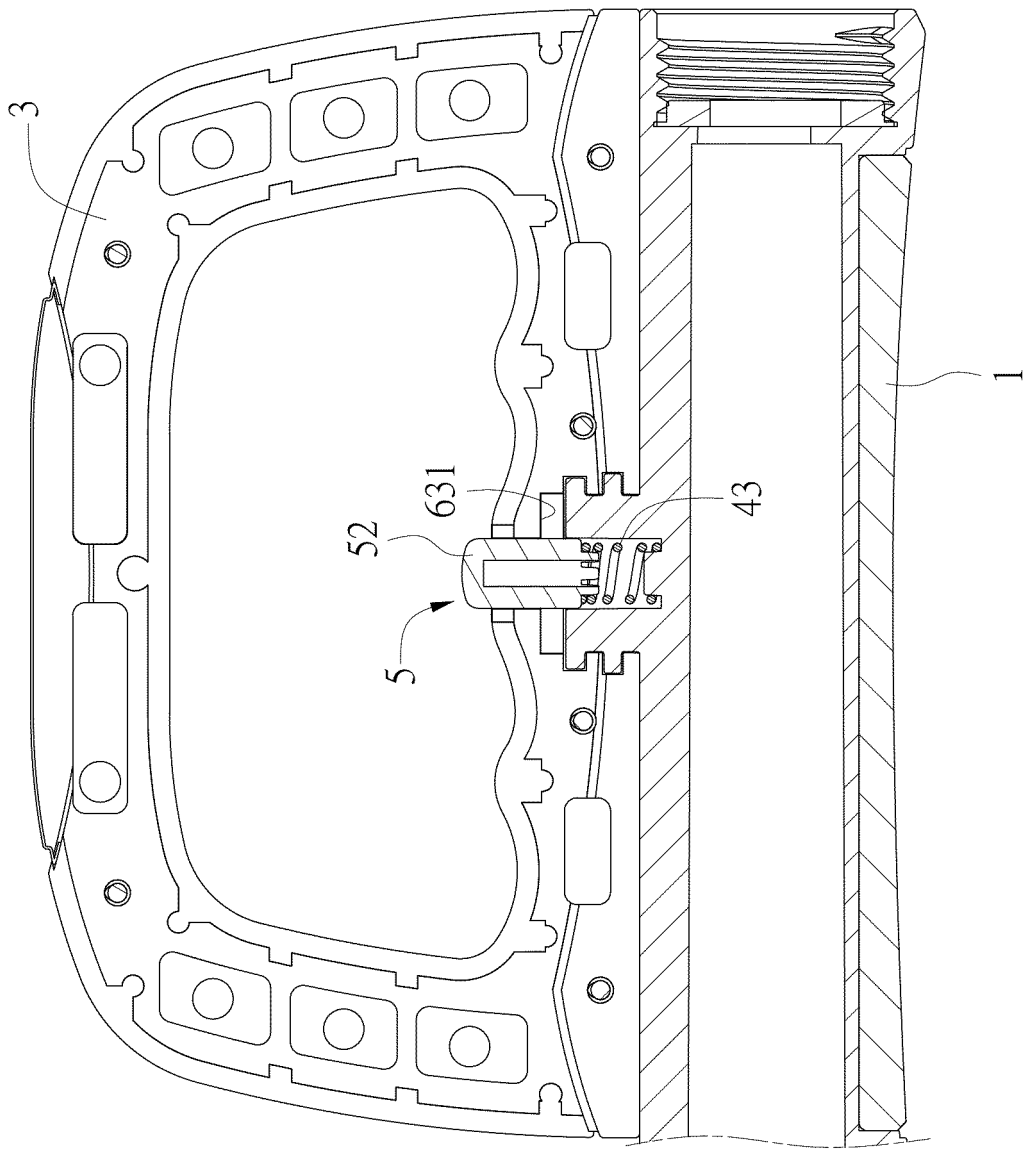


FIG. 5

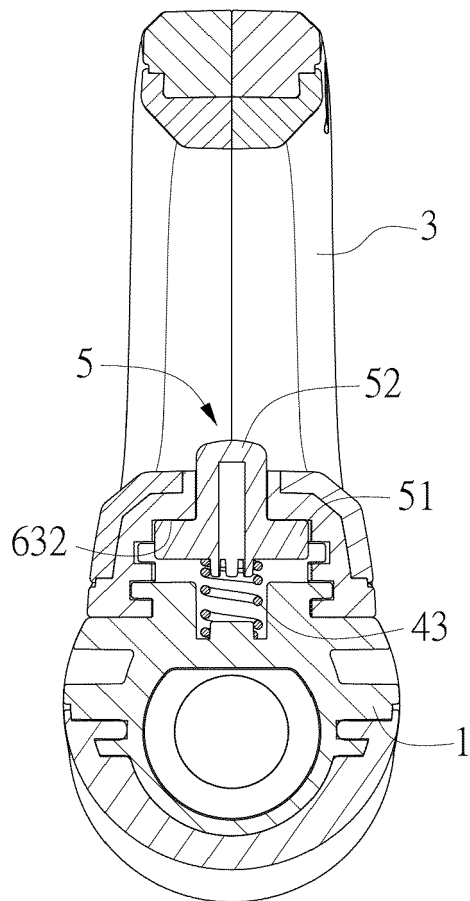


FIG. 6

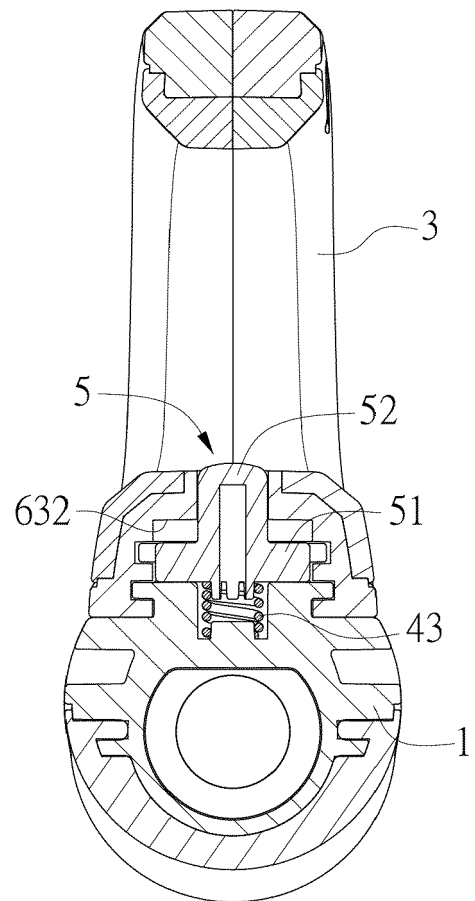


FIG. 7

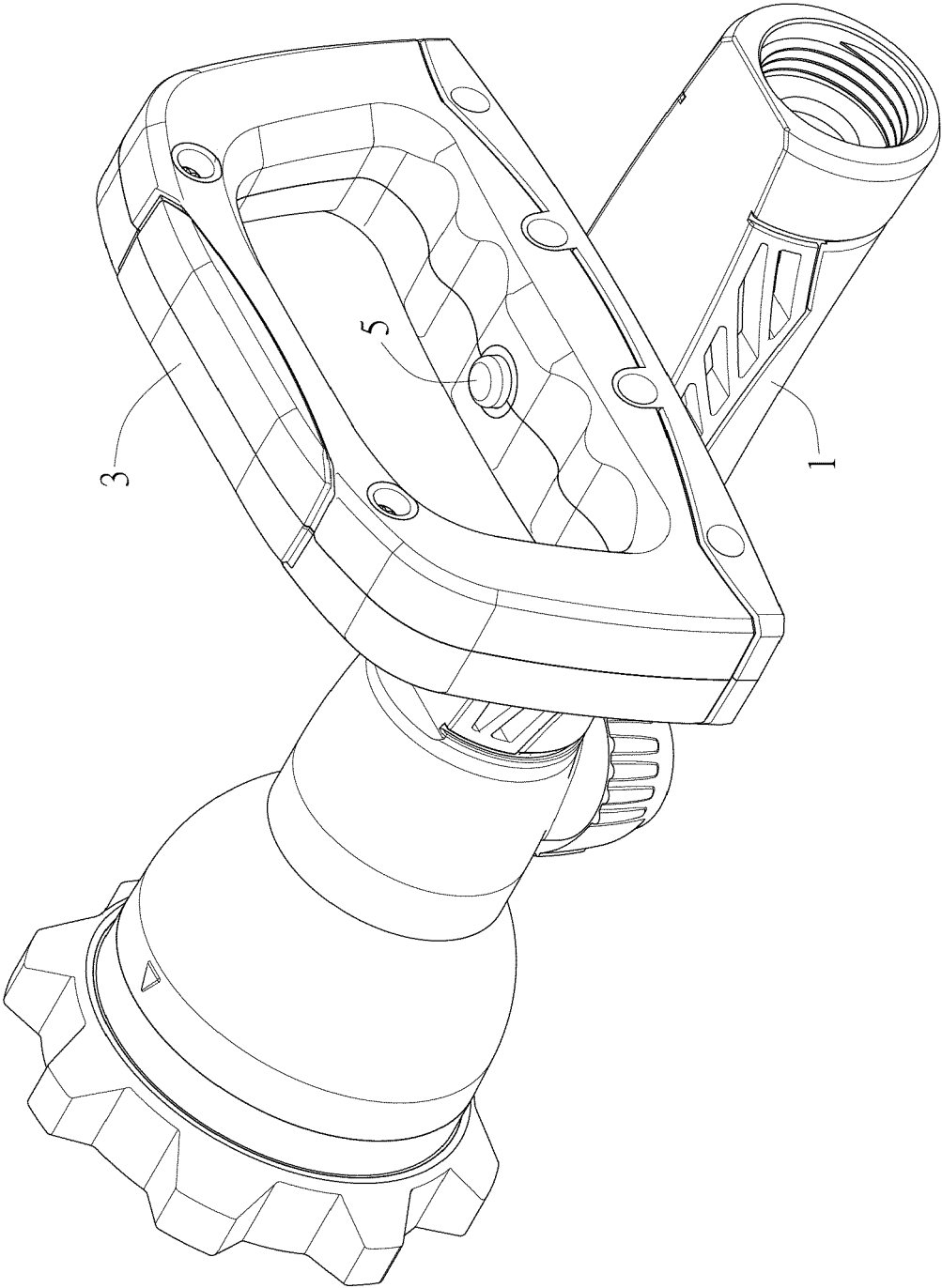


FIG. 8

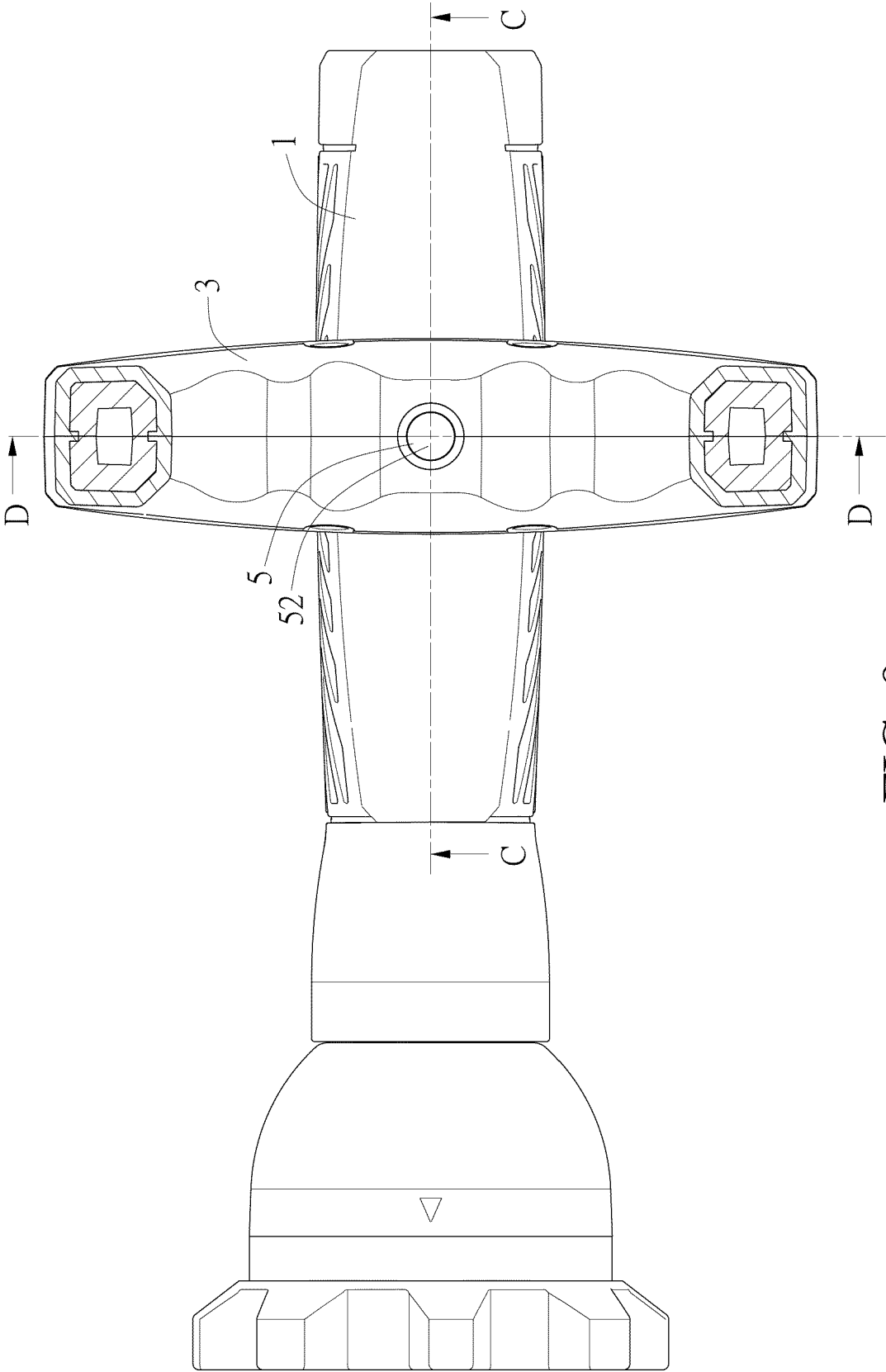


FIG. 9

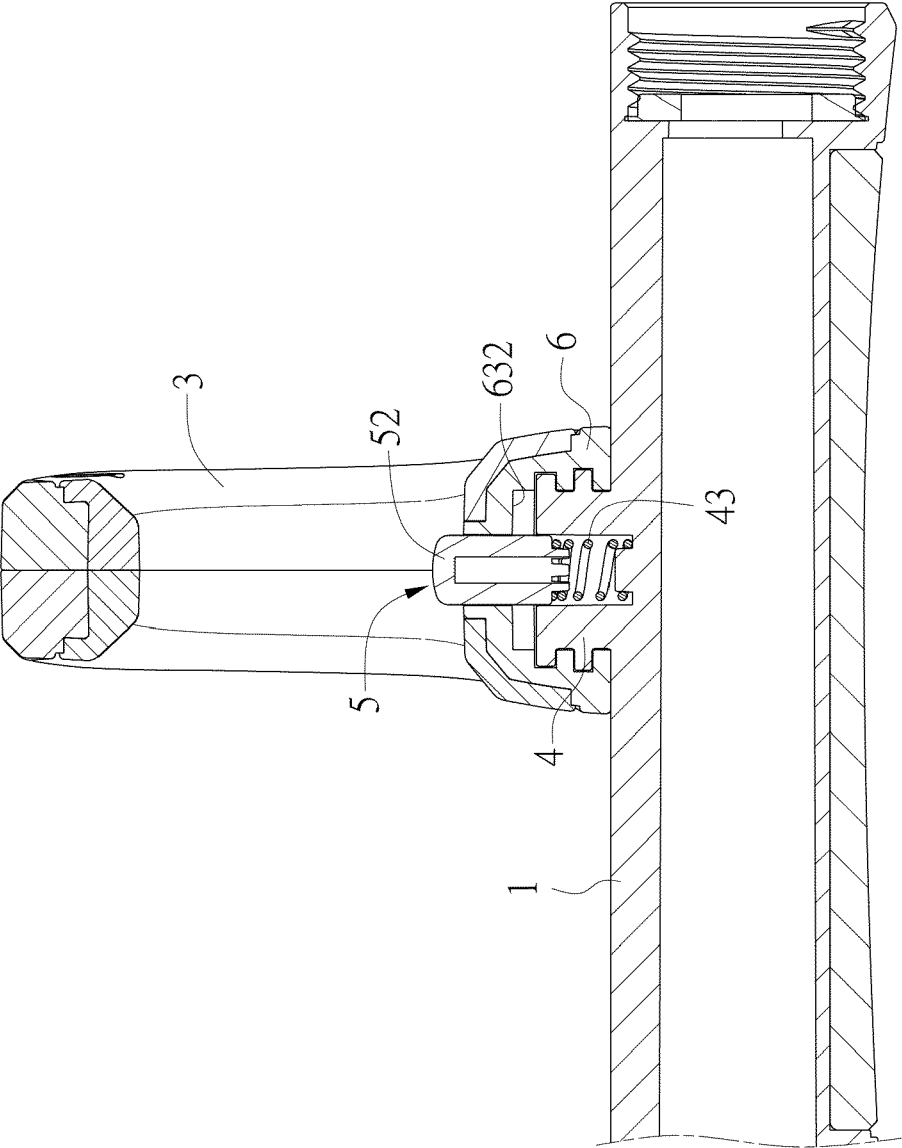


FIG. 10

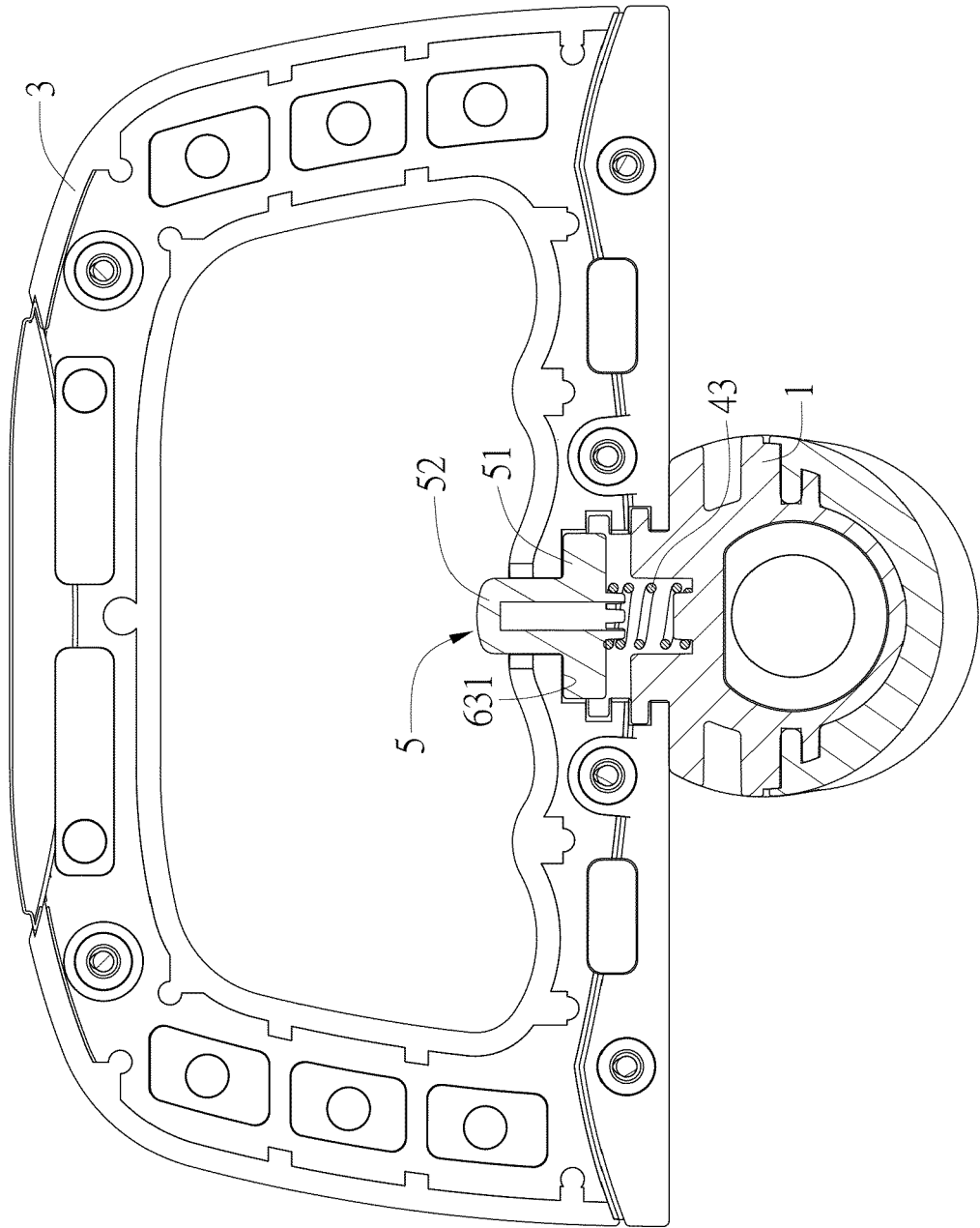


FIG. 11



FIG. 12

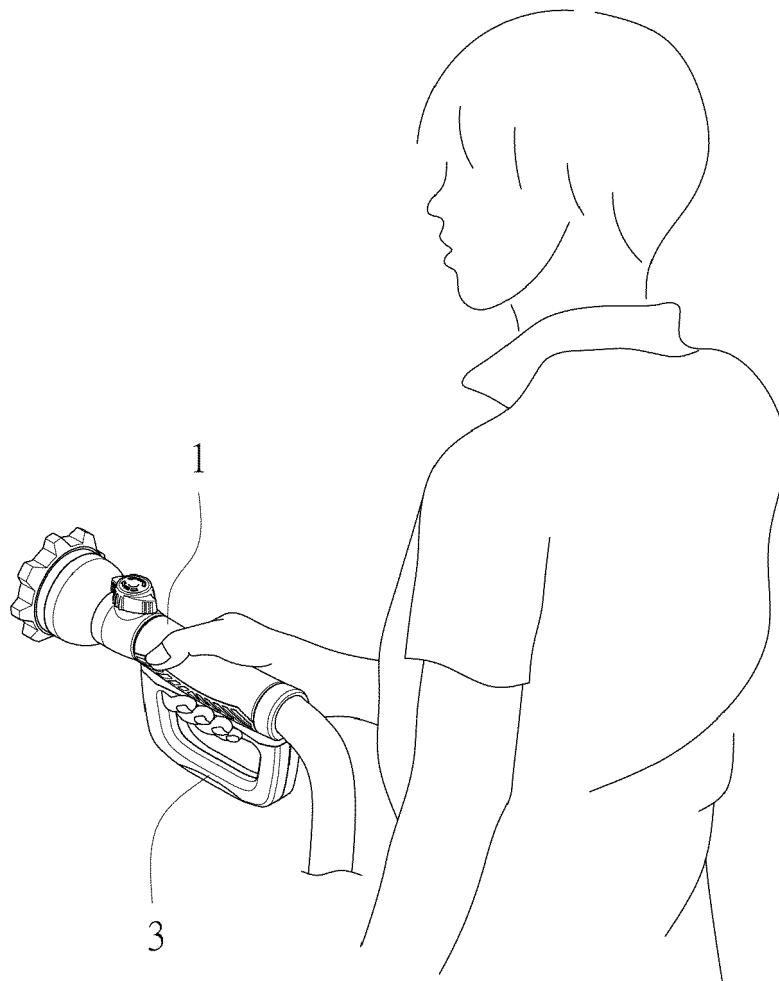


FIG. 13

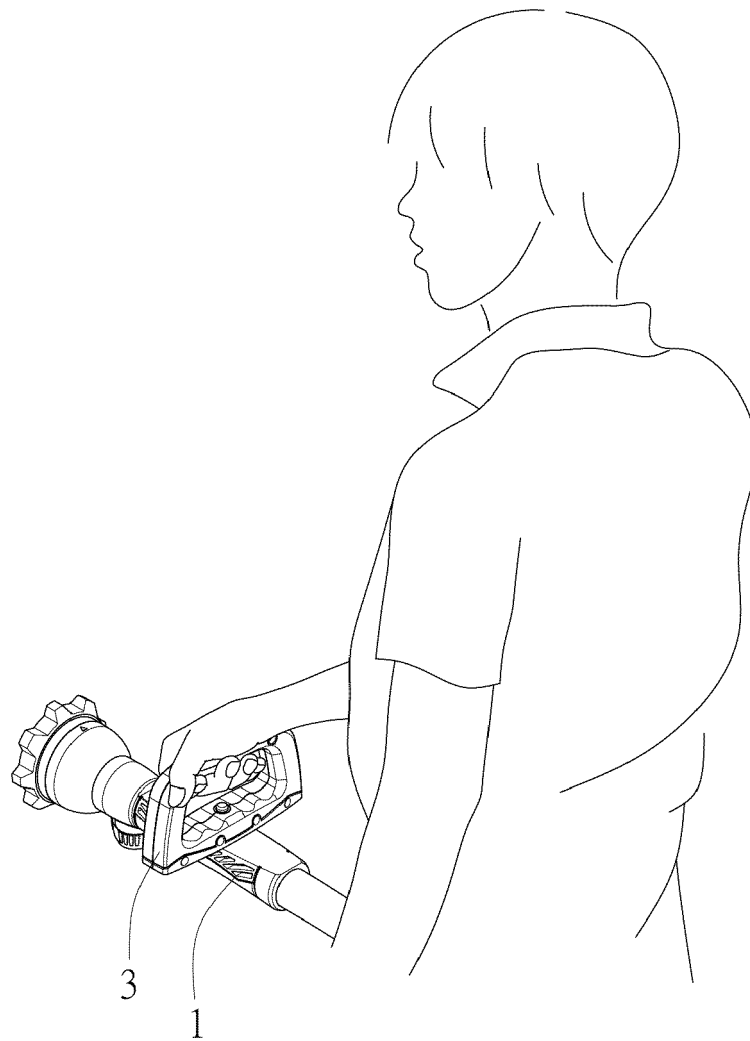


FIG. 14

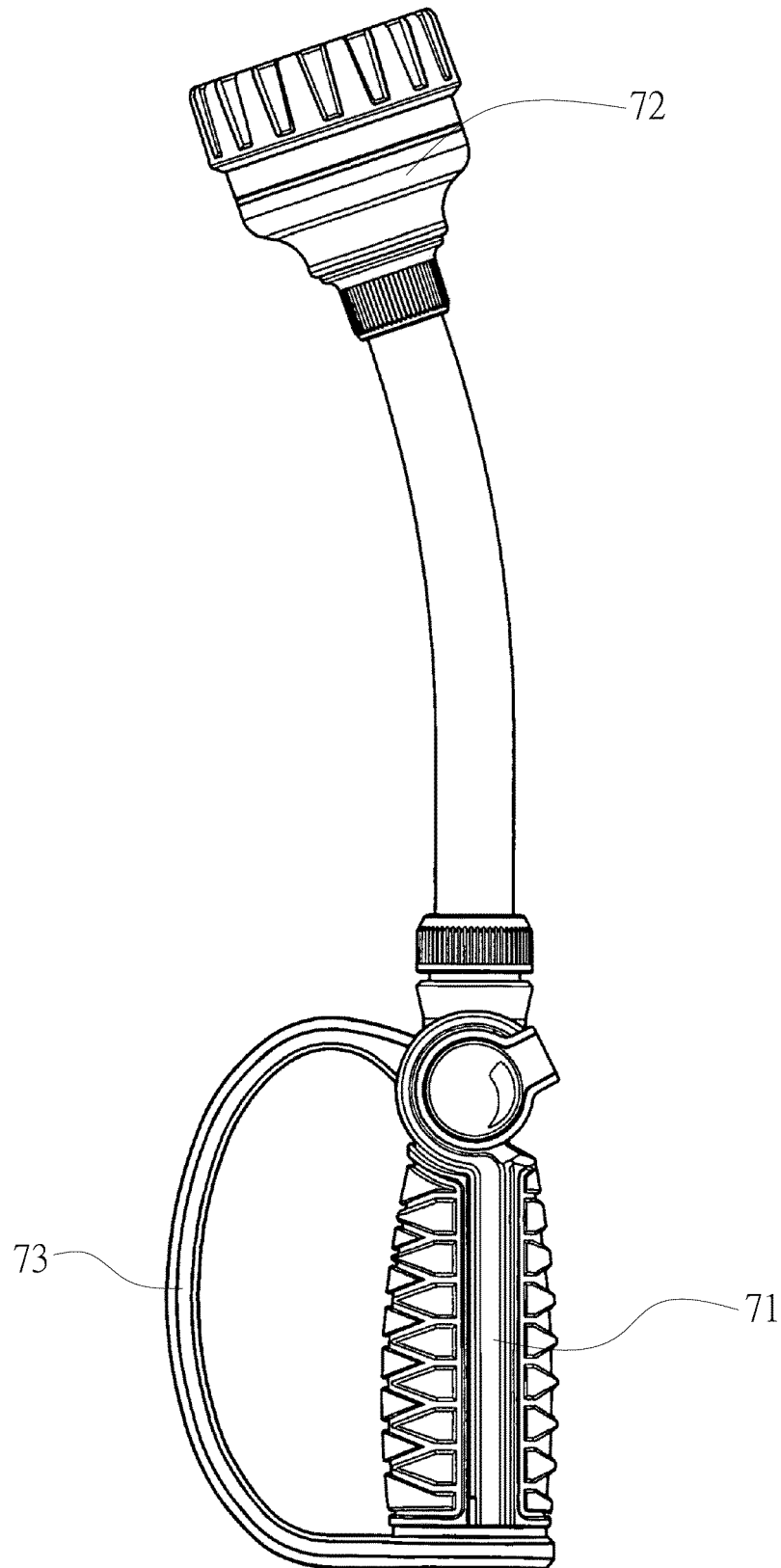


FIG. 15



EUROPEAN SEARCH REPORT

 Application Number
 EP 21 17 0056

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EPO FORM 1503 03.82 (P04C01)

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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A	US 2019/240684 A1 (CHEN CHIN-YUAN [TW]) 8 August 2019 (2019-08-08) * the whole document *	1-6	
A	CN 111 686 394 A (NINGBO DONGHAI SENTIAN FIRE FIGHTING EQUIPMENT CO LTD) 22 September 2020 (2020-09-22) * the whole document *	1-6	
			TECHNICAL FIELDS SEARCHED (IPC)
			B05B
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 23 September 2021	Examiner Neiller, Frédéric
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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 21 17 0056

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23-09-2021

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