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(54) **Nozzle assembly for hydromassage baths**

Düsenanordnung für Hydromassagebäder

Buse pour baignoire d'hydromassage

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Description

[0001] The present invention relates in general to a nozzle assembly for feeding water into the interior of the tub of a hydromassage bath, and in particular for feeding a mixture of water and air.

[0002] Hydromassage baths are known to comprise a tub provided, on its walls, with nozzle assemblies fed by a system which draws water from the tub after its filling, and feeds it, under pressure, back into the tub via suitably shaped nozzles; either pressurized water alone or a mixture of water and air can be fed. As the tub, even if provided with the hydromassage system, usually also serves for the normal part cleaning bath, it is important that when the hydromassage system is inactive the nozzle assemblies do not allow water to pass either into the nozzle assemblies themselves or into the pipes of said system, to prevent stagnation of water which, being mixed with substances removed from the user's skin and scum, could create moulds and bacteria which would be recirculated when effecting hydromassage, and also create blocking problems for the devices inside the nozzle assembly. Importantly, said nozzle assemblies must also draw air from the external environment and mix it into the jet of pressurized water to enable the hydromassage to be effected with a mixture of air and water.

[0003] Known nozzle assemblies of the above described type are shown in US-A-4 896 384 and EP-A-0 297 246. Currently known nozzle assemblies able to satisfy the aforesaid requirements and functions are constructionally complex and costly; in particular, nozzle assemblies are known presenting unidirectional valves arranged to prevent the water in the bath tub from flowing back into the nozzle interior. Being positioned along the flow direction of the pressurized water, they operate with a relatively high pressure drop as the resistance of the reaction spring of said valves has to be overcome, and moreover they are costly, and bulky to position in the interior of the nozzle assembly.

[0004] An object of the present invention is to overcome the stated drawbacks within the framework of a simple and rational solution.

[0005] These and other objects are attained by the nozzle assembly of the present invention as characterised in the claims.

[0006] The characteristics and constructional merits of the invention will be apparent from the ensuing detailed description given with reference to the figures of the accompanying drawings, which show a particular preferred embodiment thereof by way of non-limiting example.

Figure 1 is an exploded perspective view of the invention.

Figure 2 is a section on the plane II-II of Figure 4A.

Figure 2A is an enlarged detail of Figure 2 showing a different embodiment.

Figure 3 is a section on the plane III-III of figure 2.

Figure 4A and Figure 4B are a front view of the in-

vention of figure 1, in two different operative configurations.

[0007] Figures 1 and 2 show a nozzle assembly 1 to be fixed to a wall 31 of a tub 30 of the bath.

[0008] Said nozzle assembly 1 comprises a casing consisting of a first tubular part 14 to be fixed in correspondence with a respective hole 32 provided in the wall 31 to feed into the tub 30 a respective water jet originating from the nozzle assembly 1, and a second part 16 to be housed as an exact fit within an inner cylindrical surface 15 of said first part 14.

[0009] The casing 14, 16 comprises a first chamber 11, connected to a supply conduit 40 and a discharge conduit 42, and a second chamber 12, directly connected to a suction conduit 41 via a passage 18; said chambers 11 and 12 are separated from each other by a separation wall 21. The water supply conduit 40, the discharge conduit 42 and the suction conduit 41 are fixed to said casing 14, 16. Said parts 14 and 16 present suitable seats for gaskets 34, 35 and 36, used to prevent air seepage from the second chamber 12 and to prevent water seepage from the first chamber 11.

[0010] The second part 16 presents an outer edge 141 bent rearward to fix it to the wall 31; in this respect, said part 16 is firstly inserted into the hole 32 until the edge 141 is brought into contact with the outer surface of the wall 31 then, after the first part 14 has been fitted onto the second part 16, a clamping nut 70 is screwed onto a thread 71 provided on that portion of the second part 16 distant from the bath tub 30, to lock the first part 14 to the wall 31. The first part 14 is sealed against water seepage from the tub 30 by the presence of a suitable annular seat 37 filled with silicone, and a gasket 33. The second part 16 is separated from the tub 30 by a cover 17, at the centre of which there is an ejection hole 13.

[0011] The nozzle assembly 1 comprises a nozzle 20, positioned on the separation wall 21 and having a through channel 23 which connects the first chamber 11 to the second chamber 12 and possesses a mouth 22 projecting into the second chamber 12; said nozzle 20 produces a water jet with its exit directed towards the ejection hole 13.

[0012] The nozzle assembly 1 also comprises, in the second chamber 12, a movable valving element 50 to open or vice versa close the ejection hole 13 and suitably operated by operating means 51. The valving element 50 is bounded by a front first wall 56 parallel to and adhering or nearly adhering to the ejection hole 13, and a rear second wall 57 opposite the front wall 56 and parallel to and adhering or nearly adhering to the projecting mouth 22 of the nozzle 20 when the valving element 50 moves into its closed position. The valving element 50 also comprises a through channel 55 internally disposed between the first wall 56 and the second wall 57 and shaped to enable, in combination with the nozzle 20, air to be drawn in from the second chamber 12 via suitable apertures 19, and to form a mixture of air and water. In

detail, the through channel 55 presents an initial portion disposed in proximity to the nozzle 20, and having a cross-section greater than the cross-section of the channel 23 at the mouth 22; that part of this initial portion which extends radially from the projecting mouth 22 of the nozzle 20 defines said apertures 19. According to a particular embodiment, as the tub 30 of the bath is approached, the channel 55 presents a cross-section which gradually converges to transform the energy due to the water pressure into kinetic energy to increase the water outflow velocity. The final portion of the channel 55 presents a constant cross-section, close to the cross-section of the ejection hole 13.

[0013] Said operating means 51 comprise a blade 52 positioned in the first chamber 11, and rigidly fixed to a first portion of a rod 53, which is rotatably inserted through a hole 25 provided in the separation wall 21, and of which the second portion is rigidly fixed to the valving element 50.

[0014] The rod 53 defines the axis of rotation of the valving element 50 which is perpendicular (or a small angle off perpendicular) to the plane of the ejection hole 13; as will be apparent hereinafter, this axis is positioned at a suitable distance from the barycentre of the valving element 50.

[0015] The blade 52 is shaped with a profile presenting a concave surface to the water from the supply conduit 40, to increase the thrust of the water on the blade 52.

[0016] The nozzle assembly 1 is connected to a further nozzle assembly, positioned downstream, by means of the discharge conduit 42, which is connected to the supply conduit 40 of said further nozzle assembly, said nozzle assembly 1 being connected to a preceding upstream nozzle assembly by means of its supply conduit 40, which is connected to the discharge conduit of said preceding nozzle assembly.

[0017] During hydromassage, a pump of the hydraulic system connected to the nozzle assemblies withdraws water from the tub 30 of the bath and feeds it under pressure to the supply conduit 40. The pressurized water enters the first chamber 11 to strike against the surface of the blade 52, to generate about the axis of the rod 53 a first twisting movement able to position the valving element 50 in a first open position.

[0018] Said open position (see Figure 3 and Figure 4B) is such that the channel 55 becomes positioned coaxial to the nozzle 20, through which the pressurized water jet originates, and to the ejection hole 13, to enable a mixture of air and water to be ejected towards the tub 30 of the bath. When hydromassage ceases, said valving element 50 moves into the closed position, with its front wall 56 adhering to the ejection hole 13 to close it, and with its rear wall 57 adhering to and closing the projecting mouth 22 of the nozzle 20 (see Figure 4A); by virtue of this, the water present in the tub is prevented from penetrating into the second chamber 12, or at least any organic substances are prevented from being able to flow back into the second chamber and from there to the first chamber

11, creating moulds and bacteria and possible blockage. Said closed position is achieved because of the fact that as the barycentre of the valving element 50 is displaced from its axis of rotation (axis of the rod 53), the weight of the valving element 50 creates a second twisting moment about the axis of the rod 53, to return the valving element 50 into its normal closed position, where it adheres to the cover 17 and to the nozzle 20. Elastic means, in particular a torsion spring 54, can be added to return the valving element 50 into its closed position when water flow is lacking.

[0019] To render the open and closed positions of the valving element 50 (Figures 4A and 4B) more stable, on the inner surface of the second part 16, in correspondence with the second chamber 12, there is positioned on one side a first magnet 26 or equivalent means, and on the opposite side a second magnet 27 or equivalent means, both able to attract the valving element 50. In this case, this either has a totally or partly ferromagnetic body, or presents two counter-magnets 26a and 27a having opposite polarities to the corresponding magnets 26 and respectively 27 and positioned on opposite sides of the valving element 50; the magnets and counter-magnets are in geometrical relationship to each other such that when the valving element is in its closed position (Figure 4A), the magnet 26 is in contact or near contact with the counter-magnet 26a, whereas when the valving element is in its open position (Figure 4B), the second magnet 27 is in contact or near contact with the counter-magnet 27a.

[0020] Consequently the pairs of magnets and counter-magnets 26-26a and 27-27a serve to secure the valving element with a certain force, maintaining it in either its closed or open position. The force of the pressurized water which on entering the first chamber 11 strikes the blade 52 is able to overcome the force of attraction between the magnet 26 and counter-magnet 26a, whereas the thrust of the spring 54 and the weight of the valving element 50 is able to overcome the force of attraction between the magnet 27 and counter-magnet 27a when the thrust of the pressurized water against the blade 52 ceases.

[0021] In the embodiment shown in Figure 2A, the rod 53 possesses a threaded intermediate portion which is helically engaged with the likewise threaded hole 25 in the wall 21; this engagement is such that when the valving element 50 is in its open position (as shown by the full lines in Figure 2A), it lies at a distance (a few millimetres) from the hole 13; in contrast, when the valving element 50 rotates into its closed position (as shown by dashed lines in Figure 2A), the engagement with the hole 25 causes it not only to rotate but also to translate, at least a little, towards the hole 13, until its front wall 56 adheres to it. Effective adhesion of the valving element against the hole 13 can hence be obtained, with consequent effective closure thereof.

[0022] A non-limiting embodiment of the present invention has been described and illustrated, however it is apparent to the expert of the art that modifications can

be made to the shapes, the details and the orientations, without however leaving its scope.

Claims

1. A nozzle assembly (1) for hydromassage baths, to be applied to a wall (31) of the bath tub (30), comprising: a casing (14, 16) to be fixed to a wall (31) of the bath tub (30), in correspondence with a hole (32) for water entry into the tub (30) and having a hole (13) for ejecting the water jet into the bath tub (30), at least one water supply conduit (40) communicating with the casing (14, 16); a nozzle (20) arranged to produce a water jet directed towards the ejection hole (13), the pressurized water originating from the supply conduit (40) being ejected through the nozzle (20) and through the ejection hole (13); a valving element (50) movable with movement transverse to the axis of the nozzle (20), to open or vice versa to close the ejection hole (13);
characterised in that:
the valving element (50) is arranged to rotate about a rotation axis perpendicular to the plane of the ejection hole (13),
and **in that** the assembly comprises operating means (51) subjected to the pressure of the water originating from the supply conduit (40), to cause the valving element (50) to rotate into its open position when a water flow arrives in a first chamber (11) and vice versa to release said valving element (50) into its closed position when said water flow is lacking.
2. A nozzle assembly as claimed in claim 1, **characterised in that:** said casing possesses a first chamber (11) and a second chamber (12) separated from each other, said ejection hole (13) is located in the second chamber (12);
the nozzle (20) is located on the wall (21) separating the two said chambers (11, 12);
said valving element (50) is located in the second chamber (12).
3. A nozzle assembly as claimed in claim 2, **characterised in that** the valving element (50) comprises a front first wall (56) parallel to the plane of the ejection hole (13) and adhering to the ejection hole (13) when the valving element (50) lies in said closed position.
4. A nozzle assembly as claimed in claim 1, **characterised in that** the valving element (50) comprises a rear second wall (57) parallel to the plane of a mouth (22) of the nozzle (20) and adhering to the mouth (22) when the valving element (50) lies in said closed position.
5. A nozzle assembly as claimed in claim 1, **characterised in that** the operating means (51) comprise a blade (52) located in the first chamber (11) and rigidly fixed to a rod (53) which is rigid with the valving element (50) to cause this latter to rotate into the open position whenever said water pressure acts on the surface of said blade (52), the valving element (50) returning into its closed position whenever said water flow is lacking.
6. A nozzle assembly as claimed in claim 1, **characterised in that** the valving element (50) has a rotation axis distant from its barycentre said distance enabling the same valving element (50), by virtue of its weight, to be returned into said closed position.
7. A nozzle assembly as claimed in claim 5, **characterised in that** the blade (52) comprises elastic means (54) arranged to return the valving element (50) into an initial rest position, coinciding with said closed position.
8. A nozzle assembly as claimed in claim 5, **characterised in that** the rod (53) is helically engaged with a hole (25), said engagement being such that when the valving element (50) rotates into its closed position, in addition to rotating it translates at least a little towards the hole (13) until it adheres to it with its front wall.
9. A nozzle assembly as claimed in claim 5, **characterised in that** on the inner surface of a second part (16) of the casing (14, 16), there is positioned on one side a first magnet (26), and on the opposite side a second magnet (27), both able to secure the valving element (50) by magnetic attraction when this is in its closed or alternatively its open position.
10. A nozzle assembly as claimed in claim 2, **characterised in that** the second chamber (12) is connected to at least one air suction conduit (41).
11. A nozzle assembly as claimed in claim 10, **characterised in that** the valving element (50) comprises a through channel (55) shaped to enable, in combination with the nozzle (20), air to be drawn in to form a mixture of air and water originating from the nozzle (20); said channel (55) being coaxial with the nozzle (20) and with the ejection hole (13) when the valving element (50) is in said open position.
12. A nozzle assembly as claimed in claim 1, **characterised in that** the casing (14, 16) comprises:
a first part (14) to be fixed through the hole (32) of the wall (31),
a second part (16), in the interior of which said chambers (11, 12) are provided and which is to

be housed as an exact fit within the inner surface (15) of said first part (14),
a clamping nut (70) and a thread (71) provided on a portion of the second part (16) distant from the bath tub (30), to axially secure the second part (16) to the first part (14).

Patentansprüche

1. Eine Düsenanordnung (1) für Hydromassagebäder zum Anbringen an eine Wand (31) der Badewanne (30), einschließlich der folgenden Elemente:

- Eines Gehäuses (14, 16) zum Anbringen an eine Wand (31) der Badewanne (30) in Entsprechung zu einer Öffnung (32) für den Wasserzulauf in die Wanne (30) und selbst ausgestattet mit einer Öffnung (13) zum Ausstoßen des Wasserstrahls in die Wanne (30) mit wenigstens einer mit dem Gehäuse (14, 16) verbundenen Wasserzuleitung (40);
- Einer Düse (20), die so angeordnet ist, dass sie einen auf die Ausstoßöffnung (13) gerichteten Wasserstrahl produziert, wobei das unter Druck stehende Wasser aus der Zuleitung (40) kommt und durch die Düse (20) und die Ausstoßöffnung (13) ausgestoßen wird;
- Einer bewegbaren Verteileinrichtung (50), die zum Öffnen oder Verschließen der Ausstoßöffnung (13) quer zur Achse der Düse (20) bewegt werden kann;

Dadurch gekennzeichnet, dass:

- Die Verteileinrichtung (50) so angeordnet ist, dass sie auf einer Drehachse senkrecht zur Ebene der Ausstoßöffnung (13) drehbar ist;
- Die Anordnung Betriebsvorrichtungen (51) beinhaltet, welche dem Druck des Wassers aus der Zuleitung (40) ausgesetzt werden und die Verteileinrichtung (50) zum Drehen in die geöffnete Position bringen, wenn ein Wasserstrahl in einer ersten Kammer (11) ankommt und umgekehrt die Verteileinrichtung (50) in die geschlossene Position zurückbringen, wenn der Wasserstrahl ausbleibt.

2. Eine Düsenanordnung nach Patentanspruch 1, **dadurch gekennzeichnet, dass:**

- Das Gehäuse eine erste Kammer (11) und eine zweite Kammer (12) besitzt, die voneinander getrennt sind;
- Sich die Ausstoßöffnung (13) in der zweiten Kammer (12) befindet;
- Sich die Düse (20) an der Trennwand (21) zwischen den beiden Kammern (11, 12) befindet;

- Sich die Verteileinrichtung (50) in der zweiten Kammer (12) befindet.

3. Eine Düsenanordnung nach Patentanspruch 2, **dadurch gekennzeichnet, dass** die Verteileinrichtung (50) eine erste vordere Wand (56) enthält, die parallel zur Ebene der Ausstoßöffnung (13) liegt und an der Ausstoßöffnung (13) anliegt, wenn sich die Verteileinrichtung (50) in geschlossener Position befindet.
4. Eine Düsenanordnung nach Patentanspruch 1, **dadurch gekennzeichnet, dass** die Verteileinrichtung (50) eine zweite hintere Wand (57) enthält, die parallel zur Ebene einer Mündung (22) der Düse (20) liegt und an diese Mündung (22) anliegt, wenn sich die Verteileinrichtung (50) in geschlossener Position befindet.
5. Eine Düsenanordnung nach Patentanspruch 1, **dadurch gekennzeichnet, dass** die Betriebsvorrichtungen (51) eine Schaufel (52) beinhalten, die sich in der ersten Kammer (11) befindet und die fest an einen Stab (53) angebracht ist, welcher wiederum fest mit der Verteileinrichtung (50) verbunden ist und diese dazu bringt, in die offene Position zu drehen, sobald der Wasserdruck auf die Oberfläche der Schaufel (52) einwirkt und die Verteileinrichtung (50) umgekehrt zurück in die geschlossene Position verbringt, sobald der Wasserstrahl ausbleibt.
6. Eine Düsenanordnung nach Patentanspruch 1, **dadurch gekennzeichnet, dass** die Drehachse der Verteileinrichtung (50) von deren Schwerpunkt entfernt ist, wobei dieser Abstand ein Zurückfallen der Verteileinrichtung (50) in die geschlossene Position aufgrund des Gewichts derselben ermöglicht.
7. Eine Düsenanordnung nach Patentanspruch 5, **dadurch gekennzeichnet, dass** die Schaufel (52) elastische Vorrichtungen (54) beinhaltet, die so angeordnet sind, dass sie die Verteileinrichtung (50) in eine anfängliche Ruheposition verbringen, die mit der geschlossenen Position übereinstimmt.
8. Eine Düsenanordnung nach Patentanspruch 5, **dadurch gekennzeichnet, dass** der Stab (53) spiralförmig mit einer Öffnung (25) derart verbunden ist, dass sich die Verteileinrichtung (50) zusätzlich zur Drehung in die geschlossene Position auch in Richtung zur Ausstoßöffnung (13) hin bewegt, so dass sie in der geschlossenen Position mit der vorderen Wand an diese anschließt.
9. Eine Düsenanordnung nach Patentanspruch 5, **dadurch gekennzeichnet, dass** auf einer Innenseite eines zweiten Bauelements (16) des Gehäuses (14, 16) ein erster Magnet (26) und auf der gegenüber-

liegenden Innenseite ein zweiter Magnet (27) angebracht sind, die beide dazu in der Lage sind, die Verteileinrichtung (50) durch magnetische Anziehungskraft in der geschlossenen oder umgekehrt in der offenen Position zu sichern.

10. Eine Düsenanordnung nach Patentanspruch 2, **dadurch gekennzeichnet, dass** die zweite Kammer (12) mit wenigstens einer Luftansaugleitung (41) verbunden ist.

11. Eine Düsenanordnung nach Patentanspruch 10, **dadurch gekennzeichnet, dass** die Verteileinrichtung (50) einen Durchgangskanal (55) beinhaltet, der so geschnitten ist, dass er in Zusammenarbeit mit der Düse (20) Luft zur Bildung einer aus der Düse (20) stammenden Luft-Wasser-Mischung ansaugt, wobei der Kanal (55) bei offener Position der Verteileinrichtung (50) koaxial zur Düse (20) und zur Ausstoßöffnung (13) ist.

12. Eine Düsenanordnung nach Patentanspruch 1, **dadurch gekennzeichnet, dass** das Gehäuse (14, 16) folgende Elemente beinhaltet:

- Ein erstes Bauelement (14), das durch die Öffnung (32) an die Wand (31) angebracht wird;
- Ein zweites Bauelement (16), in dessen Innern sich die Kammern (11, 12) befinden, und welches genau die Maße der Innenfläche (15) des ersten Bauelements (14) hat, um innerhalb desselben untergebracht zu werden;
- Eine Klemmmutter (70) und ein Gewinde (71) auf einem von der Badewanne (30) entfernten Abschnitt des zweiten Bauelements (16), um das zweite Bauelement (16) axial am ersten Bauelement (14) zu fixieren.

Revendications

1. Une buse (1) pour bains hydromassage à appliquer à une paroi (31) de la baignoire (30), comprenant : un corps (14, 16) à fixer à une paroi (31) de la baignoire (30) au niveau d'un trou (32) pour le passage de l'eau dans la baignoire (30) et disposant d'un trou (13) pour l'expulsion de l'eau dans la baignoire (30), au moins une conduite d'alimentation en eau (40) communicant avec le corps (14, 16) ; une buse (20) disposée pour produire un jet d'eau dirigé vers le trou d'expulsion (13), l'eau sous pression qui provient de la conduite d'alimentation (40) étant expulsée à travers la buse (20) et à travers le trou d'expulsion (13) ; un élément de fermeture (50) déplaçable avec un mouvement transversal vers l'axe de la buse (20), pour ouvrir ou fermer au contraire le trou d'expulsion (13) ; **caractérisé par le fait que** ; l'élément de fermeture (50) est disposé pour pivoter

autour d'un axe de rotation perpendiculaire au plan du trou d'expulsion (13) et **par le fait que** l'ensemble comprend des dispositifs d'actionnement (51) sujets à la pression de l'eau provenant de la conduite d'alimentation (40) qui causent la rotation de l'élément de fermeture (50) dans sa position ouverte lorsqu'un flux d'eau arrive dans une première chambre (11) et qui libèrent au contraire ledit élément de fermeture (50) dans sa position fermée lorsque ledit flux d'eau est absent.

2. Une buse selon la revendication 1, **caractérisée par le fait que** : ledit corps possède une première chambre (11) et une deuxième chambre (12) séparée l'une de l'autre, ledit trou d'expulsion (13) est situé dans la deuxième chambre (12) ; la buse (20) est située sur la paroi (21) séparant lesdites deux chambres (11, 12) ; ledit élément de fermeture (50) est situé dans la deuxième chambre (12).

3. Une buse selon la revendication 2, **caractérisée par le fait que** l'élément de fermeture (50) comprend une première paroi avant (56) parallèle au trou d'expulsion (13) et adhérent au trou d'expulsion (13) lorsque l'élément de fermeture (50) se trouve dans ladite position fermée.

4. Une buse selon la revendication 1, **caractérisée par le fait que** l'élément de fermeture (50) comprend une deuxième paroi arrière (57) parallèle au plan d'un orifice (22) de la buse (20) et adhérent à l'orifice (22) lorsque l'élément de fermeture (50) se trouve dans ladite position fermée.

5. Une buse selon la revendication 1, **caractérisée par le fait que** les dispositifs d'actionnement (51) comprennent une lame (52) située dans la première chambre (11) et rigidement fixée à une tige (53) qui est rigide avec l'élément de fermeture (50) afin de causer la rotation de ce dernier dans la position ouverte lorsque ladite pression de l'eau agit sur la surface de ladite lame (52), l'élément de fermeture (50) retournant dans sa position fermée lorsque ledit flux d'eau est absent.

6. Une buse selon la revendication 1, **caractérisée par le fait que** l'élément de fermeture (50) possède un axe de rotation distant de son barycentre, la dite distance permettant à ce même élément de fermeture (50) de revenir dans ladite position fermée grâce à son poids.

7. Une buse selon la revendication 5, **caractérisée par le fait que** la lame (52) comprend un moyen élastique (54) disposé afin de faire revenir l'élément de fermeture (50) dans une position de repos initiale, coïncidant avec ladite position fermée.

8. Une buse selon la revendication 5, **caractérisée par le fait que** la tige (53) est engagée de manière hélicoïdale dans un trou (25), ledit engagement étant tel que lorsque l'élément de fermeture (50) pivote dans sa position fermée, il avance au moins un peu vers le trou (13) en plus de la rotation jusqu'à ce qu'il adhère à ce dernier avec sa paroi avant. 5
9. Une buse selon la revendication 5, **caractérisée par le fait que** sur la surface interne de la deuxième partie (16) du corps (14, 16) se trouve positionné d'un côté un premier aimant (26) et du côté opposé un deuxième aimant (27), tous deux étant capable de fixer l'élément de fermeture (50) par attraction magnétique lorsque celui-ci est en position fermée ou alternativement en position ouverte. 10
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10. Une buse selon la revendication 2, **caractérisée par le fait que** la deuxième chambre (12) est reliée à au moins une conduite d'aspiration d'air (41). 20
11. Une buse selon la revendication 10, **caractérisée par le fait que** l'élément de fermeture (50) comprend un canal de traversée (55) formé afin de permettre, en combinaison avec la buse (20), l'aspiration de l'air pour former un mélange d'air et d'eau provenant de la buse (20) ; ledit canal (55) étant coaxial avec la buse (20) et avec le trou d'expulsion (13) lorsque l'élément de fermeture (50) est dans ladite position ouverte. 25
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12. Une buse selon la revendication 1, **caractérisée par le fait que** le corps (14, 16) comprend : une première partie (14) à fixer à travers le trou (32) de la paroi (31), une deuxième partie (16), à l'intérieur de laquelle se trouvent lesdites chambres (11, 12) et qui doit être logée exactement dans la surface interne (15) de ladite première partie (14), un écrou de serrage (70) et un filetage (71) prévu sur une portion de la deuxième partie (16) distant de la baignoire (30) pour fixer de manière axiale la deuxième partie (16) à la première partie (14). 35
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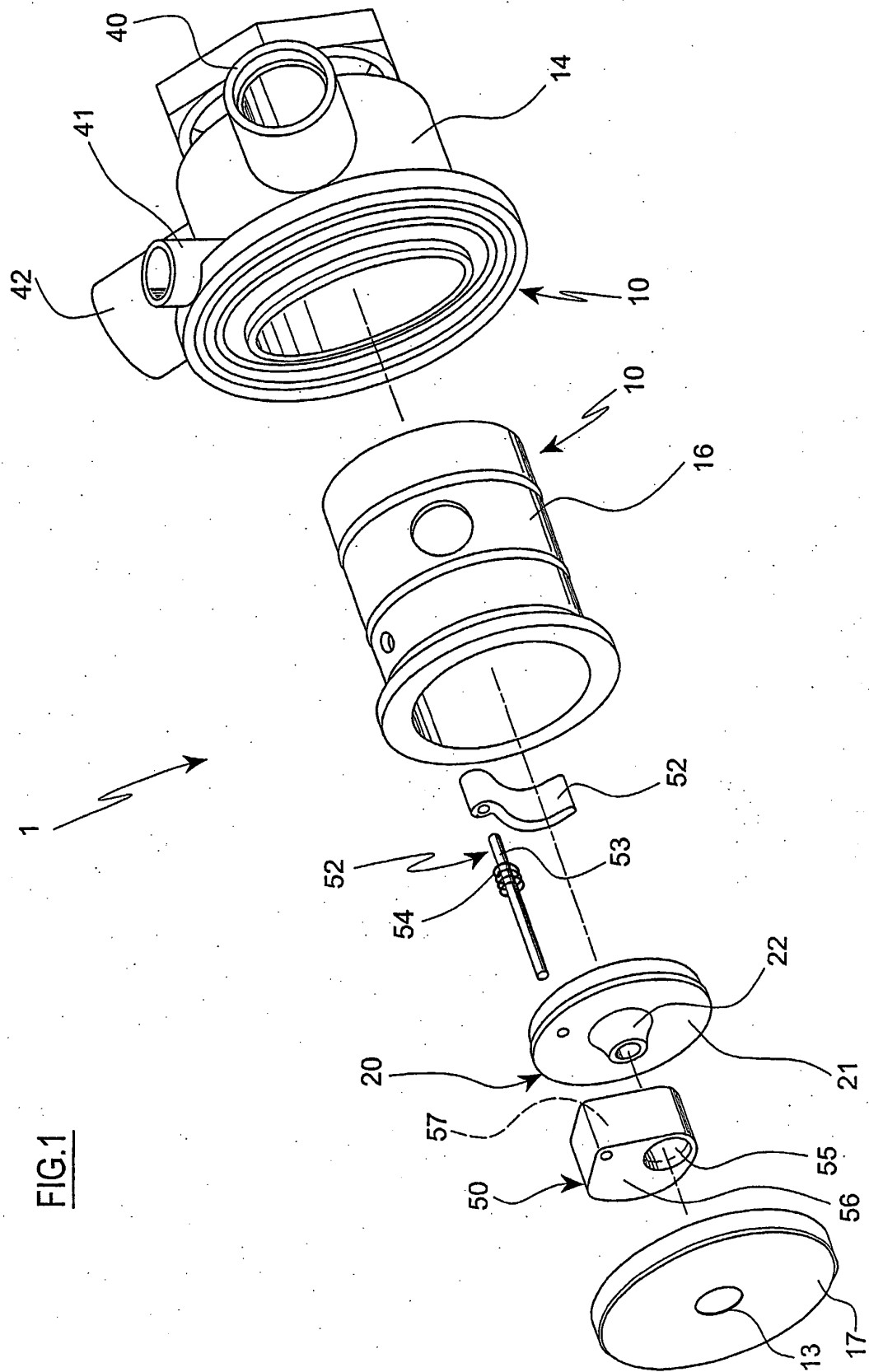


FIG.1

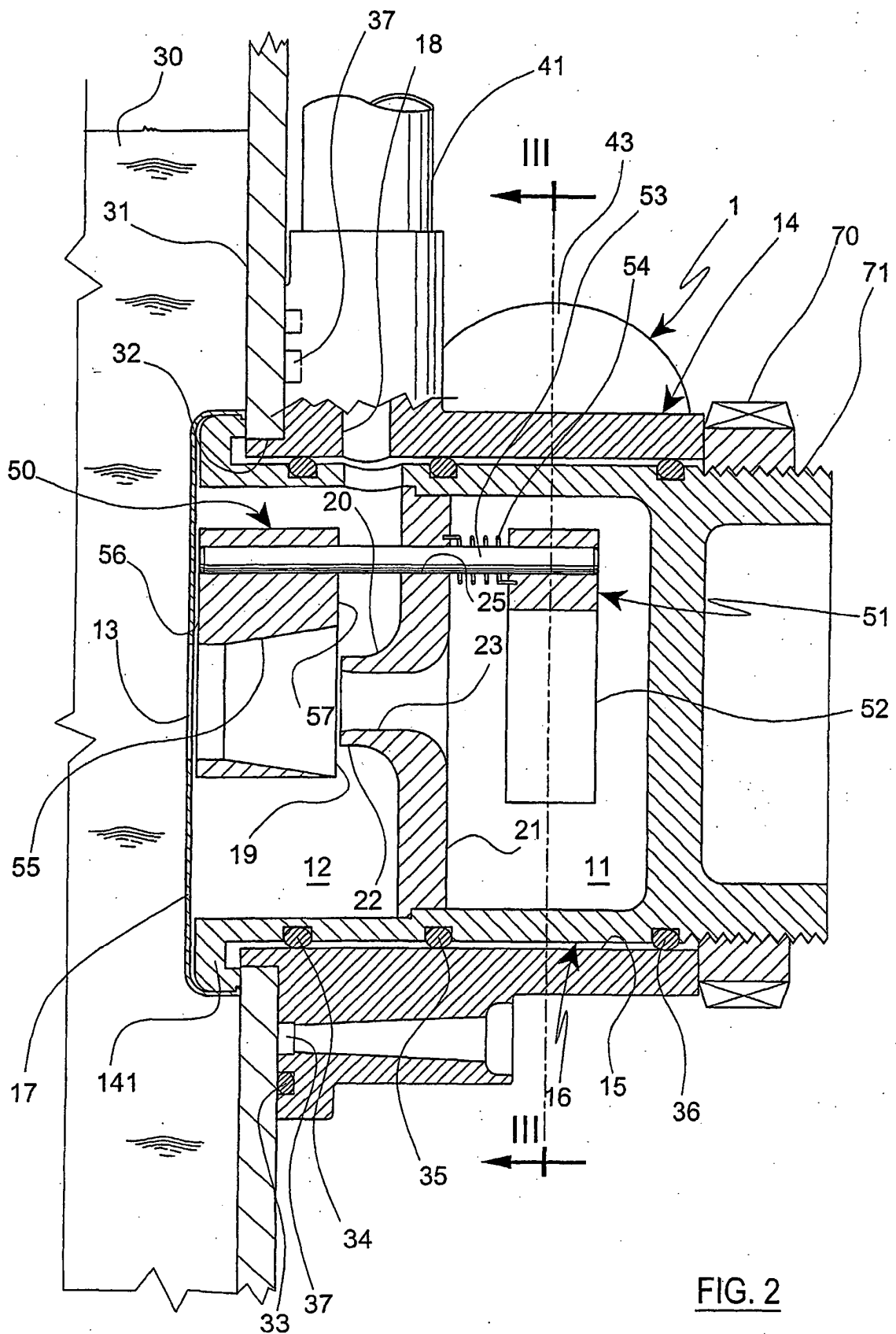


FIG. 2

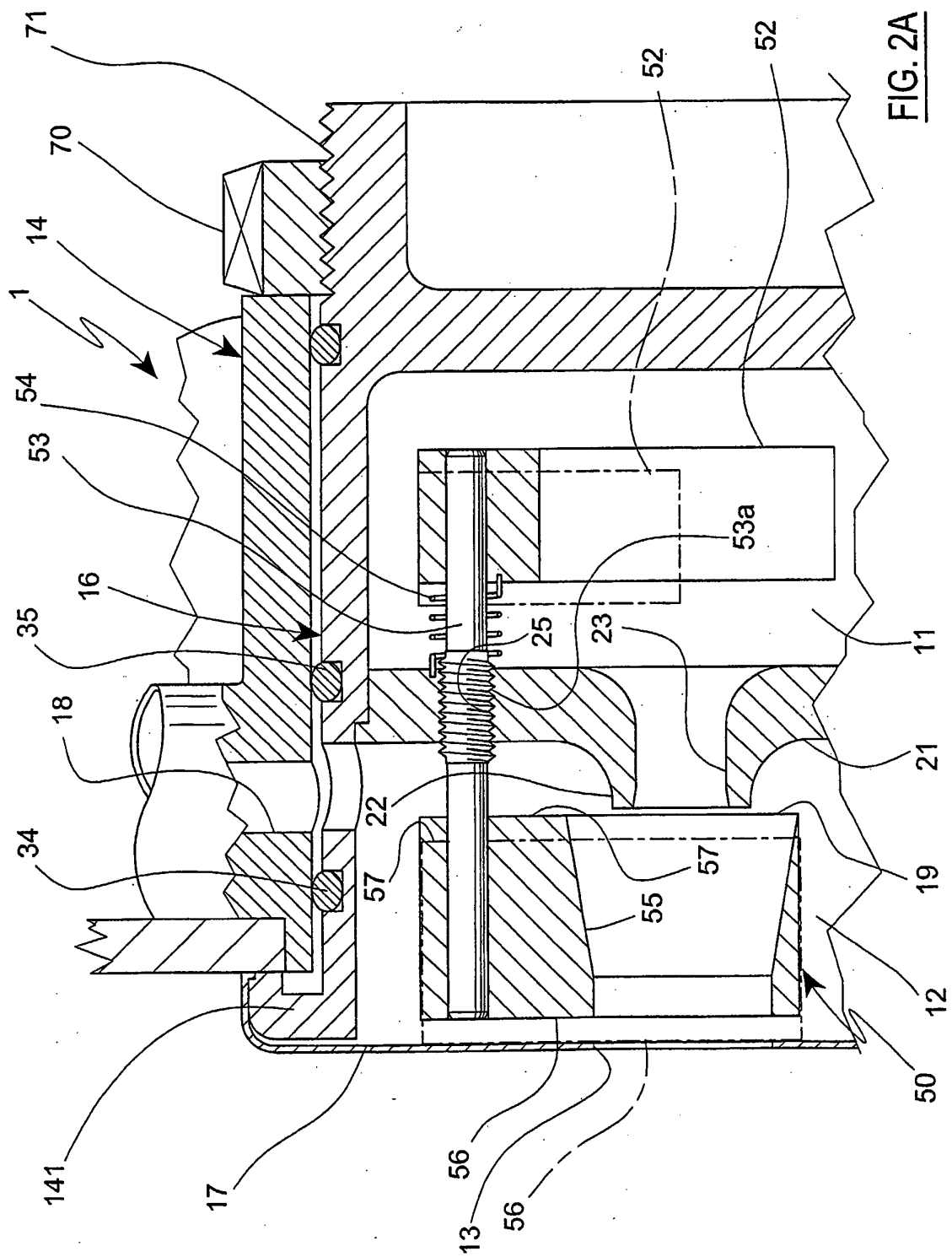
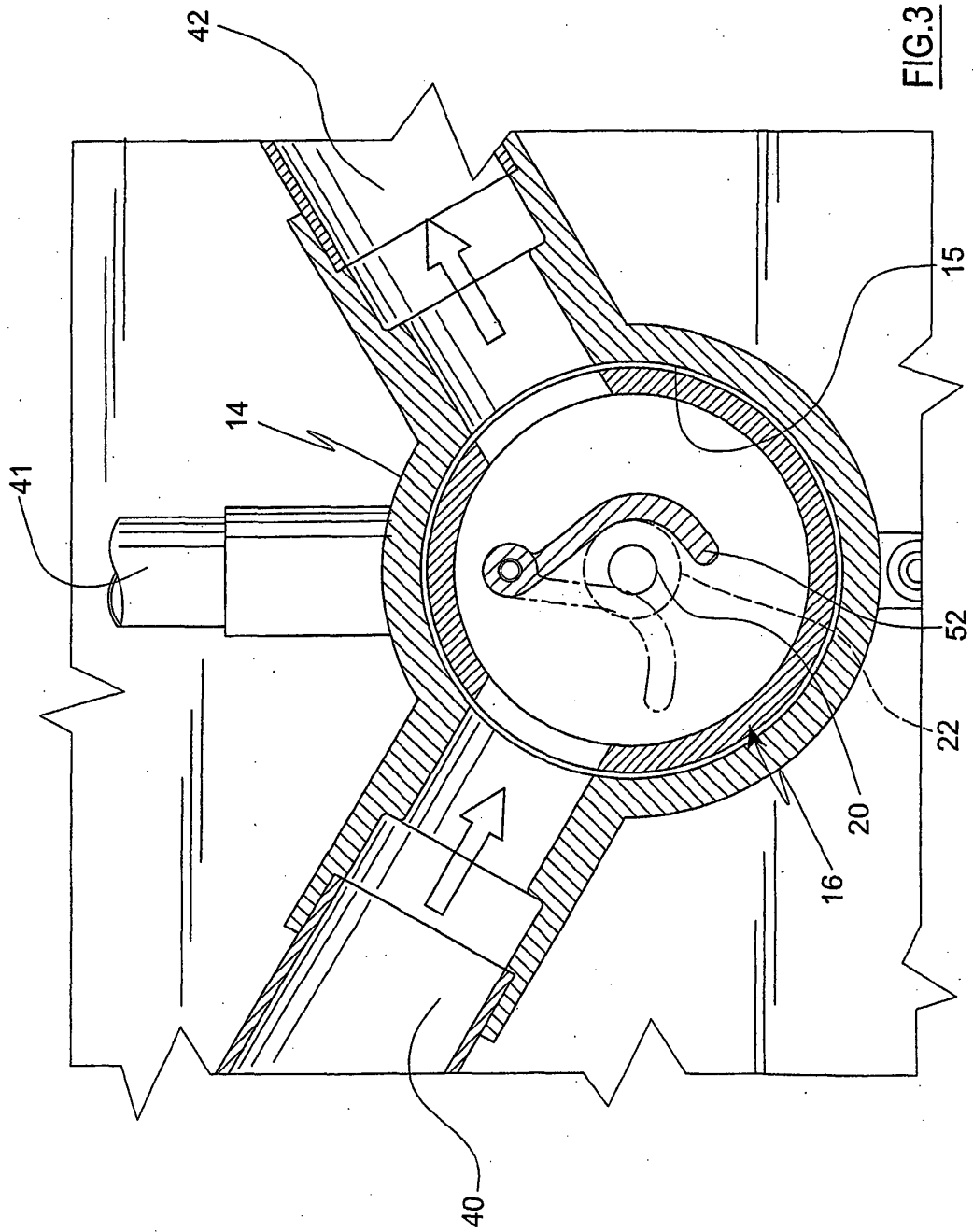
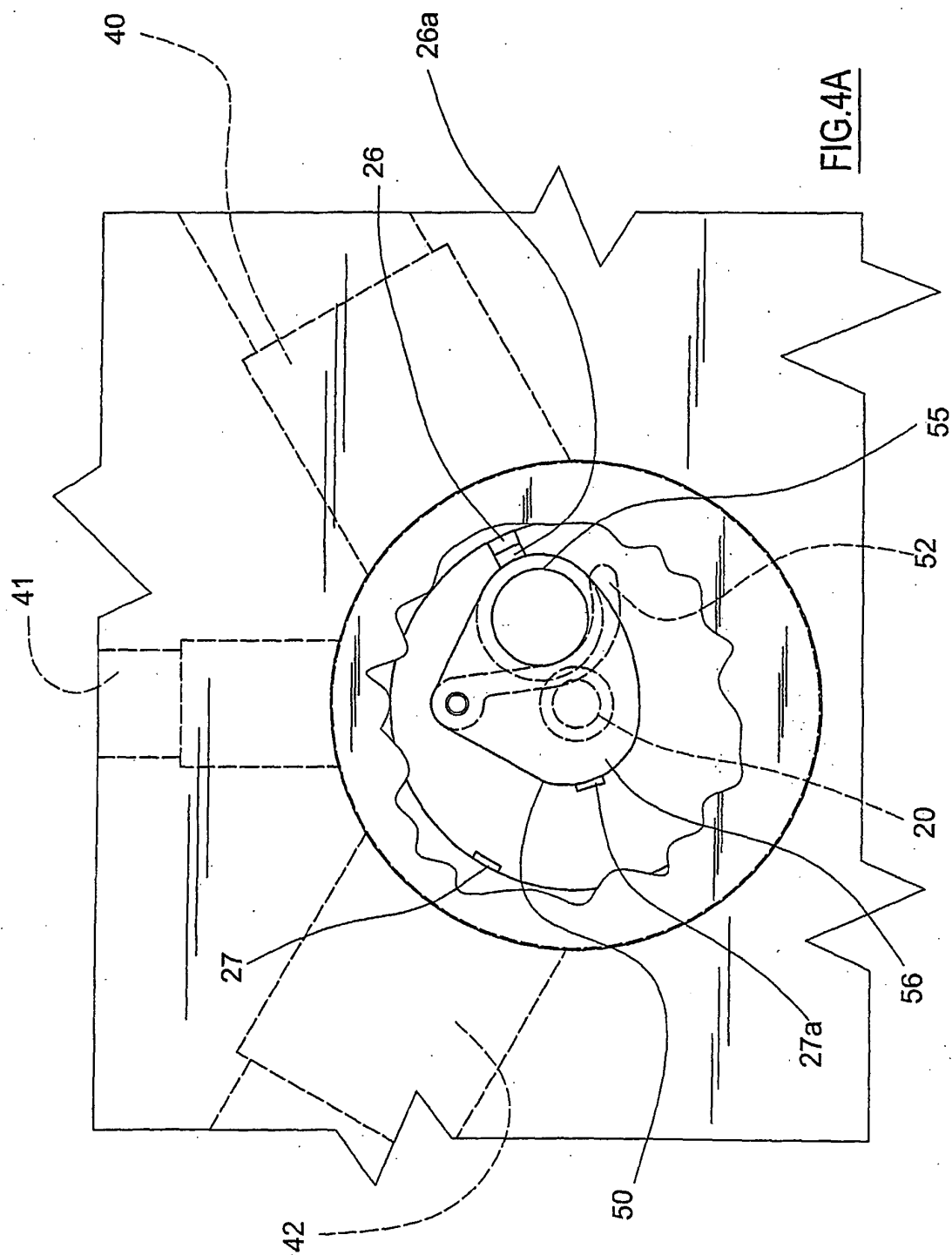
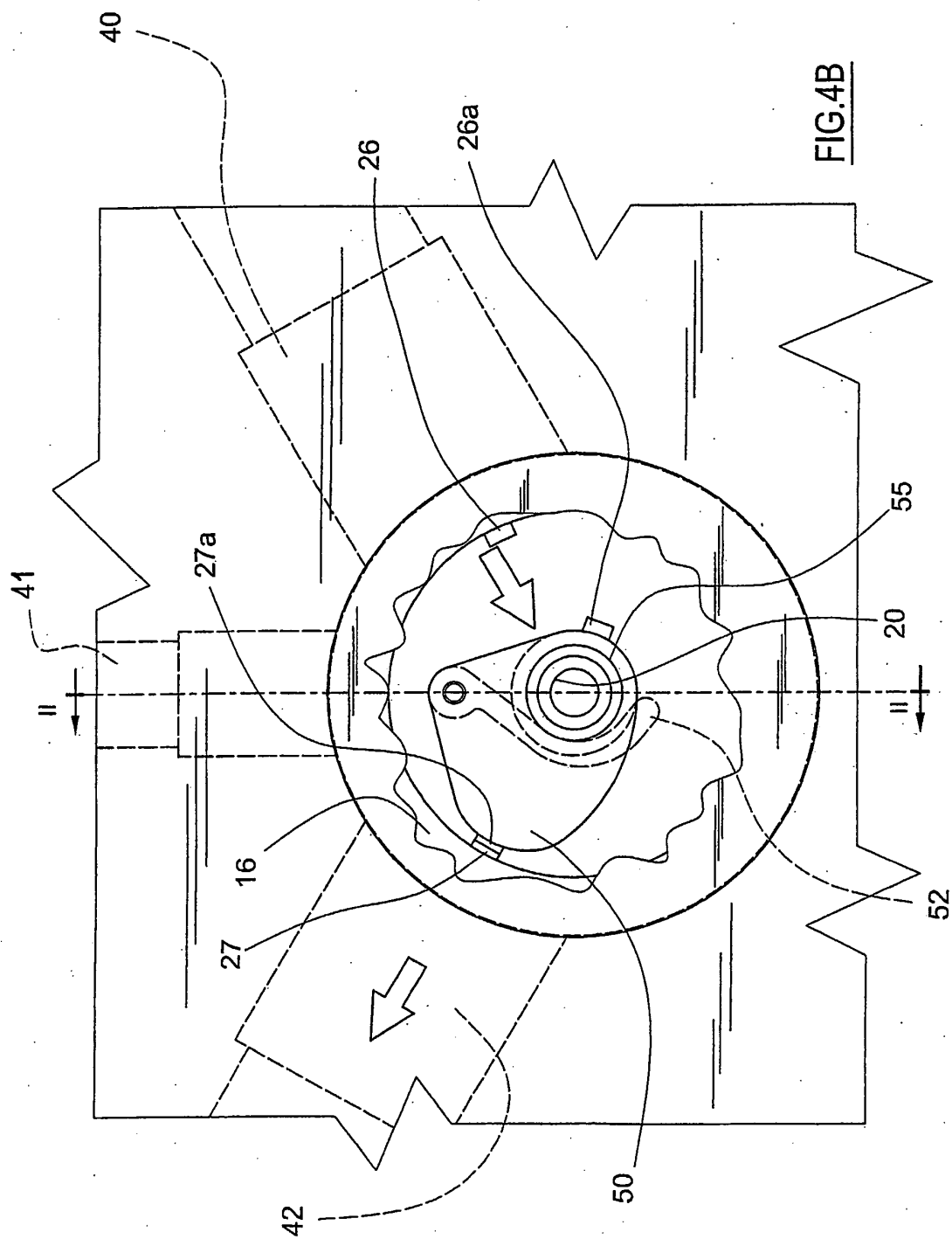


FIG. 2A







REFERENCES CITED IN THE DESCRIPTION

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