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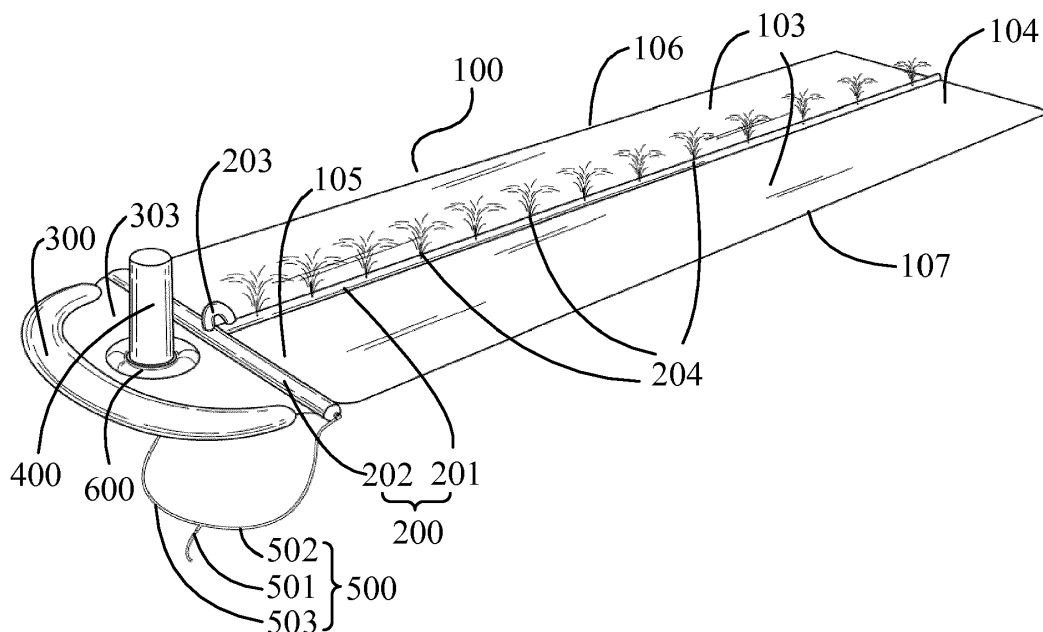
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(54) **WATER SLIDING DEVICE**

(57) The present disclosure provides water sliding device. The water sliding device includes a sliding portion and a water spray apparatus. The sliding portion has a sliding surface suitable for a user sliding thereon, wherein a water pipe, which has a plurality of water spray holes, is disposed on the sliding portion. The water spray apparatus includes an outlet portion for spraying water and a water valve disposed between the outlet portion and a

water source. Further, the water valve is configured to automatically restore to a closed state after being opened for a predetermined period of time, so as to make the outlet portion automatically stop spraying water. Accordingly, the water spray apparatus can automatically stop spraying water after a predetermined period of time, which can reduce water consumption and save water resource.

**Figure 1****EP 3 381 525 A1**

Description

TECHNICAL FIELD

[0001] The present disclosure generally relates to the technical field of entertainment device, and more particularly, to a water sliding device.

BACKGROUND

[0002] Existing water sliding devices, such as water slides, are designed for outdoor recreations and loved by children. Usually, a water slide is made of a piece of flexible plastic sheet or strip, and a water spray tube connected with a water source and coupled along a side of the flexible plastic sheet to create a wet and slippery sliding surface. The water slide can be fixed onto ground. When the water slide is in use, the user runs and slides on the piece of flexible plastic sheet. Due to inertia generated during running, the user can move on the piece of flexible plastic sheet for certain distance.

SUMMARY

[0003] An object of the present disclosure is to provide a water sliding device which has a new profile.

[0004] In order to achieve above recited object, embodiments of the present disclosure provide a water sliding device. The water sliding device includes a sliding portion and a water spray apparatus. The sliding portion has a sliding surface suitable for a user sliding thereon. The sliding portion may be disposed with a water pipe with a plurality of water spray holes. The water spray apparatus may be configured with an outlet portion for spraying water and a water valve disposed between the outlet portion and a water source. The water valve is configured to automatically restore to a closed state after being opened for a predetermined period of time, so as to make the outlet portion automatically stop spraying water.

[0005] In some embodiments, the sliding portion may include a flexible sheet.

[0006] In some embodiments, the sliding portion may include an upper sheet and a lower sheet, edges of the upper sheet and edges of the lower sheet are connected, and the upper sheet and the lower sheet define a first chamber adapted to be filled with air or water.

[0007] In some embodiments, the water pipe may include at least one first water pipe extending from a starting end to a destination end of the sliding portion, wherein the destination end is opposite to the starting end.

[0008] In some embodiments, the at least one first water pipe may be disposed along at least one of a first lateral edge and a second lateral edge of the sliding portion, wherein the second lateral edge is opposite to the first lateral edge.

[0009] In some embodiments, the at least one first water pipe may be disposed between the first lateral edge

and the second lateral edge of the sliding portion, and the sliding portion is divided to a plurality of sliding paths by the first water pipe.

[0010] In some embodiments, a number of the at least one first water pipe may be more than one, and the more than one first water pipe may be arranged in intervals.

[0011] In some embodiments, the water pipe may include a second water pipe extending from the first lateral edge to the second lateral edge of the sliding portion opposite to the first lateral edge.

[0012] In some embodiments, the second water pipe may communicate with the at least one first water pipe.

[0013] In some embodiments, the second water pipe may communicate with the at least one first water pipe via a connecting pipe.

[0014] In some embodiments, the plurality of water spray holes of the water pipe may be arranged on the water pipe in intervals.

[0015] In some embodiments, the water sliding device may further include a bumper connected to the destination end of the sliding portion.

[0016] In some embodiments, the bumper may be provided with a second chamber adapted to be filled with air or water.

[0017] In some embodiments, the bumper may include a top sheet and a bottom sheet, edges of the top sheet and edges of the bottom sheet are connected, and the top sheet and the bottom sheet define the second chamber.

[0018] In some embodiments, the bumper may be connected with the sliding portion via a connecting sheet. That is, the connecting sheet can be used to connect the bumper and the sliding portion.

[0019] In some embodiments, the water spray apparatus may include a support body, and the outlet portion and the water valve may be disposed on the support body.

[0020] In some embodiments, the support body may be provided with a third chamber adapted to be filled with air.

[0021] In some embodiments, the water valve may be provided with a connecting portion, and the water valve is positioned on the support body via the connecting portion.

[0022] In some embodiments, the connecting portion and the support body may be connected by welding or gluing.

[0023] In some embodiments, an inlet and an outlet of the water valve may be inside the support body, the water spray apparatus may further include an inlet portion positioned on the support body, a first end of the inlet portion is connected with the inlet of the water valve via a first connecting water pipe, a second end of the inlet portion is connected with the water source and the outlet of the water valve may be connected with the outlet portion via a second connecting water pipe.

[0024] In some embodiments, the inlet portion may be positioned at a bottom of the support body.

[0025] In some embodiments, the support body may be connected to the sliding portion or be connected to the bumper.

[0026] In some embodiments, the water sliding device may further include an enhancing portion adapted to be positioned at a junction of the support body and the sliding portion or be positioned at a junction of the support body and the bumper for enhancing a stability of the support body.

[0027] In some embodiments, the enhancing portion may be provided with a fourth chamber adapted to be filled with air or water.

[0028] In some embodiments, the enhancing portion may be configured into an annular tube surrounding the support body, and the enhancing portion is positioned at the junction of the support body and the sliding portion or positioned at the junction of the support body and the bumper.

[0029] In some embodiments, a number of the water spray apparatus may be more than one, the more than one water spray apparatus may be arranged corresponding to more than one sliding path of the sliding portion, respectively.

[0030] In some embodiments, the water valve may include: an inlet passage and an outlet passage, wherein the inlet passage communicates with the water source, and the outlet passage communicates with the outlet portion. The water valve may further include: a pressure-regulating chamber body and a movable valve plate, wherein the pressure-regulating chamber body and the movable valve plate can define a pressure-regulating chamber, the pressure-regulating chamber can communicate with the inlet passage via a water-inlet hole formed on the movable valve plate, and the pressure-regulating chamber body may be provided with a drain hole communicating with the pressure-regulating chamber. The movable valve plate can move between a first position and a second position by different pressures inside the pressure-regulating chamber and outside the pressure-regulating chamber acting on the movable valve plate. The water valve may further include: a water-draining assembly for blocking or opening the drain hole.

[0031] In some embodiments, a diameter of the drain hole may be greater than a diameter of the water-inlet hole.

[0032] In some embodiments, the water-draining assembly may include a seal part and a movable part; the seal part is disposed on the movable part for blocking or opening the drain hole.

[0033] In some embodiments, the water valve may further include a button for driving the movable part to move to an opened position, so as to make the seal part disposed on the movable part open the drain hole.

[0034] In some embodiments, the water-draining assembly may further include a reset part for driving the movable part to move to a closed position, so as to make the seal part disposed on the movable part block the drain hole.

[0035] In some embodiments, the water valve may be disposed on the support body, and the button of the water valve may be outside the support body.

[0036] In comparison with prior technologies, technical solutions of the present disclosure possess following advantages:

[0037] In the water sliding device provided by embodiments of present disclosure, a water spray apparatus is configured. Moreover, the water valve of the water spray apparatus can automatically restore to the closed state after being opened for a predetermined period of time, which can reduce water consumption and save water resource.

[0038] Further, the water spray apparatus may include a support body which can be arranged at a position close to the destination end of the sliding portion. Accordingly, when the user slides from the starting end to the destination end of the sliding portion, the user can activate the water valve of the water spray apparatus to make the outlet portion of the water spray apparatus start to spray water, the water spraying can be taken as a signal indicating that the user has arrived the destination, which can increase entertaining of the water sliding device.

[0039] Further, a first water pipe may be arranged between a first lateral edge and a second lateral edge of the sliding portion, so that the sliding portion can be divided into multiple sliding paths by the first water pipe. The multiple sliding paths can be used by multiple users at the same time.

BRIEF DESCRIPTION OF THE DRAWINGS

[0040]

Figure 1 schematically illustrates a structural diagram of a water sliding device according to one embodiment of the present disclosure;

Figure 2 schematically illustrates a side view of a water sliding device according to one embodiment of the present disclosure;

Figure 3 schematically illustrates a structural diagram of a water sliding device according to another embodiment of the present disclosure;

Figure 4 schematically illustrates a structural diagram of a water sliding device according to another embodiment of the present disclosure;

Figure 5 schematically illustrates a water spray apparatus of a water sliding device according to one embodiment of the present disclosure;

Figure 6 schematically illustrates a water valve for the water spray apparatus of a water sliding device according to one embodiment of the present disclosure;

Figure 7 schematically illustrates a sectional view of the water valve for the water spray apparatus of the water sliding device according to one embodiment of the present disclosure; and

Figure 8 schematically illustrates another sectional

view of the water valve for the water spray apparatus of the water sliding device according to one embodiment of the present disclosure.

DETAILED DESCRIPTION

[0041] Embodiments of the present disclosure provide a water sliding device. The water sliding device includes a sliding portion and a water spray apparatus. The sliding portion is provided with a sliding surface suitable for a user sliding thereon. The sliding portion is disposed with a water pipe, which have a plurality of water spray holes, thereon. The water spray apparatus includes an outlet portion for spraying water and a water valve disposed between the outlet portion and a water source. The water valve can automatically restore to the closed state after being opened for a predetermined period of time. When the water valve restores to the closed state, the outlet portion will stop spraying water. Accordingly, in the water sliding device provided by embodiments of the present disclosure, the water spray apparatus can automatically stop spraying water after spraying water for a predetermined period of time, which can reduce water consumption and save water resource. Further, the water spray apparatus can be disposed at a position close to the destination end of the sliding portion. Accordingly, when the user slides from the starting end to the destination end of the sliding portion, the user can activate the water valve of the water spray apparatus to make the outlet portion the water spray apparatus start to spray water, the water spraying can be taken as a signal indicating that the user has arrived the destination, which can increase entertaining of the water sliding device.

[0042] In order to make objectives, features and advantages of the present disclosure more clear, embodiments of the present disclosure will be described in detail in conjunction with the accompanying drawings.

[0043] Referring to Figure 1 to Figure 6, embodiments of the present disclosure provides a water sliding device. The water sliding device includes: a sliding portion 100, a water pipe 200 disposed on the sliding portion 100, a bumper 300 and a water spray apparatus 400.

[0044] In some embodiments, the sliding portion 100 may include: an upper sheet 101 and a lower sheet 102. Edges of the upper sheet 101 and edges of the lower sheet 102 may be connected, the upper sheet 101 and the lower sheet 102 may define a first chamber adapted to be filled with air or water.

[0045] In some embodiments, a top surface of the upper sheet 101 may serve as a sliding surface 103 of the sliding portion 100. The sliding surface 103 refers to a surface of the sliding portion suitable for a user sliding thereon.

[0046] In Figure 2, the first chamber is shown as being filled with air or water. In this case, the sliding portion 100 is inflated. Accordingly, when the user slides on the sliding surface 103 of the sliding portion 100, since the sliding portion 100 is inflated, the upper sheet 101 and the lower

sheet 102 of the sliding portion 100 are distanced from each other, the user can be prevented from being hurt by objects (e.g., stones) on the ground. Therefore, a safety of the water sliding device can be enhanced.

[0047] In some embodiments, the sliding portion 100 may be configured into a single-layer structure. In other words, the sliding portion 100 may not have the first chamber. For example, the sliding portion 100 may include only one piece of flexible sheet. In this case, the water sliding device is optionally being used on a smooth ground.

[0048] In some embodiments, the edges of the upper sheet 101 and the edges of the lower sheet 102 may be connected together by a way of welding. For example, the edges of the upper sheet 101 and the edges of the lower sheet 102 may be welded together by high-frequency welding.

[0049] In some embodiments, the upper sheet 101 and the lower sheet 102 of the sliding portion 100 may be made of flexible thermoplastic material, such as, PVC (Polyvinyl Chloride), PU (Polyurethane), etc.

[0050] Moreover, in order to make the first chamber of the sliding portion 100 be filled with air or water, an air valve or a water valve may be disposed on the sliding portion 100.

[0051] It should be noted that, in the embodiments shown in Figure 1 and Figure 2, the sliding portion 100 is shown having a rectangle shape, which is just for exemplarily illustrating the sliding portion 100. In other words, the shape of the sliding portion 100 of the water sliding device is not limited to the rectangle shown in Figure 1 and Figure 2. The sliding portion 100 may be configured having a square shape or an irregular shape, as long as the user can slide on the sliding portion 100.

[0052] In some embodiments, the water pipe 200 may include: a first water pipe 201. The first water pipe 201 extends from a starting end 104 of the sliding portion 100 to a destination end 105 of the sliding portion 100, wherein the destination end 105 is opposite to the starting end 104. The starting end 104 of the sliding portion 100 refers to a beginning of the sliding process. The destination end 105 of the sliding portion 100 refers to a destination of the sliding process. In other words, when the user slides on the sliding portion 100 of the water sliding device, the user slides from the starting end 104 of the sliding portion 100 to the destination end 105 of the sliding portion 100.

[0053] In some embodiments, the first water pipe 201 may be disposed between a first lateral edge 106 and a second lateral edge 107 of the sliding portion 100. In this case, the sliding portion 100 can be divided into multiple sliding paths by the first water pipe 201. For example, in the embodiments shown in Figure 1 and Figure 4, the first water pipe 201 is disposed along a symmetry axis of the sliding portion 100, so that the sliding portion 100 can be divided into two parallel sliding paths by the first water pipe 201.

[0054] In some embodiments, the first water pipe 201 may be disposed along the first lateral edge 106 or along

the second lateral edge 107 of the sliding portion 100.

[0055] That is to say, the first water pipe 201 may be disposed at an edge part of the sliding portion 100. For example, in the embodiment shown in Figure 3, two first water pipes 201 are disposed along the first lateral edge 106 and the second lateral edge 107, respectively.

[0056] In some embodiments, a number of the first water pipe 201 may be set to be one. The one first water pipe 201 may be disposed between the first lateral edge 106 and the second lateral edge 107 of the sliding portion 100, so that the sliding portion 100 can be divided into two sliding paths (e.g., the first water pipe 201 shown in Figure 1 and Figure 4) by the first water pipe 201. Or, the one first water pipe 201 may be disposed along the edge of the sliding portion 100 (e.g., along the first lateral edge 106 or the second lateral edge 107).

[0057] In some embodiments, the number of the first water pipe 201 may be set to be two. The two first water pipes 201 may be disposed along the first lateral edge 106 and the second lateral edge 107 of the sliding portion 100, respectively (e.g., the first water pipes 201 shown in Figure 3). Or, the two first water pipes 201 may be both disposed between the first lateral edge 106 and the second lateral edge 107, so that the sliding portion 100 can be divided into three sliding paths by the two first water pipes 201. Or, the two first water pipes 201 may have one being disposed along the first lateral edge 106 or the second lateral edge 107, and another one being disposed between the first lateral edge 106 and the second lateral edge 107.

[0058] In some embodiments, the number of the first water pipe 201 may be set to be more than two. Any one of the more than two first water pipes 201 may be disposed along the first lateral edge 106 or the second lateral edge 107, or be disposed between the first lateral edge 106 and the second lateral edge 107.

[0059] In some embodiments, when the number of the first water pipe 201 is more than one, the more than one first water spray pipe 201 may be arranged in intervals.

[0060] In some embodiments, the water pipe 200 may further include a second water pipe 202. The second water pipe 201 extends from the first lateral edge 106 of the sliding portion 100 to the second lateral edge 107 of the sliding portion 100, wherein the second lateral edge 107 is opposite to the first lateral edge 106.

[0061] In some embodiments, the second water pipe 202 may be disposed at the destination end 105 of the sliding portion 100.

[0062] In some embodiments, the second water pipe 202 may communicate with the first water pipe 201. Specifically, a connecting pipe 203 may be disposed between the second water pipe 202 and the first water pipe 201. One end of the connecting pipe 203 may be connected with the second water pipe 202, and another end of the connecting pipe 203 may be connected with the first water pipe 201, so that the second water pipe 202 can communicate with the first water pipe 201 via the connecting pipe 203. In some other embodiments, the second water

pipe 202 may be directly connected with the first water pipe 201.

[0063] In some embodiments, when the number of the first water pipe 201 is more than one, the second water pipe 202 may communicate with all the more than one first water pipe 201. In this case, the more than one first water pipe 201 and the second water pipe 202 define a water passage. When any one of the first water pipe 201 and the second water pipe 202 communicates with the water source, water from the water source can flow into all of the first water pipe 201 and the second water pipe 202.

[0064] In some embodiments, as shown in Figure 1, the second water pipe 202 may communicate with the water source via an inlet pipe 500. Water from the water source can successively flow through the inlet pipe 500, the second water pipe 200 and the first water pipe 100. In some embodiments, the first water pipe 201 may be configured communicating with the water source via the inlet pipe 500.

[0065] In some embodiments, the water pipe 200 may be configured with a plurality of water spray holes 204. When the water pipe 200 communicates with the water source, water from the water source can flow into the water pipe 200 and spout out from the water spray holes 204. Further, water spouted out from the water spray holes 204 can wet the sliding surface 103 of the sliding portion 100. Therefore, a friction of the sliding surface 103 can be reduced, which can make it easy for the user sliding on the sliding surface 103.

[0066] In some embodiments, the water pipe 200 may be configured as followed: only the first water pipe 201 is provided with the water spray holes 204. Further, the first water pipe 201 may run through the sliding portion 100, as shown in Figure 1 and Figure 2, the first water pipe 201 runs from an edge of the starting end 104 of the sliding portion 100 to an edge of the destination end 105 of the sliding portion 100. Further, the plurality of water spray holes 204 may be evenly disposed on the first water pipe 201 in intervals. In this case, water spouted from the water spray holes 204 of the first water pipe 201 can cover entire area of the sliding surface 103 of the sliding portion 100, so as to completely wet the sliding surface 103.

[0067] In some embodiments, the water pipe 200 may be configured as followed: only the second water pipe 202 is provided with the water spray holes 204, or both the first water pipe 201 and the second water pipe 202 are provided with the water spray holes 204.

[0068] Moreover, in some embodiments, the first water pipe 201 may be configured covering part of the sliding portion 100 along a longitudinal direction. Similarly, the second water pipe 202 may be configured covering part of the sliding portion 100 along a lateral direction.

[0069] It should be noted that, the word "first" and "second" in the first water pipe 201 and the second water pipe 202 are just for distinguishing water pipes extending along different directions. Structures, sizes (e.g., diam-

eter) and/or materials of the first water pipe 201 and the second water pipe 202 may be the same.

[0070] In some embodiments, all the first water pipe 201, the second water pipe 202 and the connecting pipe 203 may be made of flexible thermoplastic material, such as PVC, PU, etc. Moreover, connections among the first water pipe 201, the second water pipe 202, the connecting pipe 203 and the sliding portion 100 may be realized by high-frequency welding.

[0071] In some embodiments, the bumper 300 may be connected with the destination end 105 of the sliding portion 100.

[0072] In some embodiments, the bumper 300 may include a top sheet 301 and bottom sheet 302. Edges of the top sheet 301 and edges of the bottom sheet 302 may be connected, the top sheet 301 and the bottom sheet 302 may define a second chamber adapted to be filled with air or water. When the second chamber is filled with air or water, the bumper 300 is inflated for providing buffering. Specifically, when the user slides to the destination end 105 of the sliding portion 100, the bumper 300 can stop the user continuing to slide.

[0073] In some embodiments, the top sheet 301 and the bottom sheet 302 may be made of flexible thermoplastic material, such as PVC, PU, etc. Moreover, the edges of the top sheet 301 and the edges of the bottom sheet 302 may be connected together by high-frequency welding.

[0074] Further, in order to make the second chamber of the bumper 300 be filled with air or water, an air valve or a water valve may be disposed on the bumper 300.

[0075] In some embodiments, the bumper 300 may be connected with the sliding portion 100 via a connecting sheet 303. When the sliding portion 100 is configured into the single-layer structure, the connecting sheet 303 may extend from the sliding portion 100. In this case, the connecting sheet 303 and the sliding portion 100 are an integral component.

[0076] In some embodiments, the connecting sheet 303 may be made of flexible thermoplastic material, such as PVC, PU, etc., as well. Moreover, connections among the connecting sheet 303, the bumper 300 and the sliding portion 100 may be realized by high-frequency welding.

[0077] In some embodiments, the water spray apparatus 400 may include: a support body 401, an inlet portion 402, an outlet portion 403 and a water valve 404. The inlet portion 402 can communicate with a water source and an inlet of the water valve 404. The outlet portion 403 may be connected with an outlet of the water valve 404. The water valve 404 can be used to control the outlet portion 403 to start to spray water or stop spraying water. The inlet portion 402, the outlet portion 403 and the water valve 404 may be disposed on the support body 401.

[0078] In some embodiments, the support body 401 may be provided with a third chamber. The third chamber can be filled with air. Accordingly, when the third chamber of the support body 401 is filled with air, the support body

401 is inflated so as to support the water valve 404 and the outlet portion 403. When air in the third chamber of the support body 401 is discharged, the support body 401 is deflated, the deflated support body 401 can be folded for easily carrying or storing.

[0079] Moreover, in order to make the third chamber of the support body 401 be filled with air, an air valve may be disposed on the support body 401.

[0080] In some embodiments, the support body 401 may be connected with the bumper 300 (e.g., the connecting sheet 303 of the bumper 300) or be connected with the sliding portion 100. In some embodiments, the support body 401 may be independent from the bumper 300 and the sliding portion 100.

[0081] In some embodiments, the support body 401 may be made of flexible thermoplastic material, such as PVC, PU, etc.

[0082] In some embodiments, the support body 401 may be connected with the bumper 300 or be connected with the sliding portion 100 by welding, such as high-frequency welding.

[0083] In some embodiments, an enhancing portion 600 may be positioned at a junction of the support body 401 and the bumper 300, or be positioned at a junction of the support body 401 and the sliding portion 100, for improving a stability of the support body 401, so as to prevent the support body 401 from shaking or falling down when being inflated.

[0084] In some embodiments, the enhancing portion 600 may be provided with a fourth chamber. The fourth chamber can be filled with air or water. Accordingly, when the enhancing portion 600 is filled with air or water, the enhancing portion 600 is inflated, so that the enhancing portion 600 can provide support to the support body 401.

[0085] In some embodiments, the enhancing portion 600 may be configured into an annular tube surrounding the support body 401, and the enhancing portion 600 may be positioned at the junction of the support body 401 and the bumper 300 or may be positioned at the junction of the support body 401 and the sliding portion 100.

[0086] In some embodiments, the enhancing portion 600 may be made of flexible thermoplastic material, such as PVC, PU, etc.

[0087] Moreover, in order to make the fourth chamber of the enhancing portion 600 be filled with air or water, an air valve or a water valve may be disposed on the enhancing portion 600.

[0088] In some embodiments, the inlet portion 402 may be connected with the water source via the inlet pipe 500.

[0089] In some embodiments, the inlet pipe 500 may be embodied as a three-way pipe. Specifically, the inlet pipe 500 may include: a first inlet pipe 501, a second inlet pipe 502 and a third inlet pipe 503 which are communicated with each other. The first inlet pipe 501 can be used to connect to the water source. The second inlet pipe 502 can be used to connect the first inlet pipe 501 and the water pipe 200 (the second water pipe 202) disposed on the sliding portion 100. The third inlet pipe 503 can be

used to connect the first inlet pipe 501 and the inlet portion 402 of the water spray apparatus 400. Accordingly, when the first inlet pipe 501 communicates with the water source, water from the water source can flow into the water pipe 200 and the water spray apparatus 400 via the second inlet pipe 502 and the third inlet pipe 503, respectively.

[0090] In some embodiments, the third inlet pipe 503 and the inlet portion 402 may be detachably connected.

[0091] In some embodiments, the inlet portion 402 may be connected with the inlet of the water valve 404 via a first connecting water pipe 405. Accordingly, a first end of the inlet portion 402 is connected with the water source via the third inlet pipe 503, and a second end of the inlet portion 402 is connected with the inlet of the water valve 404 via the first connecting water pipe 405. By such a way, the inlet of the water valve 404 can communicate with the water source.

[0092] In some embodiments, the inlet portion 402 may be embodied as a connector with screw threads or clip structures. By such a way, the third inlet pipe 503 can be detachably connected with the inlet portion 402. Therefore, when the water sliding device is out of use, the third inlet pipe 503 can be detached from the inlet portion 402.

[0093] In some embodiments, the outlet portion 403 may be connected with the outlet of the water valve 404 via a second connecting water pipe 406.

[0094] In some embodiments, the outlet portion 403 may be embodied as a water nozzle having multiple holes.

[0095] In some embodiments, the inlet portion 402 may be disposed at a bottom of the support body 401. The outlet portion 403 may be arranged at a position close to a top of the support body 401.

[0096] In some embodiments, the water valve 404 may include a connecting portion 4041. The water valve 404 can be positioned on the support body 401 via the connecting portion 4041. Specifically, the connecting portion 4041 and the support body 401 can be connected by welding or gluing, so that the water valve 404 can be positioned onto the support body 401.

[0097] In some embodiments, when the water valve 404 is fixed onto the support body 401, the inlet and the outlet of the water valve 404 may be located inside the support body 401. In this case, the first connecting water pipe 405 for connecting the inlet portion 402 and the inlet of the water valve 404, and the second connecting water pipe 406 for connecting the outlet portion 403 and the outlet of the water valve 404 are also located inside the support body 401. By such a way, the support body 401 can provide protection for the first connecting water pipe 405 and the second connecting water pipe 406. Moreover, an appearance of the water sliding device is also improved.

[0098] In some embodiments, a number of the water spray apparatus 400 may be more than one, and the more than one water spray apparatus 400 can correspond to the more than one sliding path of the sliding

portion 100, respectively, as shown in Figure 4.

[0099] In some embodiments, the water valve 404 may include a button 4042. The user can control the water valve 404 via the button 4042. In some embodiments, the water valve 404 may be configured as followed: when the button 4042 is pressed, the water valve 404 is in an opened state, the outlet portion 403 communicates with the water source and starts to spray water; and when the button 4042 is loosen, after a predetermined period of time, the water valve 404 automatically restores to a closed state, the communication between the outlet portion 403 and the water source is blocked, the outlet portion 403 stops spraying water. Accordingly, the outlet portion 403 of the water spray apparatus 400 can automatically stop spraying water, which can reduce water consumption and save water resource. Moreover, when the water sliding device is used for competition, the water spray apparatus 400 can be used to indicate that a competitor has arrived the destination. Specifically, when the competitor slides to the destination end 105 of the sliding portion 100, he/she can press the button 4042, and the outlet portion 403 starts to spray water, wherein the water spraying can be used as a signal indicating that the competitor has arrived the destination. Accordingly, the water spray apparatus 400 can further enhance an entertaining of the water sliding device.

[0100] In order to make the water valve 404 automatically restore to the closed state after being opened for a predetermined period of time, embodiments of the present disclosure provide a water valve 404, as shown in Figure 7 and Figure 8.

[0101] Specifically, the water valve 404 includes: an inlet passage 4043 and an outlet passage 4044. The inlet passage 4043 is connected with the first connecting water pipe 405 so as to communicate with the water source. The outlet passage 4044 is connected with the second connecting water pipe 406 so as to communicate with the outlet portion 403.

[0102] The water valve 404 further includes: a pressure-regulating chamber body 4045 and a movable valve plate 4046. The pressure-regulating chamber body 4045 and the movable valve plate 4046 define a pressure-regulating chamber 4047. The pressure-regulating chamber 4047 communicates with the inlet passage 4043 via a water-inlet hole 40461 formed on the movable valve plate 4046. The pressure-regulating chamber body 4045 is provided with a drain hole 40451 thereon. The drain hole 40451 communicates with the pressure-regulating chamber 4047. The movable valve plate 4046 is adapted to move between a first position and a second position by different pressures inside the pressure-regulating chamber and outside the pressure-regulating chamber acting on the movable valve plate 4046 for blocking or opening the outlet passage 4044.

[0103] The water valve 404 further includes a water-draining assembly 4048. The water-draining assembly 4048 includes a seal part 40481 and a movable part 40482. The seal part 40481 is disposed on the movable

part 40482. The movable part 40482 is adapted to move, so that the seal part 40481 disposed on the movable part 40482 can move to block or open the drain hole 40451.

[0104] In some embodiments, the water-draining assembly 4048 may be actuated by the button 4042. For example, the button 402 may contact with the movable part 40482 via a rod 40421 disposed on the button 402.

[0105] In some embodiments, the water-draining assembly 4048 may be configured as followed: when the button 4042 is pressed, the button 4042 drives the movable part 40482 to move to an opened position, so as to make the seal part 40481 open the drain hole 40451.

[0106] In some embodiments, the water-draining assembly 4048 may further include a reset part 4049. The reset part 4049 is configured as followed: when the button 4042 is loosen, the reset part 4049 drives the movable part 40482 to move to a closed position, so as to make the seal part 40481 block the drain hole 40451.

[0107] Specifically, the reset part 4049 may be embodied as a torsion spring pressed against the movable part 40482 for resetting the movable part 40482. The reset part 4049 may be embodied as a compression spring arranged between the button 4042 and a valve seat for resetting the button 4042.

[0108] Accordingly, by default, the pressure-regulating chamber 4047 is filled with water, a pressure inside the pressure-regulating chamber 4047 is greater than that outside the pressure-regulating chamber 4047, due to a pressure difference inside and outside the pressure-regulating chamber 4046, the movable valve plate 4046 can block the outlet passage 4044, the water valve 404 is in the closed state. In this circumstance, if the button 4042 is pressed, the button 4042 drives the movable part 40482 to move, so that the seal part 40481 can move to an opened position at which the drain hole 40451 is opened, water inside the pressure-regulating chamber 4047 can flow out via the drain hole 40451, the pressure inside the pressure-regulating chamber 4047 can decrease to a value that smaller than that of the pressure outside the pressure-regulating chamber 4047, due to the pressure difference inside and outside the pressure-regulating chamber 4047, the movable valve plate 4046 can move away from the outlet passage 4044 so as to open the outlet passage 4044, the water valve 404 switches to the opened state, the outlet portion 403 starts to spray water. In this circumstance, is the button 4042 is loosen, the movable part 40482 resets, the seal part 40481 returns to the closed position at which the drain hole 40451 is blocked, so that water from the water source can flow into the inlet passage 4043 and then flow into the pressure-regulating chamber 4047 via the water-inlet hole 40461, the pressure inside pressure-regulating chamber 4047 can gradually increase to a value that greater than that of the pressure outside the pressure-regulating chamber 4047, due to the pressure difference inside and outside the pressure-regulating chamber 4047, the movable valve plate 4046 can gradually move towards the outlet passage 4043, and after a predeter-

mined period of time, the movable valve plate 4046 can move to block the outlet passage 4043, the water valve 404 returns to the closed state, the outlet portion 403 stops spraying water. Accordingly, when the button 4042 is pressed, the outlet portion 403 starts to spray water, and when the button 4042 is loosen, due to the pressure difference inside and outside the pressure-regulating chamber 4047, the water valve 404 can automatically return to the closed state after the predetermined period of time, so that the outlet portion 403 can automatically stop spraying water.

[0109] In some embodiments, a diameter of the drain hole 40451 may be greater than a diameter of the water-inlet hole 40461. By such a way, when the drain hole 40451 is opened, a volume of water flowing out from the pressure-regulating chamber 4047 is larger than that of water flowing into the pressure-regulating chamber 4047, the pressure inside the pressure-regulating chamber 4047 can decrease to a value smaller than that of the pressure outside the pressure-regulating chamber 4047, so that the movable valve plate 4046 can move away from the outlet passage 4044 to open the outlet passage 4044, thus the water valve 404 can switch to the opened state.

[0110] Although the present disclosure has been disclosed above with reference to preferred embodiments thereof, it should be understood by those skilled in the art that various changes and modifications may be made without departing from the spirit or scope of the disclosure. Accordingly, the present disclosure covers changes and modifications made to the present disclosure that fall into scopes defined by the claims and equivalent technical solutions thereof.

Claims

1. A water sliding device, **characterized by** comprising:
 - a sliding portion, having a sliding surface suitable for a user sliding thereon, wherein a water pipe with a plurality of water spray holes is disposed on the sliding portion; and
 - a water spray apparatus, comprising an outlet portion for spraying water and a water valve disposed between the outlet portion and a water source, wherein the water valve is configured to automatically restore to a closed state after being opened for a predetermined period of time, so as to make the outlet portion automatically stop spraying water.
2. The water sliding device according to claim 1, **characterized in that**, the sliding portion comprises a flexible sheet.
3. The water sliding device according to claim 1, **char-**

- acterized in that**, the sliding portion comprises an upper sheet and a lower sheet, edges of the upper sheet and edges of the lower sheet are connected, and the upper sheet and the lower sheet define a first chamber adapted to be filled with air or water. 5
4. The water sliding device according to claim 1, **characterized in that**, the water pipe comprises at least one first water pipe extending from a starting end of the sliding portion to a destination end of the sliding portion, wherein the destination end is opposite to the starting end. 10
5. The water sliding device according to claim 1, **characterized in that**, the water pipe comprises a second water pipe extending from a first lateral edge of the sliding portion to a second lateral edge of the sliding portion. 15
6. The water sliding device according to claim 5, **characterized in that**, the second water pipe communicates with a first water pipe. 20
7. The water sliding device according to claim 1, **characterized by** further comprising a bumper connected with a destination end of the sliding portion, wherein the bumper is provided with a second chamber adapted to be filled with air or water. 25
8. The water sliding device according to claim 7, **characterized in that**, the bumper is connected with the sliding portion via a connecting sheet. 30
9. The water sliding device according to claim 1, **characterized in that**, the water spray apparatus comprises a support body, the outlet portion and the water valve are disposed on the support body, the support body is provided with a third chamber adapted to be filled with air, the water valve comprises a connecting portion, the water valve is positioned on the support body via the connecting portion, and the connecting portion and the support body are connected by welding or gluing. 35 40
10. The water sliding device according to claim 9, **characterized in that**, an inlet and an outlet of the water valve are inside the support body, the water spray apparatus further comprises an inlet portion positioned on the support body, a first end of the inlet portion is connected with the inlet of the water valve via a first connecting water pipe, a second end of the inlet portion is connected with the water source, and the outlet of the water valve is connected with the outlet portion via a second connecting water pipe. 45 50
11. The water sliding device according to claim 9, **characterized in that**, the support body is connected with the sliding portion or a bumper. 55
12. The water sliding device according to claim 11, **characterized by** further comprising an enhancing portion, the enhancing portion is positioned at a junction of the support body and the sliding portion, or is positioned at a junction of the support body and the bumper for enhancing a stability of the support body.
13. The water sliding device according to claim 12, **characterized in that**, the enhancing portion is provided with a fourth chamber adapted to be filled with air or water.
14. The water sliding device according to claim 1, **characterized in that**, a number of the water spray apparatus is more than one, the more than one water spray apparatus corresponds to more than one sliding path of the sliding portion, respectively.
15. The water sliding device according to claim 1, **characterized in that**, the water valve comprises:
 an inlet passage and an outlet passage, wherein the inlet passage communicates with the water source, and the outlet passage communicates with the outlet portion;
 a pressure-regulating chamber body and a movable valve plate, wherein the pressure-regulating chamber body and the movable valve plate define a pressure-regulating chamber, the pressure-regulating chamber communicates with the inlet passage via a water-inlet hole formed on the movable valve plate, the pressure-regulating chamber body is provided with a drain hole, the drain hole communicates with the pressure-regulating chamber, and the movable valve plate is adapted to move between a first position and a second position by different pressures inside the pressure-regulating chamber and outside the pressure-regulating chamber acting on the movable valve plate; and
 a water-draining assembly for blocking or opening the drain hole.
16. The water sliding device according to claim 15, **characterized in that**, a diameter of the drain hole is greater than a diameter of the water-inlet hole.
17. The water sliding device according to claim 15, **characterized in that**, the water-draining assembly comprises:
 a seal part; and
 a movable part,
 wherein the seal part is disposed on the movable part for blocking or opening the drain hole.
18. The water sliding device according to claim 17, **characterized in that**, the water valve further comprises

a button for driving the movable part to move to an opened position, so as to make the seal part open the drain hole.

19. The water sliding device according to claim 18, **characterized in that**, the water-draining assembly further comprises a reset part for driving the movable part to move to a closed position, so as to make the seal part block the drain hole.
20. The water sliding device according to claim 18, **characterized in that**, the water valve is disposed on the support body, and the button of the water valve is outside the support body.

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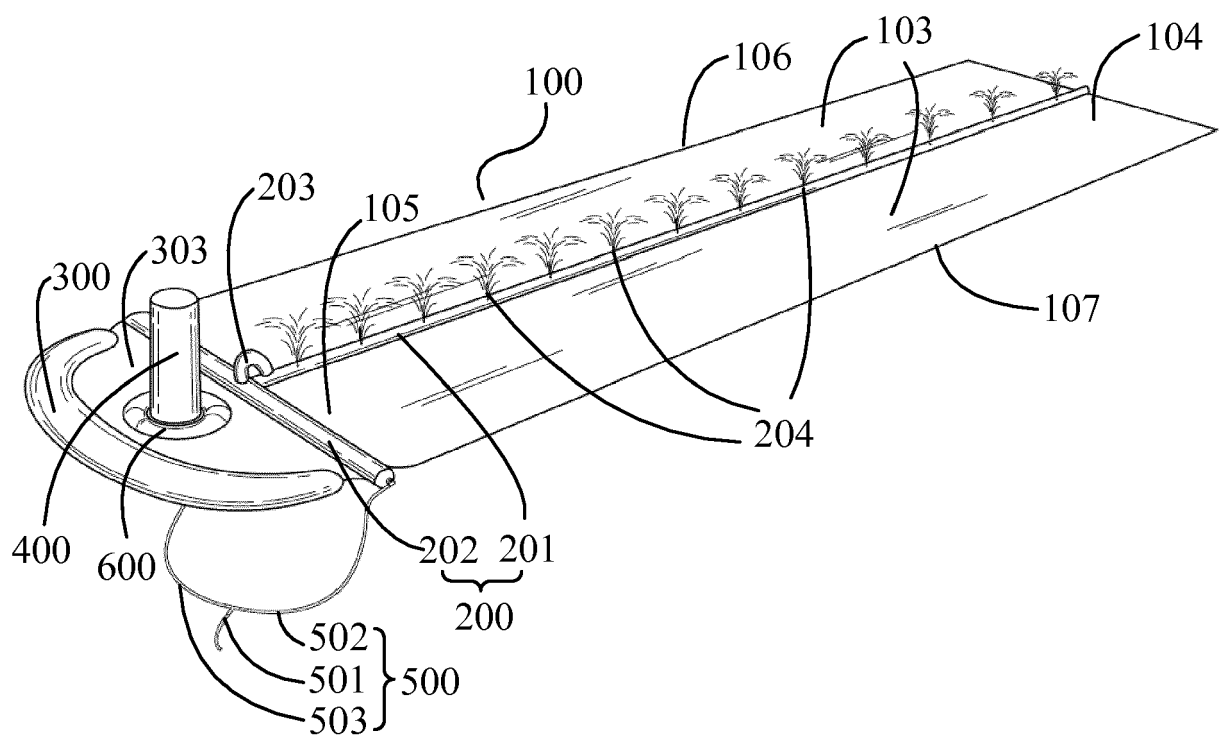


Figure 1

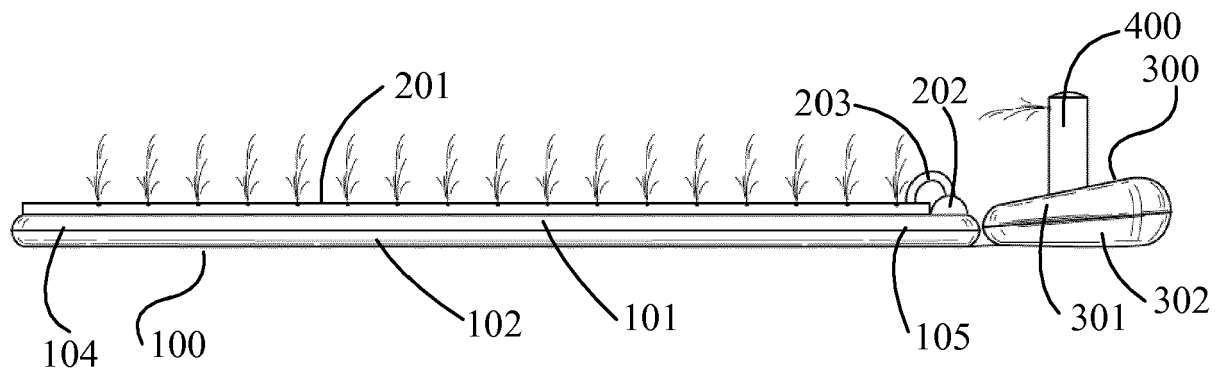


Figure 2

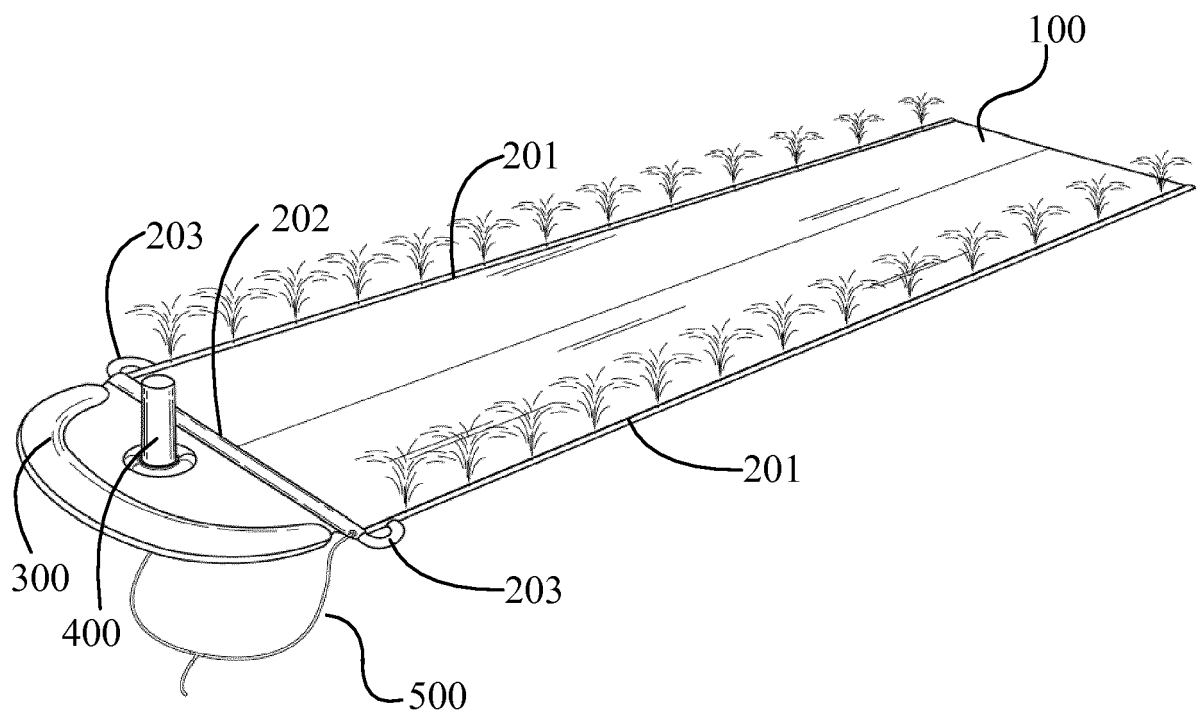


Figure 3

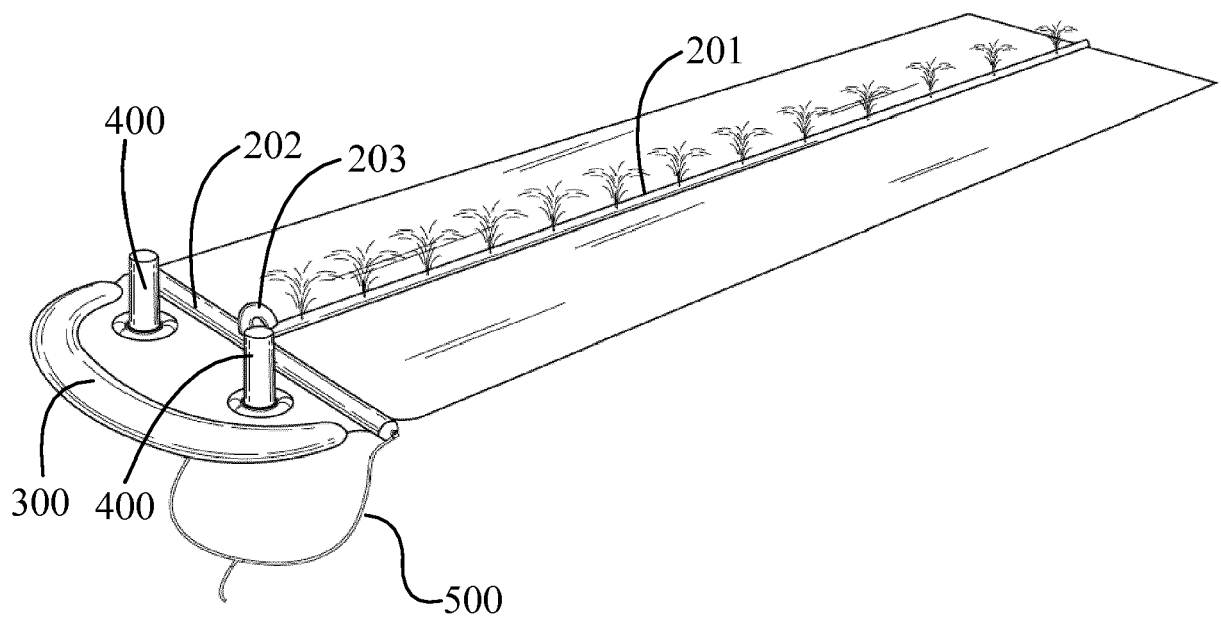


Figure 4

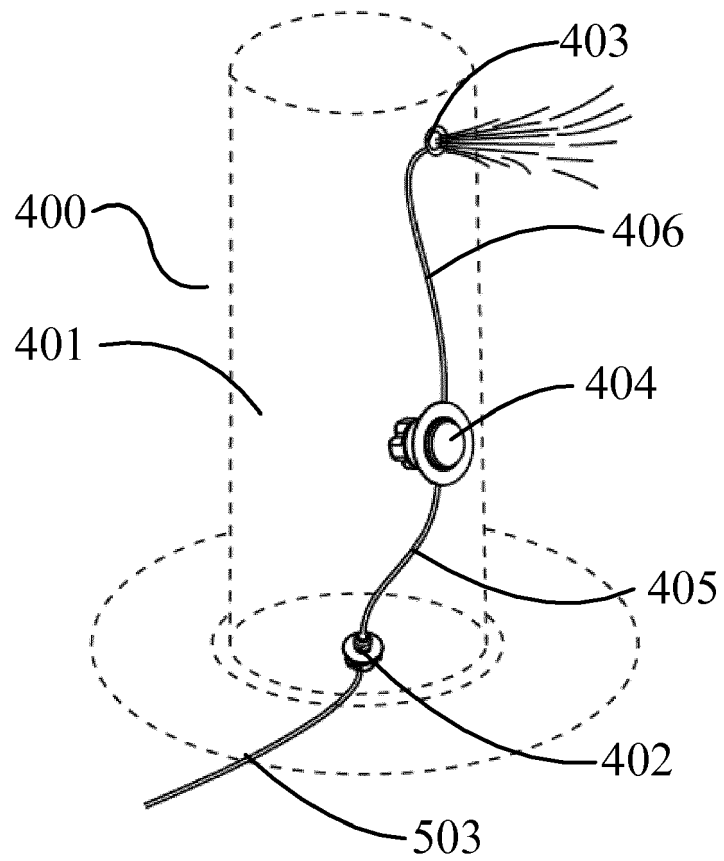


Figure 5

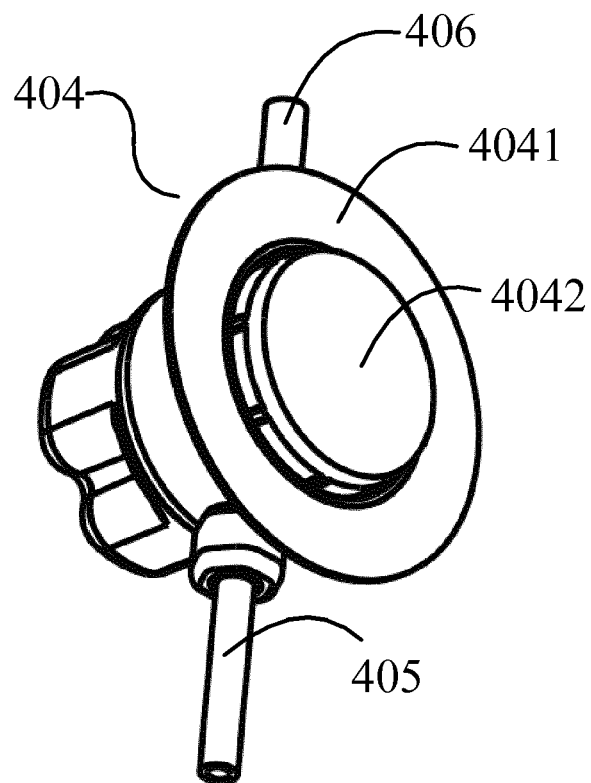


Figure 6

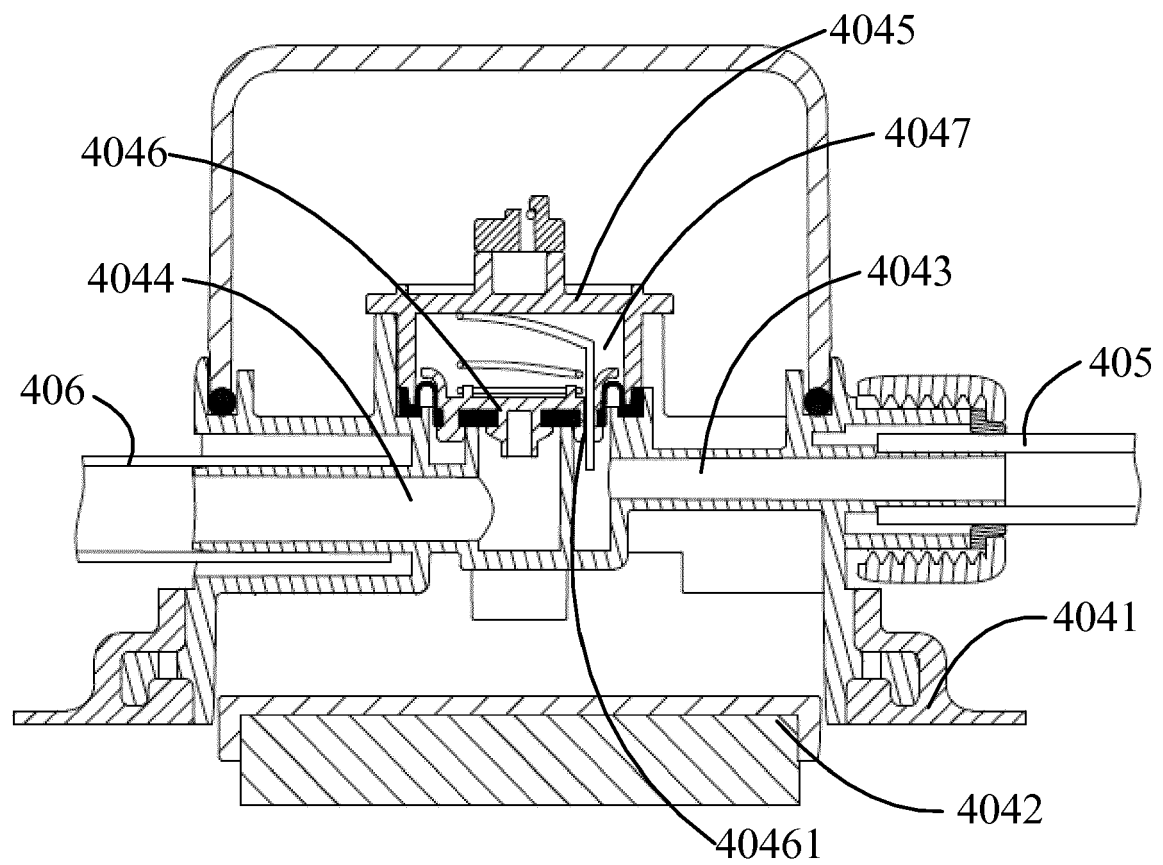


Figure 7

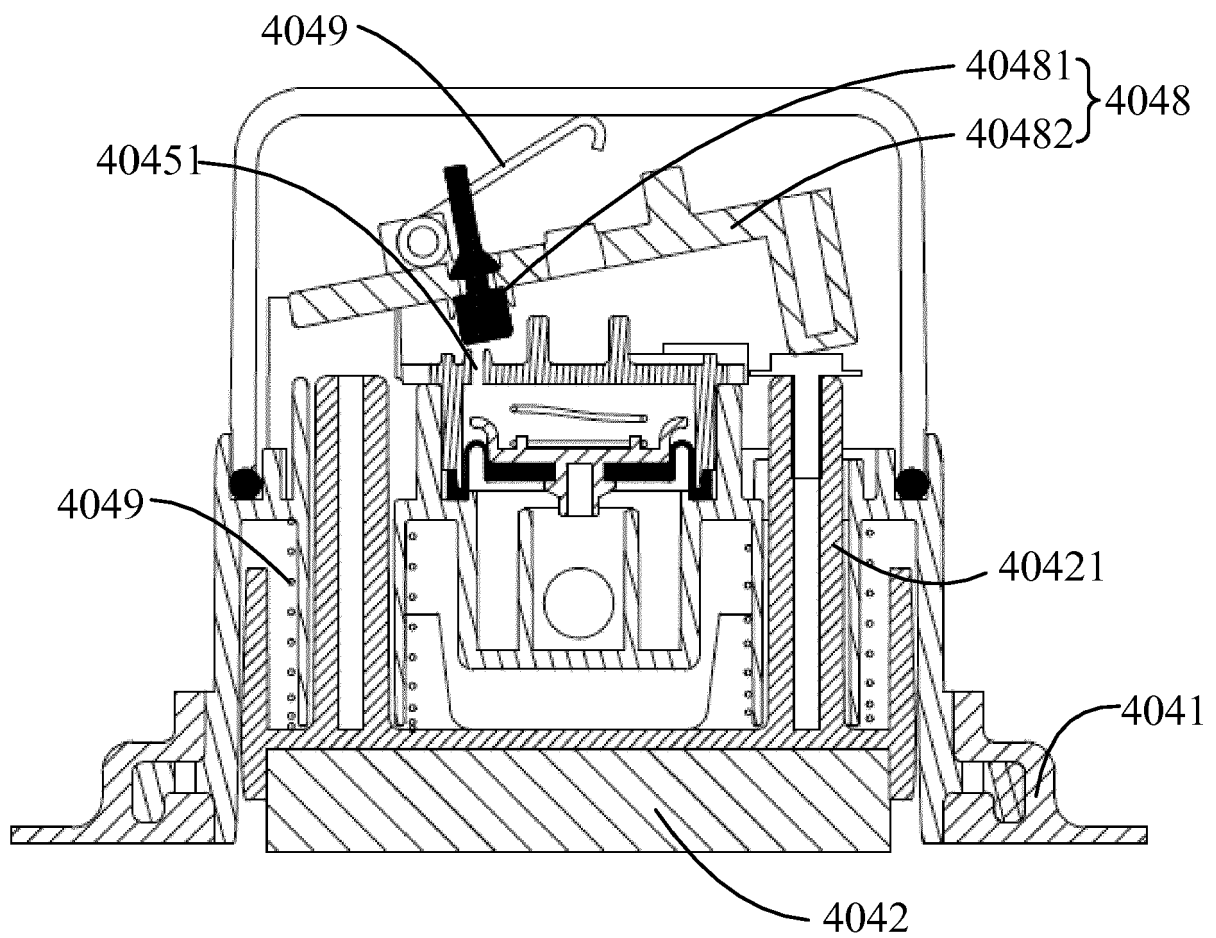


Figure 8



EUROPEAN SEARCH REPORT

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2005/181882 A1 (SANCHEZ TERRY [US]) 18 August 2005 (2005-08-18)	1,2,4, 7-12,14	INV. A63G21/18
Y	* paragraphs [14]-[28]; figures *	3-6,12, 13	A63G31/00 A63G31/12
Y	US 6 062 983 A (BUTSOOK PETER [US]) 16 May 2000 (2000-05-16) * column 3, lines 60-65; column 4, lines 3-16; figures 2, 1 *	3-6	
Y	US 2016/220911 A1 (WULF DAVID M [US] ET AL) 4 August 2016 (2016-08-04) * paragraphs [0014], [0048], [0049] *	12,13	
A	CA 2 390 240 A1 (TRACY WYETH [CA]) 11 December 2003 (2003-12-11) * the whole document *	1-14	
A	US 2011/105238 A1 (AMRON ALAN [US] ET AL) 5 May 2011 (2011-05-05) * the whole document *	1-14	
A	US D 562 929 S1 (FITZGERALD DAVID J [US]) 26 February 2008 (2008-02-26) * the whole document *	1-14	
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 27 March 2018	Examiner Turmo, Robert
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 03/82 (P04C01)



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CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing claims for which payment was due.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due and for those claims for which claims fees have been paid, namely claim(s):

☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

☒ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

1-14

☐ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

☐ The present supplementary European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims (Rule 164 (1) EPC).



**LACK OF UNITY OF INVENTION
SHEET B**

Application Number

EP 17 17 4768

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1-8

Directed to a water sliding device comprising a specific sliding portion and a water pipe.

Problem: how to provide a water sliding device with alternative sliding portion and water pipe.

2. claims: 1, 9-14

Directed to a water sliding device comprising a specific water spray apparatus.

Problem: how to provide a water sliding device with an alternative water spray apparatus.

3. claims: 1, 15-20

Directed to a water sliding device comprising a specific water valve.

Problem: how to provide water sliding device with an alternative water valve.

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 17 17 4768

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2005181882 A1	18-08-2005	AU 2005327456 A1	05-10-2006
		CN 101035600 A	12-09-2007
		EP 1765477 A1	28-03-2007
		US 2005181882 A1	18-08-2005
		US 2006160631 A1	20-07-2006
		WO 2006137820 A1	28-12-2006

US 6062983 A	16-05-2000	NONE	

US 2016220911 A1	04-08-2016	US 2016220911 A1	04-08-2016
		WO 2016126710 A1	11-08-2016

CA 2390240 A1	11-12-2003	NONE	

US 2011105238 A1	05-05-2011	NONE	

US D562929 S1	26-02-2008	-----	