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(54) MOP CLEANING BUCKET FOR DEHYDRATING AND CLEANING A MOP WITH WATER BY CIRCULATING AND PURIFYING SEWAGE

(57) A mop cleaning bucket with dehydrating and cleaning a mop with water by circulating and purifying sewage includes an outer bucket, an inner bucket, a water-drawing member and a filter element. The inner bucket is arranged in the outer bucket. The outer bucket has a positioning shaft and the water-drawing member is arranged on the positioning shaft and extends to a through hole of the inner bucket. The filter element is arranged at an outlet of the inner bucket. The outer has a first receiving space formed thereinside for receiving the water-drawing member and cleaning water, and the water-drawing member has a second receiving space formed thereinside and fluidly communicated with the first receiving space to form a clean-water area. The inner bucket has a sewage area fluidly communicated with the clean-water area through the outlet. The filter element is arranged at the outlet of the sewage area fluidly communicated with the clean-water area. The water-drawing member draws water from the clean-water area to clean a mop cloth disc and then sewage is formed, the sewage is flowed to the outlet by an inclined surface of the inner bucket and purified by the filter element to form a clean water and remain in the clean-water area, and a cycling mop cleaning bucket with repeating filtering sewage and obtaining the clean water is formed.

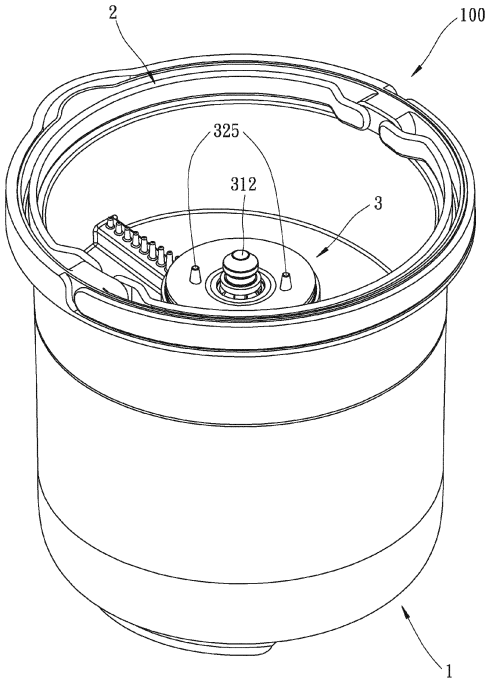

FIG. 1

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Description

FIELD OF THE INVENTION

[0001] The present invention relates to a cleaning device, and more particularly to a mop cleaning bucket with dehydrating and cleaning a mop with water by circulating and purifying sewage.

BACKGROUND OF THE INVENTION

[0002] According to the general floor cleaning method, after sweeping the floor dust, put the traditional mop into a bucket with clean water, soak it and wring it dry by hand, then wipe the floor back and forth with the mop's cleaning cloth to remove the dirt on the floor. Dirt, bacteria or dust that is difficult to remove can be removed, or special cleaning agents can also be added to the clean water to achieve different cleaning effects.

[0003] However, the conventional bucket only has the function of holding clean water. When the user puts the mop into the bucket, the user must shake the mop continuously to make the cleaning cloth shake in the clean water to wash and remove the attachments on the cleaning cloth. At the same time, the clean water in the bucket is gradually polluted into sewage. When the user wants to wash the mop again, the water in the bucket will become more and more dirty and there will be more and more dirt in the bucket. The sewage must be drained and then replaced with clean water. As a result, the water in the bucket must be changed back and forth for every floor cleaning, and the mop must be wrung out by hand to mopping the floor. Not only is the water consumption very expensive, but also the water source is not environmentally friendly.

[0004] In addition, when the existing cleaning products contain cleaning water, it is necessary to replace the cleaning water in large quantities and frequently to avoid contamination of the cleaning water to maintain and improve the efficiency of cleaning the floor or doors and windows. In this situation, frequent replacement is also required. Clean water, resulting in increased cleaning and cleaning procedures and time, waste of water sources, and in this conventional cleaning method, the parts of the environmental cleaning device that have been in contact with the dirty environment will immediately pollute the clean water. This conventional mode for thousands of years has greatly reduced the effect of cleaning the environment.

[0005] Therefore, mop cleaning buckets that use filter materials to filter sewage came into being, but the filter materials use pressure difference to generate power, so that the filter can effectively filter impurities in the water. It cannot be under no pressure or low pressure. Large-flux filtered sewage is purified to obtain clean water to wash the mop, which cannot achieve the efficiency of the cycle of sewage purification and reuse, nor can it achieve the requirements of saving water and reducing cleaning time.

[0006] In view of the foregoing circumstances, the inventor has invested a lot of time to study the relevant knowledge, compare the pros and cons, research and develop related products. After quite many experiments and tests, the "mop cleaning bucket" of this invention is eventually launched to improve the foregoing shortcomings, to meet the public use.

SUMMARY OF THE INVENTION

[0007] An objective of this invention is providing a mop cleaning bucket with dehydrating and cleaning a mop with water by circulating and purifying sewage. The bottom of the inner bucket is inclined so that the sewage may be automatically flowed from the inclined bottom of the inner bucket to the outlet protruded downwardly from the lowest part.

[0008] Another objective of this invention is providing a mop cleaning bucket with dehydrating and cleaning a mop with water by circulating and purifying sewage. The filter element is locked in the outlet of the inner bucket so that the sewage is flowed to the outlet through the inclined bottom of the inner bucket and the filter element does not use the pressure difference to achieve a large-flux circulating filter sewage under no pressure or low pressure.

[0009] Another objective of this invention is providing a mop cleaning bucket with dehydrating and cleaning a mop with water by circulating and purifying sewage. The water-drawing member includes the switching cylinder, the linking cap, the two guiding blocks and the flow guiding member. That is, the water-drawing member has light weight and small volume so that the rotation of the water-drawing member is more stable while dehydrating in high speed. In addition, there are two guiding blocks to combine and cooperate with each other, so that the movement of the switching cylinder following the cycling guide way becomes smoother.

[0010] Another objective of this invention is providing a mop cleaning bucket with dehydrating and cleaning a mop with water by circulating and purifying sewage. The water-drawing member further includes flow guiding blades and water-separating ribs, so that the effect of cleaning the mop cloth may be better.

[0011] To achieve above objectives, a mop cleaning bucket with dehydrating and cleaning a mop with water by circulating and purifying sewage is disclosed. The mop cleaning bucket comprises an outer bucket, an inner bucket, a water-drawing member and a filter element; the inner bucket is arranged in the outer bucket; the outer bucket has a positioning shaft and the water-drawing member is arranged on the positioning shaft and extends to a through hole of the inner bucket; the filter element is arranged at an outlet of the inner bucket; the outer has a first receiving space formed thereinside for receiving the water-drawing member and cleaning water; the water-drawing member has a second receiving space

formed thereinside and fluidly communicated with the first receiving space to form a clean-water area; the inner bucket has a sewage area fluidly communicated with the clean-water area through the outlet, the filter element is arranged at the outlet of the sewage area fluidly communicated with the clean-water area; the water-drawing member draws water from the clean-water area to clean a mop cloth disc and then sewage is formed, the sewage is flowed to the outlet by an inclined surface of the inner bucket and purified by the filter element to form a clean water and remain in the clean-water area, and a cycling mop cleaning bucket with repeating filtering sewage and obtaining the clean water is formed.

[0012] In some embodiments, the inclined surface is arrange at bottom of the inner bucket, the inner surface has a highest part and a lowest part, the outlet is downwardly protruded from the lowest part and the filter element is arranged in the outlet so that the inclined surface makes sewage flow to the outlet and a highest water level is formed from a lowest point of the outlet to the through hole of the inner bucket, and the highest water level provides a highest water pressure to the filter element.

[0013] In some embodiments, the water-drawing member includes a water-drawing cylinder, a flow guiding member, a linking cap, two guiding blocks and a switching cylinder, the flow guiding member is arranged in the water-drawing cylinder, the linking cap is arranged at top of the water-drawing cylinder, and the two guiding blocks are arranged in the flow guiding member and surround the switching cylinder.

[0014] In some embodiments, the water-drawing cylinder includes an outer cylinder portion and an inner cylinder portion, a top of the inner cylinder portion is lower than a top of the outer cylinder portion, a guiding groove and a hooking groove are arranged at inside of the top of the inner cylinder portion and separate from each other, and a plurality of spiral water-drawing blades is arranged at an inner sidewall of bottom of the water-drawing cylinder and extends upwardly.

[0015] In some embodiments, the flow guiding member includes a hollow cylinder, a guiding bar, a guiding hook, a plurality of flow guiding blades, a convex ring, a plurality of vertical ribs and two fixing bars, the guiding bar is arranged at outside of a lower portion of the hollow cylinder and opposite to the guiding groove of the inner cylinder portion, the guiding bar is also arranged in the guiding groove, the guiding hook is arranged at outside of the lower portion of the hollow cylinder and separated from the guiding bar, the guiding hook is arranged corresponding to the hooking groove of the inner cylinder portion, the guiding hook is hooked in the hooking groove, the plurality of flow guiding blades is arranged surrounding an outer sidewall of a center portion of the hollow cylinder, the convex ring is convexly arranged at the outer sidewall of the hollow cylinder and located above the plurality of flow guiding blades, the plurality of vertical ribs is angularly spaced apart and arranged at an outer sidewall of an upper portion of the hollow cylinder, and the two fixing bars are oppositely and vertically arranged at an inner sidewall of the upper portion of the hollow cylinder.

[0016] In some embodiments, the linking cap includes a water-separating tray, a lower cylinder, a plurality of hook portions, a plurality of vertical concave grooves and two fitting blocks, a plurality of water-separating ribs is arranged at a bottom surface of the water-separating tray, the water-separating tray is arranged on the hollow cylinder of the flow guiding member, the lower cylinder is arranged extending downwardly from a lower surface of the water-separating tray and fluidly communicated with the water-separating tray, the lower cylinder is sleeved at out of the upper portion of the hollow cylinder of the flow guiding member, the plurality of hook portions is oppositely and inwardly formed at a lower portion of the lower cylinder and each of the plurality of the hook portions is hooked at a lower surface of the convex ring of the flow guiding member, the plurality of vertical concave grooves is oppositely arranged at an inner sidewall of the lower cylinder, each of the plurality of vertical concave grooves is arranged corresponding to each vertical convex rib of the flow guiding member and guided, limited and fixed to each other, wherein the two fitting blocks are oppositely and convexly arranged on an upper surface of the water-separating tray.

[0017] In some embodiments, two fitting blocks are convexly arranged at the upper surface of the water-separating tray and just fitted at a plurality of fixing grooves of the mop cloth disc to limit and fix to each other, the water-drawing blades of the water-drawing member pump the clean water from the clean-water area while a mop rod is manually pressed to rotate the mop cloth disc.

[0018] In some embodiments, the guiding block is semi-cylindrical and arranged in the hollow cylinder of the flow guiding member, a fixing slot is defined between two ends of the two guiding blocks, the fixing bar is fitted at the corresponding fixing slot, a cycling guide way is concavely arranged at an inner sidewall of each guiding block, and a moving path of the cycling guide way has a first positioning point, a second turning point, a second positioning point and a first turning point sequentially.

[0019] In some embodiments, two protruding blocks are oppositely and convexly arranged at an outer surface of the switching cylinder, and each protruding block is arranged in and corresponding to the cycling guide way of each guiding block.

[0020] In some embodiments, the switching cylinder has a head portion, a concave ring is ring-shaped and inwardly arranged at a center part of the head portion, a sleeving hole is arranged at a center of the mop cloth disc, the sleeving hole has a plurality of ring-shaped hook guiding portions arranged therein, the head portion is just capable of inserting into the sleeving hole to make the hook guiding portions hook and fix to the concave ring so that the two protruding blocks of the switching cylinder can be driven to move at the moving path in the cycling guide way and switched and cycling between the first

positioning point and the second positioning point sequentially.

[0021] In some embodiments, the switching cylinder is arranged in the hollow cylinder of the flow guiding member and surrounded by the two guiding blocks, two protruding blocks are convexly and oppositely arranged at an outer surface of the switching cylinder, each of the two protruding blocks is arranged corresponding to each of two cycling guide ways, the guiding block includes a first positioning point and a second positioning point, a plurality of fixing grooves of the mop cloth disc is cooperated with the two fitting blocks of the linking cap while the two protruding blocks remains at the second positioning point, that is, the mop cloth disc is limited and fixed by the fitting blocks so that the water-drawing member is driven to rotate to draw water to clean the mop cloth disc while a mop rod is manually pressed to rotate the mop cloth disc.

[0022] In some embodiments, the switching cylinder is arranged in the hollow cylinder of the flow guiding member and surrounded by the two guiding blocks, two protruding blocks are convexly and oppositely arranged at an outer surface of the switching cylinder, each of the two protruding blocks is arranged corresponding to each of two cycling guide ways, the guiding block includes a first positioning point and a second positioning point, a plurality of fixing grooves of the mop cloth disc is detached from the two fitting blocks of the linking cap while the two protruding blocks remains at the first positioning point, that is, the mop cloth disc is not limited and fixed by the fitting blocks so that the water-drawing member is not driven to rotate to draw water but the mop cloth disc is driven to rotate to be hydrated while a mop rod is manually pressed to rotate the mop cloth disc.

[0023] In some embodiments, a plurality of brush posts is arranged at bottom of the inner bucket, the brush posts are sequentially arranged spaced apart and from an edge of the inner bucket to a center of the inner bucket, and the brush posts are arranged in multiple rows and more.

[0024] Further features and advantages of the present invention will become apparent to those of skill in the art in view of the detailed description of preferred embodiments which follows, when considered together with the attached drawings and claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0025] All the objects, advantages, and novel features of the invention will become more apparent from the following detailed descriptions when taken in conjunction with the accompanying drawings.

FIG. 1 is a perspective view of a mop cleaning bucket in some embodiments of the present invention.

FIG. 2 is an exploded view of the mop cleaning bucket in some embodiments of the present invention.

FIG. 3A is an exploded view of a water-drawing member of the mop cleaning bucket in some embodiments of the present invention.

FIG. 3B is a bottom partially exploded view of the water-drawing member of the mop cleaning bucket in some embodiments of the present invention.

FIG. 4 is a cross-sectional plan view of the water-drawing member of the mop cleaning bucket in some embodiments of the present invention.

FIG. 5 is a cross-sectional perspective view of the water-drawing member of the mop cleaning bucket in some embodiments of the present invention.

FIG. 6 is a bottom perspective view of an inner bucket and the water-drawing member of the mop cleaning bucket in some embodiments of the present invention.

FIG. 7A is a perspective view of a guiding block of the mop cleaning bucket in some embodiments of the present invention.

FIG. 7B is a plan view of the guiding block of the mop cleaning bucket in some embodiments of the present invention.

FIG. 7C is a schematic drawing of a moving path of a protruding block of a switching cylinder guided in a cycling guide way of the guiding block of the mop cleaning bucket in some embodiments of the present invention.

FIG. 8 is a top view of the mop cleaning bucket in some embodiments of the present invention.

FIG. 9 is a schematic cross-sectional view taken along a line A-A' in FIG. 8 in some embodiments of the present invention.

FIG. 10 is a cross-sectional perspective view of FIG. 9.

FIG. 11 is a cross-sectional view of the protruding block of the switching cylinder moved to a first positioning point of the cycling guide way in some embodiments of the present invention.

FIG. 12 is a cross-sectional view of the protruding block of the switching cylinder moved to a second positioning point of the cycling guide way in some embodiments of the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

[0026] Referring now to the drawings where like char-

acteristics and features among the various figures are denoted by like reference characters.

[0027] FIG. 1 is a perspective view of a mop cleaning bucket in some embodiments of the present invention. FIG. 2 is an exploded view of the mop cleaning bucket in some embodiments of the present invention. FIG. 3A is an exploded view of a water-drawing member of the mop cleaning bucket in some embodiments of the present invention. FIG. 3B is a bottom partially exploded view of the water-drawing member of the mop cleaning bucket in some embodiments of the present invention. FIG. 4 is a cross-sectional plan view of the water-drawing member of the mop cleaning bucket in some embodiments of the present invention. FIG. 5 is a cross-sectional perspective view of the water-drawing member of the mop cleaning bucket in some embodiments of the present invention. FIG. 6 is a bottom perspective view of an inner bucket and the water-drawing member of the mop cleaning bucket in some embodiments of the present invention.

[0028] Please reference to FIGs 1 to 2, FIG. 3A, FIG. 3B and FIGs. 4 to 6, a mop cleaning bucket 100 with dehydrating and cleaning a mop with water by circulating and purifying sewage includes an outer bucket 1, an inner bucket 2 and a water-drawing member 3.

[0029] The inner bucket 2 is arranged in the outer bucket 1 and a bottom thereof is inclined. A filter element 4 is arranged at the bottom of the inner bucket 2. A through hole 23 is arranged at a center of the inner bucket 2. A sewage area A2 is defined in the inner bucket 2. In some embodiments, the inclined bottom of the inner bucket 2 has a highest part 2A and a lowest part 2B. An outlet 21 is protruded downwardly from the lowest part 2B. The mop cleaning bucket 100 further includes the filter element 4 which is locked in the outlet 21. In some another embodiments, the inner bucket 1 further includes a plurality of brush posts 22. The brush posts 22 are sequentially arranged spaced apart and from an edge of the inner bucket 2 to a center of the inner bucket 2, and the brush posts 22 are arranged in multiple rows and more. In this way, when the mop cloth disc 220 rotates, the dirt or hair can be combed away from the mop cloth by the action of the brush posts 22 and the mop cloth disc 220, as shown in FIG. 12.

[0030] The mop cleaning bucket 100 with dehydrating and cleaning a mop with water by circulating and purifying sewage includes an outer bucket 1, an inner bucket 2 and a water-drawing member 3. The inner bucket 2 is arranged in the outer bucket 1. A positioning shaft 11 is arranged in the outer bucket 1. The water-drawing member is arranged on the positioning shaft 11 of the outer bucket 1 and extends to the through hole 23 of the inner bucket 2. The filter element 4 is arranged at the outlet 21 of the inner bucket 2. Please reference to FIG. 11 and FIG. 12, a first receiving space S1 is defined in the outer bucket 1 to receive the water-drawing member 2 and the clean water. A second receiving space S2 is defined in the water-drawing member S2. The first receiving space S1 and the second receiving space S2 are fluidly communicated with each other and define a clean-water area A1. The sewage area A2 is defined in the inner bucket 2. The sewage area A2 and the clean-water area A1 are fluidly communicated with each other through the outlet 21. The filter element 4 is arranged at the outlet 21 of the sewage area A2 which is fluidly communicated with the clean-water area A1. The water-drawing member 3 draws the water from the clean-water area A1 to clean the mop cloth disc 220 and then the sewage is formed. The sewage is flowed to the outlet 21 through an inclined surface 24. The sewage is filtered or purified by the filter element 4 to form the clean water and then the clean water is remained in the clean-water area A1 to form a cycling mop cleaning bucket with repeating filtering sewage and obtaining the clean water.

[0031] In the embodiments of the present disclosure, the water-drawing member 3 may be arranged at the through hole 23 of the center of the outer bucket 2. Please reference to FIGs. 3 to 5, the water-drawing member 3 includes a switching cylinder 31, a linking cap 32, two guiding blocks 33, a flow guiding member 34 and a water-drawing cylinder 35. The water-drawing cylinder 35 includes an outer cylinder portion 351 and an inner cylinder portion 352. In some embodiments, a top of the inner cylinder portion 352 is lower than a top of the outer cylinder portion 351. A guiding groove 353 and a hooking groove 354 are arranged at inside of the top of the inner cylinder portion 352 and separate from each other. Two guiding blocks 33 are arranged inside the flow guiding member 34 and surround the switching cylinder 31. A plurality of spiral water-drawing blades 335 is arranged at an inner sidewall of bottom of the water-drawing cylinder 35 and extends upwardly.

[0032] In some embodiments, the flow guiding member 34 includes a hollow cylinder 341, a guiding bar 342, a guiding hook 343, a plurality of flow guiding blades 344, a convex ring 345, a plurality of vertical ribs 346 and two fixing bars 347. The guiding bar 342 is arranged at outside of a lower portion of the hollow cylinder 341 and opposite to the guiding groove 353 of the inner cylinder portion 352. The guiding bar 342 is also arranged in the guiding groove 353. The guiding hook 343 is arranged at outside of the lower portion of the hollow cylinder 341 and separated from the guiding bar 342. The guiding hook 343 is arranged corresponding to the hooking groove 354 of the inner cylinder portion 352. The guiding hook 343 is hooked in the hooking groove 354. The plurality of flow guiding blades 344 is arranged surrounding an outer sidewall of a center portion of the hollow cylinder 341. The convex ring 345 is convexly arranged at the outer sidewall of the hollow cylinder 341 and located above the plurality of flow guiding blades 344. The plurality of vertical ribs 346 is angularly spaced apart and arranged at an outer sidewall of an upper portion of the hollow cylinder 341. The two fixing bars 347 are oppositely and vertically arranged at an inner sidewall of the upper portion of the hollow cylinder 341.

[0033] In some embodiments, each of the guiding blocks 33 is semi-cylindrical and arranged in the hollow cylinder 341 of the flow guiding member 34. A fixing slot 331 is defined between two ends of the two guiding blocks 33. The fixing bar 347 is fitted at the corresponding fixing slot 347. A cycling guide way 36 is concavely arranged at an inner sidewall of each guiding block 33 and a moving path of the cycling guide way 36 has a first positioning point 371, a second turning point 382, a second positioning point 372 and a first turning point 381 sequentially.

[0034] In some embodiments, the linking cap 32 includes a water-separating tray 321, a lower cylinder 322, two hook portions 323, a plurality of vertical concave grooves 324 and two fitting blocks 325. The water-separating tray 321 is arranged on the hollow cylinder 341 of the flow guiding member 34. The lower cylinder 322 is arranged extending downwardly from a lower surface of the water-separating tray 321 and fluidly communicated with the water-separating tray 321. The lower cylinder 322 is sleeved at out of the upper portion of the hollow cylinder 341 of the flow guiding member 34. The two hook portions 323 is oppositely and inwardly formed at a lower portion of the lower cylinder 322 and each of the two hook portions 323 is hooked at a lower surface of the convex ring 345 of the flow guiding member 34. The plurality of vertical concave grooves 324 is oppositely arranged at an inner sidewall of the lower cylinder 322. Each of the plurality of vertical concave grooves 324 is arranged corresponding to each vertical convex rib 346 of the flow guiding member 34 and guided, limited and fixed to each other. The two fitting blocks 325 are oppositely and convexly arranged on an upper surface of the water-separating tray 321. A plurality of water-separating ribs 3211 is arranged at a bottom surface of the water-separating tray 321. The two fitting blocks 325 are arranged on an upper surface of the water-separating tray 321. The two fitting blocks 325 are just fitted at a plurality of fixing grooves 230 of the mop cloth disc 220 to limit and fix to each other. The water-drawing blades 355 of the water-drawing member 3 pump the clean water from the clean-water area A1 while a mop rod 200 is manually pressed to rotate the mop cloth disc 220.

[0035] In some embodiments, the switching cylinder 31 is arranged in the hollow cylinder 341 of the flow guiding member 34 and surrounded by the two guiding blocks 33. The two protruding blocks 311 are convexly and oppositely arranged at the outer surface of the switching cylinder 31. Each of the two protruding blocks 311 is arranged corresponding to each of two cycling guide ways 36.

[0036] FIG. 7A is a perspective view of a guiding block of the mop cleaning bucket in some embodiments of the present invention. FIG. 7B is a plan view of the guiding block of the mop cleaning bucket in some embodiments of the present invention. Please reference to FIGs. 7A and 7B, in the front view of the inner sidewall of one of the cycling guide ways 36, the cycling guide way 36 includes an inlet section 3601, a first downward inclined section 3602, a first vertical section 3603, a second downward inclined section 3604, a second vertical section 3605, a first upward inclined section 3606, a third vertical section 3607, a second upward section 3608, a fourth vertical section 3609, a third downward inclined section 3610, a fifth vertical section 3611 and a third upward inclined section 3612 communicated with one another.

[0037] The inlet section 3601 extends downwardly from the top of the cycling guide way 36 and is communicated with the first downward inclined section 3602. The first downward inclined section 3602 extends from the lower portion of the inlet section 3601 toward the lower right and is communicated with the first vertical section 3603. An upper portion of the first vertical section 3603 is higher than the communication position of the first downward inclined section 3602 and the first vertical section 3063. The first vertical section 3603 extends downwardly from the first downward inclined section 3602 and is communicated with the second downward inclined section 3604. The second downward inclined section 3604 extends from the first vertical section 3604 toward lower right and is communicated with the second vertical section 3605. The second vertical section 3605 extends upwardly from the lower portion of the second downward inclined section 3604 and is communicated with the first upward inclined section 3606. The first upward inclined section 3606 extends from the upper portion of the second vertical section 3605 toward upper right and is communicated with the third vertical section 3607. The third vertical section 3607 extends upwardly from the upper portion of the first upward inclined section 3606 and is communicated with the second upward inclined 3608. The second upward inclined section 3608 extends from the upper portion of the third vertical section 3607 toward upper right and is communicated with fourth vertical section 3609. The fourth vertical section 3609 extends downwardly from the upper portion of the second upward inclined section 3608 and is communicated with the third downward inclined section 3610. The third downward inclined section 3610 extends from the lower portion of the fourth vertical section 3609 toward lower left and is communicated with the fifth vertical section 3611. The fifth vertical section 3611 extends upwardly and is communicated with the third upward inclined section 3612. The third upward inclined section 3612 extends from the upper portion of the fifth vertical section 3611 toward upper left, is communicated with the first vertical section 3603 and is connected to the upper portion of the first vertical section 3603.

[0038] In some embodiments, the first positioning point 371 is formed at the communication position of the lower portion of the third downward inclined section 3610 and the lower portion of the fifth vertical section 3611. The second positioning point 372 is formed at the communication position of the lower portion of the second downward inclined section 3604 and the lower portion of the second vertical section 3605. In son embodiments, a first turning point 381 is formed at the communication position

of the upper portion of the second upward inclined section 3608 and the upper portion of the fourth vertical section 3609. The second turning point 382 is formed at the communication position of the upper portion of the third upward inclined section 3612 and the upper portion of the first vertical section 3603.

[0039] Please reference to FIGs. 1 and 2, the first receiving space S1 is defined at the bottom of the outer cylinder 1 to receive the water-drawing member 3 and the filter element 4. The second receiving space S2 is defined in the water-drawing member 3. The first receiving space S1 and the second receiving space S2 are communicated with each other to form the clean-water area A1. The outlet 21 in the clean-water area A1 is communicated with the filter element 4. The sewage area A2 is defined in the inner cylinder 2. The water-drawing member 3 draws water from the clean-water area A1 to clean the mop cloth disc 220 and then sewage is formed. The sewage is flowed to the outlet 21 by the inclined surface 24 of the inner bucket 2 and purified by the filter element 4 to form the clean water A1 and remain in the clean-water area A1, and forming a cycle of filtering sewage to obtain the clean water to rinse the mop, saving water sources and reducing cleaning time requirements.

[0040] FIG. 7C is a schematic drawing of a moving path of a protruding block of a switching cylinder guided in a cycling guide way of the guiding block of the mop cleaning bucket in some embodiments of the present invention. FIG. 8 is a top view of the mop cleaning bucket in some embodiments of the present invention. FIG. 9 is a schematic cross-sectional view taken along a line A-A' in FIG. 8 in some embodiments of the present invention. FIG. 10 is a cross-sectional perspective view of FIG. 9. FIG. 11 is a cross-sectional view of the protruding block of the switching cylinder moved to a first positioning point of the cycling guide way in some embodiments of the present invention. FIG. 12 is a cross-sectional view of the protruding block 311 of the switching cylinder 31 moved to a second positioning point 372 of the cycling guide way 36 in some embodiments of the present invention.

[0041] Please reference to FIG. 7C, when the protruding block 311 moves form the first positioning point 371 to the second positioning point 372, it may move along a path P1. That is, the path P1 sequentially passes through the first positioning point 371, the fifth vertical section 3611, the third upward inclined section 3612, the second turning point 382, the first vertical section 3603, the second downward inclined second 3604 and the second positioning point 372. When the protruding block 311 moves from the second positioning point 372 to the first positioning point 371, it may move along a path P2. That is, the path P2 sequentially passes through the second positioning point 372, the second vertical section 3605, the first upward inclined section 3606, the third vertical section 3607, the second upward inclined section 3608, the first turning point 381, the fourth vertical section 3609, the third downward inclined section 3610 and the first positioning point 371.

[0042] Please reference to FIG. 7C and FIGs. 8 to 12, the switching cylinder 31 includes a head portion 312. The head portion 312 is exposed on the linking cap 32 and fitted to the mop cloth disc 220.

[0043] The switching cylinder 31 has a head portion 312. A concave ring 313 is ring-shaped and inwardly arranged at a center part of the head portion 31. A sleeving hole 240 is arranged at a center of the mop cloth disc 220. The sleeving hole 240 has a plurality of ring-shaped hook guiding portions 250 arranged therein. The head portion 31 is just capable of inserting into the sleeving hole 240 to make the hook guiding portions 250 hook and fix to the concave ring 313 so that the two protruding blocks 311 of the switching cylinder 31 can be driven to move at the moving path in the cycling guide way 36 and switched and cycling between the first positioning point 371 and the second positioning point 372 sequentially.

[0044] The switching cylinder 31 is arranged in the hollow cylinder 341 of the flow guiding member 34 and surrounded by the two guiding blocks 33. The two protruding blocks 311 are convexly and oppositely arranged at an outer surface of the switching cylinder 31. Each of the two protruding blocks 31 is arranged corresponding to each of two cycling guide ways 36. The guiding block 33 includes the first positioning point 371 and the second positioning point 372. The plurality of fixing grooves 230 of the mop cloth disc 220 is cooperated with the two fitting blocks 325 of the linking cap 32 while the two protruding blocks 33 remains at the second positioning point 372, that is, the mop cloth disc 220 is limited and fixed by the fitting blocks 325 so that the water-drawing member 3 is driven to rotate to draw water to clean the mop cloth disc 220 while a mop rod 200 is manually pressed to rotate the mop cloth disc 220.

[0045] The two protruding blocks 311 are convexly and oppositely arranged at the outer surface of the switching cylinder 31. Each of the two protruding blocks 311 is arranged corresponding to each of two cycling guide ways 36. The guiding block 33 includes the first positioning point 371 and a second positioning point 372. The plurality of fixing grooves 230 of the mop cloth disc 220 is detached from the two fitting blocks 325 of the linking cap 32 while the two protruding blocks 33 remains at the first positioning point 371, that is, the mop cloth disc 220 is not limited and fixed by the fitting blocks 325 so that the water-drawing member 3 is not driven to rotate to draw water but the mop cloth disc 220 is driven to rotate to be hydrated while the mop rod 200 is manually pressed to rotate the mop cloth disc 220.

[0046] When the two protruding blocks 311 of the switching cylinder 31 moves to the first positioning point 371 and along the cycling guide way 36 (that is the path P2), the head portion 312 is distant from the water-separating tray 321 of the linking cap 32 and the bottom end of the head portion 312 is higher than the top end of each fitting block 325 of the linking cap 32. Accordingly, as shown in FIG. 11, the protruding block 311 of the switch-

ing cylinder 311 is located at the first positioning point 371 and the head portion 312 of the switching cylinder 31 pushes the mop disc 210 and the mop cloth disc 220 arranged on the mop rod 200 upwardly, so that the plurality of the fixing grooves 230 of the mop cloth disc 220 is detached from each fitting block 325 of the linking cap 32. That is, the mop cloth disc 220 is not limited and fixed by the fitting blocks 325 so that the mop rod 200 is manually pressed upward and downward to drive the mop disc 210 to rotate and hydrate the mop cloth of the mop cloth disc 220. The sewage after hydrating the mop cloth of the mop cloth disc 220 may be automatically flowed to the outlet 21 downwardly and convexly arranged at the lowest part of the inner bucket 2 through the inclined surface 24 of the inner bucket 2, and then passes through the filter element 4 arrange in the outlet 21 of the inner bucket 2 so as to achieve a large flux of water filtration under no pressure or low pressure. The clean water after being filtered or purified by the filter element 4 may be flowed to the first receiving space S1. The inclined surface 24 makes sewage flow to the outlet 21 and a highest water level H is formed from a lowest point of the outlet 21 to the through hole 23 of the inner bucket 2, and the highest water level H provides a highest water pressure to the filter element 4.

[0047] When the two protruding blocks 311 of the switching cylinder 31 moves to the second positioning point 372 and along the cycling guide way 36 (that is the path P1), the head portion 312 is close to the water-separating tray 321 of the linking cap 32 and the bottom end of the head portion 312 is lower than the top end of each fitting block 325 of the linking cap 32. Accordingly, as shown in FIG. 12, the protruding block 311 of the switching cylinder 311 is located at the second positioning point 372 and the head portion 312 of the switching cylinder 31 pushes the mop disc 210 and the mop cloth disc 220 arranged on the mop rod 200 downwardly, so that the plurality of the fixing grooves 230 of the mop cloth disc 220 is correspondingly fitted to each fitting block 325 of the linking cap 32. That is, the mop cloth disc 220 is limited by the fitting blocks 325 so that the mop rod 200 is manually pressed upward and downward to drive the mop disc 210 to rotate and further drive the water-drawing member 3 to rotate. The water-drawing blades 355 may collect the clean water in the first receiving space S1 and the second receiving space S2 to the floe guiding member 34. The clean water may be evenly separated by the plurality of the water-separating ribs 3211 arranged at bottom of the water-separating tray 321 while rotating the flow guiding blades 344 and then sprayed from a gap between the water-separating tray 321 and the out cylinder portion 351 to clean the mop cloth of the mop cloth disc 220 and make the effect of cleaning the mop cloth disc 200 more better.

[0048] With the above structure, the bottom of the inner bucket 2 has the inclined surface 24 so that the sewage may be automatically flowed from the inclined surface 24 arrange at the bottom of the inner bucket 2 to the outlet 21 protruded downwardly from the lowest part of the inner bucket 2. In addition, the filter element 4 is locked in the outlet 21 so as to achieve a large-flux circulating filter sewage under no pressure or low pressure. Furthermore, the water-drawing member 3 includes the switching cylinder 31, the linking cap 32, the two guiding blocks 33 and the flow guiding member 34. That is, the water-drawing member 3 has light weight and small volume so that the rotation of the water-drawing member 3 is more stable while dehydrating in high speed. In addition, there are two guiding blocks 33 to combine and cooperate with each other, so that the movement of the switching cylinder 31 following the cycling guide way 36 becomes smoother. The water-drawing member 3 further includes flow guiding blades 344, so that the effect of cleaning the mop cloth may be better.

[0049] The foregoing descriptions are merely the exemplified embodiments of the present invention, where the scope of the claim of the present invention is not intended to be limited by the embodiments. Any equivalent embodiments or modifications without departing from the spirit and scope of the present invention are therefore intended to be embraced.

[0050] The disclosed structure of the invention has not appeared in the prior art and features efficacy better than the prior structure which is construed to be a novel and creative invention, thereby filing the present application herein subject to the patent law.

Claims

1. A mop cleaning bucket with dehydrating and cleaning a mop with water by circulating and purifying sewage, comprising an outer bucket, an inner bucket, a water-drawing member and a filter element; the inner bucket is arranged in the outer bucket; the outer bucket has a positioning shaft and the water-drawing member is arranged on the positioning shaft and extends to a through hole of the inner bucket; the filter element is arranged at an outlet of the inner bucket; the outer has a first receiving space formed thereinside for receiving the water-drawing member and cleaning water; the water-drawing member has a second receiving space formed thereinside and fluidly communicated with the first receiving space to form a clean-water area; the inner bucket has a sewage area fluidly communicated with the clean-water area through the outlet, the filter element is arranged at the outlet of the sewage area fluidly communicated with the clean-water area; the water-drawing member draws water from the clean-water area to clean a mop cloth disc and then sewage is formed, the sewage is flowed to the outlet by an inclined surface of the inner bucket and purified by the filter element to form a clean water and remain in the clean-water area, and a cycling mop cleaning bucket with repeating filtering sewage and obtaining the clean water is

formed.

2. The mop cleaning bucket as claimed in claim 1, wherein the inclined surface is arrange at bottom of the inner bucket, the inner surface has a highest part and a lowest part, the outlet is downwardly protruded from the lowest part and the filter element is arranged in the outlet so that the inclined surface makes sewage flow to the outlet and a highest water level is formed from a lowest point of the outlet to the through hole of the inner bucket, and the highest water level provides a highest water pressure to the filter element.

3. The mop cleaning bucket as claimed in claim 1, wherein the water-drawing member includes a water-drawing cylinder, a flow guiding member, a linking cap, two guiding blocks and a switching cylinder, the flow guiding member is arranged in the water-drawing cylinder, the linking cap is arranged at top of the water-drawing cylinder, and the two guiding blocks are arranged in the flow guiding member and surround the switching cylinder.

4. The mop cleaning bucket as claimed in claim 3, wherein the water-drawing cylinder includes an outer cylinder portion and an inner cylinder portion, a top of the inner cylinder portion is lower than a top of the outer cylinder portion, a guiding groove and a hooking groove are arranged at inside of the top of the inner cylinder portion and separate from each other, and a plurality of spiral water-drawing blades is arranged at an inner sidewall of bottom of the water-drawing cylinder and extends upwardly.

5. The mop cleaning bucket as claimed in claim 3, wherein the flow guiding member includes a hollow cylinder, a guiding bar, a guiding hook, a plurality of flow guiding blades, a convex ring, a plurality of vertical ribs and two fixing bars, the guiding bar is arranged at outside of a lower portion of the hollow cylinder and opposite to the guiding groove of the inner cylinder portion, the guiding bar is also arranged in the guiding groove, the guiding hook is arranged at outside of the lower portion of the hollow cylinder and separated from the guiding bar, the guiding hook is arranged corresponding to the hooking groove of the inner cylinder portion, the guiding hook is hooked in the hooking groove, the plurality of flow guiding blades is arranged surrounding an outer sidewall of a center portion of the hollow cylinder, the convex ring is convexly arranged at the outer sidewall of the hollow cylinder and located above the plurality of flow guiding blades, the plurality of vertical ribs is angularly spaced apart and arranged at an outer sidewall of an upper portion of the hollow cylinder, and the two fixing bars are oppositely and vertically arranged at an inner sidewall of the upper portion of the hollow cylinder.

6. The mop cleaning bucket as claimed in claim 3, wherein the linking cap includes a water-separating tray, a lower cylinder, a plurality of hook portions, a plurality of vertical concave grooves and two fitting blocks, a plurality of water-separating ribs is arranged at a bottom surface of the water-separating tray, the water-separating tray is arranged on the hollow cylinder of the [flow guiding member], the lower cylinder is arranged extending downwardly from a lower surface of the water-separating tray and fluidly communicated with the water-separating tray, the lower cylinder is sleeved at out of the upper portion of the hollow cylinder of the [flow guiding member], the plurality of hook portions is oppositely and inwardly formed at a lower portion of the lower cylinder and each of the plurality of the hook portions is hooked at a lower surface of the convex ring of the [flow guiding member], the plurality of vertical concave grooves is oppositely arranged at an inner sidewall of the lower cylinder, each of the plurality of vertical concave grooves is arranged corresponding to each vertical convex rib of the flow guiding member and guided, limited and fixed to each other, wherein the two fitting blocks are oppositely and convexly arranged on an upper surface of the water-separating tray.

7. The mop cleaning bucket as claimed in claim 3, wherein two fitting blocks are convexly arranged at the upper surface of the water-separating tray and just fitted at a plurality of fixing grooves of the mop cloth disc to limit and fix to each other, the water-drawing blades of the water-drawing member pump the clean water from the clean-water area while a mop rod is manually pressed to rotate the mop cloth disc.

8. The mop cleaning bucket as claimed in claim 3, wherein the guiding block is semi-cylindrical and arranged in the hollow cylinder of the flow guiding member, a fixing slot is defined between two ends of the two guiding blocks, the fixing bar is fitted at the corresponding fixing slot, a cycling guide way is concavely arranged at an inner sidewall of each guiding block, and a moving path of the cycling guide way has a first positioning point, a second turning point, a second positioning point and a first turning point sequentially.

9. The mop cleaning bucket as claimed in claim 3, wherein two protruding blocks are oppositely and convexly arranged at an outer surface of the switching cylinder, and each protruding block is arranged in and corresponding to the cycling guide way of each guiding block.

10. The mop cleaning bucket as claimed in claim 3, wherein the switching cylinder has a head portion, a concave ring is ring-shaped and inwardly arranged at a center part of the head portion, a sleeving hole is arranged at a center of the mop cloth disc, the sleeving hole has a plurality of ring-shaped hook guiding portions arranged therein, the head portion is just capable of inserting into the sleeving hole to make the hook guiding portions hook and fix to the concave ring so that the two protruding blocks of the switching cylinder can be driven to move at the moving path in the cycling guide way and switched and cycling between the first positioning point and the second positioning point sequentially.

11. The mop cleaning bucket as claimed in claim 3, wherein the switching cylinder is arranged in the hollow cylinder of the flow guiding member and surrounded by the two guiding blocks, two protruding blocks are convexly and oppositely arranged at an outer surface of the switching cylinder, each of the two protruding blocks is arranged corresponding to each of two cycling guide ways, the guiding block includes a first positioning point and a second positioning point, a plurality of fixing grooves of the mop cloth disc is cooperated with the two fitting blocks of the linking cap while the two protruding blocks remains at the second positioning point, that is,. the mop cloth disc is limited and fixed by the fitting blocks so that the water-drawing member is driven to rotate to draw water to clean the mop cloth disc while a mop rod is manually pressed to rotate the mop cloth disc.

12. The mop cleaning bucket as claimed in claim 3, wherein the switching cylinder is arranged in the hollow cylinder of the flow guiding member and surrounded by the two guiding blocks, two protruding blocks are convexly and oppositely arranged at an outer surface of the switching cylinder, each of the two protruding blocks is arranged corresponding to each of two cycling guide ways, the guiding block includes a first positioning point and a second positioning point, a plurality of fixing grooves of the mop cloth disc is detached from the two fitting blocks of the linking cap while the two protruding blocks remains at the first positioning point, that is, the mop cloth disc is not limited and fixed by the fitting blocks so that the water-drawing member is not driven to rotate to draw water but the mop cloth disc is driven to rotate to be hydrated while a mop rod is manually pressed to rotate the mop cloth disc.

13. The mop cleaning bucket as claimed in claim 1, wherein a plurality of brush posts is arranged at bottom of the inner bucket, the brush posts are sequentially arranged spaced apart and from an edge of the inner bucket to a center of the inner bucket, and the brush posts are arranged in multiple rows and more.

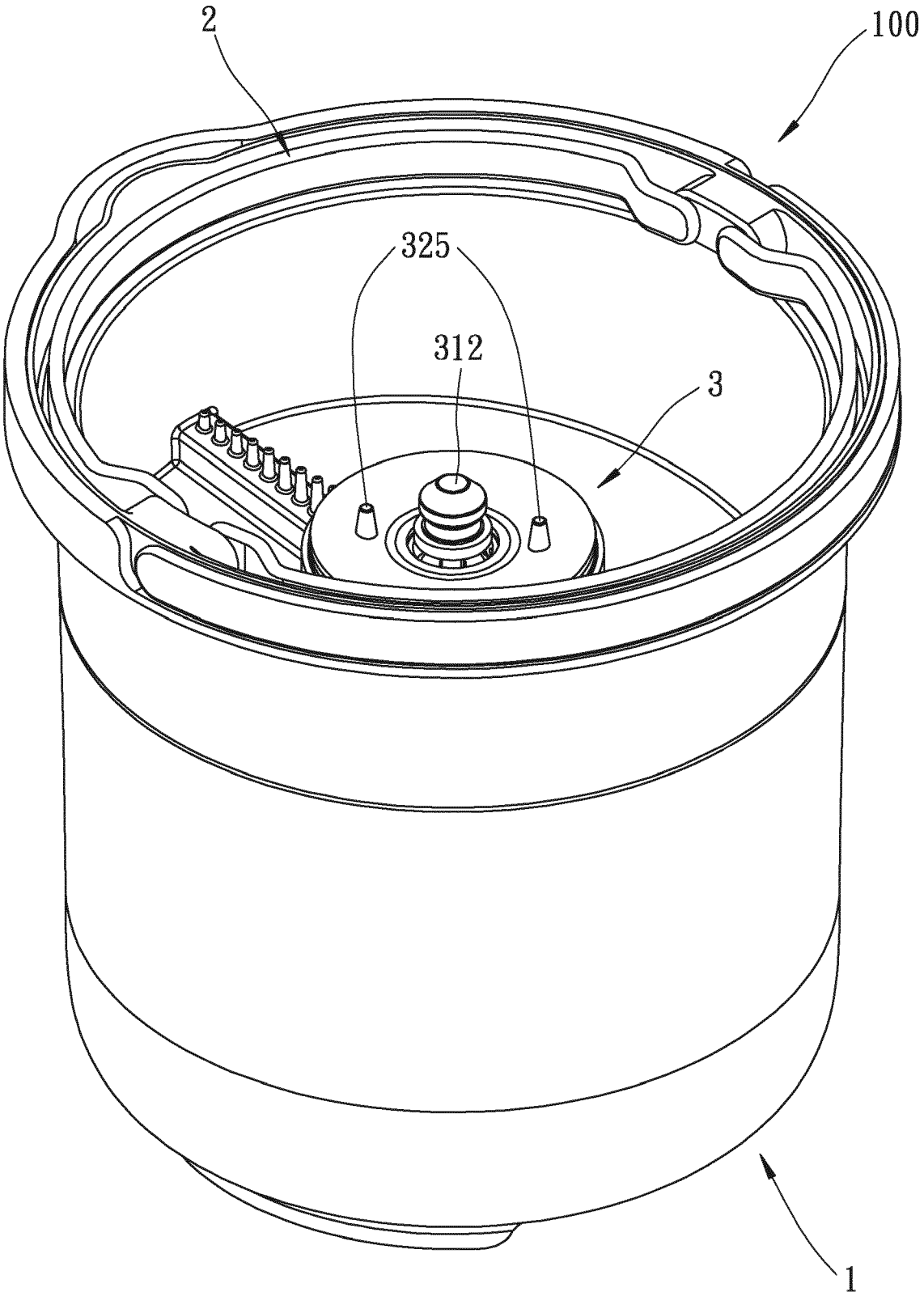

FIG. 1

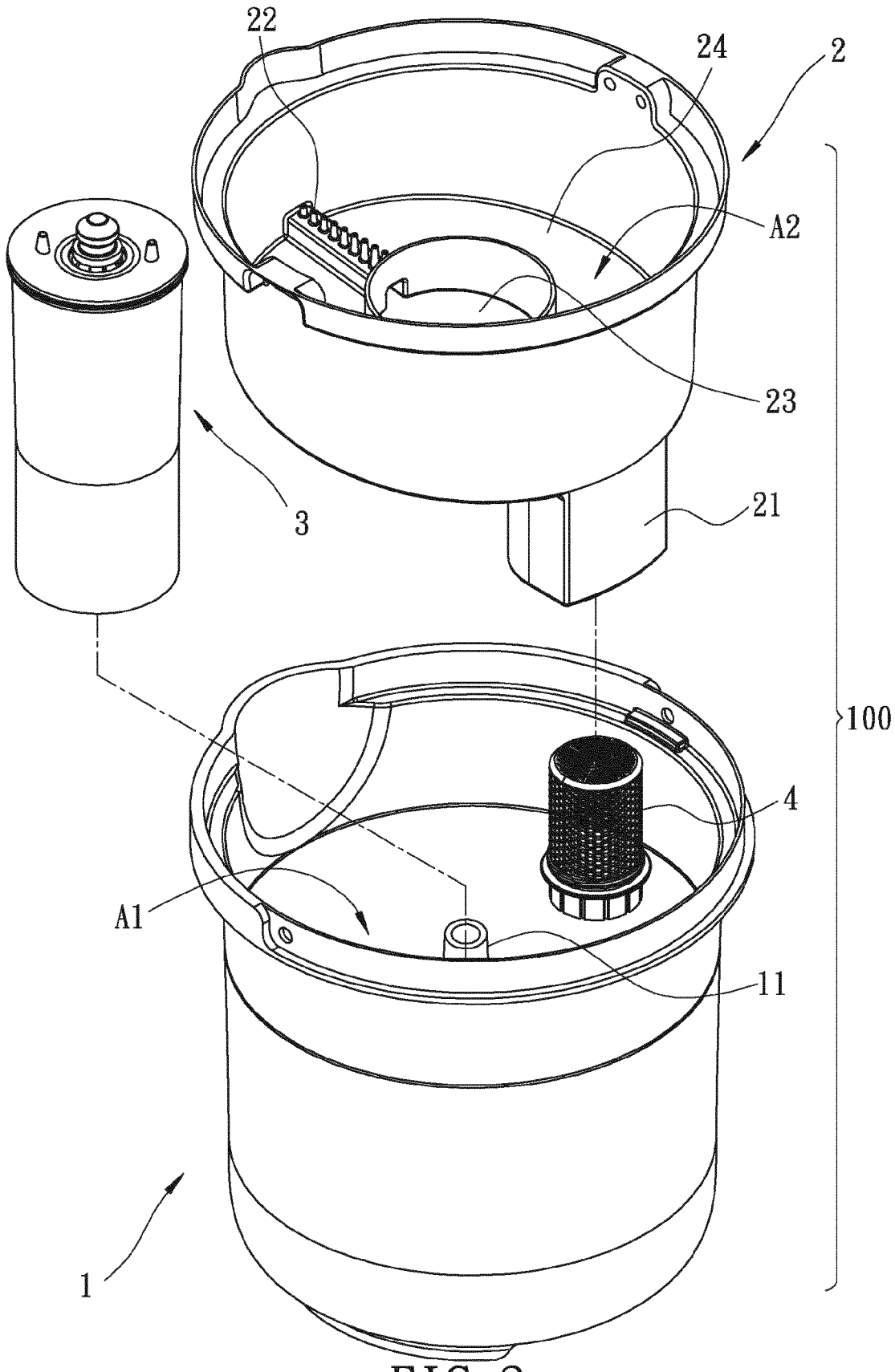

FIG. 2

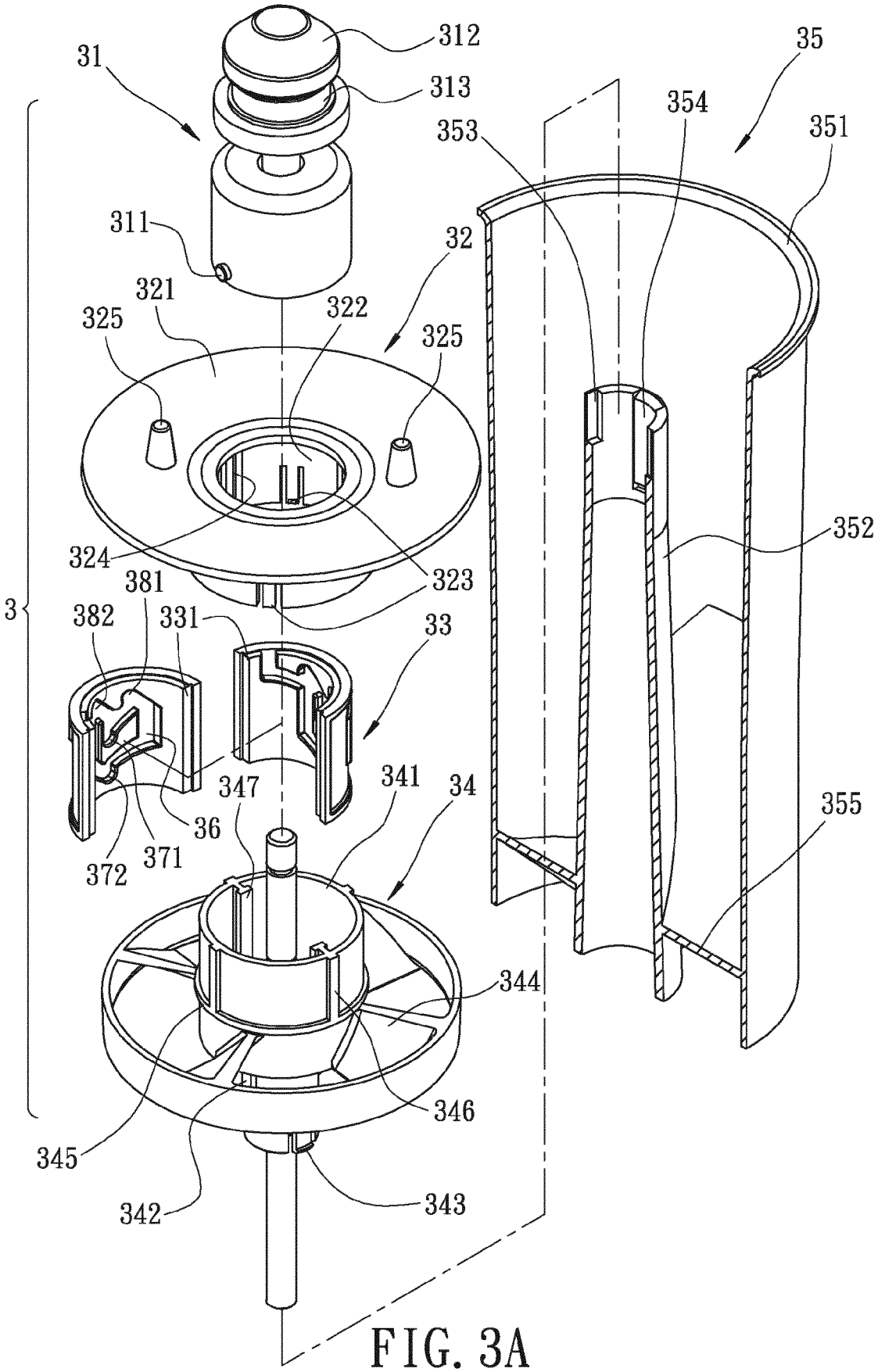
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FIG. 3A

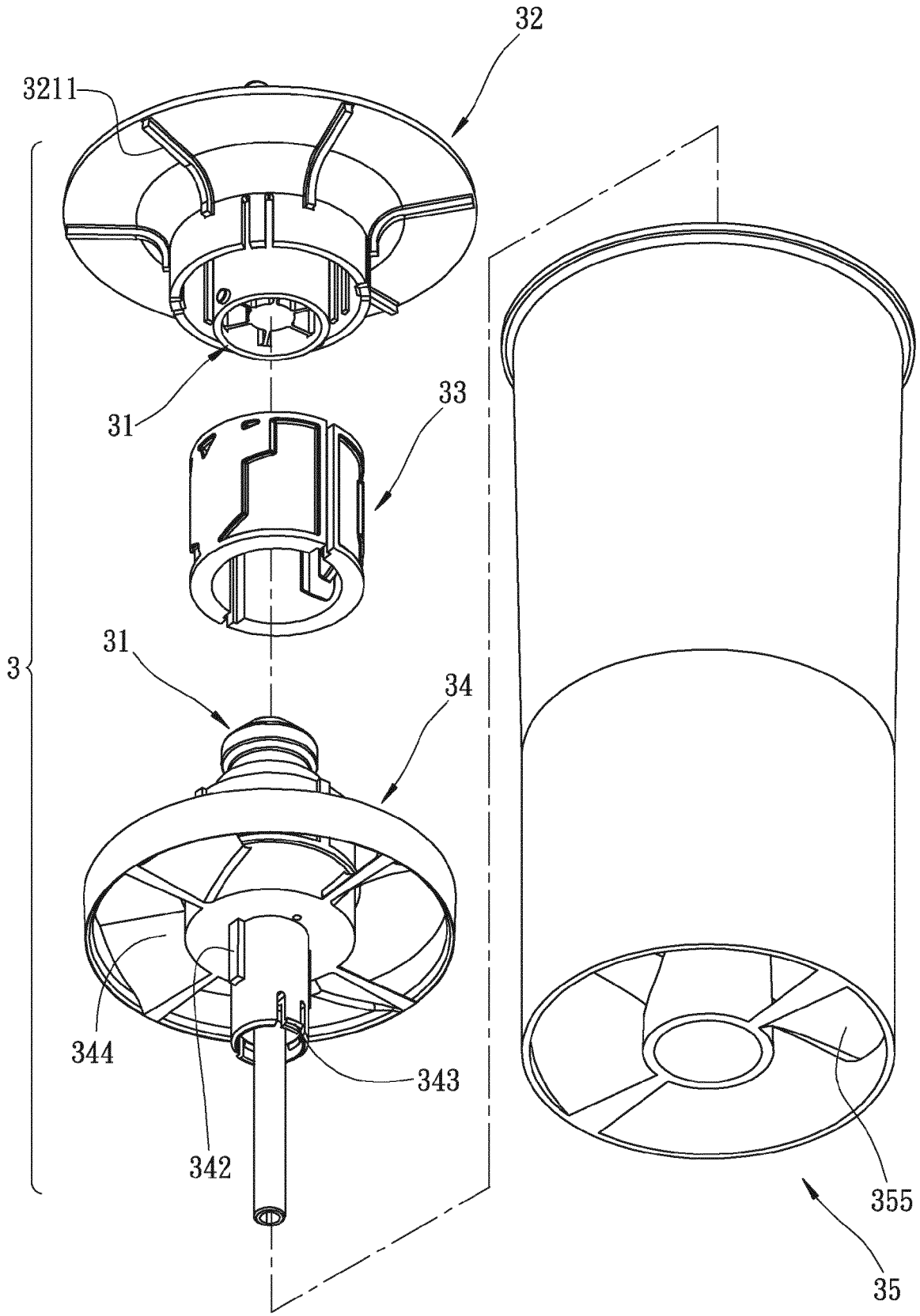

FIG. 3B

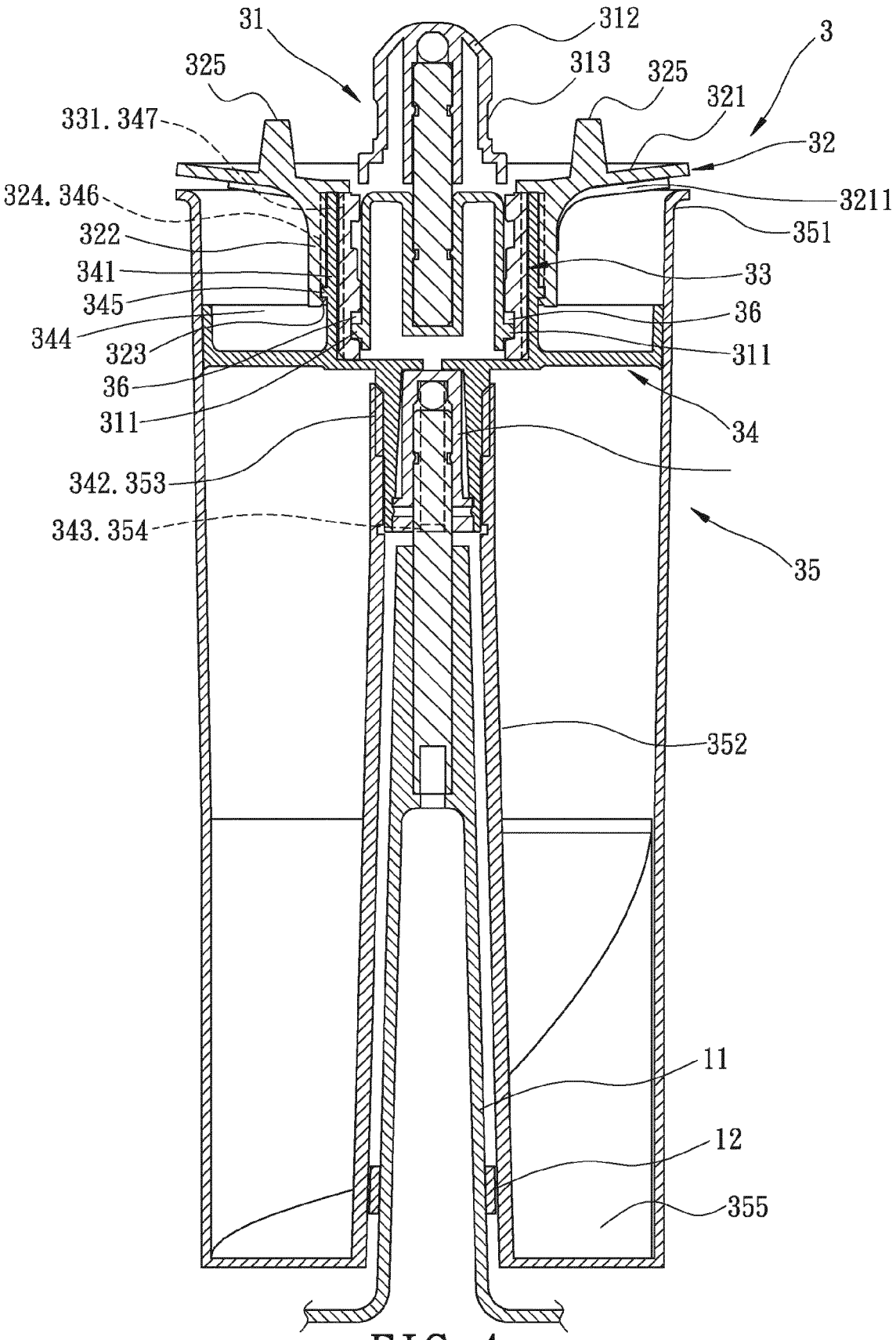
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FIG. 4

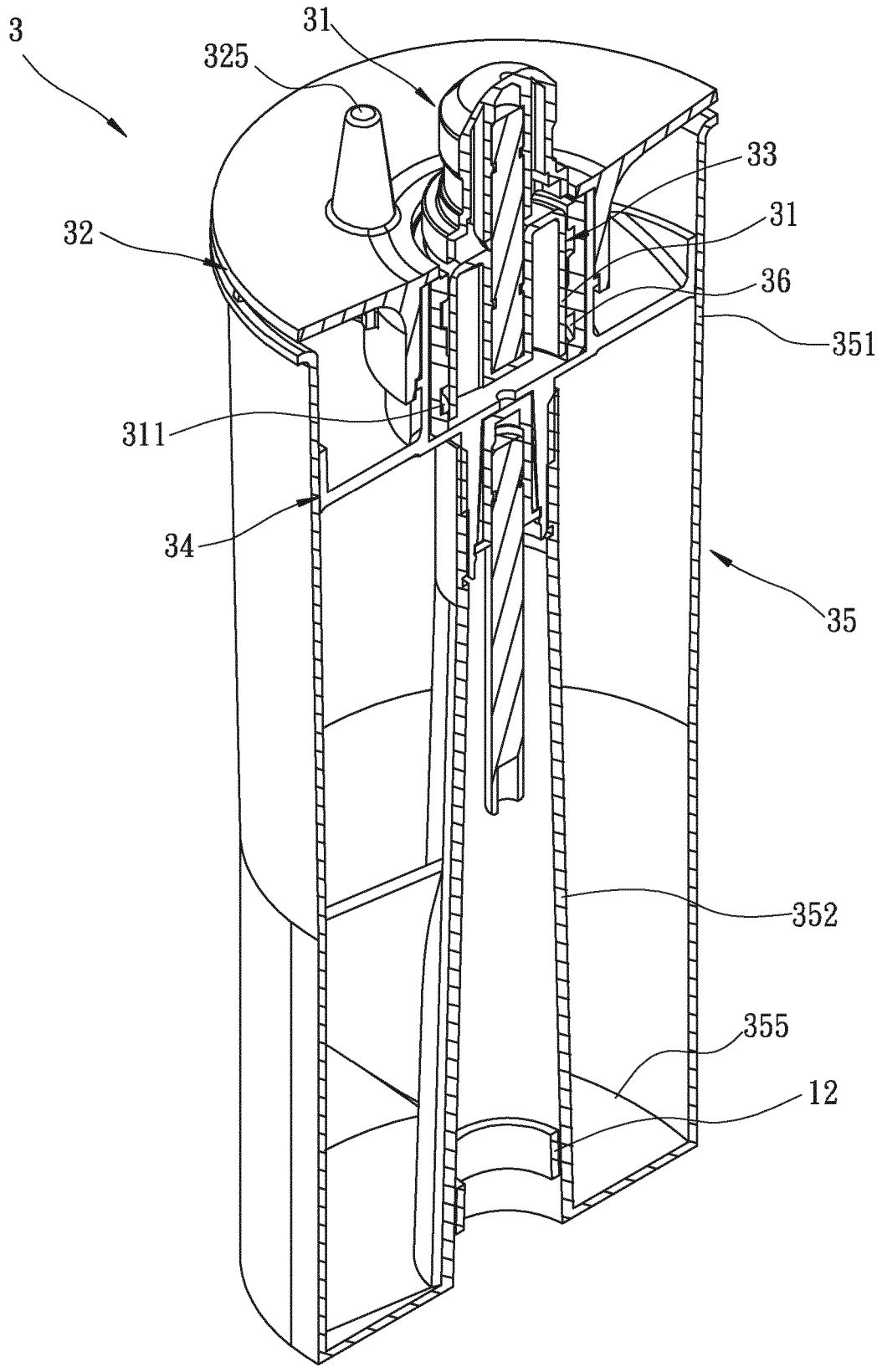

FIG. 5

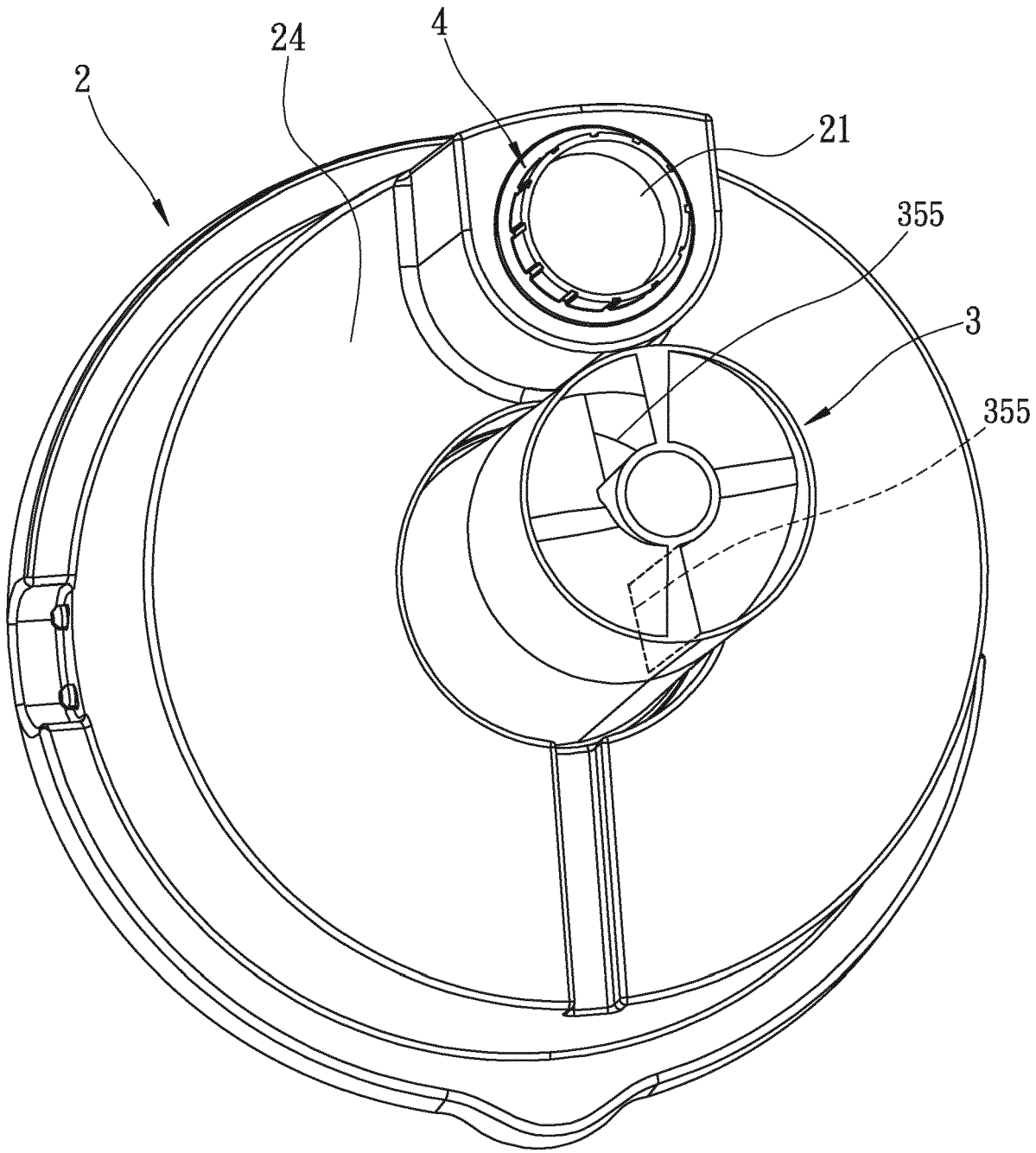

FIG. 6

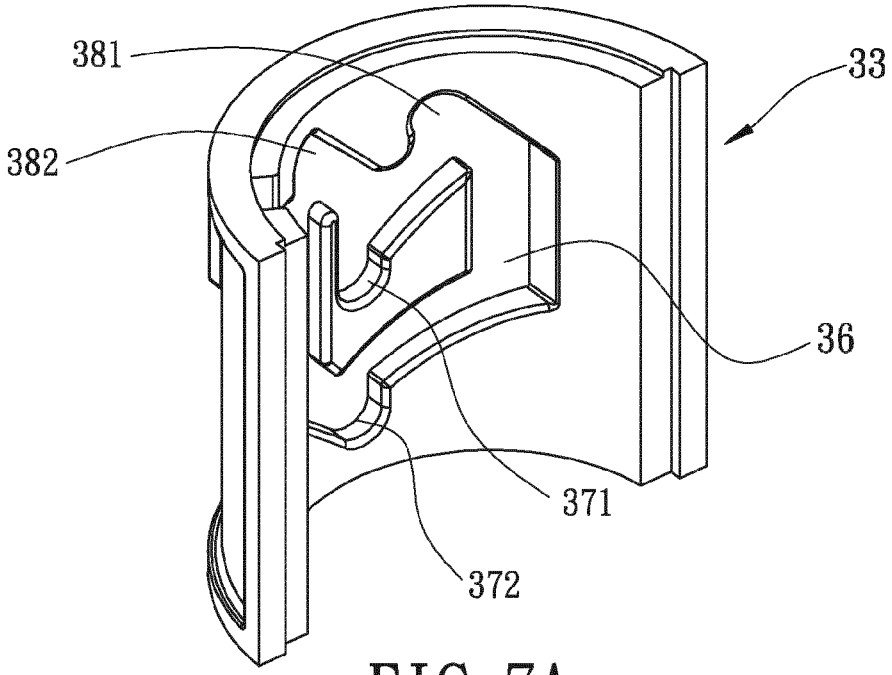
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FIG. 7A

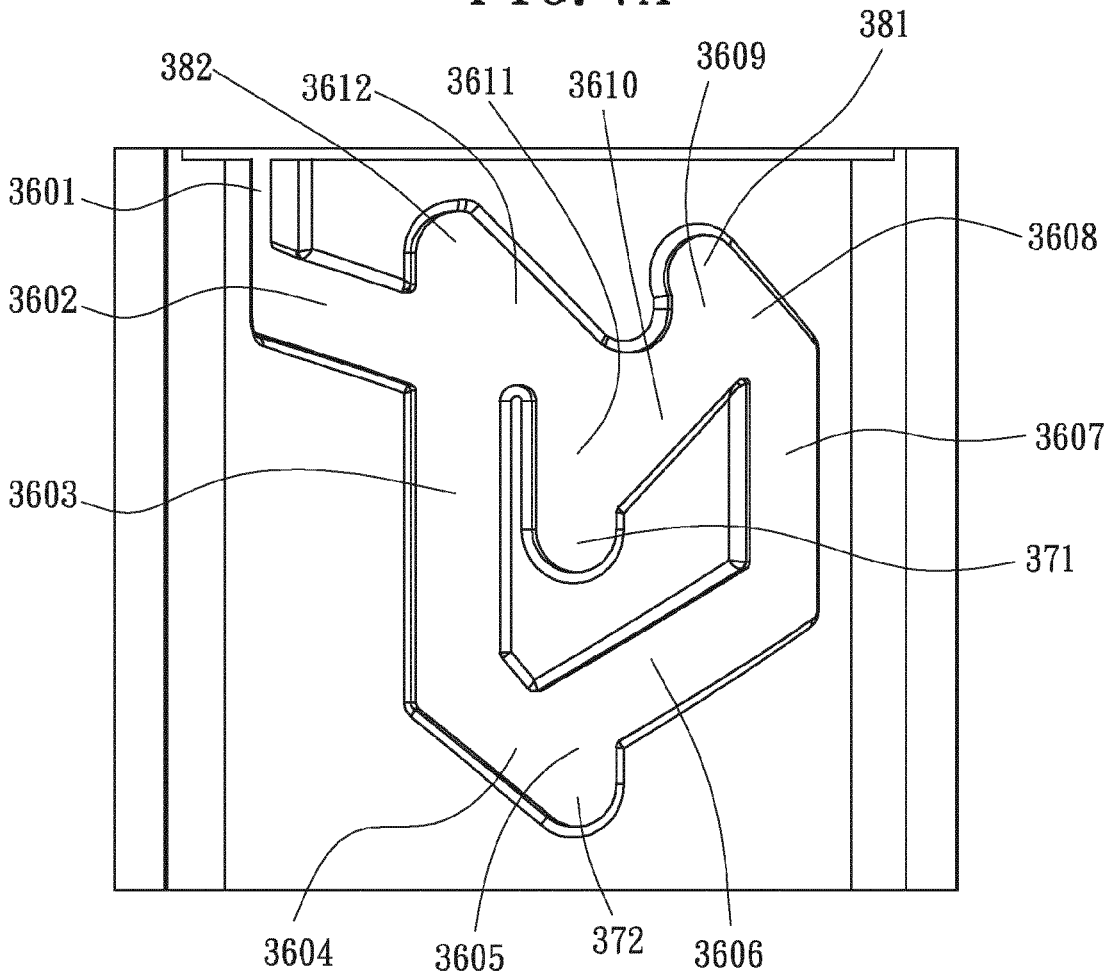
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FIG. 7B

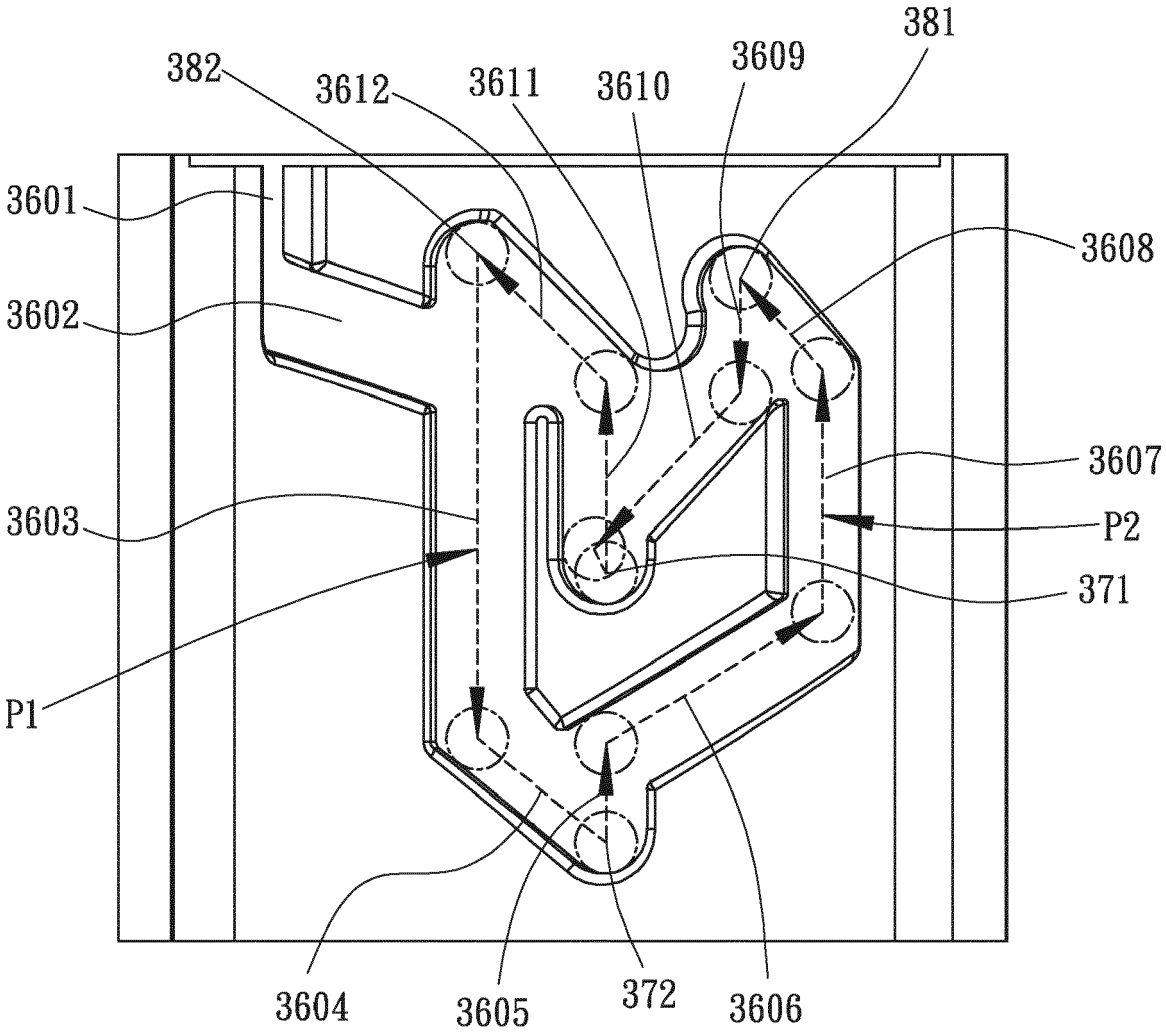
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FIG. 7C

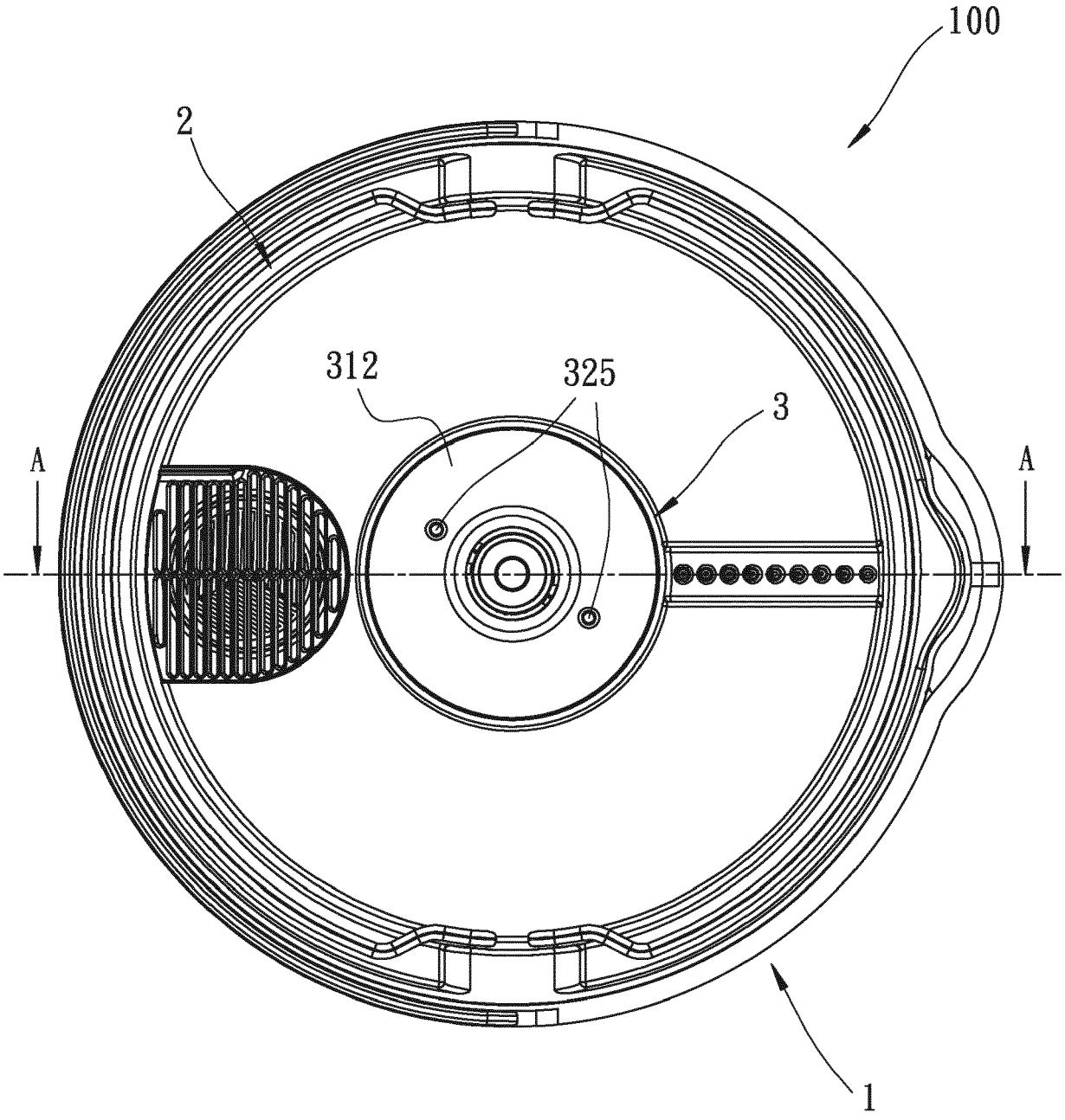

FIG. 8

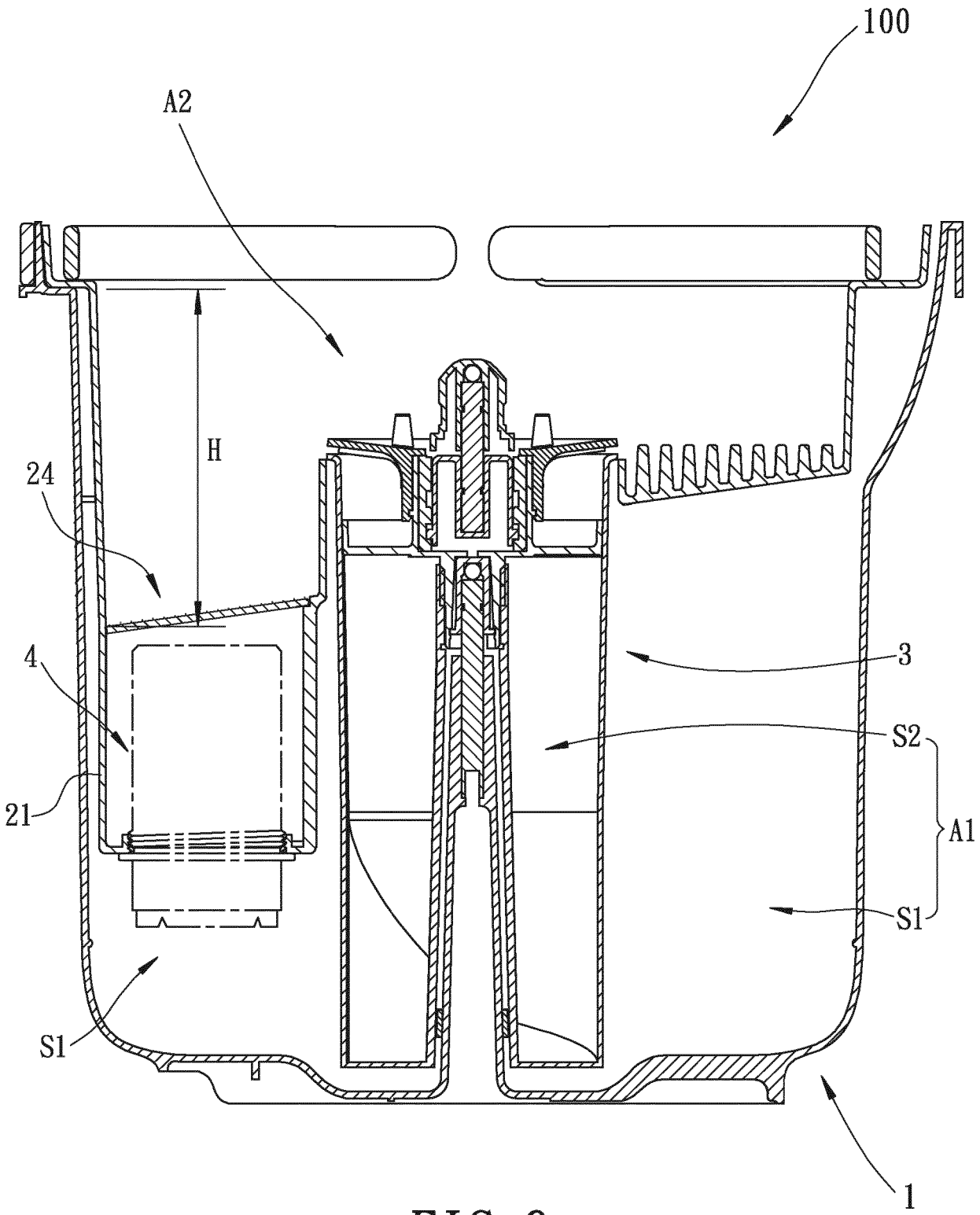

FIG. 9

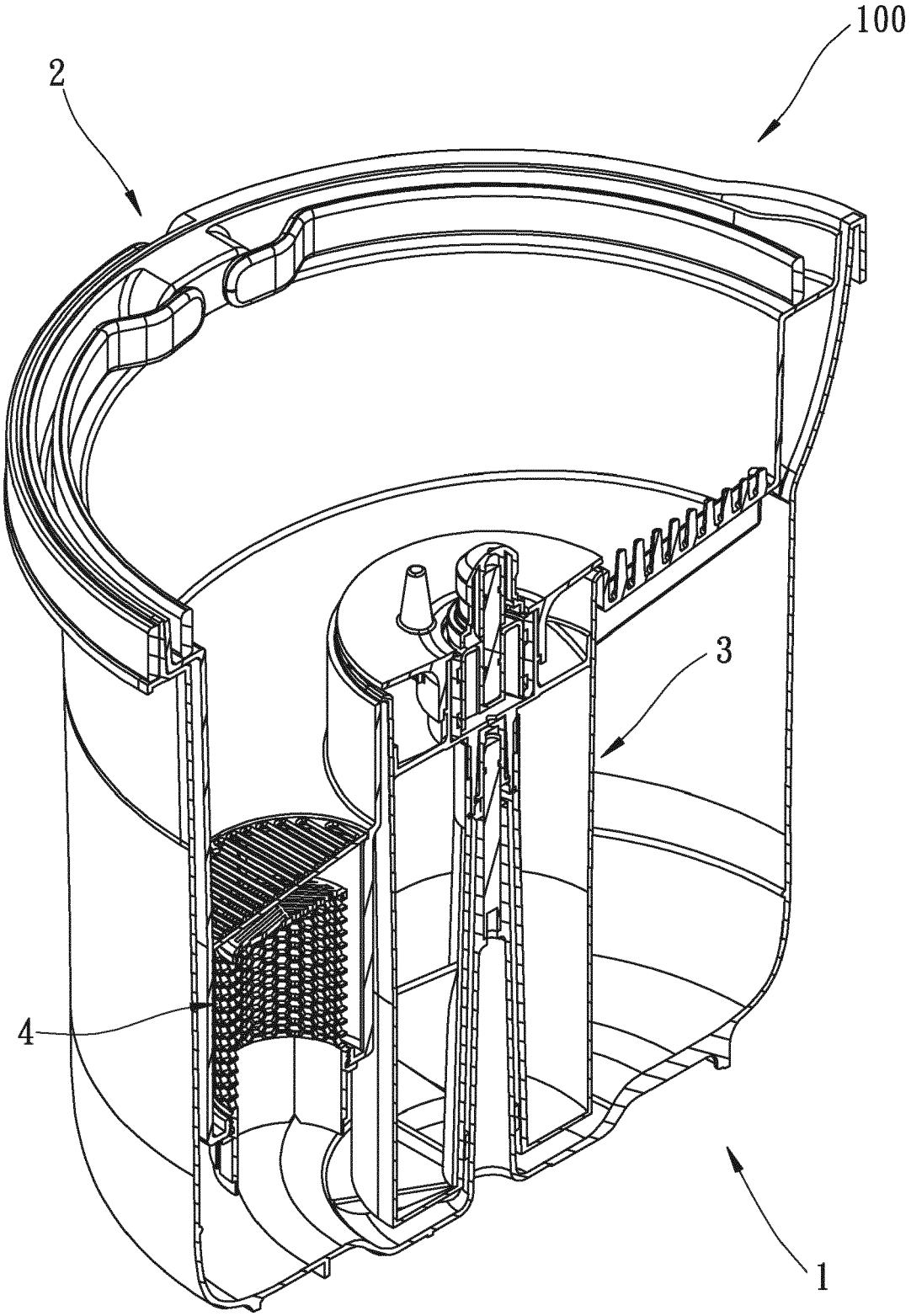

FIG. 10

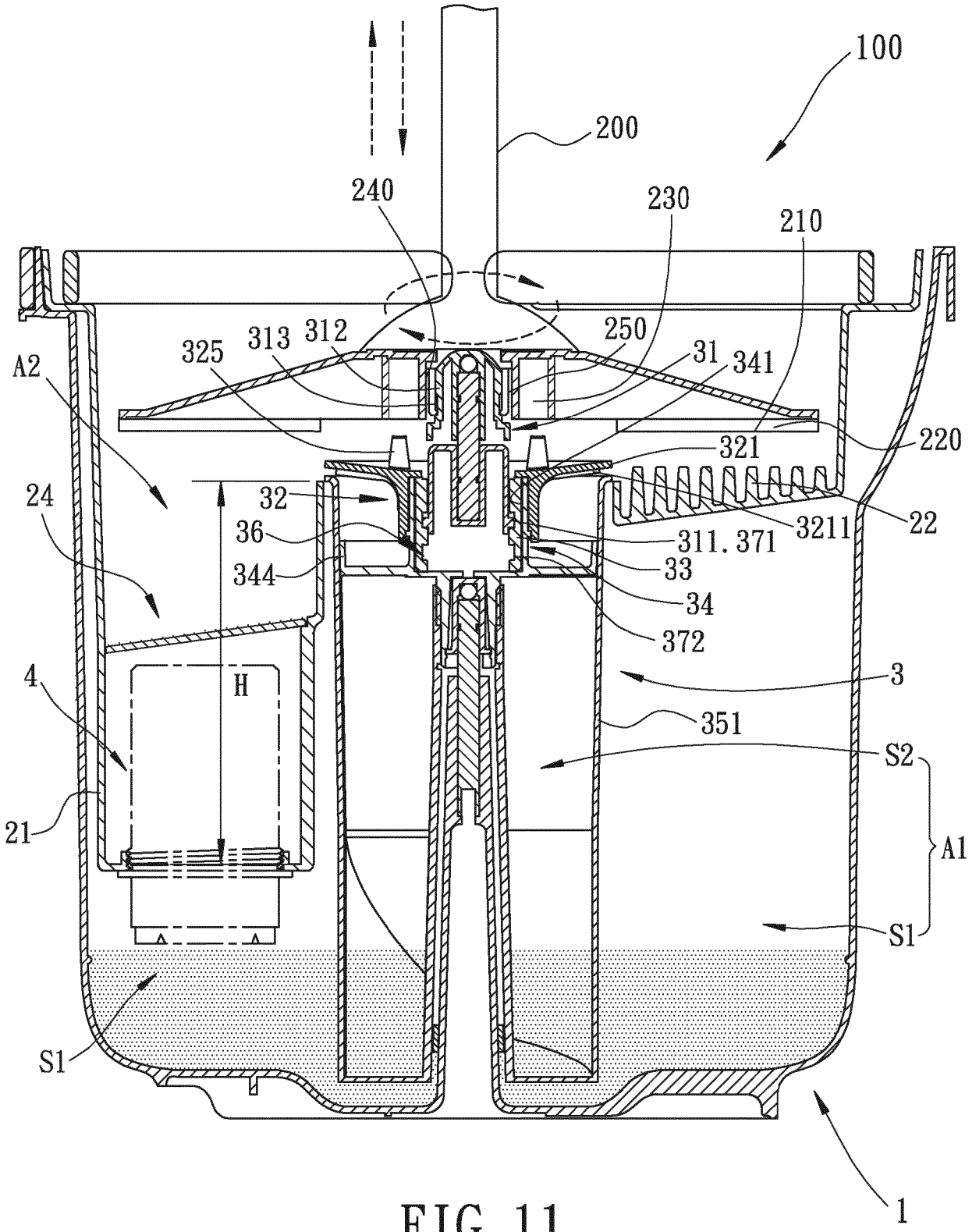
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FIG. 11

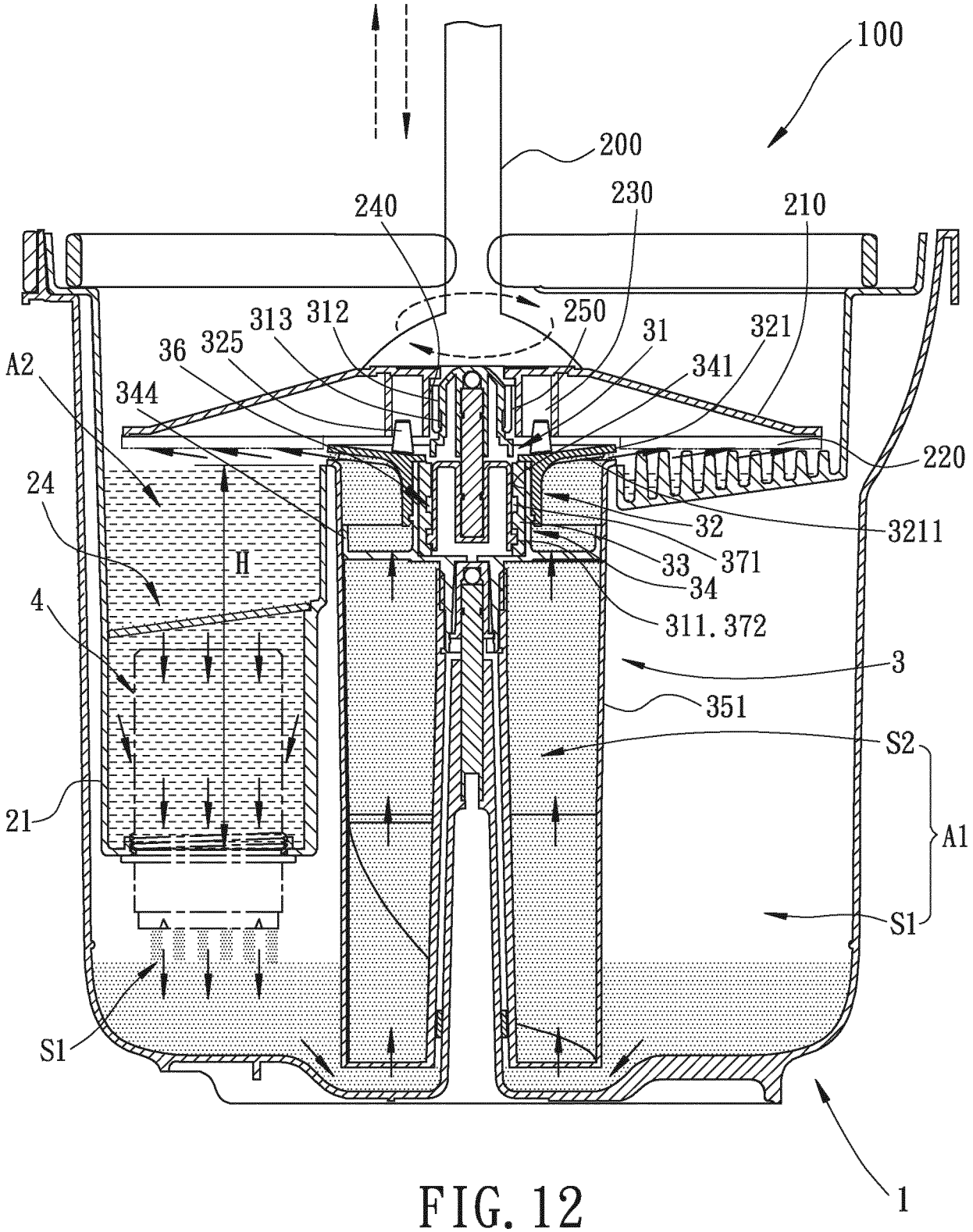
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FIG. 12

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EUROPEAN SEARCH REPORT

Application Number
EP 21 21 1910

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 Y	WO 2021/007993 A1 (LI WEI [CN]; HU QI [CN]) 21 January 2021 (2021-01-21) * pages 4-10; figures *	1,13 2	INV. A47L13/58
Y	US 2021/076895 A1 (HE MIN [CN] ET AL) 18 March 2021 (2021-03-18) * figure 2 *	2	
A	US 4 798 307 A (EVRARD WILLIAM E [US]) 17 January 1989 (1989-01-17) * column 3, lines 20-32; figure 2 *	1	
			TECHNICAL FIELDS SEARCHED (IPC)
			A47L

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	3 June 2022	Lopez Vega, Javier

CATEGORY OF CITED DOCUMENTS

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03-06-2022

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2021007993 A1	21-01-2021	NONE	
US 2021076895 A1	18-03-2021	CN 112493953 A	16-03-2021
		KR 20210000680 U	23-03-2021
		TW M603334 U	01-11-2020
		US 2021076895 A1	18-03-2021
		WO 2021047143 A1	18-03-2021
US 4798307 A	17-01-1989	NONE	

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