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(54) **MEDICAL INFUSION BAG**

(57) The present invention relates to a medical solution bag that includes an auxiliary chamber, in which a chemical is accommodated, in addition to a main chamber, in which a solution is accommodated, such that the chemical accommodated in the auxiliary chamber is easily additionally injected when the solution accommodated in the main chamber is injected as the chemical is simply mixed with the solution.

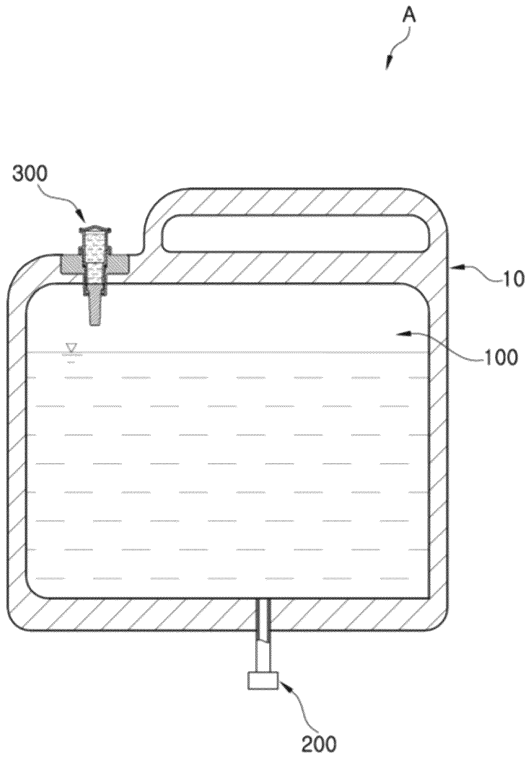

Fig. 1

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Description

[Technical Field]

[0001] The present invention relates to a medical solution bag, and more particularly to a medical solution bag that includes an auxiliary chamber, in which a chemical is accommodated, in addition to a main chamber, in which a solution is accommodated, such that the chemical accommodated in the auxiliary chamber is easily additionally injected when the solution accommodated in the main chamber is injected as the chemical is simply mixed with the solution.

[Background Art]

[0002] A medical solution such as a physiological sodium chloride solution or glucose is kept in a solution container having a predetermined shape.

[0003] Then, the solution container is generally formed to have a bottle shape.

[0004] However, the solution container having a bottle shape, that is, the solution bottle is formed of glass, and because it is easily broken by an impact due to the characteristics of the material, it is difficult to treat it.

[0005] For this reason, in recent years, a solution container formed to have a bag shape, which is disclosed in Korean Patent Application Publication No. 10-2009-0103572 (published on October 1, 2009) has been being increasingly used.

[0006] Because the solution bag is formed of a flexible material such as a synthetic resin film, it is easy to treat it because it can be hardly damaged due to the characteristics of the material.

[0007] Meanwhile, if some solutions are mixed with other kinds of solutions when being kept, they may change over time and may become unstable.

[0008] For example, if an amino acid solution and a glucose solution are mixed and kept they are browned, if a fatty oil and an electrolyte solution are mixed and kept, the fatty components are condensed, and if a phosphoric acid-containing liquid and a calcium-containing liquid are mixed and kept, calcium phosphate is precipitated.

[0009] In order to solve the problems, a medical solution bag having multiple chambers has been suggested.

[0010] Because a conventional medical solution bag A' having multiple chambers, as illustrated in FIG. 8, has a plurality of main chambers 100' that are separated and partitioned by sealing parts 11' in a body 10', the different kinds of solutions are prevented from being mixed as the solutions are accommodated in the main chambers 100', respectively.

[0011] Then, because the sealing parts 11' that separate and partition the plurality of main chambers 100' are simply separated by applying an appropriate pressure, the sealing parts 11' are separated shortly before the solutions are injected so that the mixed solutions can be injected as the different kinds of solutions accommodated in the main chambers 100', respectively, are mixed.

[0012] In this way, the medical solution bag having multiple chambers can prevent the solutions from being mixed when being kept, but it is troublesome to additionally inject a chemical such as a vitamin agent in the solution injecting process.

[0013] That is, the medical solution bag having multiple chambers cannot additionally accommodate a chemical in addition to the solutions accommodated in the main chambers, and when a chemical is to be additionally injected in addition to the solutions accommodated in the main chambers, preparation of an additional member such as preparation of a separate injection needle is necessary, which is troublesome.

[0014] For this reason, development of a medical solution bag that can easily additionally inject a chemical in addition to solutions accommodated in main chambers by simply mixing the chemical with the solutions has been tried in the corresponding field, but a satisfactory result has not been achieved until now.

[Disclosure]

[Technical Problem]

[0015] The present invention has been made in an effort to solve the above-mentioned problems, and provides a medical solution bag that can solve a problem of having a troublesomeness of providing an injection needle because the injection needle has to be used when a chemical is additionally injected because a chemical except for solutions accommodated in main chambers cannot be used when a conventional medical solution bag having multiple chambers are used.

[Technical Solution]

[0016] In accordance with an aspect of the present invention, there is provided a medical solution bag including: a main chamber in which a solution is accommodated in a bag-shaped body thereof; a main port configured to interrupt discharge of the solution from the interior to the outside of the main chamber; and an auxiliary chamber including a fixing member fixedly installed at one end of the body and communicating with the main chamber through a vent hole passing through a central portion thereof, and a storage member installed to be inserted into the vent hole of the fixing member and in which a chemical, the kind of which is different from the solution accommodated in the main chamber, is separately accommodated in an interior space thereof.

[0017] The main chamber may be separated and partitioned by a sealing part formed to cross the interior of the body.

[0018] The sealing part may be separated through pressing.

[0019] The main port may be coupled to the separat-

ed/partitioned areas of the main chamber.

[0020] The fixing member may be coupled to the body through thermal fusion or high-frequency fusion.

[0021] The vent hole may include: an annular step formed at a circumference of an outer surface of an upper end of the vent hole; a step formed at a circumference of an inner surface of an intermediate part between the upper end and a lower end of the vent hole to protrude inwards; and a stopping step formed at a circumference of an inner surface of the lower end of the vent hole.

[0022] The storage member may include: a cover configured to interrupt opening of an upper end of the interior space; and a cap configured to interrupt opening of a lower end of the interior space.

[0023] The cap includes a breaking part that may be broken through pressing.

[0024] The thickness of the breaking part may be smaller than those of the other parts.

[0025] The storage member further may include: a stopping piece formed at a circumference of the intermediate part between the upper end and the lower end to be dually folded downwards and inwards; and a step formed to protrude outwards.

[0026] The auxiliary chamber may further include an O-ring configured to maintain a sealing state between the fixing member and the storage member.

[0027] An outer surface of the auxiliary chamber may be surrounded by a light-shielding film.

[Advantageous Effects]

[0028] The medical solution bag according to the present invention includes an auxiliary chamber, in which a chemical is separately accommodated, in addition to main chambers, in which a solution is accommodated, and because the solutions and the chemical are simply mixed by introducing the chemical in the auxiliary chamber into the main chamber, the chemical can be easily injected in addition to the solutions.

[Description of the Drawings]

[0029]

FIG. 1 is a cross-sectional view illustrating a structure of a medical solution bag according to the present invention;

FIG. 2 is an exemplary view illustrating introduction of a chemical from an auxiliary chamber to a main chamber in a medical solution bag according to the present invention;

FIG. 3 is an exploded perspective view illustrating a structure of the auxiliary chamber in the medical solution bag according to the present invention;

FIG. 4 is a cross-sectional view illustrating a structure of the auxiliary chamber in the medical solution bag according to the present invention;

FIG. 5 is an exemplary view illustrating breaking of a cap from a storage chamber of the auxiliary chamber in the medical solution bag according to the present invention;

FIG. 6 is an exemplary view illustrating an example of surrounding the auxiliary chamber by a light-shielding film in the medical solution bag according to the present invention;

FIG. 7 is an exemplary view illustrating a form in which the main chamber is separated and partitioned by a sealing part in the medical solution bag according to the present invention; and

FIG. 8 is a cross-sectional view illustrating a structure of the medical solution bag having multiple chambers according to the present invention.

[Best Mode]

[0030] Hereinafter, the present invention will be described in detail with reference to the accompanying drawings.

[0031] As illustrated in FIG. 1, a medical solution bag A according to the present invention includes a main chamber 100, a main port 200, and an auxiliary chamber 300.

[0032] In the main chamber 100, a solution (not denoted by a reference numeral) is accommodated in a bag-shaped body 10.

[0033] The main chamber 100, as illustrated in FIG. 7, may be separated and partitioned by a sealing part 11 formed to cross the interior of the body 10.

[0034] Accordingly, because different kinds of solutions are introduced into the separated/partitioned areas of the main chamber 100, various kinds of solutions may be accommodated through the main chamber 100.

[0035] Then, the sealing part 11 may be separated through pressing.

[0036] Accordingly, because different kinds of solutions are mixed as the sealing part 11 is separated, the mixed solution may be injected.

[0037] Here, a plurality of sealing parts 11 may be formed, and because the number of the separated/partitioned areas of the main chamber 100 increases if the plurality of sealing parts 11 are formed, more various kinds of solutions may be accommodated through the main chamber 100.

[0038] Meanwhile, because any typical structure that may easily separate the sealing part 11 through pressing is sufficient, a detailed description of the sealing part 11 will be omitted.

[0039] The main port 200 interrupts discharge of the solution from the interior to the outside of the main chamber 100.

[0040] The main port 200 may be coupled to the separated/partitioned areas of the main chamber 100.

[0041] Accordingly, the solutions accommodated in the separated/partitioned areas of the main chamber 100 may be individually injected through the main port 200.

[0042] Meanwhile, a main port 100 having any scheme

that may interrupt discharge of the solutions accommodated in the main chamber 100 is sufficient, and an example thereof may be an injection port into which an injection needle is inserted or an infusion port into which a spike is inserted.

[0043] The auxiliary chamber 300, as illustrated in FIGS. 3 and 4, includes a fixing member 310 fixedly installed at one end of the body 10 and communicating with the main chamber 100 through a vent hole 311 passing through a central portion thereof, and a storage member 320 installed to be inserted into the vent hole 311 of the fixing member 310 and in which a chemical, the kind of which is different from the solution accommodated in the main chamber 100, is separately accommodated in an interior space thereof.

[0044] Then, because the fixing member 310 is coupled to the body 10 through thermal fusion or high-frequency fusion, leakage of the solution and the chemical through a coupling part of the fixing member 310 is prevented due to the characteristics of the coupling scheme.

[0045] Further, the vent hole 311 of the fixing member 310 includes an annular step 311a formed at a circumference of an outer surface of an upper end thereof.

[0046] Accordingly, because a stopping piece 323 of the storage member 320, which will be described below, is stopped by the annular step 311a, the fixing member 310 and the storage member 320 are coupled to each other.

[0047] Further, the vent hole 311 of the fixing member 310 includes a step 311b formed at a circumference of an inner surface of an intermediate portion between an upper end and a lower end thereof to protrude inwards.

[0048] Accordingly, because a step 324 of the storage member 320, which will be described below, is stopped by the step 311b of the fixing member 310, insertion of the storage member 320 into the vent hole 311 is restricted.

[0049] Further, the vent hole 311 of the fixing member 310 includes a stopping step 311c formed at a circumference of an inner surface of a lower end thereof.

[0050] Accordingly, because a cap 321 of the storage member 320, which will be described below, drops after the cap 321 is broken and is stopped by the stopping step 311c, separation of the cap 321 from the vent hole 311 is prevented.

[0051] Further, the storage member 320 includes a cover 322 configured to interrupt opening of an upper end of the interior space, and a cap 321 configured to interrupt opening of a lower end of the interior space.

[0052] Accordingly, leakage of the chemical through an upper end of the interior space of the storage member 320 is prevented by the cover 322, and leakage of the chemical through a lower end of the interior space of the storage member 320 is prevented by the cap 321 as well.

[0053] Then, because the cover 322 is coupled to an upper end of the inside of the storage member 320 through thermal fusion or high-frequency fusion, leakage of the chemical through a coupling part of the cover 322 is prevented due to the characteristics of the coupling scheme.

[0054] Then, the cap 321 includes a breaking part 321a that is broken through pressing.

[0055] Accordingly, because a lower end of the interior space of the storage member 320 is opened if the breaking part 321a is broken, the chemical in the storage member 320 is simply introduced into any one of the main chambers 100 in the body 10 via the vent hole 311 of the fixing member 310.

[0056] Here, because the thickness of the breaking part 321a is relatively small as compared with the thicknesses of the other parts, it is easily broken through pressing.

[0057] Meanwhile, because the chemical in the storage member 320 flows downwards along a convexo-concave portion when the cap 321 is broken along the breaking part 321a as the cap 321 has the convexo-concave portion (not denoted by a reference numeral) at a circumference of an upper end thereof, the chemical is smoothly discharged even in a state in which the broken cap 321 is stopped by the stopping step 311c formed at a lower end of the vent hole 311 of the fixing member 310.

[0058] Further, the storage member 320 further includes a stopping piece 323 at a circumference of an outer surface of the intermediate part between the upper end and the lower end to be dually folded downwards and inwards

[0059] Then, the stopping piece 323, as described above, is stopped by the annular step 311a formed at a circumference of an outer surface of an upper end of the vent hole 311 of the fixing member 310.

[0060] Further, the storage member 320 further includes a step 324 formed at a circumference of an outer surface of the intermediate part between the upper end and the lower end to protrude outwards.

[0061] Then, the step 324 is stopped by the step 311b formed at a circumference of an inner surface of the intermediate part between the upper end and the lower end of the vent hole 311 of the fixing member 310 to protrude inwards.

[0062] Meanwhile, the auxiliary chamber 300 further includes an O-ring 330 configured to maintain a sealing state between the fixing member 310 and the storage member 320.

[0063] Because the sealing state between the fixing member 310 and the storage member 320 is maintained by the O-ring 330, leakage of the chemical through a space between the fixing member 310 and the storage member 320 is prevented.

[0064] Then, the O-ring 330 may be seated between the step 311b formed in the vent-hole 311 of the fixing member 310 and the step 324 formed in the storage member 320.

[0065] Further, additionally, an outer surface of the auxiliary chamber 300 may be surrounded by the light-shielding film 340.

[0066] Because the light-shielding film 340 interrupts

exposure of the chemical, which is accommodated in the storage member 320, to light, modification of the chemical by the exposure to light can be prevented.

[0067] Then, any typical material that may interrupt exposure of the chemical to light is sufficient for the light-shielding film 340, and an example thereof may be an aluminum deposited film.

[0068] Hereinafter, injection of the solution and the chemical through the medical solution bag A according to the present invention will be described in detail.

[0069] According to the present invention, the main port 200 extends from the interior to the outside of the main chamber 100, and because an injection needle or a spike is inserted into one end of the outside of the main port 200, the solution accommodated in the main chamber 100 may be injected through the main port 200.

[0070] When the chemical is additionally injected in the above-described solution injecting process, a troublesomeness such as provision of an injection needle may be accompanied.

[0071] However, the present invention includes the auxiliary chamber 300 in which the chemical is separately accommodated in addition to the main chambers 100 in which the solutions are accommodated, respectively, and because the chemical in the auxiliary chamber 300 is introduced into the main chamber 100, the chemical is easily additionally injected.

[0072] That is, according to the present invention, the storage member 320, in which the chemical is accommodated, is inserted into the inside of the vent hole 311 formed to pass through a central portion of the fixing member 310 communicating with any one of the main chambers 100 of the body 10, and as illustrated in FIG. 2, because the solutions and the chemical are mixed as the chemical in the storage member 320 is introduced into the interior of the body 10, the chemical may be additionally injected.

[0073] Then, the cap 321 that interrupts opening of the lower end of the interior space of the storage member 320 includes the breaking part 321a having a thickness that is smaller than the thicknesses of the other parts, and as illustrated in FIG. 5, because the chemical in the storage member 320 is introduced into the body 10 via the vent hole 311 of the fixing member 310 as the breaking part 321a is broken, the solutions and the chemical may be simply mixed, and accordingly, the chemical may be smoothly additionally injected.

[0074] However, the chemical may be leaked through a space between the fixing member 310 and the storage member 320.

[0075] However, the auxiliary chamber 300 includes the O-ring 330, and because the sealing state between the fixing member 310 and the storage member 320 is maintained by the O-ring 330, leakage of the chemical through a space between the fixing member 310 and the storage member 320 is prevented.

[0076] Further, because the cap 321 broken in the storage member 320 is separated from the fixing member 310, the additional injection of the chemical may be interfered.

[0077] However, according to the present invention, the vent hole 311 of the fixing member 310 includes the stepping step 311c formed at a circumference of the inner surface of the lower end thereof, and because the separation of the cap 321 from the fixing member 310 is prevented as the cap 321 broken in the storage member 320 is stopped by the stopping step 311c, interference with the additional injection of the chemical due to the cap 321 broken in the storage member 320 is prevented.

[0078] Meanwhile, according to the present invention, the chemical accommodated in the auxiliary chamber 300, in more detail, in the storage member 320 may be modified by exposure to light.

[0079] However, according to the present invention, the outer surface of the auxiliary chamber 300, as illustrated in FIG. 6, may be surrounded by the light-shielding film 340, and because exposure of the chemical accommodated in the storage member 320 to light is interrupted, modification of the chemical due to the exposure to light is prevented.

[0080] As described above, the medical solution bag A according to the present invention includes the auxiliary chamber 300, in which the chemical is separately accommodated, in addition to the main chamber 100, in which the solution is accommodated, and because the solutions and the chemical are simply mixed by introducing the chemical in the auxiliary chamber 300 into the main chamber 100, the chemical can be easily additionally injected when the solution is injected.

[0081] The above-described present invention is not limited to the embodiments and may be modified without departing from the essence of the present invention claimed in the claims, and the modification may fall within the scope of the present invention defined by the following description of the claims.

10, 10':	body
11:	sealing part
100, 100':	main chamber
200:	main port
300:	auxiliary chamber
310:	fixing member
311:	vent hole
311a:	annular step
311b:	step
311c:	stopping step
320:	storage member
321:	cap
321a:	breaking part
322:	cover
323:	stopping piece
324:	step
330:	O-ring
340:	light-shielding film
A, A':	medical solution bag

Claims

1. A medical solution bag (A, A') comprising:

   a main chamber (100, 100') in which a solution is accommodated in a bag-shaped body (10, 10') thereof;
   a main port (200) configured to interrupt discharge of the solution from the interior to the outside of the main chamber (100, 100'); and
   an auxiliary chamber (300) comprising a fixing member (310) fixedly installed at one end of the body (10, 10') and communicating with the main chamber (100, 100') through a vent hole (311) passing through a central portion thereof, and a storage member (320) installed to be inserted into the vent hole (311) of the fixing member (310) and in which a chemical, the kind of which is different from the solution accommodated in the main chamber (100, 100'), is separately accommodated in an interior space thereof.

2. The medical solution bag of claim 1, wherein the main chamber (100, 100') is separated and partitioned by a sealing part (11) formed to cross the interior of the body (10, 10').

3. The medical solution bag of claim 2, wherein the sealing part (11) is separated through pressing.

4. The medical solution bag of claim 1, wherein the main port (200) is coupled to the separated/partitioned areas of the main chamber (100, 100').

5. The medical solution bag of claim 1, wherein the fixing member (310) is coupled to the body (10, 10') through thermal fusion or high-frequency fusion.

6. The medical solution bag of claim 1, wherein the vent hole (311) comprises:

   an annular step (311a) formed at a circumference of an outer surface of an upper end of the vent hole (311);
   a step (311b) formed at a circumference of an inner surface of an intermediate part between the upper end and a lower end of the vent hole (311) to protrude inwards; and
   a stopping step (311c) formed at a circumference of an inner surface of the lower end of the vent hole (311).

7. The medical solution bag of claim 1, wherein the storage member (320) comprises:

   a cover (322) configured to interrupt opening of an upper end of the interior space; and
   a cap (321) configured to interrupt opening of a lower end of the interior space.

8. The medical solution bag of claim 7, wherein the cap (321) comprises a breaking part (321a) that is broken through pressing.

9. The medical solution bag of claim 8, wherein the thickness of the breaking part (321a) is smaller than those of the other parts.

10. The medical solution bag of claim 7, wherein the storage member (320) further comprises:

    a stopping piece (323) formed at a circumference of the intermediate part between the upper end and the lower end to be dually folded downwards and inwards; and
    a step (324) formed to protrude outwards.

11. The medical solution bag according to claim 1, wherein the auxiliary chamber (300) further comprises an O-ring (330) configured to maintain a sealing state between the fixing member (310) and the storage member (320).

12. The medical solution bag according to claim 1, wherein an outer surface of the auxiliary chamber (300) is surrounded by a light-shielding film (340).

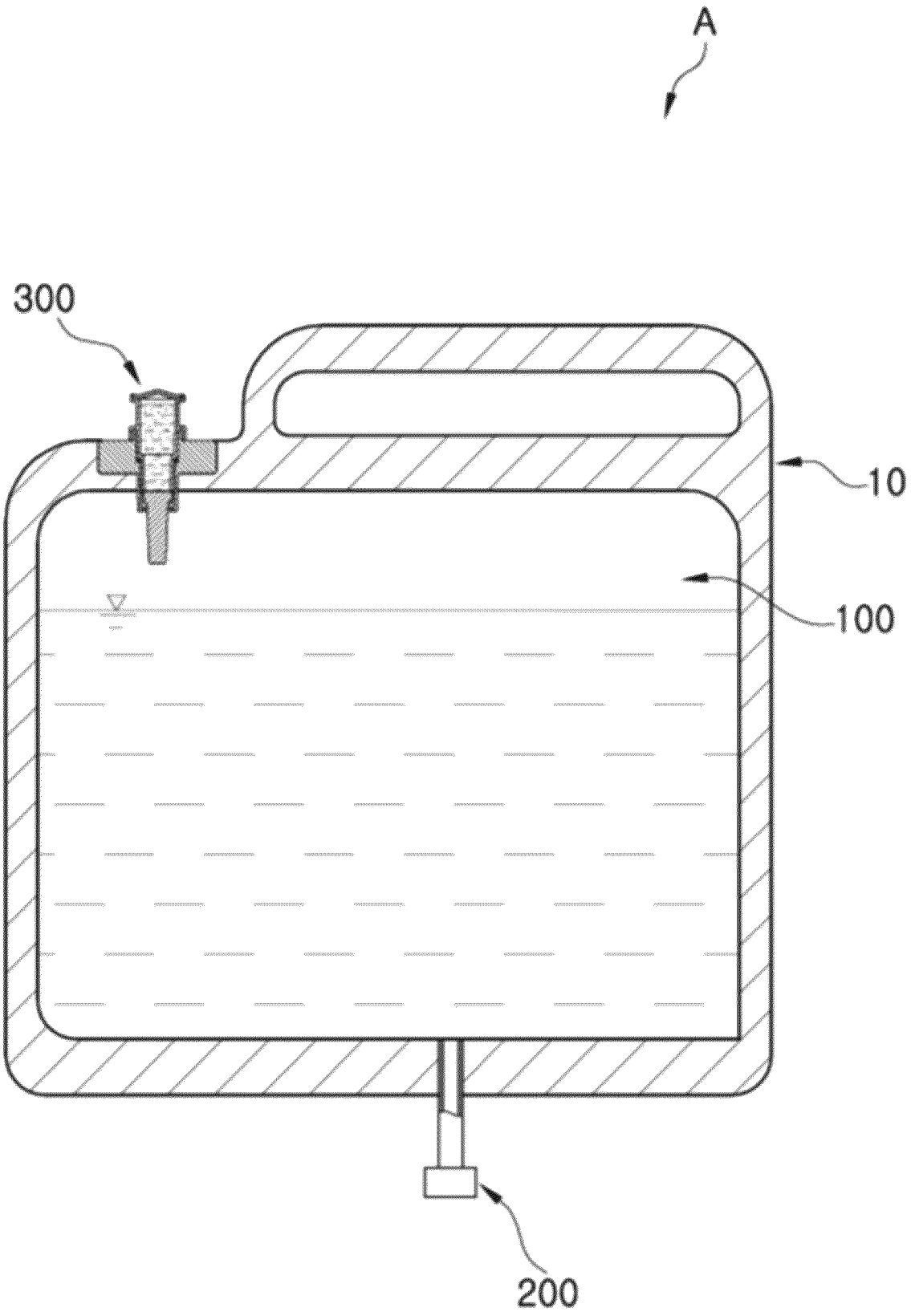

Fig. 1

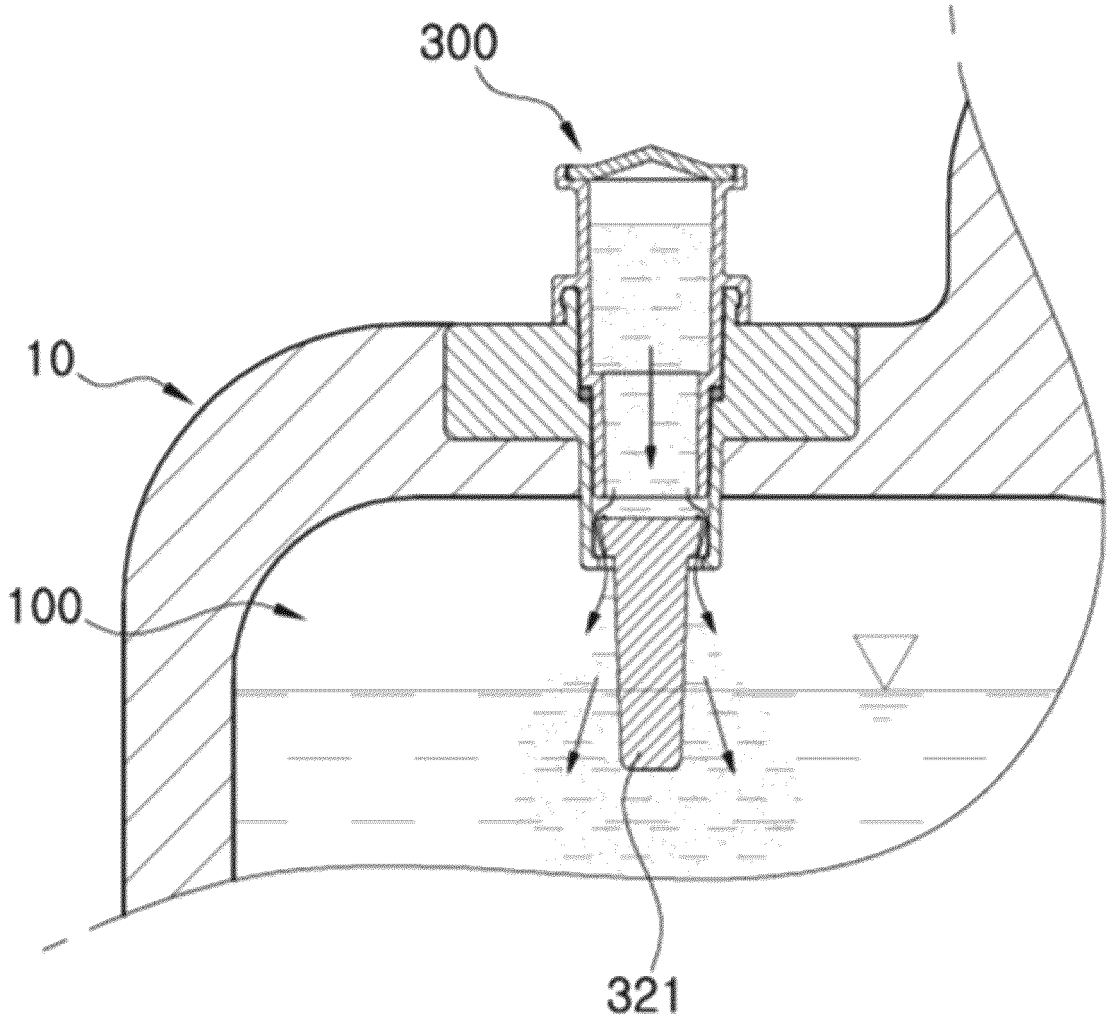

Fig. 2

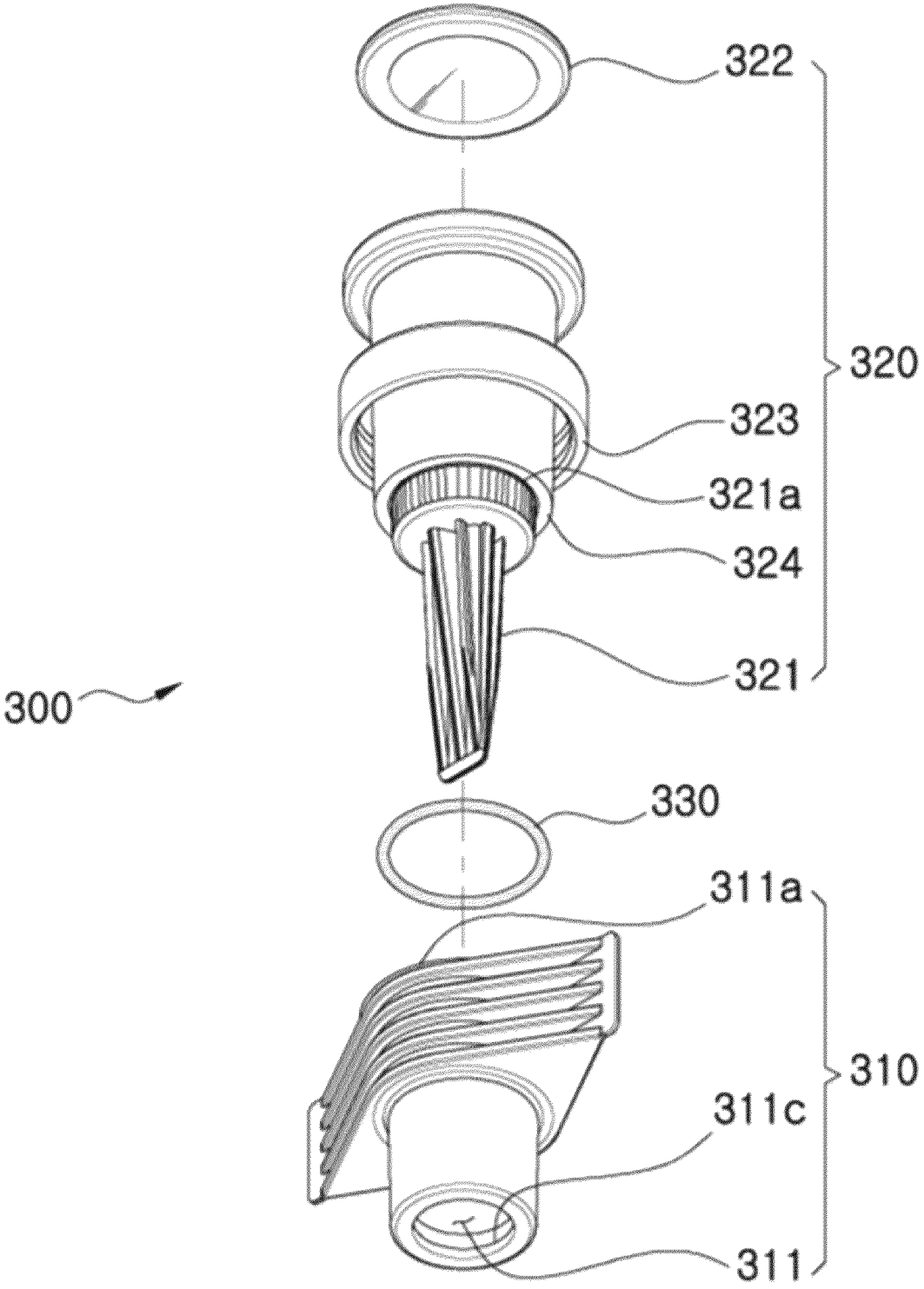

Fig. 3

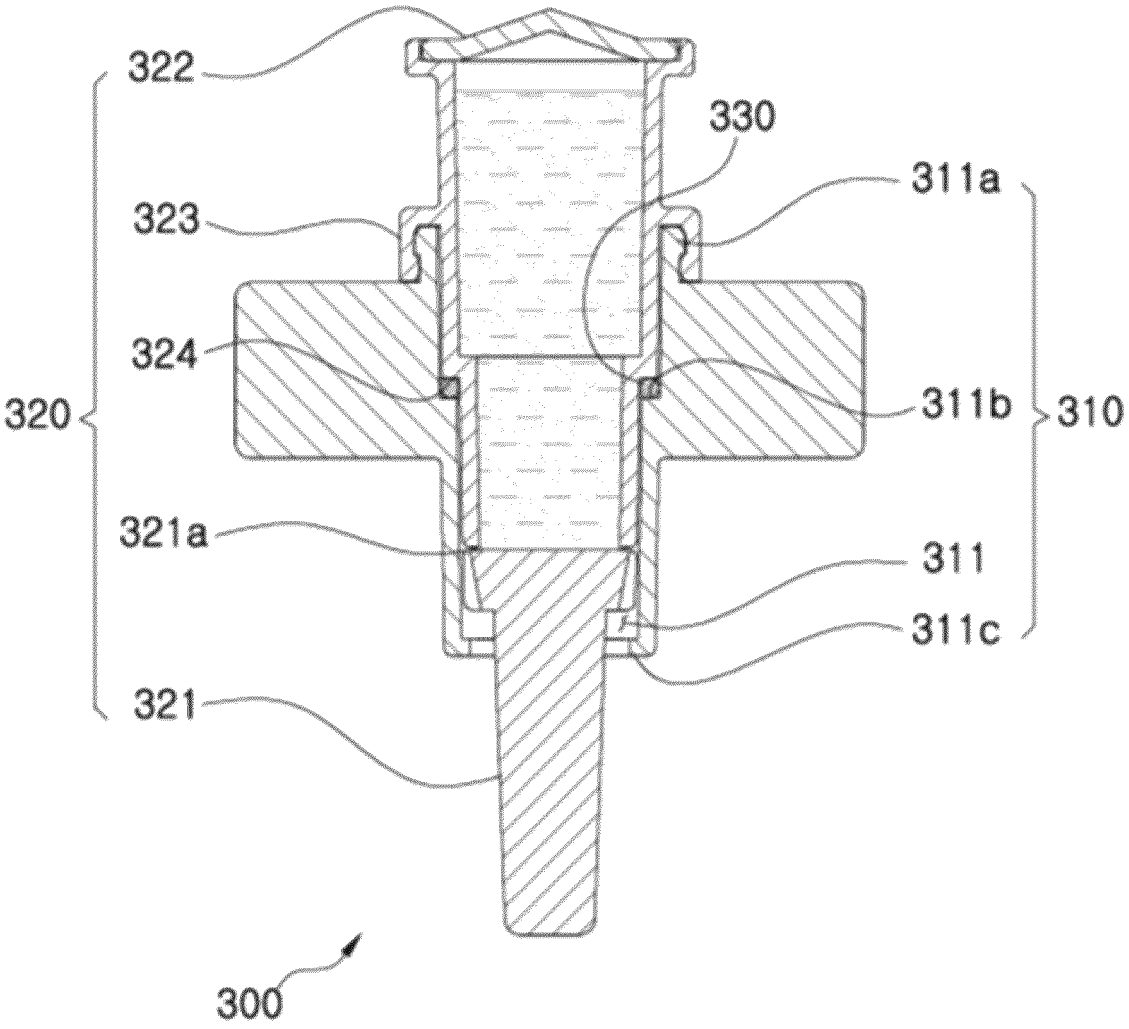

Fig. 4

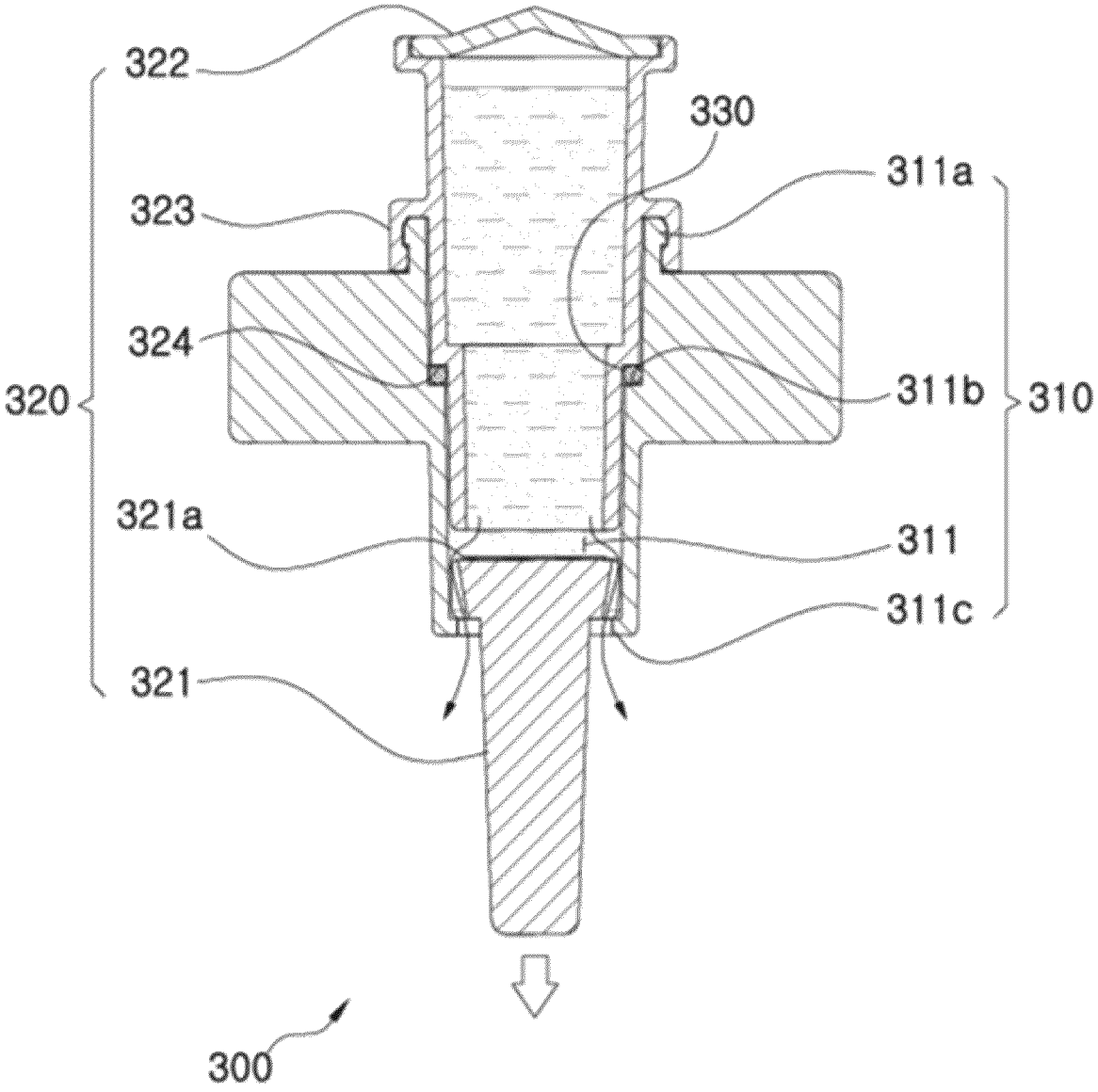

Fig. 5

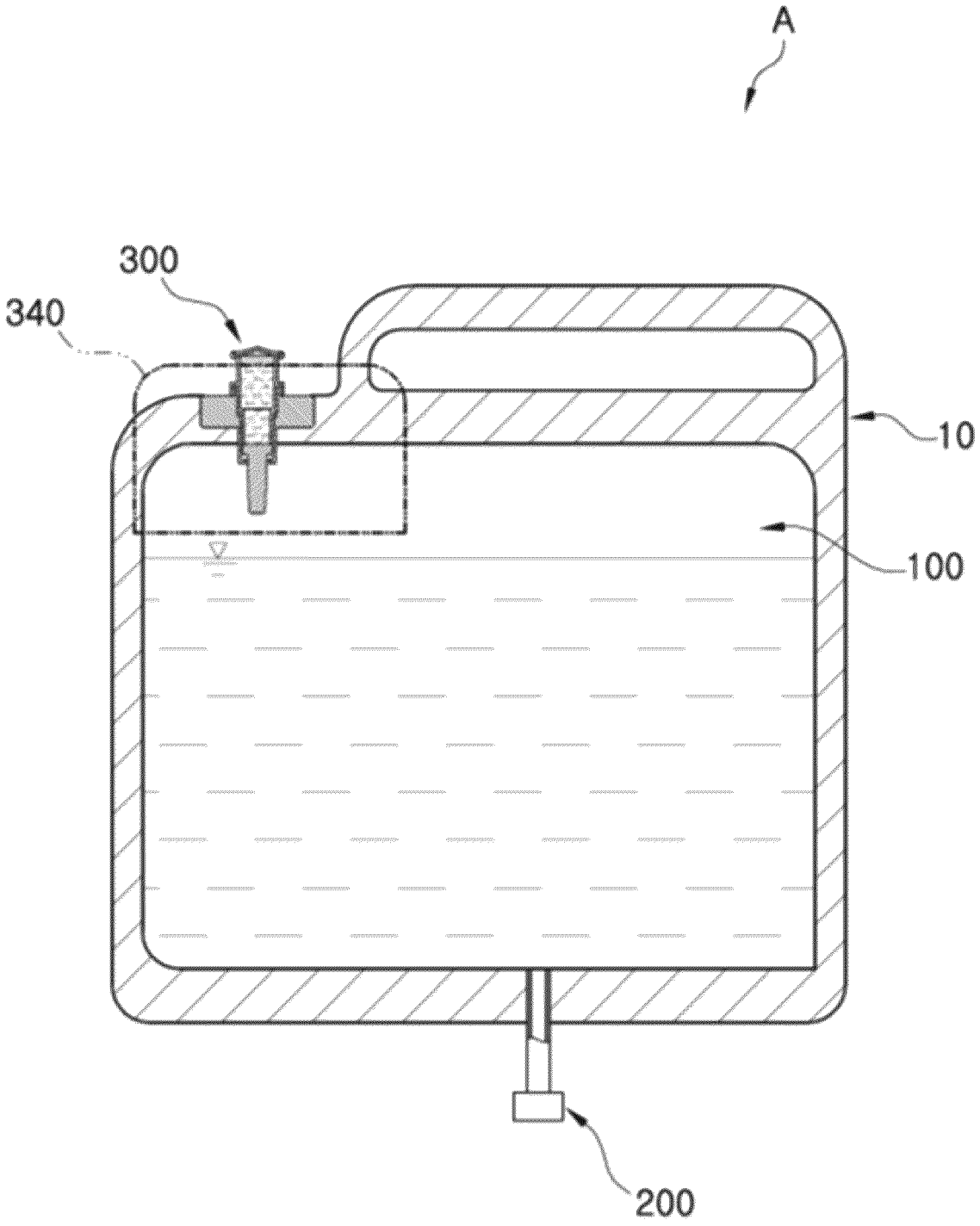

Fig. 6

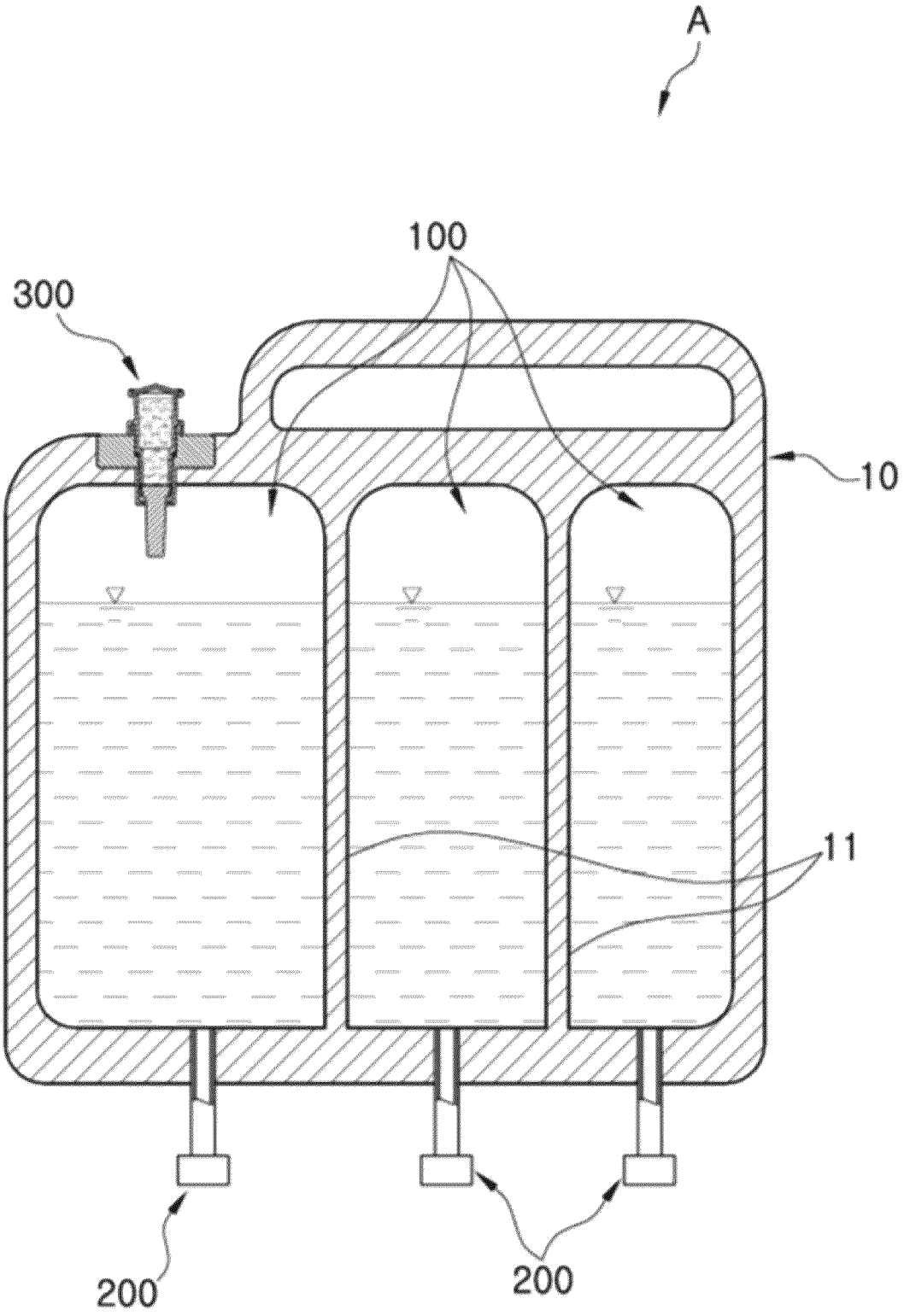

Fig. 7

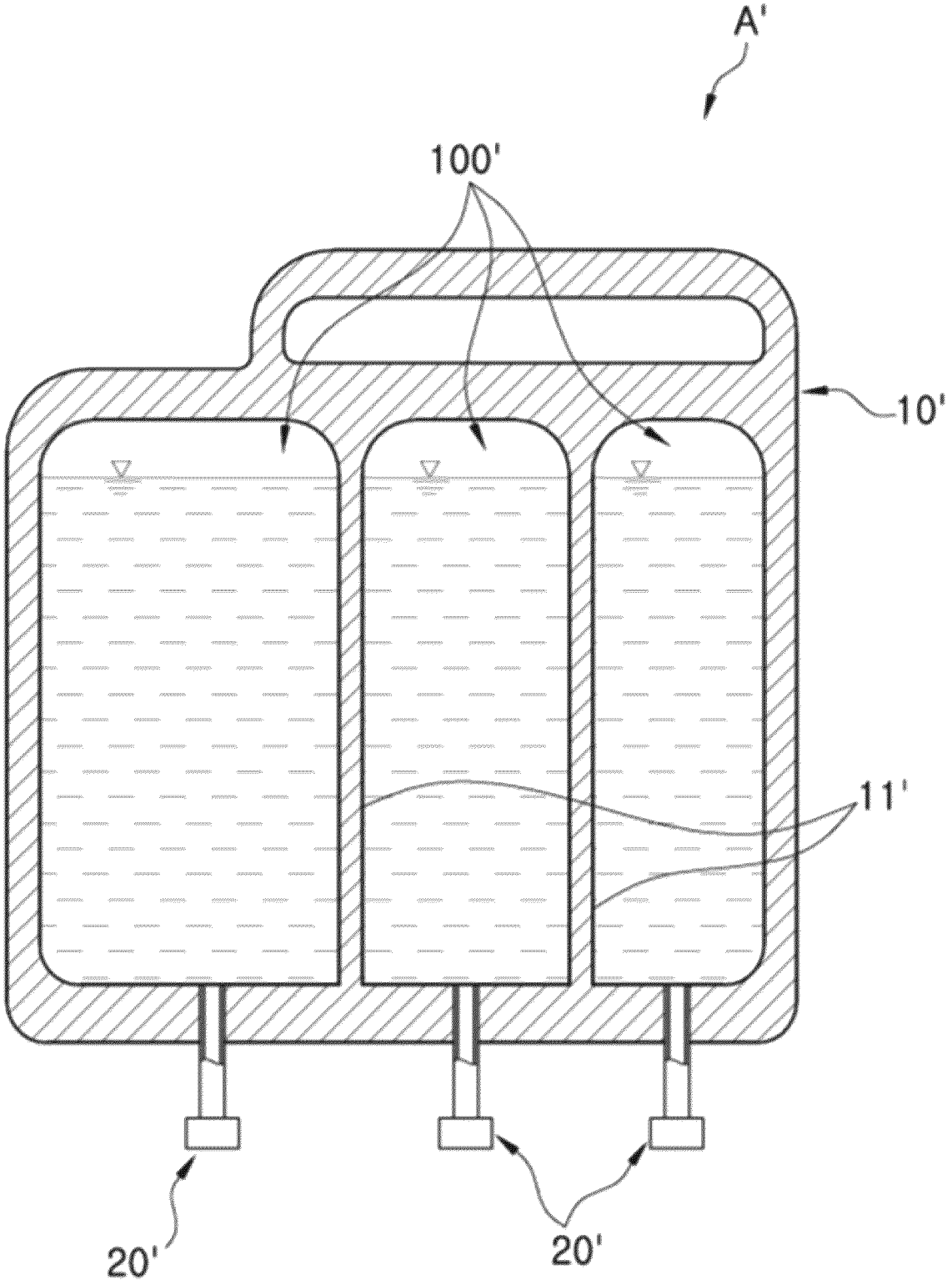

Fig. 8

INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR2018/009799

A. CLASSIFICATION OF SUBJECT MATTER

A61J 1/20(2006.01)i, A61J 1/10(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A61J 1/20; A61B 19/00; A61J 1/05; A61J 1/10; A61J 1/14; B65D 30/02; B65D 30/22; B65D 47/18

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Korean Utility models and applications for Utility models: IPC as above
Japanese Utility models and applications for Utility models: IPC as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS (KIPO internal) & Keywords: infusion solution bag, main chamber, main port, auxiliary chamber, through-hole, fixing member, storing member, sealing part, pressurization, separation, fracture part, O-ring

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	KR 10-2015-0002026 A (LEE, Sang-Woon) 07 January 2015 See claims 1-4; paragraphs [0026]-[0034]; and figures 1-3.	1
Y		2-5,7-9,11,12
A		6,10
Y	KR 10-1611859 B1 (JW CHEMITOWN CORPORATION) 14 April 2016 See claim 1; paragraph [0058]; and figure 1.	2-4
Y	JP 4472571 B2 (TERUMO CORP.) 02 June 2010 See paragraphs [0011]-[0038]; and figures 1-11.	5,7-9
Y	KR 10-1221314 B1 (KIM, Jun Bae et al.) 10 January 2013 See abstract; paragraph [0024]; and figures 1-4.	11,12
Y	US 7546918 B2 (GOLLIER, P. A. et al.) 16 June 2009 See column 3, line 50-column 4, line 30; column 8, lines 49-64; and figure 1.	2-4
A	JP 2000-116749 A (SHOWA DENKO KK. et al.) 25 April 2000 See the entire document.	1-12

☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
28 NOVEMBER 2018 (28.11.2018)	**28 NOVEMBER 2018 (28.11.2018)**
Name and mailing address of the ISA/KR Korean Intellectual Property Office Government Complex Daejeon Building 4, 189, Cheongsa-ro, Seo-gu, Daejeon, 35208, Republic of Korea Facsimile No. +82-42-481-8578	Authorized officer Telephone No.

Form PCT/ISA/210 (second sheet) (January 2015)

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/KR2018/009799

Patent document cited in search report	Publication date	Patent family member	Publication date
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