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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.

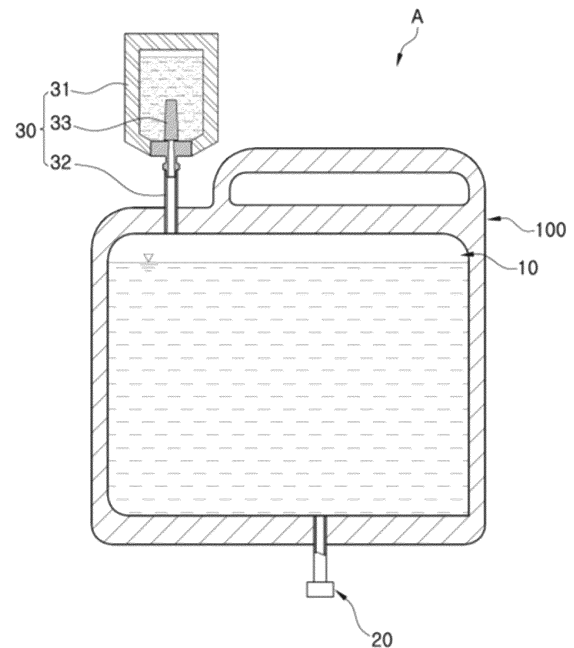


Fig. 1

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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 10' that are separated and partitioned by sealing parts 110' in a body 100', the different kinds of solutions are prevented from being mixed as the solutions are accommodated in the main chambers 10', respectively.

[0011] Then, because the sealing parts 110' that separate and partition the plurality of main chambers are simply separated by applying an appropriate pressure, the sealing parts 110' 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 10', 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 an auxiliary body in which a chemical, the kind of which is different from the solution accommodated in the main chamber, is separately accommodated, a connection member extending from the interior of the auxiliary body to the interior of the main chamber, and an interruption member configured to interrupt discharge of the chemical through the connection member.

[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 separated/partitioned areas of the main chamber.

**[0020]** The interruption member may be formed at one end of the connection member connected to the inside of the auxiliary body to have a form of a cap.

**[0021]** The interruption member having the form of a cap may include a breaking part that is broken through pressing.

**[0022]** The thickness of the breaking part may be smaller than those of the other parts.

**[0023]** The interruption member may be formed in the auxiliary body to have a form of a sealing part that is separated through pressing.

**[0024]** The connection member may be coupled to the main chamber and the auxiliary chamber through thermal fusion or high-frequency fusion.

**[0025]** An outer surface of the auxiliary chamber may be surrounded by a light-shielding film.

#### **[Advantageous Effects]**

**[0026]** 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]**

##### **[0027]**

FIG. 1 is a cross-sectional view illustrating a structure of a medical solution bag according to an embodiment of 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 illustrated in FIG. 1;

FIG. 3 is a perspective view illustrating an external appearance of a connection member in the medical solution bag illustrated in FIG. 2;

FIG. 4 is a cross-sectional view illustrating a structure of the connection member in the medical solution bag illustrated in FIG. 2;

FIG. 5 is a cross-sectional view illustrating a structure of a medical solution bag according to another embodiment of the present invention;

FIG. 6 is an exemplary view illustrating introduction of a chemical from an auxiliary chamber to a main chamber in a medical solution bag illustrated in FIG. 5;

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]**

**[0028]** Hereinafter, the present invention will be described in detail with reference to the accompanying drawings.

**[0029]** As illustrated in FIG. 1, a medical solution bag A according to the present invention includes a main chamber 10, a main port 20, and an auxiliary chamber 30.

**[0030]** In the main chamber 10, a solution (not denoted by a reference numeral) is accommodated in a bag-shaped body 100.

**[0031]** The main chamber 10, as illustrated in FIG. 7, may be separated and partitioned by a sealing part 110 formed to cross the interior of the body 100.

**[0032]** Accordingly, because different kinds of solutions are introduced into the separated/partitioned areas of the main chamber 10, various kinds of solutions may be accommodated through the main chamber 10.

**[0033]** Then, the sealing part 110 may be separated through pressing.

**[0034]** Accordingly, because different kinds of solutions are mixed as the sealing part 110 is separated, the mixed solution may be injected.

**[0035]** Here, a plurality of sealing parts 110 may be formed, and because the number of the separated/partitioned areas of the main chamber 10 increases if the plurality of sealing parts 110 are formed, more various kinds of solutions may be accommodated through the main chamber 10.

**[0036]** Meanwhile, because any typical structure that may easily separate the sealing part 110 through pressing is sufficient, a detailed description of the sealing part 110 will be omitted. The main port 20 interrupts discharge of the solution from the interior to the outside of the main chamber 10.

**[0037]** The main port 20 may be coupled to the separated/partitioned areas of the main chamber 10.

**[0038]** Accordingly, the solutions accommodated in the separated/partitioned areas of the main chamber 10 may be individually injected through the main port 20.

**[0039]** Meanwhile, a main port 20 having any scheme that may interrupt discharge of the solutions accommodated in the main chamber 10 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.

**[0040]** The auxiliary chamber 30 includes an auxiliary body 31 in which a chemical, the kind of which is different from the solution accommodated in the main chamber 10, is separately accommodated, a connection member 32 extending from the interior of the auxiliary body 31 to the interior of the main chamber 10, and an interruption member 33 and 33' configured to interrupt discharge of the chemical through the connection member 32.

**[0041]** Accordingly, as the interruption member 33 and 33' is opened, the chemical accommodated in the auxil-

ary body 31 is introduced into the interior of the main chamber 10 via the connection member 32.

**[0042]** In the auxiliary chamber 30, the interruption member 33 may be formed at one end of the connection member 32 connected to the inside of the auxiliary body 31 in a form of a cap.

**[0043]** Accordingly, the interruption member 33 formed in the form of a cap can prevent unintended discharge of the chemical because it blocks an inlet of the connection member 32.

**[0044]** Then, the interruption member 33 formed in the form of a cap, as illustrated in FIGS. 3 and 4, may include a breaking part 33a.

**[0045]** Accordingly, because the inlet of the connection member 32 located in the interior of the auxiliary body 31 is opened as the breaking part 33a is broken, the chemical in the auxiliary chamber 30 can be simply introduced into the interior of the main chamber 10 via the connection member 32.

**[0046]** Then, because the thickness of the breaking part 33a is relatively small as compared with the thicknesses of the other parts, it may be easily broken through pressing.

**[0047]** Further, in the auxiliary chamber 30, the interruption member 33', as illustrated in FIG. 5, may be formed in a form of a sealing part that crosses the interior of the auxiliary body 31.

**[0048]** Accordingly, the interruption member 33' formed in the form of a sealing part can prevent unintended discharge of the chemical because it interrupts introduction of the chemical to the inlet of the connection member 32.

**[0049]** Then, the interruption member 33' formed to have a form of a sealing part can be collapsed through pressing.

**[0050]** Accordingly, because the chemical in the interior of the auxiliary chamber 30 is introduced into the inlet of the connection member 32 as the interruption member 33' formed in the form of a sealing part is pressed and collapsed, the chemical in the auxiliary chamber 30 can be simply introduced into the interior of the main chamber 10 via the connection member 32.

**[0051]** Meanwhile, because the connection member 32 is coupled to the main chamber 10 and the auxiliary chamber 30 through thermal fusion and high-frequency fusion to maintain a sealing state at a coupling portion of the connection member 32 due to the characteristics of the coupling scheme, leakage of the solution and the chemical through the coupling portion of the connection member 32 can be prevented.

**[0052]** Hereinafter, injection of the solution and the chemical through the medical solution bag A according to the present invention will be described in detail.

**[0053]** According to the present invention, the main port 20 extends from the interior to the outside of the main chamber 10, and because an injection needle or a spike is inserted into one end of the outside of the main port 20, the solution accommodated in the main chamber

10 through the main port 20 may be injected.

**[0054]** Meanwhile, when a chemical is additionally injected in the above process, troublesomeness such as provision of an injection needle may be accompanied.

**[0055]** However, the present invention includes auxiliary chamber 30 including an auxiliary body 31 in which a chemical, the kind of which is different from the solution accommodated in the main chamber 10, is separately accommodated, a connection member 32 extending from the interior of the auxiliary body 31 to the interior of the main chamber 10, and an interruption member 33 and 33' configured to interrupt discharge of the chemical through the connection member 32, and because the chemical is introduced into the interior of the main chamber 10 via the connection member 32 as the interruption member 33 and 33' is opened, the chemical can be smoothly additionally injected as the chemical may be simply mixed with the solutions.

**[0056]** Then, the interruption member 33 includes the breaking part 33a that is formed in a form of a cap and has a thickness that is smaller than those of the other parts, and as illustrated in FIG. 2, because the chemical in the interior of the auxiliary chamber 30 is introduced into the main chamber 10 via the connection member 32 as the breaking part 33a is broken, the chemical in the auxiliary chamber 30 can be simply introduced into the interior of the main chamber 10, the chemical accommodated in the auxiliary chamber 30 can be smoothly additionally injected together with the solutions accommodated in the main chambers 10 by simply mixing the solution and the chemical.

**[0057]** Then, the interruption member 33' includes the breaking part 33a that is formed in a form of a sealing part and is collapsed through pressing, and as illustrated in FIG. 6, because the chemical in the interior of the auxiliary chamber 30 is introduced into the main chamber 10 via the connection member 32 as the interruption member 33' is collapsed, the chemical in the auxiliary chamber 30 can be simply introduced into the interior of the main chamber 10, the chemical accommodated in the auxiliary chamber 30 can be smoothly additionally injected together with the solutions accommodated in the main chambers 10 by simply mixing the solution and the chemical.

**[0058]** As described above, the medical solution bag A according to the present invention includes the auxiliary chamber 30, in which the chemical is separately accommodated, in addition to the main chamber 10, in which the solution is accommodated, and because the solutions and the chemical are simply mixed by introducing the chemical in the auxiliary chamber 30 into the main chamber 10, the chemical can be easily additionally injected when the solution is injected.

**[0059]** 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' : main chamber  
 20, 20' : main port  
 30 : auxiliary chamber  
 31 : auxiliary body  
 32 : connection member  
 33, 33' : interruption member  
 33a: breaking part  
 100, 100' : body  
 110, 110' : sealing part  
 A, A' : medical solution bag

those of the other parts.

8. The medical solution bag of claim 1, wherein the interruption member (33, 33') is formed in the auxiliary body (31) to have a form of a sealing part (110, 110') that is separated through pressing.

9. The medical solution bag of claim 1, wherein the connection member (32) is coupled to the main chamber (10, 10') and the auxiliary chamber (30) through thermal fusion or high-frequency fusion.

## Claims

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

a main chamber (10, 10') in which a solution is accommodated in a bag-shaped body (100, 100') thereof;

a main port (20, 20') configured to interrupt discharge of the solution from the interior to the outside of the main chamber (10, 10'); and

an auxiliary chamber (30) comprising an auxiliary body (31) in which a chemical, the kind of which is different from the solution accommodated in the main chamber (10, 10'), is separately accommodated, a connection member (32) extending from the interior of the auxiliary body (31) to the interior of the main chamber (10, 10'), and an interruption member (33, 33') configured to interrupt discharge of the chemical through the connection member (32).

2. The medical solution bag of claim 1, wherein the main chamber (10, 10') is separated and partitioned by a sealing part (110, 110') formed to cross the interior of the body (100, 100').

3. The medical solution bag of claim 2, wherein the sealing part (110, 110') is separated through pressing.

4. The medical solution bag of claim 1, wherein the main port (20, 20') is coupled to the separated/partitioned areas of the main chamber (10, 10').

5. The medical solution bag of claim 1, wherein the interruption member (33, 33') is formed at one end of the connection member (32) connected to the inside of the auxiliary body (31) to have a form of a cap.

6. The medical solution bag of claim 5, wherein the interruption member (33, 33') having the form of a cap comprises a breaking part (33a) that is broken through pressing.

7. The medical solution bag of claim 6, wherein the thickness of the breaking part (33a) is smaller than

10. The medical solution bag of claim 1, wherein an outer surface of the auxiliary chamber (30) is surrounded by a light-shielding film.

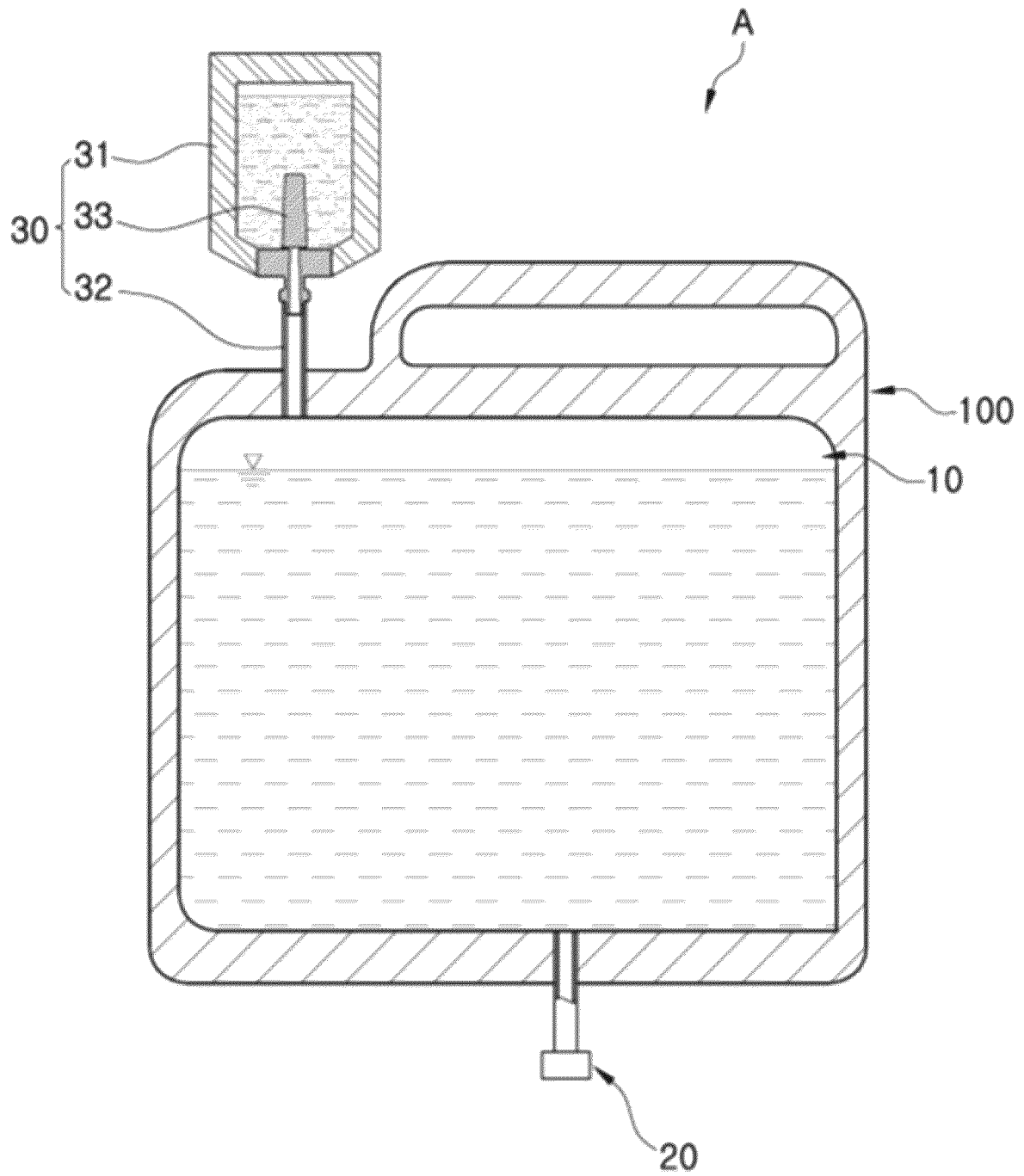


Fig. 1

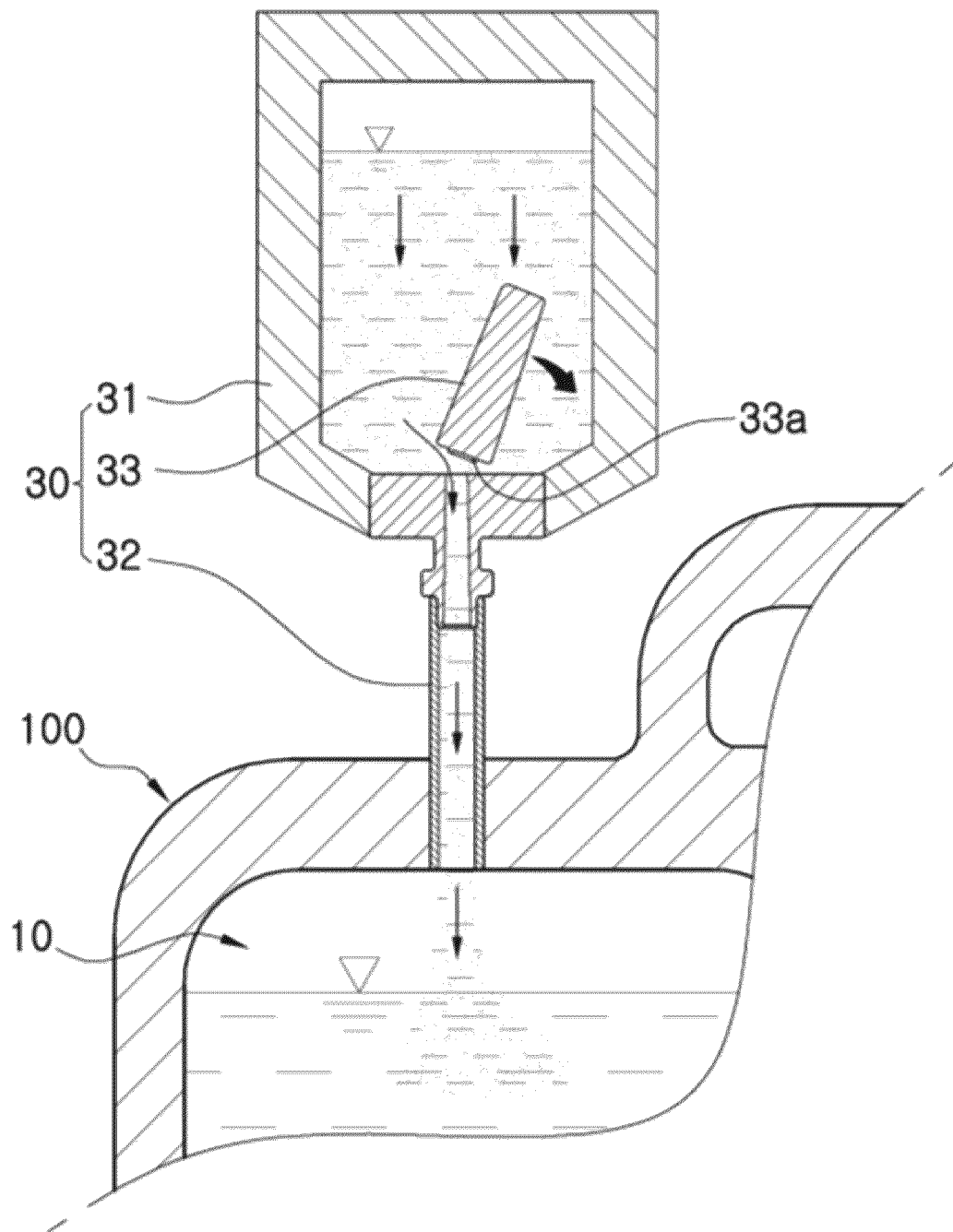


Fig. 2

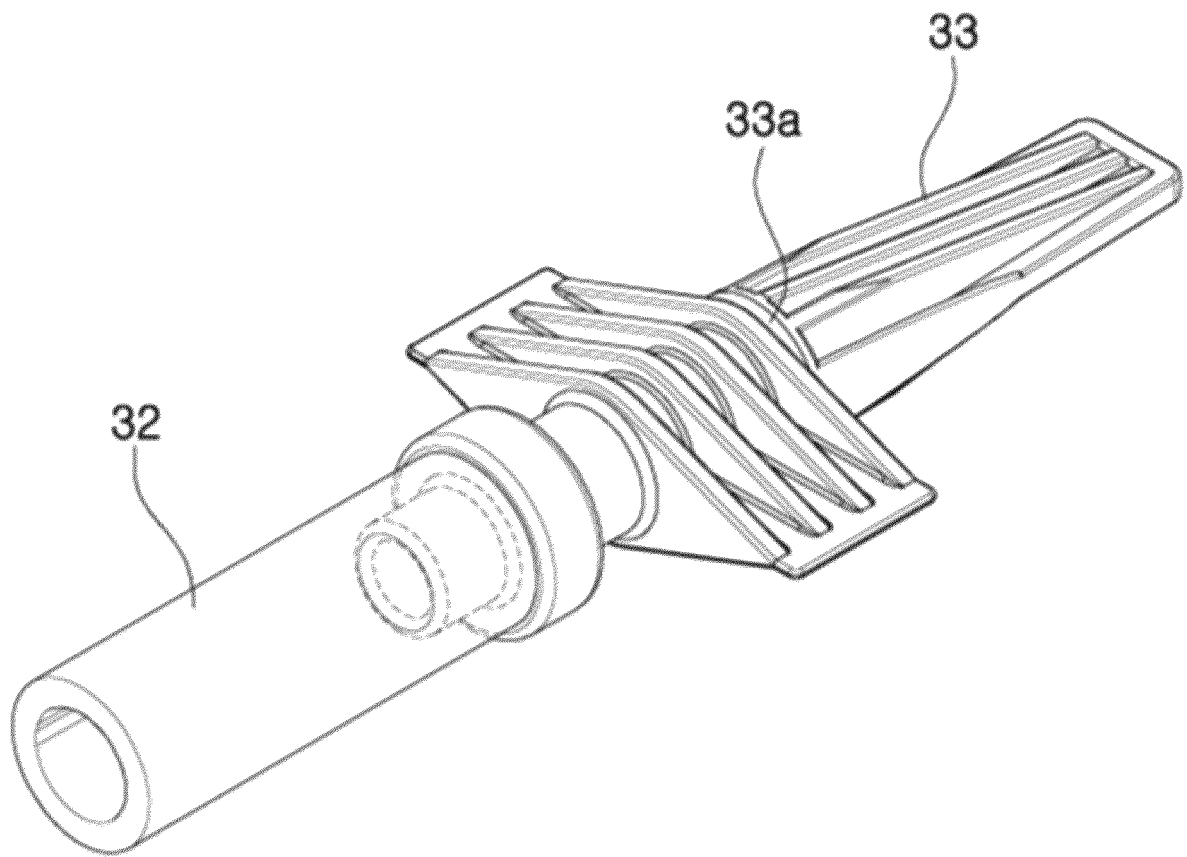


Fig. 3



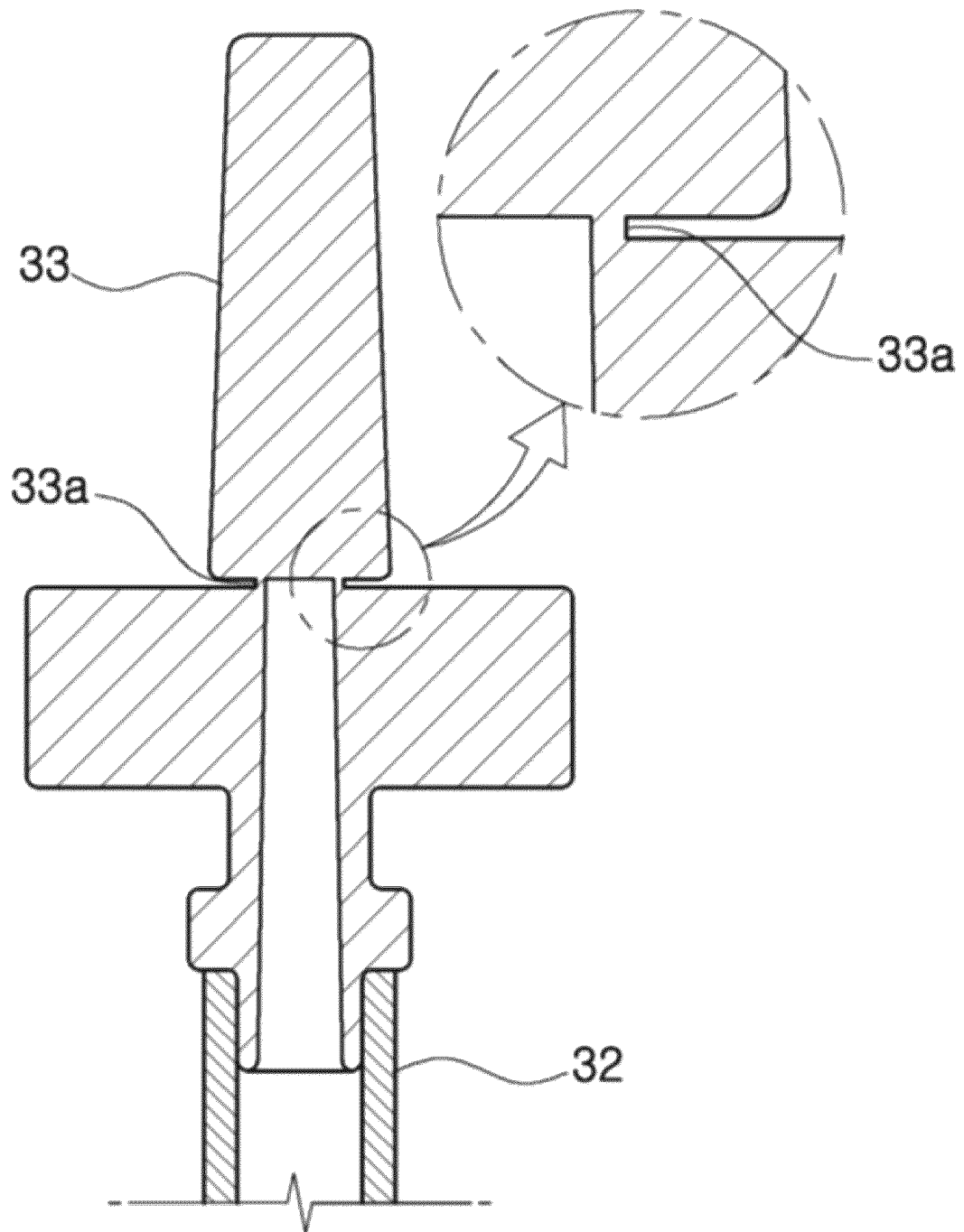


Fig. 4

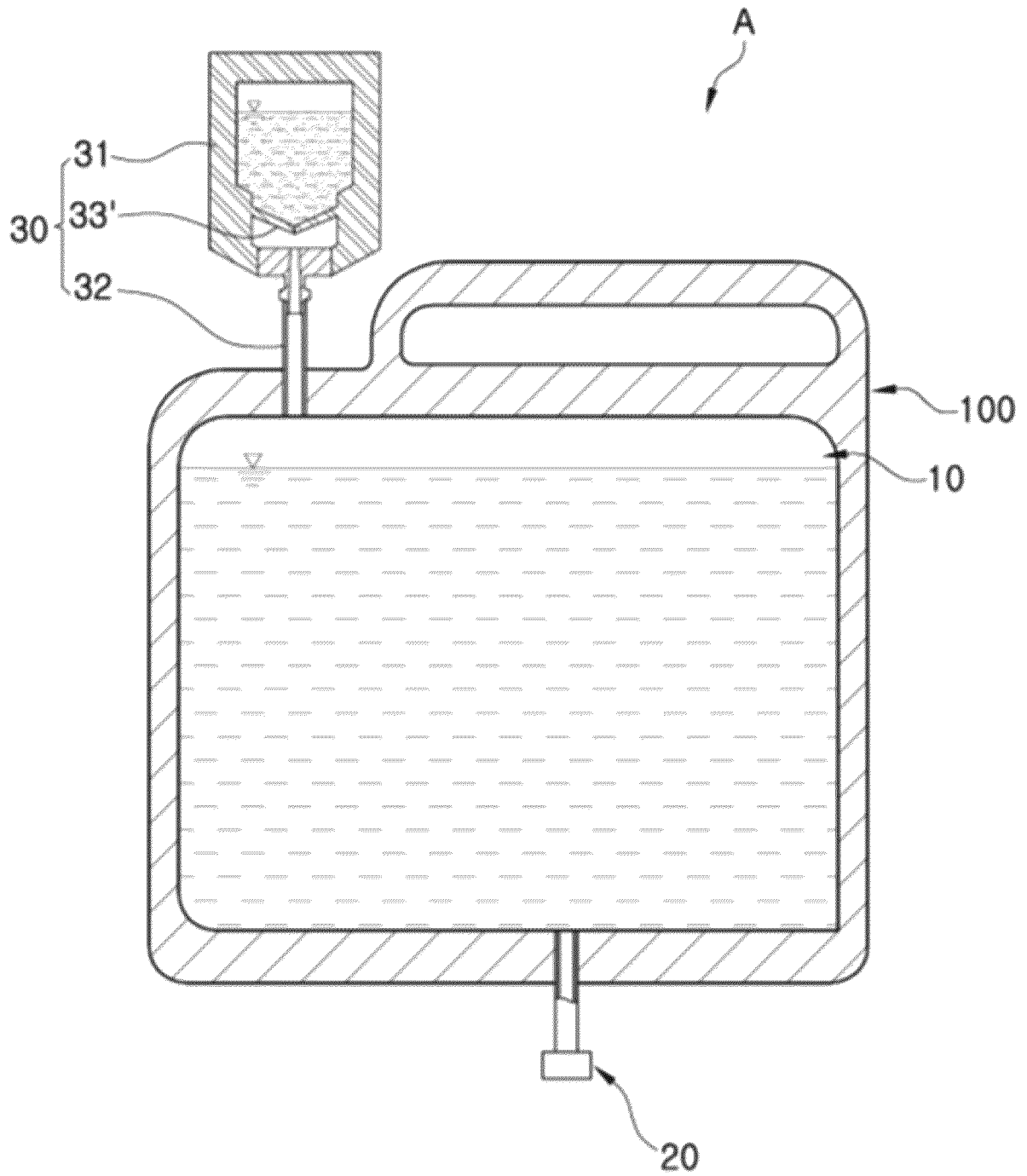


Fig. 5

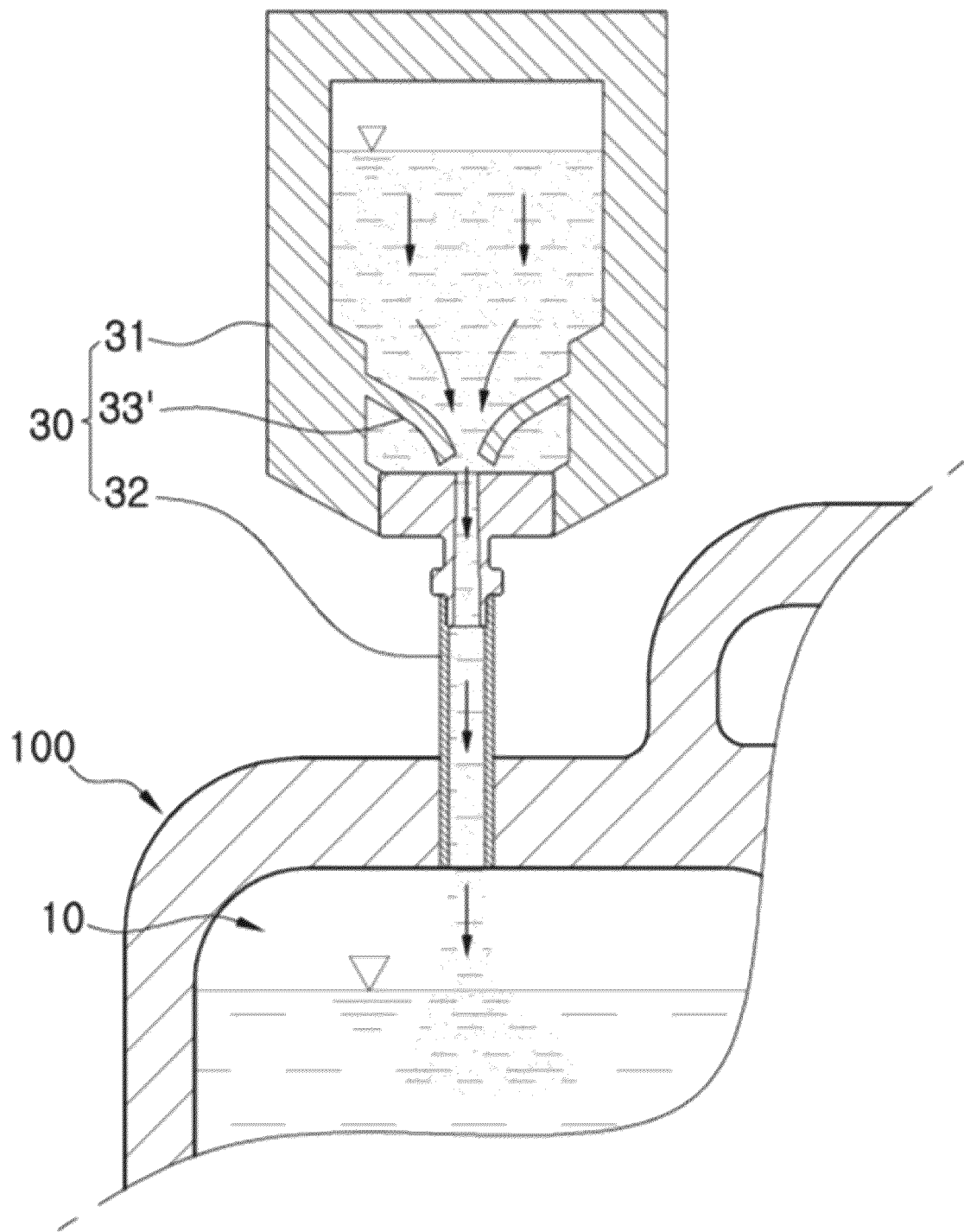


Fig. 6

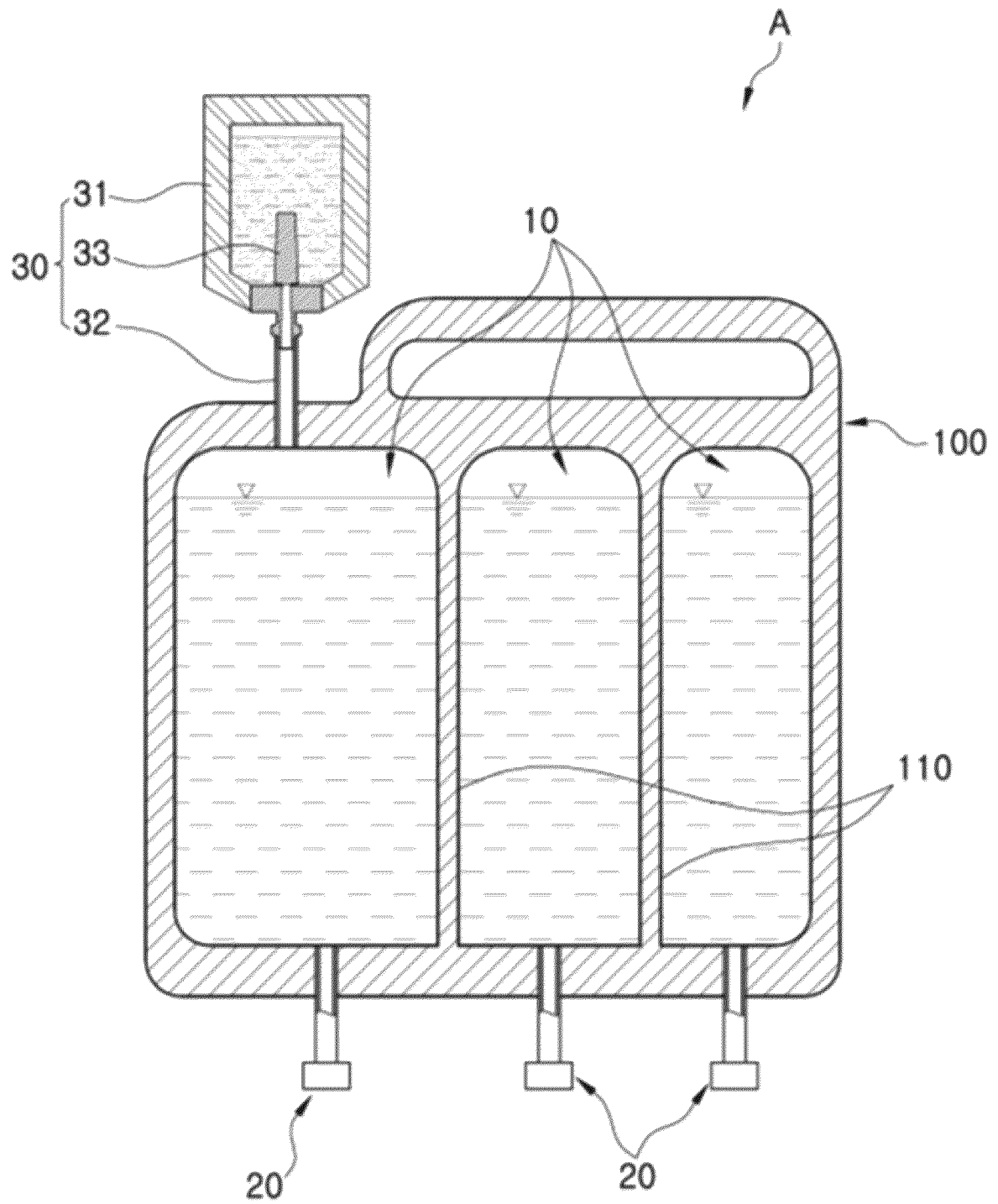


Fig. 7

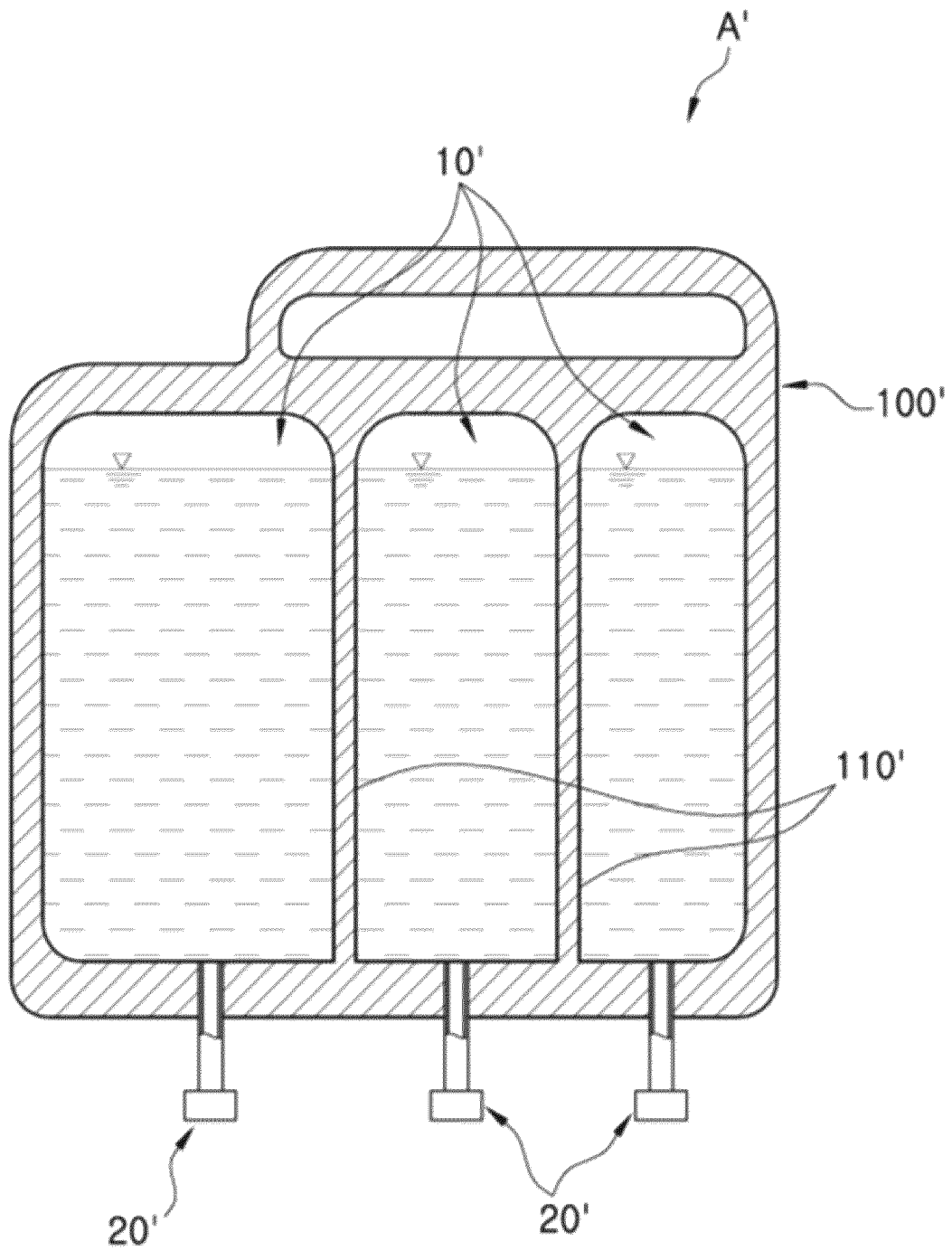



Fig. 8

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/KR2018/009797

5	A. CLASSIFICATION OF SUBJECT MATTER	
	<i>A61J 1/20(2006.01)i, A61J 1/10(2006.01)i</i>	
	According to International Patent Classification (IPC) or to both national classification and IPC	
	B. FIELDS SEARCHED	
10	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 25/20; B65D 30/02; B65D 30/22; B65D 81/32	
	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	
15	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 body, connection member, blocking member, sealing unit	
	C. DOCUMENTS CONSIDERED TO BE RELEVANT	
20	Category*	Citation of document, with indication, where appropriate, of the relevant passages
		Relevant to claim No.
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	Y	1,5-9
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	Y	10
40	<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.	
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45		
50	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)
55	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)

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Information on patent family members

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