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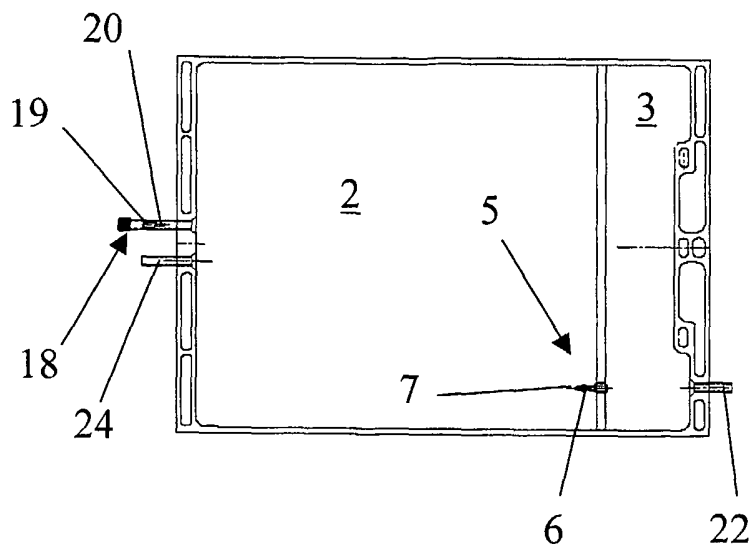
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(54) Title: CONTAINER FOR MEDICAL SOLUTION



(57) Abstract: A container (1) is described. The container (1) comprises at least a first compartment (2) adapted to receive a medical solution, and at least one communication member (5) for allowing the medical solution to be transferred into or out of the first compartment (2). The communication member (5, 8) comprises a removable blocking member (7, 10, 20) hindering a flow of medical solution through the communication member (5) prior to the removable blocking member (7, 10, 20) having been removed. The removable blocking member (7, 10, 20) has a weight-to-volume ratio of the medical solution to be received in the first compartment (2).

CONTAINER FOR MEDICAL SOLUTIONTechnical field

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The present invention relates generally to a container according to the pre-characterising portion of claim 1. More specifically the present invention relates to a container for a medical solution, which container has an openable communication member, and to a use of such a container.

10

Description of the prior art

Containers for a medical solution may be in the form of flexible containers, such as a plastic bag, or rigid containers. One application for such containers is the use for dialysis solution. With medical solution is meant medical solutions within a large range of medical solutions including cytotoxic solutions, nutrient solutions, dialysis solutions and other medical solutions. Thus, the medical solution in the containers may be transferred to patients. When the medical solution is to be used the medical solution has to be transferred from the container and possibly also from a first compartment to a second compartment. To this end the container is provided with at least one communication member through which the medical solution may be transferred. The communication member is provided with a removable blocking member which prevents medical solution from leaving the container or compartment. When the removable blocking member is removed the medical solution is allowed to leave the container or compartment. The removable blocking member is arranged pointing towards the interior of the container or the compartment. Thus, when the removable blocking member is removed from the communication member it will reside inside the container.

35

As described in WO 99/27885 the components of some dialysis solutions are incompatible with each other for long time storage. Under such circumstances the container may comprise multiple compartments which each contain one or more components, hereafter referred to as component, of the dialysis solution. A first compartment is arranged to contain the dialysis solution after mixture of the different components of the dialysis solution, and to contain a first component of the dialysis solution before mixing of the components of the dialysis solution. A second compartment is arranged to contain a second component of the dialysis solution. There is arranged a communication member between the second compartment and the first compartment to allow the second component to flow from the second compartment to the first compartment. A removable blocking member is arranged in the communication member to prevent the second component from being transferred through the communication member prior to removing the removable blocking member. Usually, the removable blocking member is arranged pointing into the first compartment so that the removable blocking member resides in the first compartment after having been broken off. The first compartment has a second communication member to allow the dialysis solution to be transferred out of the first compartment.

25

Summary of the invention

An object of the present invention is to provide a container with at least one communication member having a removable blocking member, which container is an alternative to the prior art containers.

Another object of the present invention is to provide a container with at least one communication member having a removable blocking member, which removable blocking member is arranged to minimise the risk of the removable blocking

member hindering the flow of medical solution through the communication member.

Another object of the present invention is to provide a
5 removable blocking member for use in a container for a medical solution, which removable blocking member is arranged to minimise the risk of the removable blocking member hindering the flow of medical solution through a communication member.

10

These objects are achieved with a container and a blocking member according to the independent claims. Further advantages of the invention are achieved with the features in the dependent claims.

15

A container according to the present invention comprises at least a first compartment adapted to receive a medical solution, and at least one communication member for allowing the medical solution to be transferred into or out of the
20 first compartment. The communication member comprises a removable blocking member hindering a flow of medical solution through the communication member prior to the blocking member having been removed. The container is characterised in that the removable blocking member is
25 designed in such a manner that it has a weight-to-volume ratio, which is smaller than the weight-to-volume ratio of the medical solution to be received in the first compartment.

30 In the description the term weight-to-volume ratio is used for bodies comprising a closed cavity and is equivalent to the mean density of the body with the closed cavity. For a body without any closed cavity the weight-to-volume ratio is equal to the density. The weight-to-volume ratio is equal to
35 the density also for the medical solution.

The container may be flexible to various extents. The container may be formed from thin plastics, wherein the container may adopt various forms without plastic deformation of the container.

5

With a container according to the present invention the removable blocking member will float to the top of the surface of the medical solution in the compartment into which the removable blocking member is arranged to point.

10 Thus, there is no risk for the removable blocking member to hinder the flow of solution through the communication member. With a container formed from thin plastic the walls of the container will collapse when the medical solution is drained from the container leaving the removable blocking
15 member stuck between the walls of the container.

The container according to the invention is adapted to receive a medical solution. The medical solution is to be used for a patient. The container with the medical solution
20 is normally used at NTP (normal temperature and pressure). It may of course also be contemplated that the container with a medical solution is used at different temperatures and pressures but only at such temperatures and pressures where the medical solution remains in liquid phase. At
25 temperatures and pressures around NTP the density of most medical solutions vary within a small interval. In case a medical solution whose density vary within a large interval at temperatures and pressures around NTP, or in case the temperature and pressure may vary within a large interval, a
30 person skilled in the art would know how to adapt the weight-to-volume ratio of the end member to allow it to float in the medical solution.

The removable blocking member may be arranged to be
35 removable in many different ways. One alternative is to have at least a part of the communication member breakable to re-

move the blocking member. In this way the removable blocking member is easily removable. The removable blocking member may be arranged within the first compartment, in case the blocking member is arranged between two different compartments, or in the conduit leading from the compartment, in case the blocking member is arranged between a compartment and the outside of the container. It is of course possible to have the removable blocking member arranged to be removed by twisting or screwing the removable blocking member from the communication member.

The communication member may comprise a breakable end member comprising a pipe member and the blocking member, wherein the breakable end member has a length axis, and wherein the blocking member is removable by breaking the end member. The end member is then preferably arranged to form a part of the communication member or to comprise the communication member. This allows the rest of the container to be of a material different from the material of the end member. The communication member may also comprise a conduit on which the end member is arranged.

In this context breakable means that the dimensions perpendicular to the length axis and the elongation at ultimate tensile strength of the removable blocking member are such that it breaks by bending the blocking member no more than 90° from the length axis, preferably no more than 45° .

The breakable end member may have a notch where the end member is to be broken off in order to facilitate the breaking of the end member at the correct position, wherein the area of the cross section of the end member, perpendicular to the length axis, has a local minimum at the notch.

A weight-to-volume ratio which is lower than the weight-to-volume ratio of the medical solution may be achieved in a plurality of ways. One alternative is to provide the removable blocking member with a closed cavity. Thus, a material having a higher density than the medical solution may be used while still achieving a weight-to-volume ratio that is lower than the weight-to-volume ratio of the medical solution, i.e. the density of the medical solution. The closed cavity of the blocking member may be filled with a gas or may be empty, i.e. with vacuum inside the closed cavity.

A weight-to-volume ratio which is lower than the weight-to-volume ratio of the medical solution may also be achieved by a solid blocking member being constituted of a material having a density lower than the density of the medical solution. Apart from having a correct density the material should also have properties of being breakable and being easy to manufacture. Suitable materials include hydrocarbons such as different plastics.

The man skilled in the art would be able to find a large number of plastics which are breakable, according to the above definition, and which have a suitable density. Examples of such plastics comprise polypropylene.

In a container as described above the communication member having the removable blocking member may be arranged between the first compartment and a conduit outside of the container.

In case the container also comprises a second compartment the communication member having the removable blocking member may be arranged between the second compartment and the first compartment. The container may also comprise a further communication member having a further removable

blocking member, which further communication member may be arranged between the first compartment and a conduit outside of the container.

5 The medical solution is in most cases water based, with the major portion being water, and thus has a density of 1-1.1 g/cm³. Such medical solutions usually comprise water and one or more components dissolved therein. Thus, the weight-to-volume ratio of the blocking member may be below or equal to
10 1-1.1 g/cm³ in a container adapted for such water-based medical solutions in order to secure that the weight-to-volume ratio is below the weight-to-volume ratio of the medical solution.

15 According to a second aspect of the present invention a container, according to the first aspect of the invention, is provided, wherein the container comprises a medical solution.

20 According to a third aspect of the present invention a use of a container, according to the first aspect, is provided for a medical solution. More specifically the medical solution may be a dialysis solution to be used in dialysis treatment.

25 According to a fourth aspect of the invention a removable blocking member is provided according to the blocking member described in connection with the first aspect of the present invention.

30 It goes without saying that the different features described above may be combined in any way in the same embodiment without departing from the scope and spirit of the present invention. In the following preferred embodiments of the
35 present invention will be described with reference to the appended drawings.

Brief description of the drawings

Fig 1a,b,c,d show containers for medical solutions, with communication members having blocking members according to an embodiment of the present invention.

Fig 2 shows in larger detail an end member with a blocking member according to a first embodiment of the present invention.

Fig 3 shows in larger detail an end member with a blocking member according to a second embodiment of the present invention.

Fig 4 shows in larger detail an end member with a blocking member according to a third embodiment of the present invention.

Fig 5 shows in larger detail an end member with a blocking member according to a fourth embodiment of the present invention.

Description of preferred embodiments of the invention.

In the description of preferred embodiments of the invention reference will be made to the drawings in which similar features are denoted with the same reference numerals.

Fig 1a shows a container 1 for a medical solution, with communication members having removable blocking members 7, 10 according to an embodiment of the present invention. The container 1 has a first compartment 2, a second compartment 3 and a third compartment 4. The medical solutions in the first compartment 2, in the second compartment 3 and the third compartment 4, may be different from each other. The

reason for not mixing the different medical solutions may be that the medical solutions are incompatible in the sense that they slowly degrade after being mixed. Another reason may be that it is desirable to have an option for how to mix the medical solutions as is described in more detail in WO 99/27885.

A first communication member 5 is arranged between the second compartment 3 and the first compartment 2. The first communication member 5 comprises a first end member 6 with the first removable blocking member 7. A second communication member 8 is arranged between the third compartment 4 and the first compartment 2. The second communication member 8 comprises a second end member 9 with a second removable blocking member 10. The end members 6, 9 will be described in more detail below. The end members 6, 9 are inserted into respective conduits 11, 16, forming part of the communication member 5, 8. The weight-to-volume ratios of the blocking members 7, 10, are lower than the weight-to-volume ratio of the medical solution, and thus the blocking members 7, 10, float in the medical solution when they are removed. The container 1 also comprises a suspension device 21 in the form of a hole 21 through the container 1. Furthermore the container 1 comprises a first sealable filling means 24, a second sealable filling means 22 and a third sealable filling means 23 for filling medical solution into the first compartment 2, the second compartment 3, and the third compartment 4, respectively.

By removing the first blocking member 7 communication is provided between the second compartment 3 and the first compartment 2. As the container 1 is flexible the blocking member may be removed from the outside of the container 1. As the blocking members 7, 10, float they will float to the surface of the medical solution in the first compartment 2.

The container 1 may also be provided with a further communication member 18 arranged between the first compartment 2 and a conduit outside the container 1. Such a further communication member 18 has a further end member 19 with a further removable blocking member 20. This is not shown in fig 1a but would be equivalent to the further end member 19 shown in fig 1b, 1c and 1d.

In fig 1b a container having a first compartment 2 and a second compartment 3 is shown. This container is equivalent to the container shown in fig 1a apart from the number of compartments. In fig 1c a container having only a first compartment is shown. Such a container may be used for, e.g. nutrient solutions. In both fig 1b and 1c the further end member 19 with its further removable blocking member 20 is shown within the communication member 18. In fig 1d a container having a first compartment 2 and a second compartment 3 is shown. The difference between the container shown in fig 1b and the container shown in fig 1d is that the container in fig 1d does not have a blocking member according to the invention between the first compartment 2 and the second compartment 3. Instead a so called peel seal 82 is arranged between the first compartment 2 and the second compartment 3. The peel seal is known from the art and will not be described in further detail here.

Fig 2 shows in larger detail an end member 6 according to a first alternative which has been used also in the prior art except for the density of the material in the removable blocking member 7. In fig 2a the end member 6, is shown in a side view. Fig 2b shows the end member 6, in cross section, while fig 2c shows an end view of the end member 6. The cross section in fig 2b is taken along the line A-A in fig 2c. The end member 6 has a length axis 15. The end member 6, comprises a removable blocking member 7 and an essentially cylindrical pipe member 13, for fastening the end member 6

in the conduit 11. The pipe member 13, defines a through going hole 14, which extends into the removable blocking member 7. The exterior diameter of the pipe member 13 is larger than the exterior diameter of the removable blocking member 7. The end member is arranged to break at the junction 50 between the pipe member 13 and the removable blocking member 7. As breakable end members 6 are known from the state of the art they will not be described in more detail here. The end member 6 is made of polypropylene which has a density of approximately $0,9 \text{ g/cm}^3$. This allows the removable blocking member 7 to float in medical solutions having a higher density than the removable blocking member 7.

In fig 3a and 3b an end member 6 according to a second alternative is shown in a side view and in cross-section, respectively. The end member 6 has a pipe member 13 and a removable blocking member 7. The differences between this alternative and the end member 6 shown in fig 2 is that the removable blocking member 7 is differently shaped and that it has a notch 17 further defining where the end member 6 is to be broken off, wherein the area of the cross section of the end member 6, perpendicular to the length axis, has a local minimum at the notch 17.

In fig 4a and 4b an end member 6 according to a third alternative is shown in a side view and in cross-section. The end member 6 according to this third alternative is identical to the end member 6 according to the first alternative shown in fig 2 apart from the removable blocking member 7. The removable blocking member 7 is provided with a closed cavity 36. The closed cavity 36 provides for a lower weight of the removable blocking member 7 without affecting the volume of the removable blocking member 7. Thus the weight-to-volume ratio of the removable blocking member 7 is decreased allowing higher density materials to be used while still

providing for the removable blocking member 7 to float. A closed cavity 36 as shown in fig 4 may be arranged also in an end member 6 according to fig 3.

5 In fig 5a and fig 5b end members 6 according to a fourth alternative are shown in side views. The end members 6 each have a pipe member 13 and a removable blocking member 7 and are arranged to break at the joint 50. The pipe members 13 are furthermore provided with a thread 25 to allow them to
10 be screwed into the conduits 11.

The end member 6 may be homogenous comprising only one material but may also comprise a compound of different materials. If no closed cavity 36 is provided the material
15 has to have a density below the density of the medical solution. As is the case also when a closed cavity is provided, the material has to provide properties for allowing the removable blocking member to be broken off. An example of such a material is polypropylene. It is obvious
20 for a man skilled in the art that there are also a number of other materials which are possible to use which have the desirable properties of being breakable and having a sufficiently low density.

25 Fig 6 shows a container 1 for a medical solution according to an alternative embodiment of the present invention. The container 1 comprises communication members having removable blocking members 7, 10 according to an embodiment of the present invention. The container 1 has a first compartment
30 2, a second compartment 3 and a third compartment 4. The medical solutions in the first compartment 2, in the second compartment 3 and the third compartment 4, may be different from each other. The reason for not mixing the different medical solutions may be that the medical solutions are in-
35 compatible in the sense that they slowly degrade after being mixed. Another reason may be that it is desirable to have an

option for how to mix the medical solutions as is described in more detail in WO 99/27885.

- 5 A first communication member 5 is arranged between the second compartment 3 and the first compartment 2. The first communication member 5 comprises a first end member 6 with the first removable blocking member 7. A second communication member 8 is arranged between the third compartment 4 and the second compartment 3. The second communication member 8 comprises a second end member 9 with a second removable blocking member 10. The end members 6, 9 are inserted into respective conduits 11, 16, forming part of the communication member 5, 8.
- 10
- 15 The container 1 is also provided with a further communication member 18 arranged between the first compartment 2 and a conduit outside the container 1. The further communication member 18 has a further end member 19 with a further removable blocking member 20. The container 1 may also be provided with sealable filling means (not shown) for filling the different compartments 2, 3, 4.
- 20

The medical solutions in the different compartments may be mixed in a variety of different ways. The medical solution in the third compartment 4 may be mixed with the medical solution in the second compartment 3 before this mixture is mixed with the medical solution in the first compartment 2.

25

According to an alternative embodiment the medical solution in the third compartment 4 is left unused and only the medical solution in the second compartment 3 and the first compartment 2 are mixed for use in a treatment.

30

According to still another alternative embodiment only the medical solution in the first compartment 2 is used.

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It is evident for a man skilled in the art that the above embodiments may be modified in many ways without departing from the spirit and scope of the present invention which is limited only to the appended claims.

5

It is obvious for a man skilled in the art that the pipe member 13 may be integral with the conduit 11.

CLAIMS

1. Container (1) comprising at least a first compartment (2) adapted to receive a medical solution , and at least one communication member (5, 8, 18) for allowing the medical solution to be transferred into or out of the first compartment (2), said communication member (5, 8, 18) comprising a removable blocking member (7, 10, 20) hindering a flow of medical solution through the communication member (5, 8, 18) prior to the blocking member (7 ,10, 20) having been removed, **characterised in** that the removable blocking member (7, 10, 20) is designed in such a manner that it has a weight-to-volume ratio, which is smaller than the weight-to-volume ratio of the medical solution to be received in the first compartment (2).

2. Container according to claim 1, wherein the blocking member (7, 10, 20) is arranged to be removable by breaking.

3. Container according to claim 2, wherein the communication member (5, 8, 18) comprises a breakable end member (6, 9, 19) comprising a pipe member (13) and the blocking member, wherein the breakable end member has a length axis, and wherein the blocking member (7, 10, 20) is removable by breaking the end member (6, 9, 19).

4. Container according to claim 3, wherein the breakable end member (6, 9, 19) has a notch (17) where the end member (6, 9, 19) is to be broken, wherein the area of the cross section of the end member, perpendicular to the length axis, has a local minimum at the notch.

5. Container according to any one of the preceding claims, wherein the removable blocking member (7, 10, 20) comprises a closed cavity (36) in order to provide a blocking member (7, 10, 20) with a weight-to-volume ratio which is lower

than the density of the material in the blocking member (7, 10, 20).

5 6. Container according to claim 5, wherein the closed cavity (36) of the blocking member (7, 10, 20) is filled with a gas.

10 7. Container according to any one of the preceding claims, wherein the removable blocking member (7, 10) is substantially constituted of a material having a density lower than the density of the medical solution to be contained in the compartment, in which the blocking member is to be contained.

15 8. Container according to claim 7, wherein the material is a plastic.

20 9. Container according to claim 8, wherein the plastic is polypropylene.

10. Container according to anyone of the preceding claims, wherein the communication member having the removable blocking member (7, 10, 20) is arranged between the first compartment (2) and a conduit outside the container (1).

25 11. Container according to anyone of claims 1 to 9, wherein the container (1) also comprises a second compartment (3) and the communication member (5) having the removable blocking member being arranged between the second
30 compartment (3) and the first compartment (2).

12. Container according to anyone of claims 1 to 10, wherein the container (1) comprises a communication member (18) having an end member (19) with a removable blocking member
35 (20) arranged between the first compartment (2) and a conduit outside the container (1).

13. Container according to anyone of the preceding claims, wherein the medical solution comprises water and one or more components dissolved therein.
- 5 14. Container according to anyone of the preceding claims, wherein the density of the blocking member (7, 10) is below or equal to 1-1,1 g/cm³.
- 10 15. Use of a container (1) according to any one of the preceding claims containing a medical solution.
16. Use of a container (1) according to claim 15, wherein the medical solution is a dialysis solution.
- 15 17. Use of a container (1) according to any one of claims 1-15, in a dialysis treatment.
18. Container (1) comprising at least a first compartment
- 20 (2) with a medical solution, and at least one communication member (5) for allowing the medical solution to be transferred into or out of the first compartment (2), said communication member (5, 8) comprising a removable blocking member (7, 10) hindering a transfer of medical solution
- 25 through the communication member (5) prior to the blocking member (7, 10) having been removed, **characterised in** that the removable blocking member (7, 10) is designed in such a manner that it has a weight-to-volume ratio, which is smaller than the weight-to-volume ratio of the medical
- 30 solution.
19. Use of a container according to claim 18 in dialysis.
20. Container (1) comprising at least a first compartment
- 35 (2) with a dialysis solution, and at least one communication member (5) for allowing the medical solution to be trans-

ferred into or out of the first compartment (2), said communication member (5, 8) comprising a removable blocking member (7, 10) hindering a transfer of medical solution through the communication member (5) prior to the blocking member (7, 10) having been removed, **characterised in** that the removable blocking member (7, 10) is designed in such a manner that it has a weight-to-volume ratio, which is smaller than the weight-to-volume ratio of the medical solution.

10

21. Container (1) comprising at least a first compartment (2) with a nutrient solution, and at least one communication member (5) for allowing the medical solution to be transferred into or out of the first compartment (2), said communication member (5, 8) comprising a removable blocking member (7, 10) hindering a transfer of medical solution through the communication member (5) prior to the blocking member (7, 10) having been removed, **characterised in** that the removable blocking member (7, 10) is designed in such a manner that it has a weight-to-volume ratio, which is smaller than the weight-to-volume ratio of the medical solution.

15

20

22. Removable blocking member for a container (1) comprising at least a first compartment (2) adapted to receive a medical solution, and at least one communication member (5, 8, 18) for allowing the medical solution to be transferred into or out of the first compartment (2), said communication member (5, 8, 18) being adapted to receive the removable blocking member (7, 10, 20) for hindering a transfer of medical solution through the communication member (5, 8, 18) prior to the blocking member (7, 10, 20) having been removed, **characterised in** that it is designed in such a manner that it has a weight-to-volume ratio, which is smaller than the weight-to-volume ratio of the medical solution to be received in the first compartment (2).

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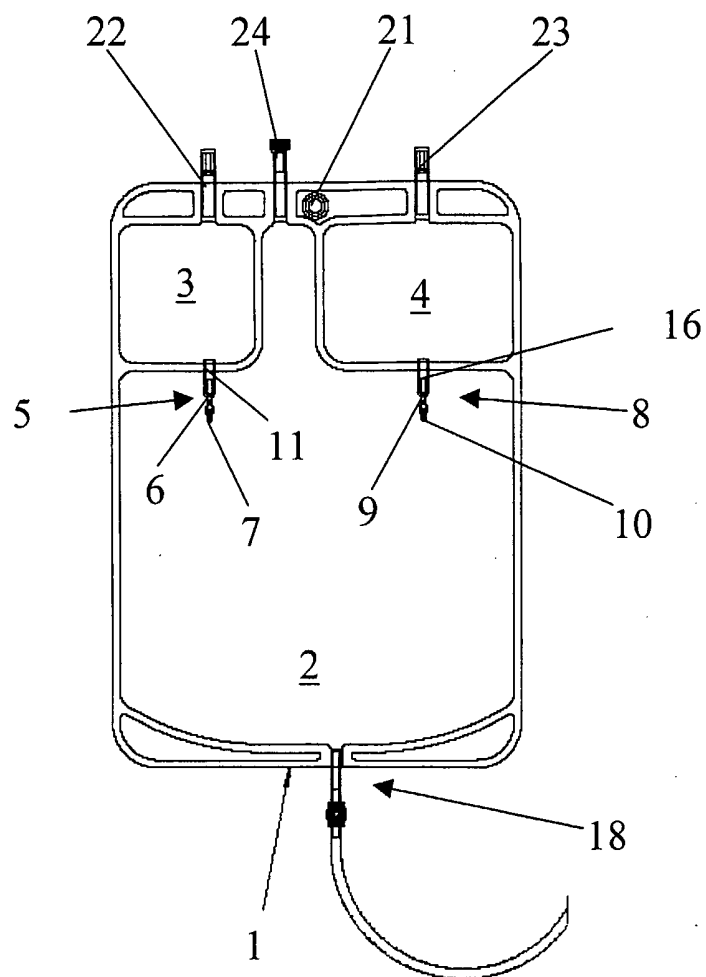


Fig 1a

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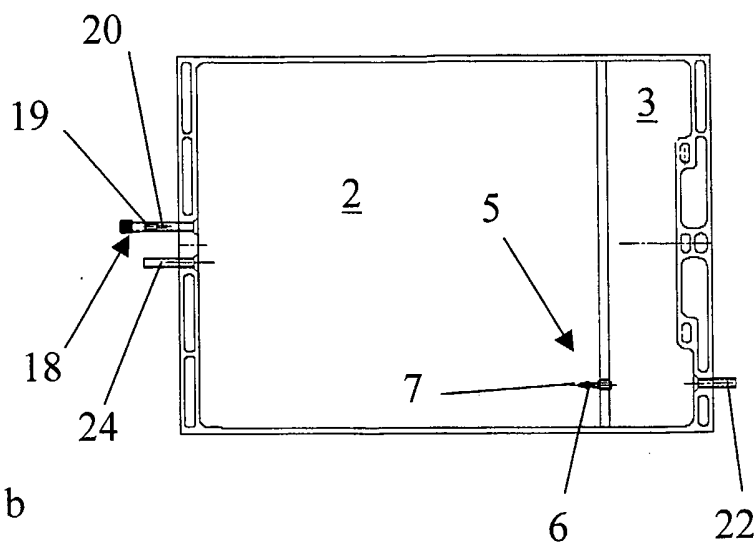


Fig 1b

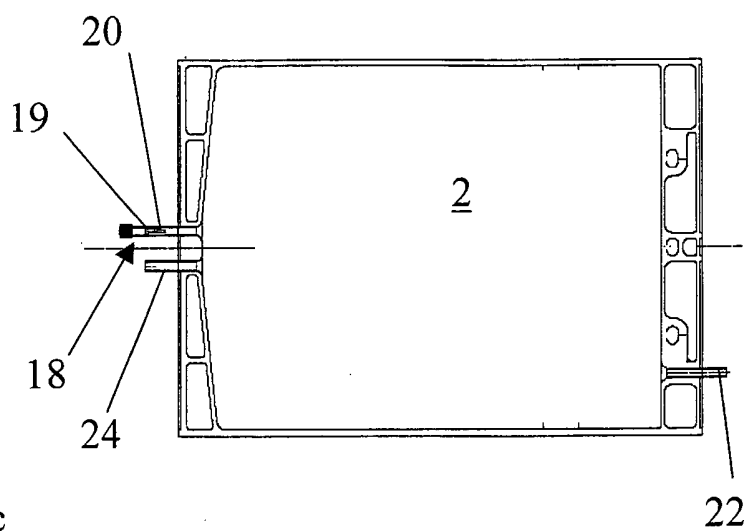


Fig 1c

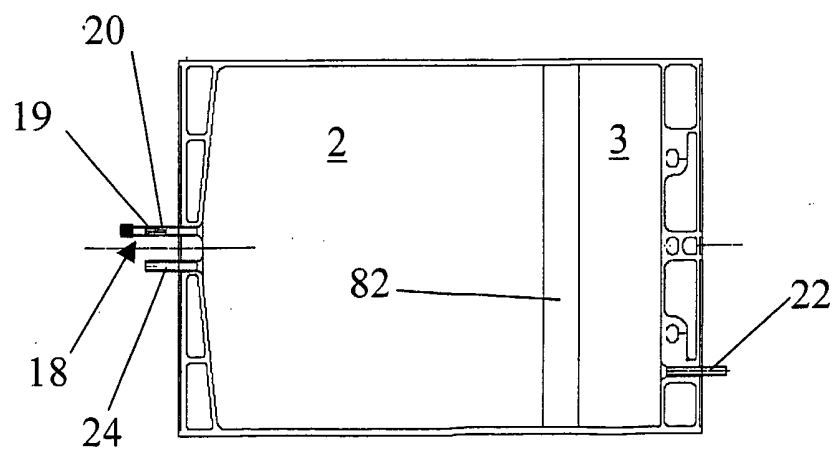


Fig 1d

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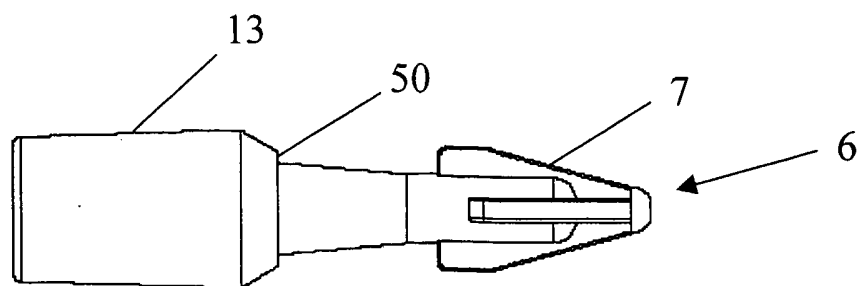


Fig 2a

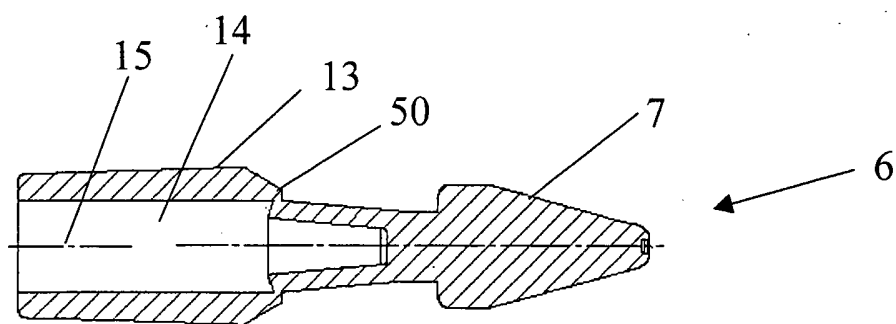


Fig 2b

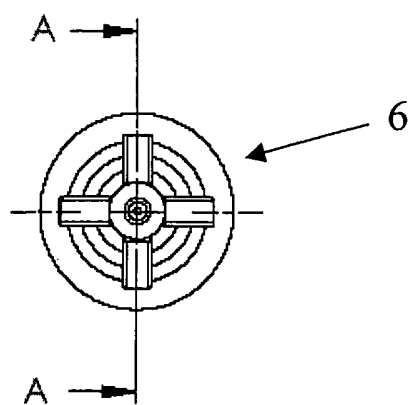


Fig 2c

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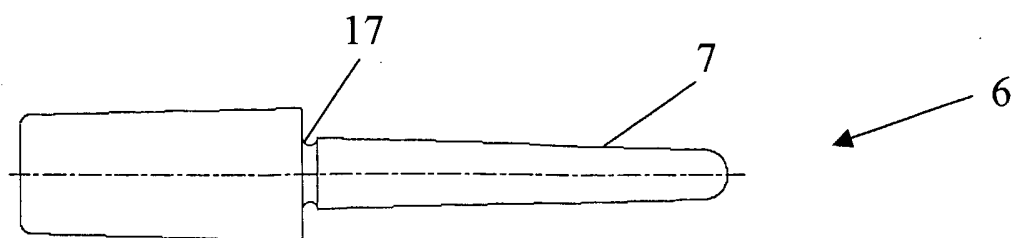


Fig 3a

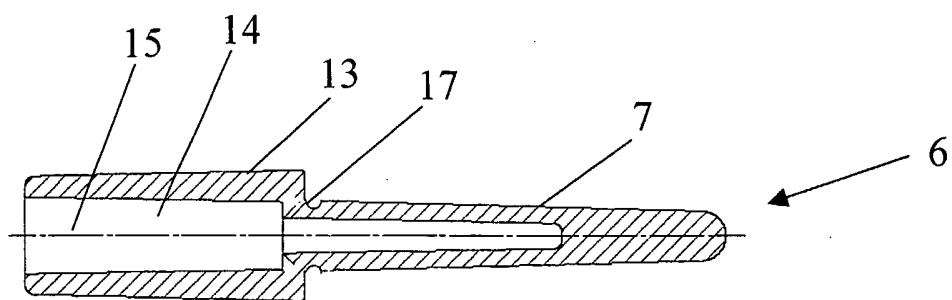


Fig 3b

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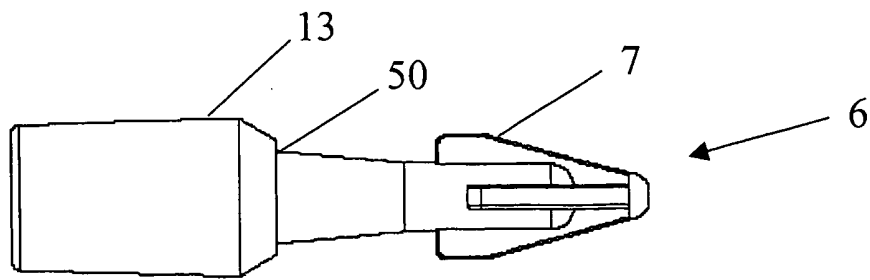


Fig 4a

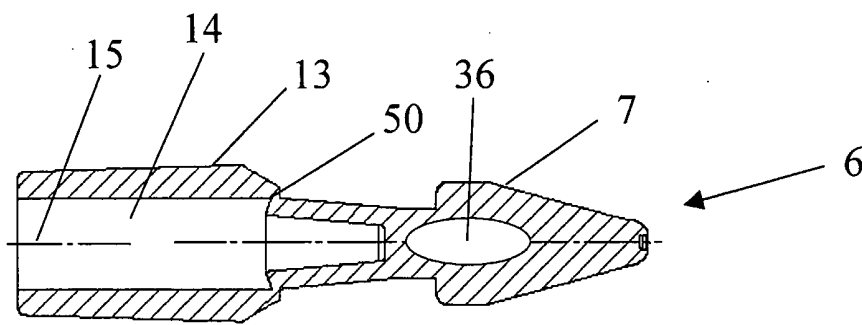


Fig 4b

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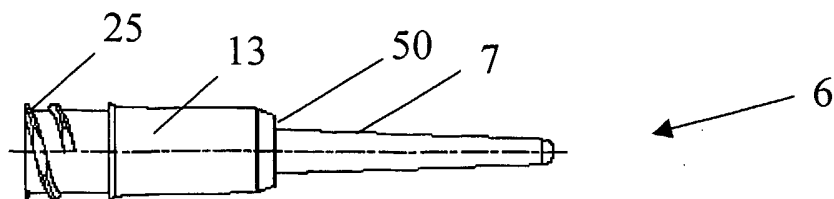


Fig 5a

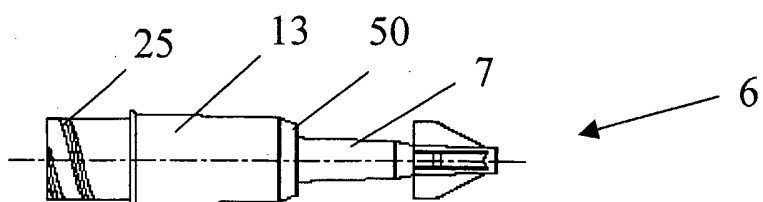


Fig 5b

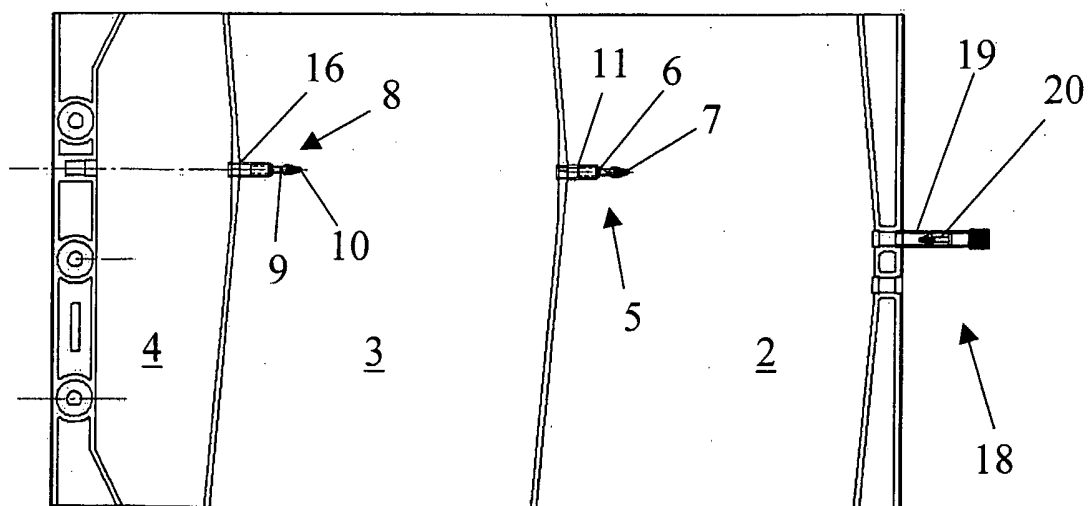


Fig 6

INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 2005/000800

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: A61J 1/00

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)

IPC7: A61J, A61M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

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

EPO-INTERNAL, WPI DATA, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4435179 A (WALKER, W.H.), 6 March 1984 (06.03.1984), column 1, line 62 - column 3, line 22 --	1-4,7-22
A	US 4586928 A (BARNES, B.E. ET AL), 6 May 1986 (06.05.1986), column 3, line 56 - column 4, line 2 --	1-22
A	US 5431496 A (BALTEAU, P. ET AL), 11 July 1995 (11.07.1995), column 1, line 8 - column 3, line 7 --	1-22
A	US 4997083 A (LORETTI, M. ET AL), 5 March 1991 (05.03.1991), see the whole document --	1-22

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

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"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

23 August 2005

Date of mailing of the international search report

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 2005/000800

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 9705852 A1 (GAMBRO AB), 20 February 1997 (20.02.1997), see the whole document -- -----	1-22

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Information on patent family members

08/07/2005

International application No.

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08/07/2005

International application No.
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