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(54) **AIRBED WITH DETACHABLE ELECTRIC PUMP**

(57) An airbed is provided with an inflation and deflation valve, which includes a base fixedly disposed at an inflation and deflation port and a sealing plug detachably disposed on the base. The airbed has an innovation that an electric air pump is part of the sealing plug and is integrated with the sealing plug. A housing of the electric air pump is used as part of the inflation and deflation valve of the airbed and serves as the sealing plug of the inflation and deflation valve. When the airbed needs to be deflated, the electric air pump is directly removed, and then air is rapidly exhausted through a large diameter exhaust port. The airbed can be produced in advance without being limited by the specification of the electric air pump, and afterwards, the electric air pump is screwed or buckled on the airbed in a sealed manner. After being detached from the airbed, the electric air pump can serve as a common electric air pump to be applied to other inflatable products. Once the electric air pump has quality problems, better after-sales services can be provided, and thus, the after cost and manufacturing cost of products are reduced.

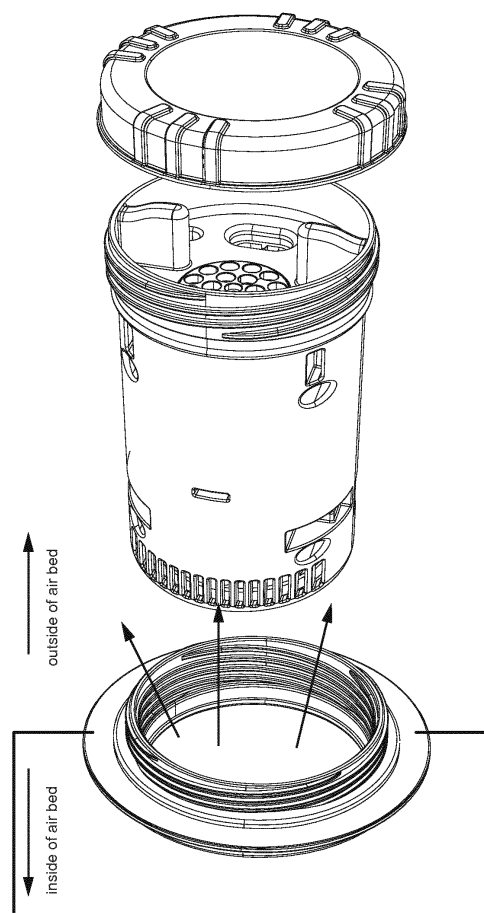


FIG. 10

Description**TECHNICAL FIELD**

[0001] The invention relates to an airbed provided with a detachable electric pump.

DESCRIPTION OF RELATED ART

[0002] In the prior art, internal pumps need to be welded to airbeds at a high frequency in the prior art, and consequentially, the airbeds are limited by the specification of the air pumps and cannot be produced in advance. With the need for hot melting of the air pumps welded to the airbeds at a high frequency, the air pumps need to be coated for a second time. Once quality problems happen to the air pumps hot melted to the airbeds, it is extremely difficult to repair the air pumps, resulting in a high manufacturing cost and a high after cost.

BRIEF SUMMARY OF THE INVENTION

[0003] The objective of the embodiments of the invention is to overcome the above-mentioned defects of the prior art by providing an airbed, which can be rapidly deflated and be produced in advance without the need of secondary coating and can also reduce the after cost and manufacturing cost.

[0004] In these embodiments, an airbed of the invention is provided with an inflation and deflation valve, which includes a base fixedly disposed at an inflation and deflation port and a sealing plug detachably disposed on the base. The innovation of the airbed of the invention lies in that an electric air pump serves as part of the sealing plug and is integrated with the sealing plug.

[0005] In one embodiment of the invention, the electric air pump in the airbed is a one-way spiral internal pump, which is connected to the base in a threaded manner.

[0006] In one embodiment of the invention, the electric air pump in the airbed is a two-way spiral internal pump, which is connected to the base in a threaded manner.

[0007] In one embodiment of the invention, the electric air pump in the airbed is a buckle internal pump, which is connected to the base in a buckled manner.

[0008] Compared with the prior art, the housing of the electric air pump is used as part of the inflation and deflation valve of the airbed and serves as the sealing plug of the inflation and deflation valve; when the airbed needs to be deflated, the electric air pump is directly removed, and then air is rapidly exhausted through a large-diameter exhaust port. In addition, the airbed can be produced in advance without being limited by the specification of the electric air pump, and afterwards, the electric air pump is screwed or buckled on the airbed in a sealed manner. After being detached from the airbed, the electric air pump can serve as a common electric air pump to be applied to other inflatable products. Once the electric air pump has certain quality problems, better after-

sales services can be provided, and thus, the after cost and manufacturing cost of products are reduced.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

[0009]

FIG. 1 is a structural view of an airbed provided with a one-way spiral internal pump.

FIG. 2 is an A-A section view of FIG. 1.

FIG. 3 is a structural view of an airbed provided with a two-way spiral internal pump.

FIG. 4 is an A-A section view of FIG. 3.

FIG. 5 is a structural view of an airbed provided with a buckle internal pump.

FIG. 6 is an A-A section view of FIG. 5.

FIG. 7 is an enlarged view of part B in FIG. 6.

FIG. 8 is a structural view of a base of the airbed provided with the buckled internal pump.

FIG. 9 is a structural view of a sealing plug of an electric air pump.

FIG. 10 is an exploded view of the electric air pump and the airbed.

DETAILED DESCRIPTION OF THE INVENTION

[0010] The invention is further illustrated in combination with the drawings and specific embodiments as follows. It would appreciate that these embodiments are only used to explain the invention instead of being used to limit the protection scope of the invention. After reading the contents recorded in this specification, those skilled in this field can make various alterations or modifications to the preset invention, and all these equivalent alterations and modifications should also fall within the scope defined by the Claims of the invention.

[0011] In the following embodiments of the invention, the pump structures of a one-way spiral internal pump, a two-way spiral internal pump and a buckle internal pump basically have no difference and can be any pump structures with an inflation function in this field.

[0012] As shown in FIG. 1 and 2, an airbed in a first preferred embodiment of the invention is provided with an inflation and deflation valve, which includes a base fixedly disposed at an inflation and deflation port and a sealing plug detachably disposed on the base. As shown in FIG. 10, an electric air pump is part of the sealing plug and is integrated with the sealing plug. In this embodi-

ment, the electric air pump is a one-way spiral internal pump, which is connected to the base in a threaded manner. As shown in FIG. 9, in order to avoid air leakage, sealing rings are disposed at a joint (primary seal in FIG. 9) of an electric air pump housing (part of the sealing plug) and the base as well as an external joint (part of the electric air pump, secondary seal in FIG. 9).

[0013] As shown in FIG. 3 and FIG. 4, an airbed in a second preferred embodiment of the invention is provided with an inflation and deflation valve, which includes a base fixedly disposed at an inflation and deflation port and a sealing plug detachably disposed on the base. As shown in FIG. 10, an electric air pump is part of the sealing plug and is integrated with the sealing plug. In this embodiment, the electric air pump is a two-way spiral internal pump, which is connected to the base in a threaded manner. As shown in FIG. 9, in order to avoid air leakage, sealing rings are disposed at a joint (primary seal in FIG. 9) of an electric air pump housing (part of the sealing plug) and the base as well as an external joint (part of the electric air pump, secondary seal in FIG. 9).

[0014] As shown in FIG. 5-8, an airbed in a third preferred embodiment of the invention is provided with an inflation and deflation valve, which includes a base fixedly disposed at an inflation and deflation port and a sealing plug detachably disposed on the base. As shown in FIG. 10, an electric air pump is part of the sealing plug and is integrated with the sealing plug. In this embodiment, the electric air pump is a buckle internal pump, which is connected to the base in a buckled manner. As shown in FIG. 9, in order to avoid air leakage, sealing rings are disposed at a joint (primary seal in FIG. 9) of an electric air pump housing (part of the sealing plug) and the base as well as an external joint (part of the electric air pump, secondary seal in FIG. 9).

5. The airbed according to any one of Claims 1-4, wherein sealing rings are disposed at a joint of the electric air pump and the base as well as an external joint.

Claims

1. An airbed, provided with an inflation and deflation valve including a base fixedly disposed at an inflation and deflation port and a sealing plug detachably disposed on the base, wherein an electric air pump is part of the sealing plug and is integrated with the sealing plug.
2. The airbed according to Claim 1, wherein the electric air pump is a one-way spiral internal pump connected to the base in a threaded manner.
3. The airbed according to Claim 1, wherein the electric air pump is a two-way spiral internal pump connected to the base in a threaded manner.
4. The airbed according to Claim 1, wherein the electric air pump is a buckle internal pump connected to the base in a buckled mode.

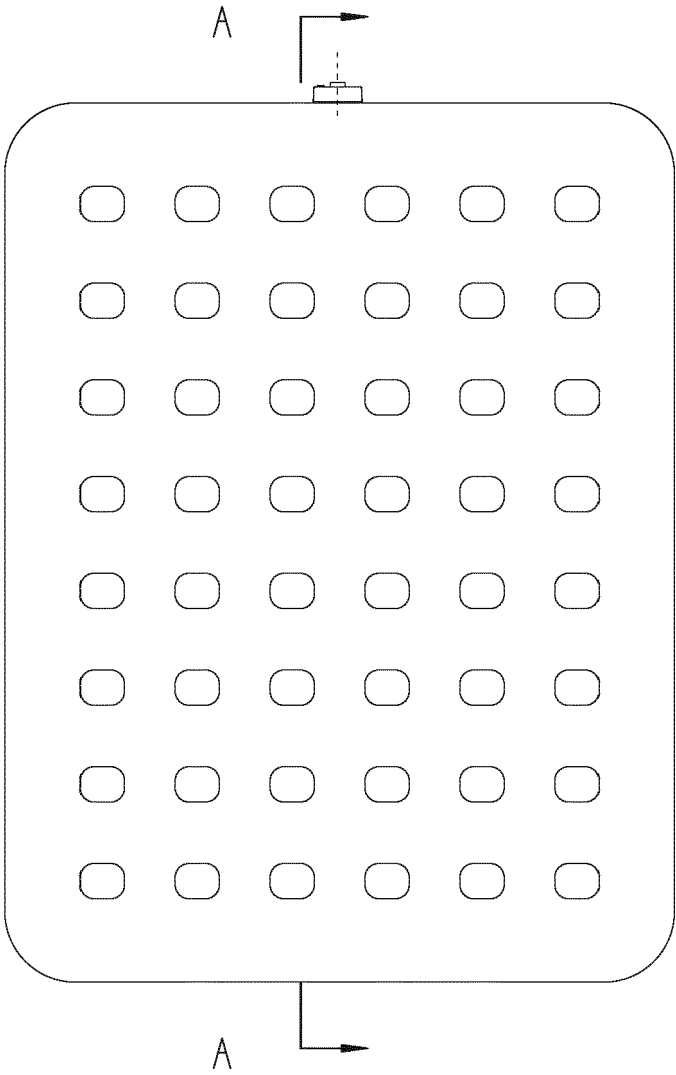


FIG. 1



FIG. 2

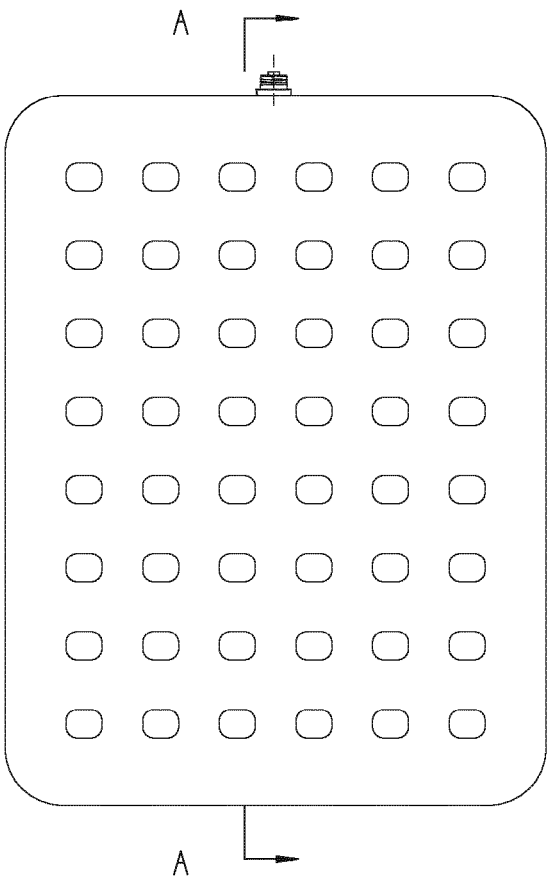


FIG. 3



FIG. 4

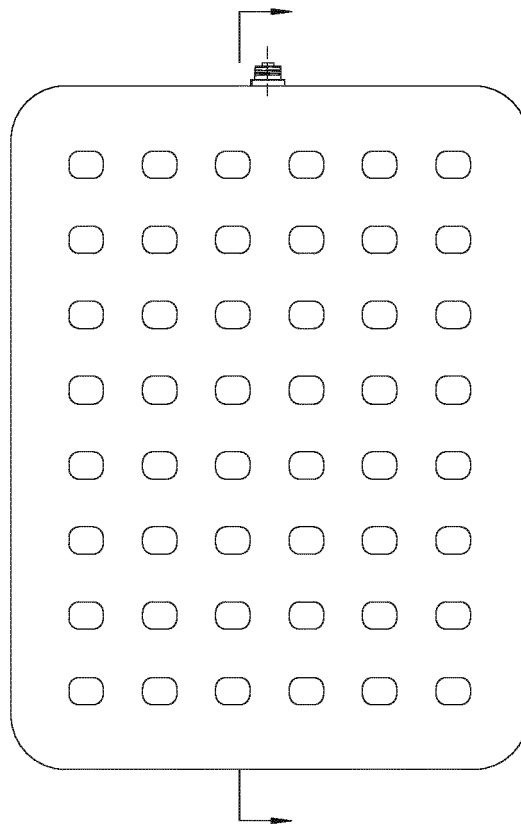


FIG. 5

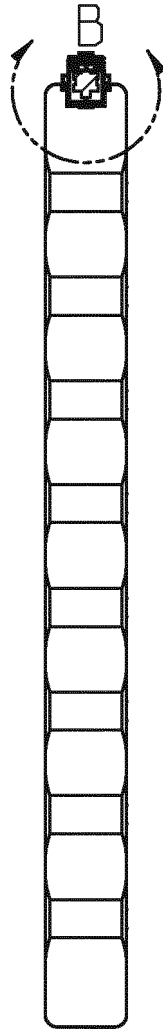


FIG. 6

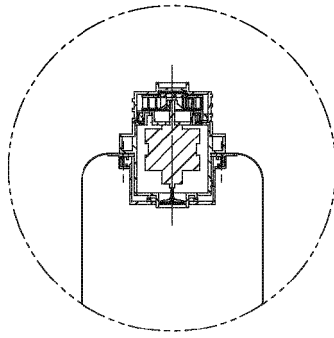


FIG. 7

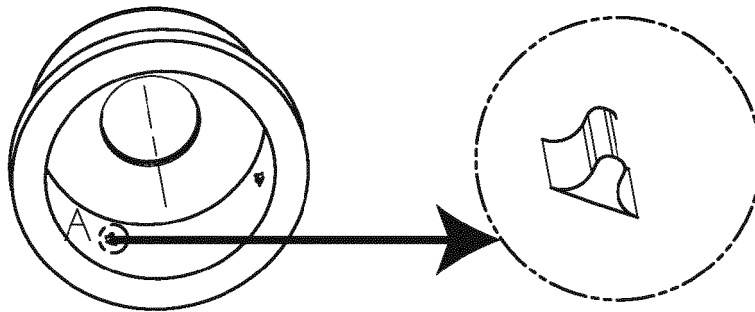


FIG. 8

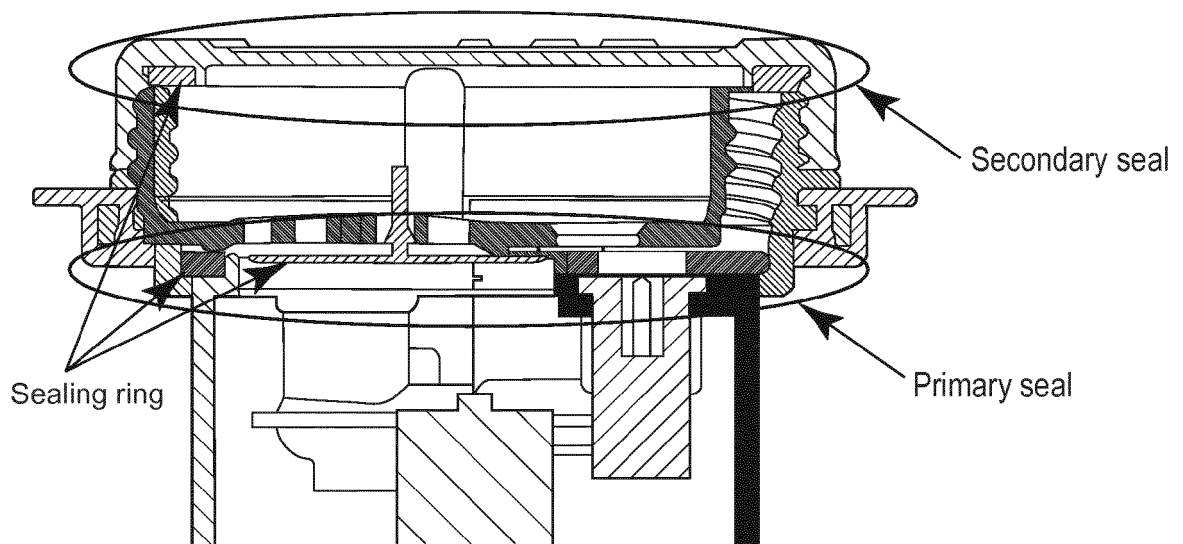


FIG. 9

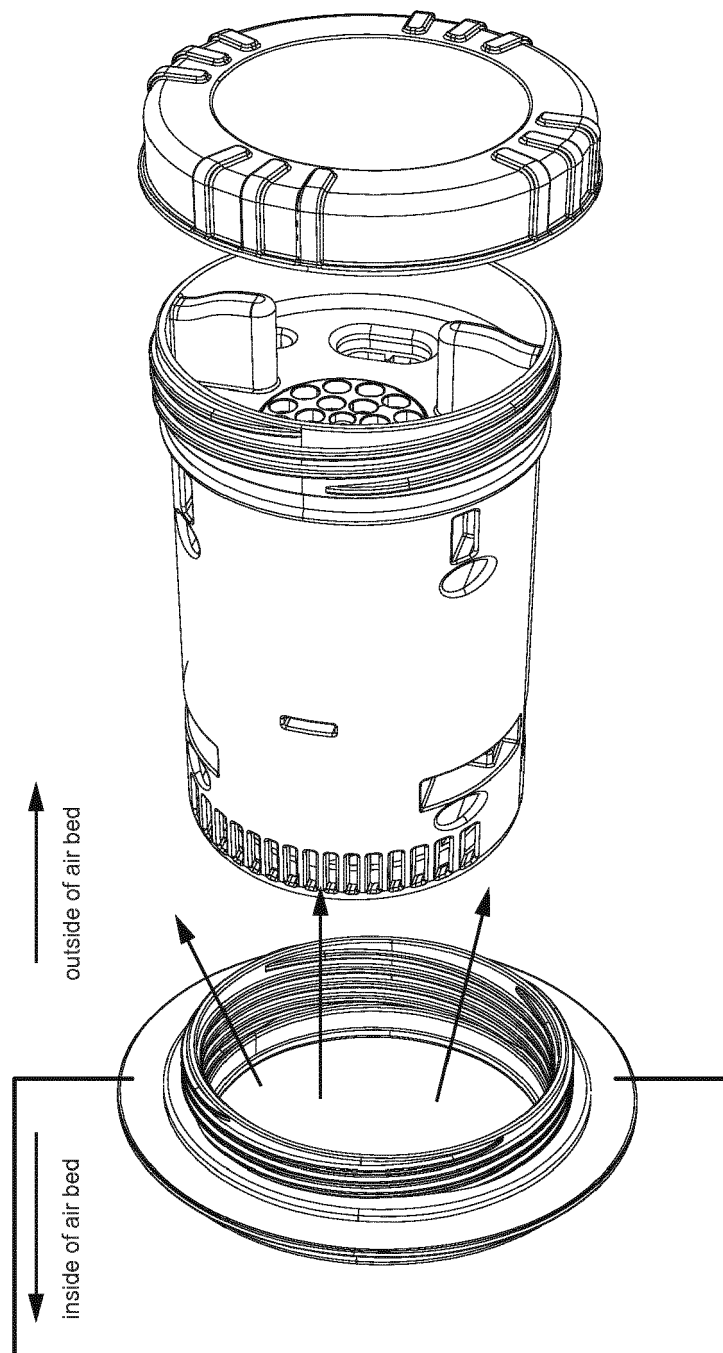


FIG. 10



EUROPEAN SEARCH REPORT

Application Number
EP 18 18 7625

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Y	* paragraphs [0039], [0054]; figures 2,3 *	3,4	

X	US 2003/099560 A1 (WANG CHENG-CHUNG [TW]) 29 May 2003 (2003-05-29)	1,5	
Y	* paragraph [0068]; figure 12 *	2-4	

X	US 2013/052050 A1 (TSAI JING-HONG [CN]) 28 February 2013 (2013-02-28)	1,2,5	TECHNICAL FIELDS SEARCHED (IPC) F04D A47C
Y	* figures 2,7,8 *	3,4	

Y	US 4 829 616 A (WALKER ROBERT A [US]) 16 May 1989 (1989-05-16) * column 5, lines 37,38; figure 2 * * column 8, line 46 - line 50; figure 14 *	2,4	

Y	US 2006/053561 A1 (METZGER ANDREW T [US] ET AL) 16 March 2006 (2006-03-16) * figure 3 *	3	

The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 12 December 2018	Examiner Yates, John
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 03/02 (P04C01)

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

EP 18 18 7625

5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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