(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 2 949 239 A1**

(12) **EUROPEAN PATENT APPLICATION**
published in accordance with Art. 153(4) EPC

(43) Date of publication:
02.12.2015 Bulletin 2015/49

(21) Application number: **14796388.8**

(22) Date of filing: **21.04.2014**

(51) Int Cl.:
A47C 27/10 *(2006.01)* ***A47C 27/08*** *(2006.01)*
A61G 7/05 *(2006.01)*

(86) International application number:
PCT/JP2014/061172

(87) International publication number:
WO 2015/162667 (29.10.2015 Gazette 2015/43)

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME

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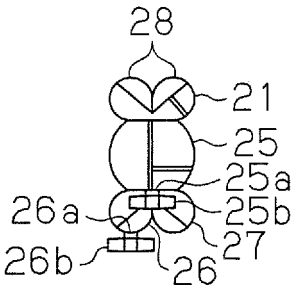
(54) **CELLS FOR AIR MATTRESS, AND AIR MATTRESS**

(57) An air mat cell unit has a middle-level cell (25) having an air supply port (25a), first and second lower-level cells (26, 27), and a plurality of pairs of upper-level cells (28, 29, 30). Each of the first and second lower-level cells (26, 27) has a length smaller than the length of the middle-level cell (25) and includes an air supply port (26a). The first and second lower-level cells (26, 27) are attached to a lower surface of the middle-level cell (25) in the longitudinal direction of the middle-level cell (25) and communicate with each other. The pairs of the upper-level cells (28, 29, 30) are attached to an upper surface of the middle-level cell (25) in the longitudinal direction of the middle-level cell (25). Each pair of the upper-level cells (28, 29, 30) extend parallel with each other, communicate with each other, and communicate with the middle-level cell (25). A clearance (G1, G2) is set between a specific pair of the upper-level cells (29) and another pair of the upper-level cells (28, 30) adjacent to the specific pair of the upper-level cells (29). The sum of the length of the upper-level cell (28), the length of the upper-level cell (29), and the length of the upper-level cell (30) of the respective pairs is set smaller than the length of the middle-level cell (25).

Fig.3



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Description

TECHNICAL FIELD

[0001] The present invention relates to an air mat cell unit and an air mat configured by air mat cell units.

BACKGROUND ART

[0002] A conventional air mat includes various types of means to avoid bedsores occurring in a user who lies on the air mat for a prolonged time. For example, an air mat disclosed in Patent Document 1 has a plurality of air cell units extending in the width direction of the air mat and joined together in the longitudinal direction of the air mat. Each of the air cell units includes a first cell, a second cell, and a third cell, the interiors of which are filled with air. The first cell has an elongated bag-like shape. The second cell and the third cell each have a diameter half the diameter of the first cell and a length equal to the length of the first cell. The second cell and the third cell are arranged in parallel and welded to the top surface of the first cell. When the air mat is used and receives load, the second cell and the third cell of each air cell unit move outward in an escaping manner. This increases the contact surface area between the air mat and the body surface of the user to decrease the contact pressure. In this manner, it is more unlikely that bedsores will occur.

[0003] Air is supplied from an air pump into each of the air cell units of the air mat via a tube. If the supply pressure of the air is set to a constant value in correspondence with any particular region of a human body, such as the head region, the shoulder region, the lumbar region, the femoral region, or the leg region, the other body regions receive load. This may make it impossible to maintain body regions susceptible to bedsores under low pressure.

[0004] The air mat of Patent Document 2 includes a plurality of air cell units extending in the width direction of the air mat and joined together in the longitudinal direction of the air mat. Each of the air cell units is configured by three level cells, which are an upper-level cell, a middle-level cell, and a lower-level cell. The upper-level cell communicates with the middle-level cell. The air mat further includes an air supply-discharge pump, first and second route tubes, sensors, an input device, and a control circuit. The first and second route tubes connect the pump to the corresponding cells. Each of the sensors detects pressure in the air cell units for one of the first and second route tubes. The input device is employed to input the body weight of the user. The control circuit controls the pump in correspondence with inputs from the sensors and the input body weight. This prevents the mat from sinking deeply for a heavy person, compared to a light person.

[0005] However, since the air mat of Patent Document 2 must employ a great number of components including the sensors and the input device, the configuration of the air mat is complicated and the costs for manufacturing the air mat thus may be increased.

PRIOR ART DOCUMENTS

Patent Documents

[0006]

Patent Document 1: Japanese Laid-Open Patent Publication No. 2008-125798

Patent Document 2: Japanese Laid-Open Patent Publication No. 2011-160896

SUMMARY OF THE INVENTION

Problems that the Invention is to Solve

[0007] Accordingly, it is an objective of the present invention to provide an air mat cell unit suitable for an air mat that is capable of dispersing pressure applied from the air mat to the user to the whole body to decrease bedsores and has a simple configuration to ensure inexpensive manufacture. Another objective of the invention is to provide an air mat employing the air mat cell unit.

Means for Solving the Problems

[0008] To achieve the foregoing objective and in accordance with a first aspect of the present invention, an air mat cell unit that includes a middle-level cell, a pair of first and second lower-level cells, and a plurality of pairs of upper-level cells is provided. The middle-level cell is formed in an elongated bag-like shape using a plastic sheet and has an air supply port through which air is supplied into the middle-level cell. The first and second lower-level cells are each formed in an elongated bag-like shape using a plastic sheet. Each of the first and second lower-level cells has a length smaller than the length of the middle-level cell. Each lower-level cell includes an air supply port through which air is supplied into the lower-level cell. The first and second lower-level cells are attached to a lower surface of the middle-level cell in a longitudinal direction of the middle-level cell, the first and second lower-level cells communicating with each other. The pairs of upper-level cells are each formed in a bag-like shape using a plastic sheet and attached to an upper surface of the middle-level cell in the longitudinal direction of the middle-level cell. The upper-level cells in each pair extend parallel with each other, communicate with each other, and communicate with the middle-level cell. A clearance is set between a specific pair of the upper-level cells and another pair of the upper-level cells adjacent to the specific pair of the upper-level cells. The sum of the lengths of the pairs of the upper-level cells is set smaller than the length of the middle-level cell.

[0009] Accordingly, in the first aspect, by setting the clearance between the specific pair of the upper-level

cells and another pair of the upper-level cells adjacent to the specific pair of the upper-level cells, the pressure received by the user is dispersed.

[0010] The pairs of the upper-level cells are preferably three pairs of upper-level cells.

[0011] The upper-level cells and the lower-level cells are preferably welded to the middle-level cell.

[0012] In accordance with a second aspect of the present invention, an air mat is provided that includes the air mat cell unit according to the first aspect, and second and third cell units each configured differently from the first cell unit. The second cell unit is formed in an elongated bag-like shape using a plastic sheet and has an air supply port through which air is supplied into the second cell unit. The interior of the second cell unit is divided into two sections by a partition wall extending in a longitudinal direction. The third cell unit is formed in an elongated bag-like shape using a plastic sheet and has an air supply port through which air is supplied into the third cell unit. The interior of the third cell unit is divided into three sections by two partition walls extending parallel with each other in the longitudinal direction. The air mat is configured by joining a plurality of first cell units, a plurality of second cell units, and a plurality of third cell units together.

[0013] In this case, the pressure applied from the air mat to the user is dispersed to the whole body to decrease bedsores. This simplifies the configuration of the air mat and ensures inexpensive manufacture of the air mat.

[0014] In the air mat, the first cell units preferably correspond to the lumbar region and the buttock region of a user. Also, the second cell units preferably correspond to the head region and the femoral region of the user, and the third cell units preferably correspond to the shoulders and the leg region of the user.

EFFECTS OF THE INVENTION

[0015] The present invention provides an air mat cell unit suitable for an air mat that is capable of dispersing pressure applied from the air mat to the user to the whole body to decrease bedsores and has a simple configuration to ensure inexpensive manufacture. The invention also provides an air mat employing the air mat cell unit.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016]

Fig. 1 is a plan view showing an air mat of the present invention in use;
Fig. 2 is a cross-sectional view of the air mat of Fig. 1 taken along line 2-2;
Fig. 3 is a side view showing a first cell unit of the air mat;
Fig. 4 is a plan view showing the first cell unit;
Fig. 5 is a front view showing the first cell unit;
Fig. 6 is a bottom view showing the first cell unit;
Fig. 7 is an enlarged cross-sectional view showing a portion of the first cell unit;
Fig. 8 is a side view showing a second cell unit of the air mat;
Fig. 9 is a side view showing the second cell unit;
Fig. 10 is a bottom view showing the second cell unit;
Fig. 11 is a side view showing a third cell unit of the air mat;
Fig. 12 is a front view showing the third cell unit;
Fig. 13 is a bottom view showing the third cell unit;
Fig. 14 is a piping diagram schematically illustrating the connection state of tubes with respect to the cell units of the air mat; and
Fig. 15 is a diagram illustrating a control circuit for controlling air supply to the air mat.

MODES FOR CARRYING OUT THE INVENTION

[0017] One embodiment of the present invention will now be described in detail with reference to the attached drawings. First, the schematic configuration of the air mat will be described. As illustrated in Figs. 1 and 2, an air mat 20 is configured by cell units configured in three different manners, which are a plurality of first cell units 21, a plurality of second cell units 22, and a plurality of third cell units 23. The first, second, and third cell units 21, 22, 23 extend in the width direction of the air mat 20 and joined together in the longitudinal direction of the air mat 20 by non-illustrated joint means.

[0018] The first cell units 21 are provided in correspondence with the lumbar region W and the buttock region G of the user U. The second cell units 22 are provided in correspondence with the head region H and the femoral region F of the user. The third cell units 23 are provided in correspondence with the shoulder region S and the leg region L of the user.

[0019] Three of the second cell units 22 correspond to the head region H and five of the third cell units 23 correspond to the shoulder region S. Nine of the first cell units 21 correspond to the lumbar region W and the buttock region G. Three of the second cell units 22 correspond to the femoral region F. Six of the third cell units 23 correspond to the leg region L. The number of the cell units corresponding to each of the body regions may be altered as needed.

[0020] The cell units 21, 22, 23 will hereafter be described in detail.

[0021] With reference to Figs. 3 to 7, each of the first cell units 21 includes a middle-level cell 25, a pair of lower-level cells 26, 27, and three pairs of upper-level cells 28, 29, 30. The middle-level cell 25 is formed in an elongated bag-like shape using a sheet of plastic such as urethane and has a substantially circular cross section. The middle-level cell 25 includes an air supply port 25a through which air is supplied into the middle-level cell 25. A T-shaped coupling 25b is attached to the air supply port 25a.

[0022] The first lower-level cell 26 and the second low-

er-level cell 27 are each formed in an elongated bag-like shape using a sheet of plastic such as urethane and have a length smaller than the length of the middle-level cell 25. The first and second lower-level cells 26, 27 communicate with each other at opposite ends of the lower-level cells 26, 27. The first and second lower-level cells 26, 27 are welded and attached to the lower surface of the middle-level cell 25 in the longitudinal direction of the middle-level cell 25. A weld portion 27a is provided between the first and second lower-level cells 26 and 27. The first lower-level cell 26 has an air supply port 26a through which air is supplied into the first and second lower-level cells 26, 27. A T-shaped coupling 26b is attached to the air supply port 26a. Accordingly, the first and second lower-level cells 26, 27 do not communicated with the middle-level cell 25 and are independent from the middle-level cell 25. Each of the first and second lower-level cells 26, 27 has a substantially circular cross section and the diameter of each lower-level cell 26, 27 is approximately half the diameter of the middle-level cell 25.

[0023] The first to third upper-level cells 28, 29, 30, which form three pairs, are each formed in a bag-like shape using a sheet of plastic such as urethane and welded and attached to the upper surface of the middle-level cell 25 in the longitudinal direction of the middle-level cell 25. A weld portion 28a, a weld portion 29a, and a weld portion 30a are arranged in a middle portion of the upper-level cells 28, a middle portion of the upper-level cells 29, and a middle portion of the upper-level cells 30, respectively. The upper-level cells 28, 29, 30 of each of the pairs extend parallel with each other and communicate with each other through opposite end portions. As illustrated in Fig. 7, each of the pairs of upper-level cells 28, 29, 30 has one of communication ports 33, 34. Similarly, the middle-level cell 25 has communication ports 35, 36 corresponding to the communication ports 33, 34. The pairs of the upper-level cells 28, 29, 30 communicate with the middle-level cell 25 in common through the corresponding communication ports 33, 34, 35, 36. Each of the upper-level cells 28, 29, 30 has a substantially circular cross section. The diameter of each upper-level cell 28, 29, 30 is approximately a half of the diameter of the middle-level cell 25.

[0024] A first clearance G1 is provided between a pair of the first upper-level cells 28 and a pair of the second upper-level cells 29. A second clearance G2 is provided between a pair of the second upper-level cells 29 and a pair of the third upper-level cells 30. The sum of the length of each upper-level cell 28, the length of each upper-level cell 29, and the length of each upper-level cell 30 is set smaller than the length of the middle-level cell 25 by the amount corresponding to the sum of the lengths of the first and second clearances G1, G2. Each of the second upper-level cells 29 is set longer than each of the first and third upper-level cells 28, 30. The length of each first upper-level cell 28 and the length of each third upper-level cell 30 are substantially equal. The length of each second upper-level cell 29 is set substantially equal to the body width of a user U of a standard body size.

[0025] With reference to Figs. 8 to 10, the second cell units 22 of the air mat 20 are configured differently from the above-described first cell units 21. Each second cell unit 22 is formed in an elongated bag-like shape using a sheet of plastic such as urethane and has an air supply port 22a through which air is supplied into the second cell unit 22. The interior of the second cell unit 22 is divided into two sections by a single partition wall 22b, which extends in the longitudinal direction. The two divided sections communicate with each other through a communication port (not shown) formed in the partition wall 22b. By employing the partition wall 22b, a constricted portion 22c is formed in each of two opposed outer walls of each second cell unit 22. This adjusts the radius of curvature of the second cell unit 22, thus adjusting the haptic sensation experienced by the user. A T-shaped coupling 22d is attached to the air supply port 22a.

[0026] As illustrated in Figs. 11 to 13, each of the third cell units 23 of the air mat 20 is configured differently from both the first cell unit 21 and the second cell unit 22. Each third cell unit 23 is formed in an elongated bag-like shape using a sheet of plastic such as urethane and has an air supply port 23a through which air is supplied into the third cell unit 23. The interior of the third cell unit 23 is divided into three sections by two partition walls 23b, 23c extending parallel with each other in the longitudinal direction. The three divided sections communicate with one another through communication ports (not shown) formed in the partition walls 23b, 23c. By employing the partition walls 23b, 23c, two constricted portions 23d are formed in each of two opposed outer walls of each third cell unit 23. This adjusts the radius of curvature of the third cell unit 23 to a value smaller than the radius of curvature of each second cell unit 22, thus adjusting the haptic sensation experienced by the user. A T-shaped coupling 23e is attached to the air supply port 23a.

[0027] When filled with air, a cell unit with a great radius of curvature causes a relatively hard sensation for the user U and a cell unit with a small radius of curvature causes a relatively soft sensation for the user U. As a result, in the present embodiment, the comparatively great radius of curvature of each of the second cell units 22 causes a hard sensation for the head region H and the femoral region F. The comparatively small radius of curvature of the upper-level cells 29 of each of the first cell units 21 provides a soft sensation for the lumbar region W and the buttock region G. The intermediate radius of curvature of each of the third cell units 23 causes an intermediate sensation for the shoulder region S and the leg region L.

[0028] A device for supplying air into the air mat 20 will hereafter be described with reference to Figs. 14 and 15. The three second cell units 22 corresponding to the head region H, which are the cell units No. 1 to No. 3 (second cell units 22), receive air of a predetermined pressure, which is, for example, 1 kPa, through the first route tube

41 connected to the corresponding couplings 22d.

[0029] The three third cell units 23 corresponding to the shoulder region S, the middle-level cells 25 of the nine first cell units 21 corresponding to the lumbar region W and the buttock region G, the three second cell units 22 corresponding to the femoral region F, and the six third cell units 23 corresponding to the leg portion L each receive air of a predetermined pressure, which is, for example, 3 kPa ± 0.5 kPa, through a pre-assigned one of second, third, and fourth route tubes 42, 43, 44 and the coupling 23e, 25b, or 22d to which the pre-assigned route tube 42 or 43 or 44 is connected. For example, in the present embodiment, the cell units No. 6, No. 9, No. 12, No. 15, No. 18, No. 21, and No. 24 are assigned to the second route tube 42. The cell units No. 4, No. 8, No. 10, No. 13, No. 16, No. 19, No. 22, and No. 25 are assigned to the third route tube 43. The cell units No. 5, No. 7, No. 11, No. 14, No. 17, No. 20, No. 23, and No. 26 are assigned to the fourth route tube 44.

[0030] The first and second lower-level cells 26, 27 of the nine first cell units 21 corresponding to the lumbar region W and the buttock region G receive air of a predetermined pressure, which is, for example, 7 kPa, through a fifth route tube 45 connected to the coupling 26b. Air supply to the respective route tubes 41 to 45 is controlled by a control device 46. A set of electromagnetic valves 47, a pump 48, and a sensor 49 are electrically connected to the control device 46.

[0031] When the control device 46 operates to open the electromagnetic valve set 47 and activate the pump 48, the pump 48 sends air to the cell units 21 to 23 through the electromagnetic valve set 47, the corresponding route tubes 41 to 45, the corresponding couplings 25b, 26b, 22d, 23e, and the corresponding air supply ports 25a, 26a, 22a, 23a. When the sensor 49 detects that the pressure in each route tube 41 to 45, which is the pressure in each corresponding cell unit 21 to 23, reaches a predetermined value, the control device 46 stops the pump 48 in response to a detection signal from the sensor 49 and, simultaneously, closes the electromagnetic valve set 47, thus ending air supply to the tubes 41 to 45. In this manner, filling the cell units 21 to 23 with air is ended.

[0032] Operation of the air mat 20 will hereafter be described. As illustrated in Fig. 1, when the air mat 20 filled with air is in use, the body regions H, S, W, G, F, and L of the user U are arranged on the corresponding cell units. In the air mat 20 of the present embodiment, an upper-level cell of each of the first cell units 21 corresponding to the lumbar region W and the buttock region G of the user U is divided into the three portions to provide the first to third upper-level cells 28 to 30. Accordingly, referring to Fig. 1, the lumbar region W and the buttock region G of the user U are arranged on the second upper-level cells 29, which are located in the middle. In this case, the second upper-level cells 29 receive the load caused by the user U, thus decreasing reception of the load by the first and third upper-level cells 28, 30. It is thus unlikely that the opposite side edges of the air mat 20 rise.

[0033] The first cell units 21 are arranged in correspondence with the lumbar region W and the buttock region G of the user U. A large number of (in the present embodiment, nine pairs of, or eighteen) second upper-level cells 29 of the first cell units 21 are filled with air of a comparatively low pressure, which is 3 kPa. In contrast, the lower-level cells 26, 27 of each first cell unit 21 are filled with air of a comparatively high pressure, which is 7 kPa.

[0034] Accordingly, the second upper-level cells 29 increase the contact surface area with respect to the user U and, simultaneously, the lower-level cells 26, 27 increase the rigidity of the air mat 20. As a result, the pressure applied from the air mat 20 to the user U is dispersed to the whole body of the user without concentrating on the lumbar region W or the buttock region G. This decreases bedsores and sinking of the user U in the air mat 20.

[0035] If the air mat 20 is used for a prolonged time and the pressure in each cell unit drops to a level lower than a predetermined pressure, the sensor 49 inputs a detection signal representing such pressure decrease to the control device 46. In response to the input signal, the control device 46 controls opening/closing of the electromagnetic valve set 47 and activates the pump 48, thus supplying air to the cell units 21 to 23. When the sensor 49 detects that the pressure in each of the cell units 21 to 23 reaches the predetermined pressure, the control device 46 controls the electromagnetic valve set 47 in response to a signal input from the sensor 49 and stops the pump 48. As a result, the pressure in each cell unit 21 to 23 is returned to the predetermined value, thus allowing continuous use of the air mat 20.

[0036] The advantages of the present embodiment are as follows.

(1) The middle-level cell 25 of each first cell unit 21 is formed in an elongated bag-like shape using a plastic sheet and has the air supply port 25a, through which air is supplied into the middle-level cell 25. Each of the first and second lower-level cells 26, 27 is formed in an elongated bag-like shape using a plastic sheet, has a length smaller than the length of the middle-level cell 25, and includes the air supply port 26a, through which air is supplied into the lower-level cell 26, 27. The first and second lower-level cells 26, 27 communicate with each other and are attached to the lower surface of the middle-level cell 25 in the longitudinal direction of the middle-level cell 25. The upper-level cells 28 to 30 are each formed in a bag-like shape using a plastic sheet and attached to the upper surface of the middle-level cell 25 in the longitudinal direction of the middle-level cell 25, thus forming multiple pairs.

As a result, the pressure of the air supplied into the middle-level cell 25 and the pressure of the air provided into each lower-level cell 26, 27 are set inde-

pendently from each other in correspondence with characteristics requested for the respective cells.

(2) The upper-level cells 28, 29, 30 in each pair extend parallel with each other, communicate with each other, and communicate with the middle-level cell 25. The clearance G1 is set between the specific pair of the upper-level cells 29 and a pair of the upper-level cells 28 adjacent to the upper-level cells 29. Also, the clearance G2 is set between the specific pair of the upper-level cells 29 and a pair of the upper-level cells 30 adjacent to the upper-level cells 29. The sum of the length of each upper-level cell 28, the length of each upper-level cell 29, and the length of each upper-level cell 30 is smaller than the length of the middle-level cell 25. This ensures dispersion of the pressure applied from the upper-level cells 28, 29, 30 to the user U. Also, when the user U lies on the air mat 20 along one of the side edges, a part of the body of the user U is received by the corresponding clearance G1, G2. This makes it unlikely that the user U will fall off from the air mat 20.

(3) The multiple pairs of the upper-level cells are configured by three pairs of the first to third upper-level cells 28, 29, 30. The length of each second upper-level cell 29 is set in correspondence with the body width of the user U with an average body size. Also, each of the clearances G1, G2 is provided by a dimension suitable for making it unlikely that the user U falls off.

(4) The upper-level cells 28, 29, 30 and the lower-level cells 26, 27 are welded to the middle-level cell 25. As illustrated in Fig. 4, the upper-level cells 28, 29, 30 are each formed by an independent bag-shaped plastic sheet and welded to the middle-level cell 25 through the corresponding three weld portions 28a, 29a, 30a in a state spaced apart by the corresponding clearances G1, G2. This arrangement facilitates manufacturing. Similarly, with reference to Fig. 6, each of the lower-level cells 26, 27 is configured by a single bag-shaped plastic sheet and welded to the middle-level cell 25 through the weld portion 27a. As a result, each first cell unit 21 as a whole is easily manufactured.

(5) The air mat 20 has the first cell units 21 and includes the second and third cell units 22, 23, each of which is configured differently from each first cell unit 21. Each second cell unit 22 is formed in an elongated bag-like shape using a plastic sheet and includes the air supply port 22a, through which air is supplied into the second cell unit 22. The interior of the second cell unit 22 is divided into the two sections by the single partition wall 22b, which extends in the longitudinal direction. Each third cell unit 23 is formed in an elongated bag-like shape using a plastic sheet and includes the air supply port 23a, through which air is supplied into the third cell unit 23. The interior of the third cell unit 23 is divided into the three sections by the two partition walls 23b, 23c, which extend parallel with each other in the longitudinal direction. The air mat 20 is configured by joining the multiple first cell units 21, the multiple second cell units 22, and the multiple third cell units 23 together.

As a result, the pressure applied from the air mat 20 to the user U is dispersed to the whole body of the user U, thus decreasing bedsores. Also, the configuration of the air mat 20 is simplified and the air mat 20 is manufactured inexpensively.

(6) The first cell units 21 correspond to the lumbar region W and the buttock region G of the user U and the second cell units 22 correspond to the head region H and the femoral region F of the user U. The third cell units 23 correspond to the shoulder region S and the leg region L of the user U. The air mat is thus configured by selectively arranging the cell units having shapes suitable for supporting the respective body regions of the user.

DESCRIPTION OF THE REFERENCE NUMERALS

[0037] 20...air mat, 21...first cell unit, 22...second cell unit, 23...third cell unit, 25...middle-level cell, 25a...air supply port, 26...first lower-level cell, 27...second lower-level cell, 26a...air support port, 28...first upper-level cell, 29...second upper-level cell, 30...third upper-level cell, G1...first clearance, G2...second clearance

Claims

1. An air mat cell unit comprising:

a middle-level cell that is formed in an elongated bag-like shape using a plastic sheet and has an air supply port through which air is supplied into the middle-level cell;

a pair of first and second lower-level cells each formed in an elongated bag-like shape using a plastic sheet, each of the first and second lower-level cells having a length smaller than the length of the middle-level cell, each lower-level cell including an air supply port through which air is supplied into the lower-level cell, the first and second lower-level cells being attached to a lower surface of the middle-level cell in a longitudinal direction of the middle-level cell, the first and second lower-level cells communicating with each other; and

a plurality of pairs of upper-level cells each formed in a bag-like shape using a plastic sheet and attached to an upper surface of the middle-level cell in the longitudinal direction of the middle-level cell, wherein

the upper-level cells in each pair extend parallel with each other, communicate with each other, and communicate with the middle-level cell,

a clearance is set between a specific pair of the

upper-level cells and another pair of the upper-level cells adjacent to the specific pair of the upper-level cells, and
the sum of the lengths of the pairs of the upper-level cells is set smaller than the length of the middle-level cell.

2. The air mat cell unit according to claim 1, wherein the pairs of the upper-level cells are three pairs of upper-level cells.

3. The air mat cell unit according to claim 1, wherein the upper-level cells and the lower-level cells are welded to the middle-level cell.

4. An air mat comprising:

the air mat cell unit according to any one of claims 1 to 3 as a first cell unit; and
second and third cell units each configured differently from the first cell unit, wherein
the second cell unit is formed in an elongated bag-like shape using a plastic sheet and has an air supply port through which air is supplied into the second cell unit, the interior of the second cell unit being divided into two sections by a partition wall extending in a longitudinal direction,
the third cell unit is formed in an elongated bag-like shape using a plastic sheet and has an air supply port through which air is supplied into the third cell unit, the interior of the third cell unit being divided into three sections by two partition walls extending parallel with each other in the longitudinal direction, and
the air mat is configured by joining a plurality of first cell units, a plurality of second cell units, and a plurality of third cell units together.

5. The air mat according to claim 4, wherein
the first cell units correspond to the lumbar region and the buttock region of a user,
the second cell units correspond to the head region and the femoral region of the user, and
the third cell units correspond to the shoulders and the leg region of the user.

Fig.1

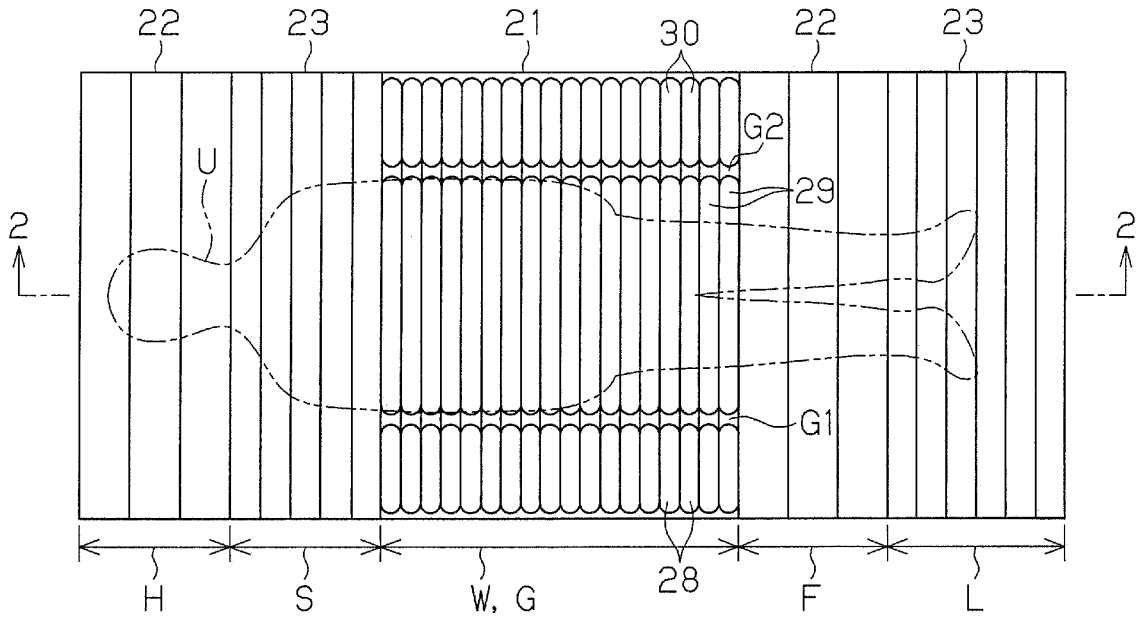
22
23
21
30
22
23
G2
U
29
2
2
G1
H
S
W, G
28
F
L

Fig.2

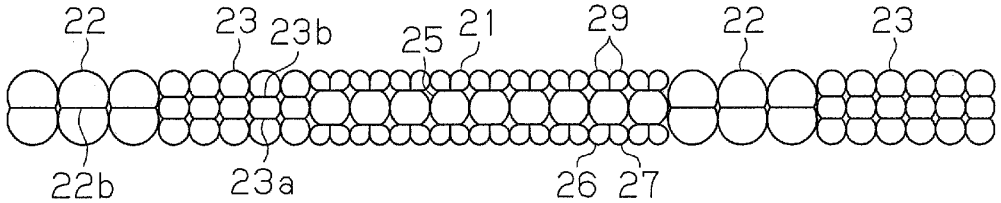
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Fig.3

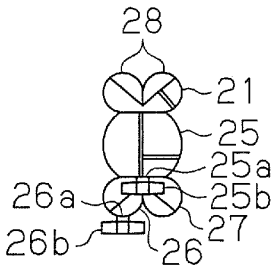


Fig.4

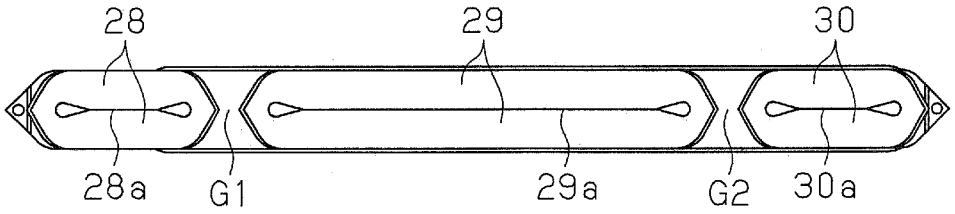


Fig.5

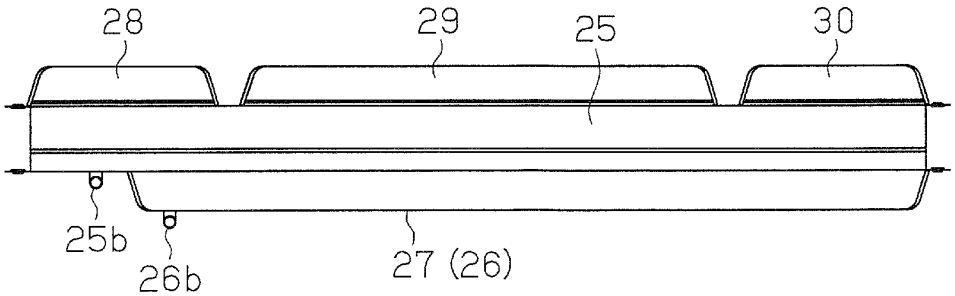
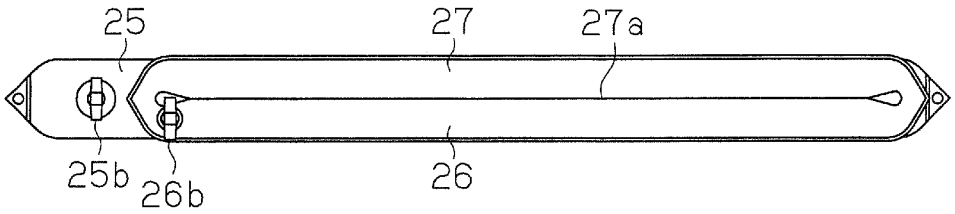


Fig.6



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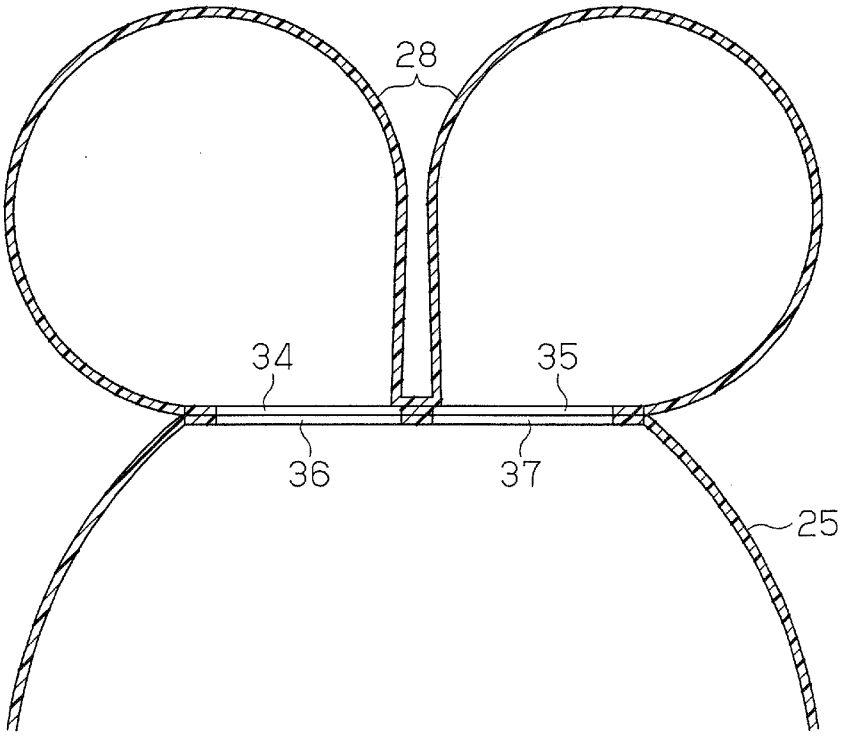

Fig.8

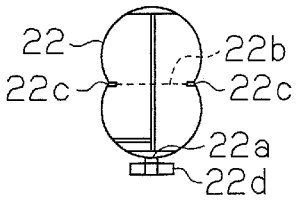

Fig.9

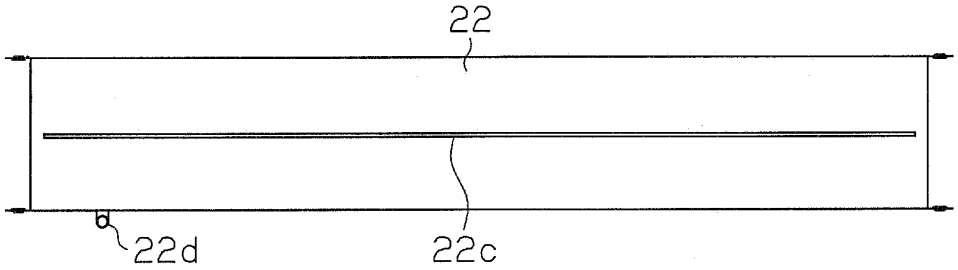

Fig.10

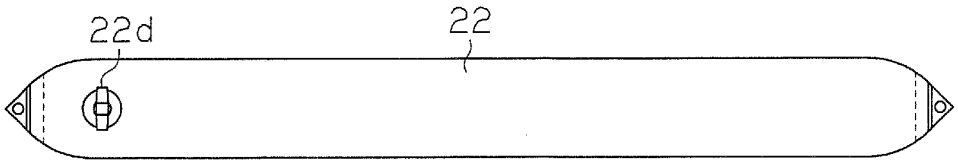

Fig.11

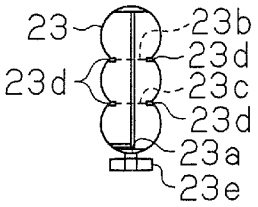

Fig.12

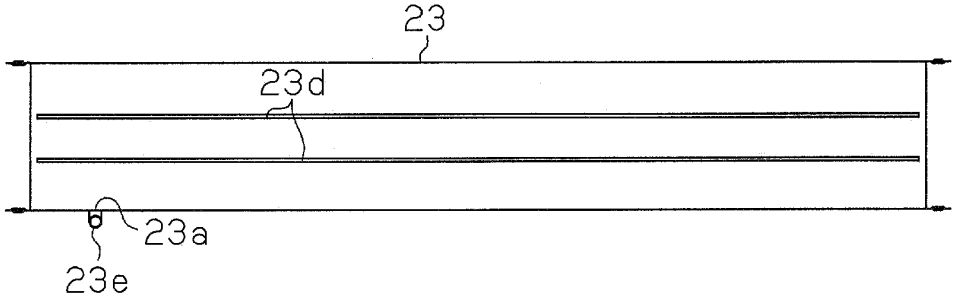

Fig.13

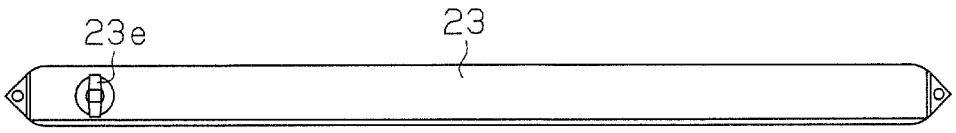

Fig.14

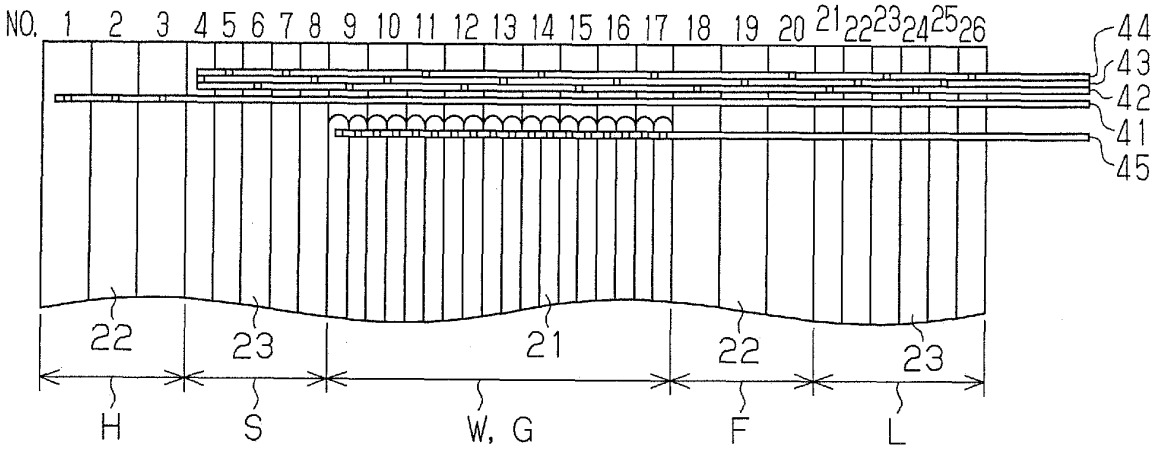
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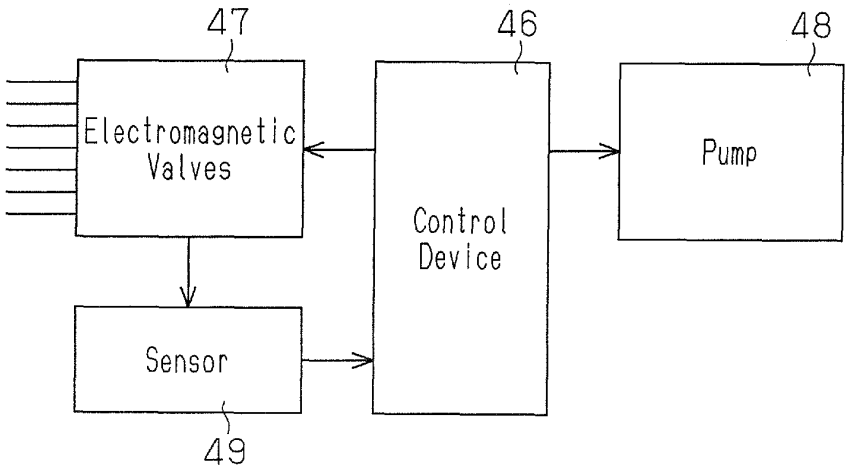
Fig.15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Electromagnetic Valves
Control Device
Pump
Sensor
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP2014/061172

A. CLASSIFICATION OF SUBJECT MATTER
A47C27/10(2006.01)i, *A47C27/08*(2006.01)i, *A61G7/05*(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)
A47C27/10, A47C27/08, A61G7/05

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Jitsuyo Shinan Koho 1922-1996 Jitsuyo Shinan Toroku Koho 1996-2014
Kokai Jitsuyo Shinan Koho 1971-2014 Toroku Jitsuyo Shinan Koho 1994-2014

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 2012-40191 A (Cape Co., Ltd.), 01 March 2012 (01.03.2012), entire text; all drawings (Family: none)	1-5
A	KR 10-0844587 B1 (YEONGWON MEDICAL CO., LTD.), 10 July 2008 (10.07.2008), entire text; all drawings (Family: none)	1-5
A	JP 2011-160896 A (Paramount Bed Co., Ltd.), 25 August 2011 (25.08.2011), paragraphs [0025] to [0026], [0029] to [0031]; fig. 1 to 4 & US 2012/0317727 A1 & EP 2532281 A1 & WO 2011/096115 A1	1-5

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

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
09 May, 2014 (09.05.14)	03 June, 2014 (03.06.14)
Name and mailing address of the ISA/ Japanese Patent Office Facsimile No.	Authorized officer Telephone No.

Form PCT/ISA/210 (second sheet) (July 2009)

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- JP 2008125798 A **[0006]**
- JP 2011160896 A **[0006]**