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(54) **COUNTERWEIGHT MASSAGINGAND BUFFERING CONVECTIVE AIRBAG CUSHION**

(57) A convective air pad with weight balancing and massage buffering effect, which includes a pad body (1), convective air chamber (2) integrally and uniformly arranged on a surface side of the pad body (1), wherein the convective air chamber (2) is filled with gas, wherein the convective air chamber (2) includes airbag members (21), a convective channel (22) connected between each two adjacently positioned airbag members (21), and a ventilation gap (23) provided between each two adjacently positioned airbag members (21). Through the convective air chamber (2) on the pad body (1), the load-bearing portion is in direct contact with the convective air chamber (2) to provide a very strong weight reducing and pressure buffering effect, thus effectively reduce the stress from the load to the load-bearing portions. The convective air chamber (2) is formed by a number of interconnecting airbag members (21) so that the pressure can be dispersed effectively by gas movement through the convective channels (22), therefore the load is translated into massage effect on the load-bearing parts through the interconnecting airbag members (21) and hence the fatigue and pain in the load-bearing parts is greatly reduced. Moreover, since ventilation gap is formed between the airbag members (21), the contact area between the load-bearing parts is effectively reduced while a superior ventilation effect is provided, hence the heat is dissipated effectively and timely and the comfort level is increased.

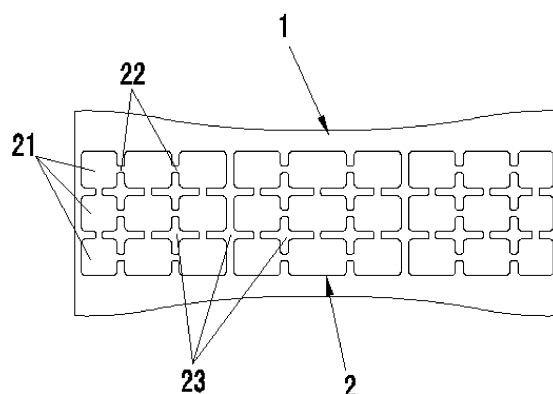


FIG. 1

## Description

### Background of the Present Invention

### Field of Invention

**[0001]** The present invention relates to a buffered pad, and more particularly to a convective air pad which provides weight balancing and massage buffering effect.

### Description of Related Arts

**[0002]** In daily life, bag products such as backpacks, waist bags, shoulder bags, arm bags and insoles are commonly used products. The traditional bag products are often only focus on the loading of its functionality. The consideration on the design or purchase is mainly on the number of pockets in a backpack, its loading capacity or its appearance. The consideration on the comfort when using the backpack is rarely taken into account. For insoles, the design is merely focus on its permeability and design which is focused on the comfort to the soles is ignored.

**[0003]** When bag items are used, its weight is generally concentrated on the shoulder, waist, neck or arm of the human body. When the bag is loaded with more items or is used for a long time, these parts of the human body will have long-term pressure and lead to poor local blood circulation and pain may be caused. Also, since the contact parts are not ventilated, sweating is easily resulted and effective heat dissipation is failed. Therefore, people will feel great discomfort, the skin health is affected and a health concern is resulted.

**[0004]** Insoles are positioned at the inner side of the shoes. When wearing, the weight is concentrated on the soles of the feet. When a person is walking, the stress points are sequentially from the heel to the sole. The stress points are varied continuously. Long-term walking can generate different pressure to different parts of the sole and may cause pain. The existing insoles do not have massage effect to the feet and do not have the function of reducing weight.

### Summary of the Present Invention

**[0005]** In order to solve the above problems, the present invention provides a convective air pad with weight balancing and massage buffering effect which is capable of providing damping and decompression effectively to load-bearing parts while providing multidirectional massage and load reducing effect for providing pain relief effectively.

**[0006]** According to the present invention, the foregoing and other objects and advantages are attained by a convective air pad with weight balancing and massage buffering effect, comprising: a pad body, a convective air chamber uniformly and integrally arranged on a surface side of said pad body, wherein the convective air cham-

ber is filled with gas, wherein said convective air chamber comprises airbag member, a convective channel connected between each two adjacently positioned airbag members, and a ventilation gap provided between each two adjacently positioned airbag members.

**[0007]** According to this embodiment, said pad body and said convective air chamber are both made of extendable elastic material.

**[0008]** According to this embodiment, the number of convective air chamber is more than one, and the number of said airbag members is more than two.

**[0009]** According to this embodiment, the convective air chamber is provided at two sides of said pad body respectively.

**[0010]** The advantageous effect of the present invention is that: the present invention filled the convective air chamber with gas through providing the convective air chamber on the surface of the pad body. When in use, the load-bearing parts and the convective air chamber are in direct contact and a buffer effect is provided through the gas, thus providing a very strong weight reducing effect and a decompression buffering effect which can effectively reduce the stress of the loading to the load-bearing parts. Wherein the convective air chamber is formed by a plurality of airbag members while each two adjacently positioned airbag members are inter-connected through the convective channel. Therefore, when under loading condition, the gas inside the airbag member can effectively disperse the pressure in different directions through the convective channels, and can translate the load to massage effect on the load-bearing parts through the plurality of interconnected airbag members. Thus, the strain and pain on the load-bearing parts are reduced dramatically. In addition, since ventilation gaps are formed between the airbag members, the contact area between the load-bearing parts are greatly reduced while a superior ventilation effect is provided, therefore, the heat is dissipated on a timely manner and the level of comfort is increased. Accordingly, the level of comfort is increased effectively.

### Brief Description of the Drawings

#### [0011]

Fig. 1 is a structural illustration of the present invention;

Fig. 2 is a structural illustration according to the preferred embodiment of the present invention;

Fig. 3 is an illustration of the present invention when the present invention is used as an insole;

Fig. 4 is a side view of the present invention according to another embodiment of the present invention;

**[0012]** Description of numerical references: 1-pad

body; 2-convective air chamber; 21-airbag member; 22-convective channel; 23-ventilation gap; 3-positioning strap.

#### Detailed Description of the Preferred Embodiment

**[0013]** Referring to Figs. 1-4 of the drawings, the present invention is related to a convective air pad which provides weight balancing and massage buffering effect, which comprises: a pad body 1, a convective air chamber 2, wherein the convective air chamber 2 is positioned on and integrally formed on a surface of the pad body 1, wherein the convective air chamber 2 has a cavity which is filled with gas, wherein the convective air chamber 2 comprises a plurality of airbag members 21, a convective channel 22 formed between each two adjacently positioned airbag members 21, and a ventilation gap 23 is positioned between each two adjacently positioned airbag members 21.

**[0014]** Compared to the existing technology, the present invention filled the convective air chamber 2 with gas through providing the convective air chamber 2 on the surface of the pad body 1. When in use, the load-bearing parts and the convective air chamber 2 are in direct contact and a buffer effect is provided through the gas, thus providing a very strong weight reducing effect and a decompression buffering effect which can effectively reduce the stress of the loading to the load-bearing parts. Wherein the convective air chamber 2 is formed by a plurality of airbag members 21 while each two adjacently positioned airbag members 21 are inter-connected through the convective channel 22. Therefore, when there is change of force during walking or running, the gas inside the airbag member 21 can effectively disperse the pressure in different directions through the convective channels 22, and can translate the load to massage effect on the load-bearing parts through the plurality of inter-connected airbag members. Thus, the blood circulation of the load-bearing parts is maintained while the strain on the load-bearing parts are reduced dramatically. In addition, since ventilation gaps 23 are formed between the airbag members 21, the contact area between the load-bearing parts are greatly reduced while a superior ventilation effect is provided, therefore, the heat is dissipated on a timely manner and the level of comfort is increased. Accordingly, the level of comfort is increased effectively.

**[0015]** According to this embodiment, the pad body 1 and the convective chamber 2 are both made of extendable elastic material. In particular, this includes one or more of plastic materials, rubber materials, silicone materials, leather materials and cloth materials.

**[0016]** The above embodiment is employed and the extendable elastic material such as plastic materials, rubber materials, leather materials, silicone materials and cloth materials is used to make the pad body and the convective chamber. Compared to the traditional sandwich materials or other elastic fabric materials in the ex-

isting technology, this can further provide a load reducing effect to the load-bearing parts and increase the level of comfort during use.

**[0017]** According to this embodiment, the convective air chamber 2 is provided to the two sides on the surface of the pad body 1.

**[0018]** When the above embodiment is employed, through providing the convective air chamber on the two sides of the surface of the pad body, the flexibility of the resulting product is greatly increased and hence the level of comfort is increased.

**[0019]** The present invention can also be applied onto the load-bearing portion of bag items, such as the straps of backpacks, the belts of waist bags and the shoulder straps of shoulder bags. The pad body 1 can be secured onto the load-bearing portion of bag items, such as the shoulder straps and the waist belts. In addition, the pad body 1 can also be arranged on a lower side of a backpack such that when the backpack is carried onto a body, the convective air chamber 2 is tightly close to a waist portion, and the position of the convective air chamber 2 is relative to the load-bearing portion of the body. Meanwhile, the pad body 1 can further comprises a positioning strap 3, which is arranged on a front and rear end at two sides of the pad body 1. The positioning strap 3 comprises a Velcro connection. Through the positioning strap 3, the pad body 1 is arranged on the load-bearing portion of the bag items (as shown in Fig. 2). Also, based on the actual need, the pad body 1 and the airbag member 21 can be configured into different shapes, such as circle, square, oval and triangle, to fit the shape of the different load-bearing portions such that it is easy to use and easy to remove. According to this embodiment, the number of convective chamber 2 is three and each of the convective chamber 2 includes nine interconnecting airbag members 21.

**[0020]** On the other hand, according to another embodiment, the present invention can be made into an insole (as shown in Fig. 3 of the drawings). In particular, the pad body 1 is configured into an insole having a shape of an insole. The pad body 1 has a top side and a bottom side and a convective air chamber 2 is provided on each of the top side and the bottom side. The convective air chamber 2 at the top side has nine airbag members 21 while the airbag members 21 are interconnected through the convective channels 22. The convective air chamber 2 at the bottom side has six airbag members 21 while the airbag members 21 are interconnected through the convective channels 22. Wherein the airbag members 21 are having a shape corresponding to the acupuncture points on the toes of the foot and on the soles respectively. During walking, the airbag member 21 is bearing the pressure from the different parts of the sole. The gas inside the airbag member 21 flows to the airbag member 21 which is not acted on by the loading through the convective channels 22 such that the pressure is dispersed and the massage effect on the top and bottom portion of the sole is realized, which can effectively reduce the fa-

tigue and the weight while the comfort level is increased. In addition, the arrangement of providing the convective chamber 2 into a top portion and a bottom portion can prevent the unidirectional gas flow to one side when under pressure and the lowering of the massage effect.

**[0021]** One skilled in the art will understand that the embodiment of the present invention as shown in the drawings and described above is exemplary only and not intended to be limiting. It will thus be seen that the objects of the present invention have been fully and effectively accomplished. It embodiments have been shown and described for the purposes of illustrating the functional and structural principles of the present invention and is subject to change without departure from such principles. Therefore, this invention includes all modifications encompassed within the spirit and scope of the following claims.

## Claims

1. A convective air pad with weight balancing and massage buffering effect, **characterized in that:** the convective air pad comprises a pad body, one or more convective air chamber integrally arranged on a surface side of said pad body, wherein each said convective air chamber is filled with gas, wherein said convective air chamber comprises a plurality of airbag members, a convective channel connected between each two adjacently positioned airbag members, and a ventilation gap provided between each two adjacently positioned airbag members.
2. The convective air pad according to claim 1, **characterized in that:** said pad body and said convective air chamber are both made of extendable elastic material.
3. The convective air pad according to claim 1, **characterized in that:** a number of convective air chamber is more than one, and a number of said airbag members is more than two.
4. The convective air pad according to claim 1, **characterized in that:** wherein said convective air chamber is provided at two sides of said pad body respectively.

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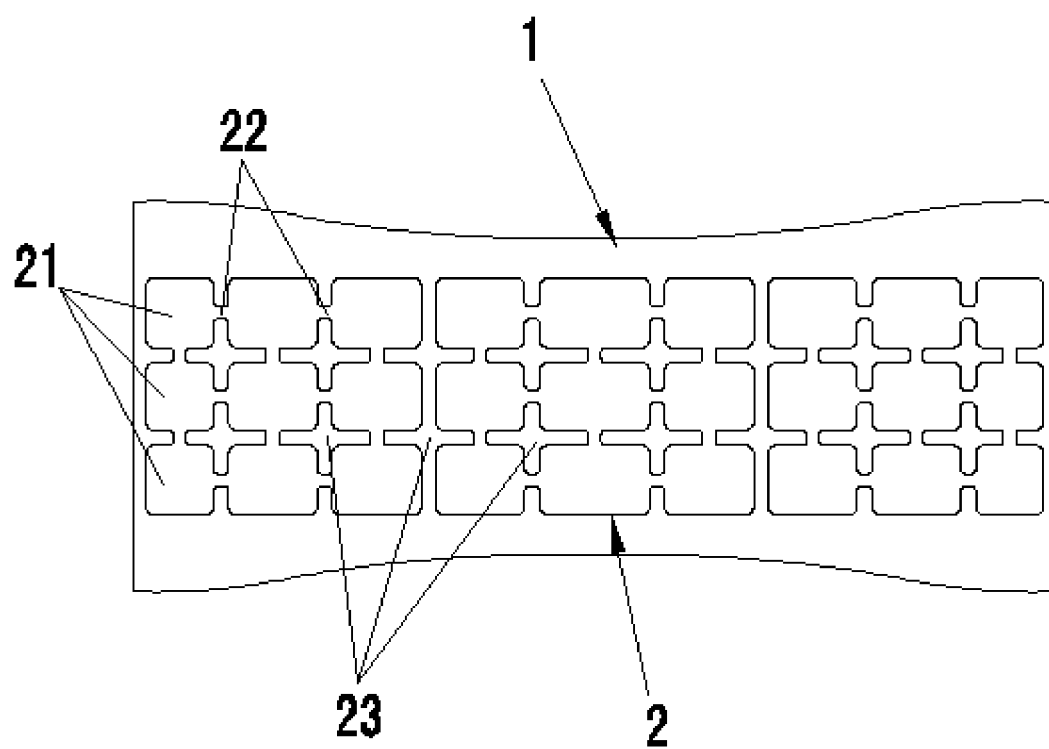


FIG. 1

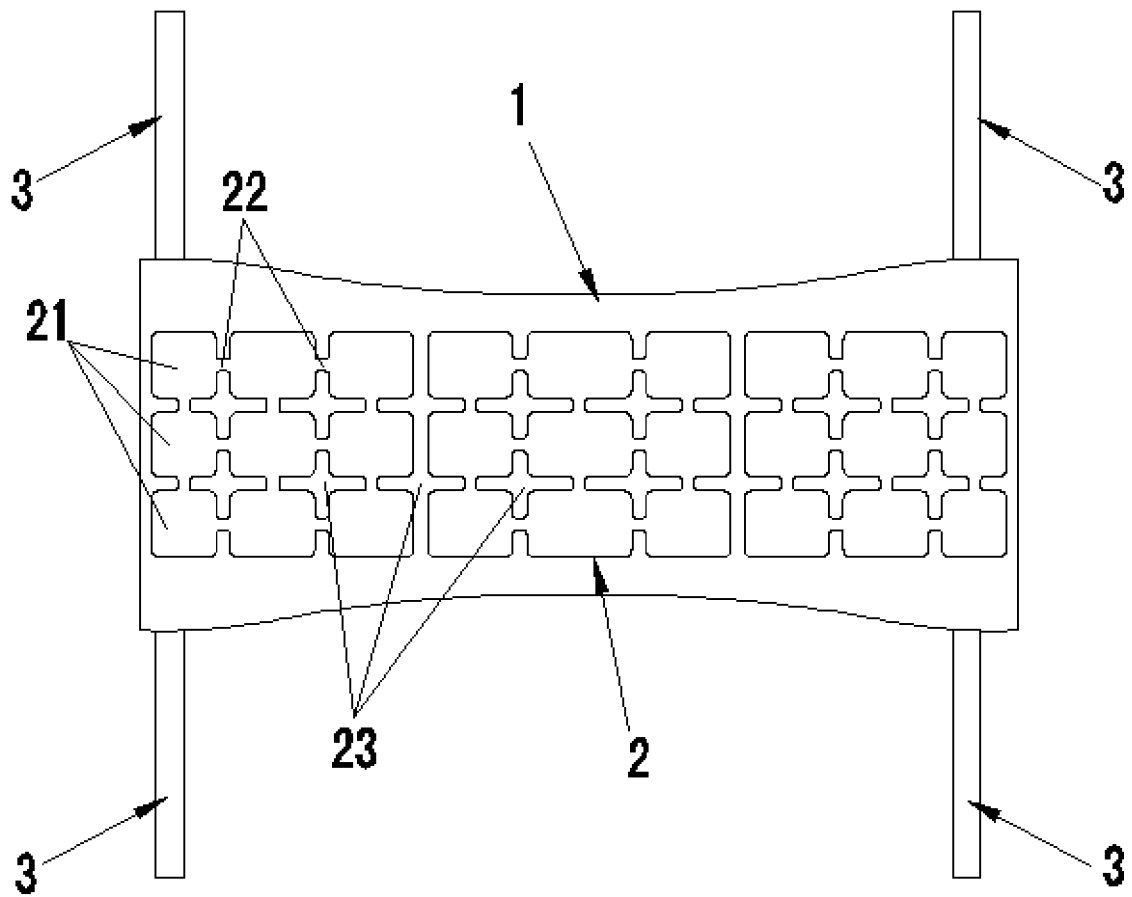


FIG. 2

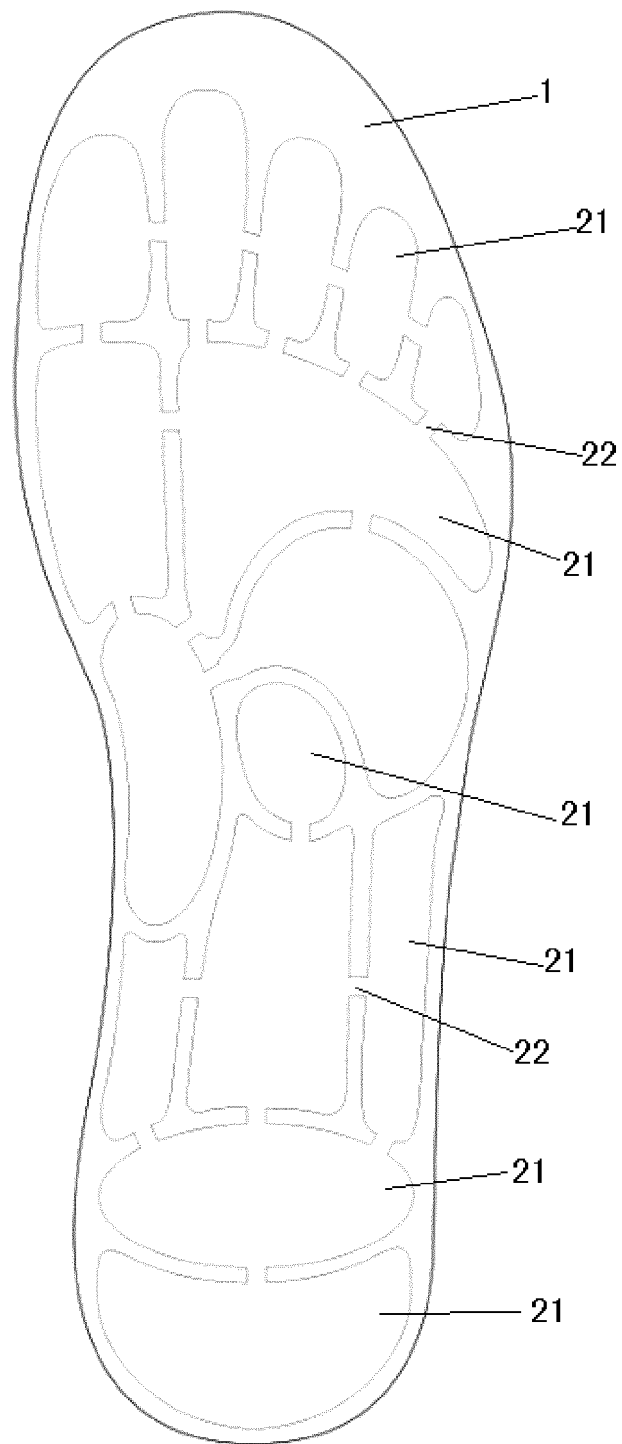


FIG. 3

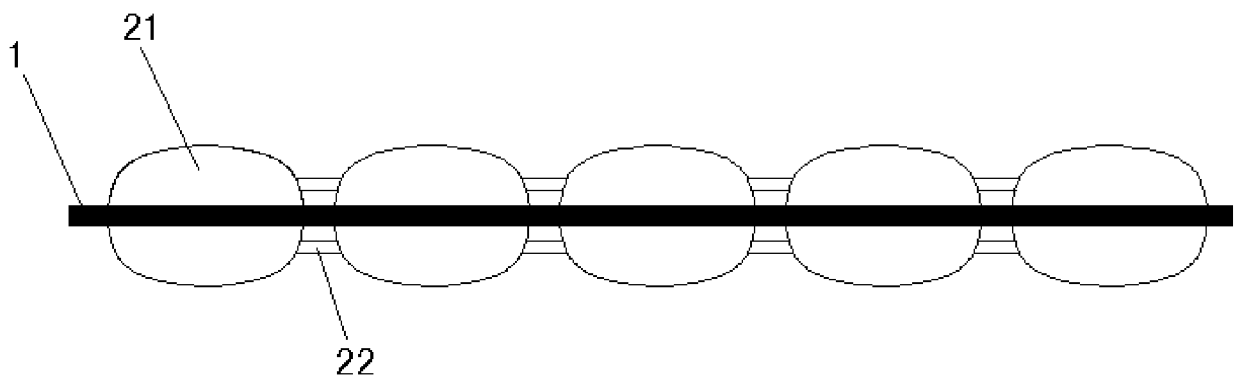


FIG. 4



## INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2016/083389

## A. CLASSIFICATION OF SUBJECT MATTER

A45F 3/04 (2006.01) i; A43B 17/08 (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)

A45F; A43B

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

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

SIPOABS: ventilat+, A45f, bag?, A45f+, A43B+, gas

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CN 204888903 U (SHI, Yulong), 23 December 2015 (23.12.2015), description, paragraphs 0016-0019, and figures 1-3	1-4
A	US 2004221481 A1 (REGEN, P.L.), 11 November 2004 (11.11.2004), the whole document	1-4
A	CN 201967840 U (JIANGSU SUNBIRD CAMPUS FASHION CO., LTD.), 14 September 2011 (14.09.2011), the whole document	1-4
A	JP 03126401 A (CHAYAMA T.), 29 May 1991 (29.05.1991), the whole document	1-4
A	CN 203898608 U (HAN, Zengying), 29 October 2014 (29.10.2014), the whole document	1-4

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

* Special categories of cited documents:	"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
"A" document defining the general state of the art which is not considered to be of particular relevance	"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
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"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	

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**INTERNATIONAL SEARCH REPORT**  
Information on patent family members

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**PCT/CN2016/083389**

Patent Documents referred in the Report	Publication Date	Patent Family	Publication Date
CN 204888903 U	23 December 2015	None	
US 2004221481 A1	11 November 2004	WO 2004101001 A3	19 May 2005
		WO 2004101001 A2	25 November 2004
CN 201967840 U	14 September 2011	None	
JP 03126401 A	29 May 1991	JP H03126401 A	29 May 1991
CN 203898608 U	29 October 2014	None	

Form PCT/ISA/210 (patent family annex) (July 2009)