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**HAO et al.**(10) **Pub. No.: US 2017/0291736 A1**(43) **Pub. Date: Oct. 12, 2017**(54) **PACKAGING CONTAINER AND  
PACKAGING METHOD USING THE SAME****B65D 81/05** (2006.01)**B65B 5/04** (2006.01)(71) Applicants: **BOE TECHNOLOGY GROUP CO.,  
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WANG**, Beijing (CN)(57) **ABSTRACT**(21) Appl. No.: **15/510,366**(22) PCT Filed: **Jul. 14, 2016**(86) PCT No.: **PCT/CN2016/089997**

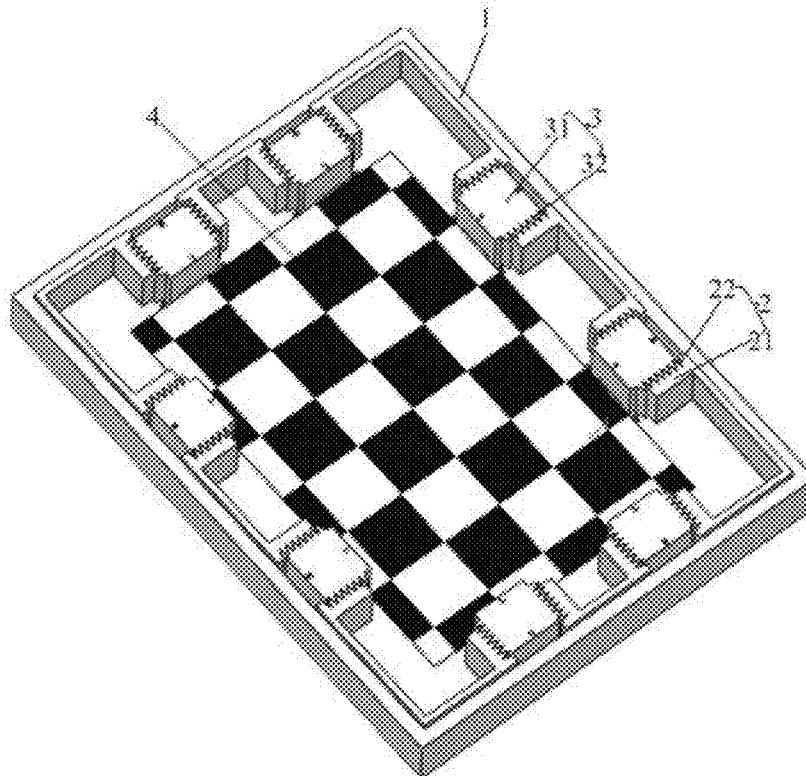
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The disclosure provides a packaging container and a packaging method using the same. The packaging container comprises a container body and further comprises: a receiving channel structure formed on an inner side wall of the container body; and a spacer block structure which is configured to be engaged with the receiving channel structure and a position of which within the receiving channel structure is variable to adjust an internal space of the container body. The receiving channel structure and the spacer block structure are provided within the container body of the packaging container according to the disclosure, and the internal space of the container body can be adjusted by changing the position of the spacer block structure within the receiving channel structure, such that the container body can be used to package the products having different sizes.



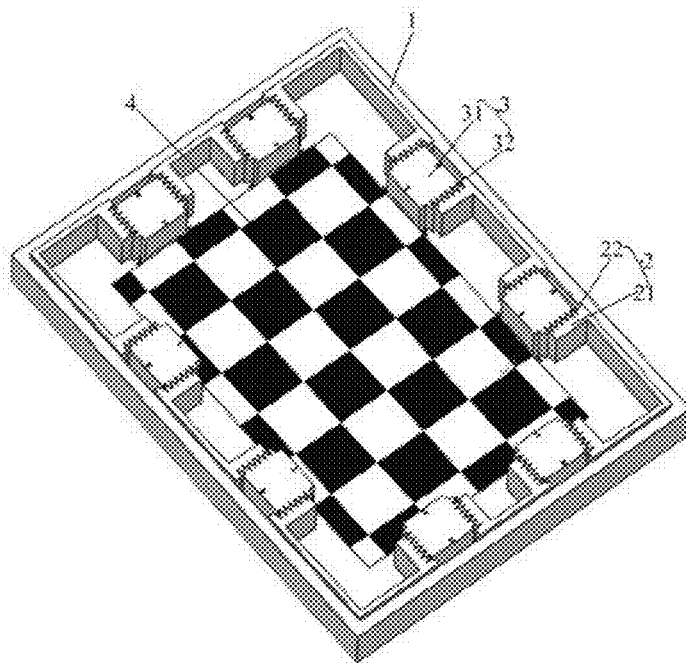


FIG. 1

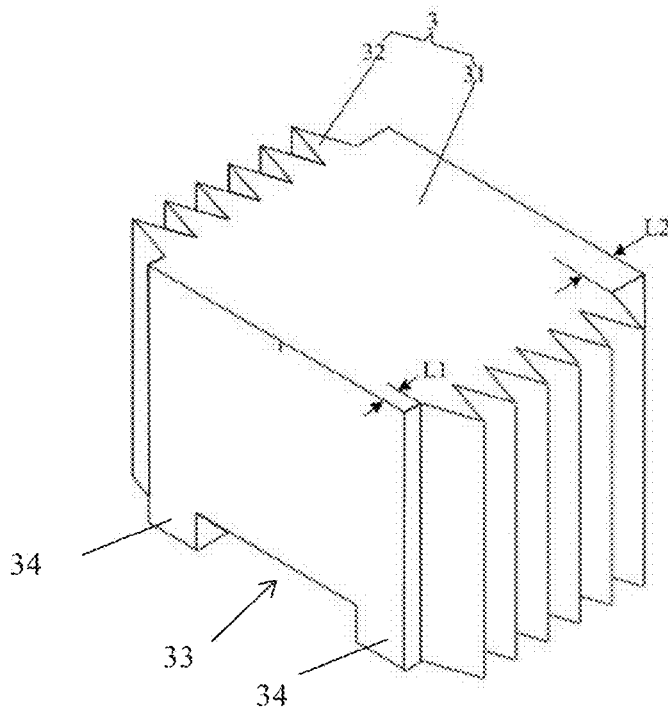


FIG. 2

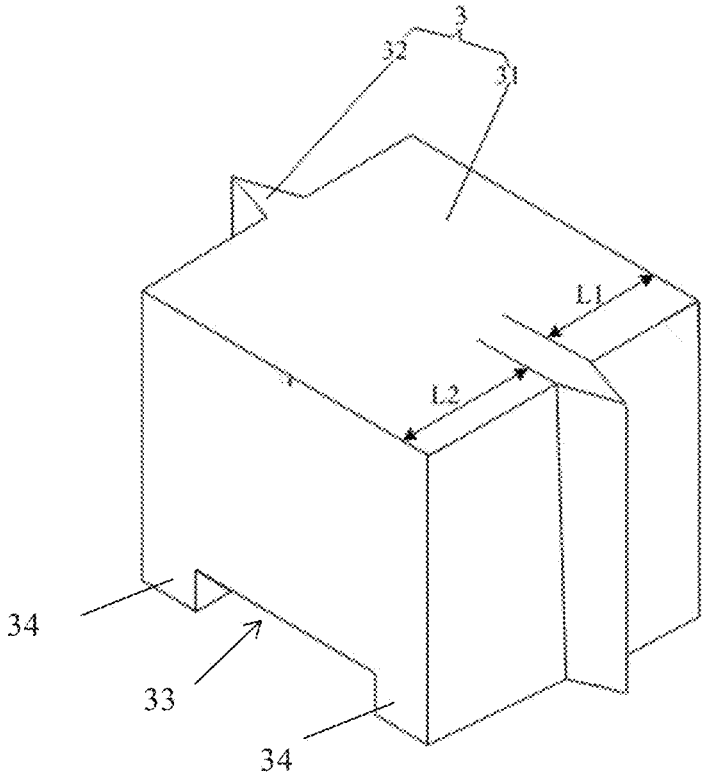


FIG. 3

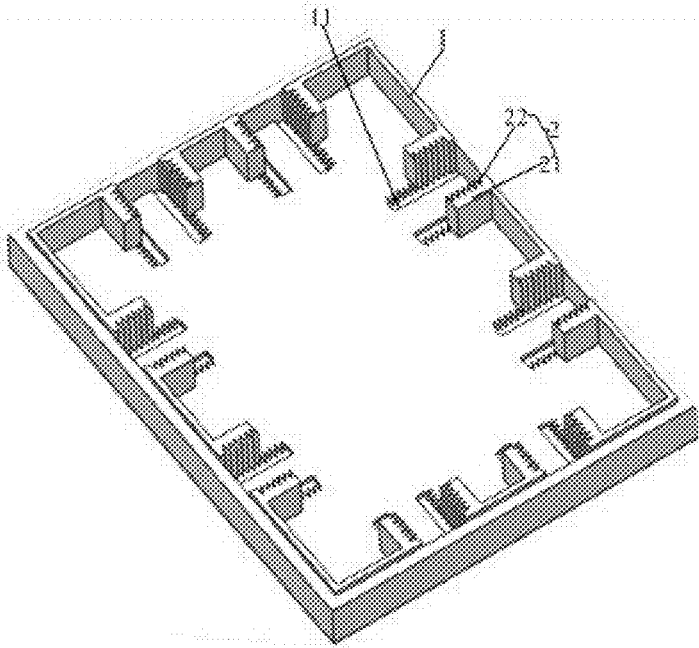


FIG. 4

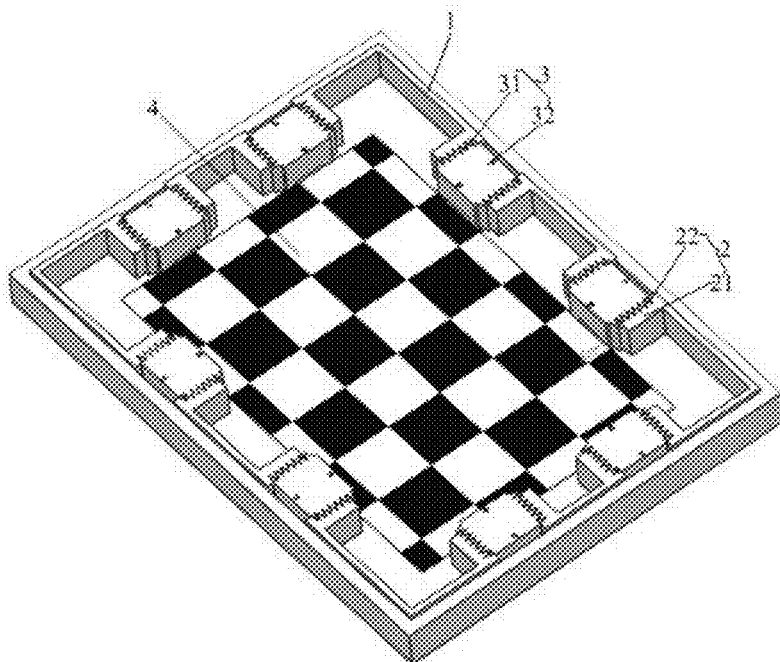


FIG. 5

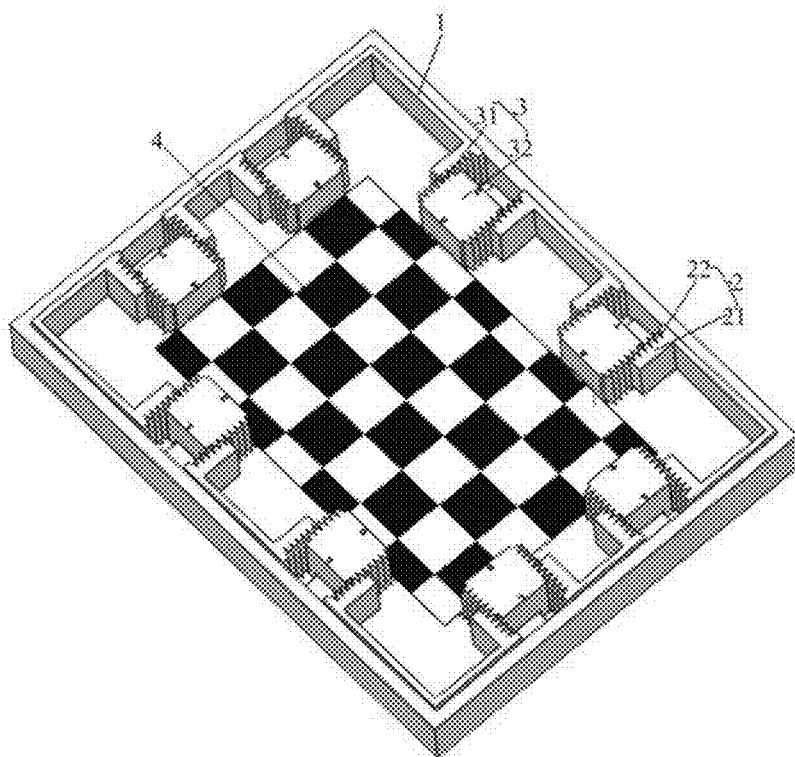


FIG. 6

## PACKAGING CONTAINER AND PACKAGING METHOD USING THE SAME

### FIELD OF THE INVENTION

[0001] The disclosure relates to the field of packaging technologies, and in particular to a packaging container for a plate shaped article (for example, a display panel) and a packaging method using the packaging container.

### BACKGROUND OF THE INVENTION

[0002] Nowadays, with increasingly fierce business competition of manufacturing industries, reduction of cost has become an important way for improving product competitiveness.

[0003] Since packaging cost of products has no direct influence on products' performance, it becomes one of important considerations for reducing the expense for every enterprise. In a prior packaging method, one product usually corresponds to one packaging container. In another prior packaging method, the container body could be universal, and different spacers can be interposed between side walls of the container body and the products to adjust a dimension of an inner space of the container body so that the same container body can satisfy with the packaging of products having different sizes.

[0004] Both of the packaging methods as described above may result in problems for an enterprise such as inconvenient stock management, production, use and recycling, which, in the end, may cause an increase in the cost of production.

### SUMMARY OF THE INVENTION

[0005] As for the above technical problems in the prior art, the disclosure provides a packaging container and a packaging method using the same. The packaging container can accommodate the products having different sizes, thereby reducing the costs of packaging and production management of products while facilitating the storage management and the recycling of the packaging containers for the enterprise.

[0006] The packaging container provided in the disclosure comprises a container body. The packaging container further comprises: a receiving channel structure which is formed on an inner side wall of the container body; and a spacer block structure which is configured to be engaged with the receiving channel structure and a position the spacer block structure within the receiving channel structure is variable to adjust an internal space of the container body.

[0007] Optionally, the receiving channel structure includes a pair of receiving channel bodies which are arranged in parallel at an interval and which are provided with teeth on inner sides thereof, respectively; and the spacer block structure includes a spacer block body and teeth arranged on opposite sides of the spacer block body, such that the teeth of the spacer block body is able to be engaged with the teeth of the receiving channel bodies.

[0008] Optionally, any two adjacent teeth on the receiving channel bodies have an equal interval.

[0009] Optionally, one or more teeth is formed on opposite sides of the spacer block body; and in the case where teeth are arranged on opposite sides of the spacer block body, respectively, any two adjacent teeth have an equal interval.

[0010] Optionally, in the case where teeth are arranged on opposite sides of the spacer block body, respectively, the

interval between adjacent two teeth of the spacer block body is able to accommodate one tooth of the receiving channel bodies, or, the interval between adjacent two teeth of the spacer block body is able to accommodate  $n$  teeth of the receiving channel bodies, wherein  $n \geq 2$  and  $n$  is an integer.

[0011] Optionally, the teeth of the receiving channel bodies have a triangular shape, a rectangular shape, a trapezoidal shape, a semi-circular shape or any other suitable shape.

[0012] Optionally, the teeth of the spacer block body have a triangular shape, a rectangular shape, a trapezoidal shape, a semi-circular shape or any other suitable shape.

[0013] Optionally, a recess is formed on a bottom of the spacer block structure.

[0014] Optionally, projections are formed on a bottom of the spacer block structure; and grooves are formed on the bottom of the container body corresponding to the spacer block structure, such that the projections of the spacer block structure is able to be seated into the grooves.

[0015] Optionally, the grooves extend out of the receiving channel structure in a direction far away from an inner side wall of the container body, and a distance by which they extends out of the receiving channel structure is equal to a length of the spacer block structure.

[0016] Optionally, the receiving channel structure is integrally formed with the container body.

[0017] Optionally, one or more receiving channel structure is arranged on each of four inner side walls of the container body; and in the case where the receiving channel structures are arranged on each inner side wall of the container body, the receiving channel structures have the same construction and are uniformly arranged on the inner side wall of the container body.

[0018] Optionally, 2 to 4 receiving channel structures are arranged on each of four inner side walls of the container body.

[0019] The disclosure also provides a packaging method using the packaging container as described above. The method may comprise steps of:

[0020] adjusting the position of the spacer block structure within the receiving channel structure, according to the size of the plate shaped article to be placed in the container body;

[0021] engaging the spacer block structure with the receiving channel structure; and

[0022] placing the plate shaped article into a space within the container body confined by the spacer block structure.

[0023] The embodiments of the disclosure may have following beneficial effects. The receiving channel structure and the spacer block structure are provided within the container body of the packaging container according to the disclosure, and the internal space of the container body can be adjusted by changing the position of the spacer block structure within the receiving channel structure, such that the container body can be used to package the products having different sizes. Therefore, the packaging container according to the disclosure can accommodate the products having different sizes, thereby reducing the costs of packaging and production management of products while facilitating the storage management and the recycling of the packaging containers for the enterprise.

### BRIEF DESCRIPTION OF THE DRAWINGS

[0024] FIG. 1 is a schematic diagram of a packaging container according to an embodiment of the disclosure;

[0025] FIG. 2 is a schematic diagram of a spacer block structure for the packaging container according to an embodiment of the disclosure;

[0026] FIG. 3 is a schematic diagram of another spacer block structure for the packaging container according to an embodiment of the disclosure;

[0027] FIG. 4 is a schematic diagram of a bottom groove of the packaging container as shown in FIG. 1;

[0028] FIG. 5 is a diagram illustrating an engagement state of the spacer block structure as shown in FIG. 2 with a receiving channel structure; and

[0029] FIG. 6 is a diagram illustrating another engagement state of the spacer block structure as shown in FIG. 2 with the receiving channel structure.

#### DETAILED DESCRIPTION OF THE EMBODIMENTS

[0030] In order to better understand the technical schemes of the disclosure for those skilled in the related art, herein-after the packaging container and the packaging method thereof proposed in the disclosure will be further described in detail in conjunction with the accompanying figures and the specific embodiments.

[0031] There is provided a packaging container in an embodiment of the disclosure. As shown in FIG. 1, the packaging container may comprise a container body 1 in which a plate shaped article(s) 4 (for example, a display panel) to be packaged is placed. The packaging container may further comprise a receiving channel structure 2 which is formed on an inner side wall of the container body 1, and a spacer block structure 3 which is configured to be engaged with the receiving channel structure 2 and a position of the spacer block structure within the receiving channel structure 2 is variable to adjust an internal space of the container body 1.

[0032] In a preferable embodiment of the disclosure, as shown in FIG. 1, two spacer block structures 3 and two receiving channel structures 2 are arranged on each inner side wall of the container body 1. In such a manner, the internal space of the container body 1 can be adjusted both in the length and the width directions, while the plate shaped article 4 to be packaged can be more stably kept within the container body 1.

[0033] In the packaging container according to the embodiment of the disclosure, since the container body 1 is provided with the receiving channel structure 2 and the spacer block structure 3 and the position of the spacer block structure 3 within the receiving channel structure 2 is variable, the internal space of the container body 1 can be adjusted such that the container body 1 is able to package products having different sizes. Therefore, the packaging container according to the embodiment of the disclosure can accommodate the products having different sizes, thereby reducing the costs of packaging and production management of products while facilitating the storage management and the recycling of the packaging containers for the enterprise.

[0034] In this embodiment, the receiving channel structure 2 may include a pair of receiving channel bodies 21 which are arranged in parallel at an interval. The pair of receiving channel bodies 21 may be provided with teeth 22 on inner sides thereof, respectively. Accordingly, the spacer block structure 3 may include a spacer block body 31 and teeth 32 arranged on opposite sides of the spacer block body 31. The teeth 32 of the spacer block body 31 can be engaged with the

teeth 22 of the receiving channel bodies 21 so as to adjust the internal space of the container body 1.

[0035] In particular, when the teeth 32 of the spacer block body 31 is engaged with the teeth 22 of the receiving channel bodies 21, it is possible to fix the spacer block structure 3 such that the spacer block structure 3 is immovable in a plane of the plate shaped article 4. When the spacer block structure 3 is fixed at a position in proximity of the inner side wall of the container body 1, as shown in FIG. 5, the container body 1 could have a relatively large internal space. When the spacer block structure 3 is fixed at a position far away from the inner side wall of the container body 1, as shown in FIG. 6, the container body 1 could have a relatively small internal space. In practice, according to a size of a product to be packaged, the position of spacer block structure 3 within the receiving channel structure 2 can be varied to adjust the internal space of the container body 1.

[0036] In a preferable embodiment of the disclosure, any two adjacent teeth 22 on the receiving channel bodies 21 may have an equal interval. Accordingly, any two adjacent teeth 32 on the spacer block body 31 may have an equal interval. In such an arrangement, it may be hard for the spacer block structure 3 to be separated from the receiving channel structure 2.

[0037] In a preferable embodiment of the disclosure, any two adjacent teeth 22 on the receiving channel bodies 21 may have an equal and relatively small interval. Accordingly, any two adjacent teeth 32 on the spacer block body 31 may have an equal and relatively small interval. In such an arrangement, it is possible to more precisely determine the position of the spacer block structure 3 within the receiving channel structure 2 so as to more precisely adjust the internal space of the container body 1.

[0038] In an example, as shown in FIG. 2, a plurality of teeth 32 may be formed on opposite sides of the spacer block body 31. In such an arrangement, when the teeth 32 on the spacer block body 31 is engaged with the teeth 22 on the receiving channel bodies 21, it is possible to more stably fix the spacer block structure 3.

[0039] In another example, as shown in FIG. 3, one tooth 32 may be formed on opposite sides of the spacer block body 31, respectively. The tooth 32 is also able to be engaged with the teeth 22 on the receiving channel bodies 21 so as to adjust the internal space of the container body 1.

[0040] Optionally, in the case where a plurality of teeth are arranged on opposite sides of the spacer block body 31, respectively, the interval between adjacent two teeth of the spacer block body 31 can accommodate one tooth of the receiving channel bodies 21, or the interval between adjacent two teeth of the spacer block body 31 can accommodate  $n$  teeth of the receiving channel bodies 21, wherein  $n \geq 2$  and  $n$  is an integer.

[0041] In this embodiment, the teeth 22 of the receiving channel bodies 21 and the teeth 32 of the spacer block body 31 may have a triangular shape, a rectangular shape, a trapezoidal shape, a semi-circular shape or any other suitable shape, as long as the spacer block structure 3 can be stably engaged with the receiving channel structure 2.

[0042] In this embodiment, as shown in FIGS. 2 and 3, a recess 33 can be formed on a bottom of the spacer block structure 3, such that it may be easy for an operator to detach the spacer block structure 3 or to adjust the position of the spacer block structure 3 manually or by means of other tools.

[0043] In this embodiment, as shown in FIGS. 2 and 3, projections 34 can be formed on the bottom of the spacer block structure 3. Accordingly, as shown in FIG. 4, grooves 11 can be formed on the bottom of the container body 1 corresponding to the spacer block structure 3, such that the projections 34 of the spacer block structure 3 can be seated into the grooves 11. In such a manner, when a plate shaped article 4 to be packaged by the container body 1 is relatively thin, the thin plate shaped article 4 could not be inserted into a slit between the bottom of the container body 1 and the spacer block structure 3, thus preventing the damage of the plate shaped article 4 being packaged in the container body 1.

[0044] Preferably, the grooves 11 may extend out of the receiving channel structure 2 in a direction far away from an inner side wall of the container body 1, and a distance by which they extend out of the receiving channel structure 2 may be substantially equal to a length of the spacer block structure 3. In such an arrangement, it is possible to ensure that the projections 34 of the spacer block structure 3 are always seated in the grooves 11 on the bottom of the container body 1. Therefore, when a plate shaped article 4 to be packaged by the container body 1 is relatively thin, the thin plate shaped article 4 could not be inserted into a slit between the bottom of the container body 1 and the spacer block structure 3, thus preventing the damage of the plate shaped article 4 being packaged in the container body 1.

[0045] In this embodiment, the receiving channel structure 2 may be integrally formed with the container body 1. Preferably, one or more receiving channel structure 2 may be arranged on each of four inner side walls of the container body 1. When the receiving channel structures 2 are arranged on each inner side wall of the container body 1, the receiving channel structures 2 preferably have the same construction and are uniformly arranged on the inner side wall of the container body 1. Preferably, 2 to 4 receiving channel structures 2 are arranged on each of four inner side walls of the container body 1. In this embodiment, two receiving channel structures 2 and two spacer block structures 3 are arranged on each of four inner side walls of the container body 1. In such an arrangement, the internal space of the container body 1 can be adjusted both in the length and the width directions, while the plate shaped article 4 to be packaged can be more stably kept within the container body 1.

[0046] On the basis of the packaging container as set forth above, there is provided a packaging method using the packaging container, comprising steps of:

[0047] Step S1: adjusting the position of the spacer block structure 3 within the receiving channel structure 2 according to the size of the plate shaped article 4 (for example, a display panel) to be placed in the container body 1.

[0048] In this step, the number of teeth 32 of the spacer block structure 3 that are engaged with teeth 22 of the receiving channel structure 2 can be changed so as to adjust the position of the spacer block structure 3 within the receiving channel structure 2. In particular, when the spacer block structure 3 is fixed at a position in proximity of the inner side wall of the container body 1 (for example, when the number of the teeth 32 of the spacer block structure 3 that are engaged with the teeth 22 of the receiving channel structure 2 is increased), as shown in FIG. 5, the container body 1 could have a relatively large internal space. When the spacer block structure 3 is fixed at a position far away from

the inner side wall of the container body 1 (for example, when the number of the teeth 32 of the spacer block structure 3 that are engaged with the teeth 22 of the receiving channel structure 2 is decreased), as shown in FIG. 6, the container body 1 could have a relatively small internal space.

[0049] In addition, it should be understood that the internal space of the container body 1 can be adjusted by changing a length of the spacer block body 31 projecting out of the receiving channel structure 2.

[0050] Step S2: engaging the spacer block structure 3 with the receiving channel structure 2.

[0051] In this step, the teeth 32 of the spacer block structure 3 are brought into engagement with the teeth 22 of the receiving channel structure 2, such that the spacer block structure 3 is fixed within the receiving channel structure 2 in place.

[0052] Step S3: placing the plate shaped article 4 into a space within the container body 1 confined by the spacer block structure 3.

[0053] It should be understood that the internal space of the container body 1 can be confined by one or more spacer block structure 3.

[0054] In the packaging method, the internal space of the container body 1 can be conveniently adjusted by changing the position of the spacer block structure 3 within the receiving channel structure 2. Therefore, the same packaging container can be used to package the products having different sizes, such that the efficiency of packaging can be significantly increased while the cost of packaging can be lowered.

[0055] The embodiments of the disclosure may have following beneficial effects. The receiving channel structure and the spacer block structure are provided within the container body of the packaging container according to the disclosure, and the internal space of the container body can be adjusted by changing the position of the spacer block structure within the receiving channel structure, such that the container body can be used to package the products having different sizes. Therefore, the packaging container according to the disclosure can accommodate the products having different sizes, thereby reducing the costs of packaging and production management of products while facilitating the storage management and the recycling of the packaging containers for the enterprise.

[0056] It should be understood that the above implementations are merely exemplary embodiments provided for the purpose of illustrating the principle of the disclosure, and the disclosure is not limited thereto. Various modifications and improvements can be made by a person having ordinary skill in the art without departing from the spirit and essence of the disclosure. Accordingly, all of the modifications and improvements also fall into the protection scope of the disclosure.

1. A packaging container comprising a container body, wherein the packaging container further comprises:

- a receiving channel structure which is formed on an inner side wall of the container body; and

- a spacer block structure which is configured to be engaged with the receiving channel structure and a position of the spacer block structure within the receiving channel structure is variable to adjust an internal space of the container body.

2. The packaging container according to claim 1, wherein the receiving channel structure includes a pair of receiving channel bodies which are arranged in parallel at an interval and which are provided with teeth on inner sides thereof, respectively; and the spacer block structure includes a spacer block body and teeth arranged on opposite sides of the spacer block body, such that the teeth of the spacer block body is able to be engaged with the teeth of the receiving channel bodies.
3. The packaging container according to claim 2, wherein any two adjacent teeth on the receiving channel bodies have an equal interval.
4. The packaging container according to claim 3, wherein one or more teeth is formed on opposite sides of the spacer block body; and in the case where teeth are arranged on opposite sides of the spacer block body, respectively, any two adjacent teeth have an equal interval.
5. The packaging container according to claim 4, wherein in the case where teeth are arranged on opposite sides of the spacer block body, respectively, the interval between adjacent two teeth of the spacer block body is able to accommodate one tooth of the receiving channel bodies, or, the interval between adjacent two teeth of the spacer block body is able to accommodate n teeth of the receiving channel bodies, wherein  $n \geq 2$  and n is an integer.
6. The packaging container according to claim 2, wherein the teeth of the receiving channel bodies have a triangular shape, a rectangular shape, a trapezoidal shape, a semi-circular shape or any other suitable shape.
7. The packaging container according to claim 2, wherein the teeth of the spacer block body have a triangular shape, a rectangular shape, a trapezoidal shape, a semi-circular shape or any other suitable shape.
8. The packaging container according to claim 2, wherein projections are formed on a bottom of the spacer block structure; and grooves are formed on the bottom of the container body corresponding to the spacer block structure, such that the projections of the spacer block structure is able to be seated into the grooves.
9. The packaging container according to claim 8 wherein the grooves extend out of the receiving channel structure in a direction far away from an inner side wall of the container body, and a distance by which they extends out of the receiving channel structure is equal to a length of the spacer block structure.
10. The packaging container according to claim 1 wherein a recess is formed on a bottom of the spacer block structure.
11. The packaging container according to claim 1 wherein the receiving channel structure is integrally formed with the container body.
12. The packaging container according to claim 1 wherein one or more receiving channel structure is arranged on each of four inner side walls of the container body; and

in the case where the receiving channel structures are arranged on each inner side wall of the container body, the receiving channel structures have the same construction and are uniformly arranged on the inner side wall of the container body.

13. The packaging container according to claim 12 wherein

2 to 4 receiving channel structures are arranged on each of four inner side walls of the container body.

14. A packaging method using the packaging container according to claim 1, wherein the method comprises steps of:

adjusting the position of the spacer block structure within the receiving channel structure, according to the size of the plate shaped article to be placed in the container body;

engaging the spacer block structure with the receiving channel structure; and

placing the plate shaped article into a space within the container body confined by the spacer block structure.

15. The method according to claim 14, wherein the receiving channel structure includes a pair of receiving channel bodies which are arranged in parallel at an interval and which are provided with teeth on inner sides thereof, respectively; and

the spacer block structure includes a spacer block body and teeth arranged on opposite sides of the spacer block body, such that the teeth of the spacer block body is able to be engaged with the teeth of the receiving channel bodies.

16. The method according to claim 15, wherein projections are formed on a bottom of the spacer block structure; and

grooves are formed on the bottom of the container body corresponding to the spacer block structure, such that the projections of the spacer block structure is able to be seated into the grooves.

17. The method according to claim 16, wherein the grooves extend out of the receiving channel structure in a direction far away from an inner side wall of the container body, and

a distance by which they extends out of the receiving channel structure is equal to a length of the spacer block structure.

18. The method according to claim 14, wherein a recess is formed on a bottom of the spacer block structure.

19. The method according to claim 14, wherein the receiving channel structure is integrally formed with the container body.

20. The method according to claim 14, wherein one or more receiving channel structure is arranged on each of four inner side walls of the container body; and in the case where the receiving channel structures are arranged on each inner side wall of the container body, the receiving channel structures have the same construction and are uniformly arranged on the inner side wall of the container body.

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