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(54) **SELF-SEALING PACKAGING BOX**

(57) Provided is a self-sealing packaging box. When one end of a box body needs to be sealed, only a first lining board (200), a second lining board (300) and a third lining board (400) all cover one end of the box body, a first plug connector is switched to a folding position and inserted into the box body from a first socket (310) so that a first panel (100) finally covers one end of the box body and the first plug connector is automatically unfolded to an unfolding position so as to be snap-fitted in the first socket, thus achieving a self-sealing function. A box sealer does not need to seal a box with an adhesive tape, which is environment-friendly. Moreover, the packaging box has the self-sealing function, and the box cannot be opened by hand after box sealing is completed, so that the integrity of goods in the box body is guaranteed; particularly in the express industry, when a buyer receives the goods, if the packaging box is intact, it can be determined that the goods are complete, and if the packaging box has a box opening mark or is damaged, it can be determined that the packaging box has been unpacked.

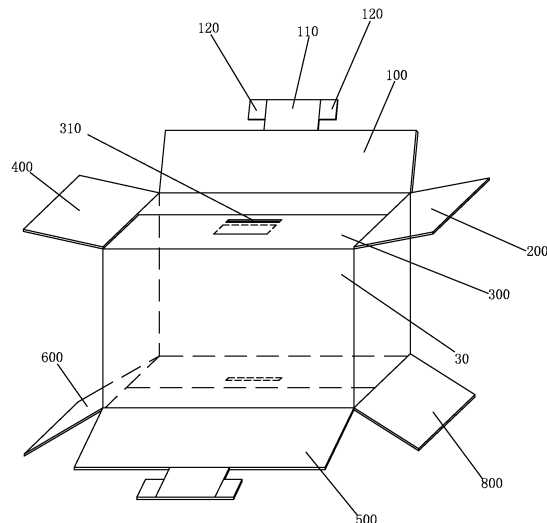


FIG. 14

Description

FIELD OF THE DISCLOSURE

[0001] The present disclosure relates to a field of packaging, and in particular to a self-closing packaging box.

BACKGROUND OF THE DISCLOSURE

[0002] Existing packaging boxes, especially packaging cartons, of which openings are sealed generally by an adhesive tape, all have a common feature: when opening the sealed packaging cartons, it is needed to use auxiliary tools such as keys, knives, metal objects, etc. to open the packaging cartons, which may cause residue (i.e., glue) of the adhesive tape to be often attached to the auxiliary tools, so as to affects the use of the auxiliary tools; moreover, the packaging cartons, which have been wrapped with the adhesive tape, cannot be recycled many times, the material of the adhesive tape is not easily degradable, the glue of the adhesive tape is pollution-carrying, and the packaging cartons may cause great environmental damage during post-processing.

[0003] In view of this, it is necessary to provide packaging cartons that do not require the use of adhesive tape, are environmentally friendly, can be recycled, have a simple structure, and are convenient and quick to unpack.

BRIEF SUMMARY OF THE DISCLOSURE

[0004] The present disclosure provides a self-closing packaging box to solve the deficiencies in the background. A first technical solution of the present disclosure is as follows.

[0005] A self-closing packaging box, comprising a box body, a first box cover and a second box cover which respectively cover two ends of the box body; the box body comprises a first side board, a second side board, a third side board, and a fourth side board, which are sequentially connected; the first box cover comprises a first board, a first inner lining board, a second inner lining board, and a third inner lining board, which are respectively connected to one ends of the first side board, the second side board, the third side board, and the fourth side board; the first board is disposed with at least one first connector configured to perform a self-closing function, the at least one first connector are configured to be changed between an unfolded position and a folded position, and the first inner lining board, the second inner lining board, or the third inner lining board comprises a first insertion hole configured to be matched with the at least one first connector which is in the folded position; when one end of the box body needs to be sealed, it is only necessary to enable each of the first inner lining board, the second inner lining board, and the third inner lining board to cover the end of the box body, and then

enable the at least one first connector to be changed to the folded position and inserted into the box body through the first insertion hole so that the first board finally covers the end of the box body, and the at least one first connector is automatically unfolded to the unfolded position to be clamped to the first insertion hole to perform the self-closing function.

[0006] In a preferred embodiment, a left side and a right side of the first board are respectively disposed with a first connector, a first insertion hole is disposed on a junction of the first inner lining board and the first side board, a first insertion hole is disposed on a junction of the third inner lining board and the fourth side board, a left end and right end of the second inner lining board are respectively disposed with a first space-providing groove, and the two first space-providing grooves respectively correspond to the two first insertion holes.

[0007] In a preferred embodiment, a first connector is disposed on a top edge of the first board, a first insertion hole is disposed on a junction of the second inner lining board and the third side board, a first space-providing groove is disposed on a junction of the first inner lining board and the second side board, a first space-providing grooves is disposed on a junction of the third inner lining board and the fourth side board, and when the two first space-providing grooves are disposed opposite to each other, the two first space-providing grooves both correspond to the first insertion hole.

[0008] In a preferred embodiment, the at least one first connector comprises a first connector body and a first folding portion fixedly connected to a side of the first connector body, and when the at least one first connector is in the folded position, the first connector body and the first folding portion define an L-shaped structure; the first insertion hole is L-shaped, a long side section of the L-shaped first insertion hole corresponds to the first connector body, and a short side section of the L-shaped first insertion hole corresponds to the first folding portion.

[0009] In a preferred embodiment, a width of the short side section of the L-shaped first insertion hole is shorter than a width of the first folding portion of the at least one first connector when the first folding portion is unfolded.

[0010] In a preferred embodiment, the at least one first connector is a cube, a cuboid, a sphere, a triangle, a trapezoid, or a combination of these shapes.

[0011] In a preferred embodiment, a unlocking hole is disposed on the first side board, the second side board, the third side board, or the fourth side board, the number of the unlocking holes is the same as the number of the at least one first connector or the number of the first insertion holes, and the unlocking hole corresponds to the first insertion hole in a one-to-one manner.

[0012] In a preferred embodiment, the unlocking hole is disposed with a connecting piece, and the unlocking hole and the connecting piece are connected by a point-breaking structure.

[0013] In a preferred embodiment, the second box cover comprises a second board, a sixth inner lining board,

a seventh inner lining board, and an eighth inner lining board, which are respectively connected to the other ends of the third side board, the fourth side board, the first side board, and the second side board, the second board is disposed with at least one second connector configured to perform a self-closing function, the at least one second connectors is configured to be changed between the unfolded position and the folded position, and the sixth inner lining board, the seventh inner lining board, or the eighth inner lining board comprises a second insertion hole configured to be matched with the at least one second connector which is in the folded position; when the other end of the box body needs to be sealed, it is only necessary to enable each of the sixth inner lining board, the seventh inner lining board, and the eighth inner lining board to cover the other end of the box body, and then enable the at least one second connector to be changed to the folded position and inserted into the box body through the second insertion hole so that the second board finally covers the other end of the box body, and the at least one second connector is automatically unfolded to the unfolded position to be clamped to the second insertion hole to perform the self-closing function.

[0014] A second technical solution of the present disclosure is as follows.

[0015] A self-closing packaging box, characterized in that, comprising a box body, a first box cover and a second box cover which respectively cover two ends of the box body; the box body comprises a first side board, a second side board, a third side board, and a fourth side board, which are sequentially connected; the first box cover comprises a first board, a first inner lining board, a second inner lining board, and a third inner lining board, which are respectively connected to one ends of the first side board, the second side board, the third side board, and the fourth side board; the first board is disposed with at least one first connector configured to perform a self-closing function, the at least one first connectors is configured to be changed between an unfolded position and a folded position, and the second side board, the third side board, or the fourth side board comprises a first insertion hole configured to be matched with the at least one first connector which is in the folded position; when the one end of the box body needs to be sealed, it is only necessary to enable each of the first inner lining board, the second inner lining board, and the third inner lining board to cover the end of the box body, and then enable the at least one first connector to be changed to the folded position and inserted into the box body through the first insertion hole so that the first board finally covers the end of the box body, and the at least one first connector is automatically unfolded to the unfolded position to be clamped to the first insertion hole to perform the self-closing function.

[0016] In a preferred embodiment, a first connector is disposed on a top edge of the first board, a first insertion hole is disposed on the second inner lining board, a sum of widths of the first inner lining board and the third inner

lining board is shorter than a length of the third side board, and a space-providing space corresponding to the first insertion hole is defined between the first inner lining board and the third inner lining board.

[0017] In a preferred embodiment, the first connector comprises a first connector body and a first folding portion connected to a side of the first connector body, and when the first connector is in the folded position, the first connector body and the first folding portion define a linear-shaped structure; the first insertion hole is linear-shaped.

[0018] In a preferred embodiment, the first connector body is fixedly connected to the top edge of the first board, and the first folding portion is not connected to the first board to define a free end.

[0019] In a preferred embodiment, the first connector body is fixedly connected to the first board, and the first folding portion is not connected to the first board to define a free end.

[0020] Compared with the existing techniques, the technical solution has the following advantages.

1. When one end of the box body needs to be sealed, it is only necessary to enable each of the first inner lining board, the second inner lining board, and the third inner lining board to cover the end of the box body, and then enable the at least one first connector to be changed to the folded position and inserted into the box body through the first insertion hole so that the first board covers the end of the box body, and the at least one first connector is automatically unfolded to the unfolded position to be clamped to the first insertion hole to perform the self-closing function. At this time, the user does not need to use an adhesive tape to seal the self-closing packaging box, which is environmentally friendly. At the same time, the self-closing packaging box has the self-closing function. When the self-closing packaging box is sealed, the self-closing packaging box cannot be opened without being damaged, which ensures an integrity of the goods in the self-closing packaging box, especially in a delivery industry. When the buyer receives the goods, if the self-closing packaging box is intact, it can be determined that the goods are intact (i.e., have not be touched). If the self-closing packaging box shows signs of opening or is damaged, it can be determined that the self-closing packaging box has been opened.

2. When the width of the short side section of the L-shaped first insertion holes is shorter than the width of the first folding portion which is unfolded, so that the first folding portion can be clamped on a bottom wall of the first insertion hole after being unfolded. The first board cannot be opened from the outside of the self-closing packaging box, so the self-closing packaging box cannot be opened.

3. The first board is disposed with two first connectors, the two first connectors are respectively disposed on a left side and a right side of the first board,

and two first insertion holes are respectively disposed on the first inner lining board and the third inner lining board. The two first connectors are matched with the two first insertion holes so that the self-closing function is more stable and not easily damaged.

4. The unlocking hole is provided. The number of the unlocking holes is the same as the number of the first insertion holes, and the unlocking hole respectively corresponds to the first insertion hole in a one-to-one manner. A human hand moves into the unlocking hole to fold the first folding portion, and then the first connector is pulled out of the first insertion hole, and the first board can be opened from the end of the box body to uncover the end of the box body. Therefore, there is no need to destroy the self-closing packaging box when opening the box, and the self-closing packaging box can be reused once unpacked.

5. The unlocking hole is disposed with a connecting piece. The connecting piece and the unlocking hole are connected by a point-breaking structure such that the connecting piece and the unlocking hole are separated by the point-breaking structure when the self-closing packaging box is open. At this time, the human hand can perform an operation of unpackaging through the unlocking hole. Thereby, an integrity of the self-closing packaging box which is unpackaged can be ensured.

6. The second box cover is the same as the first box cover to ensure a self-closing effect.

BRIEF DESCRIPTION OF THE DRAWINGS

[0021] The present disclosure will be further described below with reference to the drawings and embodiments.

FIG. 1 illustrates an overall perspective view of a self-closing packaging box according to a first preferred embodiment.

FIG. 2 illustrates a first perspective view of the self-closing packaging box according to the first preferred embodiment when a first box cover is open.

FIG. 3 illustrates a second perspective view of the self-closing packaging box according to the first preferred embodiment when the first box cover is open.

FIG. 4 illustrates a perspective view of the self-closing packaging box according to the first preferred embodiment when a second box cover is open.

FIG. 5 illustrates a perspective view of the self-closing packaging box according to the first preferred embodiment when two second connectors and two second insertion holes are matched with each other in a folded position.

FIG. 6 illustrates a perspective view of the self-closing packaging box according to the first preferred embodiment when the self-closing packaging box is unpackaged and a first connector is separated from

a first insertion hole.

FIG. 7 illustrates an overall perspective view of a self-closing packaging box according to a second preferred embodiment.

FIG. 8 illustrates a perspective view of the self-closing packaging box according to the second preferred embodiment when the first box cover is open.

FIG. 9 illustrates a perspective view of the self-closing packaging box according to the second preferred embodiment when the self-closing packaging box is unpacked, the first connector is separated from the first insertion hole, and the second connector is separated from the second insertion hole.

FIG. 10 illustrates a perspective view of the self-closing packaging box according to the second preferred embodiment when the second box cover is open.

FIG. 11 illustrates a perspective view of a self-closing packaging box according to a third preferred embodiment when two first connectors and two first insertion holes are matched with each other.

FIG. 12 illustrates a perspective view of the self-closing packaging box according to the third preferred embodiment when the first box cover is open.

FIG. 13 illustrates a perspective view of the self-closing packaging box according to the third preferred embodiment when the second box cover is open.

FIG. 14 illustrates a perspective view of a self-closing packaging box according to a fourth preferred embodiment when the first box cover and the second box cover are both open.

FIG. 15 illustrates a perspective view of the self-closing packaging box according to the fourth preferred embodiment when the first connector and the first insertion hole are matched with each other.

FIG. 16 illustrates a perspective view of the self-closing packaging box according to the fourth preferred embodiment when the first box cover and the second box cover are closed.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0022] Referring to FIGS. 1 to 6, a self-closing packaging box of a first preferred embodiment is provided, the self-closing packaging box comprises a box body, a first box cover and a second box cover which respectively cover two ends of the box body.

[0023] As shown in FIG. 1, the self-closing packaging box has a rectangular, parallelepiped structure. Alternatively, the self-closing packaging box may also be a cube, a triangle, a cylinder, or a combination of these shapes. The color of the self-closing packaging box can be red, orange, tan, brown, yellow, green, cyan, blue, purple, gray, pink, black, white, brown, or a combination of these colors, but is not limited in this regard.

[0024] The box body comprises a first side board 10, a second side board 20, a third side board 30, and a fourth side board 40, which are sequentially connected. The first side board 10, the second side board 20, the

third side board 30, and the fourth side board 40 are sequentially connected to define a rectangular, parallel-epiped frame.

[0025] The first box cover comprises a first board 100, a first inner lining board 200, a second inner lining board 300, and a third inner lining board 400, which are respectively connected to one ends of the first side board 10, the second side board 20, the third side board 30, and the fourth side board 40. As shown in figures, the first box cover is located on an upper end of the box body.

[0026] The first board 100 is disposed with a first connector configured to perform a self-closing function, and the first connector is configured to be changed between an unfolded position and a folded position. The number of first connectors can be set to any number, such as between 1 and 10, but is not limited in this regard.

[0027] In this embodiment, the first connector is disposed on a top edge of the first board 100, the first connector comprises a first connector body 110 and a first folding portion 120 fixedly connected to a side of the first connector body 110, and the first connector body 110 and the first folding portion 120 define an L-shaped structure when the first connector is in the folded position. Alternatively, the first connector body 110 and the first folding portion 120 define a T-shaped structure when the first connector is in the folded position. The specific shape of the first connector is not limited in this regard, and any shape of the first connector that enables the first connector to be smoothly inserted into a first insertion hole can be used. The first connector can also be alternatively disposed on any one of the first inner lining board 200, the second inner lining board 300, or the third inner lining board 400, and is not limited in this regard.

[0028] The first folding portion 120 of the first connector is not connected to the first board 100 to define a free end.

[0029] The second inner lining board 300 comprises the first insertion hole 310 configured to be matched with (i.e., correspond to) the first connector which is in the folded position; when one end (i.e., the upper end) of the box body needs to be sealed, it is only necessary to enable each of the first inner lining board 200, the second inner lining board 300, and the third inner lining board 400 to cover the end of the box body, and then enable the first connector to be changed to the folded position and inserted into the box body through the first insertion hole 310 so that the first board 100 finally covers the end of the box body, and the first connector is automatically unfolded to the unfolded position so as to be clamped to the first insertion hole 310 to perform the self-closing function.

[0030] The first insertion hole 310 is L-shaped, a long side section of the L-shaped first insertion hole 310 corresponds to the first connector body 110, and a short side section of the L-shaped first insertion hole 310 corresponds to the first folding portion 120. The shape of the first insertion hole 310 is not limited in this regard and matches the shape of the first connector when in the folded position. If the first connector body 110 and the first

folding portion 120 define a T-shaped structure when the first connector is in the folded position, the first insertion hole 310 can also be T-shaped. The number of the first insertion holes 310 can also be set to any number, such as between 1 and 10, but is not limited in this regard. The first insertion hole can also be disposed on the first side board, the second side board, the third side board, or the fourth side board.

[0031] In this embodiment, a width of the short side section of the L-shaped first insertion hole 310 is shorter than a width of the first folding portion 120 of the first connector when the first folding portion 120 is unfolded. The width of the short side section of the L-shaped first insertion hole 310 is shorter than the width of the first folding portion 120 of the first connector when the first folding portion 120 is unfolded so that the first folding portion 120, which is unfolded, can be clamped on a bottom wall of the first insertion hole 310. As a result, the first board 100 cannot be opened from the outside of the self-closing packaging box, and therefore the self-closing packaging box cannot be opened.

[0032] In this embodiment, the first connector is a cube, and the first connector can also be a cuboid, a sphere, a triangle, a trapezoid, or a combination of these shapes.

[0033] In this embodiment, the first inner lining board 200 and the third inner lining board 400 are both disposed with first space-providing grooves 210, 410, and the two first space-providing grooves 210, 410 are disposed opposite to each other and both correspond to the first insertion hole 310 in a one-to-one manner.

[0034] In this embodiment, the third side board 30 comprises an unlocking hole 31, the number of unlocking holes 31 is the same as the number of first insertion holes 310, and the unlocking hole 31 corresponds to the first insertion hole 310 in a one-to-one manner. A human hand moves into the unlocking hole 31 to enable the first folding portion 120 to be folded, and then enable the first connector to be pulled out of the first insertion hole 310 so that the first board 100 can be opened from the end of the box body to uncover the end of the box body. There is no need to destroy the entire self-closing packaging box when opening the self-closing packaging box, and the self-closing packaging box which has been opened can be reused.

[0035] In this embodiment, the unlocking hole 31 is disposed with a connecting piece 32, and the connecting piece 32 and the unlocking hole 31 are connected by a point-breaking structure. When opening the self-closing packaging box, the connecting piece 32 is separated from the unlocking hole 31 by the point-breaking structure. At this time, the human hand can open the self-closing packaging box through the unlocking hole, and an integrity of the self-closing packaging box can be ensured when the self-closing packaging box is not opened. As shown in FIG. 6, the unlocking hole 31 has a quadrilateral shape, and the connecting piece 32 has a quadrilateral shape. Alternatively, the unlocking hole 31 may have a circular or triangular shape, and a shape of the

connecting piece 32 is the same as that of the unlocking hole 31.

[0036] In this embodiment, the second box cover comprises a second board 500, a sixth inner lining board 600, a seventh inner lining board 700, and an eighth inner lining board 800, which are respectively connected to the other ends of the third side board 30, the fourth side board 40, the first side board 10, and the second side board 20. As shown in FIG. 3, the second box cover covers a lower end (i.e., the other end) of the box body.

[0037] The second board 500 is disposed with two second connectors configured to perform a self-closing function, and the two second connectors are configured to be changed between an unfolded position and a folded position. The two second connectors are respectively disposed on a left side and a right side of the second board 500, each of the two second connectors comprises a second connector body 510 and a second folding portion 520 fixedly connected to a side of the second connector body 510, and the second connector body 510 and the second folding portion 520 define an L-shaped structure when each of the two second connectors is in the folded position. Each of the two second connectors is the same as the first connector.

[0038] The sixth inner lining board 600 and the eighth inner lining board 800 are both disposed with second insertion holes 610, 810, which are configured to be matched with the two second connectors when in the folded position; when the other end (i.e., the lower end) of the box body needs to be sealed, it is only necessary to enable each of the sixth inner lining board 600, the seventh inner lining board 700, and the eighth inner lining board 800 to cover the second end of the box body, and then enable the two second connectors to be changed to the folded position and inserted into the box body through the second insertion holes 610, 810, so that the second board 500 finally covers the second end of the box body, and the two second connectors are automatically unfolded to the unfolded position to be clamped to the second insertion holes 610, 810 to perform the self-closing function. Each of the second insertion holes 610, 810 is the same as the first insertion hole 310.

[0039] A left end and a right end of the seventh inner lining board 700 are both disposed with a second space-providing groove 710, and the two second space-providing grooves 710 respectively correspond to the two second insertion holes 610, 810.

[0040] The second insertion holes 610, 810 are L-shaped, a long side section of each of the L-shaped second insertion holes 610, 810 corresponds to the second connector body 510, and a short side section of each of the L-shaped second insertion holes 610, 810 corresponds to the second folding portion 520. In this embodiment, a width of the short side section of each of the L-shaped second insertion holes 610, 810 is shorter than a width of the second folding portion 520 of each of the two second connectors when the second folding portion 520 is unfolded.

[0041] When the self-closing packaging box needs to be sealed, it is only necessary to initially enable the second box cover to cover the box body, and then enable the first box cover to cover the box body. A specific process is as follows:

[0042] The sixth inner lining board 600 and the eighth inner lining board 800 are initially turned inwardly to be disposed opposite to each other, and then the seventh inner lining board 700 is turned inwardly to be stacked on the sixth inner lining board 600 and the eighth inner lining board 800. At this time, the two second space-providing grooves 710 respectively correspond to the two second insertion holes 610, 810; then, the second folding portion 520 is folded to enable the second connector body 510 and the second folding portion 520 to define the L-shaped structure. Then, while the two second connectors are maintained in the folded position, the second board 500 is turned inwardly until the two second connectors are inserted into the second insertion holes 610, 810. At this time, the second board 500 is stacked on the seventh inner lining board 700, and the second folding portions 520 are automatically unfolded to be clamped to inner walls of the second insertion holes 610, 810 so as to perform the self-closing function on the lower end of the box body. This completes the connection of the second box cover and the box body.

[0043] Then, the first inner lining board 200 and the third inner lining board 400 are turned inwardly to be disposed opposite to each other. At this time, the two first space-providing grooves 210, 410 are connected to define a large space-providing space; then, the second inner lining board 300 is turned inwardly to be stacked on the first inner lining board 200 and the third inner lining board 400, and the first insertion hole 310 corresponds to the first space-providing grooves 210, 410; then, the first folding portion 120 is folded to enable the first connector body 110 and the first folding portion 120 to define the L-shape structure. Then, while the first connector is maintained in the folded position, the first board 100 is turned inwardly until the first connector is inserted into the first insertion hole 310. At this time, the first board 100 is stacked on the second inner lining board 300, and the first folding portion 120 is automatically unfolded to be clamped to an inner wall of the first insertion hole 310 so as to perform the self-closing function on the upper end of the box body. This completes the connection of the first box cover and the box body.

[0044] When unpacking is required, a specific process is as follows:

[0045] The position of the connecting piece 32 is found, three sides of the connecting piece 32 are separated from three sides of the unlocking hole 31 through the point-breaking structure, and then the connecting piece 32 is turned outward to open the unlocking hole 31. At this time, the human hand moves into the unlocking hole 31 to fold the first folding portion 120 to enable the first connector body 110 and the first folding portion 120 to define the L-shaped structure, the first connector is pulled out

of the first insertion hole 310, and the first box cover is opened. After unpackaging, the self-closing packaging box is still intact and can be reused. Since the self-closing packaging box can only be unlocked through the unlocking hole 31, if the connecting piece 32 is damaged, it can be determined whether the self-closing packaging box has been previously unpackaged.

[0046] Referring to FIGS. 7 to 10, a self-closing packaging box of a second preferred embodiment is provided.

[0047] In this embodiment, the first box cover is the same as the first box cover of the first preferred embodiment and will not be described.

[0048] The difference between this embodiment and the first preferred embodiment is as follows.

[0049] Atop end of the second board 500 is disposed with a second connector, and the seventh inner lining board 700 is disposed with a second insertion hole 720 at a corresponding position (i.e., corresponding to the second connector). The sixth inner lining board 600 and the eighth inner lining board 800 are both disposed with second space-providing grooves 620, 820. When the two second space-providing grooves 620, 820 are disposed opposite to each other, a large space-providing space is defined by the two second space-providing grooves 620, 820, and the large space-providing space corresponds to the second insertion hole 720.

[0050] When the second box cover covers the box body, the sixth inner lining board 600 and the eighth inner lining board 800 are initially turned inwardly to be disposed opposite to each other. At this time, the two second space-providing grooves 620, 820 are connected to define the large space-providing space; then, the seventh inner lining board 700 is turned inwardly to be stacked on the sixth inner lining board 600 and the eighth inner lining board 800. At this time, the two second space-providing grooves 620, 820 both correspond to the second insertion hole 720; then, the second folding portion 520 is folded to enable the second connector body 510 and the second folding portion 520 to define the L-shaped structure. Then, while the second connector is maintained in the folded position, the second board 500 is turned inwardly until the second connector is inserted into the second insertion hole 720. At this time, the second board 500 is stacked on the seventh inner lining board 700, and the second folding portion 520 is automatically unfolded to be clamped to an inner wall of the second insertion hole 720 to perform the self-closing function on the lower end of the box body. This completes the connection of the second box cover and the box body.

[0051] In this embodiment, the number of the connecting pieces 32 is set to two. The two connecting pieces 32 are disposed on an upper side and a lower side of the box body and respectively correspond to the first connector and the second connector, which are inserted into the box body.

[0052] This kind of the second box cover has a simpler structure than the second box cover of the first preferred embodiment, and the packaging and unpackaging proc-

esses are more convenient. However, a sealing performance of the self-closing packaging box of the second preferred embodiment is worse than that of the first preferred embodiment.

[0053] Referring to FIGS. 11 to 13, a self-closing packaging box of a third preferred embodiment is provided.

[0054] In this embodiment, the second box cover is the same as the second box cover of the first preferred embodiment and will not be described.

[0055] The difference between this embodiment and the first preferred embodiment is as follows.

[0056] A left side and right side of the first board 100 are each disposed with a first connector. A first insertion hole 220 is disposed on a junction of the first inner lining board 200 and the second side board 20, and a first insertion hole 420 is disposed on a junction of the third inner lining board 400 and the fourth side board. A left side and right side of the second inner lining board 300 are each disposed with a first space-providing groove 320, and the two first space-providing grooves 320 respectively correspond to the two first insertion holes 220, 420.

[0057] At the same time, the second side board 20 and the fourth side board 40 are both disposed with an unlocking hole 31, and the two unlocking holes 31 respectively correspond to the two first connectors inserted into the first insertion holes 220, 420, which is convenient for the human hand to move into the the two unlocking holes 31 to achieve unlocking. Two connecting pieces 32 are respectively disposed on the two unlocking holes 31, and the two connecting pieces 32 and the two unlocking holes 31 are connected by the point-break structure.

[0058] Referring to FIGS. 14 to 16, a self-closing packaging box of a fourth preferred embodiment is provided.

[0059] In this embodiment, the top edge of the first board 100 is disposed with a first connector, and the second inner lining board 300 is disposed with a first insertion hole 310. The first inner lining board 200, the second inner lining board 300, and the third inner lining board 400 are both not disposed with space-providing grooves. Widths of the first inner lining board 200 and the third inner lining board 400 are reduced, and a sum of the widths of the first inner lining board 200 and the third inner lining board 400 is shorter than a length of the third side board 30, so that a space-providing space is defined between the first inner lining board 200 and the third inner lining board 400 and corresponds to the first insertion hole 310. The space-providing space can provide space to the first connector when the first connector is inserted into the first insertion hole 310.

[0060] In this embodiment, the first connector comprises a first connector body 110 and a first folding portion 120 connected to the side of the first connector body 110. When the first connector is in the folded position, the first connector body 110 and the folding portion 120 define a linear-shaped structure; the first insertion hole 310 has a linear shape. The first connector body 110 is fixedly connected to the top edge of the first board 100, and the

first folding portions 120 are not connected to the first board 100 to define a free end. As shown in FIG. 14, the number of the first folding portions 120 is set to two, and the two first folding portions 120 are respectively connected to a left side and a right side of the first connector body 110. It only necessary to initially enable the two first folding portions 120 disposed on the left side and the right side of the first connector body 110 to be folded inwardly to a front side of the first connector body 110 and to be maintained in close contact with the front side of the first connector body 110. At this time, the first connector defines the linear-shaped structure, and the first connector is inserted into the first insertion hole 310 to complete an insertable connection between the first connector and the first insertion hole 310. After the first connector is inserted into the first insertion hole 310, the two first folding portions 120 can be unfolded outwardly so that a length of the first connector is greater than a length of the first insertion hole 310 to perform the self-closing function of the first box cover.

[0061] Referring to FIG. 14, the unlocking hole 31 and the connecting piece 32 are each arranged on the second inner lining board 300 near the first insertion hole 310.

[0062] The second box cover is the same as the first box cover.

[0063] Although the present invention has been described with reference to the preferred embodiments thereof for carrying out the patent for invention, it is apparent to those skilled in the art that a variety of modifications and changes may be made without departing from the scope of the patent for invention which is intended to be defined by the appended claims.

INDUSTRIAL UTILITY

[0064] The present disclosure provides a self-closing packaging box, when one end of the box body needs to be sealed, it is only necessary to enable each of the first inner lining board, the second inner lining board, and the third inner lining board to cover the end of the box body, and then enable the at least one first connector to be changed to the folded position and inserted into the box body through the first insertion hole so that the first board covers the end of the box body, and the at least one first connector is automatically unfolded to the unfolded position to be clamped to the first insertion hole to perform the self-closing function. The self-closing packaging box has a wide range of applications, good safety, and environmental protection, and has good industrial utility.

Claims

1. A self-closing packaging box, **characterized in that**, comprising a box body, a first box cover and a second box cover which respectively cover two ends of the box body; the box body comprises a first side board, a second side board, a third side board, and a fourth

side board, which are sequentially connected; the first box cover comprises a first board, a first inner lining board, a second inner lining board, and a third inner lining board, which are respectively connected to one ends of the first side board, the second side board, the third side board, and the fourth side board; the first board is disposed with at least one first connector configured to perform a self-closing function, the at least one first connector are configured to be changed between an unfolded position and a folded position, and the first inner lining board, the second inner lining board, or the third inner lining board comprises a first insertion hole configured to be matched with the at least one first connector which is in the folded position; when one end of the box body needs to be sealed, it is only necessary to enable each of the first inner lining board, the second inner lining board, and the third inner lining board to cover the end of the box body, and then enable the at least one first connector to be changed to the folded position and inserted into the box body through the first insertion hole so that the first board finally covers the end of the box body, and the at least one first connector is automatically unfolded to the unfolded position to be clamped to the first insertion hole to perform the self-closing function.

2. The self-closing packaging box according to claim 1, **characterized in that**: a left side and a right side of the first board are respectively disposed with a first connector, a first insertion hole is disposed on a junction of the first inner lining board and the first side board, a first insertion hole is disposed on a junction of the third inner lining board and the fourth side board, a left end and right end of the second inner lining board are respectively disposed with a first space-providing groove, and the two first space-providing grooves respectively correspond to the two first insertion holes.

3. The self-closing packaging box according to claim 1, **characterized in that**: a first connector is disposed on a top edge of the first board, a first insertion hole is disposed on a junction of the second inner lining board and the third side board, a first space-providing groove is disposed on a junction of the first inner lining board and the second side board, a first space-providing groove is disposed on a junction of the third inner lining board and the fourth side board, and when the two first space-providing grooves are disposed opposite to each other, the two first space-providing grooves both correspond to the first insertion hole.

4. The self-closing packaging box according to claim 1 or 2 or 3, **characterized in that**: the at least one first connector comprises a first connector body and a first folding portion fixedly connected to a side of the

first connector body, and when the at least one first connector is in the folded position, the first connector body and the first folding portion define an L-shaped structure; the first insertion hole is L-shaped, a long side section of the L-shaped first insertion hole corresponds to the first connector body, and a short side section of the L-shaped first insertion hole corresponds to the first folding portion.

5. The self-closing packaging box according to claim 4, **characterized in that:** a width of the short side section of the L-shaped first insertion hole is shorter than a width of the first folding portion of the at least one first connector when the first folding portion is unfolded.
6. The self-closing packaging box according to claim 1, **characterized in that:** the at least one first connector is a cube, a cuboid, a sphere, a triangle, a trapezoid, or a combination of these shapes.
7. The self-closing packaging box according to claim 1, **characterized in that:** a unlocking hole is disposed on the first side board, the second side board, the third side board, or the fourth side board, the number of the unlocking holes is the same as the number of the at least one first connector or the number of the first insertion holes, and the unlocking hole corresponds to the first insertion hole in a one-to-one manner..
8. The self-closing packaging box according to claim 7, **characterized in that:** the unlocking hole is disposed with a connecting piece, and the unlocking hole and the connecting piece are connected by a point-breaking structure.
9. The self-closing packaging box according to claim 1, **characterized in that:** the second box cover comprises a second board, a sixth inner lining board, a seventh inner lining board, and an eighth inner lining board, which are respectively connected to the other ends of the third side board, the fourth side board, the first side board, and the second side board, the second board is disposed with at least one second connector configured to perform a self-closing function, the at least one second connectors is configured to be changed between the unfolded position and the folded position, and the sixth inner lining board, the seventh inner lining board, or the eighth inner lining board comprises a second insertion hole configured to be matched with the at least one second connector which is in the folded position; when the other end of the box body needs to be sealed, it is only necessary to enable each of the sixth inner lining board, the seventh inner lining board, and the eighth inner lining board to cover the other end of the box body, and then enable the at least one second con-

connector to be changed to the folded position and inserted into the box body through the second insertion hole so that the second board finally covers the other end of the box body, and the at least one second connector is automatically unfolded to the unfolded position to be clamped to the second insertion hole to perform the self-closing function.

10. The self-closing packaging box according to claim 1, **characterized in that:** a first connector is disposed on a top edge of the first board, a first insertion hole is disposed on the second inner lining board, a sum of widths of the first inner lining board and the third inner lining board is shorter than a length of the third side board, and a space-providing space corresponding to the first insertion hole is defined between the first inner lining board and the third inner lining board.
11. The self-closing packaging box according to claim 10, **characterized in that:** the first connector comprises a first connector body and a first folding portion connected to a side of the first connector body, and when the first connector is in the folded position, the first connector body and the first folding portion define a linear-shaped structure; the first insertion hole is linear-shaped.
12. The self-closing packaging box according to claim 11, **characterized in that:** the first connector body is fixedly connected to the top edge of the first board, and the first folding portion is not connected to the first board to define a free end.
13. The self-closing packaging box according to claim 4, wherein: the first connector body is fixedly connected to the first board, and the first folding portion is not connected to the first board to define a free end.
14. A self-closing packaging box, **characterized in that,** comprising a box body, a first box cover and a second box cover which respectively cover two ends of the box body; the box body comprises a first side board, a second side board, a third side board, and a fourth side board, which are sequentially connected; the first box cover comprises a first board, a first inner lining board, a second inner lining board, and a third inner lining board, which are respectively connected to one ends of the first side board, the second side board, the third side board, and the fourth side board; the first board is disposed with at least one first connector configured to perform a self-closing function, the at least one first connectors is configured to be changed between an unfolded position and a folded position, and the second side board, the third side board, or the fourth side board comprises a first insertion hole configured to be matched with the at least one first connector which is in the folded posi-

tion; when the one end of the box body needs to be sealed, it only necessary to enable each of the first inner lining board, the second inner lining board, and the third inner lining board to cover the end of the box body, and then enable the at least one first connector to be changed to the folded position and inserted into the box body through the first insertion hole so that the first board finally covers the end of the box body, and the at least one first connector is automatically unfolded to the unfolded position to be clamped to the first insertion hole to perform the self-closing function.

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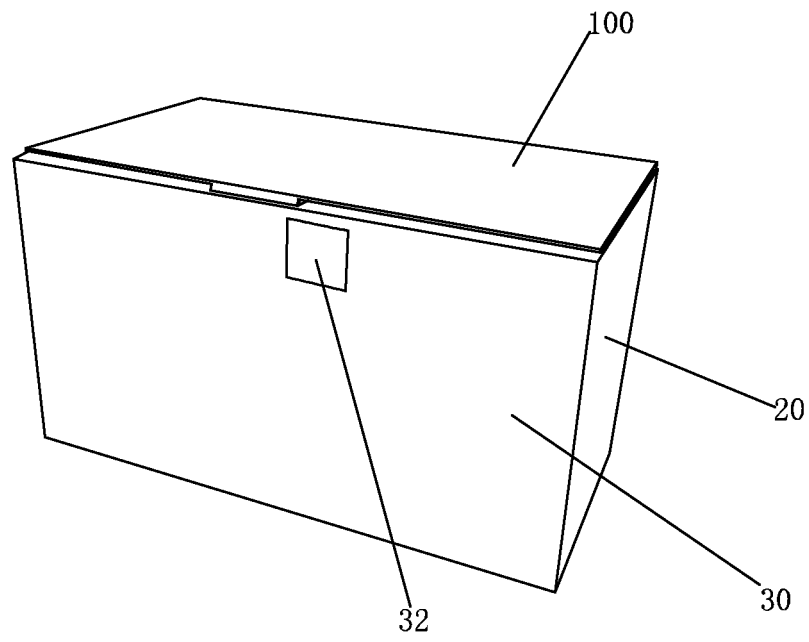


FIG. 1

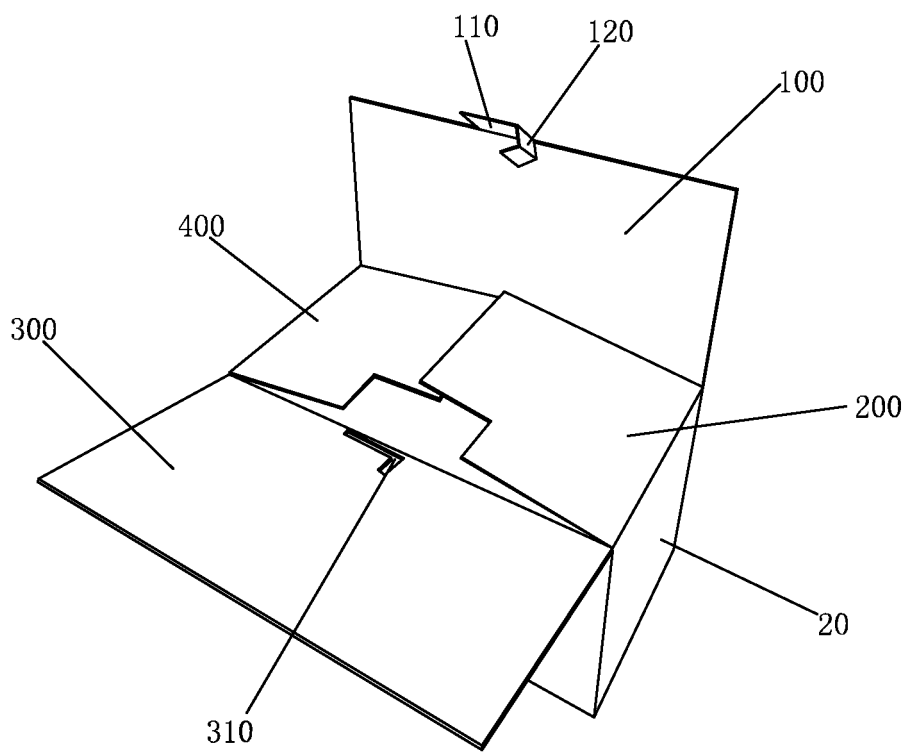


FIG. 2

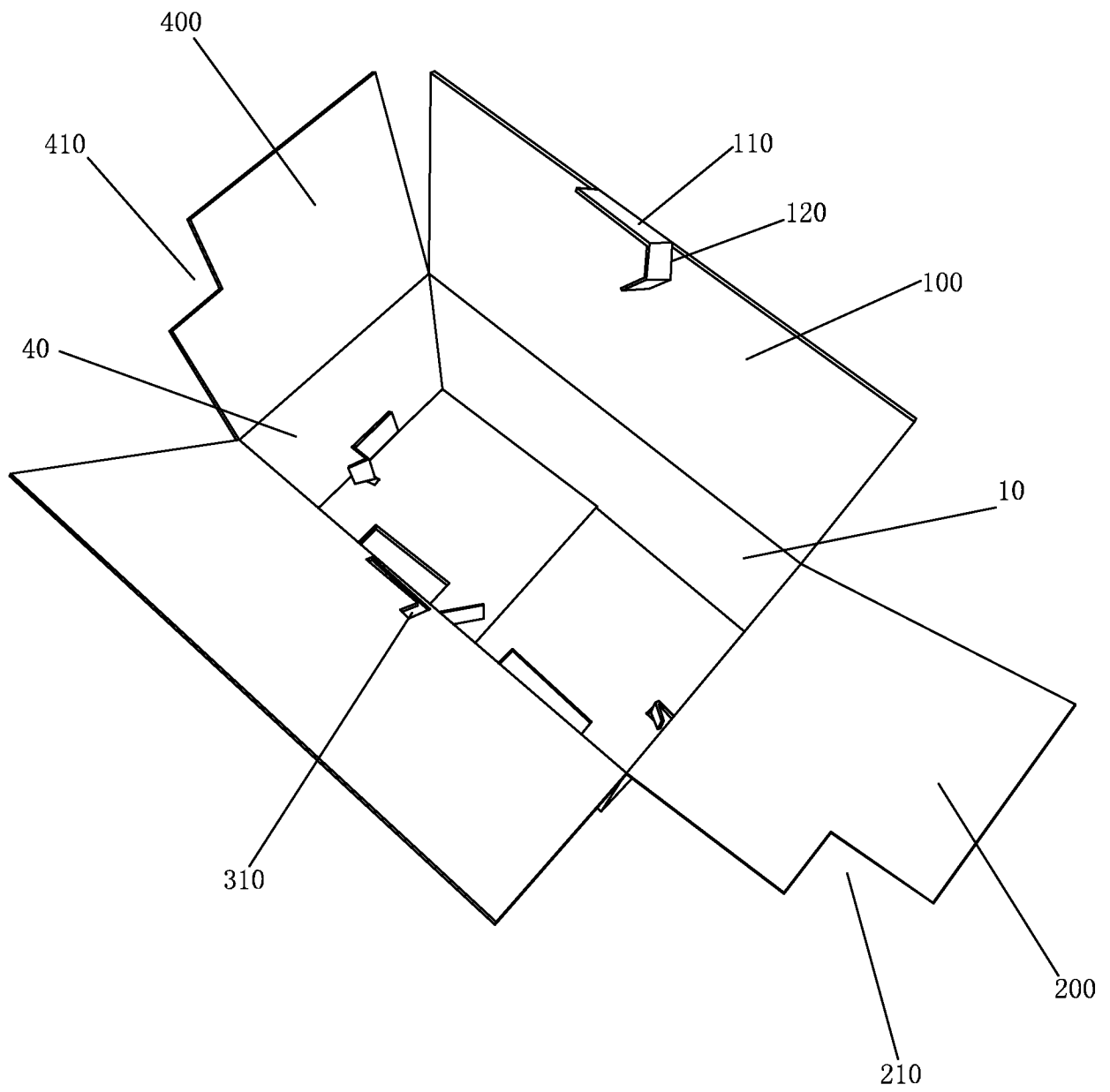


FIG. 3

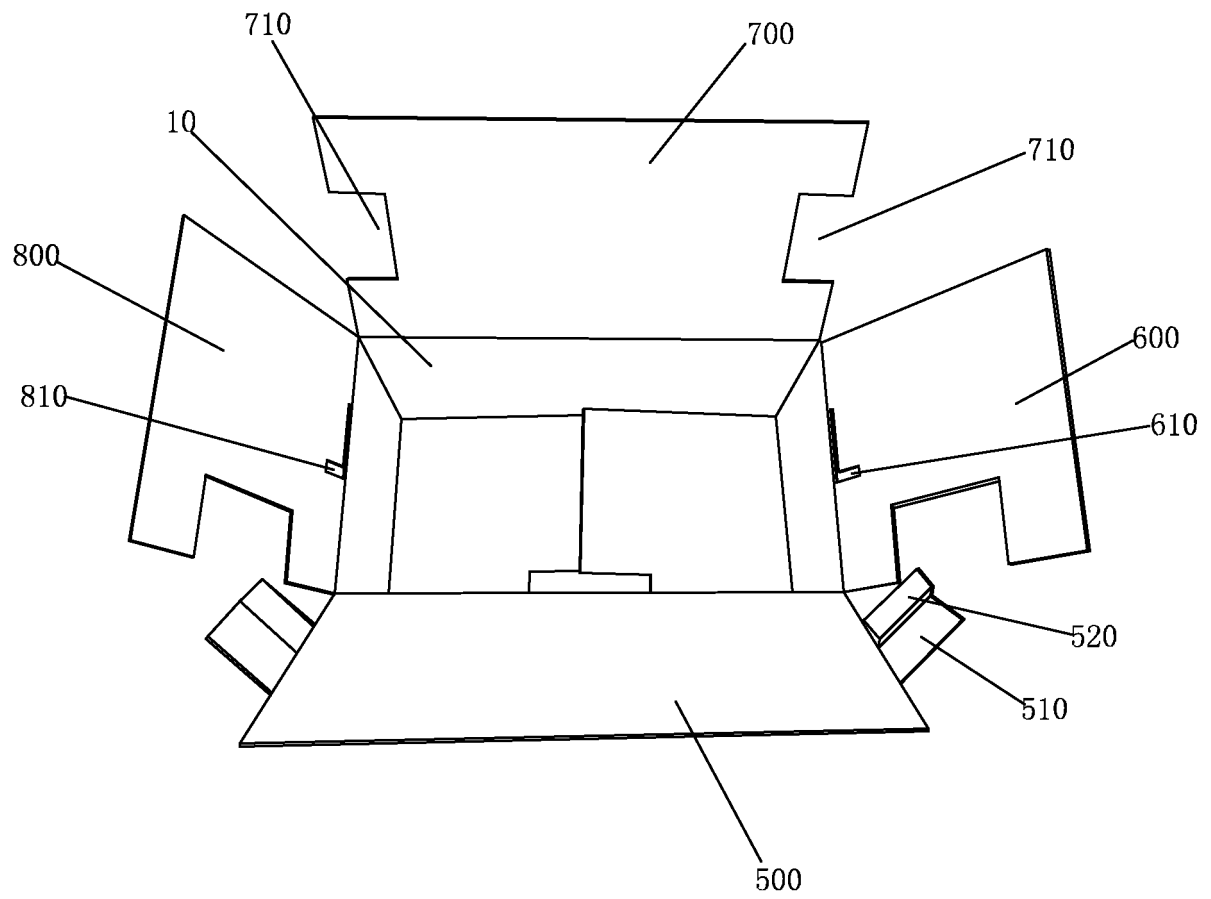


FIG. 4

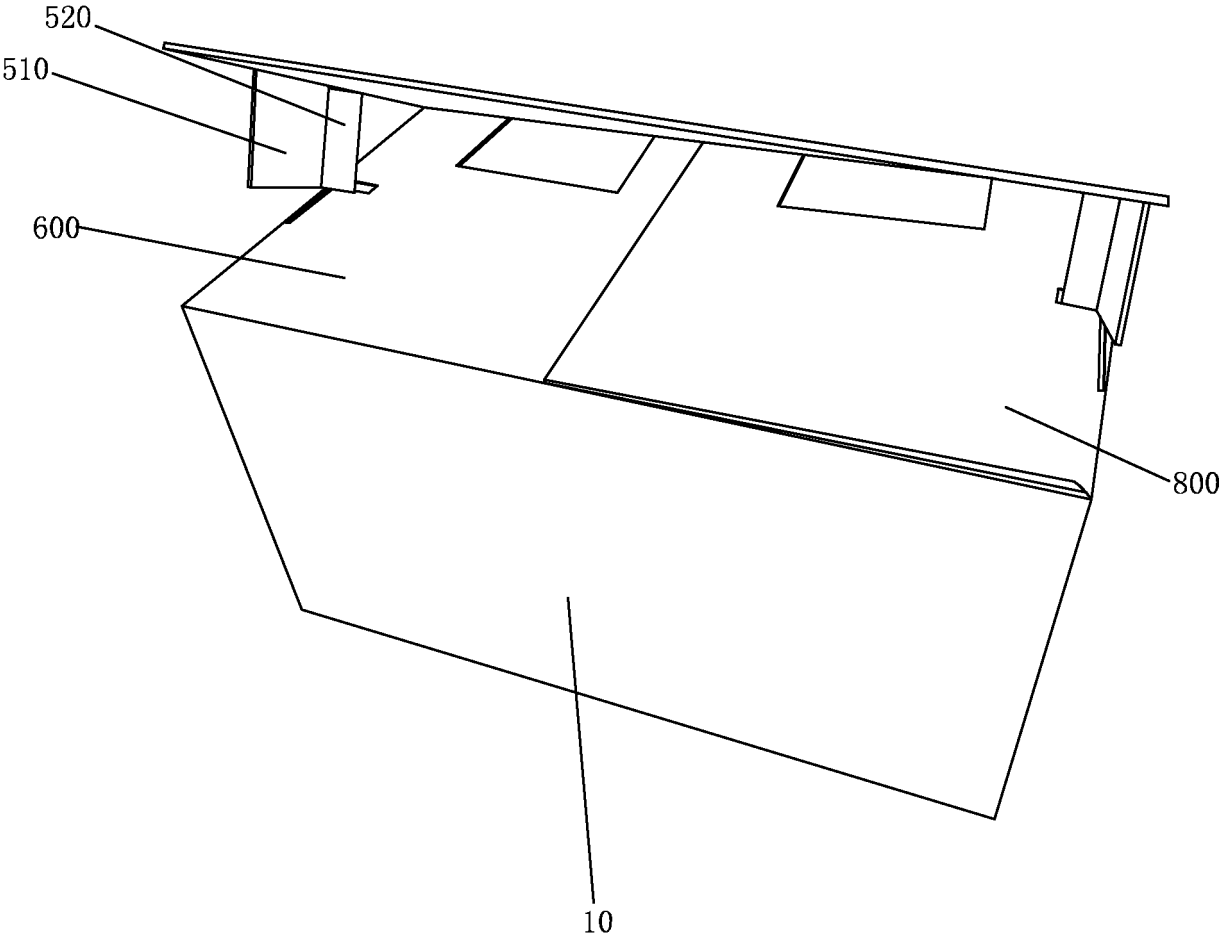


FIG. 5

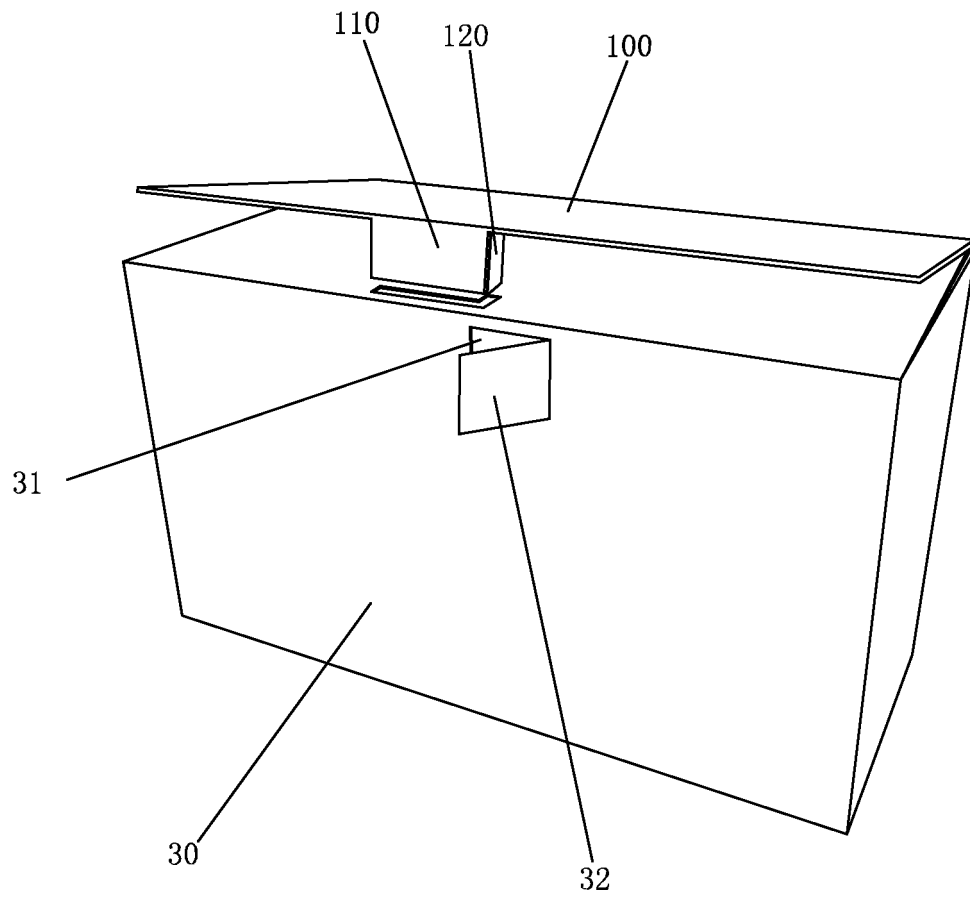


FIG. 6

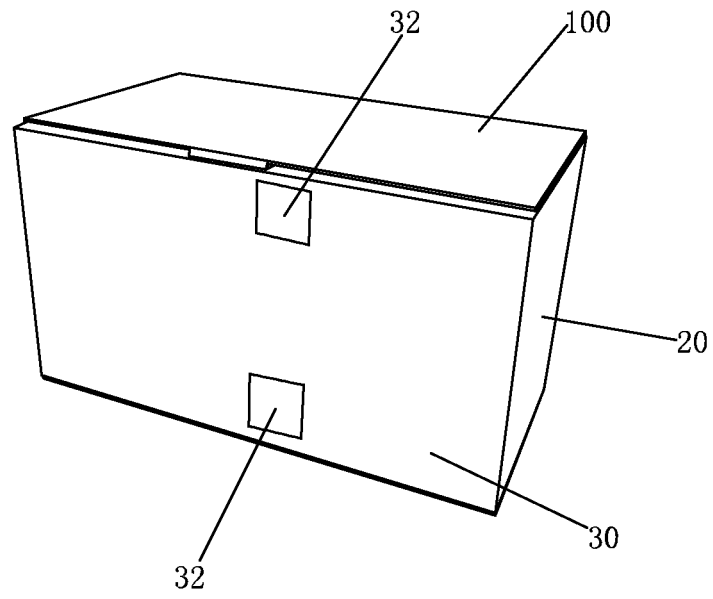


FIG. 7

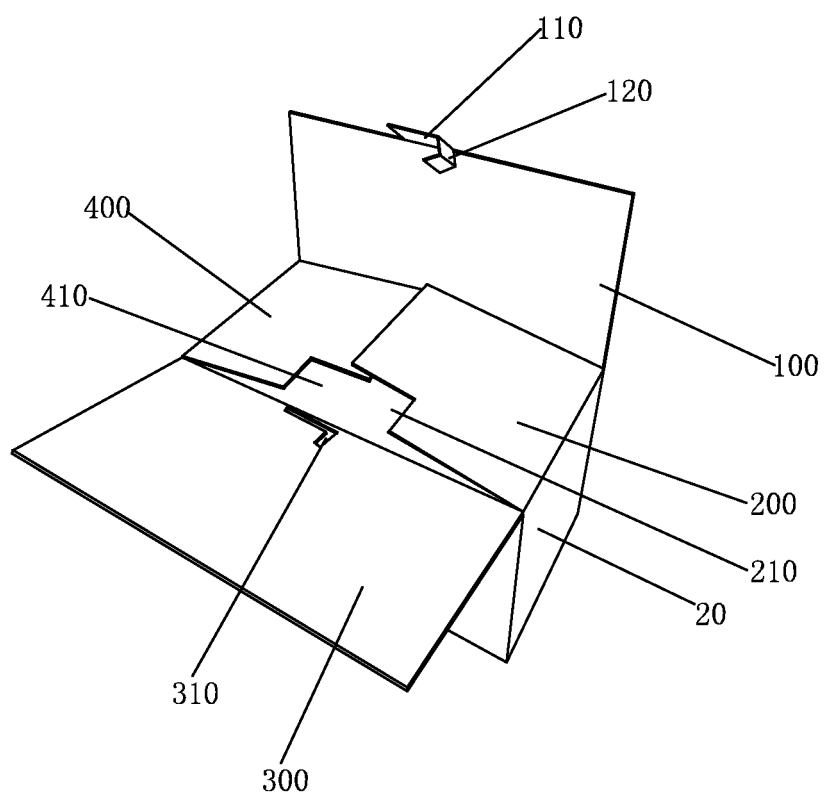


FIG. 8

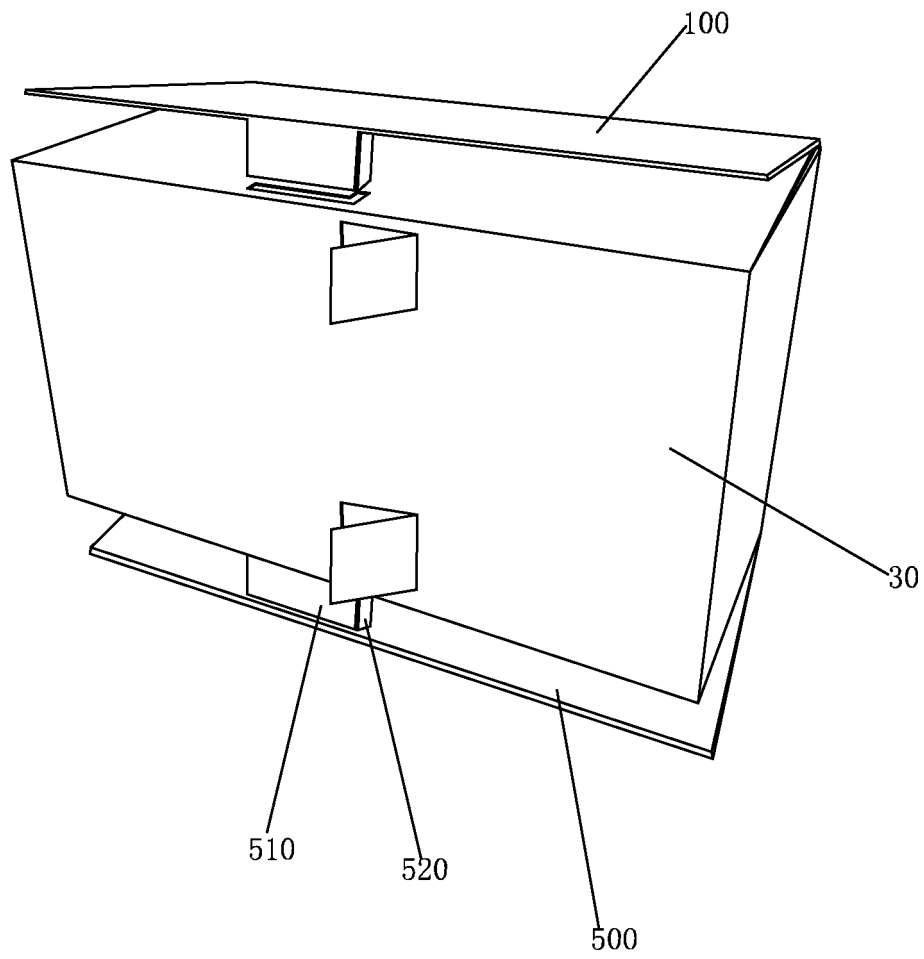


FIG. 9

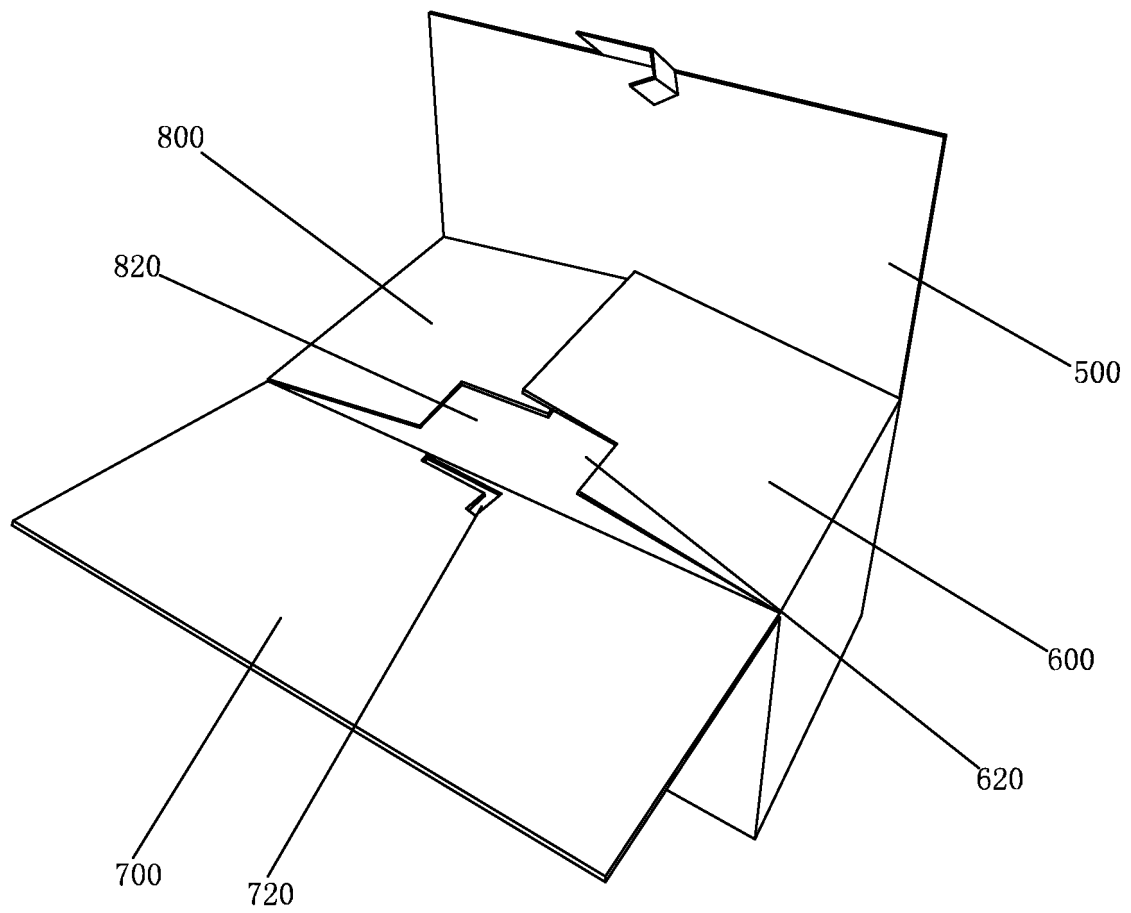


FIG. 10

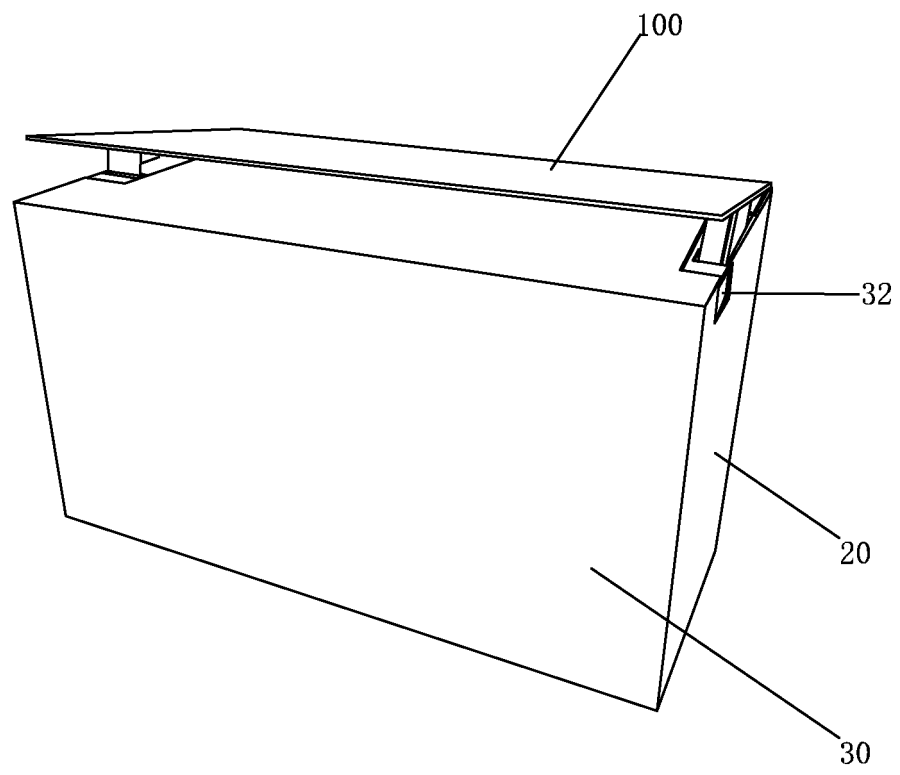


FIG. 11

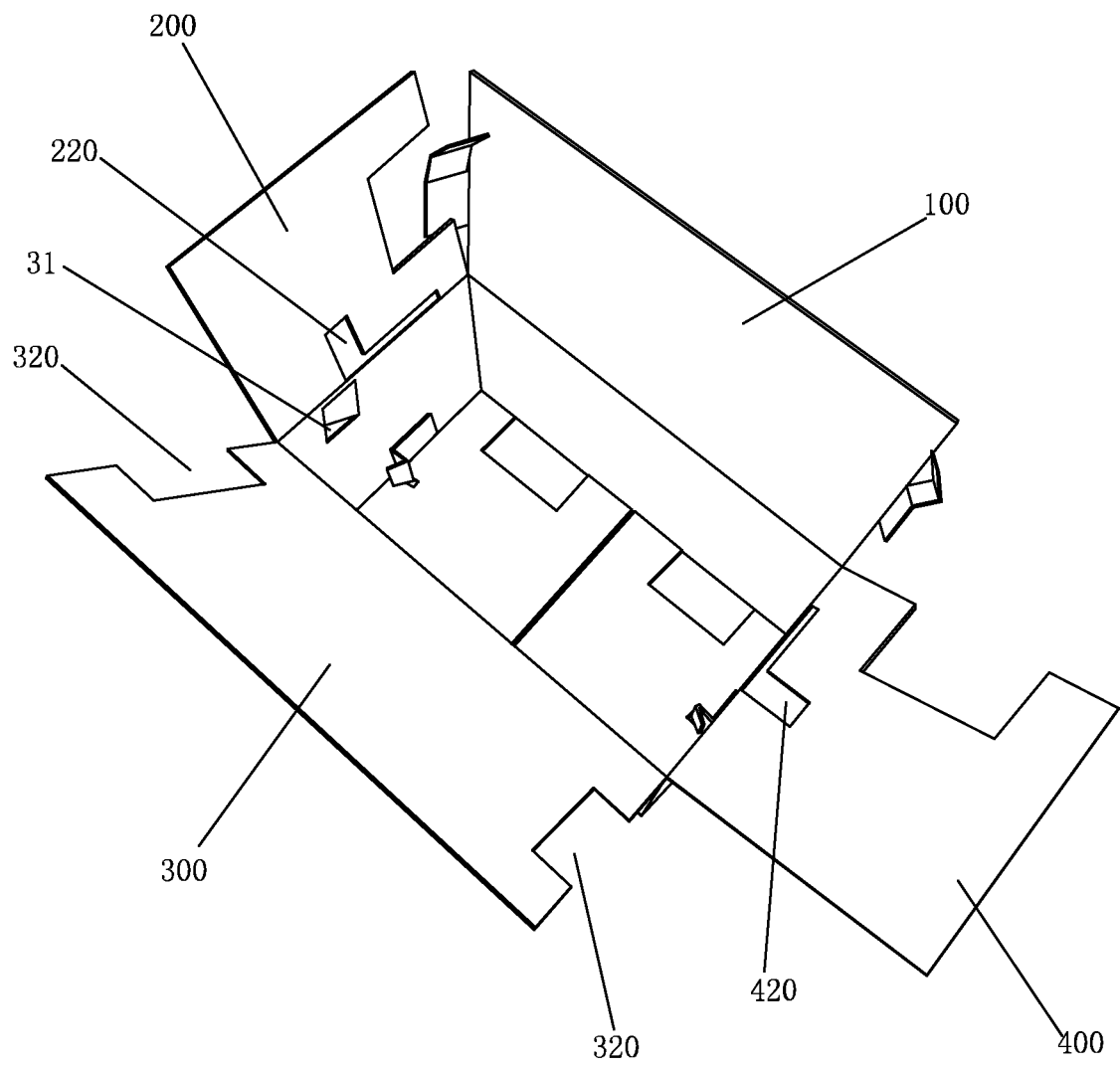


FIG. 12

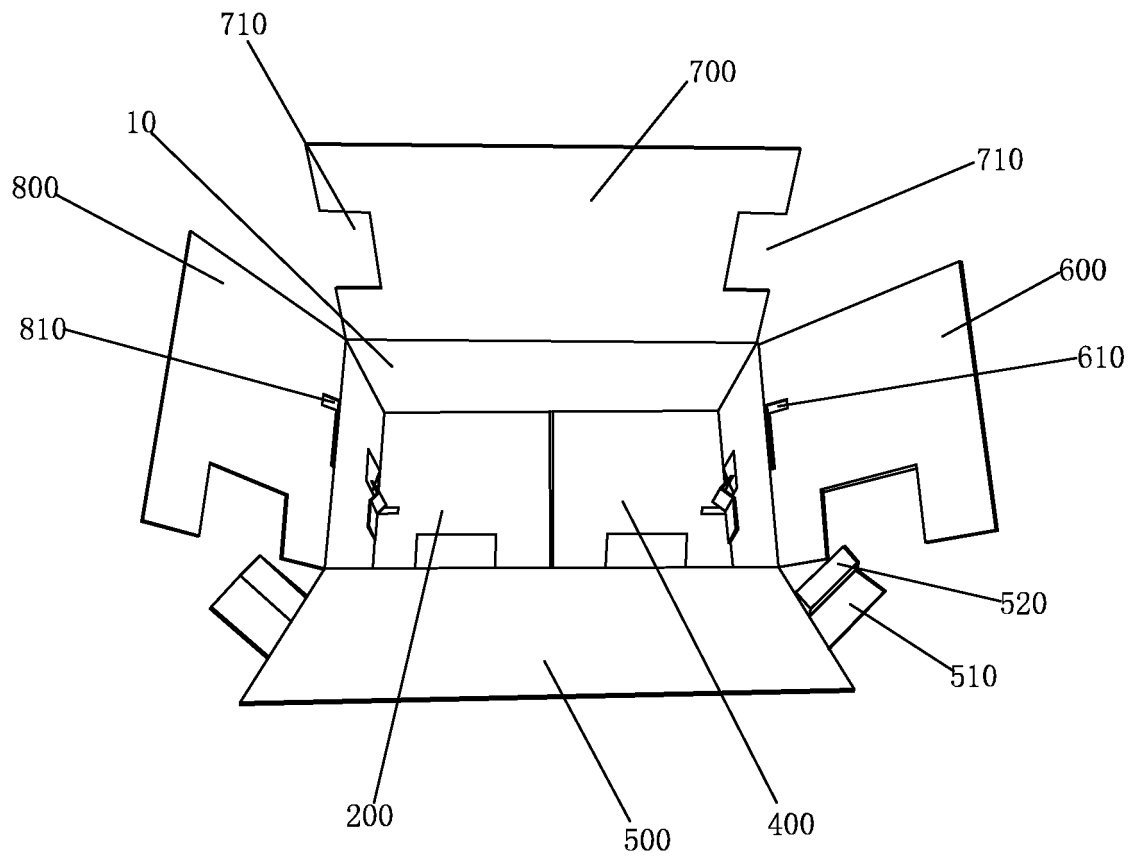


FIG. 13

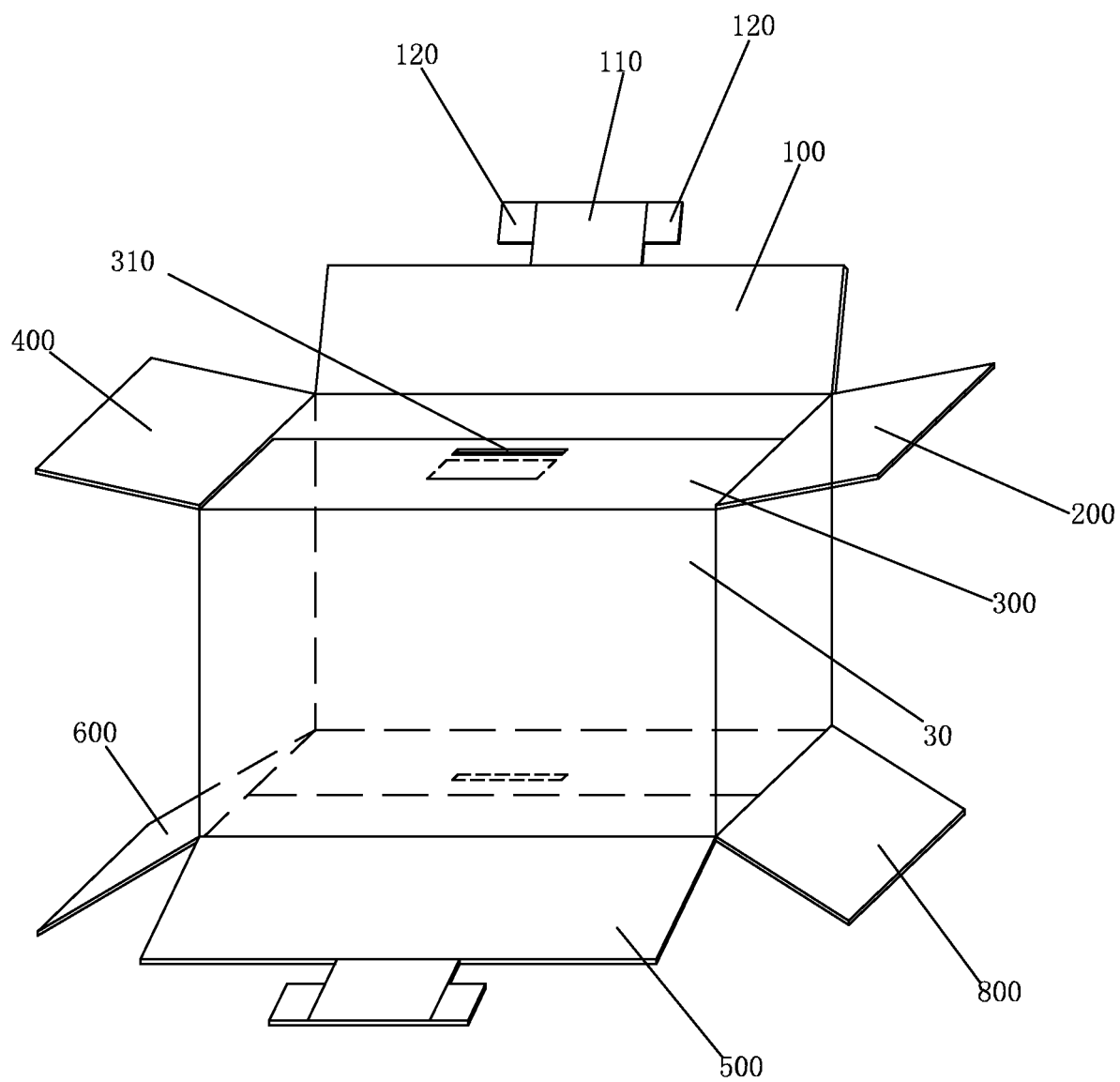


FIG. 14

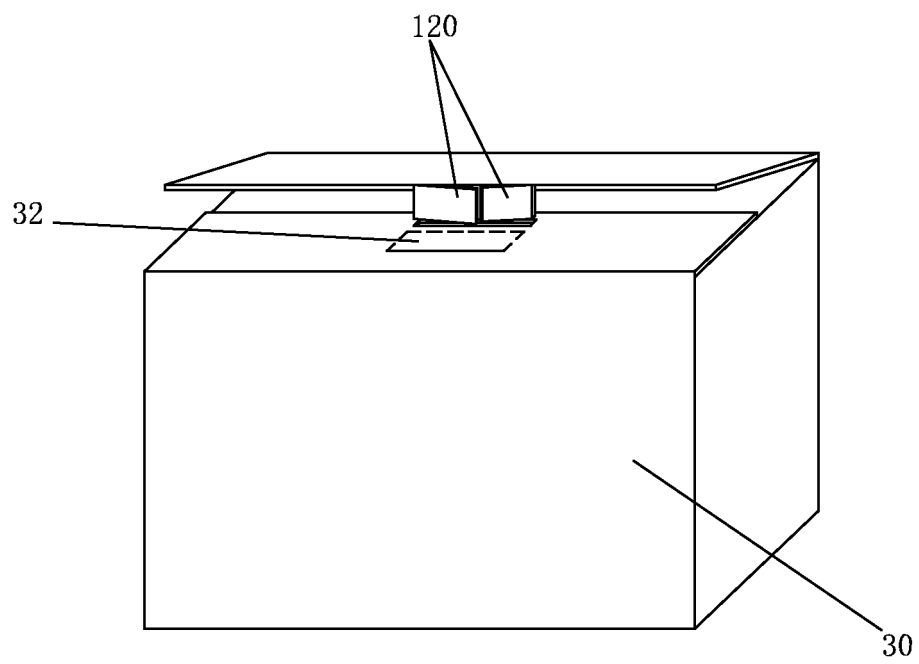


FIG. 15

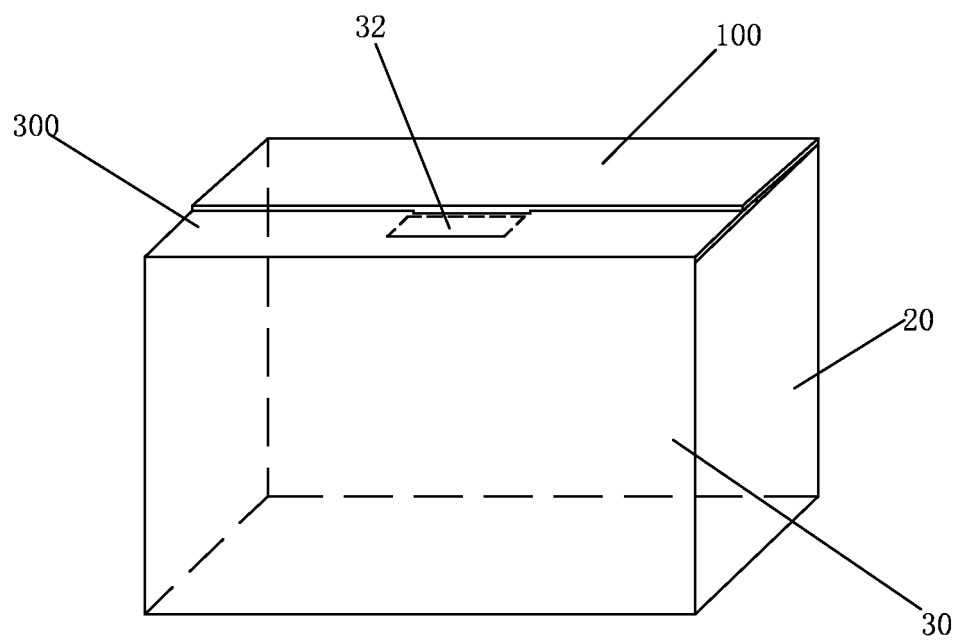


FIG. 16

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2019/072963

A. CLASSIFICATION OF SUBJECT MATTER B65D 5/30(2006.01)i; B65D 5/70(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) B65D 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) CNKI, CNABS, DWPI, SIPOABS: 自锁, 自封口, 解锁, 包装, 箱, 盒, 纸箱, self, lock, unlock+, release, pack+, box, paper																					
C. DOCUMENTS CONSIDERED TO BE RELEVANT <table border="1"> <thead> <tr> <th>Category*</th> <th>Citation of document, with indication, where appropriate, of the relevant passages</th> <th>Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>CN 203246663 U (LD PACKING PRINTING (SHANGHAI) CO., LTD.) 23 October 2013 (2013-10-23) description, paragraphs 0001-0012, and figure 1</td> <td>1-14</td> </tr> <tr> <td>A</td> <td>CN 206606454 U (KUNSHAN JIAZE PACKING PRODUCTS CO., LTD.) 03 November 2017 (2017-11-03) entire document</td> <td>1-14</td> </tr> <tr> <td>A</td> <td>CN 107323788 A (BEIJING EASY PRINT TECHNOLOGY CO., LTD.) 07 November 2017 (2017-11-07) entire document</td> <td>1-14</td> </tr> <tr> <td>A</td> <td>CN 201261571 Y (SICHUAN CHANGHONG ELECTRIC CO., LTD.) 24 June 2009 (2009-06-24) entire document</td> <td>1-14</td> </tr> <tr> <td>A</td> <td>US 2678153 A (SUTHERLAND PAPER COMPONY) 11 May 1954 (1954-05-11) entire document</td> <td>1-14</td> </tr> <tr> <td>A</td> <td>US 2827222 A (SUTHERLAND PAPER COMPANY) 18 March 1958 (1958-03-18) entire document</td> <td>1-14</td> </tr> </tbody> </table>	Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	A	CN 203246663 U (LD PACKING PRINTING (SHANGHAI) CO., LTD.) 23 October 2013 (2013-10-23) description, paragraphs 0001-0012, and figure 1	1-14	A	CN 206606454 U (KUNSHAN JIAZE PACKING PRODUCTS CO., LTD.) 03 November 2017 (2017-11-03) entire document	1-14	A	CN 107323788 A (BEIJING EASY PRINT TECHNOLOGY CO., LTD.) 07 November 2017 (2017-11-07) entire document	1-14	A	CN 201261571 Y (SICHUAN CHANGHONG ELECTRIC CO., LTD.) 24 June 2009 (2009-06-24) entire document	1-14	A	US 2678153 A (SUTHERLAND PAPER COMPONY) 11 May 1954 (1954-05-11) entire document	1-14	A	US 2827222 A (SUTHERLAND PAPER COMPANY) 18 March 1958 (1958-03-18) entire document	1-14
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Date of the actual completion of the international search 17 July 2019	Date of mailing of the international search report 01 August 2019																				
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Facsimile No. (86-10)62019451	Telephone No.																				

Form PCT/ISA/210 (second sheet) (January 2015)

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2019/072963

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Patent document cited in search report			Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
CN	203246663	U	23 October 2013	None	
CN	206606454	U	03 November 2017	None	
CN	107323788	A	07 November 2017	None	
CN	201261571	Y	24 June 2009	None	
US	2678153	A	11 May 1954	None	
US	2827222	A	18 March 1958	None	