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(54) **MOVABLE PUZZLE PLATFORM**

(57) A movable puzzle platform for placing a plurality of puzzle pieces thereon, includes: a puzzle board comprising a top surface for placing the puzzle piece thereon; and a board accessible unit coupled with the puzzle board and comprising a first moving member, a second moving member, and a first bearing unit coupled between the first moving member and the second moving member. The first moving member is rotatably mounted to the second moving member by the first bearing unit. At least a part of an outer circumferential surface of the first moving member is directly opposite to and facing at least a part of an inner circumferential surface of the second moving member via the first bearing unit to enable the second moving member to be coaxially rotated with respect to the first moving member.

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Description

BACKGROUND OF THE PRESENT INVENTION

FIELD OF INVENTION

[0001] The present invention relates to puzzle game apparatus, and more particularly to a movable puzzle platform, wherein the puzzle platform is configured for retaining all the unfinished pieces and while allowing the player to conveniently play the puzzle.

DESCRIPTION OF RELATED ARTS

[0002] Puzzles are devised over the years and are among the most popular board games generally played alone by an individual. It is well known that puzzles are good for the brain. Studies have shown that playing puzzles can improve cognition and visual-spatial reasoning, and can train concentration and patience.

[0003] Other than as a means of entertainment and enjoyment, players would like to challenge themselves by playing higher piece counts of the puzzle. Generally speaking, the higher the piece count, the harder the puzzle is. However, a common drawback or a burden for the player is that the finished size of the puzzles is relatively large. For example, a finished size of 1,000 piece puzzles is about 30" x 24", a finished size of 5,000 piece puzzles is about 60" x 40", and so on. In other words, these puzzles require a relatively large playing surface such as the surface of a table or a puzzle board for putting all the pieces together to form a puzzle figure. Therefore, to play a relatively large puzzle, for example 60" x 40" or more, the side length of the puzzle board is longer than the player's arm length that the player is unable to reach the other sides of the puzzle board, so that the player is required to move around the playing surface to put pieces at different directions and portions near each side of the puzzle board. As a skilled player, the strategies for playing the puzzles are configured for sorting the pieces into groups and assembling the border first. Therefore, the player will need to move from one side of the playing surface to another side thereof to play the puzzles. Furthermore, it could take hours, days or even months to compete a larger scale puzzle. One or more puzzle pieces could be missed accidentally or unintentionally. It is sad that the player usually finds out there is a missing piece at the end. Therefore, how to avoid losing any pieces, it is best to find a container to save all the unfinished pieces.

[0004] A need exists for a tool that retains all the unfinished pieces and while allowing the player to conveniently player the puzzle. It is to the provision of such a tool that the present disclosure is primarily directed.

SUMMARY OF THE PRESENT INVENTION

[0005] The invention provides a movable puzzle platform for placing a plurality of puzzle pieces thereon, including: a puzzle board comprising a top surface for placing the puzzle piece thereon; and a board accessible unit coupled with the puzzle board and comprising a first moving member, a second moving member, and a first bearing unit coupled between the first moving member and the second moving member. The first moving member is rotatably mounted to the second moving member by the first bearing unit. At least a part of an outer circumferential surface of the first moving member is directly opposite to and facing at least a part of an inner circumferential surface of the second moving member via the first bearing unit to enable the second moving member to be coaxially rotated with respect to the first moving member. The board accessible unit further comprises an air gap formed by the outer circumferential surface of the first moving member and the inner circumferential surface of the second moving member, the air gap is without an object along a thickness direction of the board accessible unit. The first moving member comprises a first horizontal flat base and a first rolling surface arranged along the first horizontal flat base.

[0006] The invention provides a movable puzzle platform for placing a plurality of puzzle pieces thereon. The movable puzzle platform includes: a puzzle board comprising a top surface for placing the puzzle piece thereon; and a board accessible unit coupled with the puzzle board and comprising a first moving member, a second moving member, and a first bearing unit coupled between the first moving member and the second moving member, wherein the first moving member is rotatably mounted to the second moving member by the first bearing unit. The first moving member having a first circumferential surface and the second moving member having a second circumferential surface directly opposite to the first circumferential surface. At least a part of the first circumferential surface of the first moving member is directly facing at least a part of the second circumferential surface of the second moving member to enable the second moving member to be coaxially rotated with respect to the first moving member. The board accessible unit further comprises an air gap formed by the first circumferential surface of the first moving member and the second circumferential surface of the second moving member, the air gap is without an object along a thickness direction of the board accessible unit. The first moving member comprises a first flat base and a first rolling surface arranged along the first flat base.

[0007] The invention provides a rotating assembly, including: a first moving member; a second moving member rotatably coupled to the first moving member for forming a holding space; and a plurality of ball bearings rotatably received in the holding space for allowing the second moving member rotating with respect to the first moving member. The first moving member comprises a first middle portion, an inclining portion extending downwardly from the periphery of the middle portion, a first projecting portion extending upwardly from the periphery

of the inclining portion, and an edge portion extending from the periphery of the first projecting portion and away from the first middle portion. The first middle portion is farther away from the ball bearings than an upper surface of the first projecting portion in a thickness direction of the rotating assembly.

[0008] The invention provides a movable puzzle platform for placing a plurality of puzzle pieces thereon, and the movable puzzle platform includes: a board assembly comprising a puzzle board; a kickstand pivotally coupled at the board assembly; and a rotating assembly attached on the kickstand and comprising a first moving member, a second moving member rotatably coupled to the first moving member for forming a holding space and a plurality of ball bearings rotatably received in the holding space for allowing the second moving member rotating with respect to the first moving member. One end of the kickstand is configured for being pivotally coupled at the board assembly while a free end of the kickstand is adapted to pivotally fold from the board assembly. An outer diameter of the rotating assembly is smaller than a length of the kickstand.

[0009] The invention provides a movable puzzle platform for placing a plurality of puzzle pieces thereon. The movable puzzle platform includes: a board assembly comprising a puzzle board and a supporting portion attached on a bottom surface of the puzzle board; a kickstand pivotally coupled at the board assembly; and a rotating assembly attached on the kickstand and comprising a first moving member, a second moving member rotatably coupled to the first moving member for forming a holding space and a plurality of ball bearings rotatably received in the holding space for allowing the second moving member rotating with respect to the first moving member. One end of the kickstand is configured for being pivotally coupled at the board assembly while a free end of the kickstand is adapted to pivotally fold from the board assembly. The supporting portion comprises a first inner supporting wall attached on a bottom surface of the puzzle board and a second inner supporting wall attached on the bottom surface of the puzzle board and spaced apart from the first inner supporting wall for forming a supporting space together with the first inner supporting wall, the kickstand is received in the supporting space.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010]

Fig. 1 is an illustrative isometric view of a movable puzzle platform according to a first embodiment of the present invention.

Fig. 2 is an exploded perspective view of the movable puzzle platform shown in Fig. 1.

Fig. 3 is an illustrative isometric view of the movable puzzle platform shown in Fig. 1, puzzle drawers thereof being partially pulled out of a corresponding drawer cavity.

Fig. 4 is an illustrative isometric view of the movable puzzle platform shown in Fig. 1, a puzzle board and a rotating assembly thereof being removed away.

Fig. 5 is an illustrative isometric view of a restricting wall and a supporting portion of the movable puzzle platform shown in Fig. 1.

Fig. 6 is an illustrative isometric view of the restricting wall and the supporting portion of the movable puzzle platform shown in Fig. 1, but from another aspect.

Fig. 7 is a cross-sectional view of the movable puzzle platform taken along line A-A of Fig. 1.

Fig. 8 is a cross-sectional view of the movable puzzle platform taken along line B-B of Fig. 1.

Fig. 9 is an illustrative isometric view of the movable puzzle platform shown in Fig. 1, but from another aspect.

Fig. 10 is an illustrative isometric view of the movable puzzle platform shown in Fig. 1, a base and the rotating assembly thereof being removed away.

Fig. 11 is a partially exploded perspective view of the movable puzzle platform shown in Fig. 1.

Fig. 12 is an illustrative isometric view of the movable puzzle platform shown in Fig. 1, puzzle drawers thereof being partially pulled out of a corresponding drawer cavity, and the base thereof being removed away.

Fig. 13 is a side view of the rotating assembly of the movable puzzle platform shown in Fig. 1.

Fig.14 illustrates an alternative mode of a rotating assembly of the movable puzzle platform shown in Fig. 1.

Fig. 15 is a sectional view of a supplement arrangement of the movable puzzle platform shown in Fig. 1.

Fig. 16 is an illustrative isometric view of the movable puzzle platform according to a second embodiment of the present invention.

Fig. 17 is an illustrative isometric view of the movable puzzle platform shown in Fig. 16, but from another aspect.

Fig. 18 is an illustrative isometric view of the movable puzzle platform shown in Fig. 16, puzzle drawers thereof being partially pulled out of a corresponding drawer cavity.

Fig. 19 is an illustrative isometric view of a restricting wall and a supporting portion of the movable puzzle platform shown in Fig. 16.

Fig. 20 is an illustrative isometric view of a movable puzzle platform according to a third embodiment of the present invention.

Fig. 21 is an illustrative isometric view of the movable puzzle platform shown in Fig. 20, puzzle drawers thereof being partially pulled out of a corresponding drawer cavity.

Fig. 22 is an illustrative isometric view of the movable puzzle platform shown in Fig. 20, but from another aspect.

Fig. 23 is an illustrative isometric view of a movable

puzzle platform according to a fourth embodiment of the present invention.

Fig. 24 is an illustrative isometric view of the movable puzzle platform shown in Fig. 23, but from another aspect.

Fig. 25 is an illustrative isometric view of the movable puzzle platform shown in Fig. 23, two puzzle drawers thereof being pulled out of a corresponding drawer cavity.

Fig. 26 is an illustrative isometric view of the movable puzzle platform shown in Fig. 23, three puzzle drawers thereof being partially pulled out of a corresponding drawer cavity.

Fig. 27 is a cross-sectional view of the movable puzzle platform taken along line C-C of Fig. 23.

Fig. 28 is a cross-sectional view of the movable puzzle platform taken along line D-D of Fig. 23.

Fig. 29 is an illustrative isometric view of the movable puzzle platform shown in Fig. 23, but from another aspect.

Fig. 30 is an illustrative isometric view of a rotating assembly of the movable puzzle platform shown in Fig. 23.

Fig. 31 is an illustrative isometric view of the rotating assembly of the movable puzzle platform shown in Fig. 23, but from another aspect.

Fig. 32 is an exploded perspective view of the rotating assembly of the movable puzzle platform shown in Fig. 23.

Fig. 33 is an exploded perspective view of the rotating assembly of the movable puzzle platform shown in Fig. 23, but from another aspect.

Fig. 34 is a cross-sectional view of the rotating assembly of the movable puzzle platform taken along line G-G of Fig. 30.

Fig. 35 is a cross-sectional view of the rotating assembly of the movable puzzle platform taken along line H-H of Fig. 30.

Fig. 36 is a cross-sectional view of the rotating assembly of the movable puzzle platform taken along line I-I of Fig. 30.

Fig. 37 is an illustrative isometric view of a movable puzzle platform according to a fifth embodiment of the present invention.

Fig. 38 is an illustrative isometric view of the movable puzzle platform shown in Fig. 23, illustrating a kickstand being in close position.

Fig. 39 is an illustrative isometric view of the movable puzzle platform shown in Fig. 23, illustrating the kickstand being in close position, but from another aspect.

Fig. 40 is a side view of the movable puzzle platform shown in Fig. 37, illustrating the kickstand being pivotally folded to support a board assembly at an inclined manner on a playing place in open position.

Fig. 41 is an illustrative isometric view of a rotating assembly of the movable puzzle platform shown in Fig. 37.

Fig. 42 is an illustrative isometric view of the rotating assembly of the movable puzzle platform shown in Fig. 37, but from another aspect.

Fig. 43 is an illustrative isometric view of the rotating assembly of the shown in Fig. 37, a first moving member thereof being removed away.

Fig. 44 is an exploded perspective view of the rotating assembly of the movable puzzle platform shown in Fig. 37.

Fig. 45 is an exploded perspective view of the rotating assembly of the movable puzzle platform shown in Fig. 37, but from another aspect.

Fig. 46 is a cross-sectional view of the rotating assembly of the movable puzzle platform taken along line E-E of Fig. 41.

Fig. 47 is a cross-sectional view of the rotating assembly of the movable puzzle platform taken along line F-F of Fig. 41.

Fig. 48 is an illustrative isometric view of a movable puzzle platform according to a sixth embodiment of the present invention.

Fig. 49 is an illustrative isometric view of the movable puzzle platform shown in Fig. 48, illustrating a kickstand being in open position.

Fig. 50 a partially exploded perspective view of the movable puzzle platform shown in Fig. 48.

Fig. 51 is an illustrative isometric view of a movable puzzle platform according to a seventh embodiment of the present invention.

Fig. 52 is a cross-sectional view of the movable puzzle platform taken along line J-J of Fig. 51.

Fig. 53 is a cross-sectional view of the movable puzzle platform taken along line J-J of Fig. 51, but from another aspect.

Fig. 54 is an illustrative isometric view of the movable puzzle platform shown in Fig. 51, but from another aspect.

Fig. 55 is an illustrative isometric view of the movable puzzle platform shown in Fig. 51, puzzle drawers thereof being pulled out of a corresponding drawer cavity.

Fig. 56 is an illustrative isometric view of the movable puzzle platform shown in Fig. 51, puzzle drawers thereof being partially pulled out of a corresponding drawer cavity.

Fig. 57 is an illustrative isometric view of a restricting wall and a supporting portion of the movable puzzle platform shown in Fig. 51.

Fig. 58 is an illustrative isometric view of a movable puzzle platform according to an eighth embodiment of the present invention.

Fig. 59 is a cross-sectional view of the movable puzzle platform taken along line K-K of Fig. 58.

Fig. 60 is an illustrative isometric view of the movable puzzle platform shown in Fig. 58, a puzzle board thereof being removed away.

Fig. 61 is an illustrative isometric view of the movable puzzle platform shown in Fig. 58, the puzzle board

thereof being removed away and puzzle drawers thereof being partially pulled out of a corresponding drawer cavity.

Fig. 62 is an illustrative isometric view of the movable puzzle platform shown in Fig, 58, but from another aspect.

Fig. 63 is an illustrative isometric view of a movable puzzle platform according to a ninth embodiment of the present invention.

Fig. 64 is an illustrative isometric view of a movable puzzle platform according to a tenth embodiment of the present invention.

Fig. 65 is an illustrative isometric view of a movable puzzle platform according to an eleventh embodiment of the present invention.

Fig. 66 is an illustrative isometric view of the movable puzzle platform shown in Fig. 65, but from another aspect.

Fig. 67 is an illustrative isometric view of the movable puzzle platform of the shown in Fig. 65, a puzzle board and a rotating assembly thereof being removed away and puzzle drawers thereof being partially pulled out of a corresponding drawer cavity.

Fig. 68 is a partially exploded perspective view of the movable puzzle platform shown in Fig. 67, the puzzle board and the rotating assembly thereof being removed away and the puzzle drawers thereof being removed away.

Fig. 69 is an illustrative isometric view of the movable puzzle platform shown in Fig. 65, but from another aspect.

Fig. 70 is a cross-sectional view of the movable puzzle platform taken along line L-L of Fig. 69.

Fig. 71 is a cross-sectional view of the movable puzzle platform taken along line M-M of Fig. 69.

Fig. 72 is an illustrative isometric view of a movable puzzle platform illustrating another mode of a kickstand being in close position.

Fig. 73 is an illustrative isometric view of the movable puzzle platform illustrating the kickstand shown in Fig. 72 being in open position.

Fig. 74 is an illustrative isometric view of a movable puzzle platform illustrating a third mode of a kickstand being in close position.

Fig. 75 is an illustrative isometric view of the movable puzzle platform illustrating the kickstand shown in Fig. 74 being in open position.

Fig. 76 is an illustrative isometric view of a movable puzzle platform illustrating a fourth mode of a kickstand being in open position.

Fig. 77 is an illustrative isometric view of the movable puzzle platform illustrating the kickstand shown in Fig. 76 being in close position.

Fig. 78 is a perspective view of the movable puzzle platform incorporating with the puzzle pieces to form a puzzle game kit according to the above preferred embodiment of the present invention.

Fig. 79 is an exploded perspective view of a movable puzzle platform according to a preferred embodiment of the present invention.

Fig. 80 is a side view of a board accessible unit of the movable puzzle platform according to the above preferred embodiment of the present invention.

Fig. 81 illustrates an alternative mode of the board accessible unit of the movable puzzle platform according to the above preferred embodiment of the present invention.

Fig. 81A illustrates another alternative mode of the board accessible unit of the movable puzzle platform according to the above preferred embodiment of the present invention.

Fig. 82 is a sectional view of a supplement arrangement of the movable puzzle platform according to the above preferred embodiment of the present invention.

Fig. 83 is a side view of the movable puzzle platform according to the above preferred embodiment of the present invention, illustrating a kickstand being pivotally folded to support the puzzle board at an inclined manner on the playing surface.

Fig. 84 is a perspective view of the movable puzzle platform incorporating with the puzzle pieces to form a puzzle game kit according to the above preferred embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0011] The following description is disclosed to enable any person skilled in the art to make and use the present invention. Preferred embodiments are provided in the following description only as examples and modifications will be apparent to those skilled in the art. The general principles defined in the following description would be applied to other embodiments, alternatives, modifications, equivalents, and applications without departing from the spirit and scope of the present invention.

[0012] Referring to Figs. 1 to 15, a movable puzzle platform 1 according to a first embodiment of the present invention is illustrated, wherein the movable puzzle platform 1 is arranged for a user or a player to assemble a plurality of puzzle pieces 100 thereon. Accordingly, the movable puzzle platform 1 comprises a board assembly 90 and a rotating assembly 20 attached on the board assembly 90. The board assembly 90 comprises a puzzle board 10 for placing the puzzle pieces 100, a supplement arrangement 30 attached on the puzzle board 10, a base 40 attached on the supplement arrangement 30, and a restricting wall 50 upwardly extended from a peripheral edge of the puzzle board 10. The rotating assembly 20 is configured for allowing the board assembly 90 sliding on a playing place and provides accessibility for the board assembly 90 to move the board assembly 90 at different planar directions with respect to the playing place. The supplement arrangement 30 is configured not only for storing the puzzle pieces 100 before they are assembled,

but also for allowing the player to preassemble and store a section of the puzzle figure with a group of puzzle pieces 100. The supplement arrangement 30 and the restricting wall 50 are positioned at the two sides of the puzzle board 10, respectively. Although good results have been shown with the board assembly 90 that is rectangular in shape, it is within the scope of the present invention that numerous other shapes of the board assembly 90 could be used to achieve the desired functionality as described herein. The movable puzzle platform 1 is manufactured from a suitable durable material such as wood combined with durable fiberboard. In another embodiment, a movable puzzle platform could be manufactured from plastic or fiberglass. In yet another embodiment, a puzzle board is made of non-slip felt surfaces to keep the puzzle pieces secure.

[0013] The puzzle board 10 with an even thickness may take any shape, such as circular, square, rectangular and so on. According to this embodiment as shown in Figs. 1-2 and 11, the puzzle board 10 is embodied to have a rectangular shape defining two longer longitudinal sides provided along a longitudinal direction X and two shorter transverse sides provided along a lateral direction Y perpendicular to the longitudinal direction X. Accordingly, the puzzle board defines XY coordinate surface. The puzzle board 10 comprises a puzzle plate 101 for playing the puzzle pieces 100 thereon and a fixing portion 102 extending from the edge of the puzzle plate 101 and connected with the supplement arrangement 30 and the restricting wall 50, respectively. The puzzle plate 101 comprises a flat playing surface 11 and a bottom surface 12 opposite to the playing surface 11. It is worth mentioning that an area of the playing surface 11 is not smaller than an area of the puzzle pieces 100 being put together. Preferably, the area of the playing surface 11 matches with the area of the puzzle pieces 100 after the puzzle pieces 100 are assembled. In other words, the puzzle board 10 serves as a puzzle frame for framing the puzzle pieces 100 after the puzzle pieces 100 are assembled. It is worth mentioning that the puzzle board 10 has a predetermined size adapted for a larger scale puzzle, such as at least 1,000 puzzle pieces, being assembled on the puzzle board 10.

[0014] In this embodiment, the restricting wall 50 is substantially perpendicular to the puzzle board 10 and is generally four-piece type. The restricting wall 50 comprises a first extending wall 51 mounted on the fixing portion 102 and arranged in the longitudinal direction X, a second extending wall 52 mounted on the fixing portion 102 and spaced apart from the first extending wall 51, a third extending wall 53 mounted on the fixing portion 102 and arranged in the lateral direction Y for connected with the adjacent first and second extending walls 51, 52, and a fourth extending wall 54 mounted on the fixing portion 102 and spaced apart from the third extending wall 53 for connected with the adjacent first and second extending walls 51, 52. The first and second extending walls 51, 52 are parallel to each other in the longitudinal direction X. The third and fourth extending walls 53, 54 are parallel to each other in the lateral direction Y. The restricting wall 50 is configured for preventing the players from accidentally or unintentionally pushing the puzzle pieces 100 off the puzzle plate 101. Each of extending walls is substantially strip-shaped and connected with the adjacent extending walls for forming the restricting wall 50 having a closed structure. The restricting wall with a closed curve shape is configured for preventing the puzzle pieces fall off from the puzzle board when the board assembly is rotated on the playing place via a rotation movement of the rotating assembly and/or when the board assembly is moved by a user or a player from one place to another. Each of extending walls may be detachably assembled edge-to-edge to form the restricting wall 50. It is optional that a restricting wall may be an integral unit. Optionally, adjacent extending walls are unconnected with each other. A restricting wall further four arc walls located on four corners of a puzzle plate and smoothly connecting two adjacent extending walls. It is optional that each arc wall is configured to be a part of a circle.

[0015] The supplement arrangement 30 comprises a supporting portion 301 connected with the bottom surface 12 of the puzzle plate 101 for forming at least one drawer cavity 31 and at least one puzzle drawer 32 received in the corresponding drawer cavity 31. The puzzle board 10 of the movable puzzle platform 1 has a thin and big size. A length and/or a width of the puzzle board 10 is much greater than a thickness of the puzzle board 10, so the supporting portion 301 is configured for improving the structural strength of the puzzle board 10. The supporting portion 301 is substantially perpendicular to the puzzle board 10 and may take any shape, such as circular, square, rectangular and so on. As shown in Figs. 1 -15, in this embodiment, the supplement arrangement 30 has six drawer cavities 31 and six puzzle drawers 32 received in the corresponding drawer cavity 31. The storing capacity of drawers vary as per varying sizes of the puzzle pieces. The drawer cavities 31 comprise four lateral cavities 302 and two longitudinal cavities 303. The four lateral cavities 302 comprise a first lateral cavity 33, a second lateral cavity 34, a third lateral cavity 35 and a fourth lateral cavity 36. The two longitudinal cavities 303 comprise a first longitudinal cavity 37 and a second longitudinal cavity 38. In this embodiment, the supporting portion is configured not only for improving the structural strength of the movable puzzle platform, but also for forming the drawer cavities together with the puzzle plate.

[0016] The supporting portion 301 comprises a first main supporting wall 311 attached on the bottom surface 12 of the puzzle board 10 along the longitudinal direction X, a second main supporting wall 312 attached on the bottom surface 12 of the puzzle board 10 along the longitudinal direction X and disposed opposite to the first main supporting wall 311, a first dividing supporting wall 313 attached on the bottom surface 12 of the puzzle board 10 along the longitudinal direction X and disposed

between the first and second main supporting walls 311, 312, a second dividing supporting wall 314 attached on the bottom surface 12 of the puzzle board 10 along the longitudinal direction X and disposed between the first and second main supporting walls 311, 312, a first inner supporting wall 315 attached on the bottom surface 12 of the puzzle board 10 along the lateral direction Y and connected with the first and second main supporting walls 311, 312, and a second inner supporting wall 316 attached on the bottom surface 12 of the puzzle board 10 along the lateral direction Y and connected with the first and second main supporting walls 311, 312. The first and second dividing supporting walls 313, 314 are spaced apart from each other. The first and second inner supporting walls 315, 316 are spaced apart from each other and disposed parallel to each other. The first and second dividing supporting walls 313, 314 and the first and second main supporting walls 311, 312 are disposed parallel to each other. The first dividing supporting wall 313 connects with the first inner supporting wall 315 and the second dividing supporting wall 314 connects with the second inner supporting wall 316 for forming crossing structures, respectively. The first and second inner supporting walls 315, 316 are not exposed from the first and second main supporting walls 311, 312, respectively.

[0017] One end of the first dividing supporting wall 313 is connected with the first inner supporting wall 315 and is substantially perpendicular to the first inner supporting wall 315, and another end of the first dividing supporting wall 313 and the third extending wall 53 partly overlap in a thickness direction of the board assembly 90. One end of the second dividing supporting wall 314 is connected with the second inner supporting wall 316 and is substantially perpendicular to the second inner supporting wall 316 and another end of the second dividing supporting wall 314 and the fourth extending wall 54 partly overlap in a thickness direction of the board assembly 90. The first lateral cavity 33 is formed by the first main supporting wall 311 cooperated with the first dividing supporting wall 313 and the first inner supporting wall 315. The second lateral cavity 34 is formed by the second main supporting wall 312 cooperated with the first dividing supporting wall 313 and the first inner supporting wall 315. The third lateral cavity 35 is formed by the second main supporting wall 312 cooperated with the second dividing supporting wall 314 and the second inner supporting wall 316. The fourth lateral cavity 36 is formed by the first main supporting wall 311 cooperated with the second dividing supporting wall 314 and the second inner supporting wall 316. In this embodiment, the first dividing supporting wall 313 cooperates with the first and second main supporting wall 311,312 for varying volumes of the first and second lateral cavities 33, 34. Moreover, the second dividing supporting wall 314 cooperates with the first and second main supporting wall 311, 312 for varying volumes of the third and fourth lateral cavities 35, 36.

[0018] The supporting portion 30 further comprises a third dividing supporting wall 317 extending from the bottom surface 12 of the puzzle plate 101 along the longitudinal direction X and connected with the first and second inner supporting walls 315, 316 and a fourth dividing supporting wall 318 extending from the bottom surface 12 of the puzzle plate 101 along the longitudinal direction X and connected with the first and second inner supporting walls 315, 316. The third and fourth dividing supporting walls 317, 318 are located between the first and second inner supporting walls 315, 316 and spaced apart to each other. The third and fourth dividing supporting walls 317, 318 are parallel to the first and second main supporting walls 311, 312. The first and second main supporting walls and the first through fourth dividing supporting walls are configured for improving the structural strength of the movable puzzle platform along the longitudinal direction X, respectively. The first and second inner supporting walls are configured for improving the structural strength of the movable puzzle platform along the lateral direction Y, respectively. The first and second inner supporting walls and the first through fourth dividing supporting walls are arranged between the first and second main supporting walls, respectively. The main supporting walls and the inner supporting walls can be assembled together by threads, snap-fit, friction fit, screws, rivets or other similar complementary conformation. The inner supporting walls and the dividing supporting walls can be assembled together by threads, snap-fit, friction fit, screws, rivets or other similar complementary conformation. Optionally, each of the main supporting walls, each of the inner supporting walls and/or each of the dividing supporting walls may be extended in any direction, spaced apart with each other and/or spaced apart from the bottom surface of the puzzle board as long as it is configured for improving the structural strength of the board assembly and/or forming the drawer cavity together with the puzzle plate.

[0019] The first main supporting wall 311 comprises a right first part 3111 connected with the first inner supporting wall 315, a left first part 3112 connected with the second inner supporting wall 316 and spaced apart from the right first part 3111 for forming a first opening 3113. The first longitudinal cavity 37 is formed by the first and second inner supporting walls 315, 316 together with the third dividing supporting wall 317. The first longitudinal cavity 37 is communicated with the first opening 3113, so that the corresponding puzzle drawer 32 can be slide in-and-out through the first opening 3113. The second main supporting wall 312 comprises a right second part 3121 connected with the first inner supporting wall 315, a left second part 3122 connected with the second inner supporting wall 316 and spaced apart from the right second part 3121 for forming a second opening 3123. The second longitudinal cavity 38 is formed by the first and second inner supporting walls 315, 316 together with the fourth dividing supporting wall 318. The second longitudinal cavity 38 is communicated with the second opening 3123, so that the corresponding puzzle drawer 32 can be slide in-and-out through the second opening 3123.

[0020] According to the first embodiment, the four lateral cavities 302 are formed at the transverse sides of the puzzle board 10 respectively. Particularly, the first and second lateral cavities 33, 34 are spacedly formed at each of the transverse sides of the puzzle board 10. The third and fourth lateral cavities 35, 36 are spacedly formed at each of the other transverse sides of the puzzle board 10. In other words, two corresponding puzzle drawers 32 are slidably coupled at each of the transverse sides of the puzzle board 10. Therefore, four puzzle drawers 32 are slidably coupled at the transverse sides of the puzzle board 10. It is worth mentioning that each puzzle drawer 32 is independently actuated to slide in-and-out of the corresponding lateral cavity 302. Since the puzzle drawers 32 are slidably coupled at the transverse sides of the puzzle board 10, each puzzle drawer 32 is relatively long enough and each drawer cavity 31 is deep enough to retain the puzzle drawer 32 therein so as to prevent the puzzle drawer 32 being slid out of the drawer cavity 31 accidentally or unintentionally when moving the puzzle board 10 on the playing surface. Accordingly, a length of each puzzle drawer is slightly smaller than half of the length of the puzzle board between the transverse sides thereof.

[0021] Each of the puzzle drawer 32 comprises a rectangular bottom panel 321 slidably received in the corresponding drawer cavity 31, a front panel 322 extending from the bottom panel 321, a back panel 323 extending from the bottom panel 321 and opposite to the front panel 322, a pair of side panels 324 extending from the bottom panel 321 for connected with the front panel 322 and the back panel 323. Optionally, each of the puzzle drawer 32 further comprises an anti-slipping layer 325 attached the bottom panel 321 for preassembling a group of puzzle pieces 100 to form a section of the puzzle figure and storing the puzzle pieces 100. Each of drawer cavity 302 comprises a gap 326 formed between the pair of side panels 324 and the corresponding supporting portion 301, thereby reducing the friction between the pair of side panels 324 and the corresponding supporting portion 301 when each of the puzzle drawer 32 is pulled and slid out of the corresponding drawer cavity 31.

[0022] The supplement arrangement 30 further comprises a drawer holder 304 provided at the puzzle board 10 to retain the puzzle drawers 32 in the drawer cavities 31 respectively. In this embodiment, the drawer holder 304 comprises a first magnetic element 331 provided at an inner wall of the drawer cavity 31 and a second magnetic element 332 provided at the puzzle drawer 32 to magnetically attract with the first magnetic element 331 so as to retain the puzzle drawer 32 in the drawer cavity 31. Due to the magnetically attracting force between the first and second magnetic elements 331, 332, the puzzle drawers 32 are held within the drawer cavities 31 respectively to prevent the puzzle drawer 32 being slid out of the drawer cavity 31 accidentally or unintentionally when moving the puzzle board 10 on the playing place. When a pulling force is applied at one of the puzzle drawers 32 to overcome the magnetically attracting force, the puzzle drawer 32 can be pulled and slid out of the drawer cavity 31.

[0023] In this embodiment, the first extending wall 51 is integral with a periphery of the first main supporting wall 311 as a whole for forming a first monolithic portion 55. The first monolithic portion 55 comprises a first receiving space 103 for fixing and receiving the fixing portion 102 of the puzzle board 10. The second extending wall 52 is integral with a periphery of the second main supporting wall 312 as a whole for forming a second monolithic portion 56. The second monolithic portion 56 comprises a second receiving space 104 for fixing and receiving the fixing portion 102 of the puzzle board 10. Optionally, a first monolithic portion further comprises a first fixing space positioned below the first receiving space and formed on the first main supporting wall for fixing and receiving one ends of the first and second inner supporting walls, respectively. A second monolithic portion further comprises a second fixing space positioned below the second receiving space and formed on the second main supporting wall for fixing and receiving another ends of the first and second inner supporting walls. When assembled, one ends of the first and second inner supporting walls are inserted into the first fixing space and are not exposed from the first main supporting wall of the first monolithic portion. Another ends of the first and second inner supporting walls are inserted into the second fixing space and are not exposed from the second main supporting wall of the second monolithic portion. The first receiving space is parallel to the first fixing space. The second receiving space is parallel to the second fixing space.

[0024] Therefore, the combination of the first extending wall 51, the puzzle board 10 and the first main supporting wall 311 is stable and reliable. The combination of the second extending wall 52, the puzzle board 10 and the second main supporting wall 312 is stable and reliable. The combination of first and second inner supporting walls 315, 316 and the first and second main supporting wall 311, 312 is stable and reliable. The side of the fixing portion 102 is accommodated in the first and second receiving spaces 103, 104, which is not exposed from the first and second monolithic portions 55, 56, thus can avoid the puzzle board 10 being removed from the restricting wall 50 and the first and second main supporting walls 311,312 under larger exterior impact, or under the condition of failure in gluing. The third extending wall 53 is directly stacked on the fixing portion 102 of the puzzle board 10 and the fourth extending wall 54 is directly stacked on the fixing portion 102 of the puzzle board 10. The third and fourth extending walls are stacked on the fixing portion 102 of the puzzle board 10 by suitable chemical or mechanical methods such as but not limited to glue or wood screws, respectively. When assembled, the side of the fixing portion 102 is exposed out of the third and fourth extending walls 53, 54, thus reducing difficulties in assembling of the movable puzzle platform and improving manufacturing efficiency.

[0025] Referring to Fig. 5, each of extending walls comprises an inner surface 57, an outer surface 58 opposite to the inner surface 57, and a pair of side surfaces 59 connecting the inner and outer surfaces 57, 58. The side surface of one extending wall is engaged with the inner surface of the adjacent extending wall. Particularly, the side surface of the third and fourth extending walls are engaged with the inner surface of the adjacent first and second extending walls, respectively. In other words, the side surface of extending wall extending along the lateral direction Y is engaged with the inner surface of the adjacent extending wall extending along the longitudinal direction X. The longitudinal side surface is exposed from the adjacent extending wall. The third extending wall 53 comprises a third extending body 531 and a pair of third fastening portions 532 projecting from two ends of the third extending body 531 and inserted and fixed in the first and second receiving spaces 103, 104 for improving the structural strength of the movable puzzle platform 1. The fourth extending wall 54 comprises a fourth extending body 541 and a pair of fourth fastening portions 542 projecting from two ends of the fourth extending body 541 and inserted and fixed in the first and second receiving spaces 103, 104 for improving the structural strength of the movable puzzle platform 1. Optionally, a fastening portion may be provided on the longitudinal extending wall and a receiving space may be provided on the lateral extending wall for receiving and fixing the fastening portion.

[0026] The first extending wall 51 and/or the first main supporting wall 311 are/is made of plastic, wood, or metal. When the first extending wall 51 is made of plastic by molding, the first main supporting wall 311 is preferred to be integrally molded on the first extending wall 51 as a whole. When the first extending wall 51 is made of metal by stamping, the first main supporting wall 311 is preferred to be integrally molded on the first extending wall 51 as a whole. If the first extending wall 51 and/or the first main supporting wall 311 are/is made of aluminum, the weight of the movable puzzle platform 1 can be reduced. If the first extending wall 51 and/or the first main supporting wall 311 are/is made of stainless steel or tempered steel, the structural strength of the movable puzzle platform 1 can be improved. If the first extending wall 51 and/or the first main supporting wall 311 are/is made of plastic or wood, the manufacturing cost of the movable puzzle platform 1 can be reduced. The second extending wall 52 has the same structure as the first extending wall 51 and the second main supporting wall 312 has the same structure as the first main supporting wall 311.

[0027] The base 40 is assembled with the supporting portion 301 of the supplement arrangement 30 for supporting the movable puzzle platform 1 on the playing place such as a table surface, a wall surface, a floor surface, and the like or even a support frame for supporting the movable puzzle platform 1 on ground. The base 40 is generally the type of one-piece with a whole entirety platy shape and have a rectangular shape for matching and covering the supporting portion 301. In this embodiment, the bottom panel 321 of each of the puzzle drawer 32 is mounted on the base 40 and slid on the base 40 directly. So, the base is configured not only holding the puzzle drawer 32 and preventing the puzzle drawer 32 from falling off the supporting portion 301, but also for allowing each of the puzzle drawer 32 to be slid in-and-out of the corresponding drawer cavity 31. The base 40 is stacked on the supporting portion 301 by suitable chemical or mechanical methods such as but not limited to glue or wood screws. Optionally, a base is integral with at least a part of the supporting portion of the supplement arrangement as a whole for forming a stable and reliable structure.

[0028] As shown in Fig. 2, the puzzle board 10 further comprises an anti-slipping layer 14 overlappedly provided on the playing surface 11 for preventing the puzzle pieces 100 being slipped thereon. Preferably, the anti-slipping layer 14 has a self adhesive bottom surface adhered on the playing surface 11, wherein the anti-slipping layer 14 can be removed from the playing surface 11 without damaging the playing surface 11 and the anti-slipping layer 14. Therefore, the anti-slipping layer 14 is reusable to place on the playing surface 11. Furthermore, the anti-slipping layer 14 serves as a backing layer of the puzzle pieces 100 after the puzzle pieces 100 are assembled.

[0029] It is appreciated that electronic puzzle game is provided as software or APP that the user or player can play the puzzle game with a display such as a TV screen, LED screen or computer monitor. However, the player may generally use a smaller screen to play because a relatively larger screen such as 50" or more TV screen supported on a playing surface is difficult for the player to reach all sizes of the screen. In one alternative embodiment, the puzzle board 10 can be embodied as an electronic screen, such as a TV display or LED screen, and the playing surface 11 is the screen surface that serves as puzzle floor for the player to select and put puzzle piece images together, wherein the rotating assembly 20 is mounted to the bottom of the electronic board assembly 90 for allowing the electronic board assembly 90 to smoothly slide on the playing place that provides accessibility for moving the electronic board assembly 90 at different planar directions with respect to the playing place.

[0030] As shown in Figs 2, 9 and 13-15, the rotating assembly 20 comprises a first moving member 21 coupled at the base 40 and a second moving member 22 rotatably coupled to the first moving member 21. It is worth mentioning that the rotating assembly 20 is preferred to be coupled coaxially with a center of gravity of the board assembly 90, for example at a center portion of the board assembly 90, such that the board assembly 90 can be moved on the playing place in a balancing manner.

[0031] According to this embodiment of the present invention, the board assembly 90 is adapted for being

self-rotated 360° on the playing place via a rotation movement between the first and second moving members 21, 22. In other words, the user is able to selectively rotate the board assembly 90 from one longitudinal side to another opposed longitudinal side or to any one of the shorter transverse sides without walking around the board assembly 90. For example, the user is able to assemble one puzzle piece 100 at one side of the board assembly 90 and to rotate the board assembly 90 at 180° in order to assembly another puzzle piece 100 at an opposed side of the board assembly 90, so as to speed up the assembling time of the puzzle pieces 100. It should be understood that a rotating angle of the puzzle board 10 can be adjusted to be smaller than 360°.

[0032] In this embodiment, the rotating assembly 20 is detachably coupled at the base 40. As shown in Fig. 2, 9 and 13-15, the rotating assembly 20 comprises a plurality of coupling members 25 extended from the first moving member 21 to detachably couple at the base 40. Preferably, the coupling members 25 are integrally extended from an inner circumferential surface of the first ring member, i.e. the first moving member 21, wherein each of the coupling members 25 has a coupling slot formed thereon to detachably couple at the base 40 by inserting screws through the coupling slot to the base 40. It is worth mentioning that a plurality of screw holes are formed at the base 40, such that the screws can engage with the screw holes through the coupling slot to couple the rotating assembly 20 at the base 40.

[0033] The rotating assembly 20 further comprises a second bearing unit 24 provided at a bottom side of the second moving member 22 for sliding the puzzle board 10 on the playing surface at different planar directions via the second moving member 22. Via the second bearing unit 24 at the second moving member 22, the puzzle board 10 is able to selectively slide on the playing place at any direction with respect to the XY coordinate surface. Via the first bearing unit 23, the puzzle board 10 is able to selectively rotate on the playing surface with respect to XY coordinate surface. In other words, the puzzle board 10 is able to freely move at XY coordinate surface, so as to adjust the planer angle of the puzzle board 10 with respect to the user conveniently.

[0034] Alternatively, as shown in Fig. 14, the rotating assembly 20 further comprises one or more first coupling elements 25A spacedly provided on the base 40, and one or more second coupling elements 26A spacedly provided at the first moving member 21 to detachably couple the first coupling elements 25A so as to detachably couple the rotating assembly 20 at the base 40. Preferably, the first and second coupling elements 25A, 26A are magnetic elements adapted for magnetically attracting with each other. The first coupling elements 25A are aligned in a ring shaped on the base 40. The second coupling elements 26A are provided on a playing surface of the first ring member, i.e. the first moving member 21, wherein the first and second coupling elements 25A, 26A are aligned with each other and are magnetically attracted with each other to detachably couple the rotating assembly 20 at the base 40.

[0035] The rotating assembly 20 is coupled with the base 40 and made of plastic or metal and so on. In this embodiment, the first and second moving members 21, 22 are first and second ring members respectively coaxially engaged with each other. In other words, a diameter of the first moving member 21 is smaller than a diameter of the second moving member 22. The rotating assembly 20 further comprises a first bearing unit 23 coupled between the first and second moving members 21, 22, such that when the first moving member 21, i.e. the first ring member, is rotated within the second moving member 22, i.e. the second ring member, the board assembly 90 is self-rotated 360° on the playing place. Particularly, an outer circumferential surface of the first moving member 21 is engaged with an inner circumferential surface of the second moving member 22 via the first bearing unit 23 to enable the second moving member 22 being coaxially rotated with respect to the first moving member 21.

[0036] The rotating assembly 20 further comprises a plurality of friction pads 28 intervally attached on the second moving member 22 for enhancing relative friction between the second moving member 22 and the playing place and ensuring the position of the movable puzzle platform 1, so that the board assembly 90 is in rotatable state. The rotating assembly with friction pads is easy to conveniently control the board assembly compared with castors or other similar swivel-type wheels attached on the board assembly.

[0037] Figs. 16-19 show a movable puzzle platform 1a of a second embodiment of the present invention. A movable puzzle platform 1a according to the second embodiment of the present invention is illustrated, wherein the movable puzzle platform 1a is arranged for a user or a player to assemble a plurality of puzzle pieces 100a thereon. Accordingly, the movable puzzle platform 1a comprises a board assembly 90a and a rotating assembly 20a attached on the board assembly 90a. The board assembly 90a comprises a puzzle board 10a, a supplement arrangement 30a attached on the puzzle board 10a, a base 40a attached on the supplement arrangement 30a, and a restricting wall 50a upwardly extended from a peripheral edge of the puzzle board 10a.

[0038] The second embodiment is similar to the first embodiment of the present invention except that: (1) The restricting wall 50a is generally three-piece type. At least one extending wall can be omitted. In this embodiment, an extending wall located on a shorter transverse side of a puzzle board 10a can be omitted, so the restricting wall 50a is an unclosed structure for forming a surrounding opening 501a. (2) Two longitudinal cavities can be omitted. The supplement arrangement 30a has four lateral drawer cavities 302a and four puzzle drawers 32a received in the corresponding drawer cavity 302a.

[0039] In this embodiment, the restricting wall 50a is substantially perpendicular to the puzzle board 10a and comprises a first extending wall 51a mounted on the

puzzle board 10a and arranged in the longitudinal direction X, a second extending wall 52a mounted on the puzzle board 10a and spaced apart from the first extending wall 51a, and a third extending wall 53a mounted on the puzzle board 10a and arranged in the lateral direction Y for connected with the adjacent first and second extending walls 51a, 52a. The first and second extending walls 51a, 52a are parallel to each other in the longitudinal direction X. The surrounding opening 501a is configured for providing comfort for the player's arm while using the board assembly 90a while seated at the surrounding opening 501a. The assembled puzzle pieces 100 can be removed out completely via the surrounding opening 501a. It is optional that any one of the four extending walls can be omitted, or any two or three extending walls can be omitted, or all the extending walls can be omitted. The restricting wall 50a can be easily disassembled and reassembled from the puzzle board 10a.

[0040] Figs. 20-22 show a movable puzzle platform 1b of a third embodiment of the present invention. A movable puzzle platform 1b according to the third embodiment of the present invention is illustrated, wherein the movable puzzle platform 1b comprises a puzzle board 10b, a rotating assembly 20b attached on the puzzle board 10b, a supplement arrangement 30b attached on the puzzle board 10b, a base 40b attached on the supplement arrangement 30b, and a restricting wall 50b upwardly extended from a peripheral edge of the puzzle board 10b.

[0041] The third embodiment is similar to the first embodiment of the present invention except that the restricting wall 50b is generally three-piece type. At least one extending wall can be omitted. In this embodiment, an extending wall located on a shorter transverse side of a puzzle board can be omitted, so the restricting wall 50b is an unclosed structure for forming a surrounding opening 501b. In this embodiment, the restricting wall 50b is substantially perpendicular to the puzzle board 10b and comprises a first extending wall 51b mounted on the puzzle board 10b and arranged in the longitudinal direction X, a second extending wall 52b mounted on the puzzle board 10b and spaced apart from the first extending wall 51b, and a third extending wall 53 mounted on the puzzle board 10b and arranged in the lateral direction Y for connected with the adjacent first and second extending walls 51b, 52b. The first and second extending walls 51b, 52b are parallel to each other in the longitudinal direction X. The surrounding opening 501a is configured for the convenience of the player's arm is supported directly on the puzzle board 10. Optionally, any one of the four extending walls can be omitted, or any two or three extending walls can be omitted, or all extending walls can be omitted.

[0042] Figs. 23-36 show a movable puzzle platform 1d of a fourth embodiment of the present invention comprises a board assembly 90d and a rotating assembly 20d attached on the board assembly 90d. The board assembly 90d comprises a puzzle board 10d, a supplement arrangement 30d attached on the puzzle board 10d, and a restricting wall 50d upwardly extended from a peripheral edge of the puzzle board 10d. The puzzle board 10d comprises a puzzle plate 101d with a bottom surface 12d for playing the puzzle pieces 100d thereon. The supplement arrangement 30d comprises at least one puzzle drawer 32d, at least one drawer cavity 31d for receiving the corresponding puzzle drawer 32d, and a supporting portion 301d connected with the bottom surface 12d of the puzzle plate 101d for forming the drawer cavity 31d.

[0043] The four embodiment is similar to the first embodiment of the present invention except that the movable puzzle platform 1d further comprises a complementary conformation 80d provided between the puzzle drawer 32d and the corresponding supporting portion 301d for holding the puzzle drawer 32d and preventing the puzzle drawer 32d from falling off the supporting portion 301d, so a base can be omitted and the rotating assembly 20d is directly attached on the supplement arrangement 30d. Each of the puzzle drawer 32d comprises a rectangular bottom panel 321d slidably received in the corresponding drawer cavity 31d and a pair of side panels 324d extending from the bottom panel 321d. The complementary conformation 80d comprises a pair of engaging portions 326d extending outwardly from a pair of side panels 324d towards the corresponding supporting portion 301d and a pair of engaging slots 305d provided on the corresponding supporting portion 301d for receiving the corresponding engaging portions 326d. In usage state, each of the engaging portions 326d is configured for smoothly sliding in the corresponding engaging slot 305d. The extending direction of the slots 305d is parallel to that of the corresponding supporting portion 301d.

[0044] The supporting portion 301d further comprises a pair of main supporting walls 311d, a first inner supporting portions 315d attached on the bottom surface 12d of the puzzle board 10d along the lateral direction Y and positioned between the pair of main supporting walls 311d, and a second inner supporting wall 316d attached on the bottom surface 12d of the puzzle board 10d along the lateral direction Y, a first dividing supporting wall 313d attached on the bottom surface 12d of the puzzle board 10d along the longitudinal direction X and extending from the first inner supporting portion 315d away from the second inner supporting wall 316d, a second dividing supporting wall 314d attached on the bottom surface 12d of the puzzle board 10d along the longitudinal direction X and extending from the second inner supporting portion 316d away from the first inner supporting wall 315d, a third dividing supporting wall 317d extending from the bottom surface 12d of the puzzle board 10d along the longitudinal direction X and connected with the first and second inner supporting walls 315d, 316d and a fourth dividing supporting wall 318d extending from the bottom surface 12d of the puzzle board 10d along the longitudinal direction X and connected with the first and second

inner supporting walls 315d, 316d. An outer diameter of the rotating assembly 20d is greater than a distance from the first inner supporting wall 315d to the second inner supporting wall 316d. The rotating assembly 20d is connected with the first and second inner supporting portions 315d, 316d and the first through fourth dividing supporting walls 313d, 314d, 317d, 318d, respectively. The first and second inner supporting walls 315d, 316d are exposed from the main supporting walls 311d, respectively. Optionally, each of engaging slots is long enough to retain a corresponding supporting portion therein so as to improve the structural strength of a movable puzzle platform, such that an inner supporting wall is able to be inserted into the corresponding engaging slot of the main supporting wall or the dividing supporting wall is able to be inserted into the corresponding engaging slot of the inner supporting wall.

[0045] The rotating assembly 20d comprises a first moving member 21d coupled at the supporting portion 301d of the supplement arrangement 30d, a second moving member 22d rotatably coupled to the first moving member 21d, and a bearing unit 23d coupled between the first and second moving members 21d, 22d. The bearing unit 23d is constructed to have a holding ring 231d and a plurality of ball bearings 232d spacedly retained at the holding ring 231d in a rotatable manner, such that when the holding ring 231d is coaxially held between the first and second moving members 21d, 22d, the ball bearings 232d are rotatably sandwiched between the first and second moving members 21d, 22d so as to enable the first and second moving members 21d, 22d being coaxially moved with each other. In this embodiment, the first moving member 21d is rotatably and mounted to the second moving member 22d by the bearing unit 23d, thereby enabling the puzzle board 10d to be self-rotated on the playing place. In one embodiment, a ratio of an inner diameter of the first moving member to an outer diameter of the first moving member is in a range of 0.95 to 0.5, a ratio of an inner diameter of the second moving member to an outer diameter of the second moving member is in a range of 0.95 to 0.5.

[0046] The first moving member 21d comprises a flat first middle portion 211d, a first projecting portion 212d extending from the center of the first middle portion 211d toward the second moving member 22d, a first rolling surface 213d provided on the first projecting portion 212d for directly engaging with the ball bearings 232d, a pair of first engaging wall 214d extending from the first middle portion 211d and spaced apart from the first projecting portion 212d and a first engaging body 215d projecting from the first engaging wall 214d toward the second moving member 22d. The second moving member 22d comprises a flat second middle portion 221d, a second projecting portion 222d extending from the center of the second middle portion 221d toward the first moving member 21d, a second rolling surface 223d provided on the second projecting portion 221d for engaging with the ball bearings 232d, a pair of second engaging wall 224d extending from the second middle portion 221d and spaced apart from the second projecting portion 222d and a second engaging body 225d projecting from the second engaging wall 224d and constantly engaged with the first engaging body 215d to enable the second moving member 22 being coaxially rotated with respect to the first moving member 21. The first and second rolling surfaces 213d,223d may be a ring-shaped groove. Optionally, the first and second rolling surfaces can be omitted. Ball bearings are engaged with a first projecting portion and a second projecting portion directly. The rotating assembly 20 further comprises a plurality of friction pads 28d intervally attached on the second moving member 22 and/or the first moving member 21 for enhancing relative friction between the second moving member 22 and the playing place and/or the board assembly 90 and the first moving member 21 and ensuring the position of the movable puzzle platform 1d, so that the board assembly 90 is in rotatable state.

[0047] The holding ring 231d is a substantially flat ring, which is a whole entirety ring and indivisible, and comprises a retaining ring 26d having a diameter generally equal to the circular first and second rolling surfaces 213d, 223d, a plurality of retaining base 24d intervally and integrally protruded on one side of the retaining ring 26d and a plurality of retaining holes 25d drilled completely through the corresponding retaining base 24d for the plurality of ball bearings 232d being rotatably retained therein respectively. Each of the retaining holes 25d comprises a pair of locking openings 251d spaced apart from each other and a connecting hole 252d integrally and smoothly connected with the pair of locking openings 251d and coaxial with respect to the locking openings 251d. An upper surface of the retaining holes 25d is coplanar with that of the retaining ring 26d. Diameters of the locking openings 251d are slightly smaller than that of the ball bearings 232d so as to lock the plurality of ball bearings 232d in position respectively while allowing the plurality of ball bearings 232d in a free rolling manner. The connecting hole 252d is slightly greater than of ball bearings 232d for receiving the ball bearings 232d in a rollable manner. In this embodiment, a side edge of the retaining ring 26d is aligned with that of the first and second projecting portions 212d, 222d, respectively.

[0048] Figs. 37-47 show a movable puzzle platform 1e of a fifth embodiment of the present invention comprises a board assembly 90e and a rotating assembly 20e attached on the board assembly 90e. The board assembly 90e comprises a puzzle board 10e, a supplement arrangement 30e attached on the puzzle board 10e, and a restricting wall 50e upwardly extended from a peripheral edge of the puzzle board 10e.

[0049] The supplement arrangement 30e comprises a supporting portion 301e connected with a bottom surface 12e of the puzzle board 10e for forming at least one drawer cavity 31e and at least one puzzle drawer 32e received in the corresponding drawer cavity 31e. The supporting portion 301e comprises a first main support-

ing wall 311e attached on the bottom surface 12e of the puzzle board 10e along the longitudinal direction X, a second main supporting wall 312e attached on the bottom surface 12e of the puzzle board 10 along the longitudinal direction X and disposed opposite to the first main supporting wall 311e, a first dividing supporting wall 313e attached on the bottom surface 121e of the puzzle board 10e along the longitudinal direction X and disposed between the first and second main supporting walls 311e, 312e, a second dividing supporting wall 314e attached on the bottom surface 12e of the puzzle board 10e along the longitudinal direction X and disposed between the first and second main supporting walls 311e, 312e, a first inner supporting wall 315e attached on the bottom surface 12e of the puzzle board 10e along the lateral direction Y and connected with the first and second main supporting walls 311e, 312e, and a second inner supporting wall 316e attached on the bottom surface 12e of the puzzle board 10e along the lateral direction Y and connected with the first and second main supporting walls 311e, 312e. The first and second dividing supporting walls 313e, 314e are spaced apart from each other. The first and second inner supporting walls 315e, 316e are spaced apart from each other and disposed parallel to each other for forming a supporting space 319e. The first and second dividing supporting walls 313e, 314e and the first and second main supporting walls 311e, 312e are disposed parallel to each other. The first dividing supporting wall 313e connects with the first inner supporting wall 315e and the second dividing supporting wall 314e connects with the second inner supporting wall 316e.

[0050] The movable puzzle platform 1e further comprises a kickstand 15 pivotally coupled at the board assembly 90e. The kickstand 15 is manufactured from a suitable durable material such as wood, plastic, fiberglass or metal. In this embodiment, the kickstand 15 is collapsible and pivotally coupled at the supplement arrangement 30e. Particularly, one end of the kickstand 15 is pivotally coupled at the supplement arrangement 30e while a free end of the kickstand 15 is adapted to pivotally fold from the puzzle board 10e to support on a playing place. Therefore, when the kickstand 15 is pivotally folded on the puzzle board 10e, the board assembly 90e is movable on the playing place via the rotating assembly 20e. In another words, in open position, the kickstand 15 is pivotally folded for supporting on the playing place and the puzzle board 10e is inclined and supported on the playing place. The open position is the desired position for the user of the movable puzzle platform 1e during the assembly process. In closed position, the kickstand 15 is pivotally received in the supporting space 319e of the supporting portion 301e and substantially parallel to the board assembly 90e. This position is desirable for storage, movement and transportation of the movable puzzle platform 1e. The kickstand 15 having a generally H-shaped and comprises a first supporting arm 151 pivotally coupled at the first inner supporting wall 315e, a second supporting arm 152 parallel to the first supporting arm 151 and pivotally coupled at the second inner supporting wall 316e, at least one fastening arm 153 detachably connected with the first and second supporting arms 151, 152. Each of the supporting arms 151, 152 is capable of detachably fastening to the corresponding inner supporting walls 315e, 316e. An extending direction of the first supporting arm 151 is different from that of the fastening arm 153. Optionally, when a board assembly of a movable puzzle platform further comprise a base, a kickstand may pivotally coupled at the base directly.

[0051] The supporting portion 30 further comprises a third dividing supporting wall 317e extending from the bottom surface 12d of the puzzle board 10e along the longitudinal direction X and connected with the first and second inner supporting walls 315e, 316e and a fourth dividing supporting wall 318e extending from the bottom surface 12e of the puzzle board 10e along the longitudinal direction X and connected with the first and second inner supporting walls 315e, 316e. The supporting space 319e is formed by the first and second inner supporting walls 315e, 316e and the third and fourth dividing supporting walls 317e, 318e. Optionally, the first and second supporting arms may pivotally couple at the third or fourth dividing supporting wall.

[0052] In this embodiment, the rotating assembly 20e is coupled with the kickstand 15 and comprises a first moving member 21e coupled at the kickstand 40e and a second moving member 22e rotatably coupled to the first moving member 21e. It is worth mentioning that the rotating assembly 20e is preferred to be coupled coaxially with a center of gravity of the board assembly 90e, such that the puzzle board 10e can be moved on the playing place in a balancing manner. The rotating assembly 20e further comprises a plurality of ball bearings 23e rotatably sandwiched between the first and second moving members 21e, 22e, such that when the first moving member 21e is rotated within the second moving member 22e, the board assembly 90e is self-rotated 360° on the playing place.

[0053] The first moving member 21e comprises a first middle portion 211e, an inclining portion 212e extending downwardly from the periphery of the first middle portion 211e and surrounding the first middle portion 211e for avoiding the first moving member 21e colliding with the puzzle board 10e of the board assembly 90e, a first projecting portion 213e extending upwardly from the periphery of the inclining portion 212e and surrounding the inclining portion 212e, and an edge portion 214e extending the periphery of the first projecting portion 213e and away from the first middle portion 211e. The second moving member 22e comprises a second middle portion 221e, a second projecting portion 223e extending downwardly from the periphery of the second middle portion 212e away from the first projecting portion 213e, and a bending portion 224e bent upward from the periphery of the second projecting portion 213e for forming an accommodating space 225e for receiving the

edge portion 214e. The bending portion 224e is unconnected with the edge portion 214e for forming a rotating gap 226e to enable the second moving member 22 being coaxially rotated with respect to the first moving member 21 and preventing the first moving member 21e detaching from the second moving member 22e. The accommodating space 225e cooperated with the rotating gap 226e is configured to supply sufficient rotating space for the edge portion 214e of the first moving member 21e. The first moving member 21e and a second moving member 22e is substantially circular platy shape. The first moving member 21e further comprises a first through hole 210e provide on the first middle portion 211e for greatly reducing material cost. The second moving member 22e further comprises a second through hole 220e provide on the second middle portion 221e for greatly reducing material cost. The rotating assembly 20e is made of aluminum, stainless steel by metal stamping techniques. Optionally, a bending portion is connected with the edge portion as long as a second moving member is coaxially rotated with respect to a first moving member and preventing the first moving member detaching from the second moving member.

[0054] In order to completely open the kickstand 15 from the puzzle board 10e and avoid the rotating assembly 20e colliding with the puzzle board 10e, an outer diameter D1 of the rotating assembly 20e is slightly smaller than lengths H1 of the supporting arms 151, 152. In order to receive the kickstand 15, a length of the supporting space 319e is not smaller than a distance between the supporting arms 151, 152.

[0055] The first and second projecting portions 213e, 223e are spaced apart from each other for forming a holding space 227e. The plurality of ball bearings 23e retained at the holding space 227e in a rotatable manner, such that when the ball bearings 23e are rotatably sandwiched between the first and second moving members 21e, 22e, so as to enable the first and second moving members 21e, 22e being coaxially moved with each other. An inner circumferential surface of the first moving member 21e is engaged with an inner circumferential surface of the second moving member 22e via the ball bearings 23e to enable the second moving member 22e being coaxially rotated with respect to the first moving member 21e. In usage state, referring to Figs. 46-47, adjacent ball bearings 23e may be engaged with each other or spaced apart from each other as long as the ball bearings 23e are in constantly contact with a top inner surface of the first projecting portion 213e and the bottom inner surface of the second projecting portion 223e to effectively enable the first and second moving members 21e, 22e being coaxially moved with each other.

[0056] The rotating assembly 20e further comprises a plurality of friction pads 28e intervally attached on the second moving member 22e and/or the first moving member 21e for enhancing relative friction between the second moving member 22e and the playing place and/or the board assembly 90e and the first moving member 21e and ensuring the position of the movable puzzle platform 1e, so that the board assembly 90e is in rotatable state.

[0057] Figs. 48-50 show a movable puzzle platform 1c of a sixth embodiment of the present invention comprises a board assembly 90g, a kickstand 15g pivotally coupled at the board assembly 90g and a rotating assembly 20g attached on the kickstand 15g. The board assembly 90g comprises a puzzle board 10g, a supplement arrangement 30g attached on the puzzle board 10e, and a restricting wall 50g upwardly extended from a peripheral edge of the puzzle board 10g. The sixth embodiment is similar to the fifth embodiment of the present invention except that: the board assembly 90g further comprises a base 40g. The base 40g comprises a base portion 401g covered on the supplement arrangement 30g and a base opening 402g surrounded by the base portion 401g and provided in a center of the base 40g for avoiding the kickstand 15g colliding with the base portion 401g.

[0058] Figs. 51-57 show a movable puzzle platform 1f of a seventh embodiment of the present invention, wherein the movable puzzle platform 1f is arranged for a user or a player to assemble a plurality of puzzle pieces 100f thereon. The movable puzzle platform 1f comprises a board assembly 90f and a rotating assembly 20f attached on the board assembly 90f. The board assembly 90f comprises a puzzle board 10f, a supplement arrangement 30f attached on the puzzle board 10f, and a restricting wall 50f upwardly extended from the puzzle board 10f. The puzzle board 10f comprises a puzzle plate 101f and a fixing portion 102f extending from the edge of the puzzle plate 101f. The puzzle plate 101f comprises a flat playing surface 11f and a bottom surface 12f opposite to the playing surface 11f. The puzzle board 10f is embodied to have a rectangular shape defining two longer longitudinal sides provided along a longitudinal direction X and two shorter transverse sides provided along a lateral direction Y perpendicular to the longitudinal direction X.

[0059] In this embodiment, the restricting wall 50f is substantially perpendicular to the puzzle board 10f and is generally four-piece type. The restricting wall 50f comprises a first extending wall 51f mounted on the fixing portion 102f and arranged in the longitudinal direction X, a second extending wall 52f mounted on the fixing portion 102f and spaced apart from the first extending wall 51f, a third extending wall 53f mounted on the fixing portion 102f and arranged in the lateral direction Y for connected with the adjacent first and second extending walls 51f, 52f, and a fourth extending wall 54f mounted on the fixing portion 102f and spaced apart from the third extending wall 53f for connected with the adjacent first and second extending walls 51f, 52f. The first and second extending walls 51f, 52f are parallel to each other in the longitudinal direction X. The third and fourth extending walls 53f, 54f are parallel to each other in the lateral direction Y. The restricting wall 50f is configured for preventing the players from accidentally or unintentionally pushing the

puzzle pieces 100f off the puzzle plate 1f.

[0060] The supplement arrangement 30f comprises a supporting portion 301f connected with the bottom surface 12f of the puzzle plate 101f for forming at least one drawer cavity 31f and at least one puzzle drawer 32f received in the corresponding drawer cavity 31f. The supporting portion 301f comprises a first main supporting wall 311f attached on the bottom surface 12f of the puzzle board 10f along the longitudinal direction X, a second main supporting wall 312f attached on the bottom surface 12f of the puzzle board 10 along the longitudinal direction X and disposed opposite to the first main supporting wall 311f, a first dividing supporting wall 313f attached on the bottom surface 12f of the puzzle board 10f along the longitudinal direction X and disposed between the first and second main supporting walls 311f, 312f, a second dividing supporting wall 314f attached on the bottom surface 12f of the puzzle board 10f along the longitudinal direction X and disposed between the first and second main supporting walls 311f, 312f, a first inner supporting wall 315f attached on the bottom surface 12f of the puzzle board 10f along the lateral direction Y and connected with the first and second main supporting walls 311f, 312f, and a second inner supporting wall 316f attached on the bottom surface 12f of the puzzle board 10f along the lateral direction Y and connected with the first and second main supporting walls 311f, 312f. The first and second dividing supporting walls 313f, 314f are spaced apart from each other. The first and second inner supporting walls 315f, 316f are spaced apart from each other and disposed parallel to each other. The first and second dividing supporting walls 313f, 314f and the first and second main supporting walls 311f, 312f are disposed parallel to each other. The first dividing supporting wall 313f connects with the first inner supporting wall 315f and the second dividing supporting wall 314f connects with the second inner supporting wall 316f.

[0061] The restricting wall 50f and the fixing portion 102f of the puzzle board 10f are successively stacked on the supporting portion 301f by suitable chemical or mechanical methods such as but not limited to glue or wood screws. Particularly, the first extending wall 51f and the fixing portion 102f of the puzzle board 10f are successively stacked on the first main supporting wall 311f. The second extending wall 52f and the fixing portion 102f of the puzzle board 10f are successively stacked on the second main supporting wall 312f. The third extending wall 53f is directly stacked on the fixing portion 102f of the puzzle board 10f and the fourth extending wall 54f is directly stacked on the fixing portion 102f of the puzzle board 10f. When assembled, the side of the fixing portion 102f is exposed out of the first through fourth restricting walls 51f-54f and the first and second main supporting wall 311f, 312f, thus reducing difficulties in assembling of the movable puzzle platform and improving manufacturing efficiency. Each of extending walls comprises an inner surface 57f, an outer surface 58f opposite to the inner surface 57f, and a pair of side surfaces 59f connecting the inner and outer surfaces 57f, 58f. The side surface of the extending wall is engaged with the side surface of the adjacent extending wall. Particularly, the side surface of the first and second extending walls 51f, 52f are engaged with the side surface of the adjacent third and fourth extending walls 53f, 54f, respectively.

[0062] The base 40f is stacked on the supporting portion 301f of the supplement arrangement 30 by glue. The base 40f is generally the type of one-piece with a whole entirety platy shape and have a rectangular shape for matching and coving the supporting portion 301. In this embodiment, the rotating assembly 20 is directly mounted on the base 40f. Each of the puzzle drawer 32d comprises a rectangular bottom panel 321d slidably received in the corresponding drawer cavity 31d and slid on the base 40 directly.

[0063] Figs. 58-62 show a movable puzzle platform 1h of an eighth embodiment of the present invention, wherein the movable puzzle platform 1h is arranged for a user or a player to assemble a plurality of puzzle pieces 100h thereon. The movable puzzle platform 1h comprises a board assembly 90h, a kickstand 15h pivotally coupled at the board assembly 90h and a rotating assembly 20h attached on the kickstand 15h. The board assembly 90h comprises a puzzle board 10h, a supplement arrangement 30h attached on the puzzle board 10h, and a restricting wall 50h upwardly extended from the puzzle board 10h. The puzzle board 10h comprises a puzzle plate 101h and a fixing portion 102h extending from the edge of the puzzle plate 101h. The puzzle plate 101h comprises a flat playing surface 11b and a bottom surface 12h opposite to the playing surface 11h. The puzzle board 10h is embodied to have a rectangular shape defining two longer longitudinal sides provided along a longitudinal direction X and two shorter transverse sides provided along a lateral direction Y perpendicular to the longitudinal direction X.

[0064] The supplement arrangement 30h comprises a supporting portion 301h connected with the bottom surface 12h of the puzzle plate 101h for forming at least one drawer cavity 31h and at least one puzzle drawer 32h received in the corresponding drawer cavity 31h. The base 40h comprises a plurality of holding portions 401h with same shape arranged on the corresponding supporting portion 301h and positioned spaced from each other. Each of the holding portions 401h is substantially strip-shaped and connected with the corresponding supporting portion 301h for form a L-shaped structure. Each of the puzzle drawer 32h is partly exposed from the corresponding holding portions 401h. The holding portions 401h are integral with the corresponding supporting portion 301h as a whole. It is optional that the plurality of holding portions of the base is detachably stacked on the corresponding supporting portion by glue. Each of the holding portions 401h is not only holding the puzzle drawer 32 and preventing the puzzle drawer 32 from falling off the supporting portion, but also for allowing each of the puzzle drawer 32 to be slid thereon. Particu-

larly, referring to Fig. 62, the plurality of holding portions 401h of the base 40h are integral with the corresponding supporting portion 301h and the restricting wall 50h as a whole.

[0065] Referring to Fig. 63, show a movable puzzle platform 1i of a ninth embodiment of the present invention. The ninth embodiment is similar to the fourth embodiment of the present invention except that an outer diameter of a rotating assembly 20i is smaller than a distance from a first inner supporting wall 315i to a second inner supporting wall 316i. A supporting portion further comprises at least one fixing arm 329i arranged between a third dividing supporting wall 317i and a fourth dividing supporting wall 318i. The rotating assembly 20i is connected with the fixing arm 329i and the third and fourth dividing supporting walls 317i, 318i, respectively.

[0066] Referring to Fig. 64, show a movable puzzle platform 1j of a tenth embodiment of the present invention. The tenth embodiment is similar to the fourth embodiment of the present invention except that a structure of rotating assembly 20j is similar to that of the fifth embodiment of the present invention.

[0067] Referring to Figs. 65-71, show a movable puzzle platform 1k of an eleventh embodiment of the present invention. The movable puzzle platform 1k comprises a board assembly 90k, a kickstand 15k pivotally coupled at the board assembly 90k and a rotating assembly 20k attached on the kickstand 15k. The board assembly 90k comprises a puzzle board 10k, a supplement arrangement 30k attached on the puzzle board 10k, an extending wall 50k upwardly extended from a peripheral edge of the puzzle board 10k and a base 40k is stacked on and detachably fastened to the supplement arrangement 30k. The puzzle board 10k comprises a puzzle plate 101k and a fixing portion 102k extending from the edge of the puzzle plate 101k. The puzzle board 10K is embodied to have a rectangular shape defining two longer longitudinal sides provided along a longitudinal direction X and two shorter transverse sides provided along a lateral direction Y perpendicular to the longitudinal direction X.

[0068] The supplement arrangement 30k comprises at least one puzzle drawer 32k, at least one drawer cavity 31k for receiving the corresponding puzzle drawer 32k, and a supporting portion 301k connected with the bottom surface 12k of the puzzle plate 101k for forming the drawer cavity 31k. The movable puzzle platform 1k further comprises a complementary conformation 80k provided between the puzzle drawer 32k and the corresponding supporting portion 301k for holding the puzzle drawer 32k and preventing the puzzle drawer 32k from falling off the supporting portion 301k. Each of the puzzle drawer 32k comprises a rectangular bottom panel 321k slidably received in the corresponding drawer cavity 31k and a pair of side panels 324k extending from the bottom panel 321k. The complementary conformation 80d comprises a pair of engaging slots 305k provided on the pair of side panels 324k, and a pair of engaging portions 326k extending outwardly from the corresponding supporting portion 301k for inserted into the corresponding engaging slots 305k. In usage state, each of the engaging slot 305k is configured for smoothly sliding in the corresponding engaging portions 326k. The extending direction of the slots 305k is parallel to that of the corresponding supporting portion 301k. Each of the engaging portions 326k is connected with the corresponding supporting portion 301k, directly.

[0069] The extending wall 50k is substantially perpendicular to the puzzle board 10k and comprises at least a pair of extending walls assembled edge-to-edge. Each of extending walls 50k comprises an inner surface 501k, an outer surface 502k opposite to the inner surface 501k, and a pair of side surface 503k connecting the inner and outer surfaces 501k, 502k. The side surface of the extending wall 503k is engaged with the inner surface 501k of the adjacent extending wall 50k. In other words, the side surface of extending wall extending along the lateral direction Y is engaged with the inner surface of the adjacent extending wall extending along the longitudinal direction X. The longitudinal side surface is exposed from the adjacent lateral extending wall.

[0070] In this embodiment, the extending wall 50k is integral with the corresponding supporting portion 301k as a whole for forming a monolithic portion 55k. The monolithic portion 55k comprises a receiving space 103k for fixing and receiving the fixing portion 102k of the puzzle board 10k.

[0071] Although the kickstand 15 is shown in the fifth embodiment to be generally H-shaped, those skilled in the art will recognize that numerous different shapes could be used in place of the H-shaped kickstand 15 to achieve the desired function as described herein. More specifically but not by way of limitation the kickstand 15 could be cylindrical, circular, square and so on. Referring to Figs. 72-73, a movable puzzle platform 1L comprises a puzzle board 10L, a supporting portion 301L supporting the puzzle board 10L, and a kickstand 15L attached on the supporting portion 301L. The kickstand 15L could be a planar plate with a rectangle shape and connected with the supporting portion 301L of the via a hinge 16L. Referring to Figs. 74-75, a movable puzzle platform 1M comprises a puzzle board 10M, a supporting portion 301M supporting the puzzle board 10M, and a kickstand 15M attached on the puzzle board 10M. The kickstand 15M could be a planar plate with a rectangle shape and connected with the puzzle board 10M of the via at least a pair of hinges 16M. Referring to Figs. 76-77, a movable puzzle platform 1N comprises a puzzle board 10N, a supporting portion 301N supporting the puzzle board 10N, and a kickstand 15N attached on the supporting portion 301N. The kickstand 15L could be substantially strip-shaped and connected with the supporting portion 301N of the via at least a hinge 16N.

[0072] The puzzle board is made of plastic, wood, or metal. When the puzzle board is made of plastic by molding, the restricting wall is preferred to be integrally

molded on the puzzle plate as a whole. Optionally, the restricting wall can be stacked on the puzzle plate and integrally glued to the puzzle plate. When the puzzle board is made of metal by stamping, the restricting wall is preferred to be integrally molded on the puzzle plate. Optionally, the restricting wall can be stacked on the puzzle plate and integrally welded to the puzzle plate as a whole. When the puzzle board is made of wood, the restricting wall is preferred to be integrally molded on the puzzle plate as a whole. Optionally, the restricting wall can be stacked on the puzzle plate and integrally glued to the puzzle plate. If the puzzle board is made of aluminum, the weight of the puzzle board can be reduced. If the puzzle board is made of stainless steel or tempered steel, the structural strength of the puzzle board can be improved. If the puzzle board is made of plastic or wood, the manufacturing cost of the puzzle board can be reduced. It is worth mentioning that, the restricting wall and the puzzle plate can be secured together by threads, snap-fit, friction fit, etc., to fix the restricting wall on the puzzle plate. It is appreciated that the puzzle plate and the restricting wall can be made of different materials. The puzzle plate and the restricting wall may be fabricated in any desired manner, using any acceptable material.

[0073] In one application, as shown in Fig. 78, the movable puzzle platform of the present invention can be incorporated with the puzzle pieces 100 to form a puzzle game kit. Particularly, the area of the playing surface 11 matches with the area of the puzzle pieces 100 after the puzzle pieces 100 are assembled, such that the puzzle board 10 serves as a puzzle frame for framing the puzzle pieces 100 after the puzzle pieces 100 are assembled. Furthermore, the puzzle board 10 is constructed to have a plurality of supplement arrangement 30. Therefore, the supplement arrangement 30, the rotating assembly 20 and the puzzle pieces 100 are packed in a box. In order to play the puzzle pieces 100, the board panels can be assembled edge-to-edge to form the puzzle board 10. Then, the rotating assembly 20 can be coupled at the bottom side 11 of the puzzle board 10 to form the movable puzzle platform for the user to move the puzzle board 10 on the playing surface and to assemble the puzzle pieces 100 on the playing surface 11 of the puzzle board 10. Once the puzzle pieces 100 are completely assembled on the playing surface 11 of the puzzle board 10, the rotating assembly 20 can be detached from the bottom side 11 of the puzzle board 10, such that the puzzle board 10 forms the puzzle frame for framing the puzzle pieces 100.

[0074] Figs. 79-84 show a movable puzzle platform according to still another embodiment of the present disclosure.

[0075] Referring to Figs. 79 and 80, a movable puzzle platform according to a preferred embodiment of the present invention is illustrated, wherein the movable puzzle platform is arranged for a user or a player to assemble a plurality of puzzle pieces 100 on a puzzle surface of the movable puzzle platform. Accordingly, the movable puzzle platform comprises a puzzle board 10 and a board accessible unit 20.

[0076] As shown in Figs. 79 and 80, the puzzle board 10, having a panel configuration, has a bottom 11 for supporting on a playing surface such as a table surface, a wall surface, a floor surface, and the like or even a support frame for supporting the movable puzzle platform on ground, and provides a top surface 12, wherein when the top surface 12 is a flat surface, it serves as a puzzle floor 101 for playing the puzzle pieces 100 thereon. It is worth mentioning that the puzzle board 10 has a predetermined size adapted for a larger scale puzzle, such as at least 1,000 puzzle pieces, being assembled on the puzzle board 10.

[0077] The board accessible unit 20 is coupled at the bottom surface 11 of the puzzle board 10 and configured for allowing the puzzle board 10 sliding on the playing surface, wherein the board accessible unit 20 provides accessibility for the puzzle board 10 to move the puzzle board 10 at different planar directions with respect to the playing surface.

[0078] The puzzle board 10 can be circular, square or rectangular shape. According to the preferred embodiment as shown in FIG. 79, the puzzle board 10 is embodied to have a rectangular shape defining two longer longitudinal sides and two shorter transverse sides. The puzzle board 10 further comprises a surrounding border wall 13 upwardly extended from a peripheral edge of the top surface 12 of the puzzle board 10 to define the puzzle floor 101 within the surrounding border wall 13. It is worth mentioning that an area of the puzzle floor 101 is not smaller than an area of the puzzle pieces 100 being put together. Preferably, the area of the puzzle floor 101 matches with the area of the puzzle pieces 100 after the puzzle pieces 100 are assembled. In other words, the puzzle board 10 serves as a puzzle frame for framing the puzzle pieces 101 after the puzzle pieces 100 are assembled.

[0079] As shown in FIG. 79, the puzzle board 10 further comprises an anti-slipping layer 14 overlappedly provided on the puzzle floor 101 for preventing the puzzle pieces 100 being slipped thereon. Preferably, the anti-slipping layer 14 has a self adhesive bottom surface adhered on the puzzle floor 101, wherein the anti-slipping layer 14 can be removed from the puzzle floor 101 without damaging the puzzle floor 101 and the anti-slipping layer 14. Therefore, the anti-slipping layer 14 is reusable to place on the puzzle floor 101. Furthermore, the anti-slipping layer 14 serves as a backing layer of the puzzle pieces 100 after the puzzle pieces 100 are assembled.

[0080] It is appreciated that electronic puzzle game is provided as software or APP that the user or player can play the puzzle game with a display such as a TV screen, LED screen or computer monitor. However, the player may generally use a smaller screen to play because a relatively larger screen such as 50" or more TV screen supported on a playing surface is difficult for the player to

reach all sizes of the screen. In one alternative embodiment, the puzzle board 10 can be embodied as an electronic screen, such as a TV display or LED screen, and the top surface 12 is the screen surface that serves as puzzle floor for the player to select and put puzzle piece images together, wherein the board accessible unit 20 is mounted to the bottom of the electronic puzzle board 10 for allowing the electronic puzzle board 10 to smoothly slide on the playing surface that provides accessibility for moving the electronic puzzle board 10 at different planar directions with respect to the playing surface.

[0081] As shown in Figs. 79 and 80, the board accessible unit 20 comprises a first moving member 21 coupled at the bottom 11 of the puzzle board 10 and a second moving member 22 rotatably coupled to the first moving member 21. It is worth mentioning that the board accessible unit 20 is preferred to be coupled coaxially with a center of gravity of the puzzle board 10, for example at a center portion of the puzzle board 10, such that the puzzle board 10 can be moved on the playing surface in a balancing manner.

[0082] According to the preferred embodiment of the present invention, the puzzle board 10 is adapted for being self-rotated 360° on the playing surface via a rotation movement between the first and second moving members 21, 22. In other words, the user is able to selectively rotate the puzzle board 10 from one longitudinal side to another opposed longitudinal side or to any one of the shorter transverse sides without walking around the puzzle board 10. For example, the user is able to assemble one puzzle piece 100 at one side of the puzzle board 10 and to rotate the puzzle board 10 at 180° in order to assembly another puzzle piece 100 at an opposed side of the puzzle board 10, so as to speed up the assembling time of the puzzle pieces 100.

[0083] In one embodiment, the first and second moving members 21, 22 are first and second ring members respectively coaxially engaged with each other. In other words, a diabase 40er of the first moving member 21 is smaller than a diabase 40er of the second moving member 22. The board accessible unit 20 comprises further comprises a first bearing unit 23 coupled between the first and second moving members 21, 22, such that when the first moving member 21, i.e. the first ring member, is rotated within the second moving member 22, i.e. the second ring member, the puzzle board 10 is self-rotated 360° on the playing surface. Particularly, an outer circumferential surface of the first moving member 21 is engaged with an inner circumferential surface of the second moving member 22 via the first bearing unit 23 to enable the second moving member 22 being coaxially rotated with respect to the first moving member 21. In one embodiment, the first bearing unit 23 is constructed to have a holding ring and a plurality of ball bearings spacedly retained at the holding ring in a rotatable manner, such that when the holding ring is coaxially held between the first and second moving members 21, 22, the ball bearings are rotatably sandwiched between the first and second moving members 21, 22 so as to enable the first and second moving members 21, 22 being coaxially moved with each other.

[0084] The board accessible unit 20 further comprises a second bearing unit 24 provided at a bottom side of the second moving member 22 for sliding the puzzle board 10 on the playing surface at different planar directions via the second moving member 22. Accordingly, assumed that the playing surface defines xyz axis. Via the second bearing unit 24 at the second moving member 22, the puzzle board 10 is able to selectively slide on the playing surface at any direction with respect to the xy coordinate surface. Via the first bearing unit 23, the puzzle board 10 is able to selectively rotate on the playing surface with respect to z axis. In other words, the puzzle board 10 is able to freely move at two-dimensional direction, so as to adjust the planer angle of the puzzle board 10 with respect to the user.

[0085] In one embodiment, the board accessible unit 20 is detachably coupled at the bottom surface 11 of the puzzle board 10. As shown in Figs. 80, 81 and 81A, the board accessible unit 20 comprises a plurality of coupling members 25 extended from the first moving member 21 to detachably couple at the bottom surface 11 of the puzzle board 10. Preferably, the coupling members 25 are integrally extended from an inner circumferential surface of the first ring member, i.e. the first moving member 21, wherein each of the coupling members 25 has a coupling slot formed thereon to detachably couple at the bottom surface 11 of the puzzle board 10 by inserting screws through the coupling slot to the bottom surface 11 of the puzzle board 10. It is worth mentioning that a plurality of screw holes are formed at the bottom surface 11 of the puzzle board 10, such that the screws can engage with the screw holes through the coupling slot to couple the board accessible unit 20 at the bottom surface 11 of the puzzle board 10.

[0086] Alternatively, as shown in FIG. 81, the board accessible unit 20 further comprises one or more first coupling elements 25A spacedly provided on the bottom surface 11 of the puzzle board 10, and one or more second coupling elements 26A spacedly provided at the first moving member 21 to detachably couple the first coupling elements 25A so as to detachably couple the board accessible unit 20 at the bottom surface 11 of the puzzle board 10. Preferably, the first and second coupling elements 25A, 26A are magnetic elements adapted for magnetically attracting with each other. The first coupling elements 25A are aligned in a ring shaped on the bottom surface 11 of the puzzle board 10. The second coupling elements 26A are provided on a top surface of the first ring member, i.e. the first moving member 21, wherein the first and second coupling elements 25A, 26A are aligned with each other and are magnetically attracted with each other to detachably couple the board accessible unit 20 at the bottom surface 11 of the puzzle board 10.

[0087] Alternatively, as shown in FIG. 81A, the board accessible unit 20 further comprises one or more cou-

pling elements 25B provided on at least one of the bottom surface 11 of the puzzle board 10 and the first moving member 21 to detachably couple the board accessible unit 20 at the bottom surface 11 of the puzzle board 10. In one embodiment, the coupling element 25B is a self-adhering film or a self-sticking film provided on the first moving member 21 to detachably adhere on the bottom surface 11 of the puzzle board 10. It is worth mentioning that the coupling element 25B has a ring shape matching with the first moving member 21, wherein the coupling element 25B is re-usable to detachably adhere on the bottom surface 11 of the puzzle board 10 without damaging the detachably adhere on the bottom surface 11 of the puzzle board 10. It is appreciated that the coupling element 25B can be applied on the bottom surface 11 of the puzzle board 10 to detachably adhere to the first moving member 21.

[0088] As shown in Figs. 79 and 82, the movable puzzle platform further comprises a supplement arrangement 30 configured not only for storing the puzzle pieces 100 before they are assembled, but also for allowing the player to preassemble and store a section of the puzzle figure with a group of puzzle pieces 100. In one embodiment, the supplement arrangement 30 has one or more drawer cavities 31 formed at sidewalls of the puzzle board 10 between the bottom surface 11 and the top surface 12 thereof and comprises one or more section puzzle boards 32 slidably received in the drawer cavities 31 respectively. According to the preferred embodiment of the present invention, each of the section puzzle boards 32, which is embodied as a puzzle drawer 32, has a section puzzle surface with an anti-slipping layer 14 attached thereon to serve as section puzzle floor 321 for preassembling a group of puzzle pieces 100 to form a section of the puzzle figure and storing the puzzle pieces 100.

[0089] According to the preferred embodiment, the drawer cavities 31 are formed at the transverse sides of the puzzle board 10 respectively. Particularly, two drawer cavities 31 are spacedly formed at each of the transverse sides of the puzzle board 10. In other words, two puzzle drawers 32 are slidably coupled at each of the transverse sides of the puzzle board 10. Therefore, four puzzle drawers 32 are slidably coupled at the transverse sides of the puzzle board 10. It is worth mentioning that each puzzle drawer 32 is independently actuated to slide in-and-out of the corresponding drawer cavity 31. Since the puzzle drawers 32 are slidably coupled at the transverse sides of the puzzle board 10, each puzzle drawer 32 is relatively long enough and each drawer cavity 31 is deep enough to retain the puzzle drawer 32 therein so as to prevent the puzzle drawer 32 being slid out of the drawer cavity 31 accidentally or unintentionally when moving the puzzle board 10 on the playing surface. Accordingly, a length of each puzzle drawer is slightly smaller than half of the length of the puzzle board 10 between the transverse sides thereof.

[0090] The supplement arrangement 30 further comprises a drawer holder 33 provided at the puzzle board 10 to retain the puzzle drawers 32 in the drawer cavities 31 respectively. In one embodiment, the drawer holder 33 comprises a first magnetic element 331 provided at an inner wall of the drawer cavity 31 and a second magnetic element 332 provided at the puzzle drawer 32 to magnetically attract with the first magnetic element 331 so as to retain the puzzle drawer 32 in the drawer cavity 31. Due to the magnetically attracting force between the first and second magnetic elements 331, 332, the puzzle drawers 32 are held within the drawer cavities 31 respectively to prevent the puzzle drawer 32 being slid out of the drawer cavity 31 accidentally or unintentionally when moving the puzzle board 10 on the playing surface. When a pulling force is applied at one of the puzzle drawers 32 to overcome the magnetically attracting force, the puzzle drawer 32 can be pulled and slid out of the drawer cavity 31.

[0091] As shown in FIG. 83, the puzzle board 10 further comprises a kickstand 15 pivotally coupled at the bottom surface 11 of the puzzle board 10. Particularly, one end of the kickstand 15 is pivotally coupled at the bottom surface 11 of the puzzle board 10 while a free end of the kickstand 15 is adapted to pivotally fold from the puzzle board 10 to support on the playing surface. Therefore, when the kickstand 15 is pivotally folded on the bottom surface 11 of the puzzle board 10, the puzzle board 10 is movable on the playing surface via the board accessible unit 20. When the kickstand 15 is pivotally folded for supporting on the playing surface, the puzzle board 10 is inclined and supported on the playing surface.

[0092] In one application, as shown in FIG. 84, the movable puzzle platform of the present invention can be incorporated with the puzzle pieces 100 to form a puzzle game kit. Particularly, the area of the puzzle floor 101 matches with the area of the puzzle pieces 100 after the puzzle pieces 100 are assembled, such that the puzzle board 10 serves as a puzzle frame for framing the puzzle pieces 101 after the puzzle pieces 100 are assembled. Furthermore, the puzzle board 10 is constructed to have a plurality of board panels. Therefore, the board panels, the board accessible unit 20 and the puzzle pieces 100 are packed in a box. In order to play the puzzle pieces 100, the board panels can be assembled edge-to-edge to form the puzzle board 10. Then, the board accessible unit 20 can be coupled at the bottom side 11 of the puzzle board 10 to form the movable puzzle platform for the user to move the puzzle board 10 on the playing surface and to assemble the puzzle pieces 100 on the top surface 12 of the puzzle board 10. Once the puzzle pieces 100 are completely assembled on the top surface 12 of the puzzle board 10, the board accessible unit 20 can be detached from the bottom side 11 of the puzzle board 10, such that the puzzle board 10 forms the puzzle frame for framing the puzzle pieces 100.

[0093] It will thus be seen that the objects of the present invention have been fully and effectively accomplished. The 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 movable puzzle platform for placing a plurality of puzzle pieces thereon, comprising:

   a puzzle board comprising a top surface for placing the puzzle piece thereon; and
   a board accessible unit coupled with the puzzle board and comprising a first moving member, a second moving member, and a first bearing unit coupled between the first moving member and the second moving member;
   wherein the first moving member is rotatably mounted to the second moving member by the first bearing unit;
   wherein at least a part of an outer circumferential surface of the first moving member is directly opposite to and facing at least a part of an inner circumferential surface of the second moving member via the first bearing unit to enable the second moving member to be coaxially rotated with respect to the first moving member;
   wherein the board accessible unit further comprises an air gap formed by the outer circumferential surface of the first moving member and the inner circumferential surface of the second moving member, the air gap is without an object along a thickness direction of the board accessible unit; and
   wherein the first moving member comprises a first horizontal flat base and a first rolling surface arranged along the first horizontal flat base.

2. The movable puzzle platform, as recited in claim 1, wherein the first rolling surface is curved towards the first horizontal flat base.

3. The movable puzzle platform, as recited in claim 1, wherein the first bearing unit is partly overlapped with the first horizontal flat base in the thickness direction of the board accessible unit.

4. The movable puzzle platform, as recited in claim 1, wherein the second moving member comprises a second horizontal flat base and the first bearing unit is partly overlapped with the second horizontal flat base in the thickness direction of the board accessible unit.

5. The movable puzzle platform, as recited in claim 4, wherein the second moving member further comprises a protrusion protruded from the second horizontal flat base toward the first moving member along the thickness direction of the board accessible unit for engaging with the first bearing unit.

6. The movable puzzle platform, as recited in claim 4, wherein the second moving member further comprises a recess extending from the second horizontal flat base towards the first moving member for dividing the second horizontal flat base into a first part and a second part.

7. The movable puzzle platform, as recited in claim 7, wherein the area of the first part is substantially greater that of the second part, the first bearing unit is partly overlapped with the first part of the second horizontal flat base.

8. The movable puzzle platform, as recited in claim 1, wherein the first moving member is coupled with the puzzle board.

9. The movable puzzle platform, as recited in claim 1, wherein the second moving member is coupled with the puzzle board.

10. The movable puzzle platform, as recited in claim 1, wherein a diameter of the first moving member is substantially smaller than a diameter of the second moving member.

11. A movable puzzle platform for placing a plurality of puzzle pieces thereon, comprising:

    a puzzle board comprising a top surface for placing the puzzle piece thereon; and
    a board accessible unit coupled with the puzzle board and comprising a first moving member, a second moving member, and a first bearing unit coupled between the first moving member and the second moving member, wherein the first moving member is rotatably mounted to the second moving member by the first bearing unit;
    wherein the first moving member having a first circumferential surface and the second moving member having a second circumferential surface directly opposite to the first circumferential surface;
    wherein at least a part of the first circumferential surface of the first moving member is directly facing at least a part of the second circumferential surface of the second moving member to enable the second moving member to be coaxially rotated with respect to the first moving member;
    wherein the board accessible unit further comprises an air gap formed by the first circumferential surface of the first moving member and the second circumferential surface of the second

moving member, the air gap is without an object along a thickness direction of the board accessible unit; and

wherein the first moving member comprises a first flat base and a first rolling surface arranged along the first flat base.

12. The movable puzzle platform, as recited in claim 11, wherein the first bearing unit is partly overlapped with the first flat base in the thickness direction of the board accessible unit.

13. The movable puzzle platform, as recited in claim 11, wherein the first rolling surface is curved towards the first flat base.

14. The movable puzzle platform, as recited in claim 11, wherein the second moving member comprises a second flat base and the first bearing unit is partly overlapped with the second flat base in the thickness direction of the board accessible unit.

15. The movable puzzle platform, as recited in claim 14, wherein the second moving member further comprises a protrusion protruded from the second flat base toward the first moving member along the thickness direction of the board accessible unit for engaging with the first bearing unit.

16. A rotating assembly, comprising:

a first moving member;

a second moving member rotatably coupled to the first moving member for forming a holding space; and

a plurality of ball bearings rotatably received in the holding space for allowing the second moving member rotating with respect to the first moving member;

wherein the first moving member comprises a first middle portion, an inclining portion extending downwardly from the periphery of the middle portion, a first projecting portion extending upwardly from the periphery of the inclining portion, and an edge portion extending from the periphery of the first projecting portion and away from the first middle portion; and

wherein the first middle portion is farther away from the ball bearings than an upper surface of the first projecting portion in a thickness direction of the rotating assembly.

17. The rotating assembly, as recited in claim 16, wherein the second moving member comprises a second middle portion, a second projecting portion extending downwardly from the periphery of the second middle portion for forming the holding space together with the first projecting portion, and a bending portion bent upward from the periphery of the second projecting portion for forming an accommodating space for receiving the edge portion.

18. The rotating assembly, as recited in claim 17, wherein the bending portion is unconnected with the edge portion for allowing the second moving member rotating with respect to the first moving member.

19. The rotating assembly, as recited in claim 16, wherein the ball bearings are in constantly contact with a top inner surface of the first projecting portion and a bottom inner surface of the second projecting portion.

20. The rotating assembly, as recited in claim 16, wherein the rotating assembly is made of aluminum.

21. The rotating assembly, as recited in claim 16, wherein the adjacent ball bearings are engaged with each other.

22. The rotating assembly, as recited in claim 16, wherein the adjacent ball bearings are spaced apart from each other.

23. A movable puzzle platform for placing a plurality of puzzle pieces thereon, comprising:

a board assembly comprising a puzzle board;

a kickstand pivotally coupled at the board assembly; and

a rotating assembly attached on the kickstand and comprising a first moving member, a second moving member rotatably coupled to the first moving member for forming a holding space and a plurality of ball bearings rotatably received in the holding space for allowing the second moving member rotating with respect to the first moving member;

wherein one end of the kickstand is configured for being pivotally coupled at the board assembly while a free end of the kickstand is adapted to pivotally fold from the board assembly;

and an outer diameter of the rotating assembly is smaller than a length of the kickstand.

24. The movable puzzle platform, as recited in claim 23, wherein the board assembly comprises a puzzle board and a supporting portion attached on a bottom surface of the puzzle board.

25. The movable puzzle platform, as recited in claim 24, wherein the kickstand pivotally coupled at the supporting portion.

26. The movable puzzle platform, as recited in claim 24, wherein the kickstand pivotally coupled at the puzzle

board.

27. The movable puzzle platform, as recited in claim 24, wherein the board assembly further comprises a base attached on the supporting portion.

28. The movable puzzle platform, as recited in claim 27, wherein the kickstand pivotally coupled at the base.

29. The movable puzzle platform, as recited in claim 27, wherein the base comprises a plurality holding portions positioned spaced from each other.

30. The movable puzzle platform, as recited in claim 27, wherein the base is integral with the supporting portion as a whole.

31. The movable puzzle platform, as recited in claim 27, wherein the base is stacked on the supporting portion.

32. The movable puzzle platform, as recited in claim 27, wherein the base comprises a base portion covered on the supporting portion and a base opening for avoiding the kickstand colliding with the base portion.

33. The movable puzzle platform, as recited in claim 23, wherein the supporting portion comprises a first inner supporting wall attached on a bottom surface of the puzzle board and a second inner supporting wall attached on the bottom surface of the puzzle board and spaced apart from the first inner supporting wall for forming a supporting space together with the first inner supporting wall, the kickstand is received in the supporting space.

34. The movable puzzle platform, as recited in claim 33, wherein the supporting portion further comprises a third inner supporting wall arranged between the first and second inner supporting walls for forming the supporting space together with the first and second inner supporting walls, the kickstand comprises a first supporting arm pivotally coupled at the third inner supporting wall, a second supporting arm parallel to the first supporting arm and pivotally coupled at the third inner supporting wall.

35. The movable puzzle platform, as recited in claim 23, wherein the kickstand is substantially strip-shaped.

36. The movable puzzle platform, as recited in claim 23, wherein the kickstand is substantially H-shaped.

37. A movable puzzle platform for placing a plurality of puzzle pieces thereon, comprising:

a board assembly comprising a puzzle board and a supporting portion attached on a bottom surface of the puzzle board;

a kickstand pivotally coupled at the board assembly; and

a rotating assembly attached on the kickstand and comprising a first moving member, a second moving member rotatably coupled to the first moving member for forming a holding space and a plurality of ball bearings rotatably received in the holding space for allowing the second moving member rotating with respect to the first moving member;

wherein one end of the kickstand is configured for being pivotally coupled at the board assembly while a free end of the kickstand is adapted to pivotally fold from the board assembly; and

wherein the supporting portion comprises a first inner supporting wall attached on a bottom surface of the puzzle board and a second inner supporting wall attached on the bottom surface of the puzzle board and spaced apart from the first inner supporting wall for forming a supporting space together with the first inner supporting wall, the kickstand is received in the supporting space.

38. The movable puzzle platform, as recited in claim 37, wherein the supporting portion further comprises a third inner supporting wall arranged between the first and second inner supporting walls for forming the supporting space together with the first and second inner supporting walls, the kickstand comprises a first supporting arm pivotally coupled at the third inner supporting wall, a second supporting arm parallel to the first supporting arm and pivotally coupled at the third inner supporting wall.

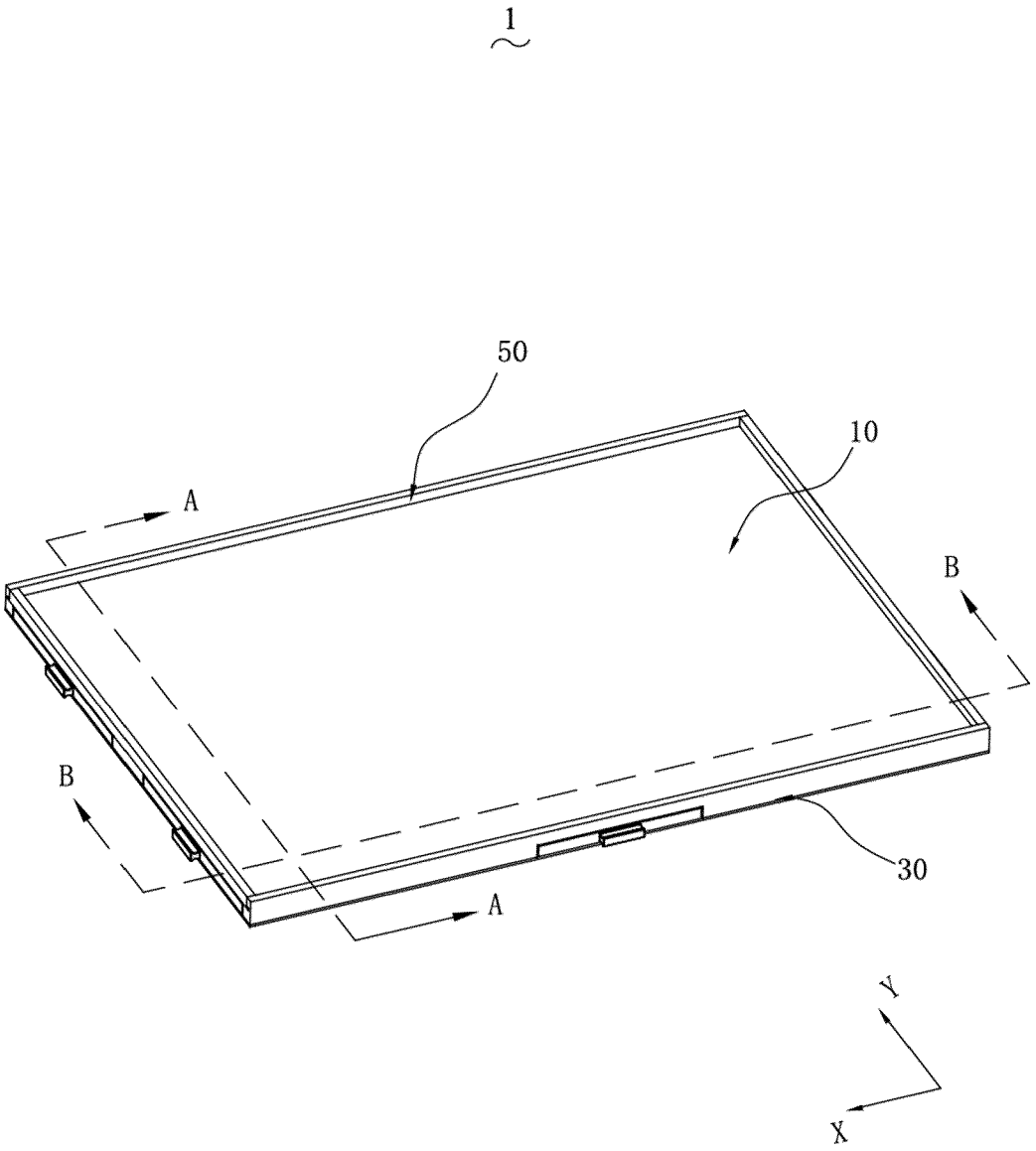

Fig. 1

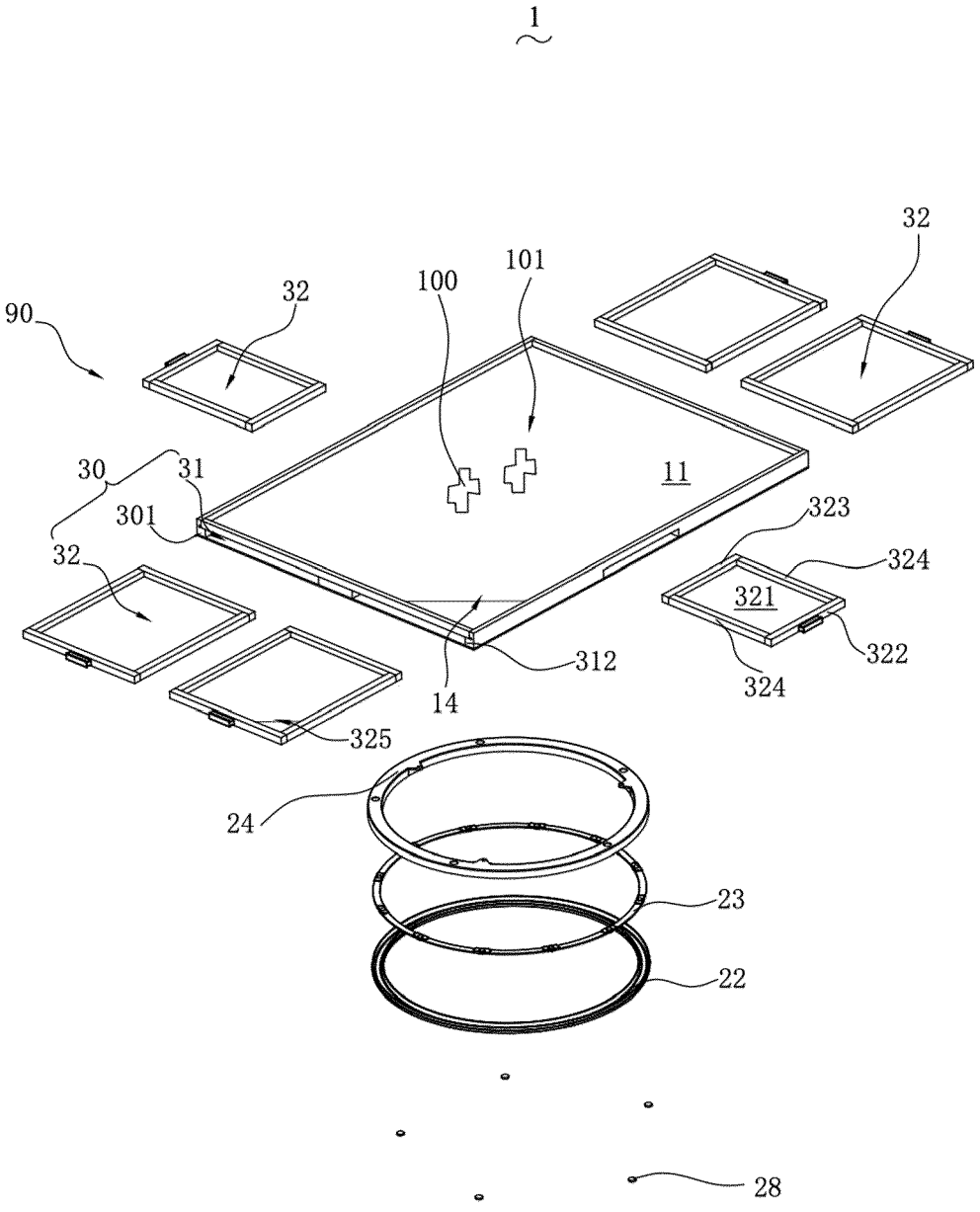
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Fig. 2

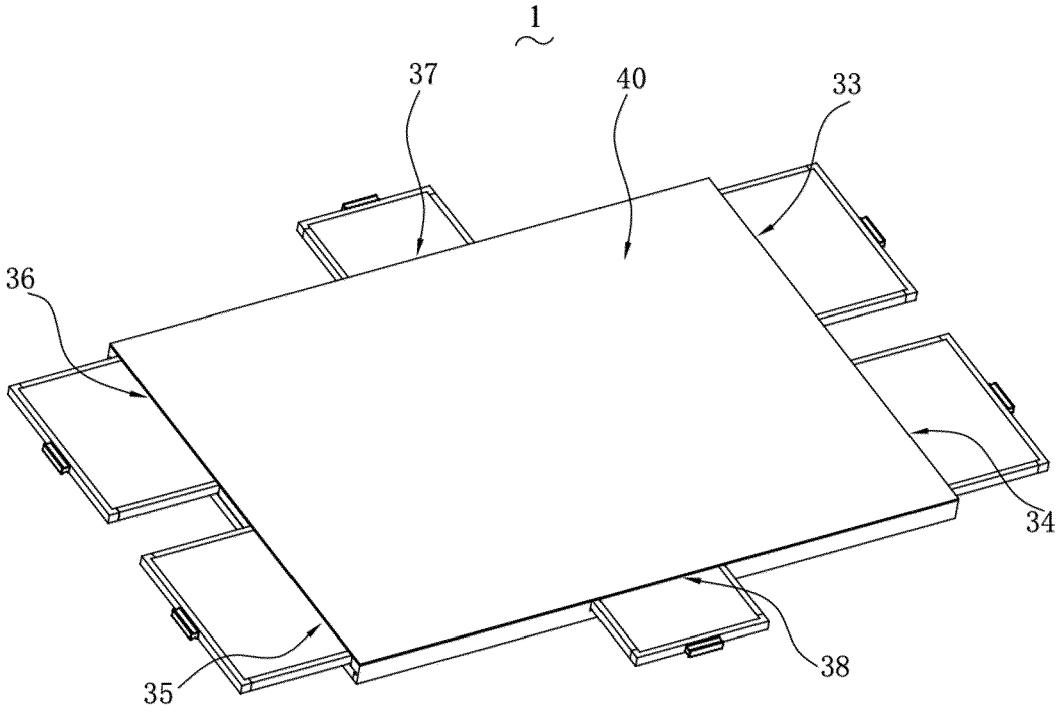

Fig. 3

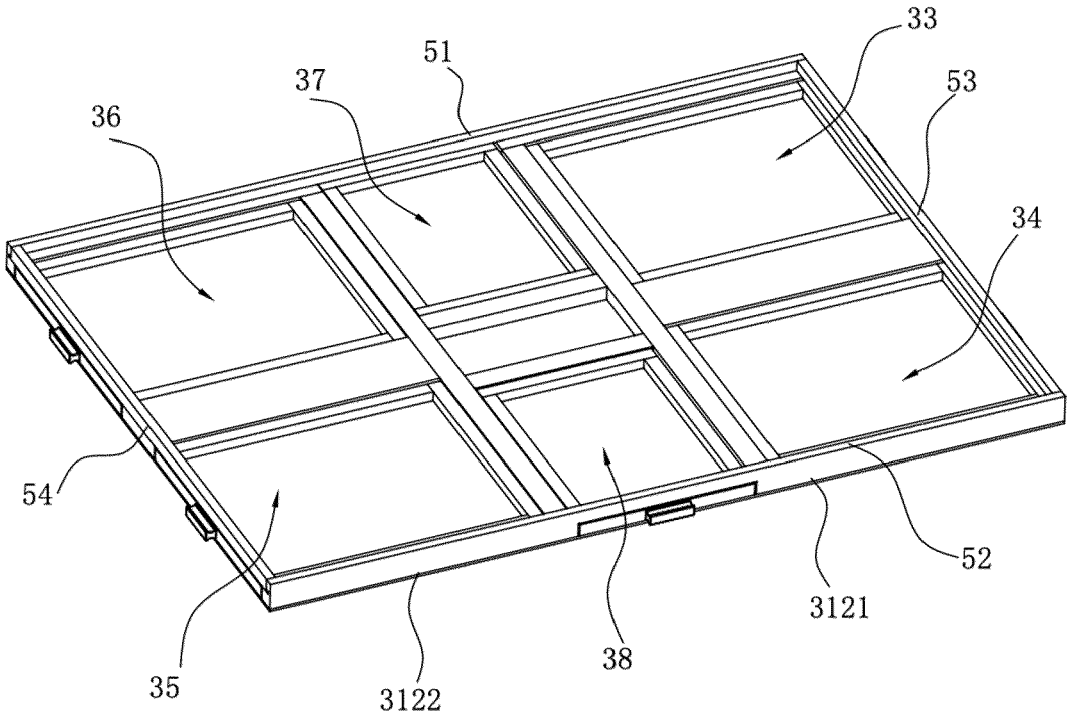

Fig. 4

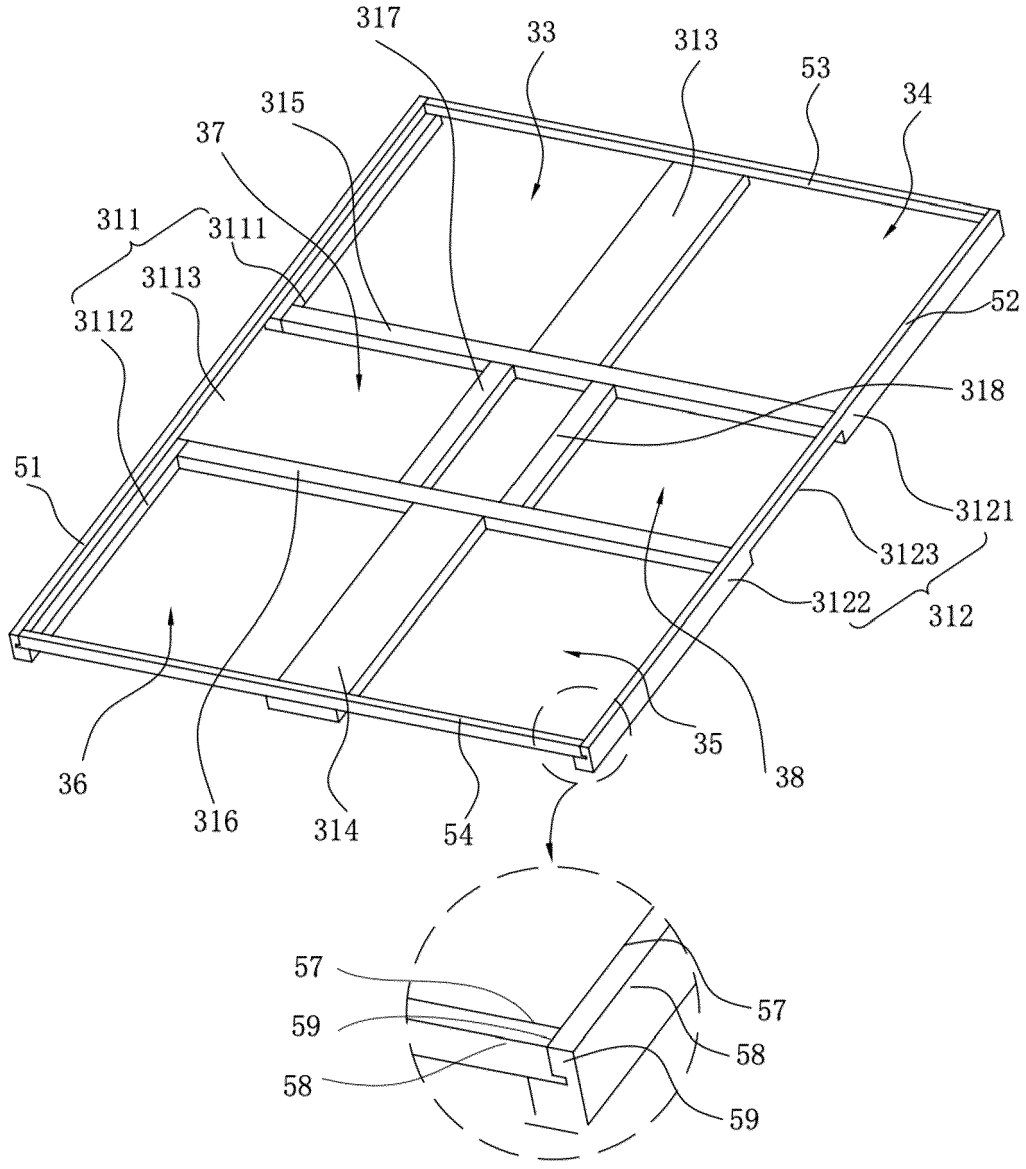
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Fig. 5

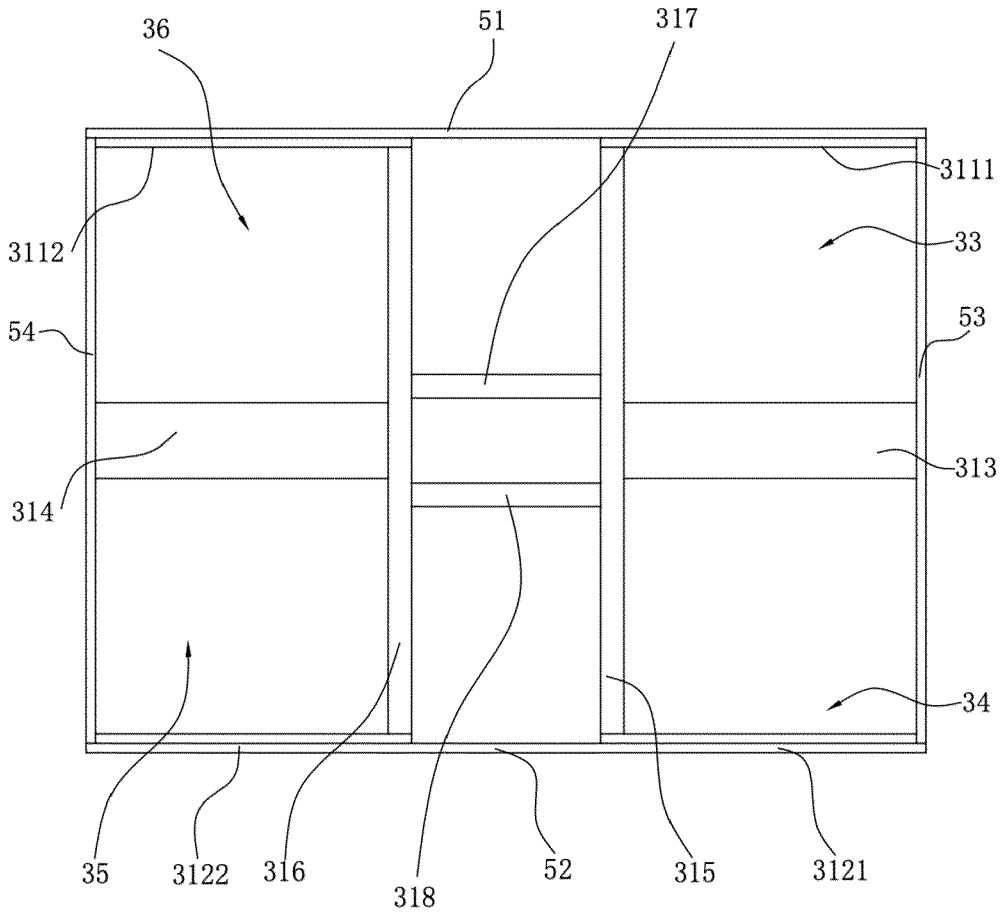
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Fig. 6

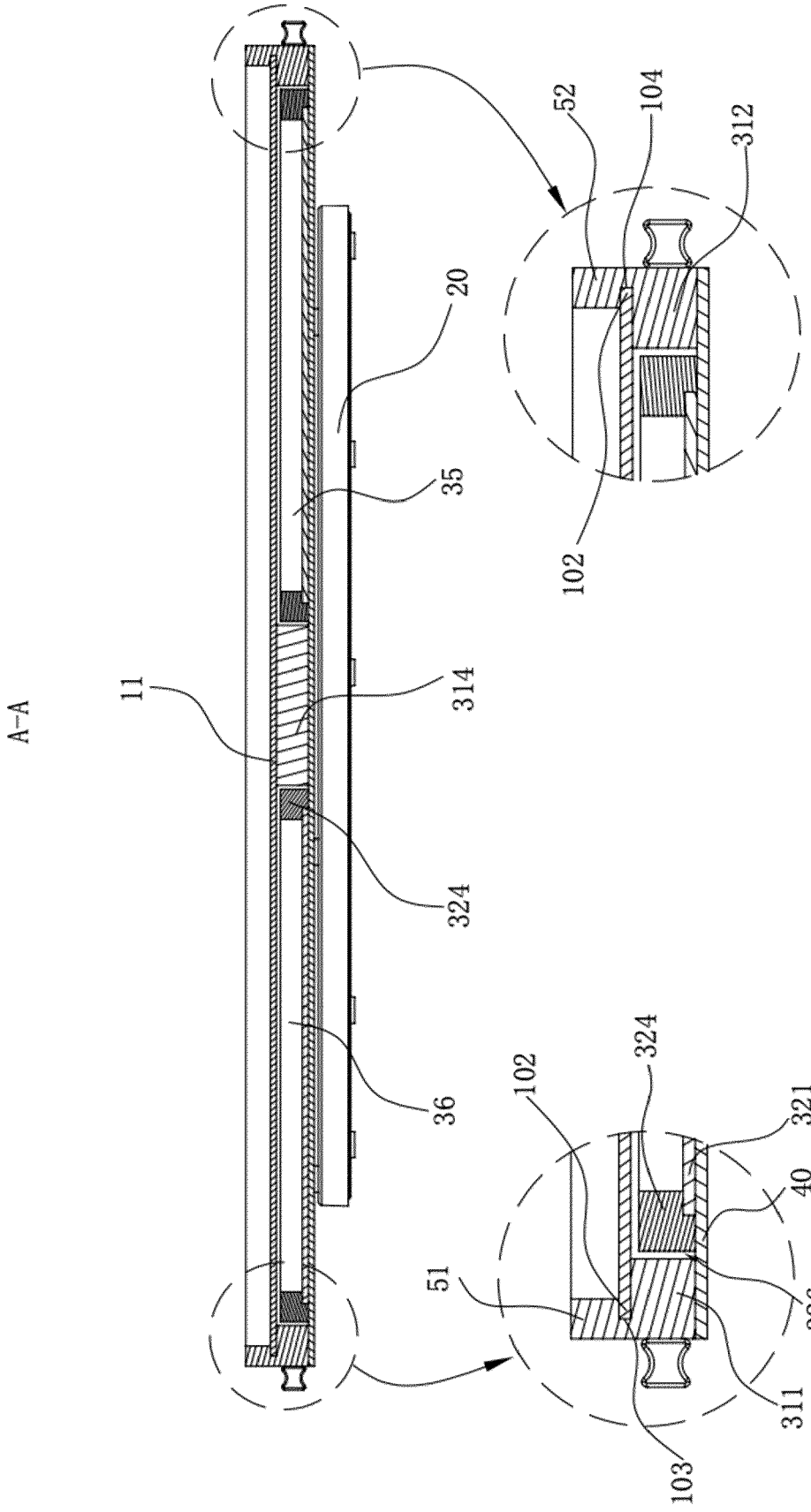

Fig. 7

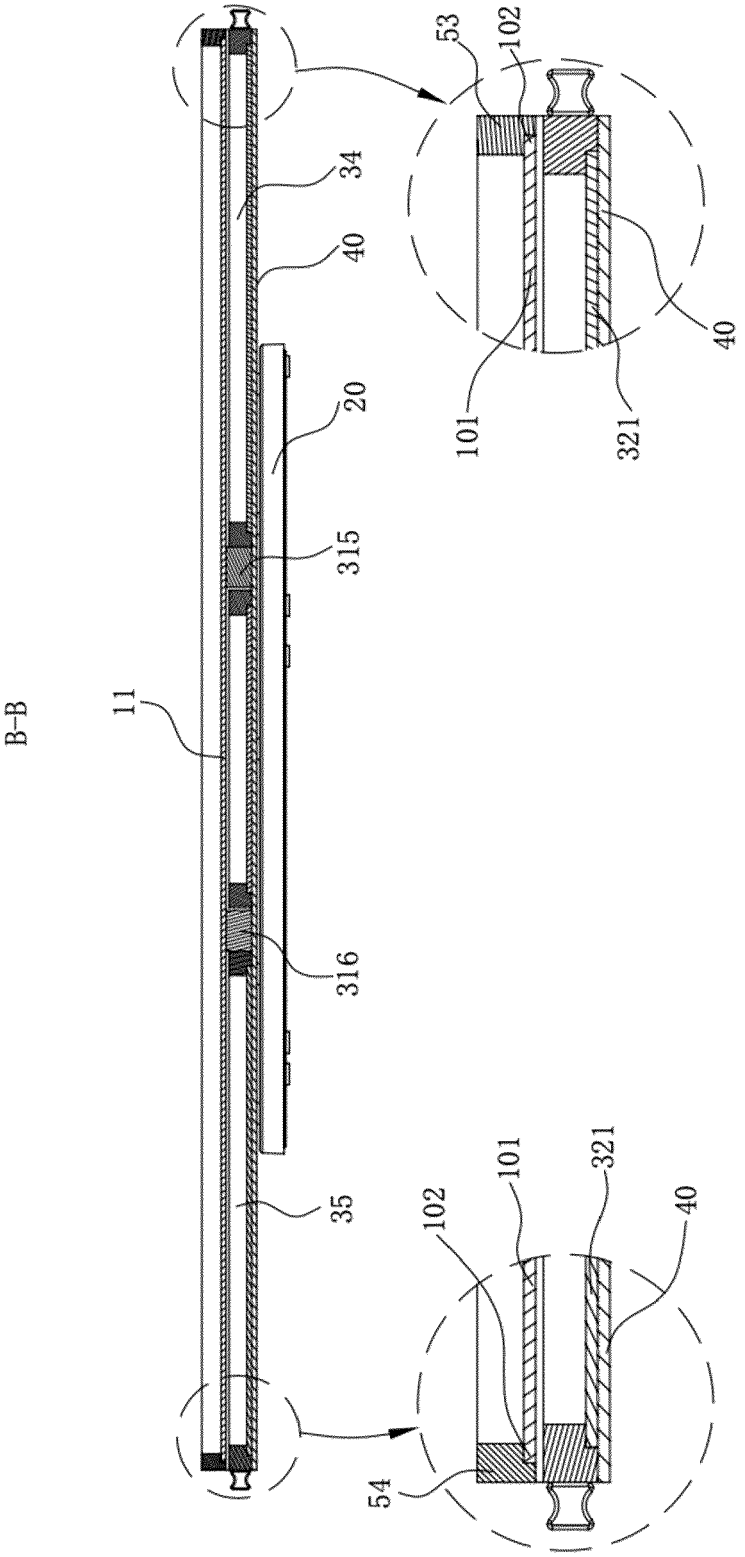

Fig. 8

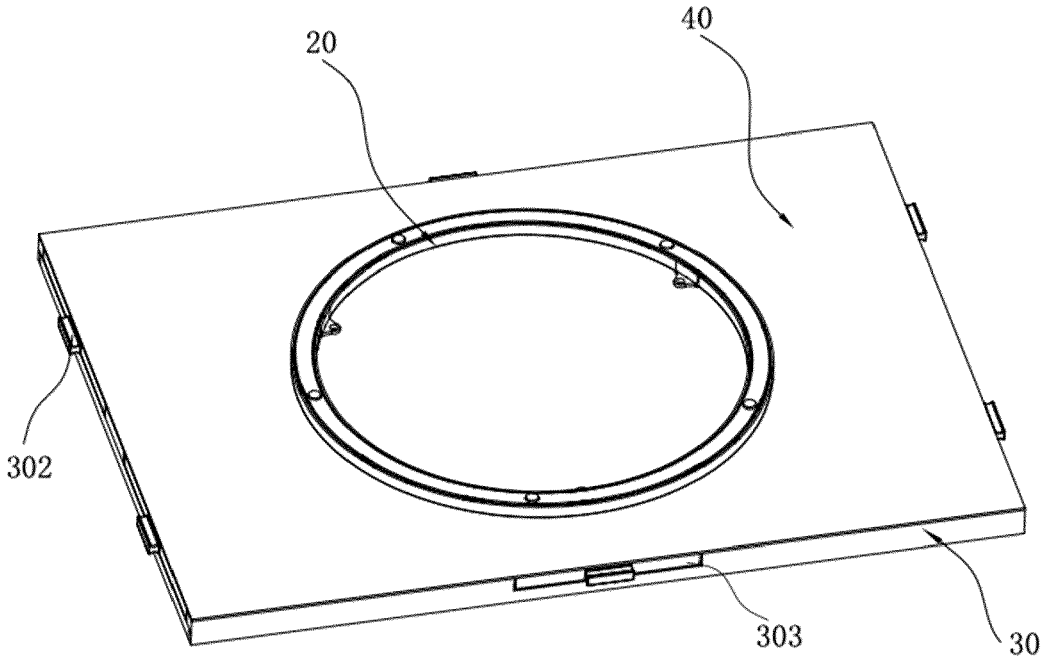

Fig. 9

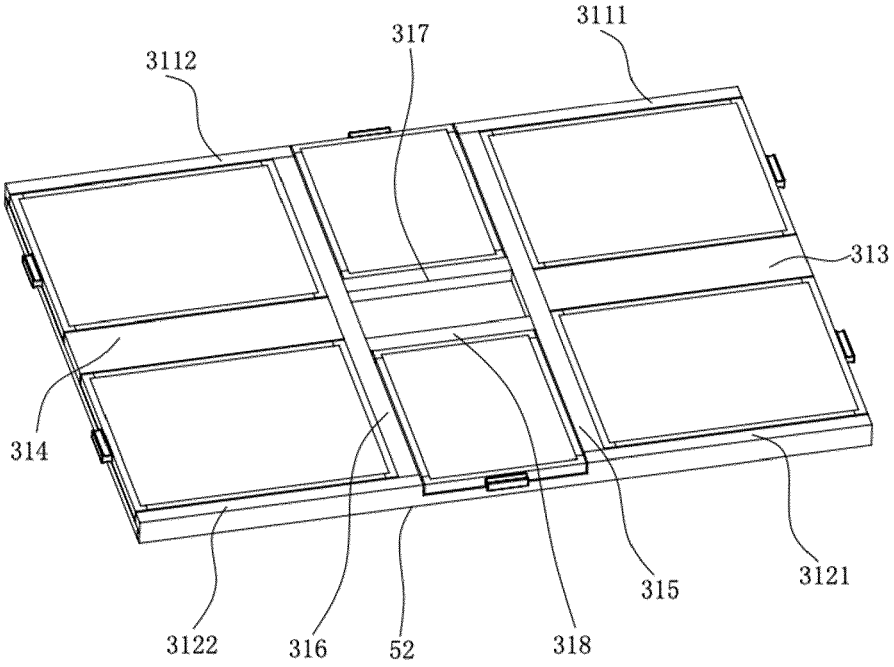

Fig. 10

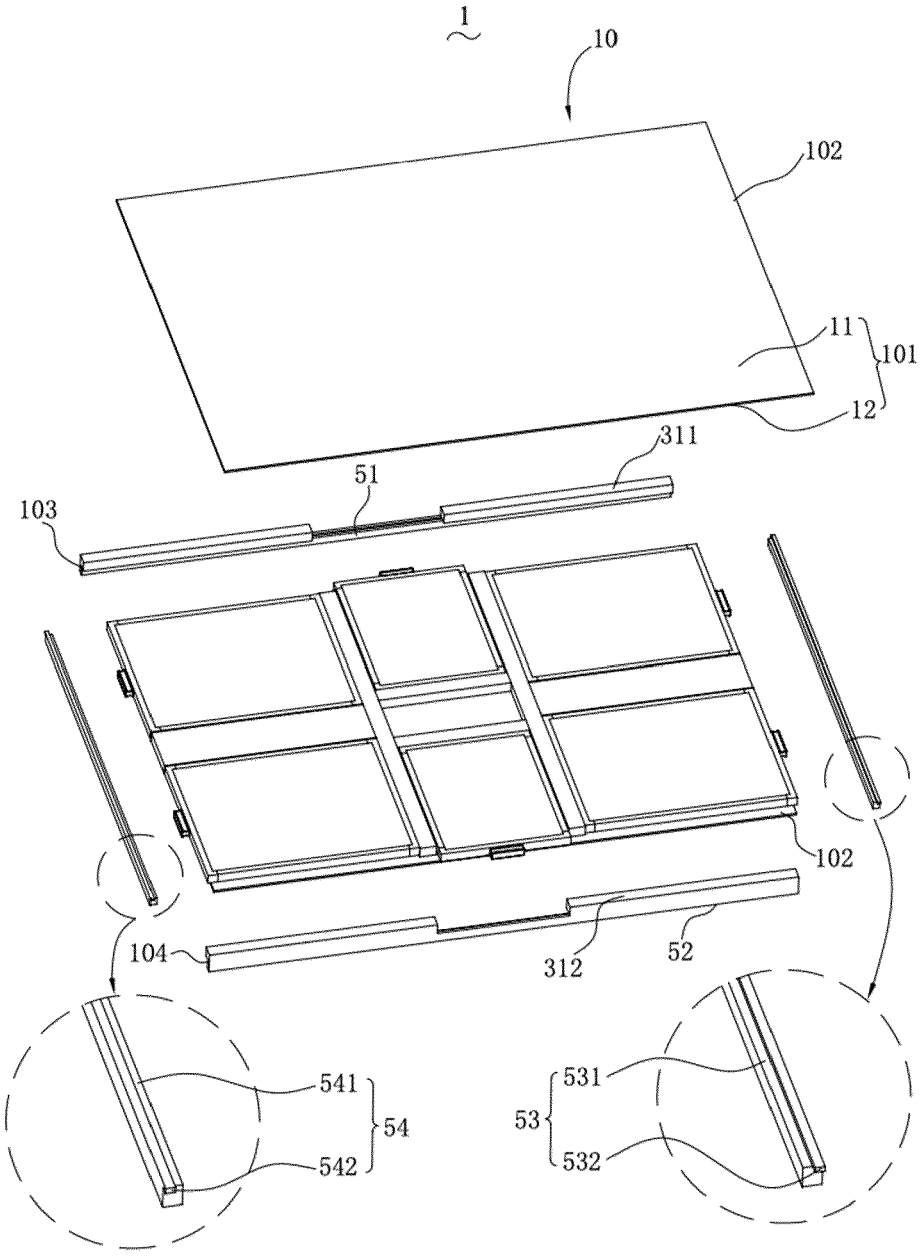

Fig. 11

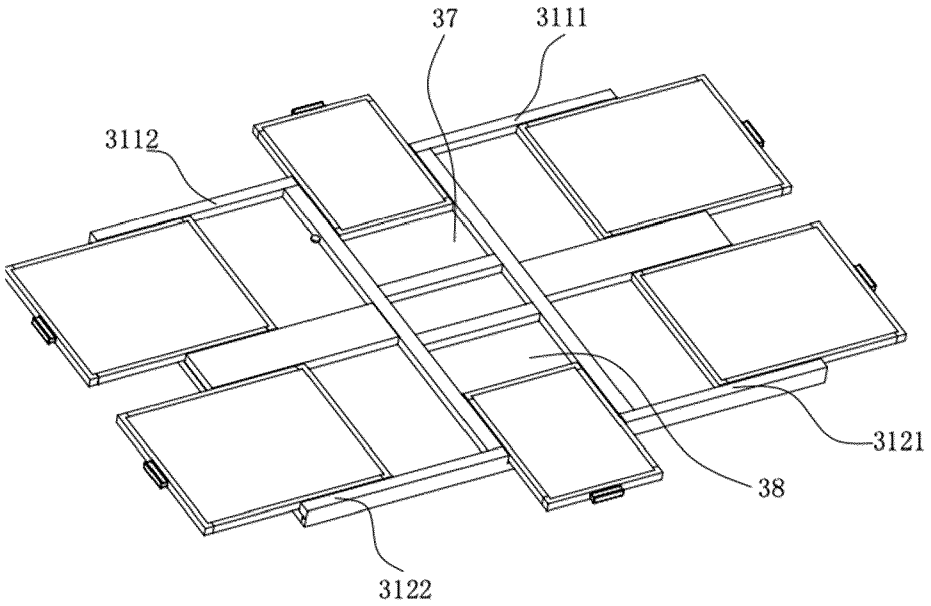

Fig. 12

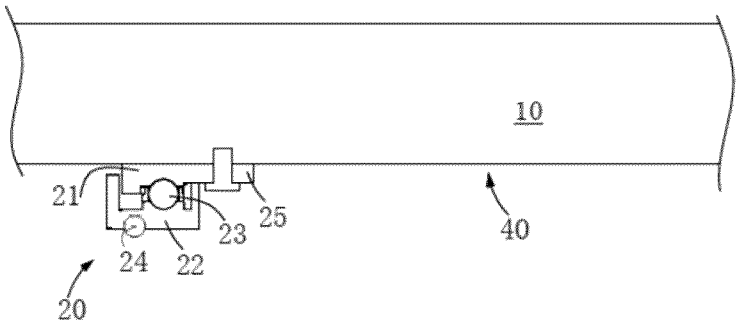

Fig. 13

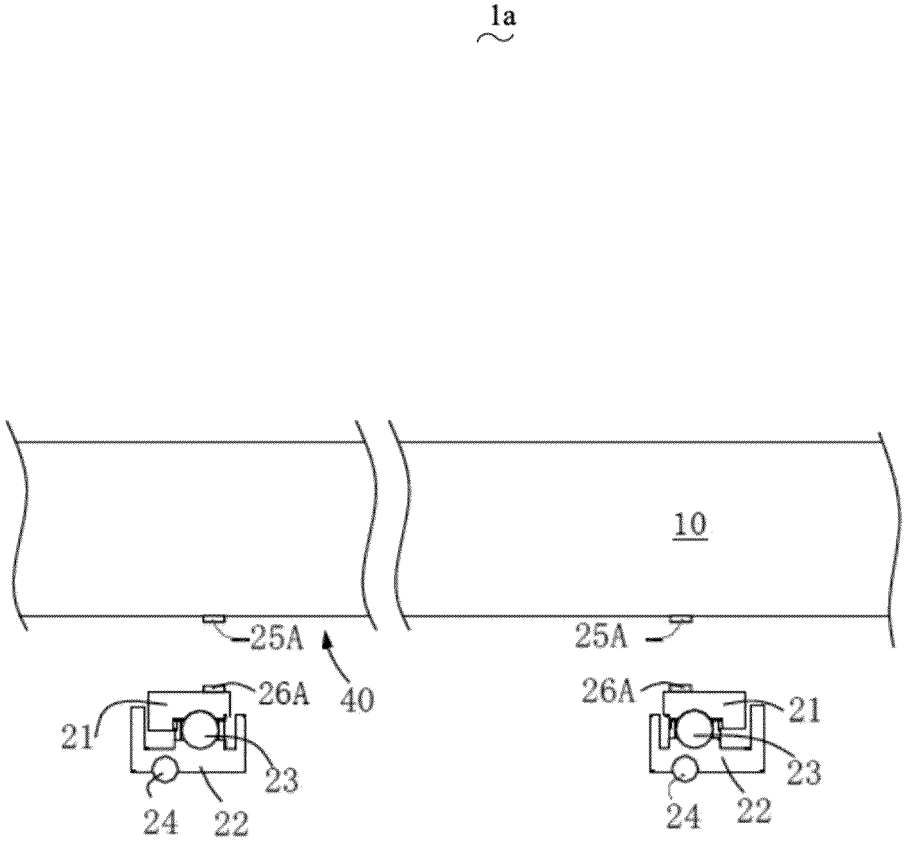
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Fig. 14

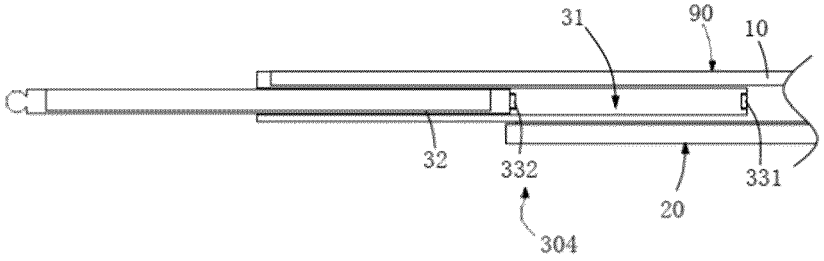
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Fig. 15

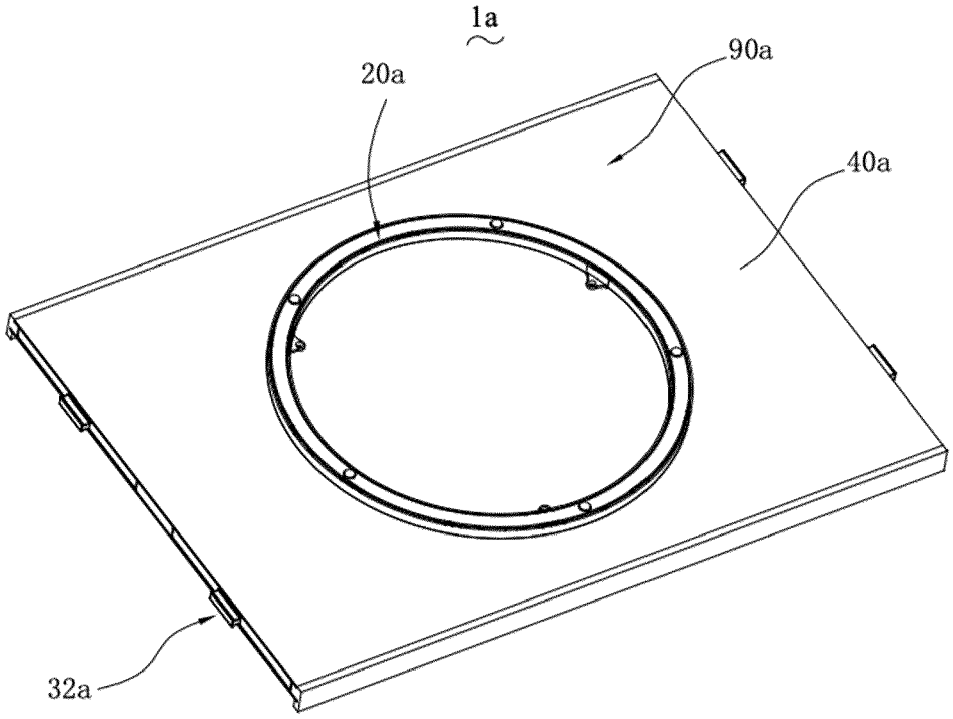


Fig. 16

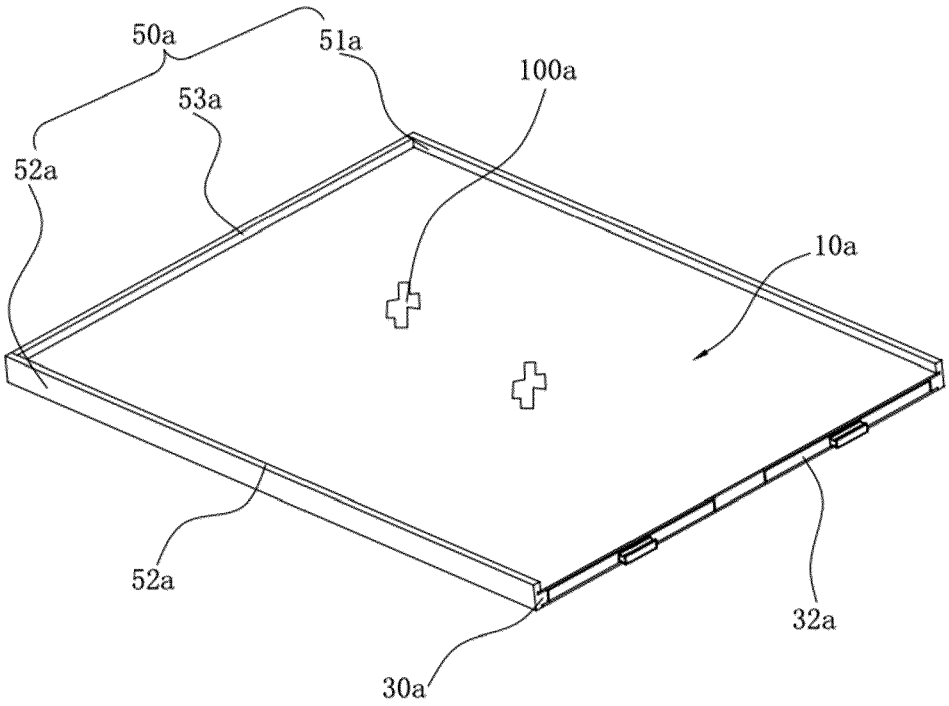
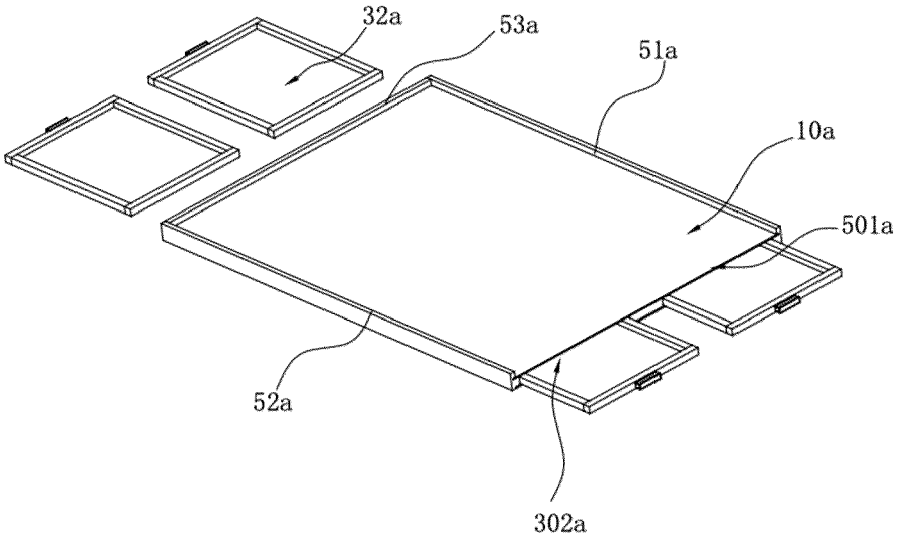


Fig. 17



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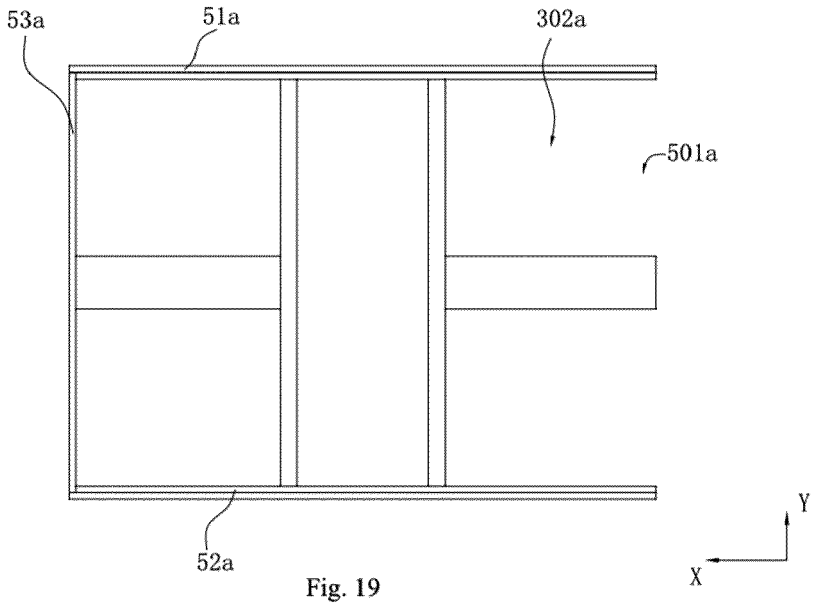

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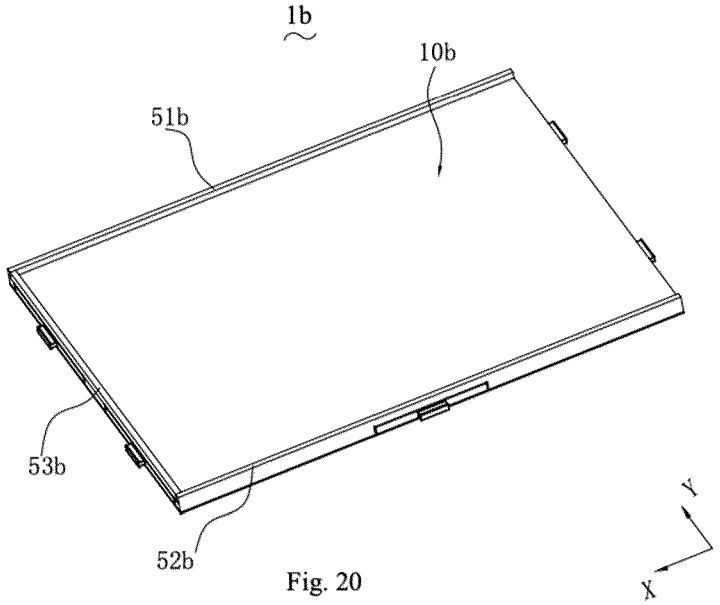

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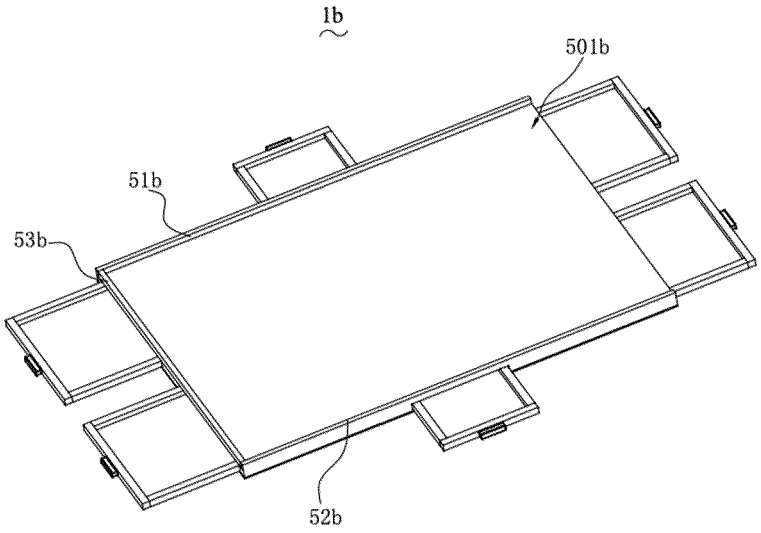

Fig. 21

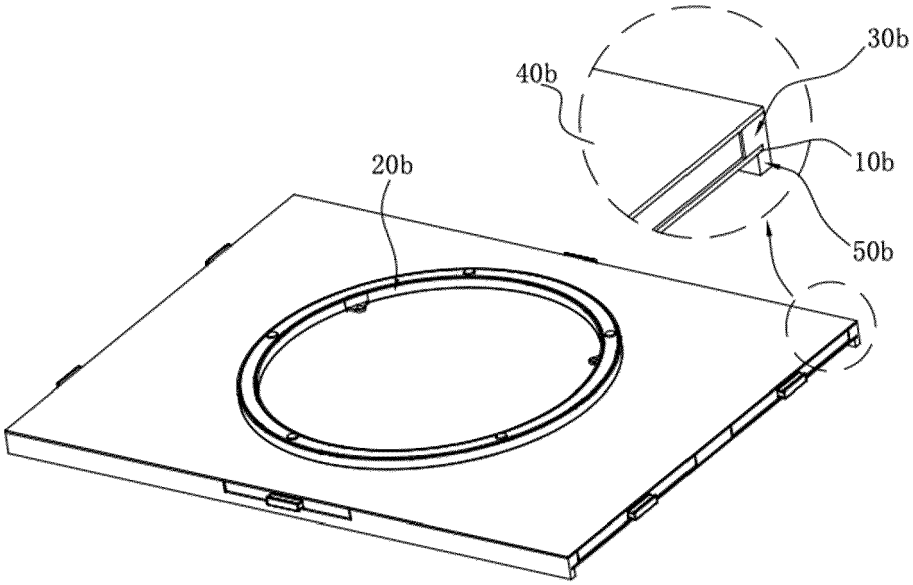

Fig. 22

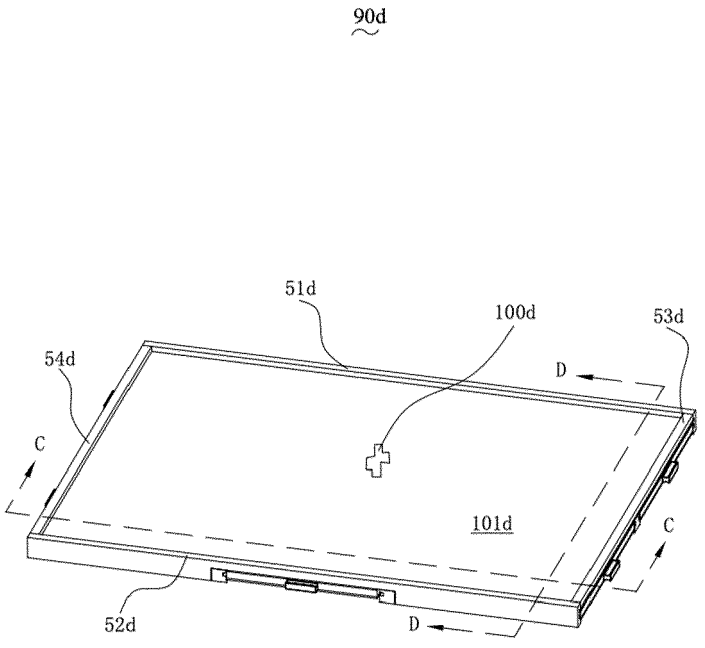

Fig. 23

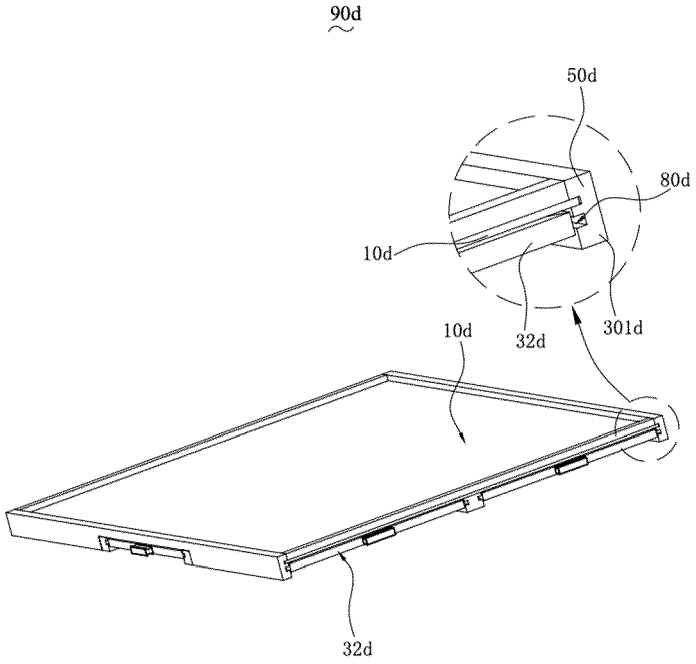

Fig. 24

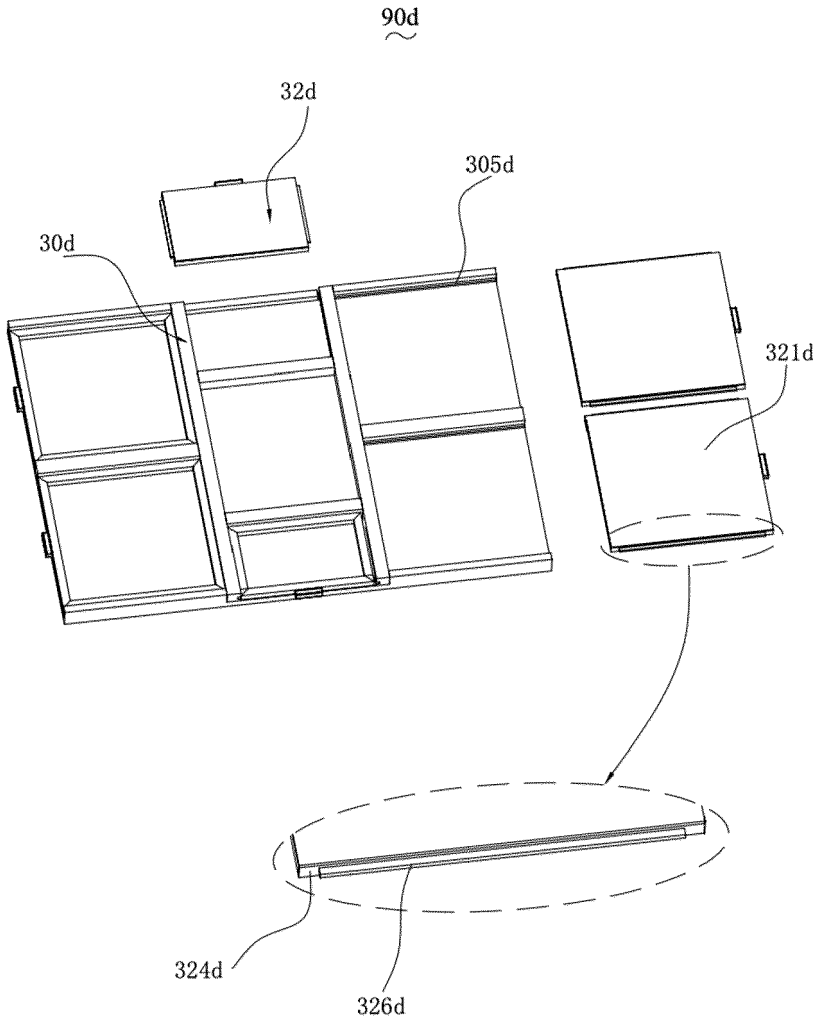

Fig. 25

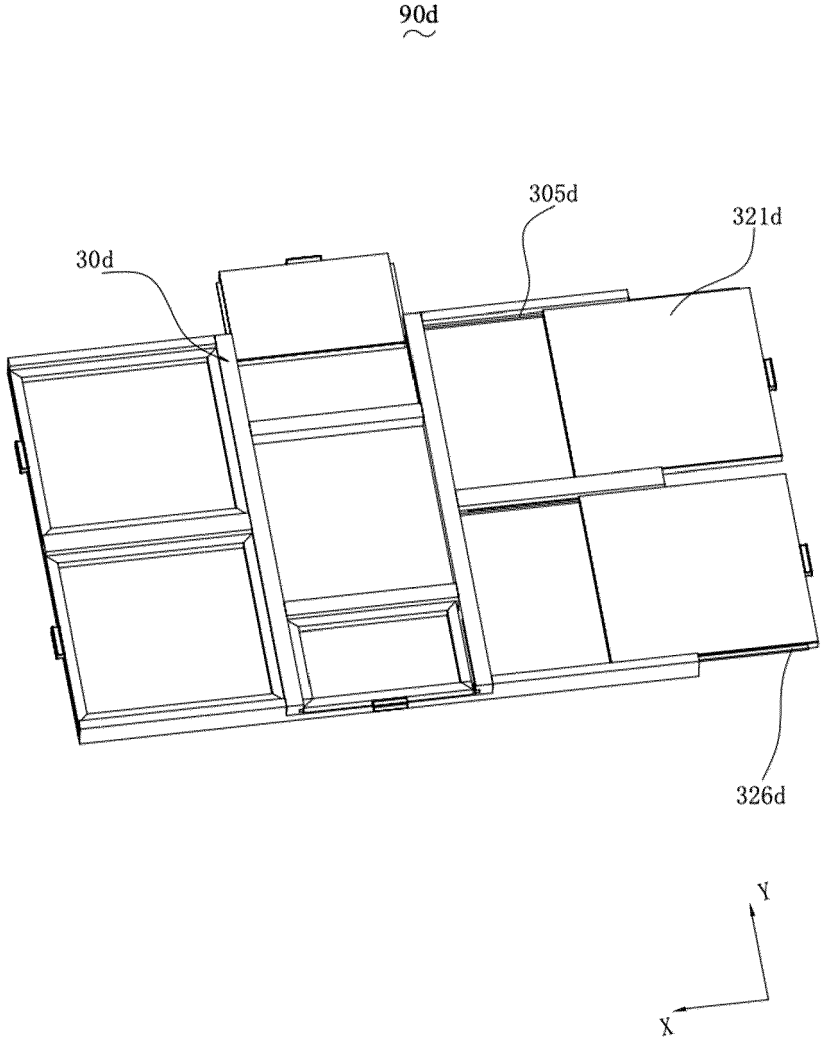

Fig. 26

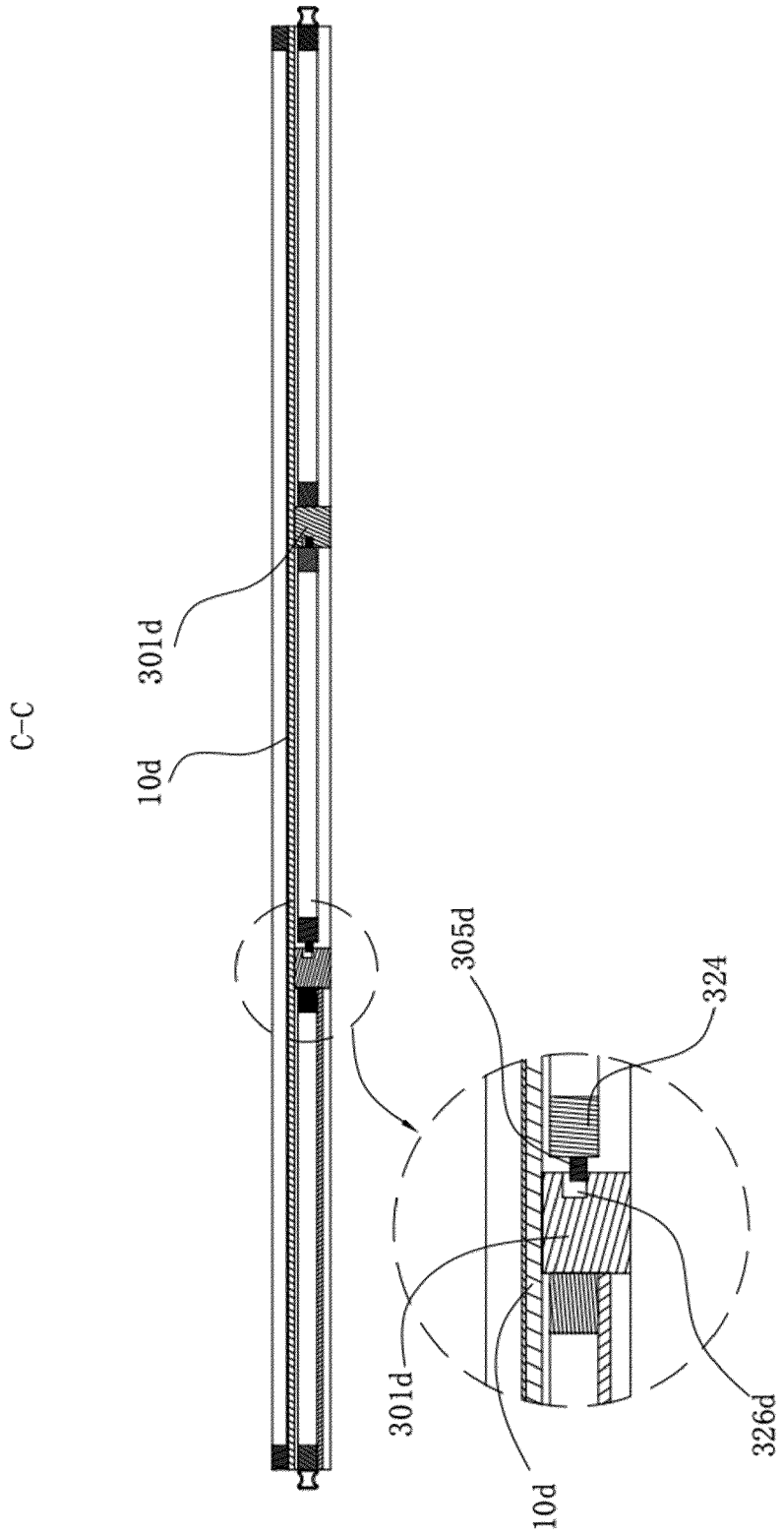

Fig. 27

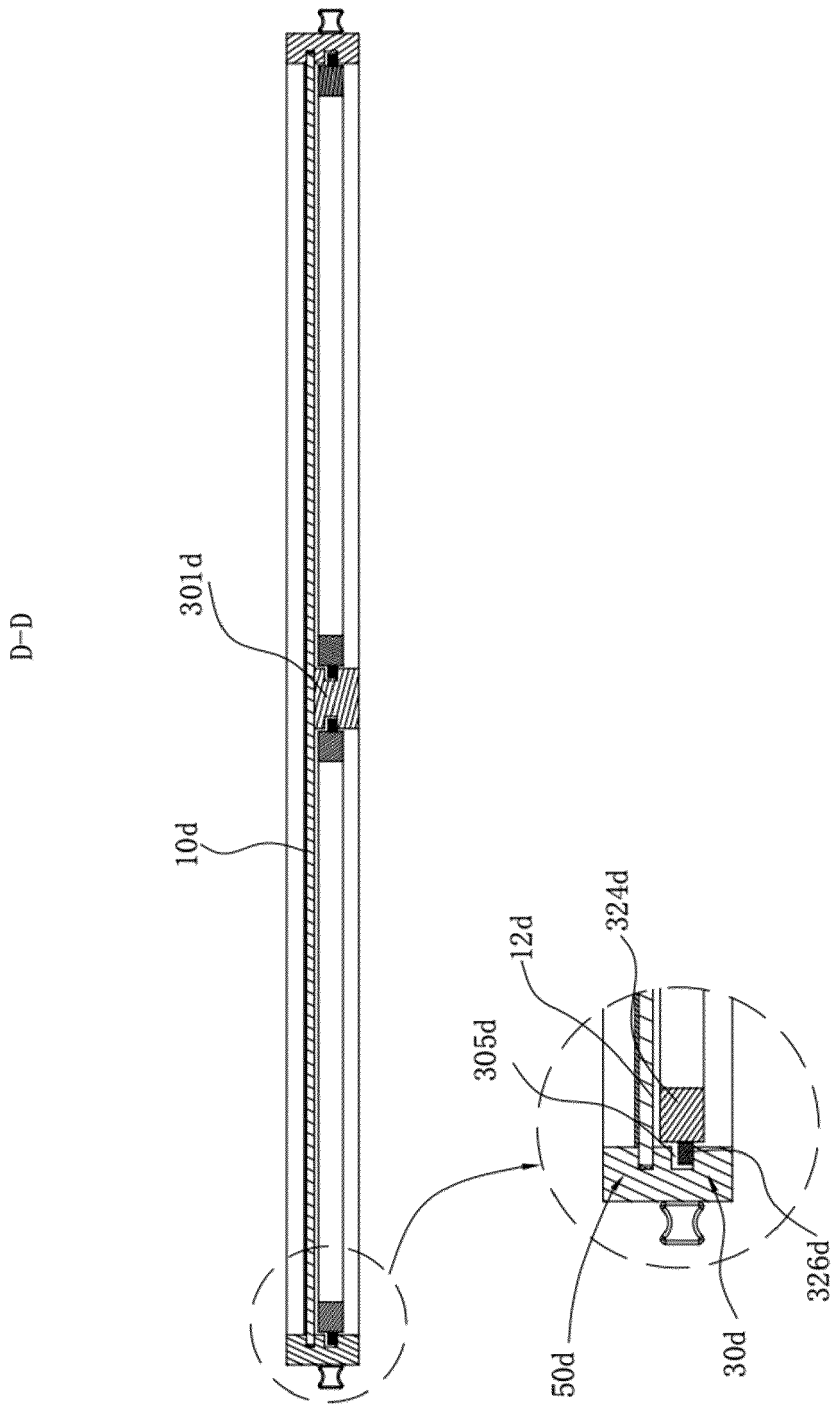

Fig. 28

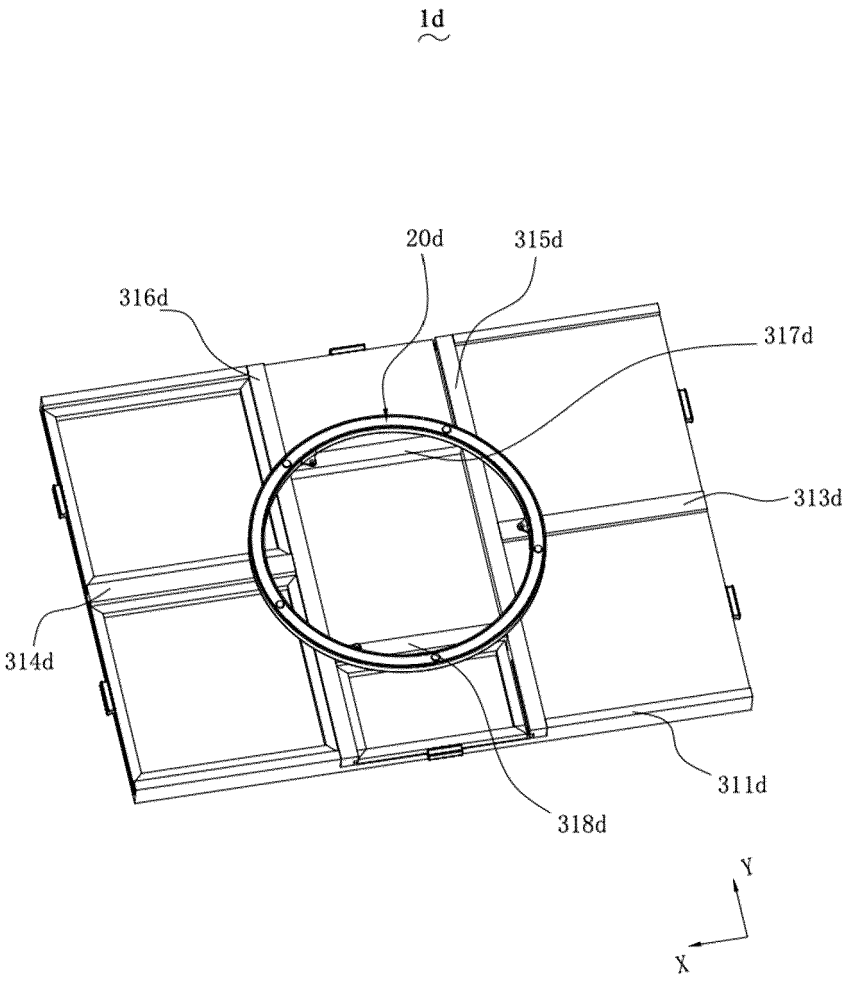
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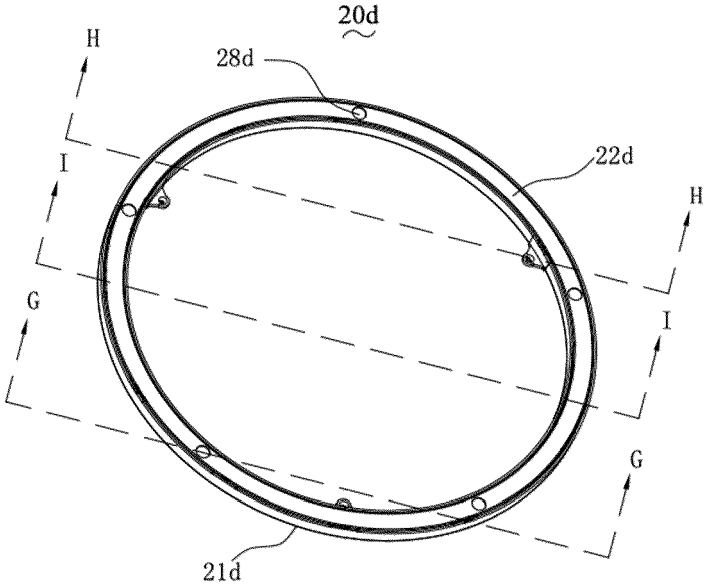
Fig. 29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G
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Fig. 30

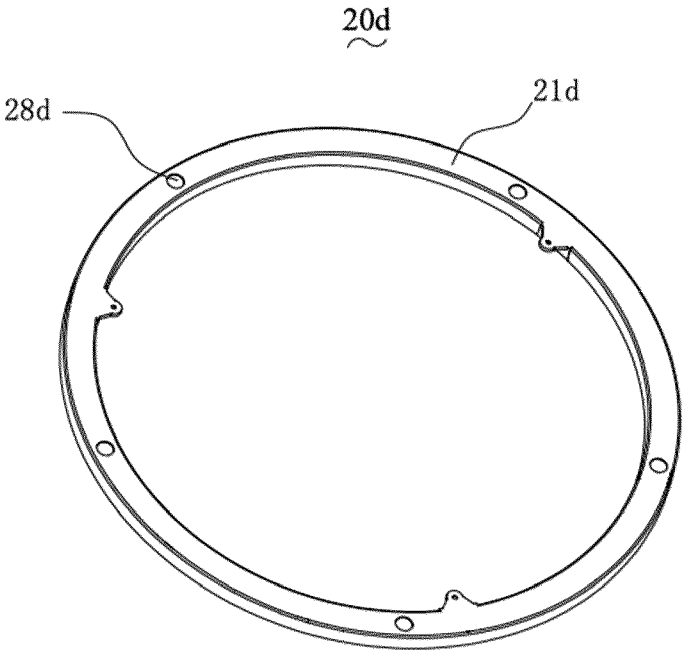

Fig. 31

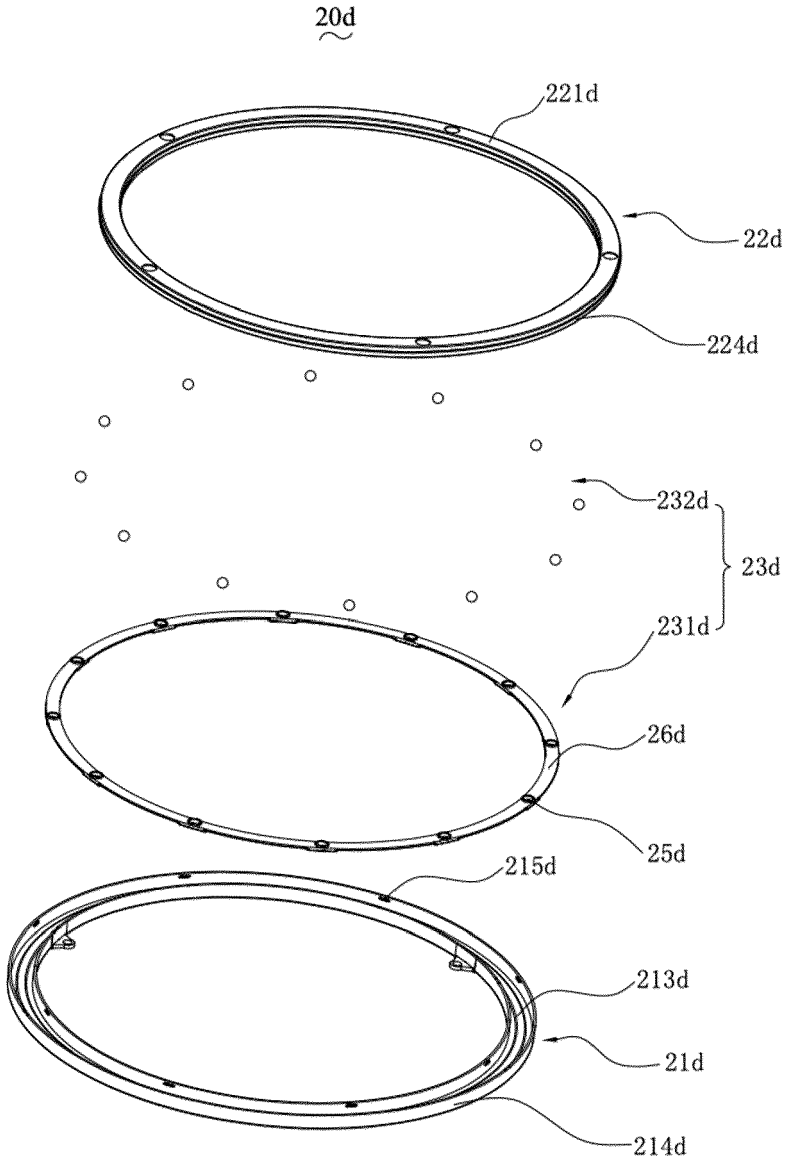

Fig. 32

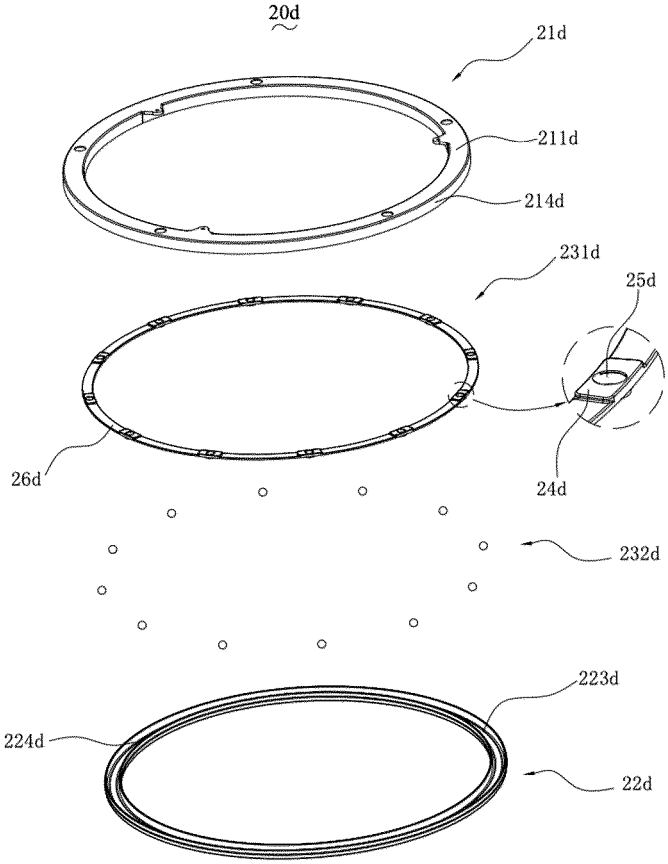
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Fig. 33

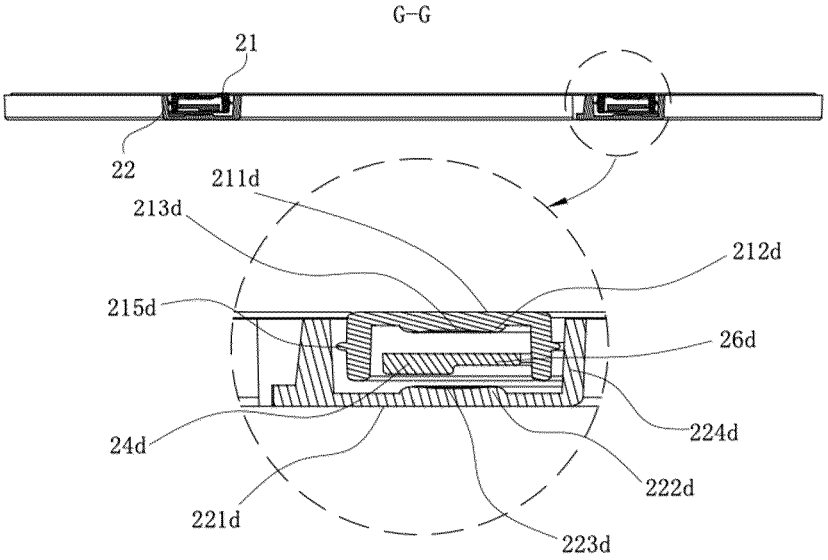
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Fig. 34

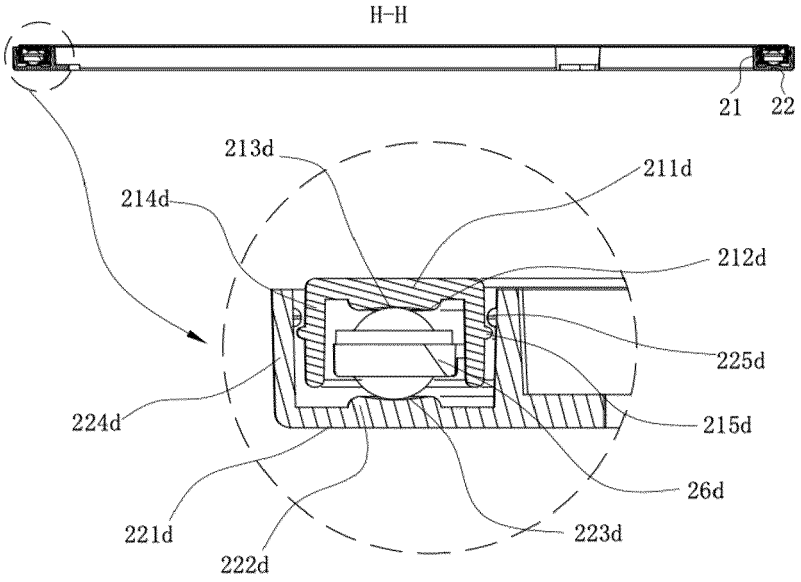
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Fig. 35

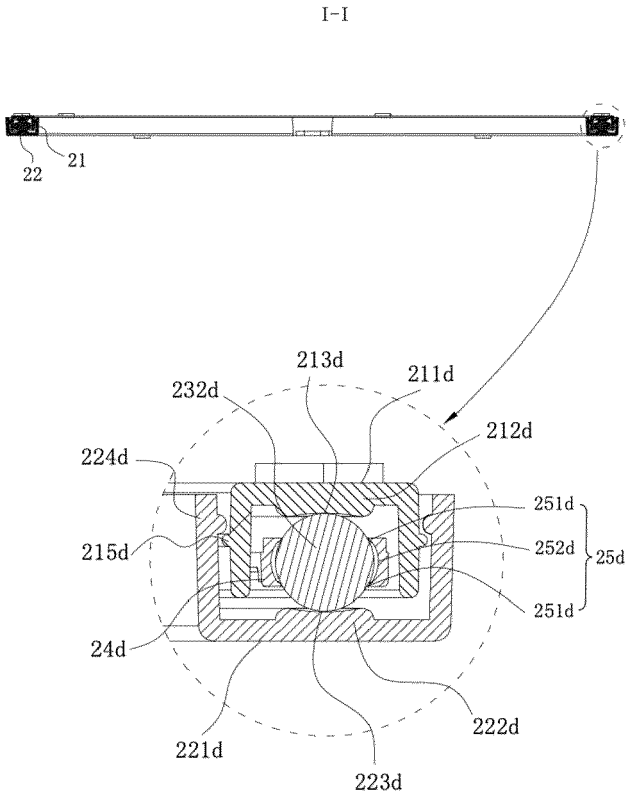
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Fig. 36

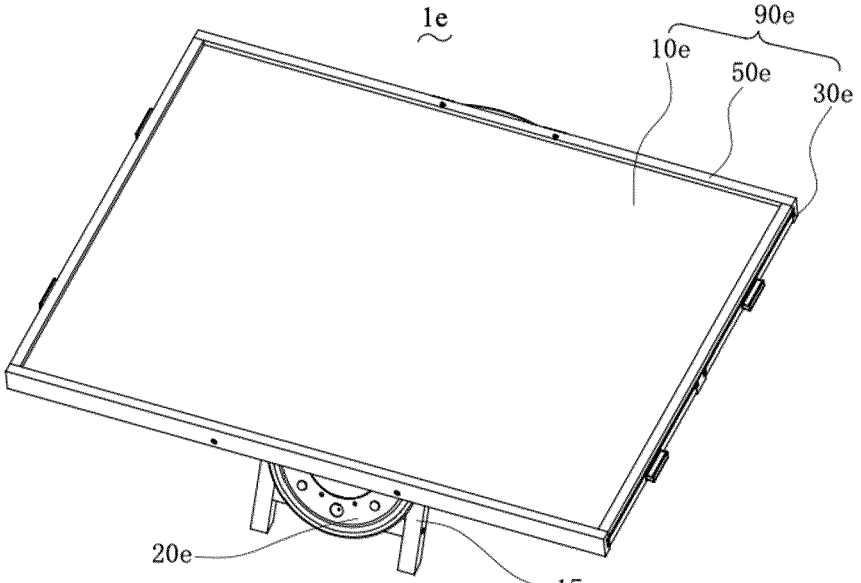


Fig. 37

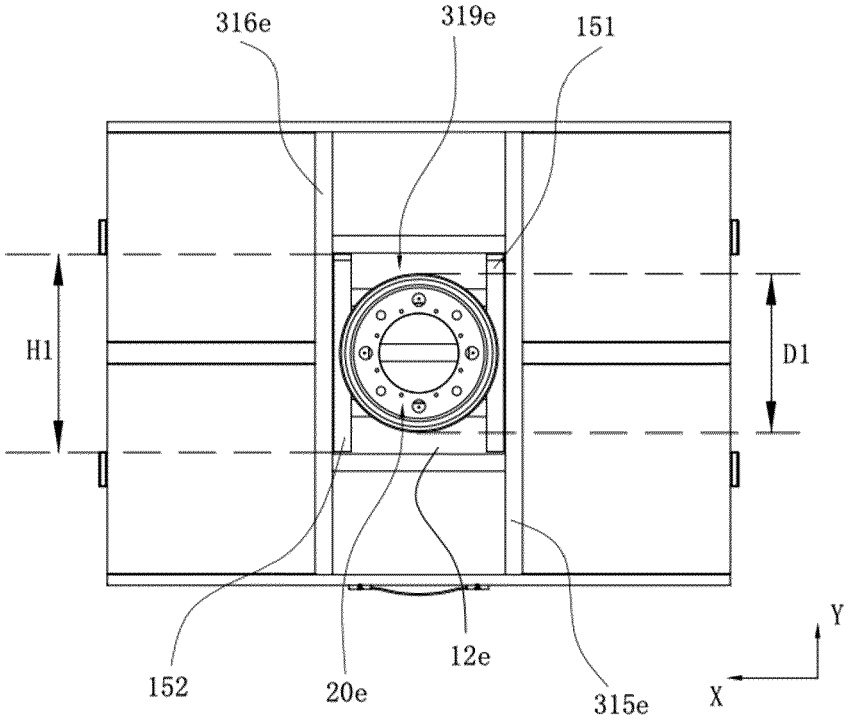
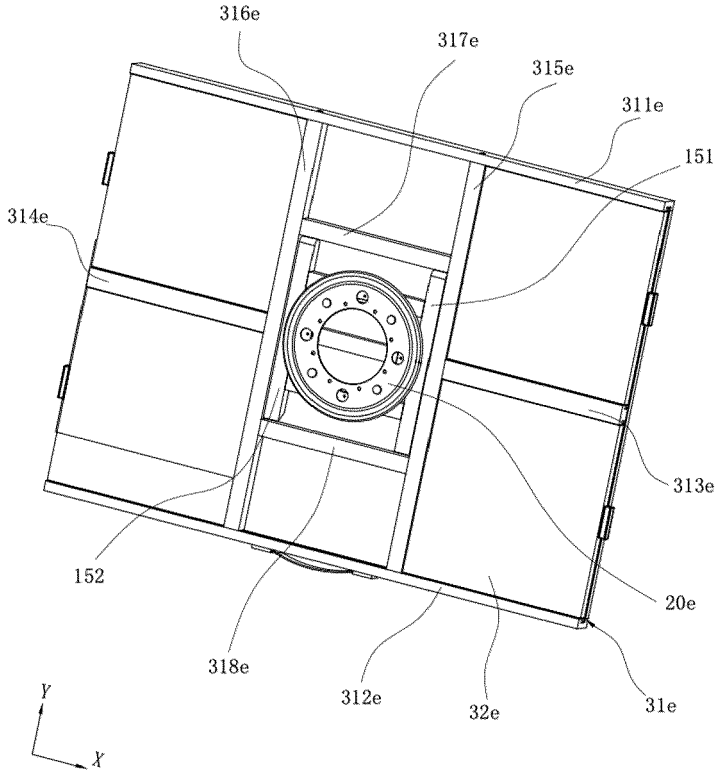


Fig. 38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X

Fig. 39

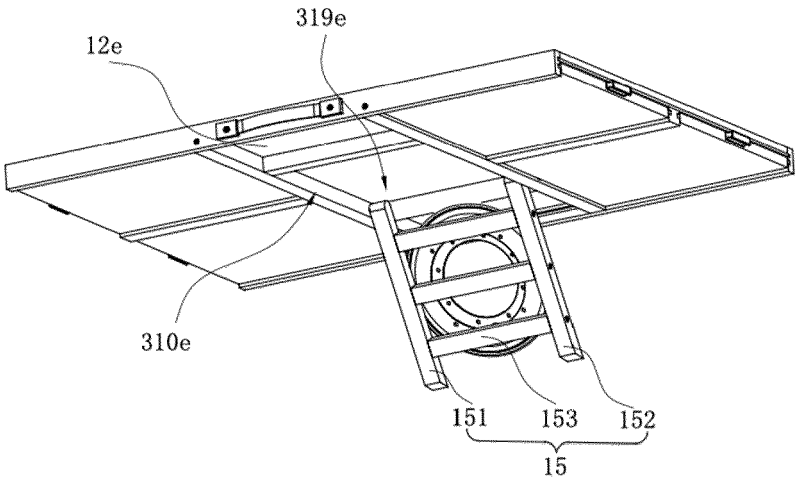
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Fig. 40

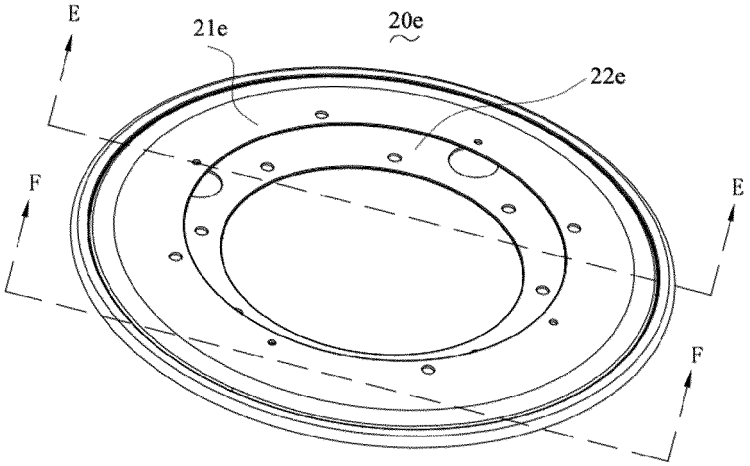

Fig. 41

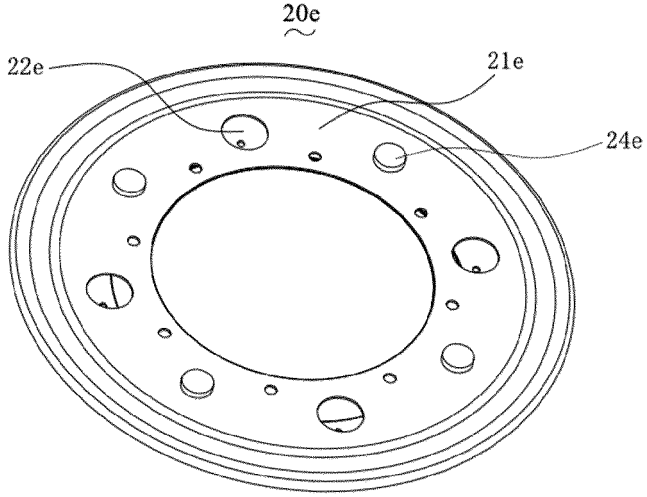

Fig. 42

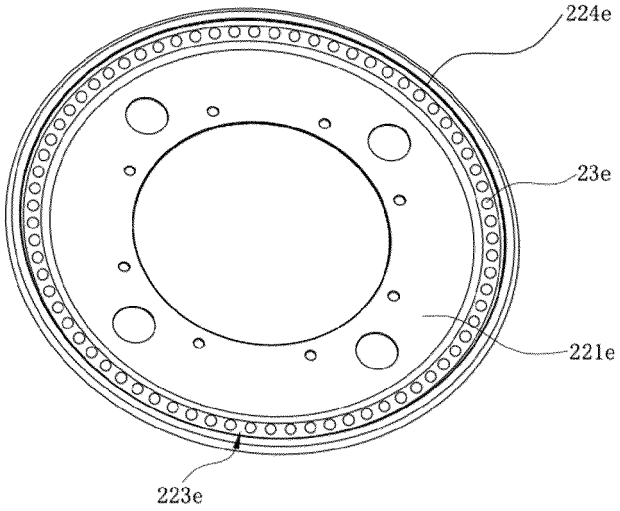

Fig. 43

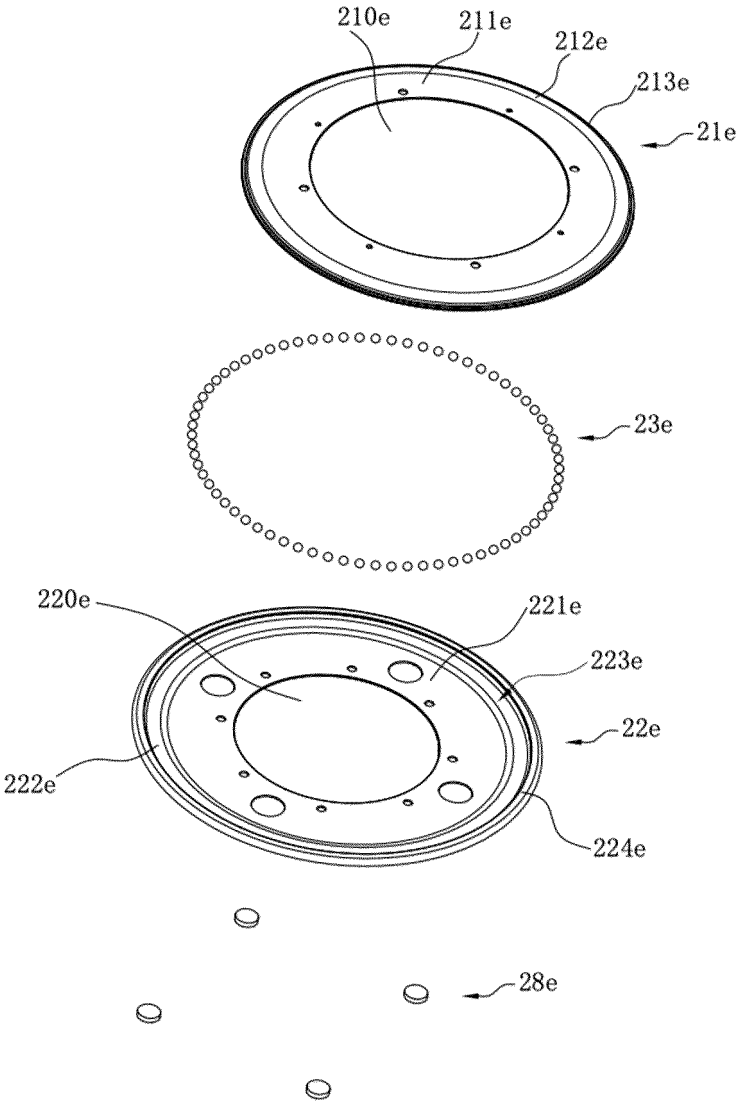

Fig. 44

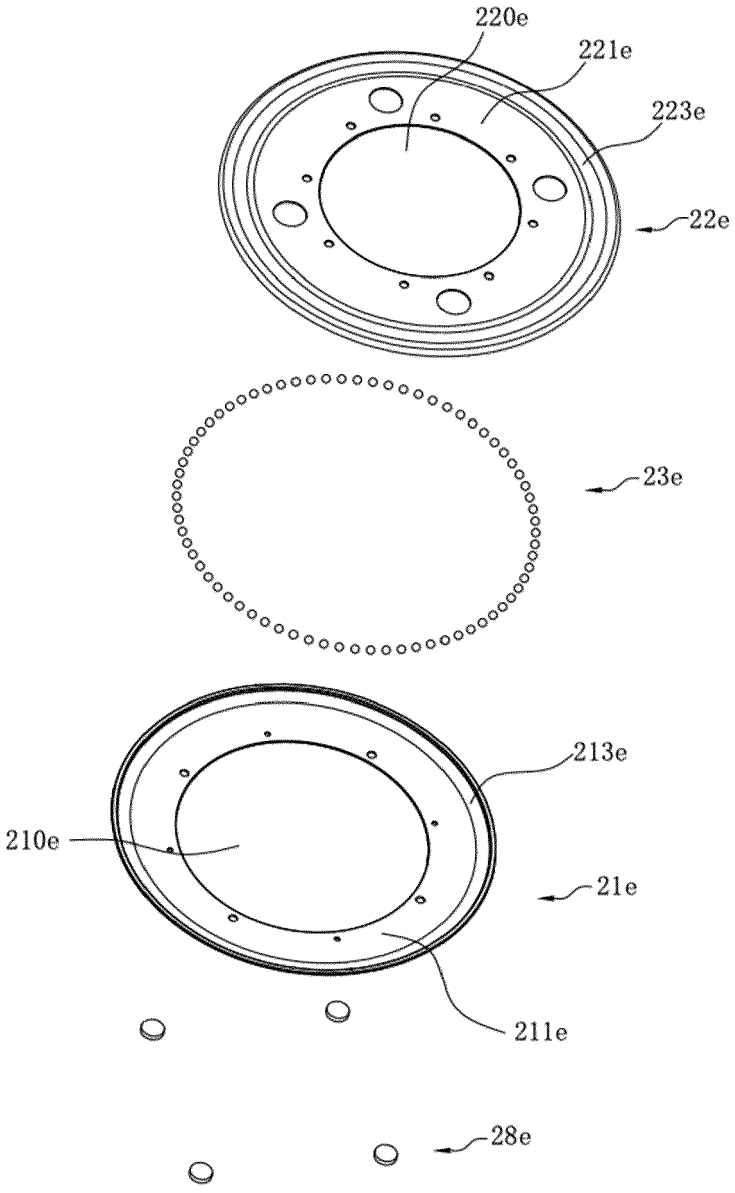

Fig. 45

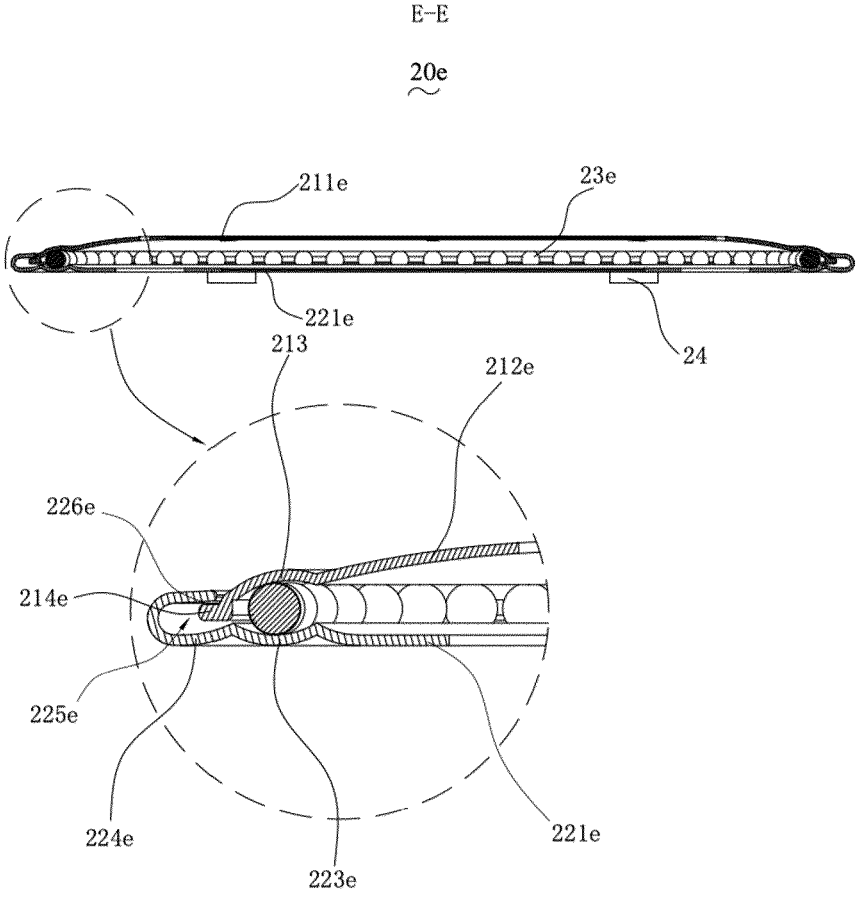
E-E
20e
211e
23e
221e
24
213
212e
226e
214e
225e
224e
223e
221e

Fig. 46

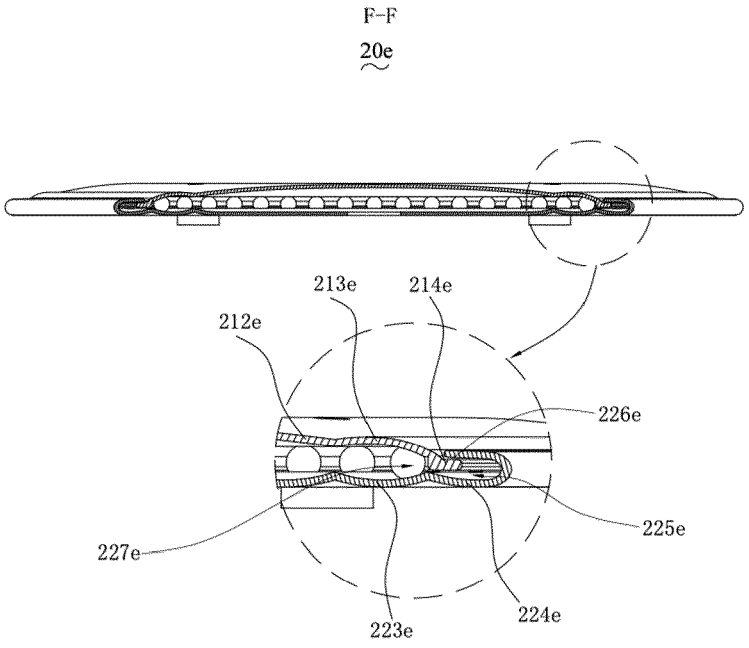
F-F
20e
213e
214e
212e
226e
225e
227e
223e
224e

Fig. 47

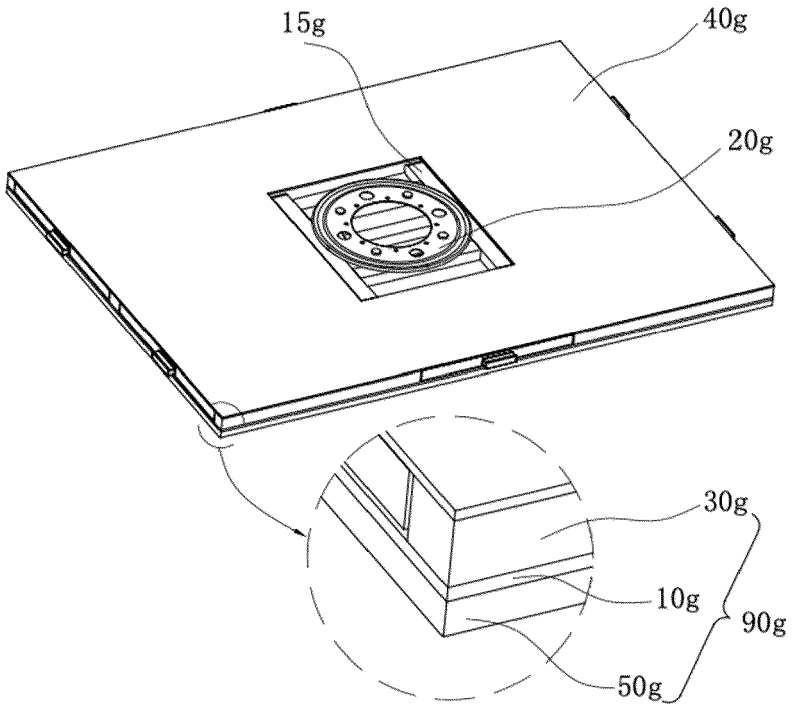

Fig. 48

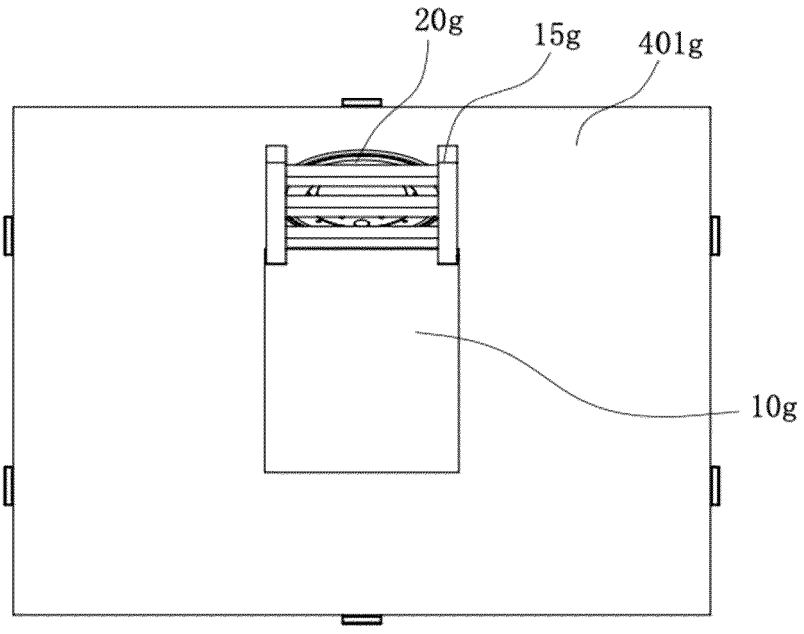

Fig. 49

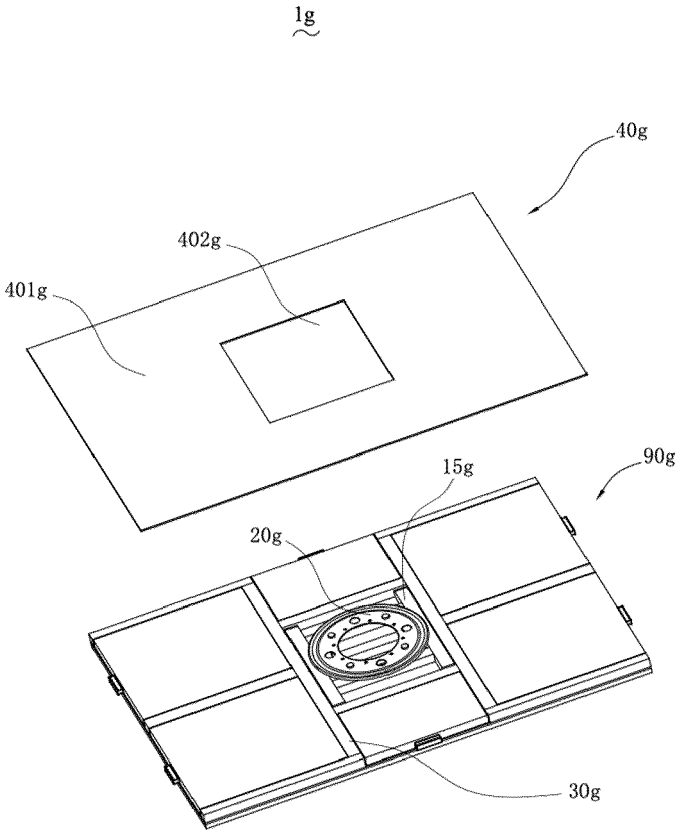

Fig. 50

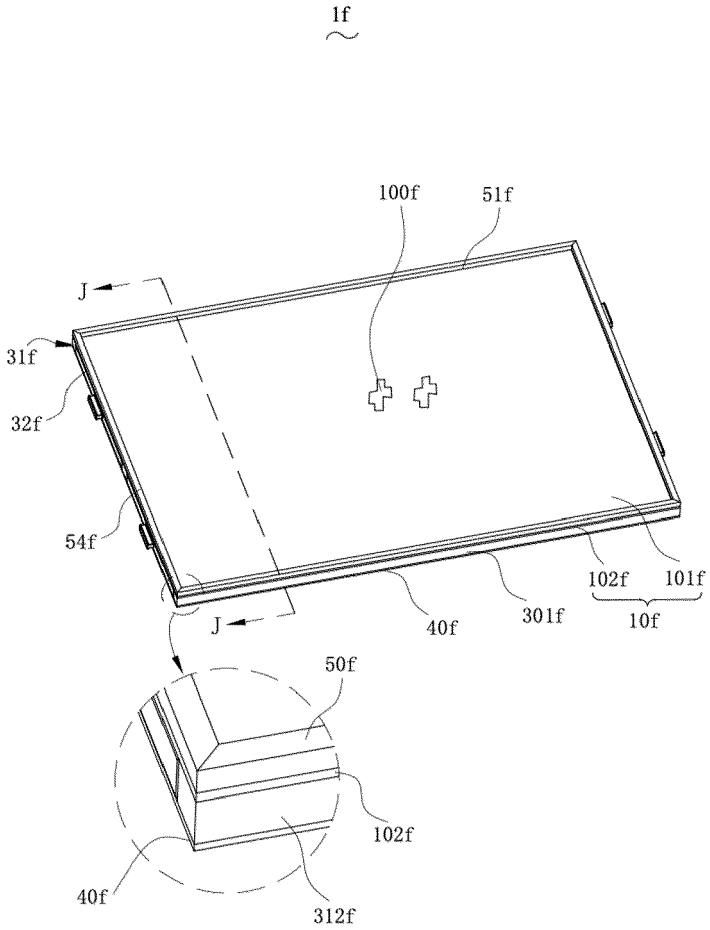

Fig. 51

J-J

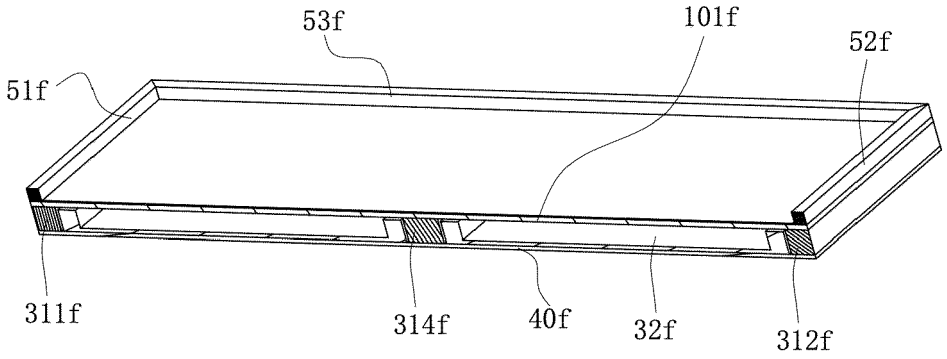

Fig. 52

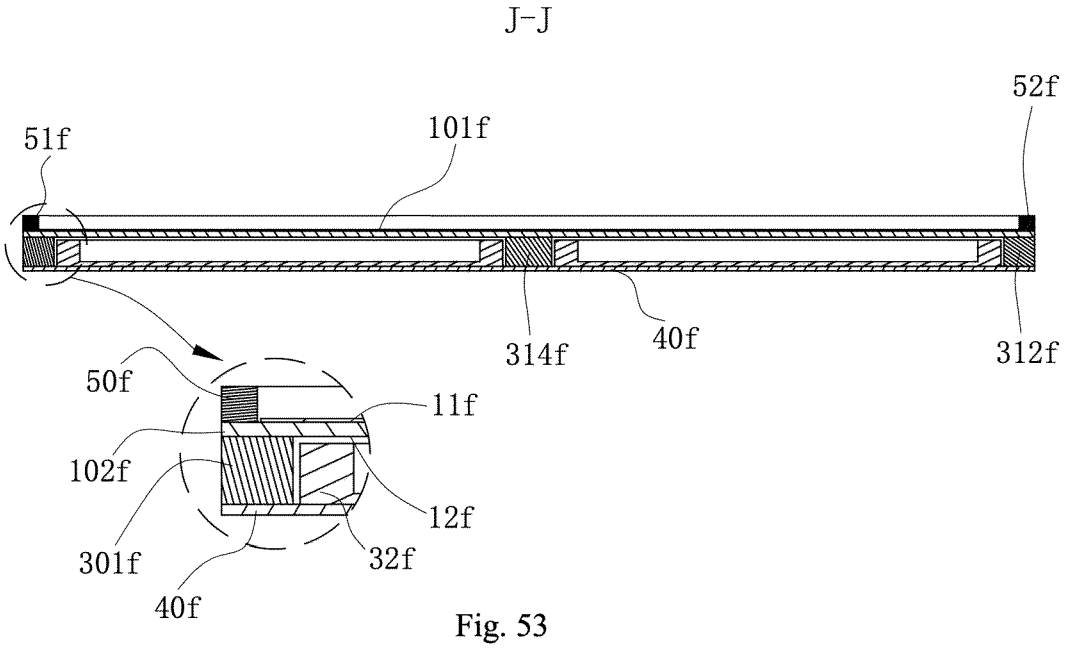
J-J
52f
51f
101f
314f
40f
312f
50f
11f
102f
12f
301f
32f
40f

Fig. 53

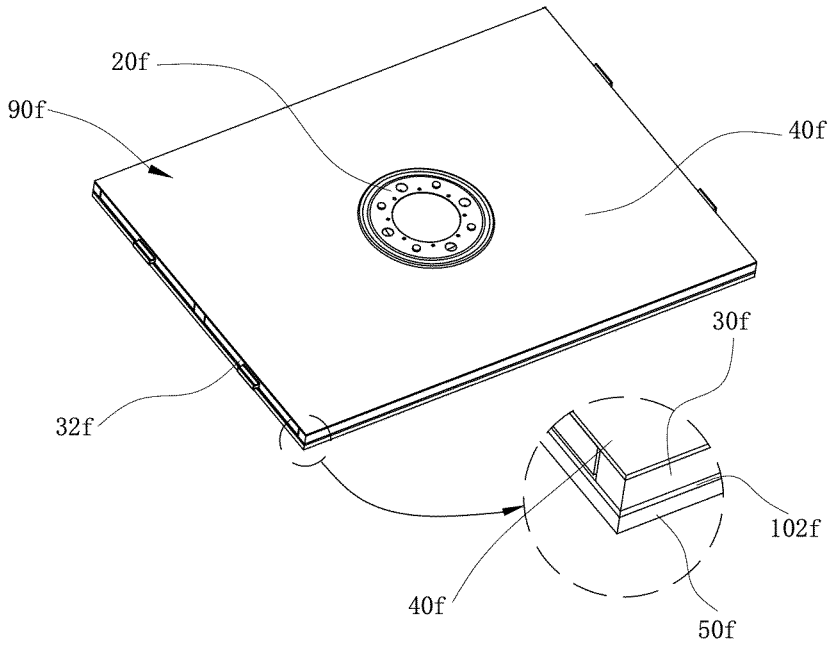
20f
90f
40f
30f
32f
102f
40f
50f

Fig. 54

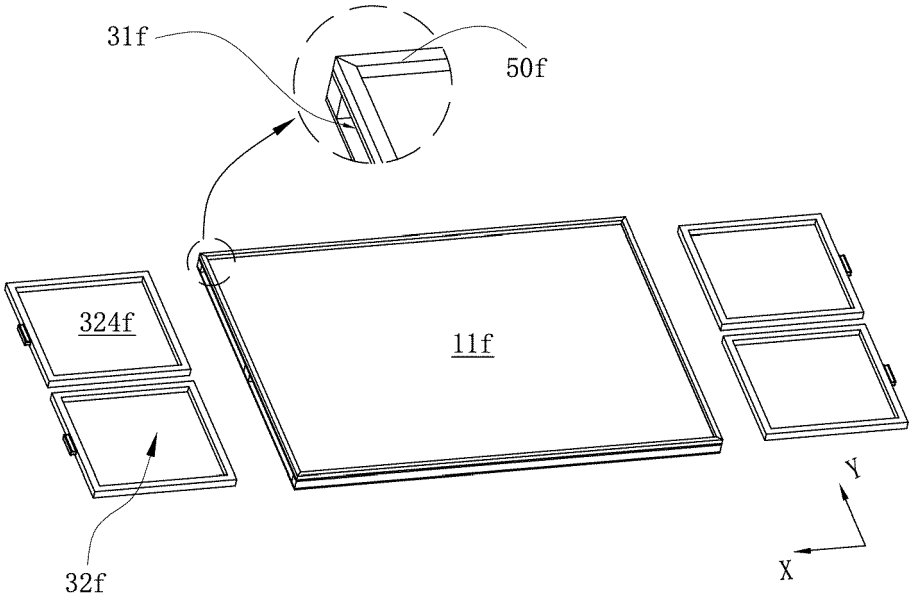
31f
50f
324f
11f
32f
Y
X

Fig. 55

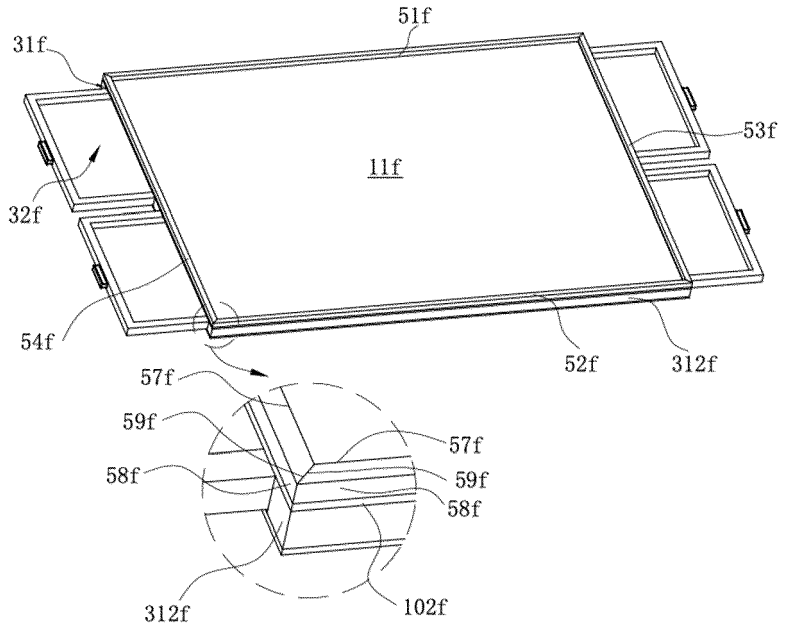
51f
31f
53f
11f
32f
54f
52f
312f
57f
59f
57f
58f
59f
58f
312f
102f

Fig. 56

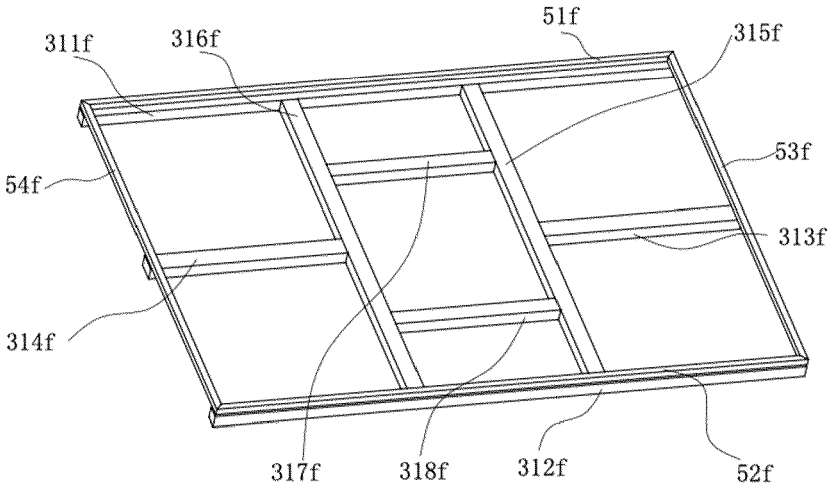

Fig. 57

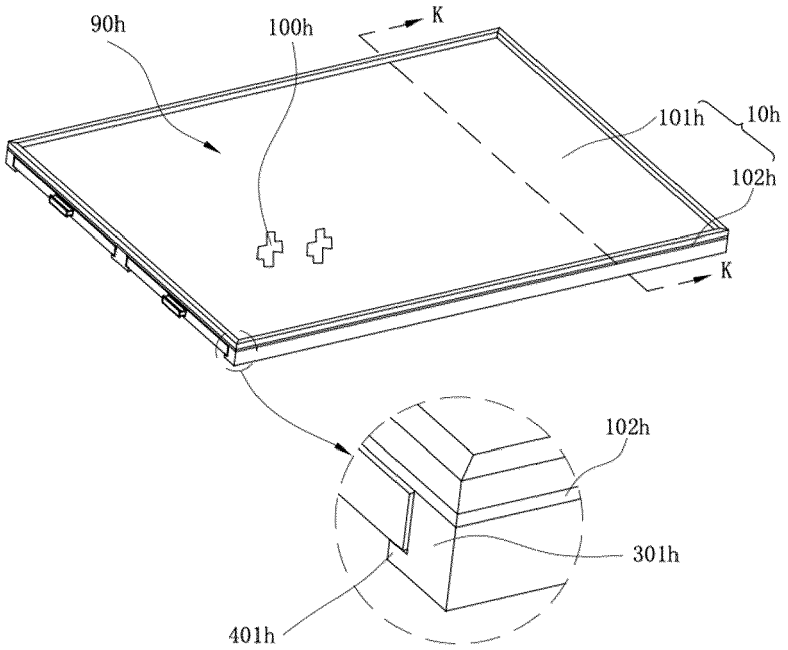

Fig. 58

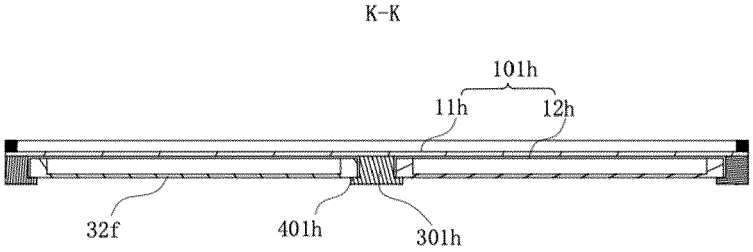

Fig. 59

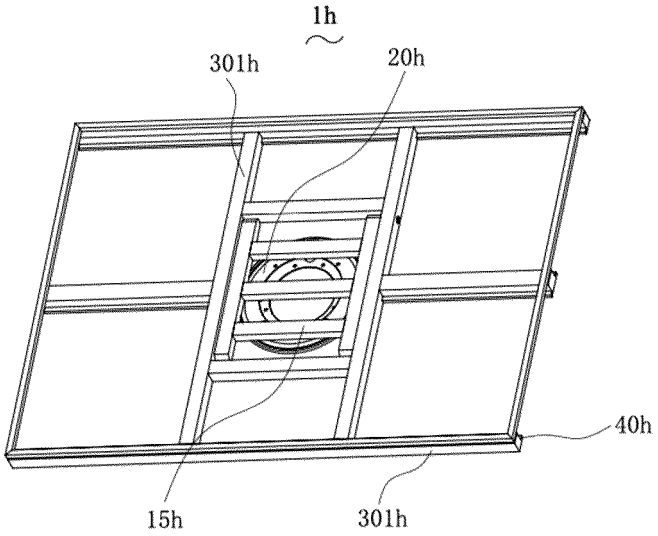
1h
301h
20h
40h
15h
301h

Fig. 60

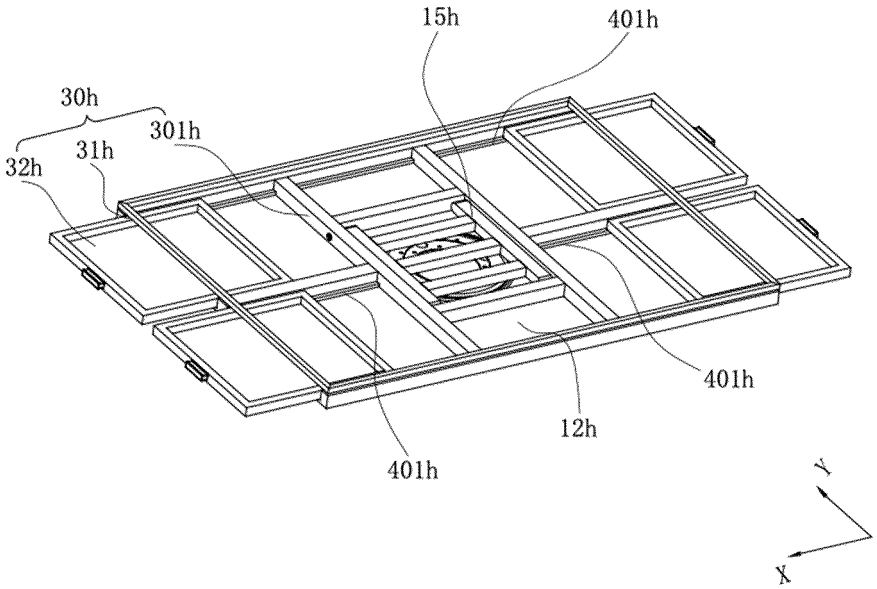
15h
401h
30h
301h
31h
32h
401h
12h
401h
Y
X

Fig. 61

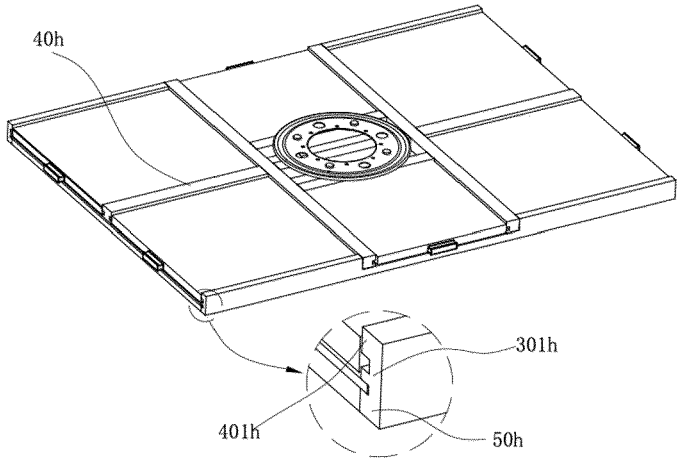

Fig. 62

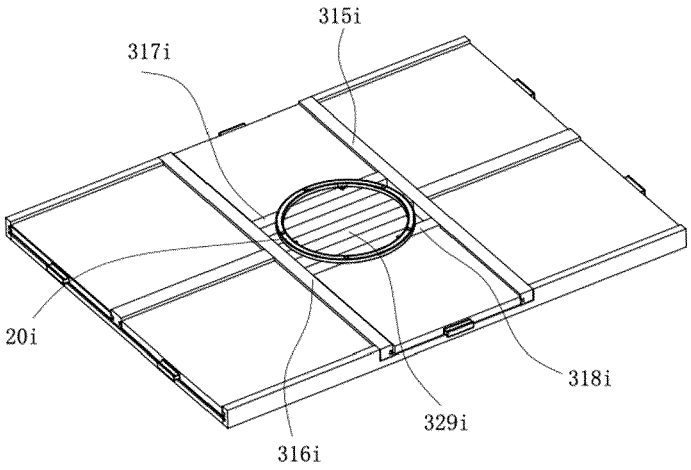

Fig. 63

1j

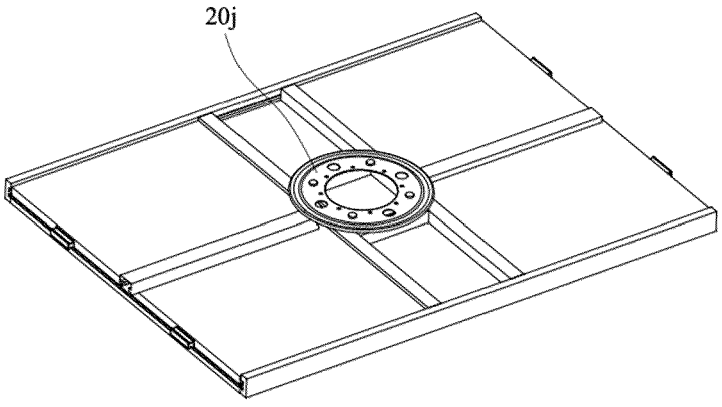

Fig. 64

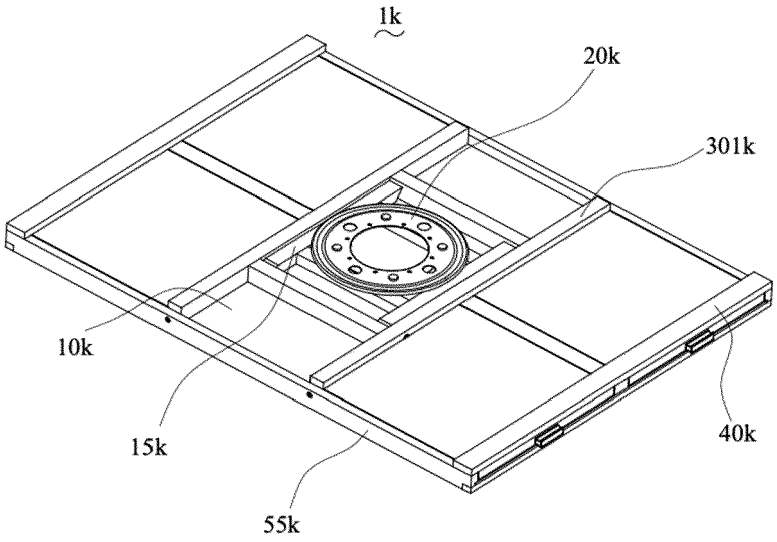
1k
20k
301k
10k
15k
55k
40k

Fig. 65

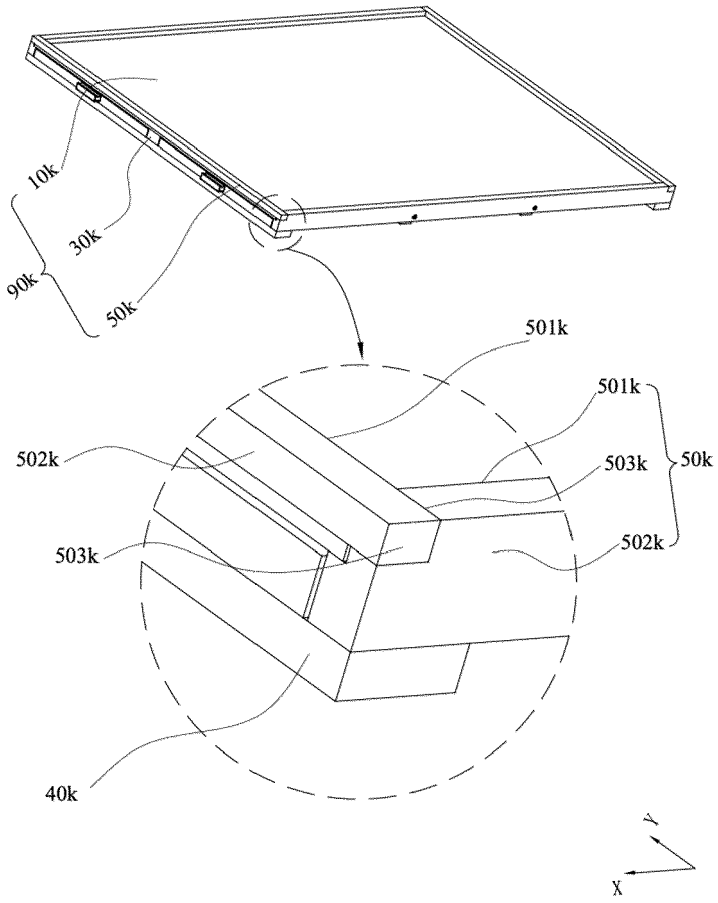
10k
30k
90k
50k
501k
501k
502k
503k
50k
503k
502k
40k
Y
X

Fig. 66

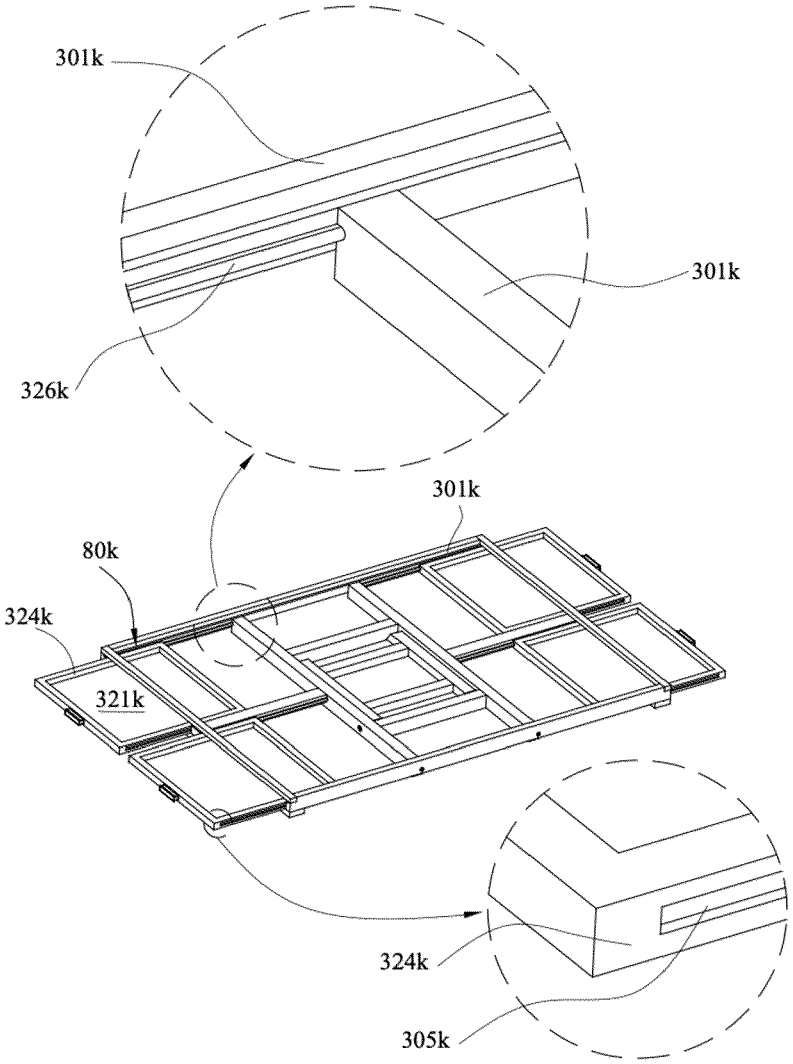

Fig. 67

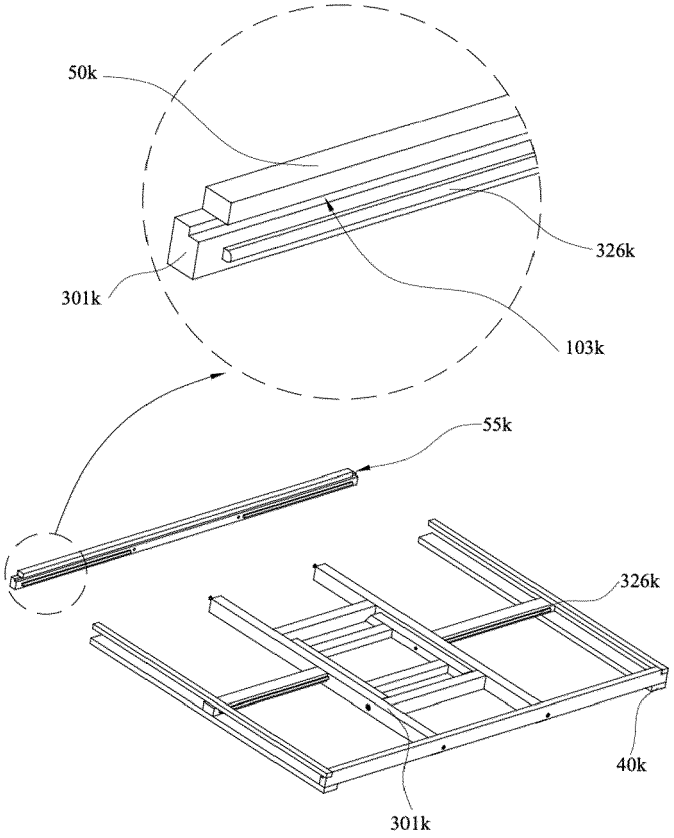
50k
326k
301k
103k
55k
326k
40k
301k

Fig. 68

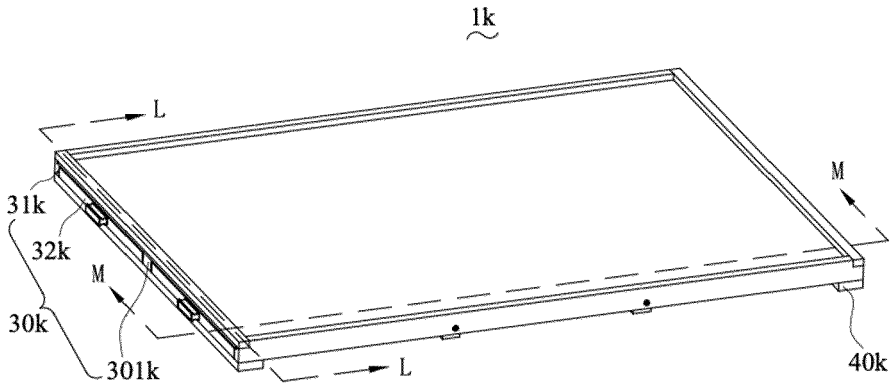
1k
L
M
31k
32k
M
30k
301k
L
40k

Fig. 69

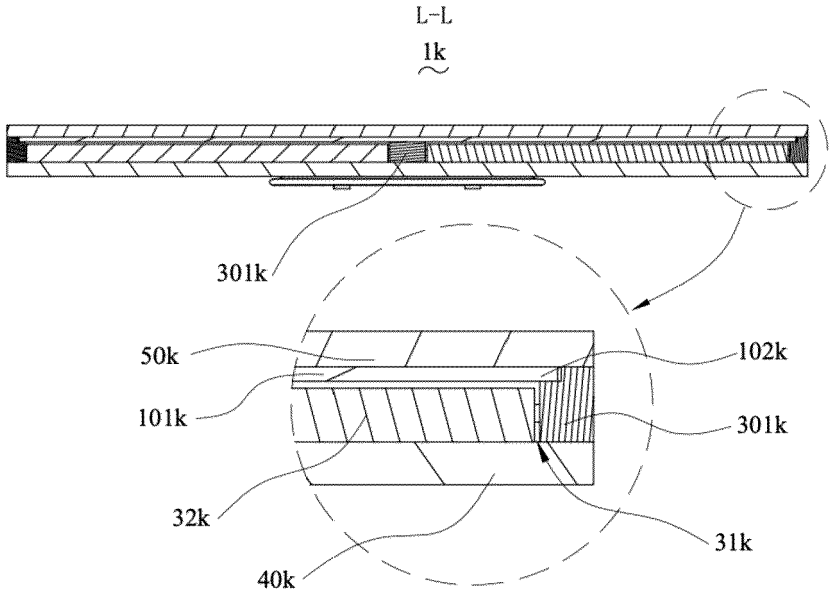
L-L
1k
301k
50k
102k
101k
301k
32k
31k
40k

Fig. 70

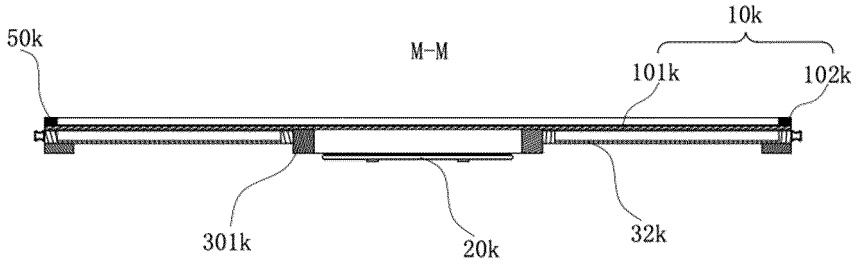
50k
M-M
10k
101k
102k
301k
20k
32k

Fig. 71

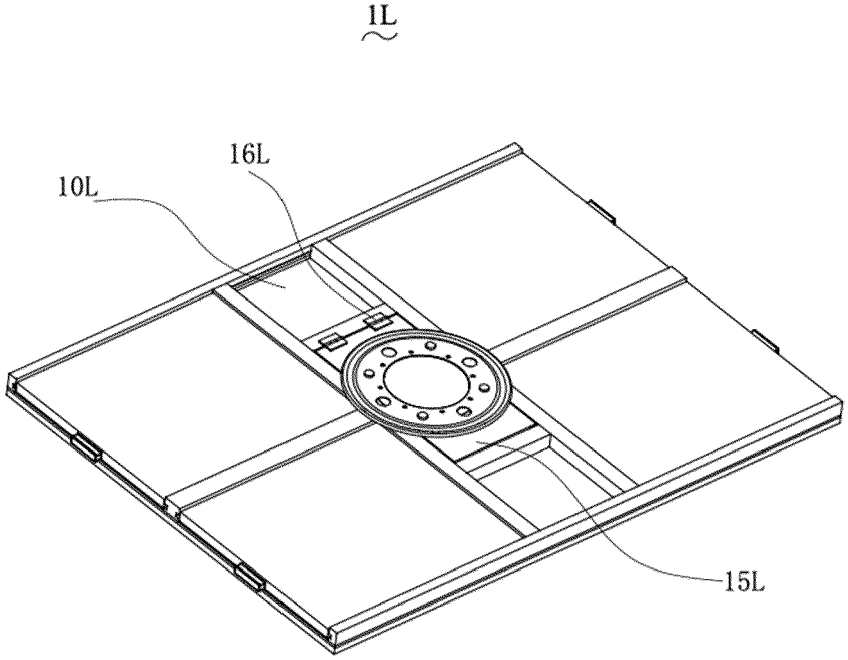

Fig. 72

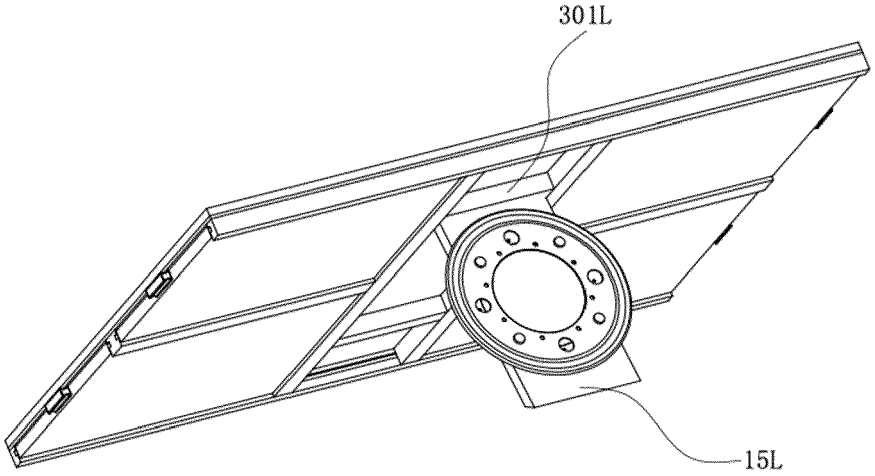

Fig. 73

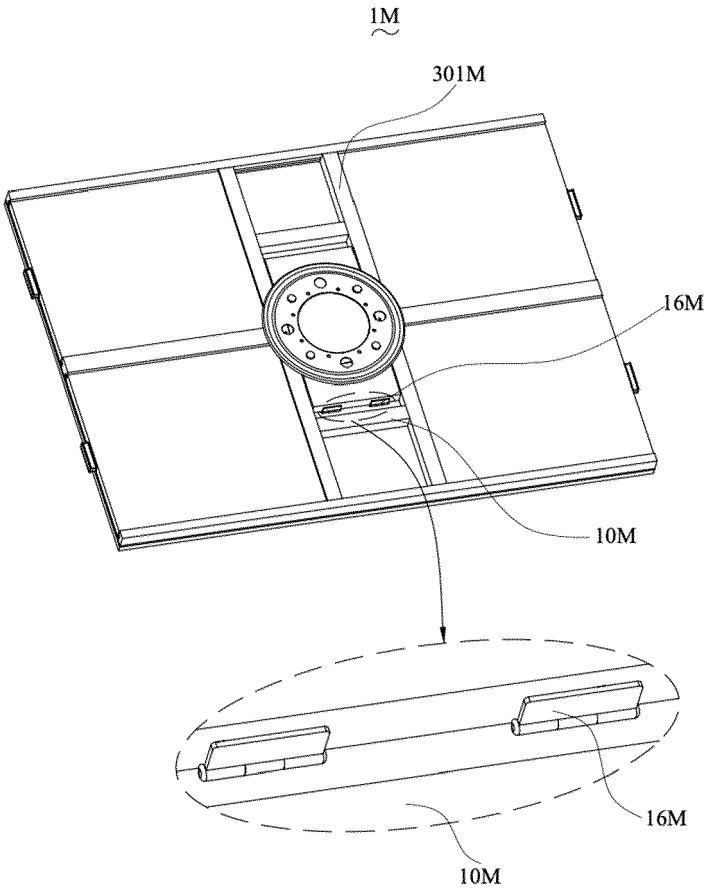

Fig. 74

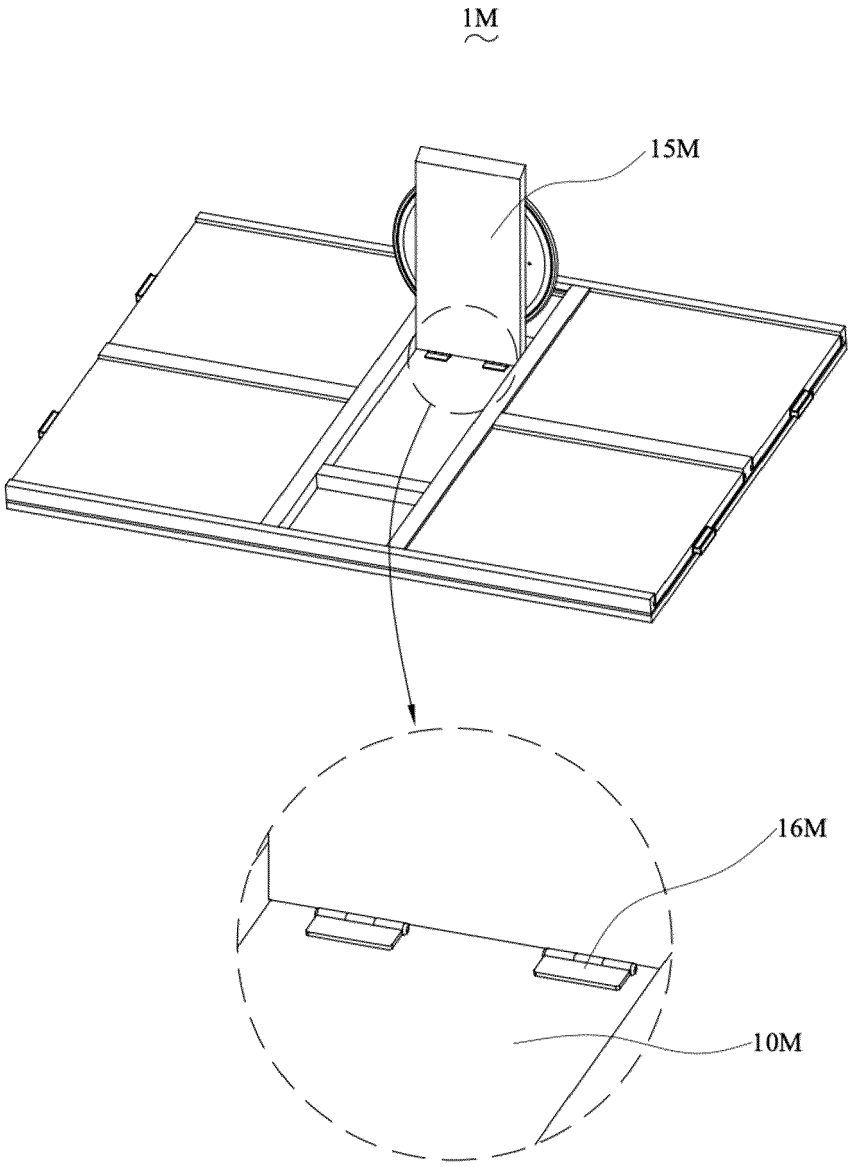

Fig. 75

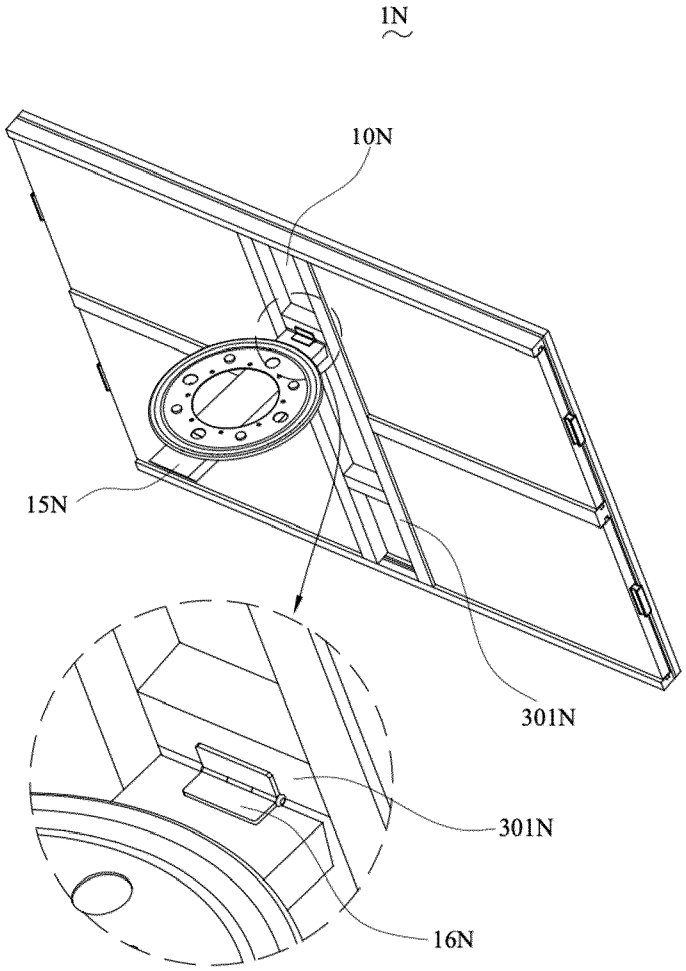

Fig. 76

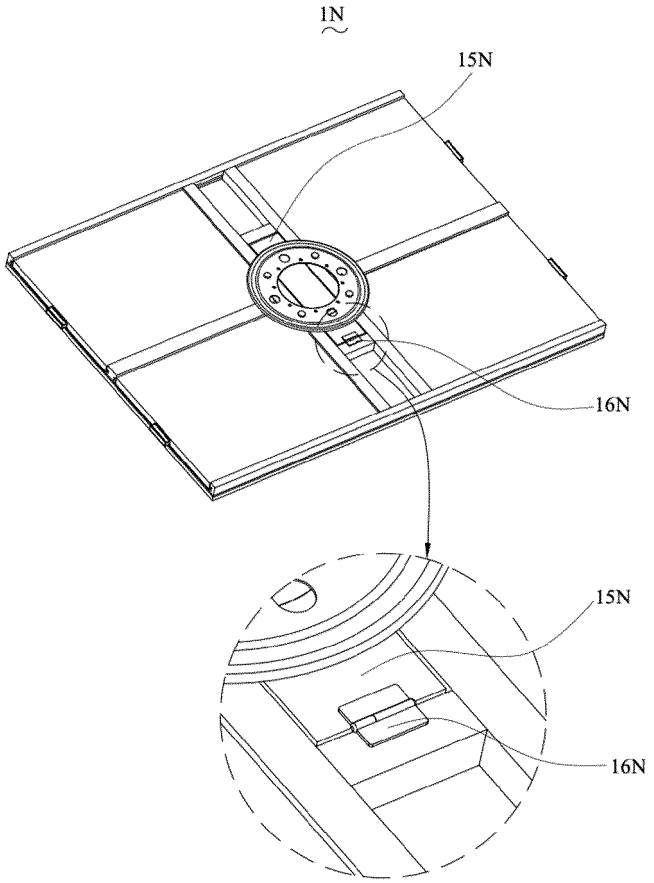

Fig. 77

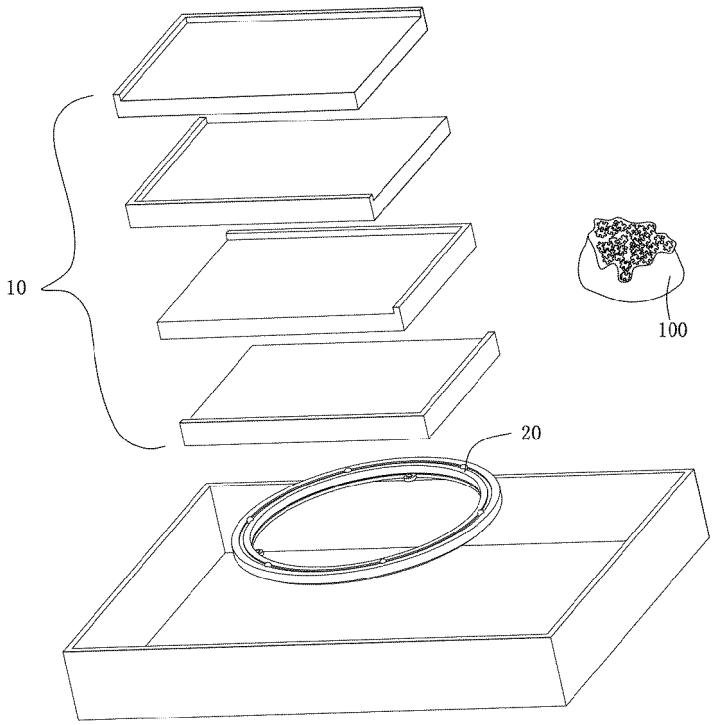

Fig. 78

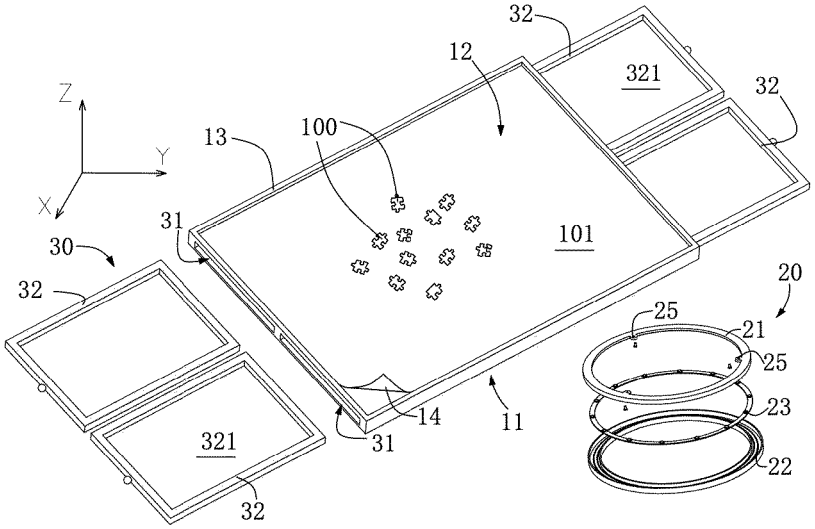

Fig. 79

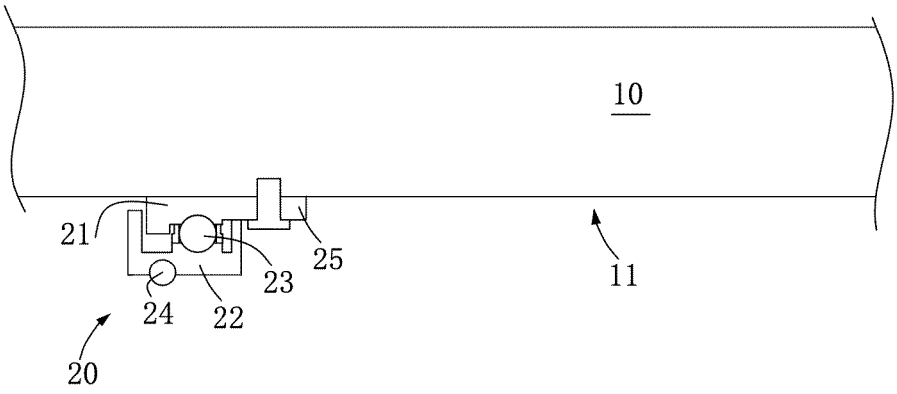

Fig. 80

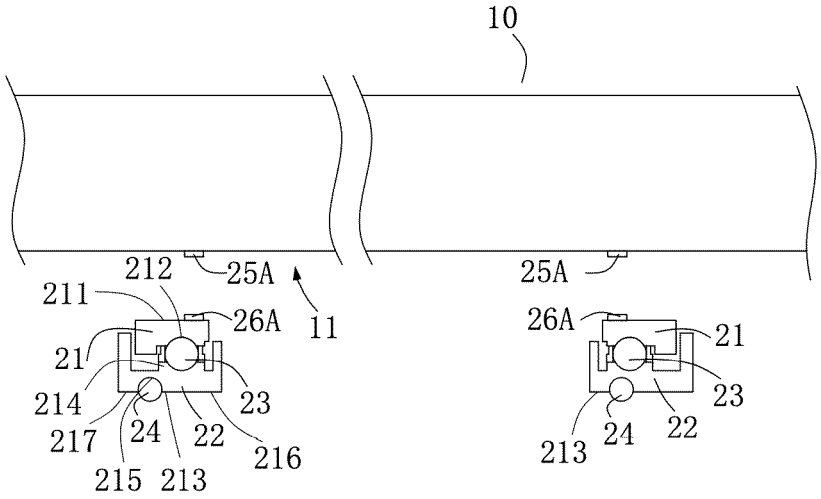

Fig. 81

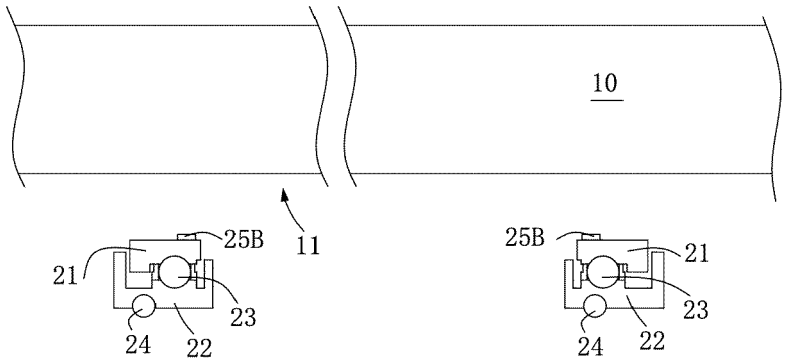

Fig. 81A

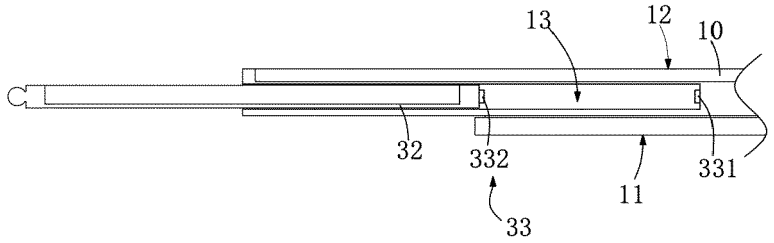

Fig. 82

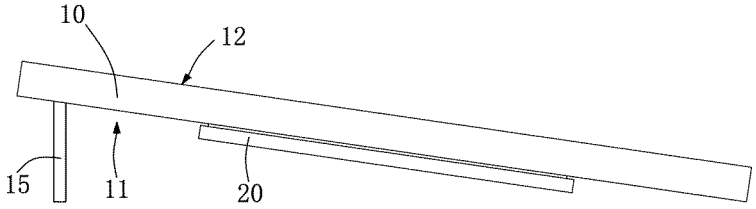

Fig. 83

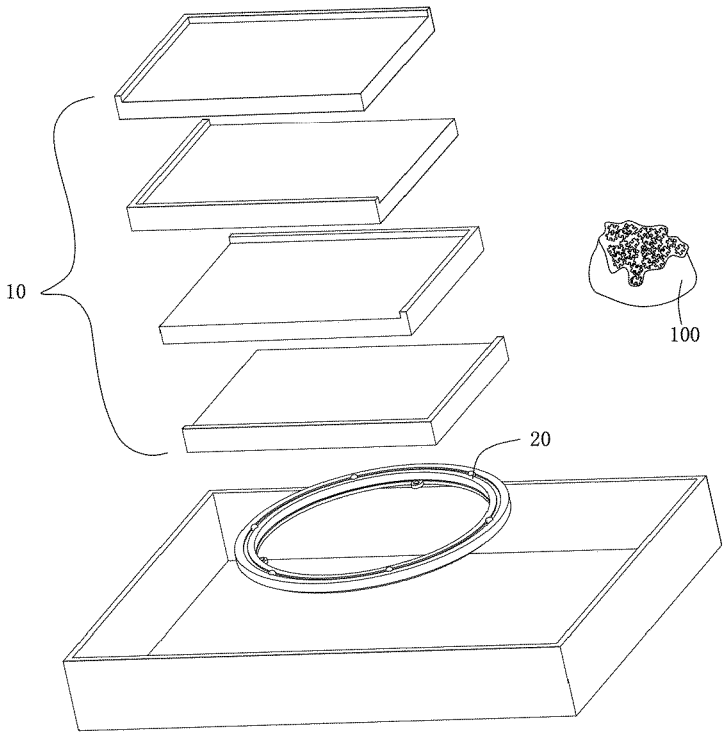

Fig. 84