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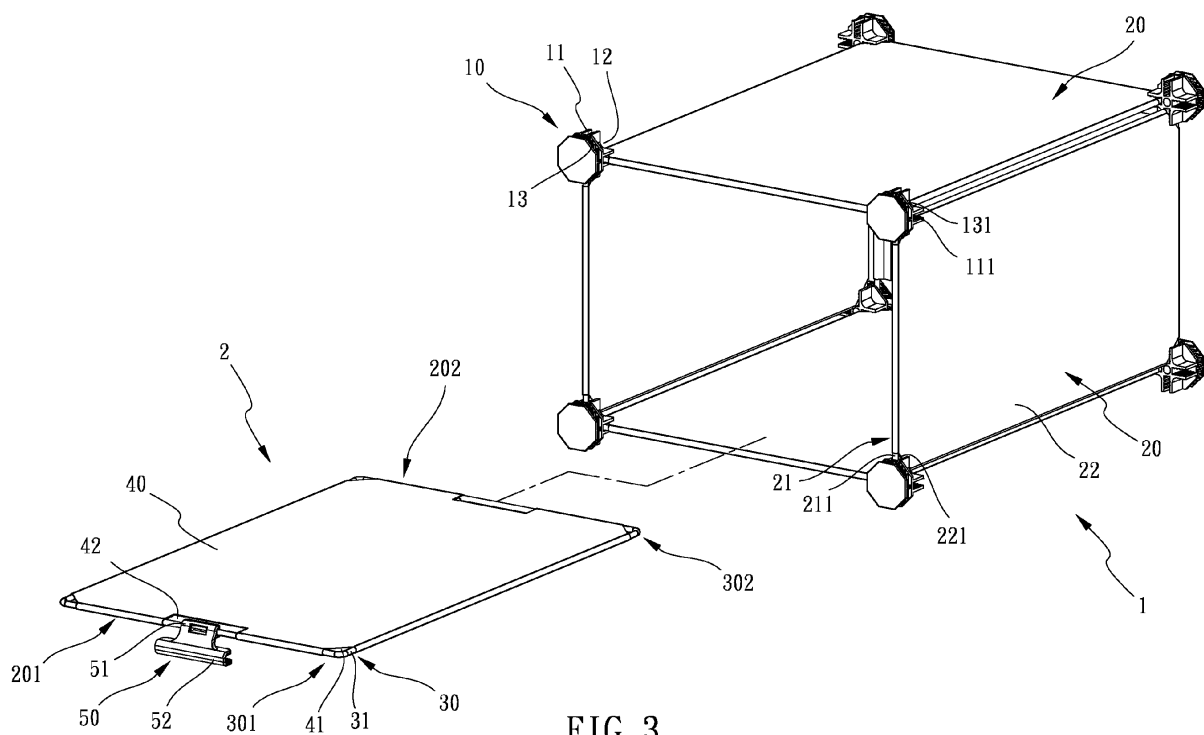
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(54) Storage case with a partition shelf

(57) A storage case with a partition shelf includes a case 1 and a partition shelf 2. The case 1 has a plurality of side walls 101, a bottom wall 102, an opening end 103 and a storage space 104. The partition shelf 2 has a first end 201 and a second end 202 at two ends thereof. The partition shelf 2 has a partition frame 30, a partition portion 40 and a clamping member 50. The clamping mem-

ber 50 is assembled on the partition shelf 2. The clamping member 50 has a clamping end 51 and a positioning end 52; the clamping end 51 clamps a center portion of the partition frame 30 and the positioning end 52 is connected to the case 1 so that the partition shelf 2 is received in the storage space 104.

**FIG. 3****EP 2 737 826 A1**

Description

Field of the Invention

[0001] The present invention relates to a storage case, and more particularly to a storage case with a partition shelf.

Description of Related Art

[0002] The conventional storage case comprises a case. The case has a plurality of shelves and connectors. The shelves define a storage space and enclose the storage space. The shelves are assembled to each other via the connectors, so as to form the case. The case has an opening opened at one end thereof. Furthermore, the case could be connected to additional cases via the connectors, so that a user could use the additional cases according to their requirement.

[0003] However, each case of the conventional storage case has only one storage space defined therein. In other words, there is no partition structure, such as a partition shelf, assembled in the storage space, so as to separate the storage space into a plurality of further storage spaces. When the user wants to separate two objects in the conventional storage case, the user only could use the additional cases. Therefore, the conventional storage case is inconvenient for the user to use.

[0004] The main objective of the present invention is to provide an improved tool storage case.

[0005] To achieve the objective, a storage case with a partition shelf comprises a case and a partition shelf, the case having a plurality of side walls, a bottom wall and an opening end, the side walls, the bottom wall and the opening end defining a storage space and enclosing the storage space, the partition shelf having a first end and a second end at two ends thereof, the partition shelf having a partition frame, a partition portion and a clamping member, the clamping member assembled at the first end of the partition shelf, the partition portion sleeving the partition frame, the clamping member having a clamping end and a positioning end, the clamping end clamping a center portion of the partition frame, the positioning end connected to the case so that the partition shelf is received in the storage space. Wherein a cross section of the positioning end is U-shaped; the positioning end has a plurality of non-slip portions defined on an inner wall thereof; the partition frame has a clamped portion defined at a center portion of one end thereof; the partition portion has an opening portion defined at a center portion of one end thereof; the opening portion corresponds to the clamped portion and the clamping end clamps the clamped portion of the partition frame; a cross section of the clamping end is C-shaped and a cross section of the partition frame is circle-shaped, so that the clamping end is pivotally rotatable relative to partition frame; the clamping end has a first opening opened at a lateral side thereof; an arc length of the first opening is

less than a quarter arc length of the clamping end; the clamping end has a first opening opened at a lateral side thereof; the positioning end has a second opening opened at a lateral side thereof; the first opening and the second opening are both opened toward the same direction; the partition shelf has another clamping member assembled at the second end thereof; when the partition shelf is in use, one positioning end of one clamping member at the second end of the partition shelf is connected to an upper portion of the bottom wall of the case and another positioning end of another clamping member at the first end of the partition shelf is abutted against a lower portion of the storage space; the case has a plurality of connectors, and the side walls and the bottom wall are performed as a plurality of shelves; the case is assembled by the connectors and the shelves; each connector has a plurality of first slots transversely defined at one end thereof; the first slots are used to assemble the shelves; each first slot and each second slot respectively have a plurality of non-slip ribs defined therein; each shelf comprises a frame and a covering portion; the frame is sleeved by the covering portion; the frame has four assembling portions respectively defined at four corners thereof; the covering portion has four hollow portions respectively defined at four corners thereof, so that the assembling portions are exposed from the covering portion; the assembling portions of the frame of each shelf are respectively plugged into the first slots of each connector.

[0006] Under this arrangement, the partition shelf is positioned at a first position or at a second position; when the partition shelf is positioned in the first position, the clamping member is connected to an upper portion of the case and the second end of the partition shelf is abutted against a lower portion of the storage space of the case; besides, when the partition shelf is positioned in the second position, the first end and the second end of the partition shelf are both placed on one side wall at a lower portion of the case and the clamping member clamps a lower end of the storage space.

[0007] Further benefits and advantages of the present invention will become apparent after a careful reading of the detailed description with appropriate reference to the accompanying drawings.

In the drawings:

[0008]

Fig. 1 is a perspective view of a first embodiment of a storage case with a partition shelf of the present invention;

Fig. 2 is a cross-sectional view along line 2-2 of Fig. 1;

Fig. 3 is an exploded view of the first embodiment of the present invention;

Fig. 4 is a partial enlarged view of a partition shelf of

the present invention;

Fig. 5 is a partial enlarged view of Fig. 2;

Fig. 6 is another partial enlarged view for showing that a fixing member is detached from a covering portion;

Fig. 7 is a perspective view of the first embodiment of the present invention when the partition shelf is in use;

Fig. 8 is a cross-sectional view along line 8-8 of Fig. 7;

Fig. 9 is a partial enlarged view of Fig. 8;

Fig. 10 is a schematic view of the first embodiment of the present invention for showing that the storage case has two spaces;

Fig. 11 is an exploded view of a second embodiment of the present invention;

Fig. 12 is a cross-sectional view of the second embodiment of the present invention when the partition shelf is not in use;

Fig. 13 is a cross-sectional view of the second embodiment of the present invention when the partition shelf is in use; and

Fig. 14 is a perspective view for showing that the storage case with a partition shelf is assembled by a plurality of cases.

[0009] Figs. 1-2 show a first embodiment of the present invention. The storage case with a partition shelf in accordance with the present invention comprises a case 1 and a partition shelf 2. The case 1 has a plurality of side walls 101, a bottom wall 102, an opening end 103 and a storage space 104. The side walls 101, the bottom wall 102 and the opening end 103 define the storage space 104 and enclose the storage space 104. The partition shelf 2 is positioned at a first position (as shown in Fig. 7 and 8) or at a second position (as shown in Fig. 1 and 2). When the partition shelf 2 is positioned at the second position, the partition shelf 2 is horizontally received in the storage space 104 and is positioned in the case 1, so as to be prevented from being unexpectedly detached.

[0010] Figs. 3-4 show the exploded views of the first embodiment of present invention. The case 1 has a plurality of connectors 10, and the side walls 101 and the bottom wall 102 are performed as a plurality of shelves 20. The case 1 is assembled by the connectors 10 and the shelves 20. Each connector 10 has a plurality of first slots 11 and a plurality of receiving portions 12 transversely defined at one end thereof. Each connector 10 has a plurality of second slots 13 longitudinally defined

at another end thereof. Each receiving portion 12 is defined between each two adjacent first slots 11. The first slots 11 and the second slots 13 are used to assemble the shelves 20. Each shelf 20 is plugged into the first slots 11 or the second slots 13. Each first slot 11 and each second slot 13 respectively have a plurality of non-slip ribs 111 and 131 defined therein. The non-slip slots 111 and 131 prevent the shelves 20 from being unexpectedly detached from the first slots 11 and the second slots 13.

[0011] Each shelf 20 comprises a frame 21 and a covering portion 22. The frame 21 is sleeved by the covering portion 22. The frame 21 has four assembling portions 211 respectively defined at four corners thereof. The covering portion 22 has four hollow portions 221 respectively defined at four corners thereof, so that the assembling portions 211 are exposed from the covering portion 22.

[0012] The assembling portions 211 of the frame 21 of each shelf 20 are respectively plugged into the first slots 11 of each connector 10. The assembling portions 211 of the four corners of the frame 21 are all connected to the connectors 10. Under this arrangement, the shelves 20 and the connectors 10 are assembled as the case 1.

[0013] The partition shelf 2 has a first end 201 and a second end 202 at two ends thereof. The partition shelf 2 comprises a partition frame 30, a partition portion 40 and a clamping member 50. A cross section of the partition frame 30 is circle-shaped. The partition portion 40 sleeves the partition frame 30. The partition frame 30 has a front end 301 and a rear end 302 at two ends thereof. The partition frame 30 has four connecting portions 31 respectively defined at four corners thereof. The front end 301 of the partition frame 30 has a clamped portion 32 defined at a center portion thereof. The partition portion 40 has four hollow portions 41 respectively defined at four corners thereof. The partition portion 40 has an opening portion 42 defined at a center portion thereof. The opening portion 42 is located between the two hollow portions 41 near the front end 301. The opening portion 42 corresponds to the clamped portion 32, so that the clamped portion 32 is exposed from the opening portion 42.

[0014] Referring to Fig. 5, the clamping member 50 comprises a clamping end 51 and a positioning end 52. A cross section of the clamping end 51 is C-shaped. The clamping end 51 has a first opening 511 opened at a lateral side thereof. An arc length of the first opening 511 is less than a quarter arc length of the clamping end 51. A cross section of the positioning end 52 is U-shaped. The positioning end 52 has a second opening 521 opened at a lateral side thereof. The second opening 521 has a plurality of non-slip portions 522 defined on an inner wall thereof. The first opening 511 and the second opening 521 are both opened toward the same direction.

[0015] The clamping member 50 is assembled at the first end 201 of the partition shelf 2. The clamping end 51 clamps the clamped portion 32 of the partition frame 30. Under this arrangement, when the clamping member

50 is assembled on the partition frame 30, the clamping member 50 is connected to the partition frame 30 securely because the arc length of the first opening 511 is less than the quarter arc length of the clamping end 51, so as to prevent the clamping member 50 from being unexpectedly detached from the partition frame 30. The cross section of the clamping end 51 is C-shaped and the cross section of the partition frame 30 is circle-shaped, so that the partition frame 30 is pivotally rotatable relative to the clamping end 51. Therefore, a user easily operates the partition shelf 2 which is assembled in the case 1.

[0016] The positioning end 52 is connected to one side wall 101 at the opening end 103 of the case 1. In other words, the clamping member 50 is connected to one shelf 20. The non-slip portions 522 of the positioning end 52 are used to prevent the positioning end 52 from being unexpectedly detached from one shelf 20.

[0017] When the partition shelf 2 is received in the storage space 104, the four corners of the partition shelf 2 are located into the receiving portions 12 of the connectors 10. The first end 201 and the second end 202 of the partition shelf 2 are both placed on one side wall 101 at a lower portion of the case 1. The clamping member 50 clamps a lower end of the storage space 104.

[0018] Referring to Fig. 6, the clamping member 50 is detached from one shelf 20. The clamping end 51 of the clamping member 50 is pivotally rotated relative to the partition frame 30. Under this arrangement, the user rotates the clamping member 50 so as to detach the positioning end 52 from the covering portion 22. Therefore, the user could take the partition shelf 2 out from the case 1 easily; as a result, the partition shelf 2 is detached from the case 1.

[0019] Referring to Figs. 7-10, when the partition shelf 2 is in use, the partition shelf 2 is positioned in the first position. The partition shelf 2 is received in the storage space 104. The first opening 511 of the clamping end 51 is connected to the partition frame 30. The positioning end 52 is connected to one covering portion 22 at an upper portion of the case 1. The second end 202 of the partition shelf 2 is abutted against another covering portion 22 at a lower portion of the case 1, so that the storage space 104 is separated into two further spaces by the partition shelf 2. Therefore, the storage space 104 has two further spaces because of the partition shelf 2 so as to place objects like shoes as shown in Fig. 10.

[0020] Figs. 11-13 show a second embodiment of the present invention. The differences between the first embodiment and the second embodiment are described as following. A partition shelf 2 has two clamping members 50 defined at two ends thereof. A front end 301 of a partition frame 30 has one clamped portion 32 defined at a center portion thereof; and a rear end 302 of the partition frame 30 has another clamped portion 32 defined at a center portion thereof. A partition portion 40 has two opening portion 42 respectively defined at the front end 301 and the rear end 302. Each opening portion 42 is located between each two adjacent hollow portions 41

and corresponds to each corresponding clamped portion 32. Each clamped portion 32 is exposed from each corresponding opening portion 42. The clamping end 51 of each clamping member 50 is assembled onto each corresponding clamped portion 32.

[0021] When the partition shelf 2 is in use (as shown in Fig. 13), one positioning end 52 of one clamping member 50 at the second end 202 of the partition shelf 2 is connected to an upper portion of the bottom wall 102 of the case 1; and another positioning end 52 of another clamping member 50 at the first end 201 of the partition shelf 2 is abutted against the covering portion 22 at a lower portion of the storage space 104. In addition, when the partition shelf 2 is not in use (as shown in Fig. 12), another positioning end 52 of another clamping member 50 at the first end 201 of the partition shelf 2 is connected to one side of the upper portion of the case 1.

[0022] Referring to Fig. 14, the storage case with a partition shelf is assembled by a plurality of cases 1. Each case 1 is assembled by a plurality of connectors 10 and shelves 20. The connectors 10 are connected to other selves 20 horizontally and vertically, so that one case 1 is connected to another case 1 via the connectors 10. In addition, the partition shelves 2 are positioned in each case 1.

[0023] The storage case with a partition shelf of the present invention has following advantages.

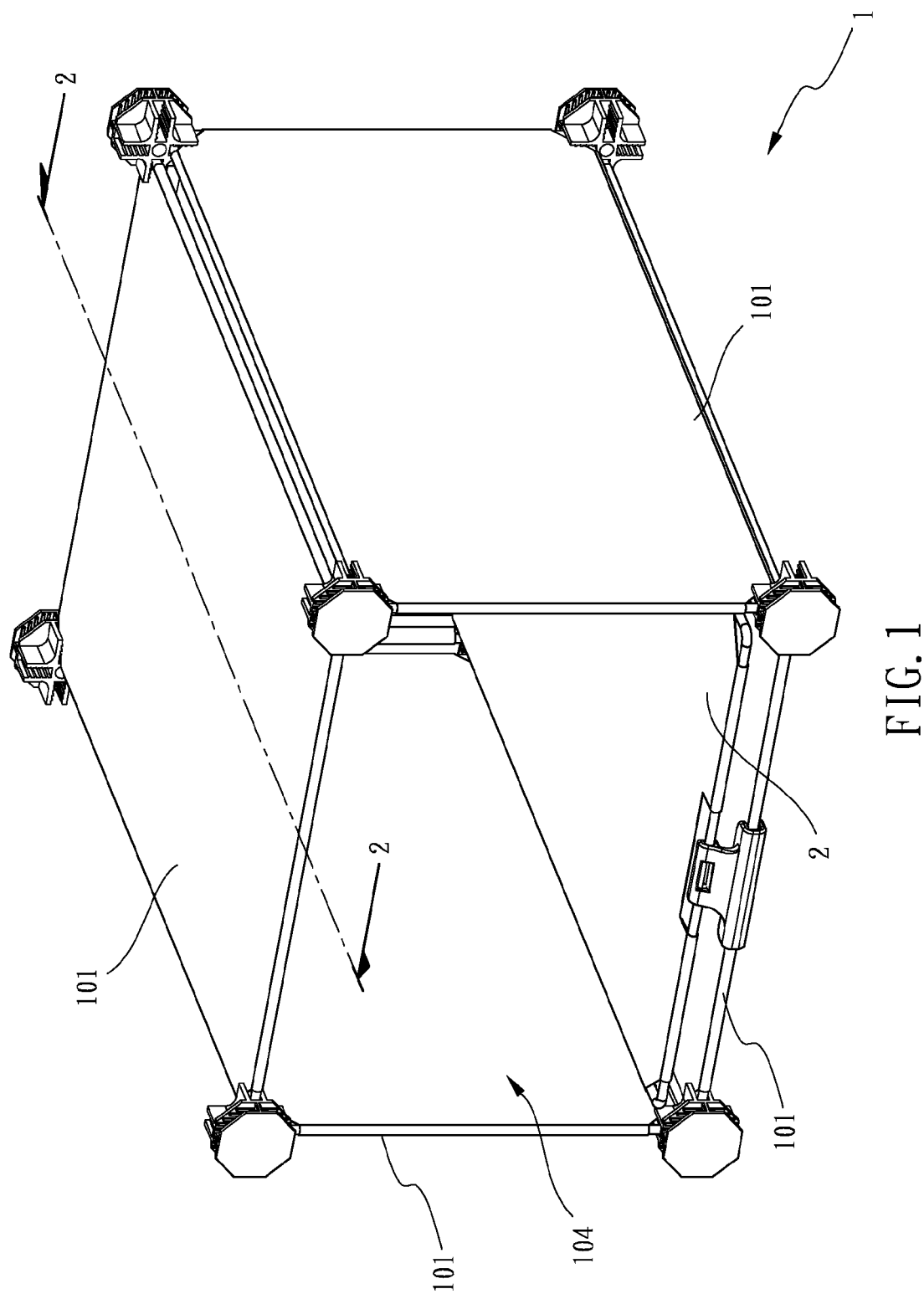
1. The partition shelf 2 is positioned in the case 1, so that the storage space 104 of the case 1 is divided into two further storage spaces. Therefore, the objects can be sorted in the two further storage spaces.
2. When the partition shelf 2 is not in use, the partition shelf 2 is positioned in the storage space 104 by the clamping member 50, so as to prevent the partition shelf 2 from being unexpectedly detached.
3. The clamping member 50 is pivotally rotatable relative to the partition frame 30, so that the user easily operates the partition shelf 2 clamping on the case 1.
4. The clamping member 50 is mounted to each end of the partition shelf 2, so that the partition shelf 2 is positioned in the case stably.

[0024] Although the invention has been explained in relation to its preferred embodiment, it is to be understood that many other possible modifications and variations can be made without departing from the spirit and scope of the invention as hereinafter claimed.

Claims

1. A storage case with a partition shelf comprising:
a case (1) and a partition shelf (2);

- the case (1) having a plurality of side walls (101), a bottom wall (102) and an opening end (103), the side walls (101), the bottom wall (102) and the opening end (103) defining a storage space (104) and enclosing the storage space (104); the partition shelf (2) having a first end (201) and a second end (202) at two ends thereof, the partition shelf (2) having a partition frame (30), a partition portion (40) and a clamping member (50), the clamping member (50) assembled at the first end (201) of the partition shelf (2), the partition portion (40) sleeving the partition frame (30); and the clamping member (50) having a clamping end (51) and a positioning end (52), the clamping end (51) clamping a center portion of the partition frame (30), the positioning end (52) connected to the case (1) so that the partition shelf (2) is received in the storage space (104); wherein the partition shelf (2) is positioned at a first position or at a second position; when the partition shelf (2) is positioned in the first position, the clamping member (50) is connected to an upper portion of the case (1) and the second end (202) of the partition shelf (2) is abutted against a lower portion of the storage space (104) of the case (1); besides, when the partition shelf (2) is positioned in the second position, the first end (201) and the second end (202) of the partition shelf (2) are both placed on one side wall (101) at a lower portion of the case (1) and the clamping member (50) clamps a lower end of the storage space (104).
2. The storage case with a partition shelf as claimed in claim 1, wherein a cross section of the positioning end (52) is U-shaped.
 3. The storage case with a partition shelf as claimed in claim 2, wherein the positioning end (52) has a plurality of non-slip portions (522) defined on an inner wall thereof.
 4. The storage case with a partition shelf as claimed in one of claims 1 to 3, wherein the partition frame (30) has a clamped portion (32) defined at a center portion of one end thereof; the partition portion (40) has an opening portion (42) defined at a center portion of one end thereof; the opening portion (42) corresponds to the clamped portion (32) and the clamping end (51) clamps the clamped portion (32) of the partition frame (30).
 5. The storage case with a partition shelf as claimed in one of claims 1 to 4, wherein a cross section of the clamping end (51) is C-shaped and a cross section of the partition frame (30) is circle-shaped, so that the clamping end (51) is pivotally rotatable relative to partition frame (30).
 6. The storage case with a partition shelf as claimed in one of claims 1 to 5, wherein the clamping end (51) has a first opening (511) opened at a lateral side thereof; an arc length of the first opening (511) is less than a quarter arc length of the clamping end (51).
 7. The storage case with a partition shelf as claimed in one of claims 1 to 6, wherein the clamping end (51) has a first opening (511) opened at a lateral side thereof; the positioning end (52) has a second opening (521) opened at a lateral side thereof; the first opening (511) and the second opening (521) are both opened toward the same direction.
 8. The storage case with a partition shelf as claimed in one of claims 1 to 7, wherein the partition shelf (2) has another clamping member (50) assembled at the second end (202) thereof; when the partition shelf (2) is in use, one positioning end (52) of one clamping member (50) at the second end (202) of the partition shelf (2) is connected to an upper portion of the bottom wall (102) of the case (1) and another positioning end (52) of another clamping member (50) at the first end (201) of the partition shelf (2) is abutted against a lower portion of the storage space (104).
 9. The storage case with a partition shelf as claimed in one of claims 1 to 8, wherein the case (1) has a plurality of connectors (10), and the side walls (101) and the bottom wall (102) are performed as a plurality of shelves (20); the case (1) is assembled by the connectors (10) and the shelves (20); each connector (10) has a plurality of first slots (11) transversely defined at one end thereof; the first slots (11) are used to assemble the shelves (20).
 10. The storage case with a partition shelf as claimed in claim 9, wherein each first slot (11) and each second slot (13) respectively have a plurality of non-slip ribs (111) and (131) defined therein.
 11. The storage case with a partition shelf as claimed in claim 9, wherein each shelf (20) comprises a frame (21) and a covering portion (22); the frame (21) is sleeved by the covering portion (22); the frame (21) has four assembling portions (211) respectively defined at four corners thereof; the covering portion (22) has four hollow portions (221) respectively defined at four corners thereof, so that the assembling portions (211) are exposed from the covering portion (22); the assembling portions (211) of the frame (21) of each shelf (20) are respectively plugged into the first slots (11) of each connector (10).



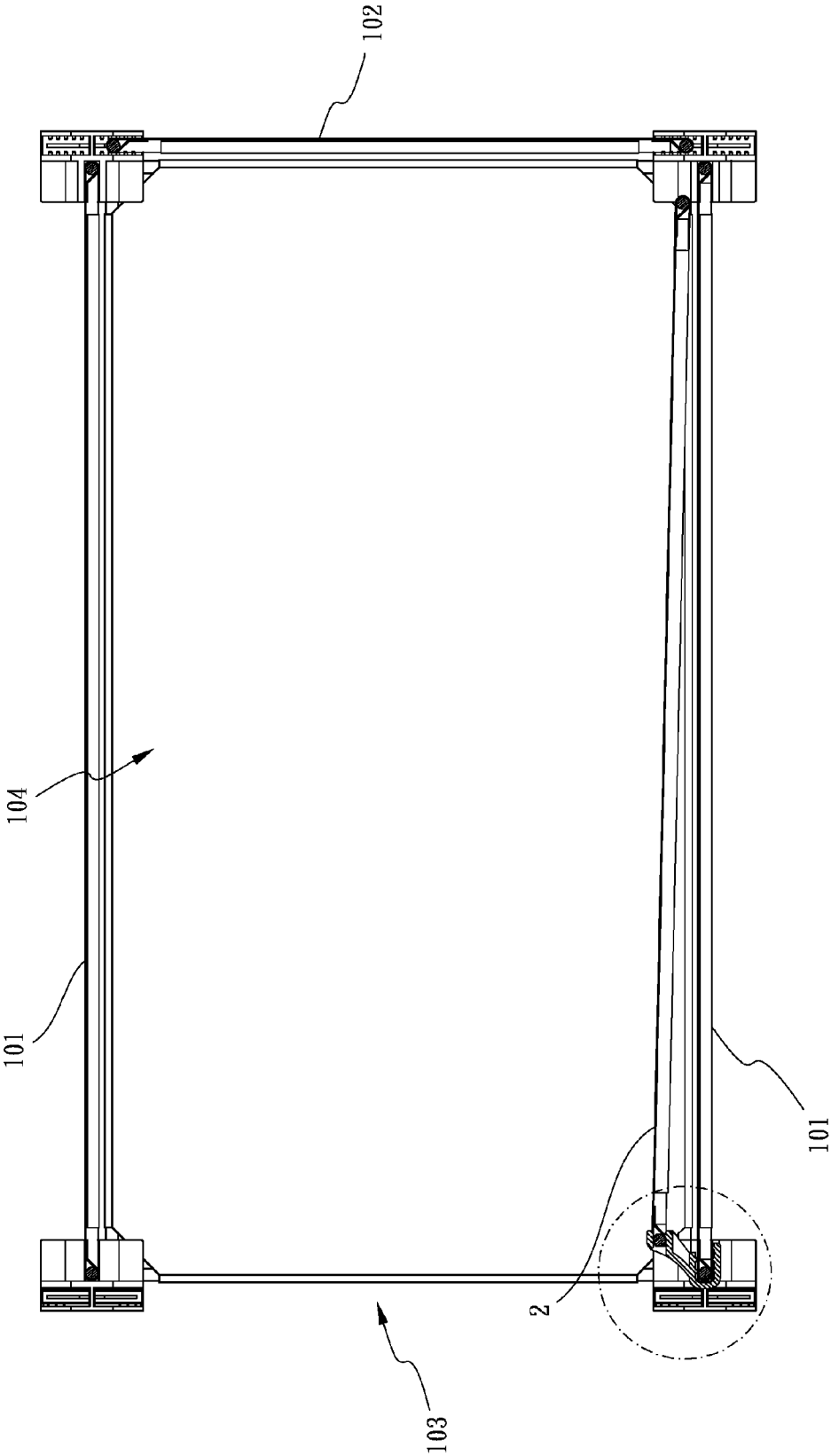
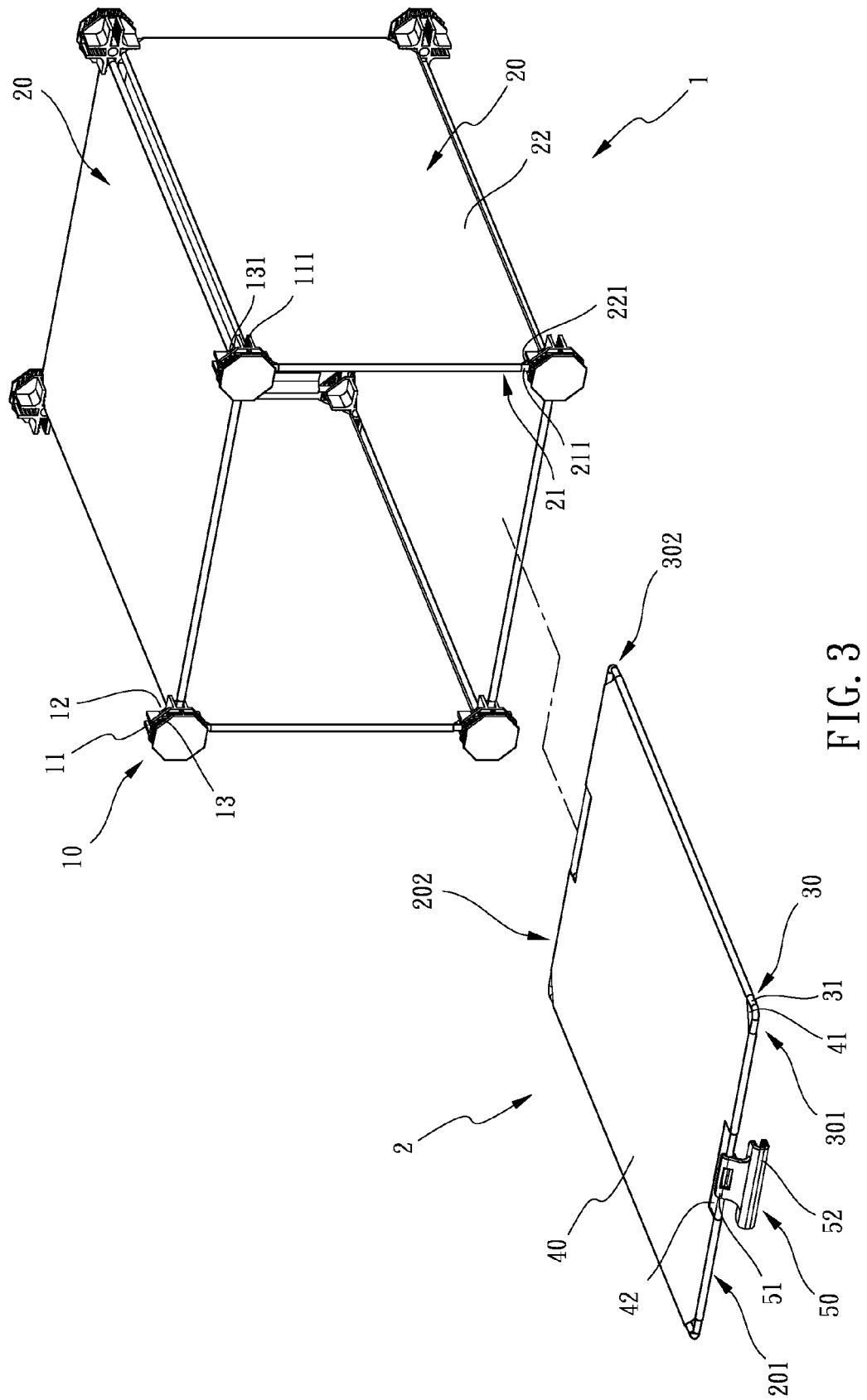


FIG. 2



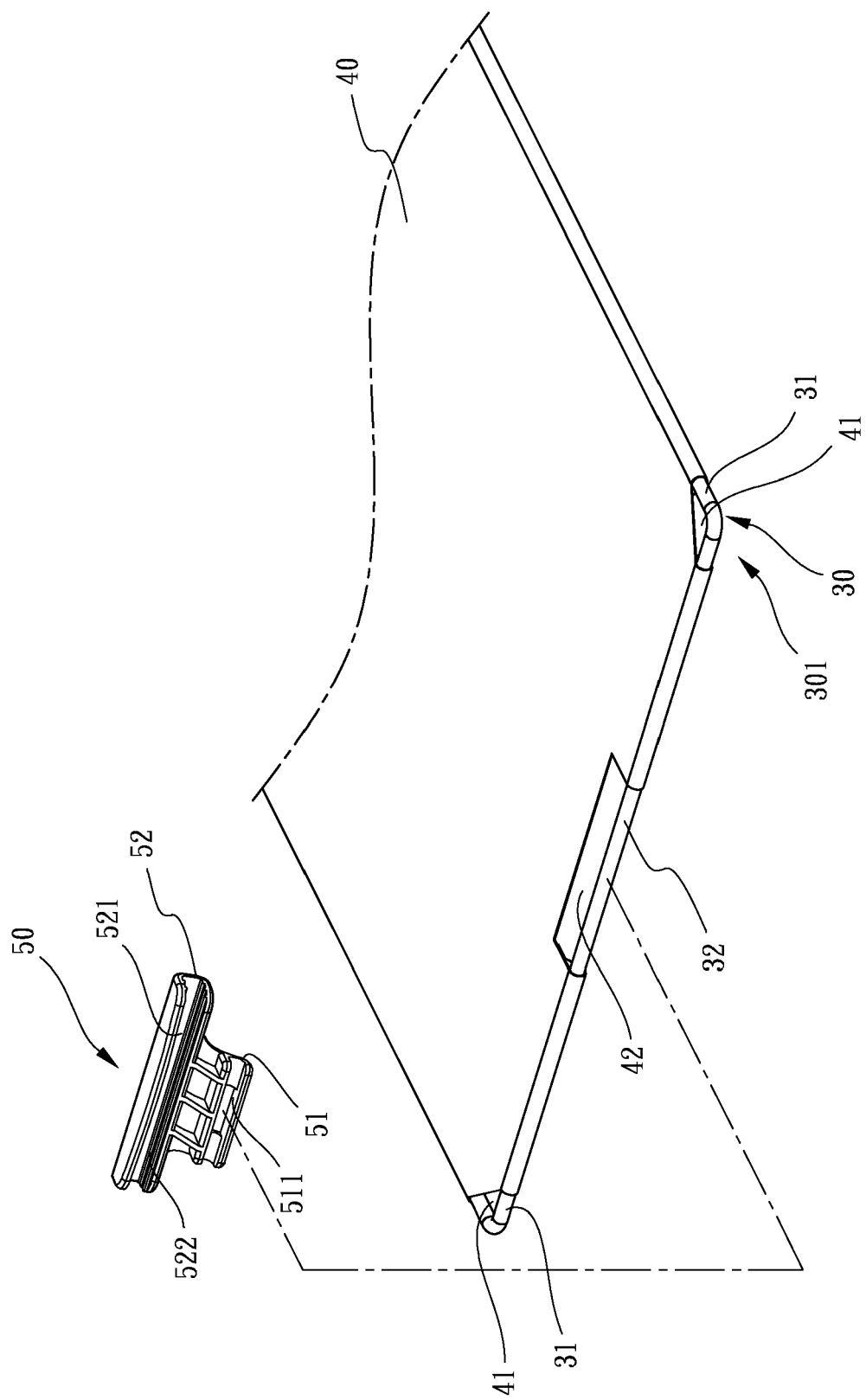


FIG. 4

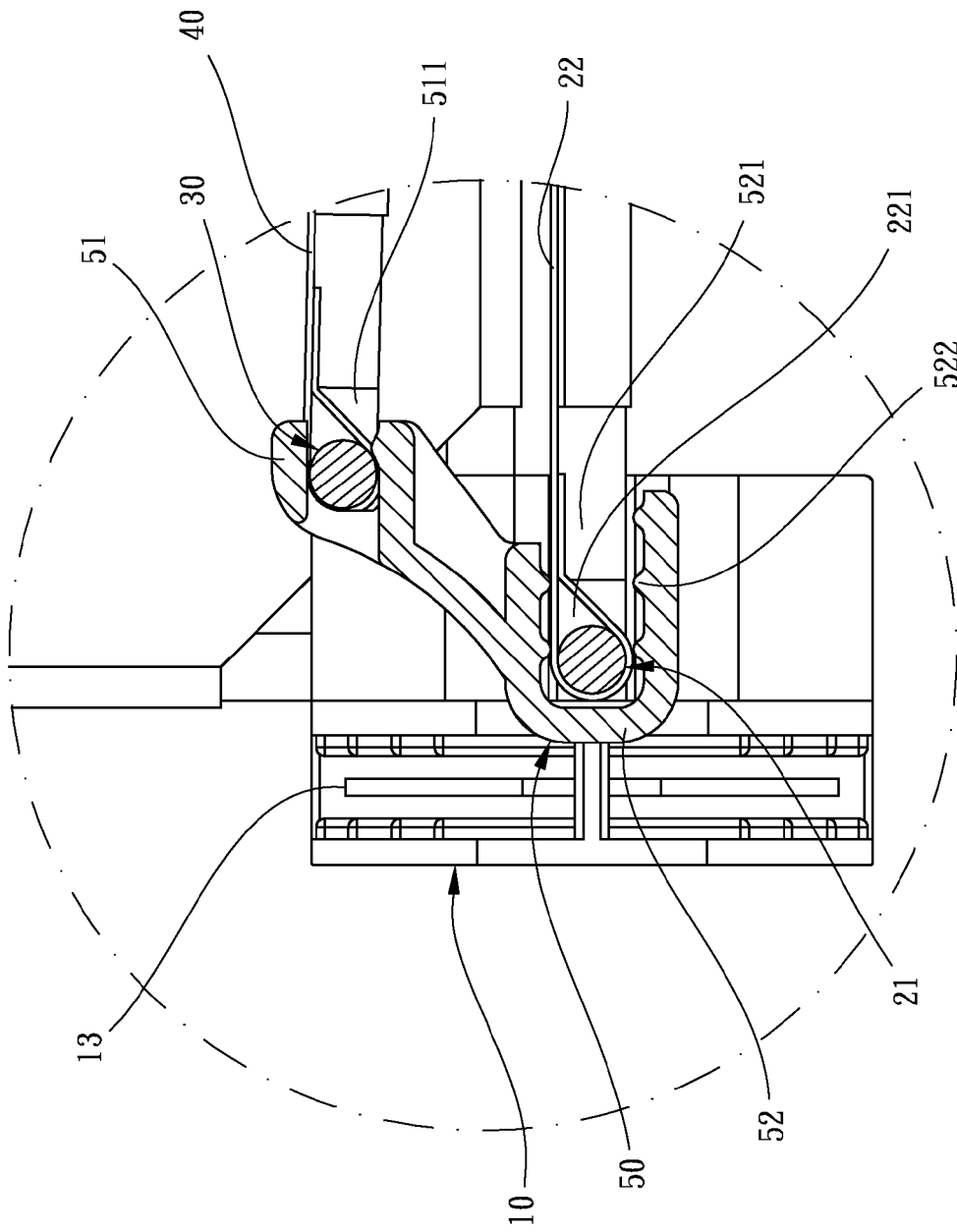


FIG. 5

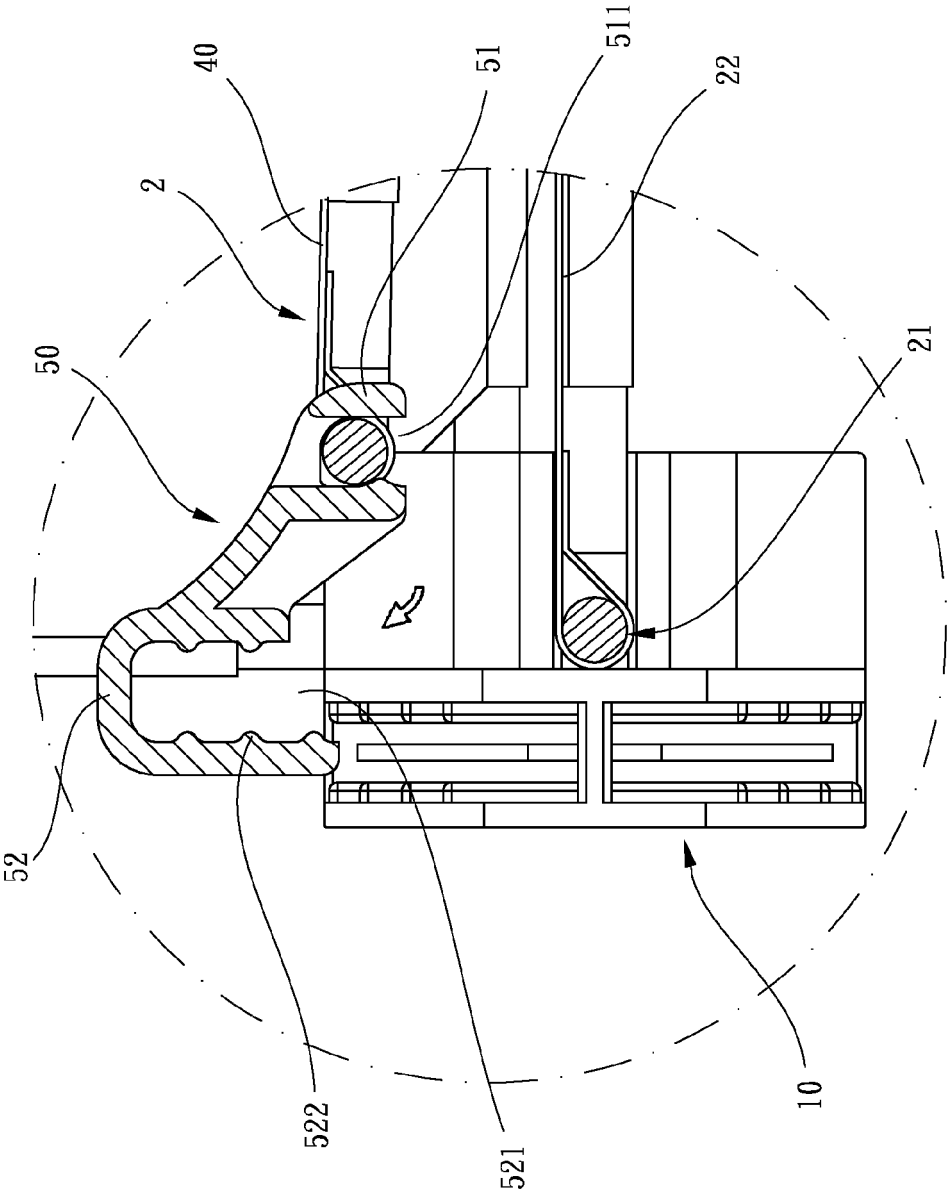


FIG. 6

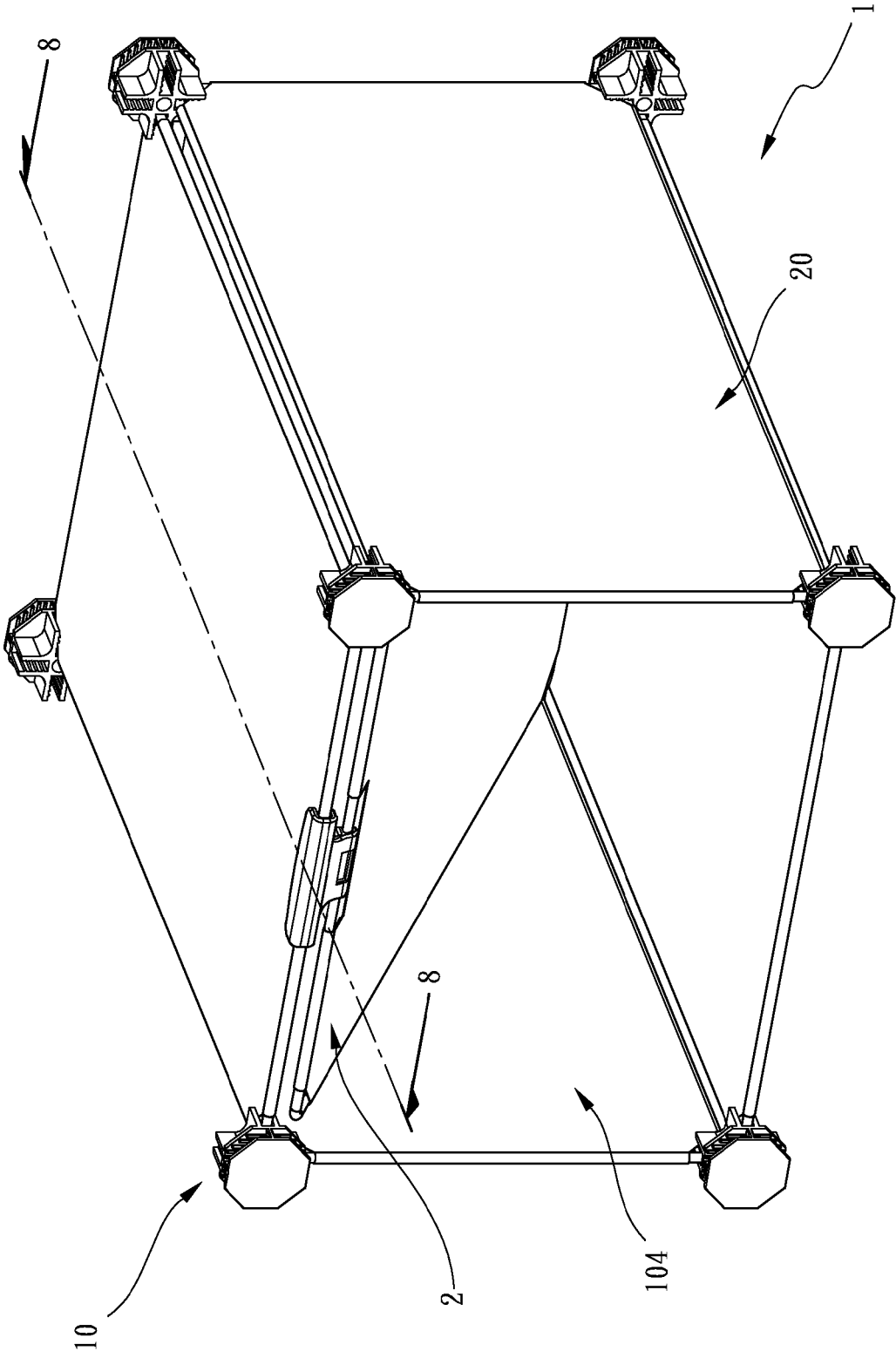


FIG. 7

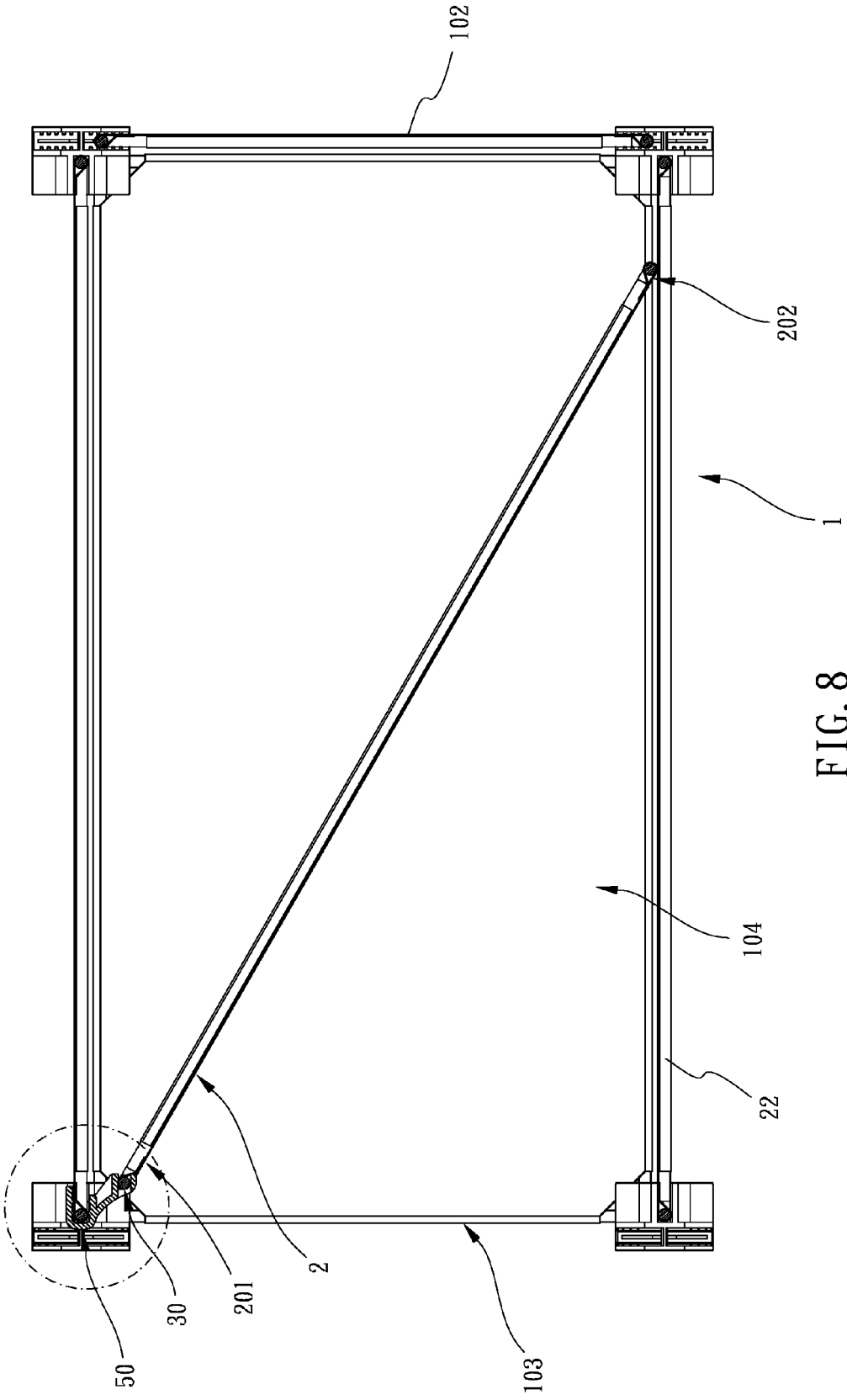


FIG. 8

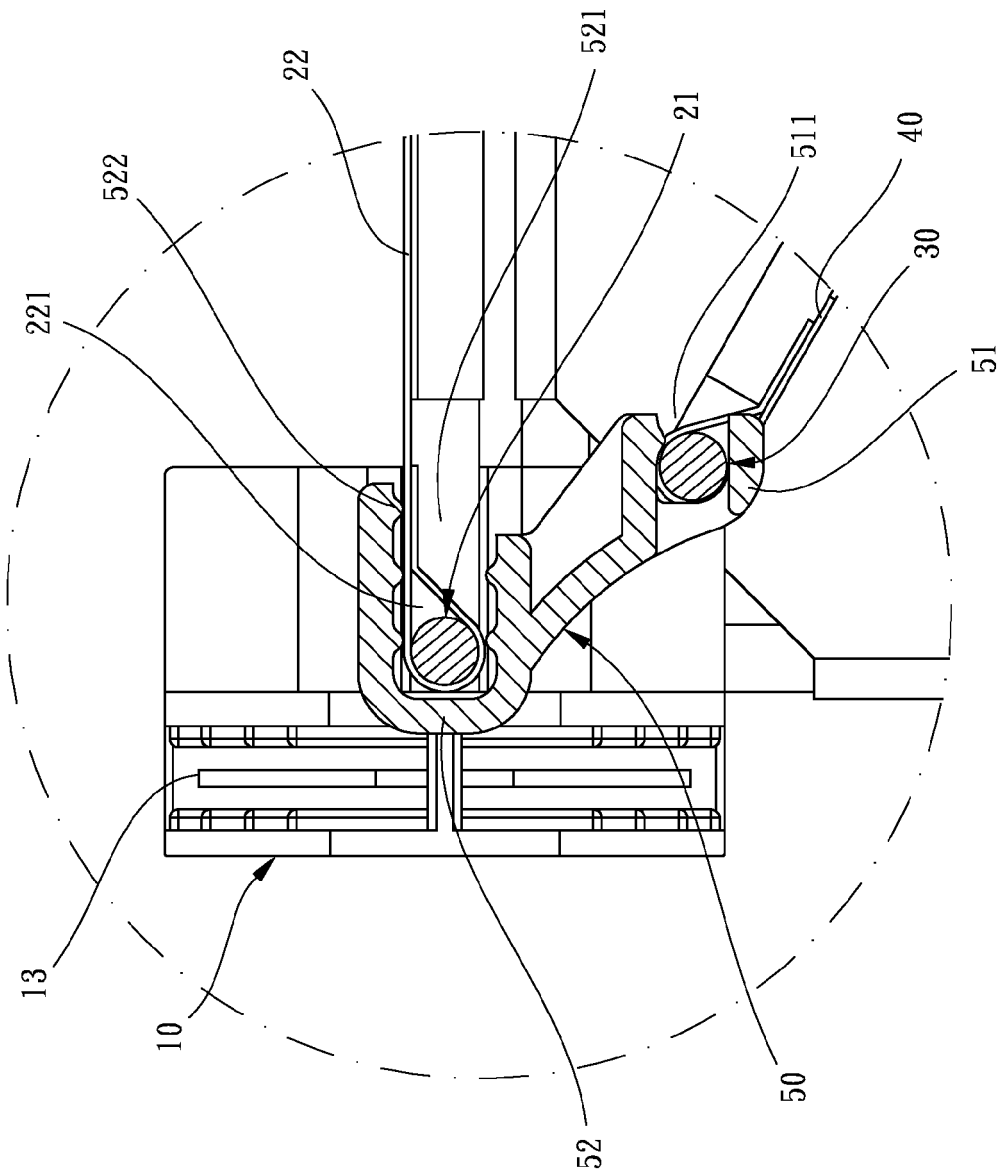
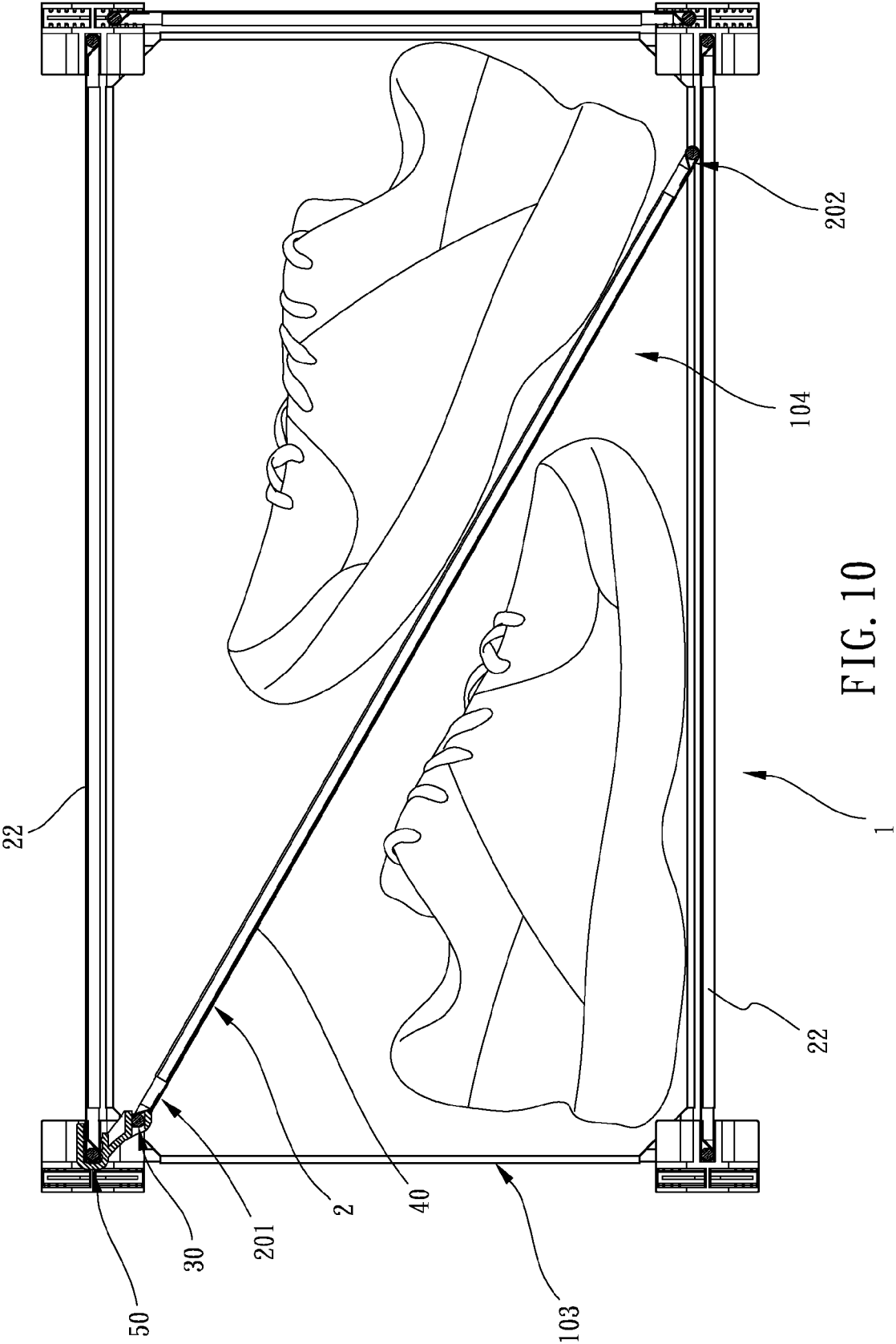
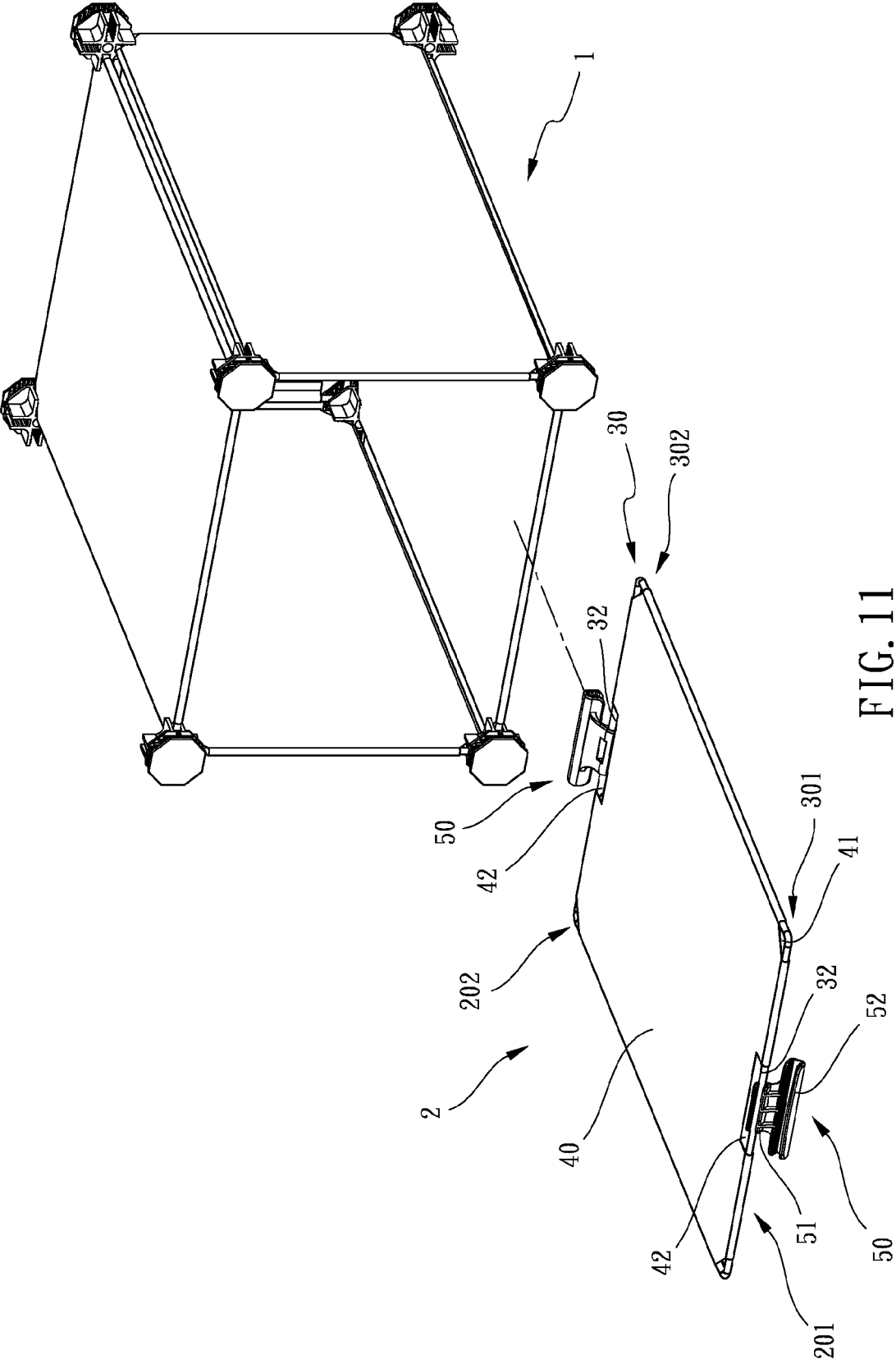


FIG. 9





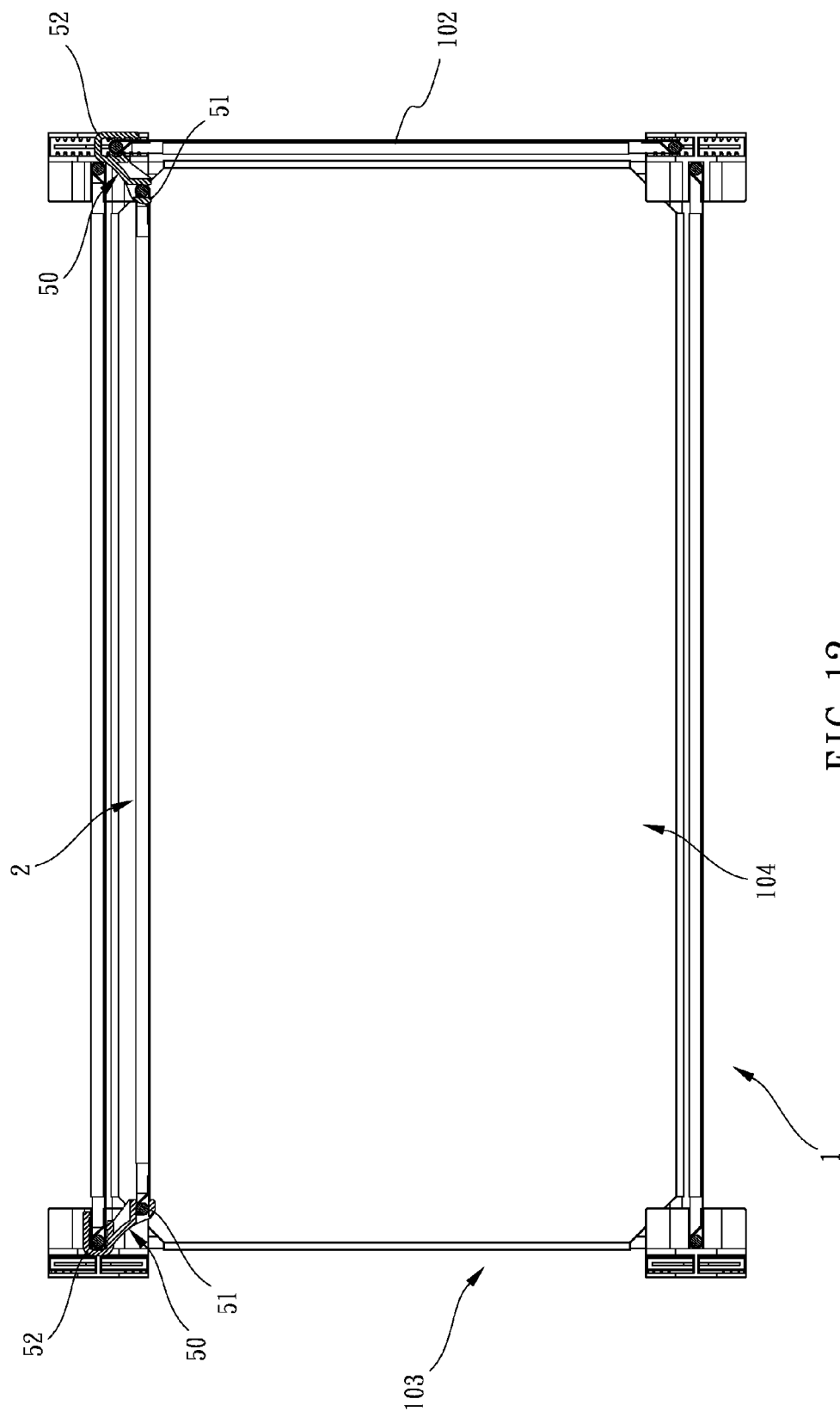
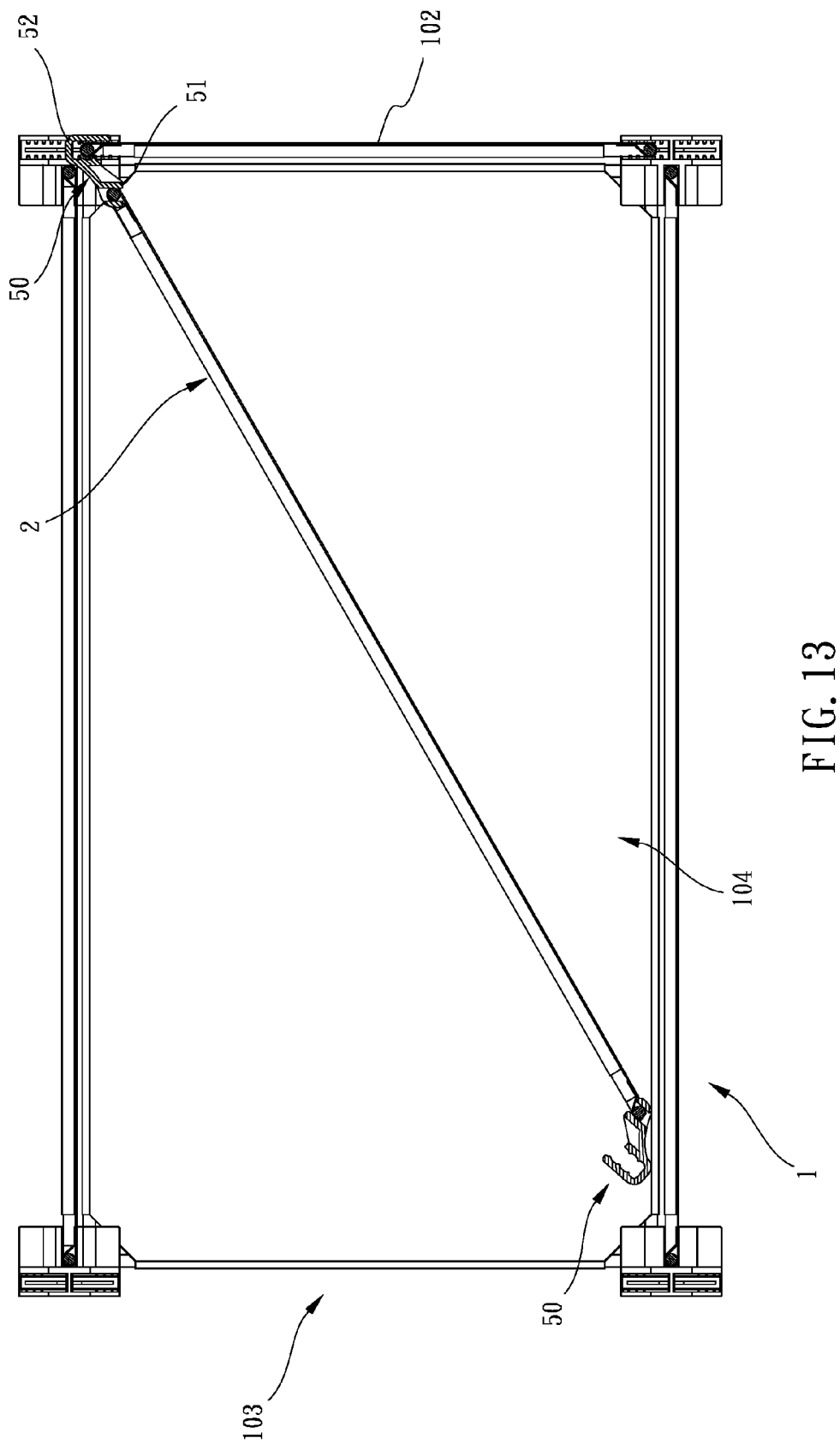


FIG. 12



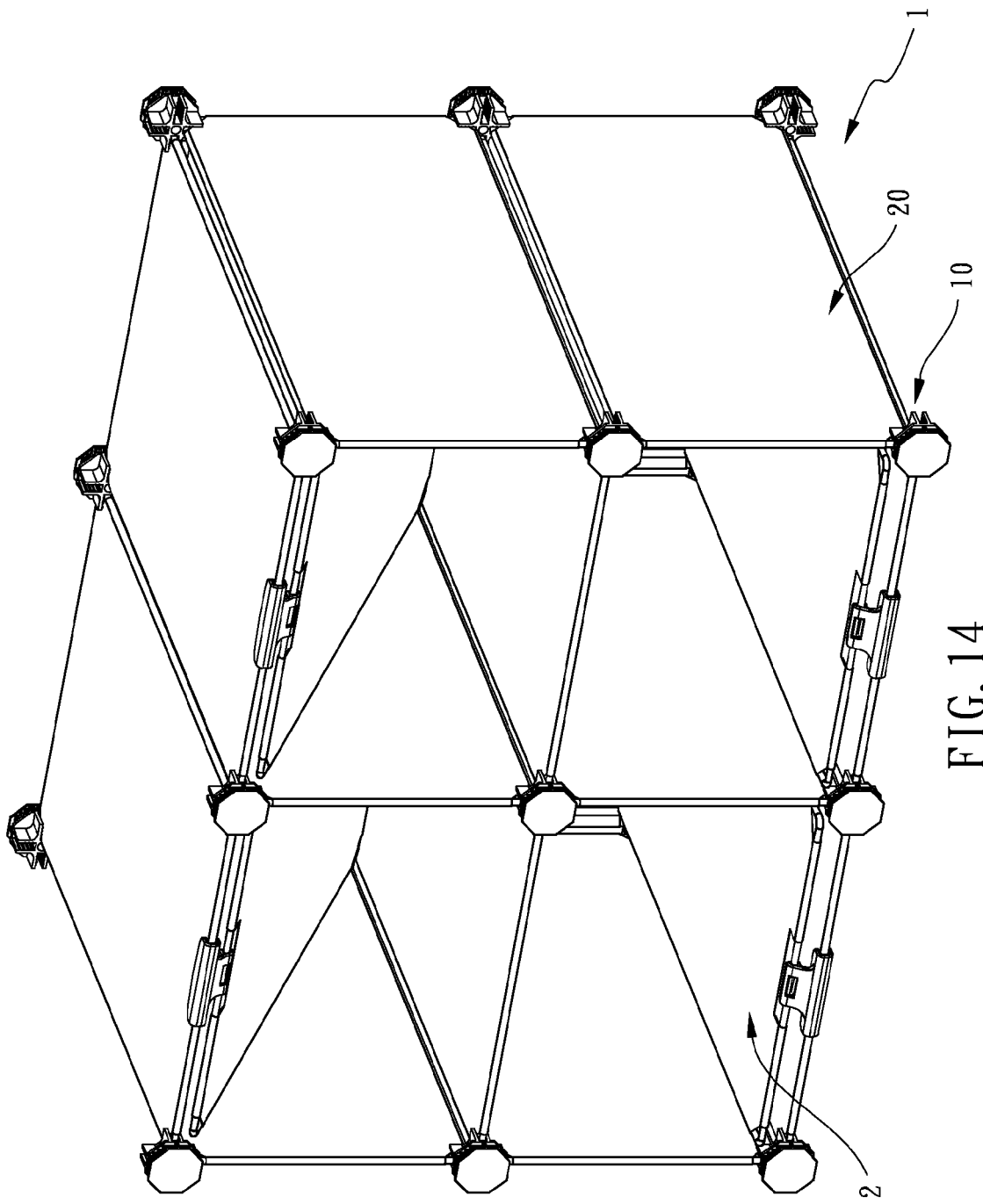


FIG. 14



EUROPEAN SEARCH REPORT

Application Number
EP 12 19 5050

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	GB 2 113 342 A (STACK KABUSHIKI KAISHA) 3 August 1983 (1983-08-03) * the whole document *	1-11	INV. A47B47/00 A47B47/04
A	US 2 104 828 A (BRINNON RICHARD B) 11 January 1938 (1938-01-11) * the whole document *	1-11	
A	US 4 546 887 A (COHN ROBERT J [US]) 15 October 1985 (1985-10-15) * the whole document *	1-11	
A	US 4 976 375 A (QUAM ROGER C [US]) 11 December 1990 (1990-12-11) * the whole document *	1-11	
			TECHNICAL FIELDS SEARCHED (IPC)
			A47B A47F
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 8 May 2013	Examiner Ottesen, Rune
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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

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08-05-2013

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
GB 2113342 A	03-08-1983	GB 2113342 A	03-08-1983
		JP S58109610 U	26-07-1983
US 2104828 A	11-01-1938	NONE	
US 4546887 A	15-10-1985	CA 1226556 A1	08-09-1987
		JP H0257402 B2	04-12-1990
		JP S6058103 A	04-04-1985
		US 4546887 A	15-10-1985
US 4976375 A	11-12-1990	NONE	

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