

(19)



(11)

EP 3 936 004 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention of the grant of the patent:
02.09.2026 Bulletin 2026/36

(51) International Patent Classification (IPC):
A47C 4/02 (2006.01) **A47C 17/02** (2006.01)
A47C 17/04 (2006.01)

(21) Application number: **21183169.8**

(52) Cooperative Patent Classification (CPC):
A47C 4/028; A47C 17/02; A47C 17/04

(22) Date of filing: **01.07.2021**

(54) **SCREWLESS ASSEMBLED SOFA**

SCHRAUBENLOSES ZUSAMMENGESETZTES SOFA

CANAPÉ MONTÉ SANS VIS

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

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(30) Priority: **09.07.2020 CN 202021338986 U**

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(43) Date of publication of application:
12.01.2022 Bulletin 2022/02

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(56) References cited:
CN-U- 201 509 939 CN-U- 203 655 818
DE-U1- 202020 100 903 JP-A- 2002 045 255
US-A1- 2016 249 742 US-B1- 6 241 317

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Description

TECHNICAL FIELD

[0001] The present utility model pertains to the field of furniture and specifically relates to a screwless assembled sofa.

BACKGROUND ART

[0002] Sofas are common furniture in people's daily life. A sofa comprises a sofa seat and armrests in general and the sofa seat comprises a seat body and a backrest. Conventionally, the foregoing components are assembled by means of bolts. This assembly method has the following main defects: the assembly has many steps, is time and labor consuming and has a poor user experience. A relevant prior-art is known from JP2002045255A.

SUMMARY OF THE UTILITY MODEL

[0003] In order to make up for the defects of the prior art, the present invention provides a screwless assembled sofa as claimed in claim 1. Preferred features are set out in the dependent claims.

[0004] Compared with the prior art, the armrests and the sofa seat in the present invention are mounted in an insertion fit manner to simplify assembly steps, shorten the assembly time and eliminate the dependence on tools. Easy and rapid assembly has significantly improved user experience. The buckle structures prevent component loosening and disengagement during use of the sofa.

BRIEF DESCRIPTION OF THE DRAWINGS

[0005]

Fig. 1 is an exploded structural schematic view 1 of Embodiment 1;

Fig. 2 is an exploded structural schematic view 2 of Embodiment 1;

Fig. 3 is a structural schematic view of Embodiment 1 after assembly;

Fig. 4 is a schematic view of insertion fit between upper connectors and lower connectors in Embodiment 1.

Fig. 5 is a structural schematic top view of the upper connectors in Embodiment 1;

Fig. 6 is a structural schematic bottom view of the upper connectors in Embodiment 1;

Fig. 7 is a structural schematic top view of the lower connectors in Embodiment 1;

Fig. 8 is a structural schematic bottom view of the lower connectors in Embodiment 1;

Fig. 9 is a cross-section schematic view of insertion fit between the upper connectors and the lower

connectors in Embodiment 1;

Fig. 10 is an exploded structural schematic view 1 of Embodiment 2, not according to the invention;

Fig. 11 is an exploded structural schematic view 2 of Embodiment 2;

Fig. 12 is a structural schematic view of Embodiment 2 after assembly;

Fig. 13 is an exploded structural schematic view 1 of Embodiment 3;

Fig. 14 is an exploded structural schematic view 2 of Embodiment 3;

Fig. 15 is a structural schematic view of Embodiment 3 after assembly.

DETAILED DESCRIPTION

[0006] The present utility model will be further illustrated with reference to accompanying drawings.

20 Embodiment 1

[0007] As shown in Fig. 1 to Fig. 9, a screwless assembled sofa comprises a sofa seat and armrests 1, which are mounted in a fit manner. The armrests 1 may be mounted on only one side of the sofa seat or on both sides of the sofa seat, the sofa seat is fixedly fit with first lower connectors 4a, the armrests 1 are fixedly fit with first upper connectors 5a, and the first lower connectors 4a are in insertion fit with the first upper connectors 5a.

[0008] The sofa seat comprises a seat body 2 and a backrest 3. The seat body 2 and the backrest 3 are fixedly fit with each other and can be formed integrally or may be fixed by means of bolts or welding.

[0009] Description of how to distribute the first lower connectors 4a between the seat body 2 and the backrest 3: the seat body of the sofa seat 2 and two sides of the backrest 3 are all fixedly fit with the first lower connectors 4a, and the armrests 1 achieve mounting with the seat body 2 and the backrest 3, respectively through the insertion fit between the first upper connectors 5a and the first lower connectors 4a.

[0010] In the foregoing structures, seat body mounting racks 20 for mounting the first lower connectors 4a are fixedly fit on the seat body 2, and the first lower connectors 4a can be fixed by means of bolts or welding. Backrest mounting racks 30 for mounting the first lower connectors 4a are fixedly fit on the backrest 3, and the first lower connectors 4a can be fixed by means of bolts or welding. Armrest mounting racks 10 for mounting the first upper connectors 5a are fixedly fit on the armrests 1, and the first upper connectors 5a can be fixed by means of bolts or welding.

[0011] The first lower connectors 4a can be called lower connectors 4. The first upper connectors 5a can be called upper connectors 5. The connecting structures between the upper connectors 5 and the lower connectors 4 are as follows: during insertion, the upper connec-

tors 5 are also snap-fit with the lower connectors 4 by means of buckle structures. Specifically, protrusions 6 are arranged on one of the upper connectors 5 and or the lower connectors 4, slots 7 are arranged on the other, and the protrusions 6 are snap-fit with the slots 7. In actual implementation, the protrusions 6 are fixedly fit with the upper connectors 5 and the slots 7 are arranged in the lower connectors 4. The locations of the protrusions 6 and the slots 7 can be swapped, i.e., the protrusions 6 are fixedly fit with the lower connectors 4, and the slots 7 are arranged in the upper connectors 5.

[0012] Further description of the foregoing connecting structures: the upper connectors 5 and the lower connectors 4 are all V-shaped structures with folded edges on both sides, the lower connectors 4 are slightly larger than the upper connectors 5, the upper connectors 5 are inserted onto the lower connectors 4, and during insertion fit, the lower connectors 4 are in interference fit with the upper connectors 5 through tapers generated by the V-shaped structures. Furthermore, alternatively, the upper connectors 5 and the lower connectors 4 can be designed as inverted-V-shaped structures and the upper connectors 5 can be designed as structures slightly larger than the lower connectors 4, and in this way, the upper connectors 5 can also be inserted onto the lower connectors 4 through the tapers in an interference fit manner.

[0013] In this embodiment, the sofa seat and the armrests 1 are mounted in an inserted manner, and the armrests 1 can be separately dismounted to facilitate storage and transportation. During mounting, the upper connectors 5 are aligned with and inserted into the lower connectors 4. The upper connectors 5 are in interference fit with the lower connectors 4 and the protrusions 6 will be automatically buckled with the slots 7 to prevent component loosening and disengagement during use of the sofa.

[0014] Embodiment 2, not according to the invention As shown in Fig. 10 to Fig. 12, Embodiment 2 has the following difference from Embodiment 1: the seat body of the sofa seat 2 is rotatably fit with the backrest 3. In actual implementation, the seat body 2 is rotatably fit with the two sides of the backrest 3 by means of bolts, and nuts for locking the rotation of the backrest are connected to the bolts in a threaded manner.

[0015] In this embodiment, the sofa seat and the armrests 1 are mounted in an inserted manner, and the armrests 1 can be separately dismounted to facilitate storage and transportation. During mounting, the upper connectors 5 are aligned with and inserted into the lower connectors 4. The upper connectors 5 are in interference fit with the lower connectors 4 and the protrusions 6 will be automatically buckled with the slots 7 to prevent component loosening and disengagement during use of the sofa.

[0016] In this embodiment, when the nuts are fastened, the backrest 3 is fixed and the sofa is ready for people to sit on; when the nuts are unfastened, the backrest 3 can be rotated to a horizontal position to facilitate storage and

transportation.

Embodiment 3

[0017] Fig. 13 to Fig. 15 show a screwless assembled sofa comprises a sofa seat and armrests 1, which are mounted in a fit manner. The armrests 1 may be mounted on only one side of the sofa seat or on both sides of the sofa seat, the sofa seat is fixedly fit with first lower connectors 4a, the armrests 1 are fixedly fit with first upper connectors 5a, and the first lower connectors 4a are in insertion fit with the first upper connectors 5a.

[0018] The sofa seat comprises a seat body 2 and a backrest 3. The seat body 2 is fixedly fit with second lower connectors 4b, the backrest 3 of the sofa seat is fixedly fit with second upper connectors 5b, and the second lower connectors 4b are in insertion fit with the second upper connectors 5b.

[0019] Description of how to distribute the first lower connectors 4a between the seat body 2 and the backrest 3: the seat body of the sofa seat 2 and the backrest 3 are both fixedly fit with the first lower connectors 4a, and the armrests 1 achieve mounting with the seat body 2 and the backrest 3, respectively through the insertion fit between the first upper connectors 5a and the first lower connectors 4a.

[0020] In the foregoing structures, seat body mounting racks 20 for mounting the first lower connectors 4a and the second lower connectors 4b are fixedly fit on the seat body 2, and the first lower connectors 4a and the second lower connectors 4b can be fixed by means of bolts or welding. Backrest mounting racks 30 for mounting the first lower connectors 4a and the second upper connectors 5b are fixedly fit on the backrest 3, and the first lower connectors 4a and the second upper connectors 5b can be fixed by means of bolts or welding. Armrest mounting racks 10 for mounting the first upper connectors 5a are fixedly fit on the armrests 1, and the first upper connectors 5a can be fixed by means of bolts or welding.

[0021] The second lower connectors 4b and the first lower connectors 4a adopt the same structures and are collectively referred to as lower connectors 4. The second upper connectors 5b and the first upper connectors 5a adopt the same structures and are collectively referred to as upper connectors 5. The connecting structures between the upper connectors 5 and the corresponding lower connectors 4 are as follows: During insertion fit, the upper connectors 5 are also snap-fit with the corresponding lower connectors 4 by means of buckle structures. Specifically, protrusions 6 are arranged on the upper connectors 5 or the lower connectors 4, slots 7 are arranged on the other, and the protrusions 6 are snap-fit with the slots 7. In actual implementation, the protrusions 6 are fixedly fit with the upper connectors 5 and the slots 7 are arranged in the lower connectors 4. The locations of the protrusions 6 and the slots 7 can be swapped, i.e., the protrusions 6 are fixedly fit with the lower connectors 4, and the slots 7 are

arranged in the upper connectors 5.

[0022] Further description of the foregoing connecting structures: the upper connectors 5 and the lower connectors 4 are all V-shaped structures with folded edges on both sides, the lower connectors 4 are slightly larger than the upper connectors 5, the upper connectors 5 are inserted onto the lower connectors 4 in an interference fit manner, and during insertion fit, the lower connectors 4 are in interference fit with the upper connectors 5 through tapers generated by the V-shaped structures. Furthermore, alternatively, the upper connectors 5 and the lower connectors 4 can be designed as inverted-V-shaped structures and the upper connectors 5 can be designed as structures slightly larger than the lower connectors 4, and in this way, the upper connectors 5 can also be inserted onto the lower connectors 4 through the tapers in an interference fit manner.

[0023] In this embodiment, the seat body 2 is mounted to the armrests 1 and the backrest 3, respectively in an inserted manner, and the armrests 1 and the backrest 3 can be separately dismantled to facilitate storage and transportation. During mounting, the upper connectors 5 are aligned with and inserted into the lower connectors 4. The upper connectors 5 are in interference fit with the lower connectors 4 and the protrusions 6 will be automatically buckled with the slots 7 to prevent component loosening and disengagement during use of the sofa.

[0024] Lastly, it should be noted that the foregoing embodiments are intended to describe and not to limit the technical solutions of the present invention; although the present invention has been elaborated by referring to preferred embodiments, those of ordinary skills in the art should understand that they still can modify the technical solutions of the foregoing embodiments, or equivalently replace some or all of the technical features therein, and such modifications or replacements will not result in essential departure of the corresponding technical solutions from the scope of the technical solutions of the embodiments of the present invention.

Claims

1. A screwless assembled sofa, comprising a sofa seat with a seat body (2), a backrest (3) and armrests (1), which are mounted in a fit manner, wherein the sofa seat is fixedly fit with first lower connectors (4a) and the seat body (2) of the sofa seat is fixedly fit with second lower connectors (4b), the armrests (1) are fixedly fit with first upper connectors (5a), and the first lower connectors (4a) are in insertion fit with the first upper connectors (5a) and wherein the backrest (3) of the sofa seat is fixedly fit with second upper connectors (5b), and the second lower connectors (4b) are in insertion fit with the second upper connectors (5b), wherein when the upper connectors (5a,5b) are in insertion fit with the lower connectors (4a,4b), the upper connectors (5a,5b) are also snap-fit with the

lower connectors (4a,4b) by means of buckle structures, and protrusions (6) are arranged on the upper connectors (5a,5b) or the lower connectors (4a,4b), slots (7) are arranged on the other, and the protrusions (6) are snap-fit with the slots (7), wherein the protrusions (6) are fixedly fit with the upper connectors (5a,5b) or fixedly fit with the lower connectors (4a,4b).

2. The screwless assembled sofa according to claim 1, wherein the seat body (2) of the sofa seat is fixedly fit with the backrest (3).
3. The screwless assembled sofa according to claims 1 or 2, wherein the seat body (2) of the sofa seat and the backrest (3) are both fixedly fit with the first lower connectors (4a), and the armrests (1) achieve mounting with the seat body (2) and the backrest (3), respectively through the insertion fit between the first upper connectors (5a) and the first lower connectors (4a).
4. The screwless assembled sofa according to claims 1 or 2, wherein when the upper connectors (5) are in insertion fit with the lower connectors (4), the upper connectors (5) are in interference fit with the lower connectors (4) through tapers.
5. The screwless assembled sofa according to claim 4, wherein the upper connectors (5) and the lower connectors (4) are all V-shaped structures with folded edges on both sides.

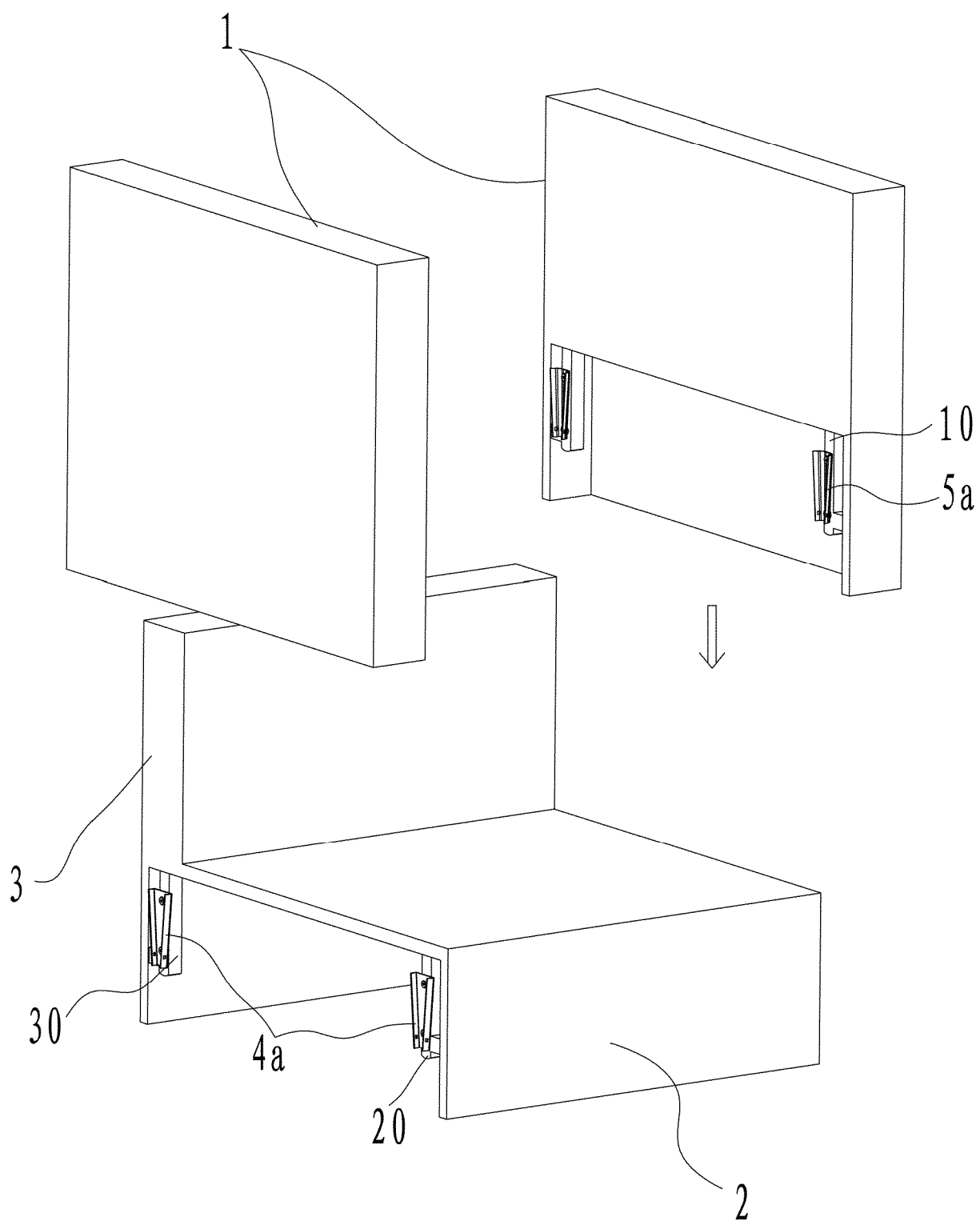
Patentansprüche

1. Ein schraubenloses zusammengesetztes Sofa, umfassend einen Sofasitz mit einem Sitzkörper (2), einer Rückenlehne (3) und Armlehnen (1), die passgenau montiert sind, wobei der Sofasitz fest mit ersten unteren Verbindungselementen (4a) verbunden ist und der Sitzkörper (2) des Sofasitzes fest mit zweiten unteren Verbindungselementen (4b) verbunden ist, die Armlehnen (1) fest mit ersten oberen Verbindungselementen (5a) verbunden sind und die ersten unteren Verbindungselemente (4a) in Steckverbindung mit den ersten oberen Verbindungselementen (5a) stehen, und wobei die Rückenlehne (3) des Sofasitzes fest mit zweiten oberen Verbindungselementen (5b) verbunden ist und die zweiten unteren Verbindungselemente (4b) in Steckverbindung mit den zweiten oberen Verbindungselementen (5b) stehen, wobei, wenn die oberen Verbindungselemente (5a, 5b) mit den unteren Verbindungselementen (4a, 4b) in Steckverbindung stehen, die oberen Verbindungselemente (5a, 5b) zudem mittels Schnappstrukturen in den unteren Verbindungselementen (4a, 4b) eingerastet sind und Vorsprünge (6)

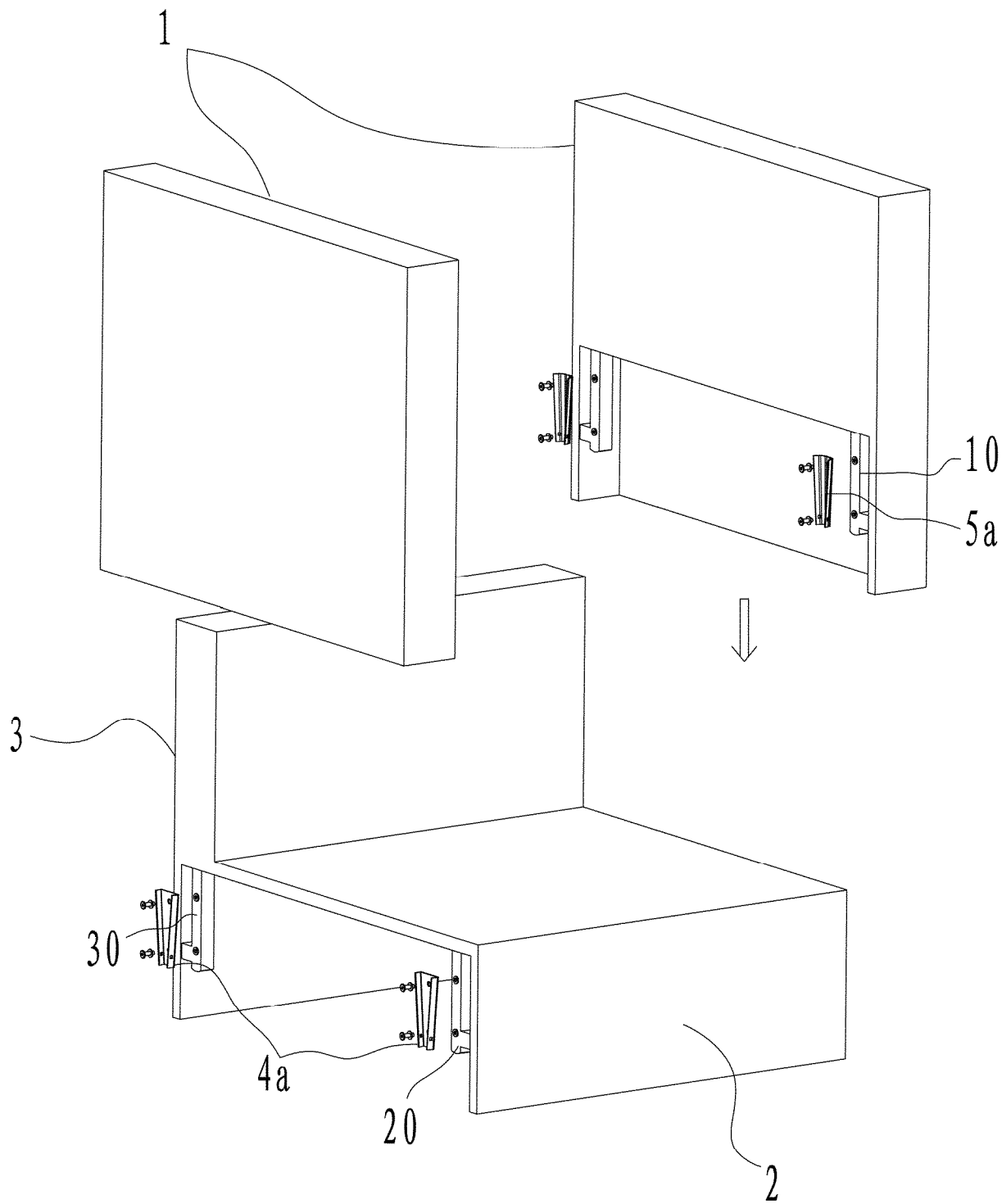
- an den oberen Verbindungselementen (5a, 5b) oder den unteren Verbindungselementen (4a, 4b) angeordnet sind, Schlitz (7) auf der anderen Seite angeordnet sind und die Vorsprünge (6) in die Schlitz (7) einrasten, wobei die Vorsprünge (6) fest mit den oberen Verbindungselementen (5a, 5b) verbunden sind oder fest mit den unteren Verbindungselementen (4a, 4b) verbunden sind.
2. Das schraubenlose zusammengesetzte Sofa nach Anspruch 1, wobei der Sitzkörper (2) des Sofasitzes fest mit der Rückenlehne (3) verbunden ist.
3. Das schraubenlose zusammengesetzte Sofa nach Anspruch 1 oder 2, wobei der Sitzkörper (2) des Sofasitzes und die Rückenlehne (3) jeweils fest mit den ersten unteren Verbindungselementen (4a) verbunden sind und die Armlehnen (1) durch die Steckverbindung zwischen den ersten oberen Verbindungselementen (5a) und den ersten unteren Verbindungselementen (4a) an dem Sitzkörper (2) und der Rückenlehne (3) befestigt werden.
4. Das schraubenlose zusammengesetzte Sofa nach Anspruch 1 oder 2, wobei, wenn die oberen Verbindungselemente (5) in Steckverbindung mit den unteren Verbindungselementen (4) stehen, die oberen Verbindungselemente (5) durch Verjüngungen in Presspassung mit den unteren Verbindungselementen (4) stehen.
5. Das schraubenlose zusammengesetzte Sofa nach Anspruch 4, wobei die oberen Verbindungselemente (5) und die unteren Verbindungselemente (4) alleamt V-förmige Strukturen mit beidseitig gebogenen Kanten sind.
- férieurs (4a, 4b), les connecteurs supérieurs (5a, 5b) sont également encliquetés avec les connecteurs inférieurs (4a, 4b) au moyen de structures à boucle, et des saillies (6) sont disposées sur les connecteurs supérieurs (5a, 5b) ou sur les connecteurs inférieurs (4a, 4b), des fentes (7) sont disposées sur l'autre, et les saillies (6) s'emboîtent par encliquetage dans les fentes (7), dans lequel les saillies (6) sont fermement ajustées aux connecteurs supérieurs (5a, 5b) ou fermement ajustées aux connecteurs inférieurs (4a, 4b).
2. Canapé monté sans vis selon la revendication 1, dans lequel le corps d'assise (2) du siège du canapé est fermement ajusté au dossier (3).
3. Canapé monté sans vis selon la revendication 1 ou 2, dans lequel le corps d'assise (2) du siège du canapé et le dossier (3) sont tous deux fermement ajustés aux premiers connecteurs inférieurs (4a), et les accoudoirs (1) sont montés sur le corps d'assise (2) et le dossier (3), respectivement, par l'ajustement par insertion entre les premiers connecteurs supérieurs (5a) et les premiers connecteurs inférieurs (4a).
4. Canapé monté sans vis selon la revendication 1 ou 2, dans lequel, lorsque les connecteurs supérieurs (5) sont en ajustement par insertion dans les connecteurs inférieurs (4), les connecteurs supérieurs (5) sont en ajustement serré dans les connecteurs inférieurs (4) par des cônes.
5. Canapé monté sans vis selon la revendication 4, dans lequel les connecteurs supérieurs (5) et les connecteurs inférieurs (4) sont tous des structures en forme de V avec des bords repliés des deux côtés

Revendications

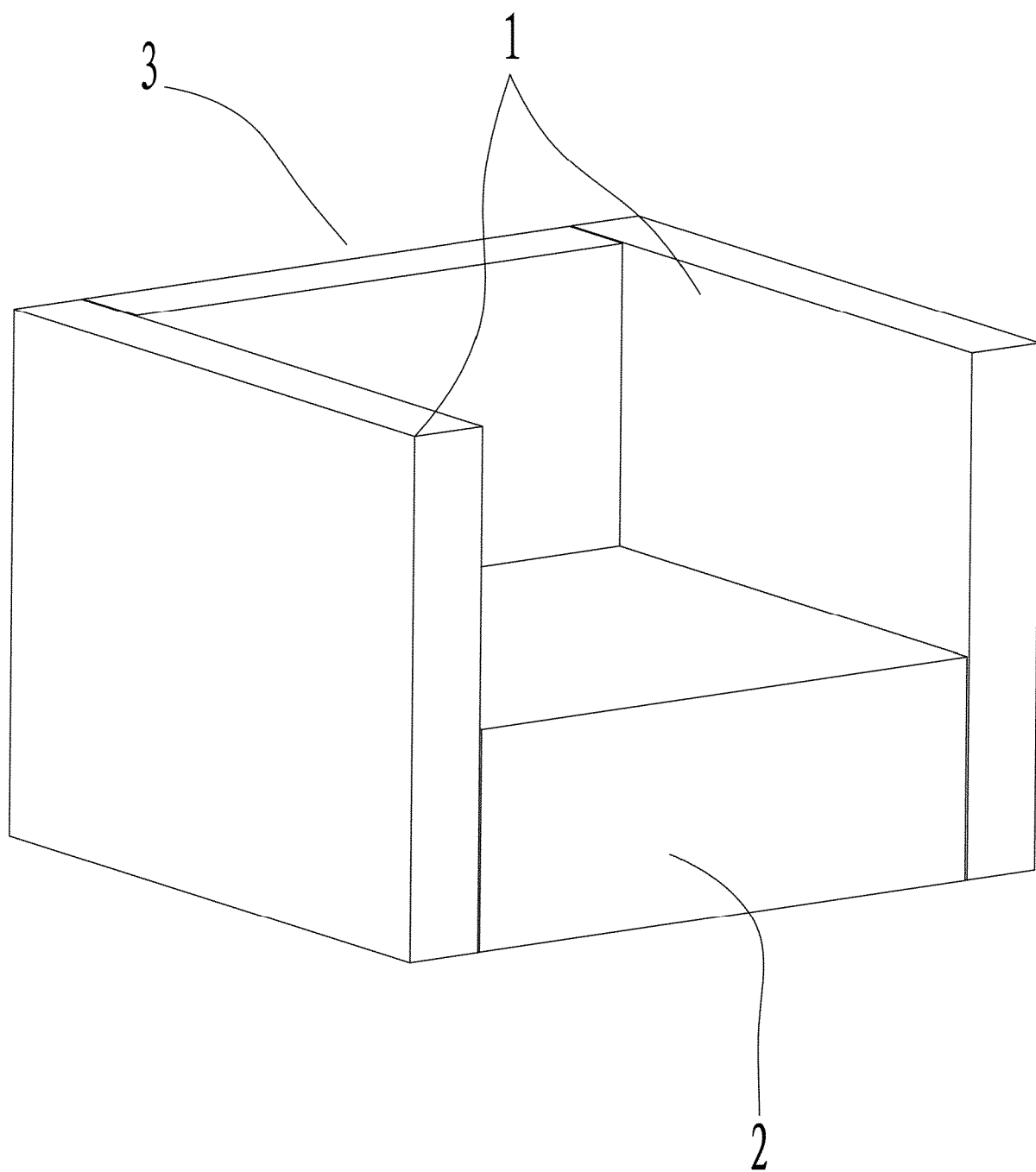
1. Canapé monté sans vis, comprenant une assise de canapé comportant un corps d'assise (2), un dossier (3) et des accoudoirs (1), qui sont montés de manière ajustée, dans lequel l'assise de canapé est fermement ajustée à des premiers connecteurs inférieurs (4a) et le corps d'assise (2) de l'assise de canapé est fermement ajusté à des seconds connecteurs inférieurs (4b), les accoudoirs (1) sont montés de manière ajustée sur des premiers connecteurs supérieurs (5a), et les premiers connecteurs inférieurs (4a) sont montés par insertion dans les premiers connecteurs supérieurs (5a), et dans lequel le dossier (3) de l'assise de canapé est monté de manière fixe sur des seconds connecteurs supérieurs (5b), et les seconds connecteurs inférieurs (4b) sont montés par insertion dans les seconds connecteurs (5b), dans lequel, lorsque les connecteurs supérieurs (5a, 5b) sont montés par insertion dans les connecteurs in-



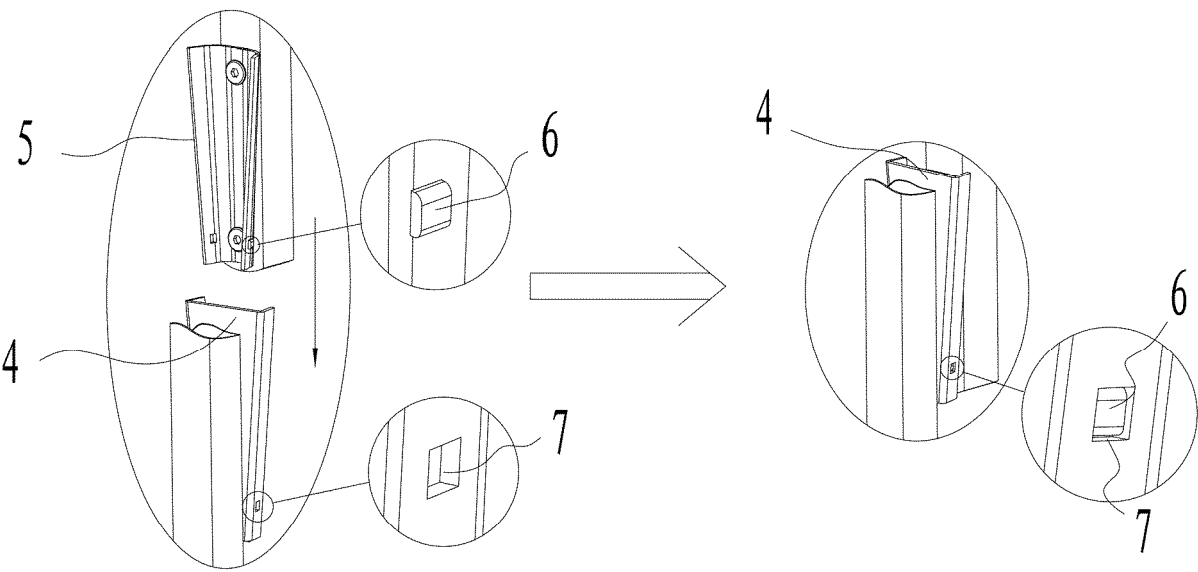
[Figure No.] Fig. 1



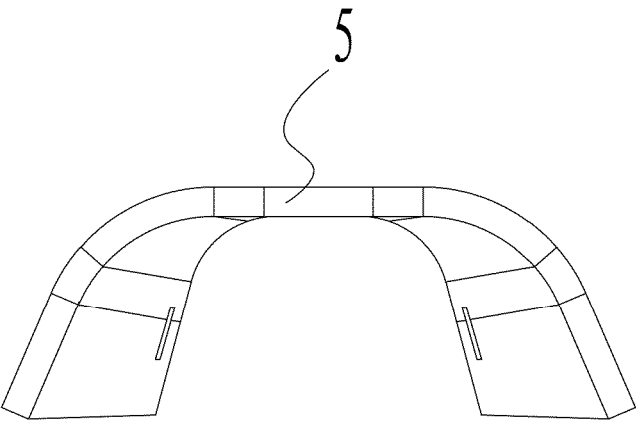
[Figure No.] Fig. 2



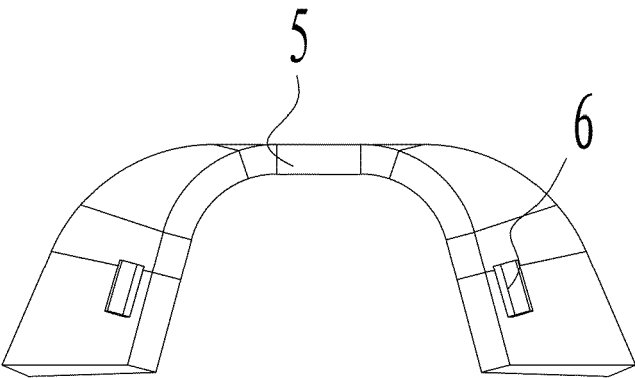
[Figure No.] Fig. 3



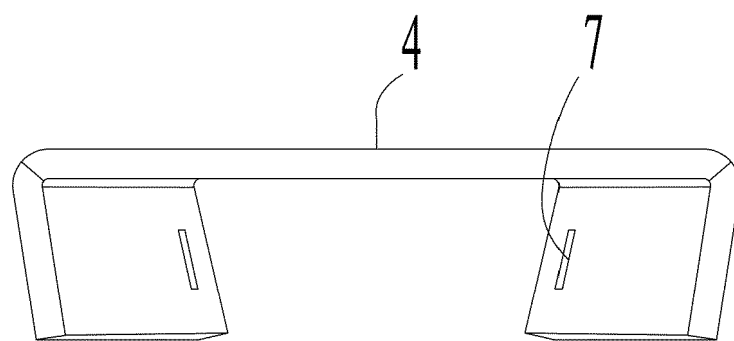
[Figure No.] Fig. 4



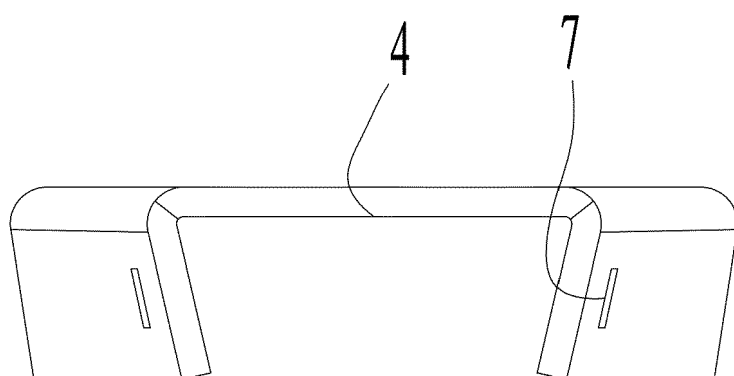
[Figure No.] Fig. 5



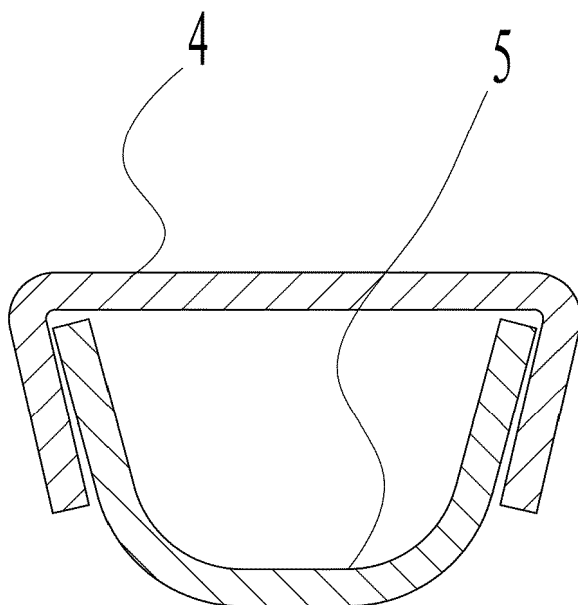
[Figure No.] Fig. 6



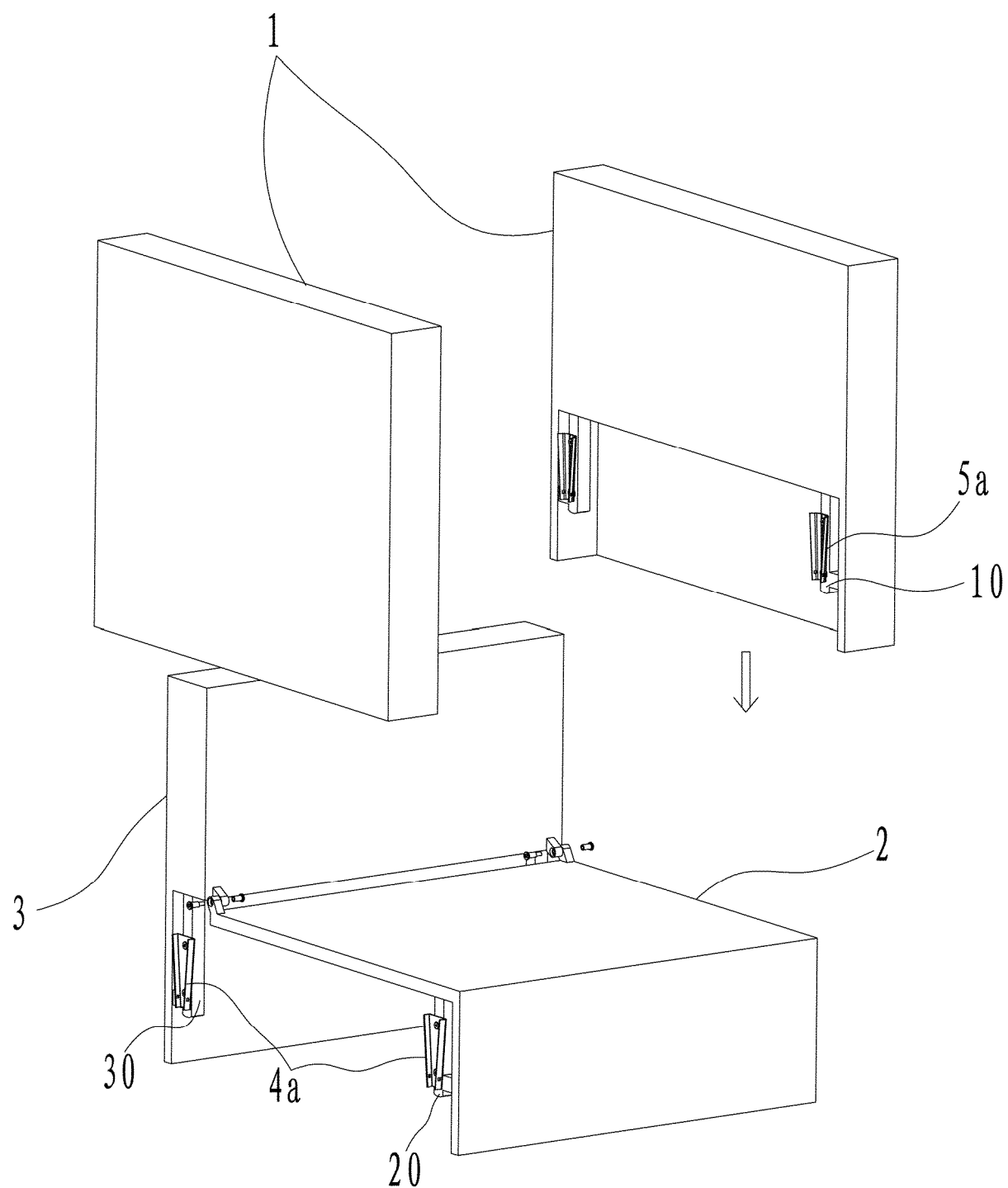
[Figure No.] Fig. 7



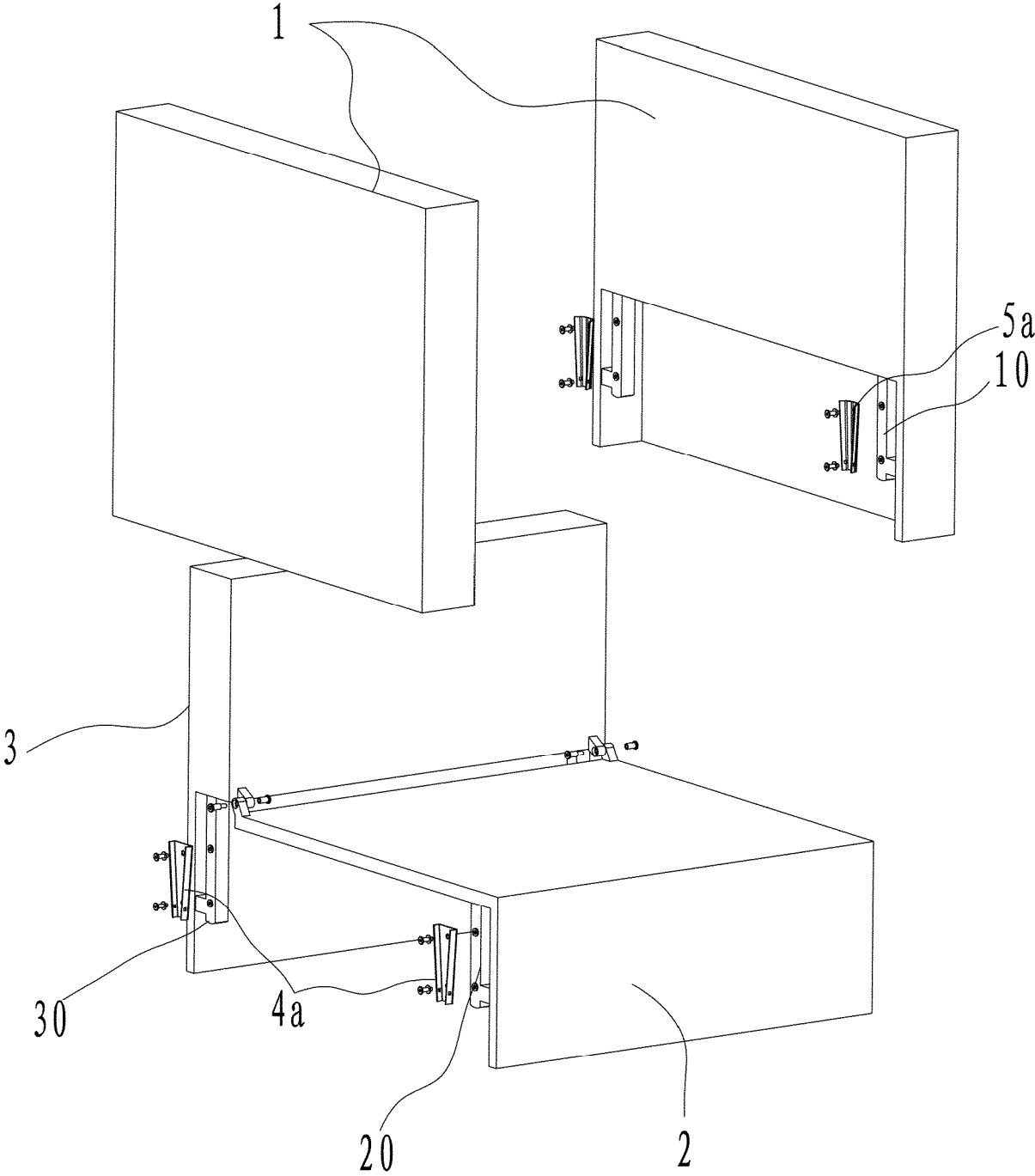
[Figure No.] Fig. 8



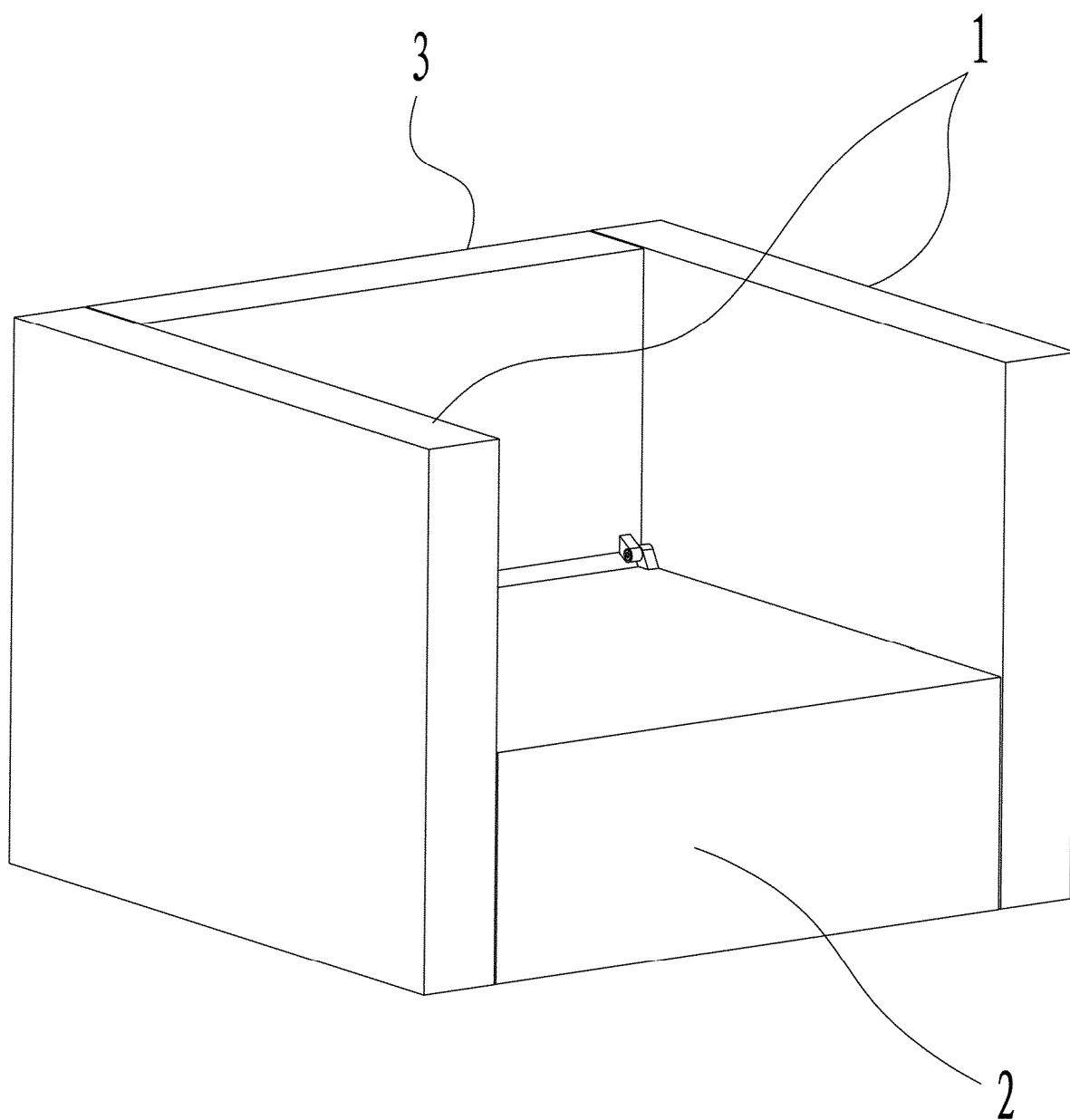
[Figure No.] Fig. 9



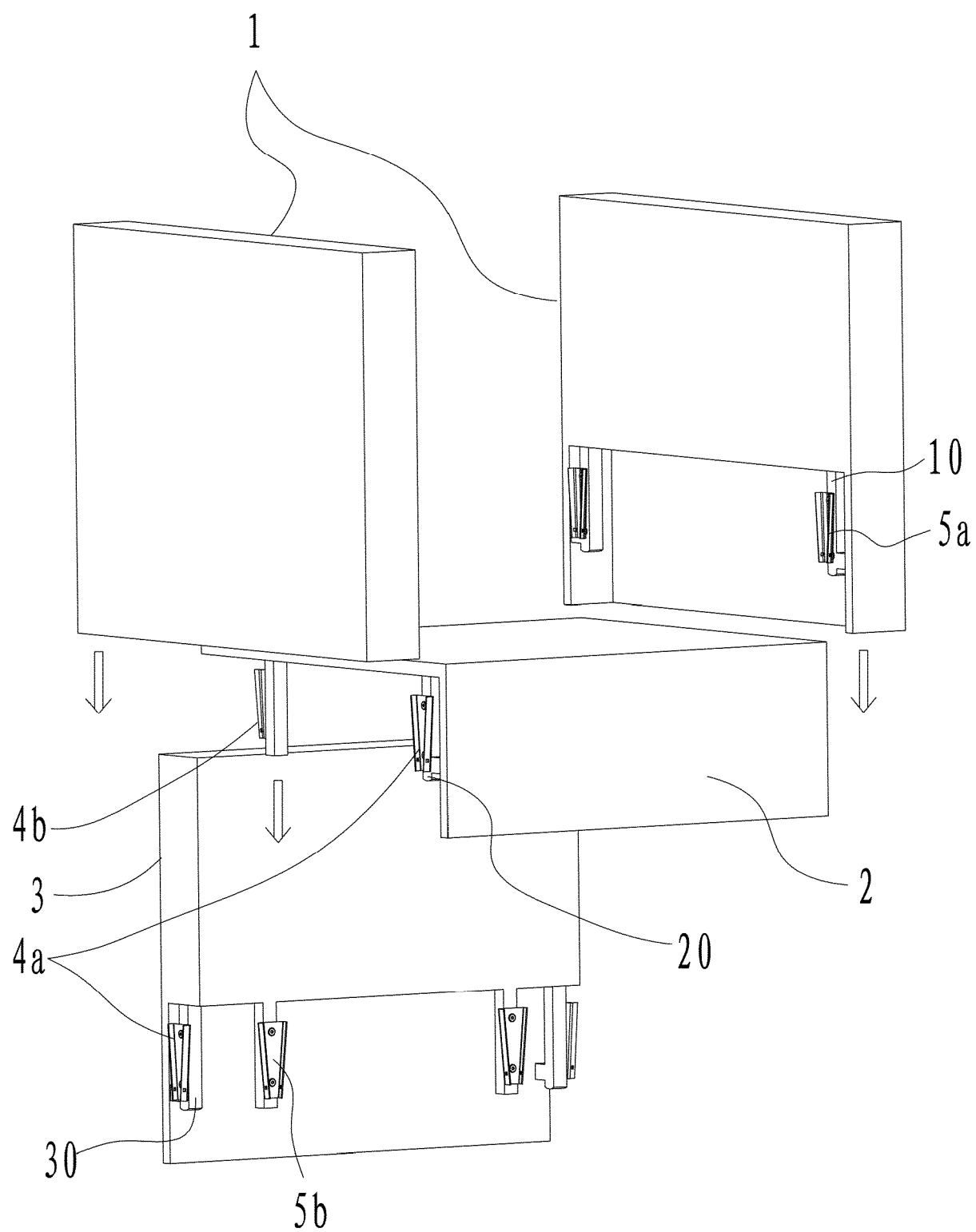
[Figure No.] Fig. 10



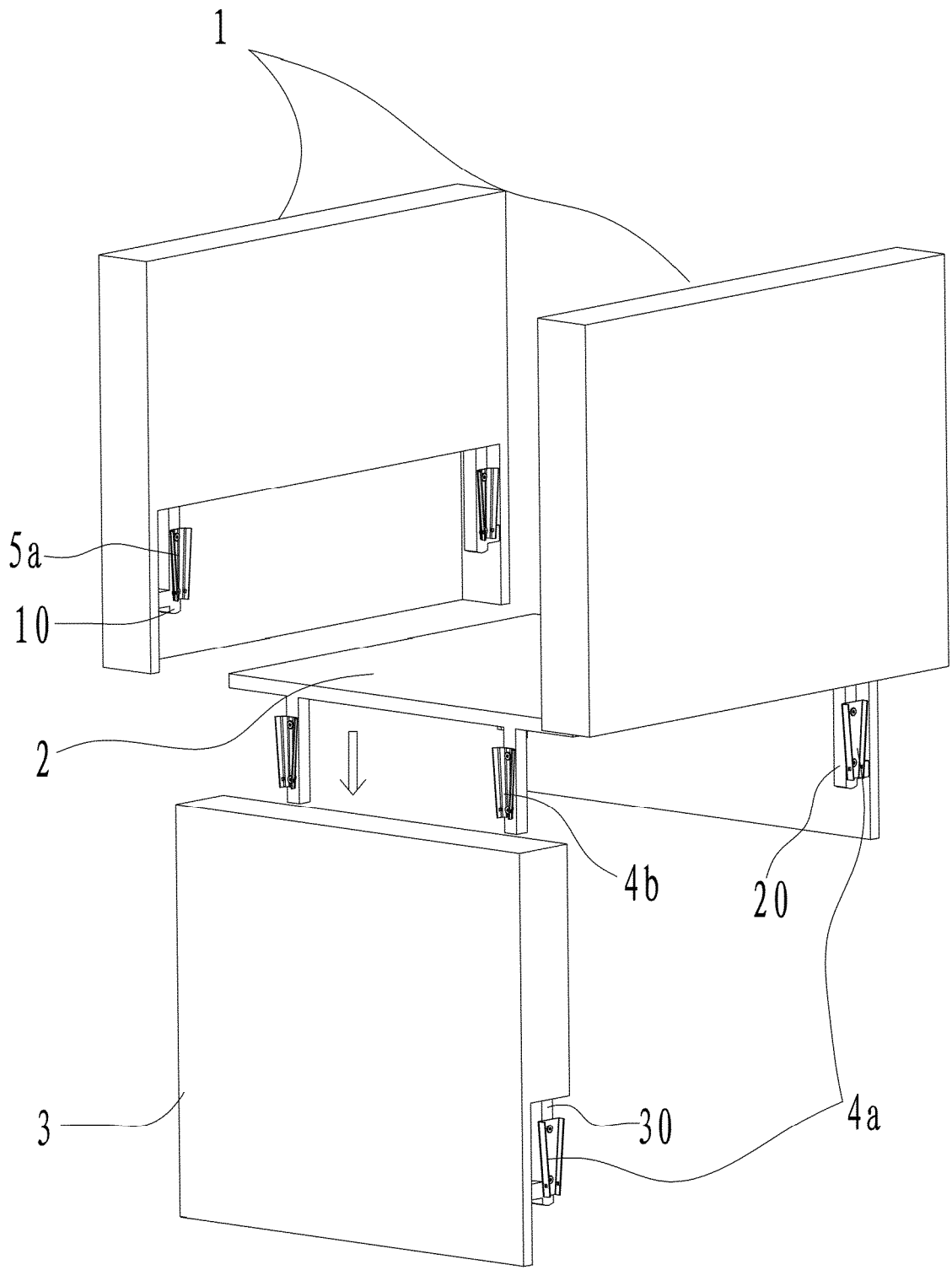
[Figure No.] Fig. 11



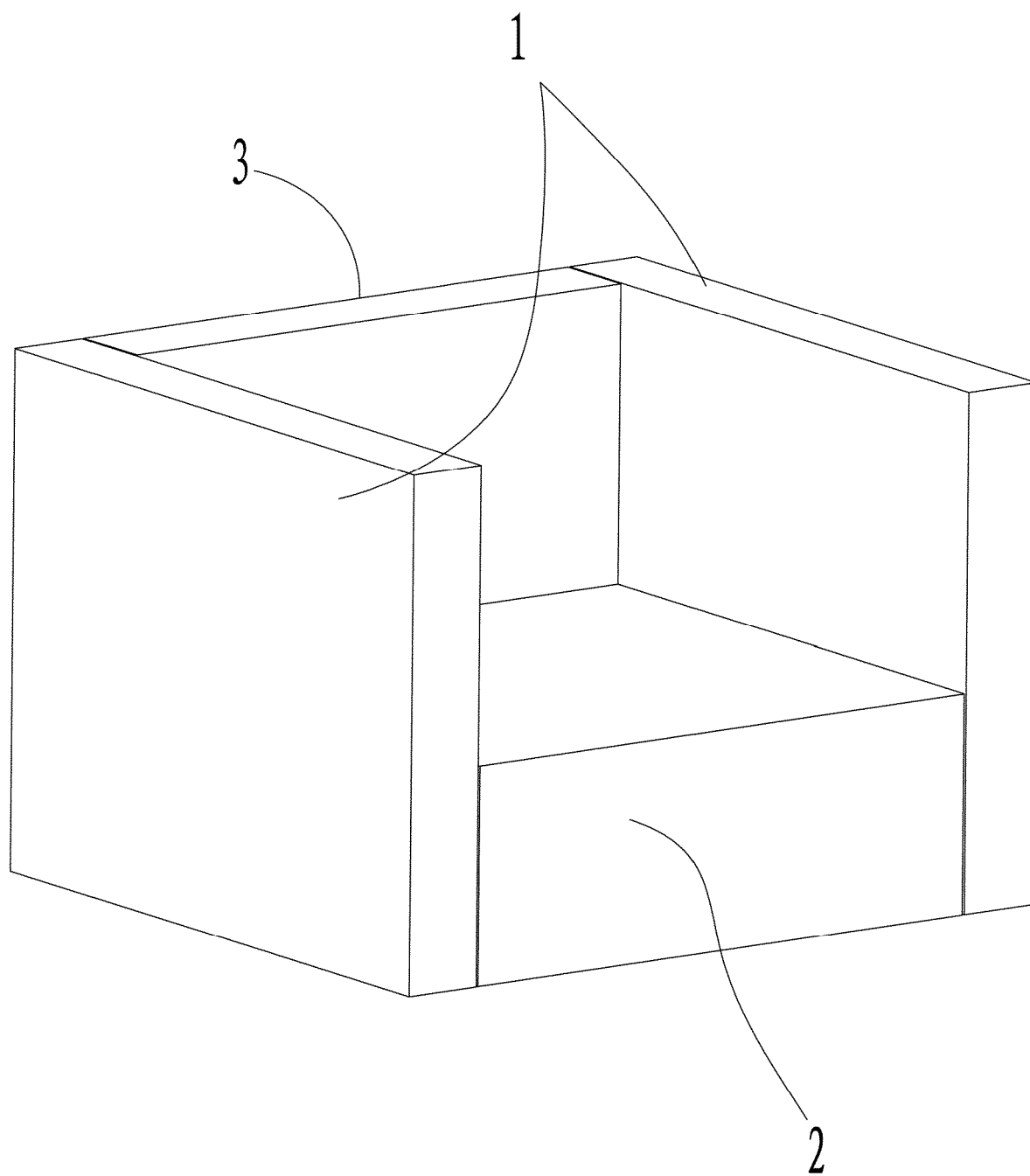
[Figure No.] Fig. 12



[Figure No.] Fig. 13



[Figure No.] Fig. 14



[Figure No.] Fig. 15

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- JP 2002045255 A [0002]