

(19)



(11)

**EP 3 524 536 B1**

(12)

**EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:  
**14.10.2020 Bulletin 2020/42**

(51) Int Cl.:  
**B65D 19/44 (2006.01) B65D 85/48 (2006.01)**

(21) Application number: **18214847.8**

(22) Date of filing: **20.12.2018**

(54) **PALLET**

PALETTE

PALETTE

(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**

(30) Priority: **21.12.2017 PL 42399817**

(43) Date of publication of application:  
**14.08.2019 Bulletin 2019/33**

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## Description

**[0001]** The invention relates to a transportation pallet and more specifically to a pallet for transportation of boards or windows. The pallet is foldable, which enables transporting many empty pallets within a confined loading space.

**[0002]** Utility model application PL125189U discloses a standing rack designed for transportation of windows and having a structure made up of a base connected pivotally with a backing stand where the stand can be locked in vertical position by means of dedicated pins inserted into pivoting hinges. In addition, the standing rack has two brackets to support the base after having it folded onto the backing stand initially turned to the horizontal position, whilst positioning studs are used to fix positions of empty racks after having empty racks stacked to high heaps.

**[0003]** Patent application DE4135677A1 discloses a cargo carrier with a rectangular shape with four poles in corners, the pallet base and two open transverse sides as well as side walls. The right-hand side wall is made up of two parts, i.e. a top one and a bottom one that are pivotally connected and can rotate one against another around a common horizontal axis. Similarly, the left-hand side wall is also made up of two parts, i.e. a top one and a bottom one to enable rotation of them against a common horizontal axis. Both the bottom part of the right-hand side wall and the bottom part of the left-hand wall are each fixed to swivel about the axes on a holder.

**[0004]** Patent FR2757831B1 discloses a pallet that is made up of a platform supported on four legs and a foldable back frame. The frame is provided on one side of the platform and its two parts are extended vertically to support goods to be placed onto the pallet. Detachable hinges of frame type have sleeves to embrace a transverse bar that can be inserted to fix the frame in vertical position whilst the posts are furnished with lugs to enable easy handling.

**[0005]** Patent application JPH111231A discloses a pallet that has a right-hand side and a left-hand side posts pivotally attached to the base by means of hinges. These posts serve as supports for pinching members that are movable seated on these posts and can be locked by means of a pair of fixing devices. After placing a bay window under a vertical posture on the base, the pair of pinching members are moved to supporting positions, so the vertical edge parts of the bay window can be pinched.

**[0006]** Utility model application CN204137553U discloses a shelf for storage of glass parts, which comprises a base, wherein the base is defined by two longitudinal rods and two transverse rods and is of a frame type structure. Triangular supports are correspondingly and fixedly arranged on the two longitudinal rods, a cross beam is arranged between the tops of the triangular supports, and a plurality of sliding bodies which are capable of relatively sliding along the two transverse rods and the cross beam are arranged between the two triangular supports.

Each sliding body comprises a sliding beam arranged between the two transverse rods in a sliding mode and a sliding support, wherein the top end of the sliding support is arranged on the cross beam in a sliding mode, and the bottom end of the sliding support is fixedly connected with the corresponding sliding beam. The upper planes of the sliding beams are flush with the upper planes of the two longitudinal rods.

**[0007]** Patent application WO2017069496A1 discloses a cassette and a method of packaging a plurality of glass plates. The cassette comprises a bottom cover that serves as a support frame for bottom surfaces of the plurality of glass substrates, and a back cover connected to the bottom cover and designed to support the back surface of the cassette. The front surface, which faces the cassette, of the back frame is a vertical surface and the upper surface, which faces the cassette, of the bottom frame is a horizontal surface.

**[0008]** Patent US5388532A discloses a pallet for moving and holding glass plates of various sizes, which include a rectangular floor framework, a front stanchion inserted into a front stanchion support disposed at each front corner of the floor framework. A rear stanchion is inserted into a rear stanchion support disposed at each rear corner of the floor framework. A rear framework is supported by the rear stanchions. Additionally a headrest is supported by the rear framework. Longitudinally extending floor beams are supported by the floor framework. An assembly of a bar and pin is designed for stepwise adjusting the levels of the front stanchions, the headrest, the distances between the floor beams. Additionally there is disclosed an assembly for transversely bringing down and pulling up the front stanchion and stanchion supports and assembly for transversely bringing down and pulling up the rear stanchion and stanchion support.

**[0009]** Patent US2009071381A1 discloses a pallet designed to hold at least one window frame. The pallet includes a base and movable sides pivotally attached to the base. The movable sides are positionable to be substantially perpendicular to the base and are configured to hold the window frame. Connectors attached to the base and the movable sides, respectively, prevent the first and second movable sides from moving away from each other. A method for using the pallet is also disclosed.

**[0010]** Patent application JPH11227771 discloses a carry pallet for carrying objects. The pallet includes a receiver with a roller for vertically mounting each opening member on a base panel of a pallet and includes a cushioning partition sheet. The partition sheet is disposed in between of opening members of the receiver base with a roller and bound with a belt to fix, thereby allowing a bare opening member without packing to be carried.

**[0011]** Patent application CN102363556A discloses a double-station frame for glass objects. It comprises a frame body for stacking glass slantwise, and is characterized in that the glass frame body is provided with a double-station stacking platform and a manual operation

platform is arranged in the middle of the double-station stacking platform.

**[0012]** Utility model application CN203753630U discloses a glass transportation device that comprises a support frame. Wheels are arranged at the bottom of the support frame, and a telescopic support is installed on the support frame and is of a U-shaped structure. The telescopic support comprises a leaning support. Additionally telescopic rods are arranged on two sides of the leaning support, while vertical rods are arranged on the support frame. The telescopic rods are installed in the vertical rods in an inner embedding mode.

**[0013]** Utility model application CN203753630U discloses a glass transportation fixing frame. The glass transportation fixing frame comprises a plurality of supporting rods and a horizontal bottom frame. The bottom frame is provided with two parallel side rods and fixedly connected with a guiding rod. The guiding rod is in sliding connection with fixing rods. Locating parts are arranged between the fixing rods and the guiding rod. The supporting rods are tubular, one ends of the supporting rods are connected to the side rods in a sliding mode, and the other ends of the supporting rods are connected with telescopic rods in an inserting mode. The free ends of the telescopic rods are connected to the fixing rods in a sliding mode. Fixing parts are arranged between the telescopic rods and the supporting rods. The supporting rods are connected with holding rods in a sliding mode.

**[0014]** The closest prior art is a patent KR101384013B1, which discloses a pallet intended to transport and store glass or window frames. The pallet has a loading table which is limited by supporting posts, supporting rods and by a rear support platform, so the loading table is open at the front. The rear support platform has an auxiliary support, which might be raised or folded according to the height of the cargo and which is coupled to the upper end of the rear support by a hinge pin. The pallet is stored in a folded state so the supporting posts, supporting rods are folded toward the loading table and they are fixed by standing when they are used. In each corner of the loading table there is a strut with assembled the support post. Also each support post is provided at their lower end with shaft pin about which the support post is turned at the time of folding. The slot, into which the shaft pin is inserted, is cut into the strut. So each strut has a long hole formed on each of the front surface and the rear surface so that the support posts can be folded toward the loading table. The user lifts the support posts and pulls the lower end of the support posts out of the struts and then turns the posts toward the cuts in struts. At this time, the support posts rotate around the shaft pins. The rear side support is connected to the left and right support posts by a connecting rod provided on the inner side of the rear struts. The connecting rod includes a shaft rod directly connected to each of the rear struts and a rotary shaft adjacent to the shaft rod. There is also a stopper that is fixed to the shaft rod by passing a fixing bolt through the rotary shaft. When the fixing bolt

is tightened, the stopper moves to rotate the rotary shaft and is brought into close contact with the shaft rod to stop the rotation. The pallet is also equipped with a latch provided on the rear support post in order to lock rear support platform, especially its auxiliary support.

**[0015]** The problem that is to be resolved consists in transportation of a plurality of products that represent fragile items, for instance glass panels or windows, that are to be placed on plurality of pallets and put into a confined transportation space, for instance semitrailers of trucks. After delivery to the destination site, empty pallets are returned and must take minimum space in a single, limited cargo space.

**[0016]** The invention relates to a pallet that is described in the preamble to the independent claim No. 1. The invention consists in that a third beam is attached to an upper part of the support, wherein in an unfolded configuration of the pallet said third beam extends towards the base and an of the said third beam rests on an upper end of a respective backing stand beam.

**[0017]** Preferably a safeguarding mechanism is provided between the second beam of the support and the backing stand beam. In addition, a second safeguarding mechanism may be provided between the first beam of the support and the second beam of the support. In addition, a locking mechanism may be attached to a bottom end of the backing stand beam to fix position of that beam with respect to the base. Moreover, a first engagement may be attached to an the upper end of the backing stand beam and the said first engagement is designed to engage with a second engagement attached to an end part of the second beam of the support. In addition a gas-filled damping device may be provided between the base and the support. Fixed feet extending upwards and /or foldable feet may be attached to corners of the base.

**[0018]** The beneficial effect of this invention is the possibility to safely transport and store goods with the possibility to fold empty pallets and move them inside a one confined cargo space, for instance a truck semitrailer. Application of safeguarding and locking mechanisms prevents from uncontrolled folding of the support. In addition, the engagements make the connections between individual members more rigid, which improves stability of the structure. It is important for pallets having large size of whole structure. Application of such engaging members increases friction surfaces, which enhances rigidity of the whole structure. Folded feet and / or feet extending upwards enable steady stacking of pallets one on another in rectangular heaps, which improves safety during transportation of empty pallets. Application of a gas-filled damper device also improves safety of pallets handling.

**[0019]** An embodiment of the invention is presented in Fig. 8. Figures 1-7 show a pallet which is not in accordance with the present invention, nevertheless illustrates a plurality of features of the preamble of claim 1 and the dependent claims.

Fig. 1 presents an isometric top view of a pallet in the unfolded mode,

Fig. 2 is a front view of the pallet according to Fig. 1 in the unfolded mode,

Fig. 3 is a cross-section view of the pallet according to Fig. 1, taken at the A-A plane,

Fig. 4 is a cross-section view of the pallet according to Fig. 1, taken at the B-B plane,

Fig. 5 is an isometric top view of the pallet according to Fig. 1 after the second step of folding,

Fig. 6 is an isometric top view of the pallet according to Fig. 1 after the third step of folding,

Fig. 7 is an isometric top view of the completely folded pallet according to Fig. 1,

Fig. 8 is an isometric top view of a pallet according to an embodiment of the invention in the unfolded mode.

**[0020]** The pallet according to Figures 1-7 has a width for instance of 1.2 m, length of 2.4 m and the total height in the unfolded mode of 2.1834 m. The base is covered with wooden planks. The first beam 3a of the support 3 is attached to each end of the side beam 1a by means of the first hinge 2, and is foldable towards the center of the base 1. A second beam 3b of the support 3 is attached to each first beam 3a of the support 3 by means of a second hinge 4, and is foldable outwards of the base 1. In turn, one backing stand beam 6 is attached to the base 1 nearby each end of the side beam 1a by means of a third hinge 5. Beams 6 are foldable towards the middle of side beam 1a. Between the second beam 3b of the support 3 and the backing stand beam 6 there is a safeguarding mechanism 7 designed as a lever handle. Similarly, between the first beams 3a of the support 3 and the second beams 3b of the support 3 there are second safeguarding mechanisms 8 designed as a lever handle. The bottom end of the backing stand beam 6 is provided with a locking mechanism 9 designed to lock position of that beam against the base 1. The top end of the backing stand beam 6 is provided with a first engagement 10 that engages with the second engagement 11 attached to the end part of the second beam 3b of the support 3. In the middle part of the side beam 1a there are attached two central support beams 3d of the support 3 by means of fourth hinges 18. The second support beams 3e of the support 3 are attached to the said beams 3d by means of fifth hinges 19. The support 3 comprises also a central beam 3c that is provided between the first beams 3a of the support 3 and that has the third engagement 12 provided at its bottom end and engaged with the fourth engagement 13 fixed to the base 1. The central beam 3c itself is T-shaped and two upper ends of the T bar are attached to top ends of the central support beams 3d of the support 3. Feet 14 extending upwards are mounted at corners of the base 1 at the side of the beams of the support 3 whilst foldable feet 15 are provided at the opposite side of the base 1. At least one gas-filled damping device 17 is mounted between the base 1 and the support

3. Specifically, the illustrated pallet has two said gas-filled damping devices 17, where one end of said devices is attached to the base 1 and the other ends of them are attached to bottom ends of the central support beams 3d of the support 3.

**[0021]** The embodiment presented in Fig. 8 shows the main feature of the invention. The pallet has a width for instance of 1.2 m with the length of 1.5 m and the total height in the unfolded position of 2.1834 m. Its design is similar to the pallet of Figures 1-7. In this embodiment the pallet does not have a central support beam 3c which is substituted with one support beam 3d of the support 3 and one piece of the second support beam 3e of the support 3. In addition, a third beam 16 fixed to an upper part of the support 3, wherein in an and in unfolded configuration of the pallet, said third beam 16 extends towards the base 1 and an end of the third beam 16 rests on an upper end of a respective backing stand beam 6.

Key for figures:

**[0022]**

- 1 - base
- 1a - side beam
- 2 - first hinge
- 3 - support
- 3a - first support beam
- 3b - second support beam
- 3c - central support beam
- 3d - load-bearing beam of the support
- 3e - second load-bearing beam of the support
- 4 - second hinge
- 5 - third hinge
- 6 - backing stand beam
- 7 - safeguarding mechanism
- 8 - second safeguarding mechanism
- 9 - locking mechanism
- 10 - first engagement
- 11 - second engagement
- 12 - third engagement
- 13 - fourth engagement
- 14 - fixed foot
- 15 - folded foot
- 16 - third beam
- 17 - gas-filled damping device
- 18 - fourth hinge
- 19 - fifth hinge

**Claims**

1. Transportation pallet having a base (1) with a side beam (1a), where first beams (3a) of a support (3) foldable towards the base (1) are attached to each end part of the said side beam (1a) by means of first hinges (2), and where an end of each first beam (3a) of the support (3) is connected by means of a second

- hinge (4) with a second beam (3b) of the support (3) foldable outwards of the base (1) and each end part of the side beam (1a) of the base (1) is attached by means of a third hinge (5) to a backing stand beam (6), where said backing stand beams (6) are foldable towards the middle of the side beam (1a), **characterized in that** a third beam (16) is attached to an upper part of the support (3), wherein in an unfolded configuration of the pallet and said third beam (16) extends towards the base (1) and an end of the said third beam (16) rests on an upper end of a respective backing stand beam (6).
2. Transportation pallet according to Claim 1, **characterized in that** a safeguarding mechanism (7) is provided between the second beam (3b) of the support (3) and the backing stand beam (6).
  3. Transportation pallet according to Claim 1 or 2, **characterized in that** a second safeguarding mechanism (8) is provided between the first beam (3a) of the support (3) and the second beam (3b) of the support (3).
  4. Transportation pallet according to one of the Claims 1 to 3, **characterized in that** a locking mechanism (9) is attached to a bottom end of the backing stand beam (6) and the locking mechanism is designed to fix position of said backing stand beam (6) with respect to the base (1).
  5. Transportation pallet according to one of the Claims 1 to 4, **characterized in that** a first engagement (10) is attached to the upper end of the backing stand beam (6) and said first engagement is designed to engage with a second engagement (11) attached to an end part of the second beam (3b) of the support (3).
  6. Transportation pallet according to one of the Claims 1 to 5, **characterized in that** at least one gas-filled damping device (17) is provided between the base (1) and the support (3).
  7. Transportation pallet according to one of the Claims 1 to 6, **characterized in that** feet are mounted in corners of the base (1).
  8. Transportation pallet according to Claim 7, **characterized in that** the said feet are fixed members (14) and extend upwards.
  9. Transportation pallet according the Claims 7, **characterized in that** the said feet are foldable members (15).

## Patentansprüche

1. Transportpalette mit einer Basis (1) mit einem Seitenbalken (1a), wobei die ersten Balken (3a) des Trägers (3), die sich zur Basis (1) hin falten, mit jedem Ende des Seitenbalkens (1a) durch die ersten Scharniere (2) verbunden sind, und das Ende jedes ersten Balkens (3a) des Trägers (3) durch ein zweites Scharnier (4) mit einem zweiten Balken (3b) des Trägers (3) verbunden ist, der sich von der Basis (1) nach außen hin faltet, und jeder Endabschnitt des Seitenbalkens (1a) der Basis (1) durch ein drittes Scharnier (5) mit einem Rückenlehnenbalken (6) verbunden ist, und die Rückenlehnenbalken (6) sich zur Mitte des Seitenbalkens (1a) hin falten, **dadurch gekennzeichnet, dass** der dritte Balken (16) am oberen Teil des Trägers (3) angebracht ist, der sich in der ausgeklappten Position der Palette zur Basis (1) hin erstreckt und das Ende des dritten Balkens (16) auf dem oberen Ende des entsprechenden Rückenlehnenbalkens (6) ruht.
2. Transportpalette nach Anspruch 1, **dadurch gekennzeichnet, dass** ein Sicherungsmechanismus (7) zwischen dem zweiten Balken (3b) des Träger (3) und dem Rücklehnenbalken (6) vorgesehen ist.
3. Transportpalette nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** ein zweiter Sicherungsmechanismus (8) zwischen dem ersten Balken (3a) des Trägers (3) und dem zweiten Balken (3b) des Trägers (3) vorgesehen ist.
4. Transportpalette nach einem der Ansprüche von 1 bis 3, **dadurch gekennzeichnet, dass** ein Verriegelungsmechanismus (9) am unteren Ende des Rückenlehnenbalkens (6) angebracht ist und die Position des Rückenlehnenbalkens (6) relativ zur Basis (1) verriegeln soll.
5. Transportpalette nach einem der Ansprüche von 1 bis 4, **dadurch gekennzeichnet, dass** eine erste Verzahnung (10) am oberen Ende des Rückenlehnenbalkens (6) befestigt ist und diese erste Verzahnung für Mitbetrieb mit einer zweiten Verzahnung (11) am Endabschnitt des zweiten Balkens (3b) des Trägers (3) vorgesehen ist.
6. Transportpalette nach einem der Ansprüche von 1 bis 5, **dadurch gekennzeichnet, dass** mindestens ein Gasstoßdämpfer (17) zwischen der Basis (1) und dem Träger (3) vorgesehen ist.
7. Transportpalette nach einem der Ansprüche von 1 bis 6, **dadurch gekennzeichnet, dass** die Füße an den Ecken der Basis (1) befestigt sind.
8. Transportpalette nach Anspruch 7, **dadurch ge-**

**kennzeichnet, dass** die FüÙe FestfüÙe (14) sind, die nach oben gerichtet sind.

9. Transportpalette nach Anspruch 7, **dadurch gekennzeichnet, dass** die FüÙe faltbare FüÙe (15) sind.

#### Revendications

1. La palette de transport équipé d'un socle (1) avec une poutre latérale (1a), les premières poutres (3a) du support (3) se pliant vers le socle (1) sont reliées à chaque extrémité de cette poutre latérale (1a) à l'aide des premières charnières (2), et aussi l'extrémité de chaque première poutre (3a) du support (3) est reliée, à l'aide de la deuxième charnière (4) à la deuxième poutre (3b) du support (3) se pliant vers la direction extérieure par rapport au socle (1), et chaque partie finale de la poutre latérale (1a) du socle (1) est reliée à l'aide de la troisième charnière (5) à la poutre d'appui (6); les poutres d'appui (6) se plient vers le centre de la poutre latérale (1a), **caractérisée en ce que** la troisième poutre (16) est fixée sur la partie supérieure du support (3), en notant qu'avec la position dépliée de la palette, cette troisième poutre (16) est orientée vers le socle (1) et l'extrémité de cette troisième poutre (16) s'appuie sur l'extrémité supérieure de la poutre d'appui (6).
2. La palette, selon la revendication 1, **caractérisée en ce que** le mécanisme de sécurité (7) est situé entre la deuxième poutre (3b) du support (3) a la poutre d'appui (6).
3. La palette, selon la revendication 1 ou 2, **caractérisée en ce que** le deuxième mécanisme de sécurité (8) est situé entre la première poutre (3a) du support (3) et la deuxième poutre (3b) du support (3).
4. La palette, selon l'une des revendications de 1 à 3, **caractérisée en ce que** le mécanisme de verrouillage (9) est fixé sur l'extrémité inférieure de la poutre d'appui (6) et est destiné au verrouillage de la position de la poutre d'appui (6) par rapport au socle (1).
5. La palette, selon l'une des revendications de 1 à 4, **caractérisée en ce que** le premier engrenage (10) est fixé sur l'extrémité supérieure de la poutre d'appui (6) et ce premier engrenage (10) est destiné au fonctionnement avec le deuxième engrenage (11) fixé sur la partie finale de la deuxième poutre (3b) du support (3).
6. La palette, selon l'une des revendications de 1 à 5, **caractérisée en ce qu'**au moins un amortisseur à gaz (17) est situé entre le socle (1) et le support (3).

7. La palette, selon l'une des revendications de 1 à 6, **caractérisée en ce que** les pieds sont fixés sur les pièces de coin du socle (1).

- 5 8. La palette, selon la revendication 7, **caractérisée en ce que** les pieds sont les pieds fixes (14) orientés vers le haut.

- 10 9. La palette, selon la revendication 7, **caractérisée en ce que** les pieds sont les pieds pliables (15).

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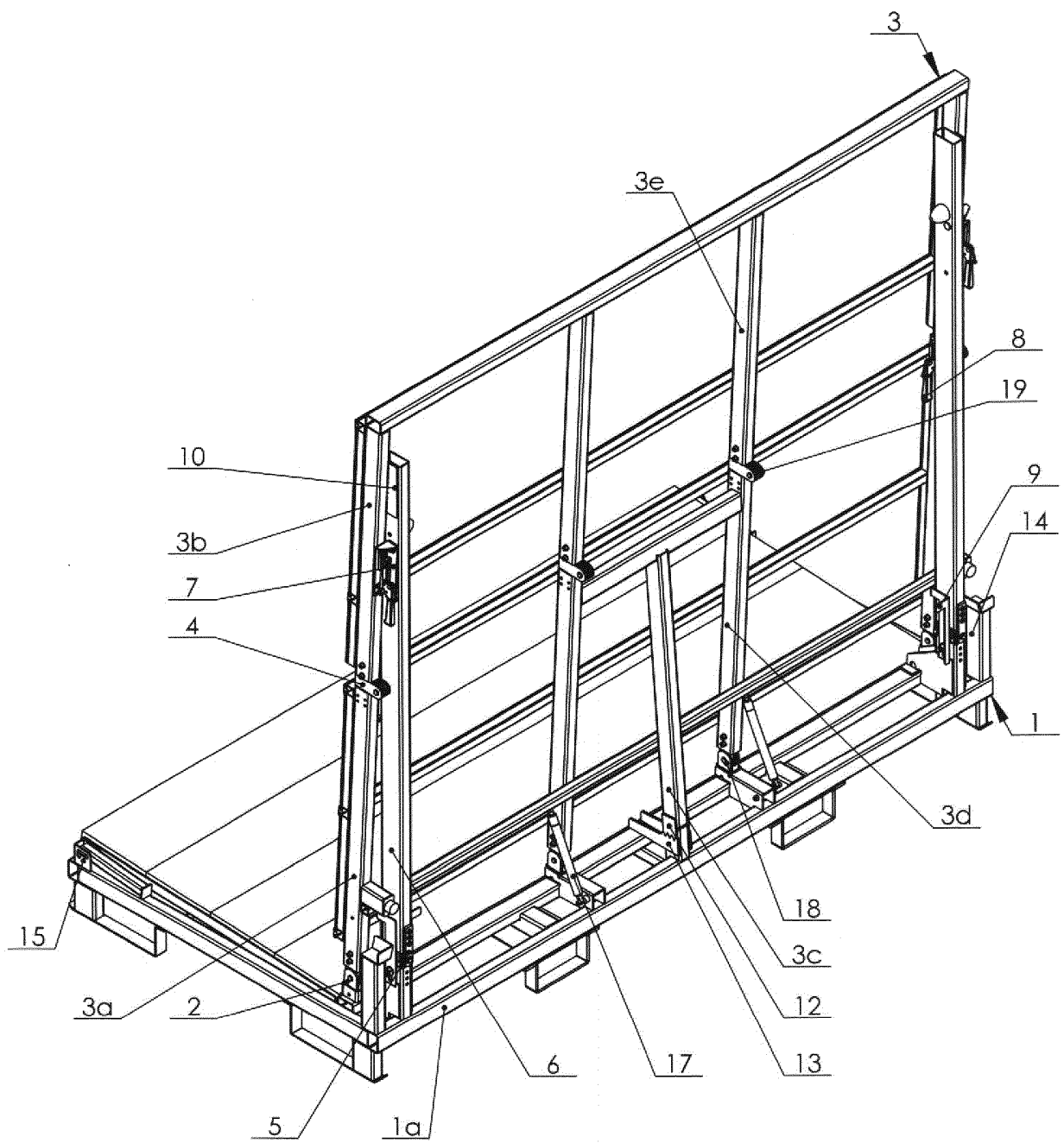


Fig. 1

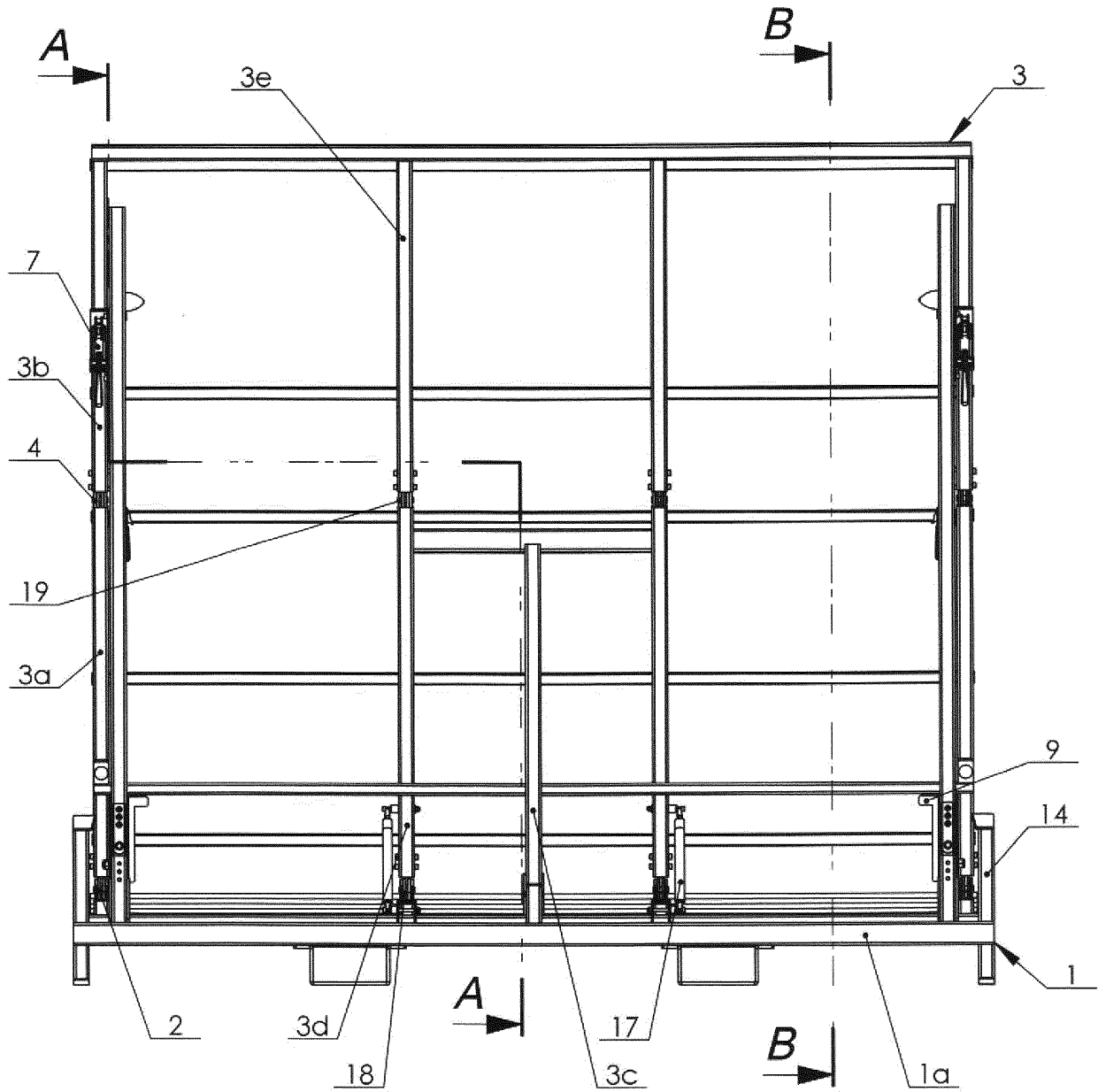


Fig. 2

A-A

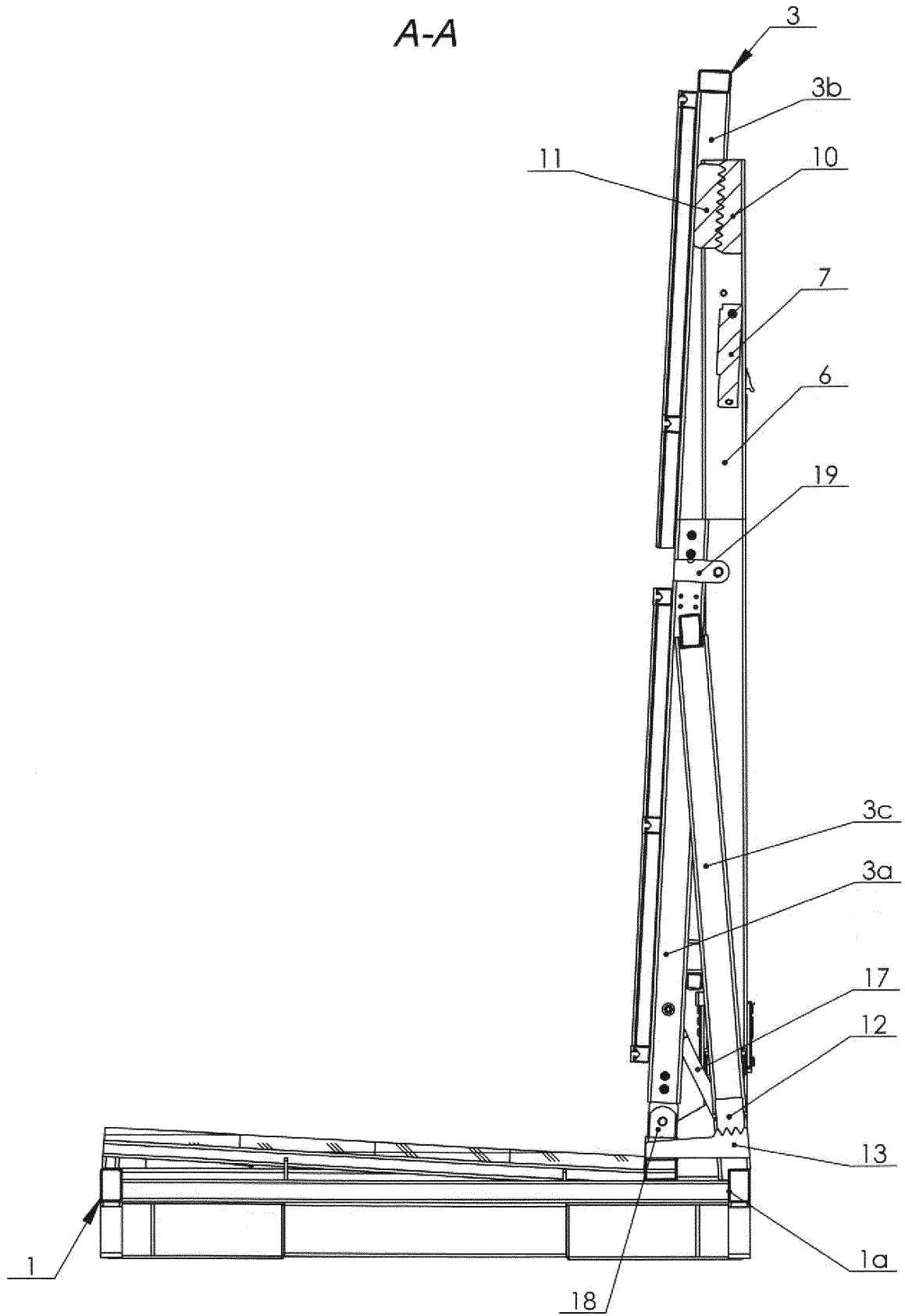
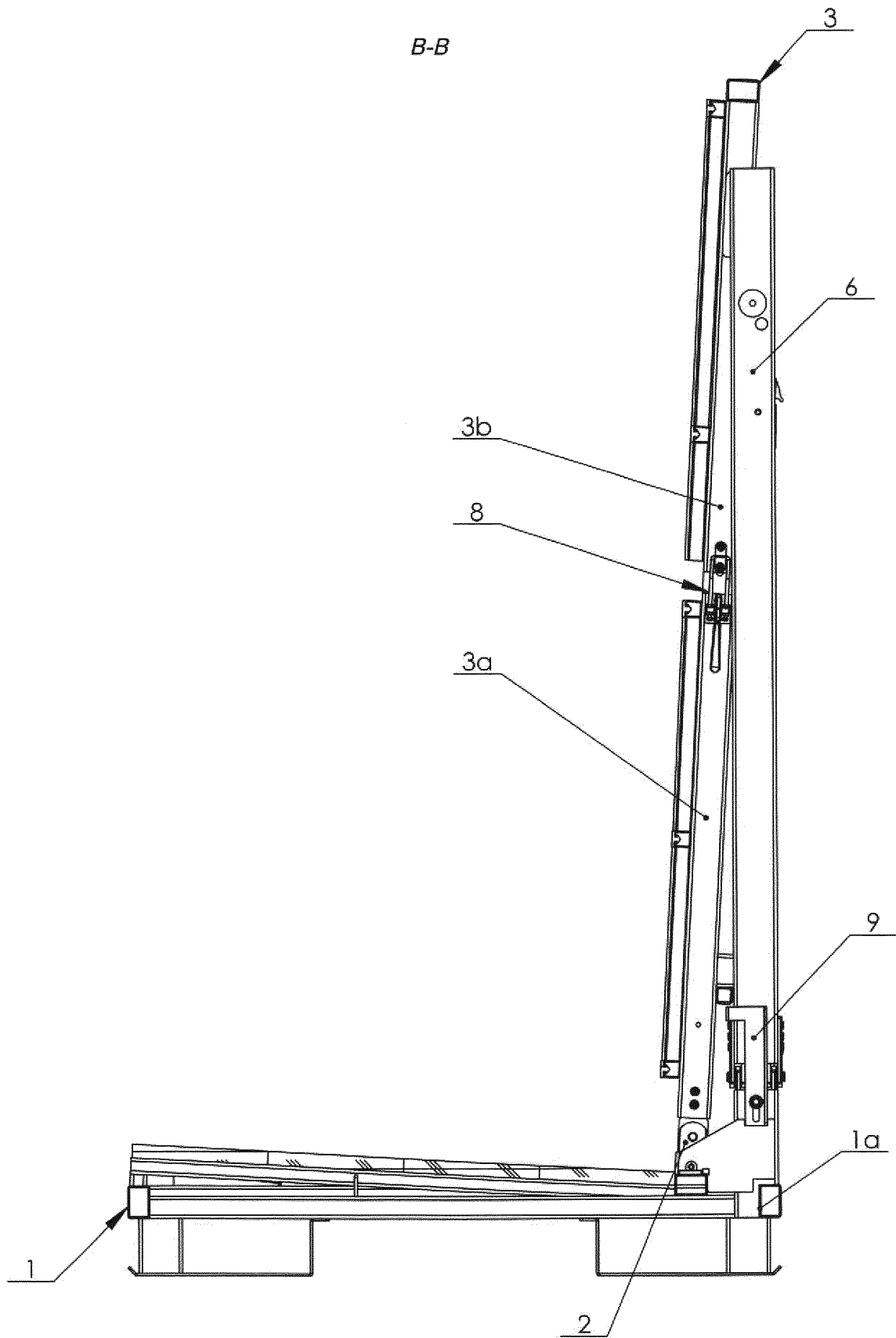


Fig. 3



*Fig. 4*

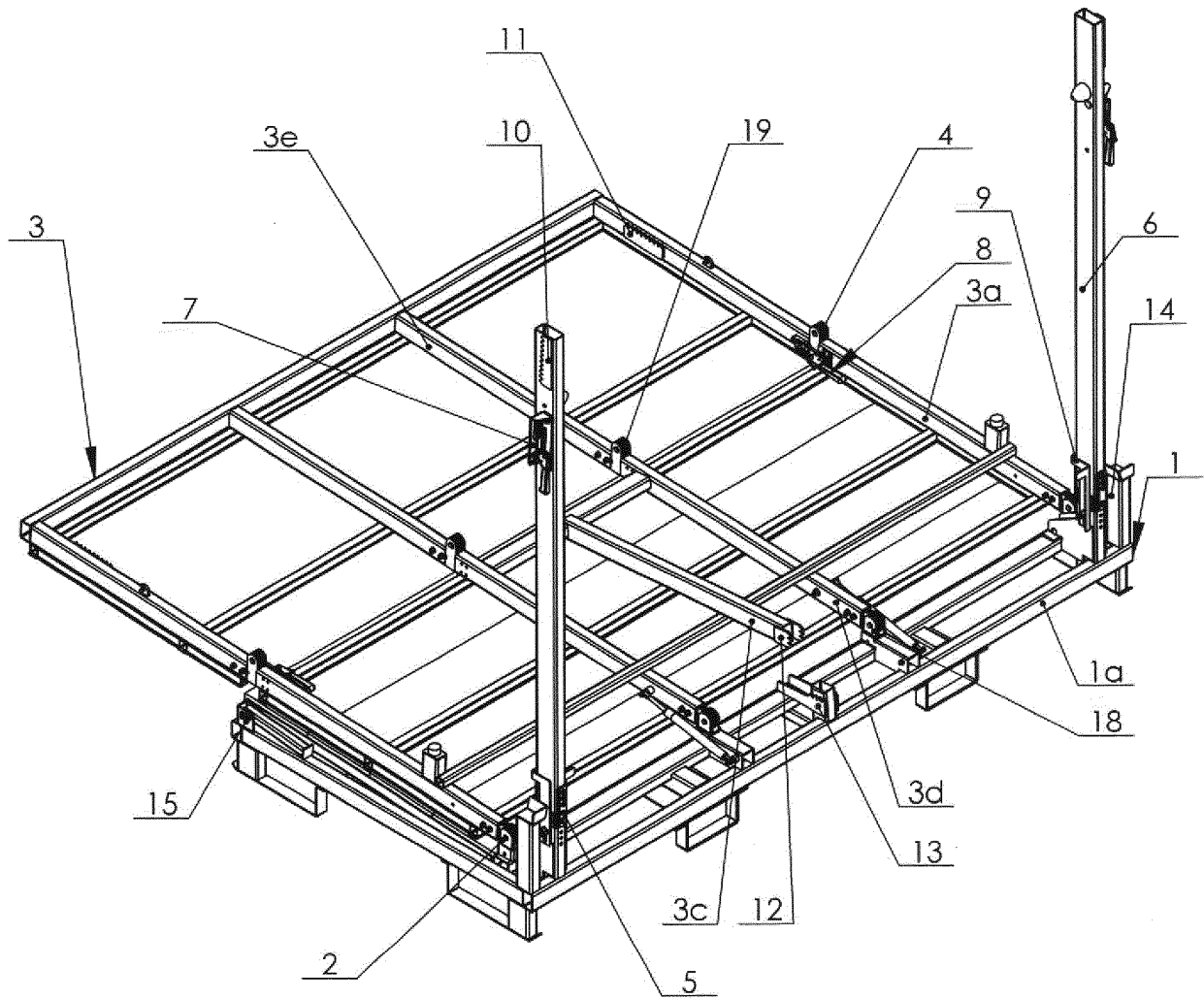


Fig. 5

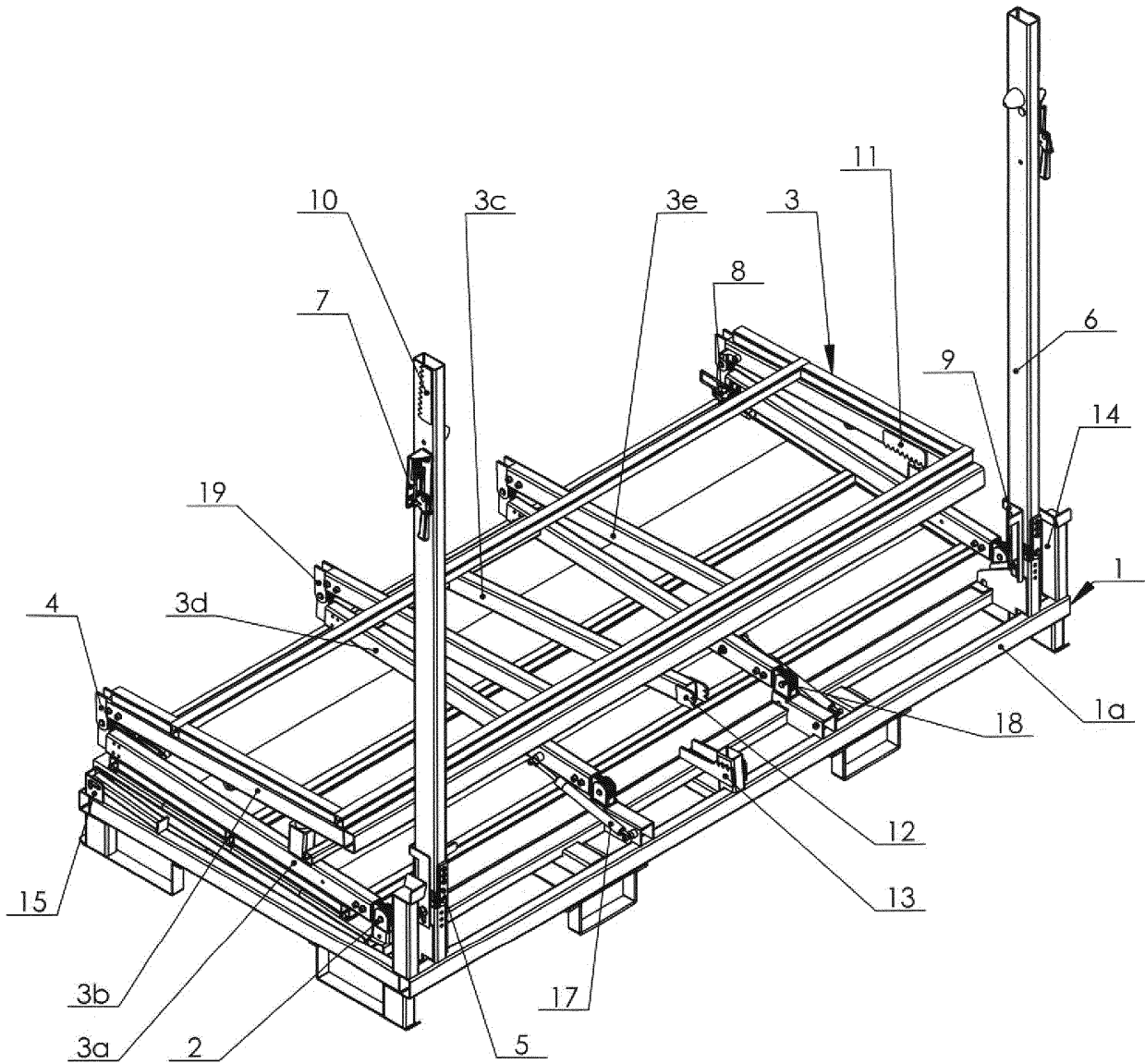


Fig. 6

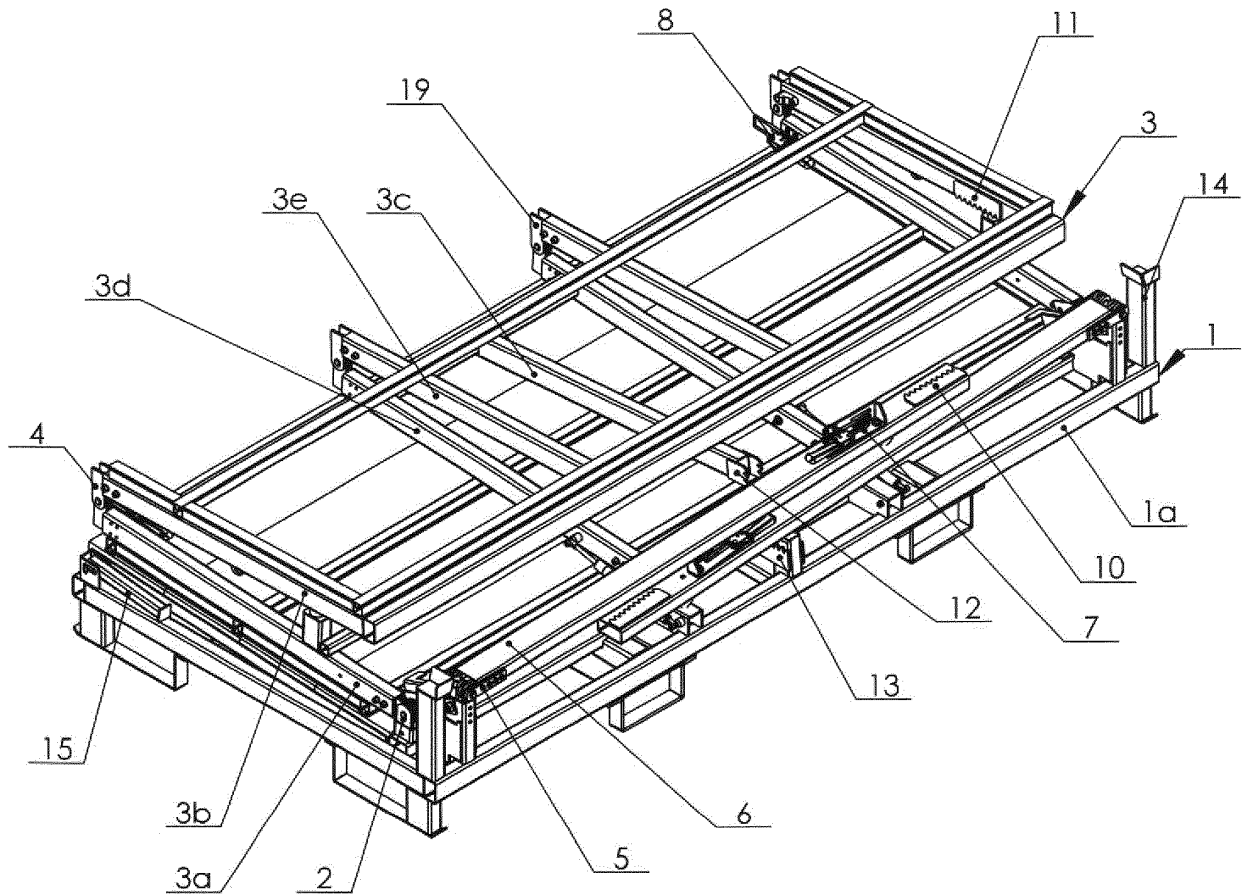


Fig. 7

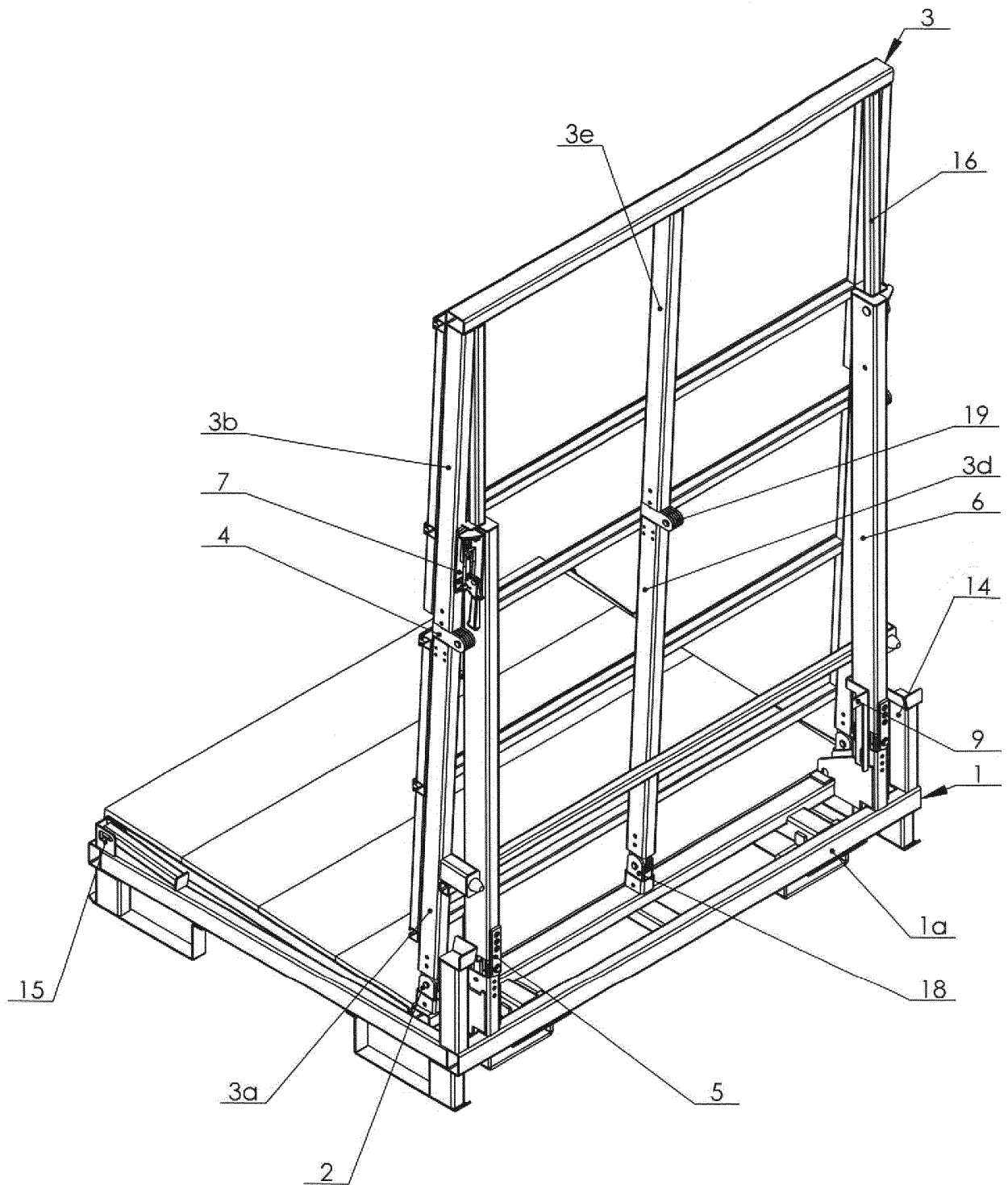


Fig. 8

**REFERENCES CITED IN THE DESCRIPTION**

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