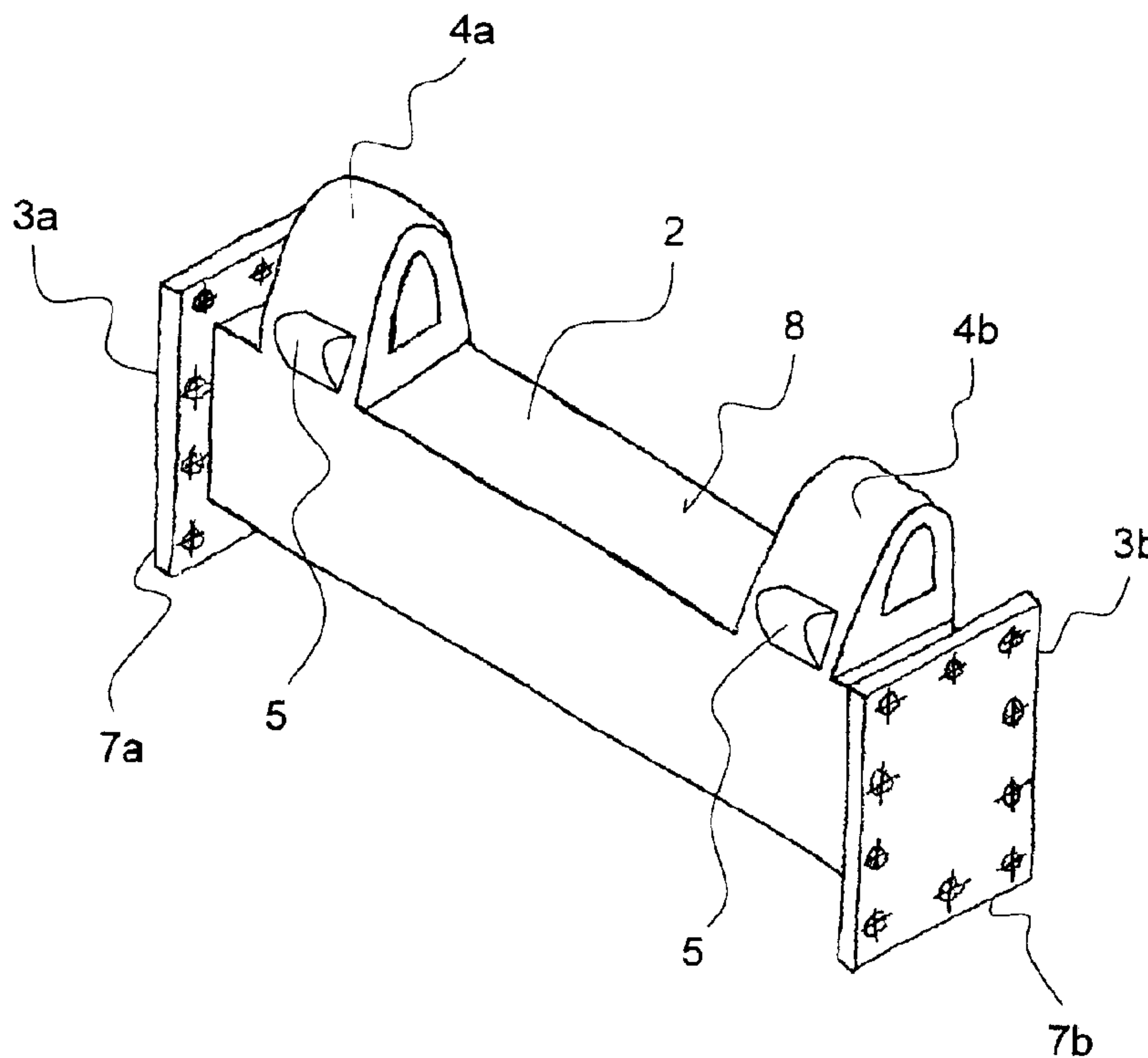




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 (72) Inventeur/Inventor:
 ALGUERA GALLEGO, JOSE MANUEL, DE
 (73) Propriétaire/Owner:
 JOST-WERKE GMBH, DE
 (74) Agent: SIM & MCBURNEY

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 (54) Title: SUPPORTING TRAVERSE



(57) Abrégé/Abstract:

The invention relates to a supporting traverse for reinforcing a vehicle frame (1), comprising a cross-member (2) with a fastening region (3a, 3b), which is integrally formed thereon on the end and can be connected to the vehicle frame (1), and bearing blocks (4a, 4b) acting between the fastening regions (3a, 3b) on the cross-member (2). The aim of the invention is to refine a supporting strut with which the risk of the bearing block (4a, 4b) breaking away from the cross-member (2) due to wear is considerably reduced. According to the invention, said aim is achieved by a supporting traverse, wherein the bearing blocks (4a, 4b) and the cross-member (2) are connected to each other in a non-detachable way.

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(71) Applicant (for all designated countries except US):
JOST-WERKE GMBH [DE/DE]; Siemensstrasse 2,
63263 Neu-Isenburg (DE).

(72) Inventor; and

(75) Inventor/applicant (only for US): **ALGÜERA GALLEGO, José Manuel** [ES/DE]; Bessenbacher Weg 85, 63739 Aschaffenburg (DE)

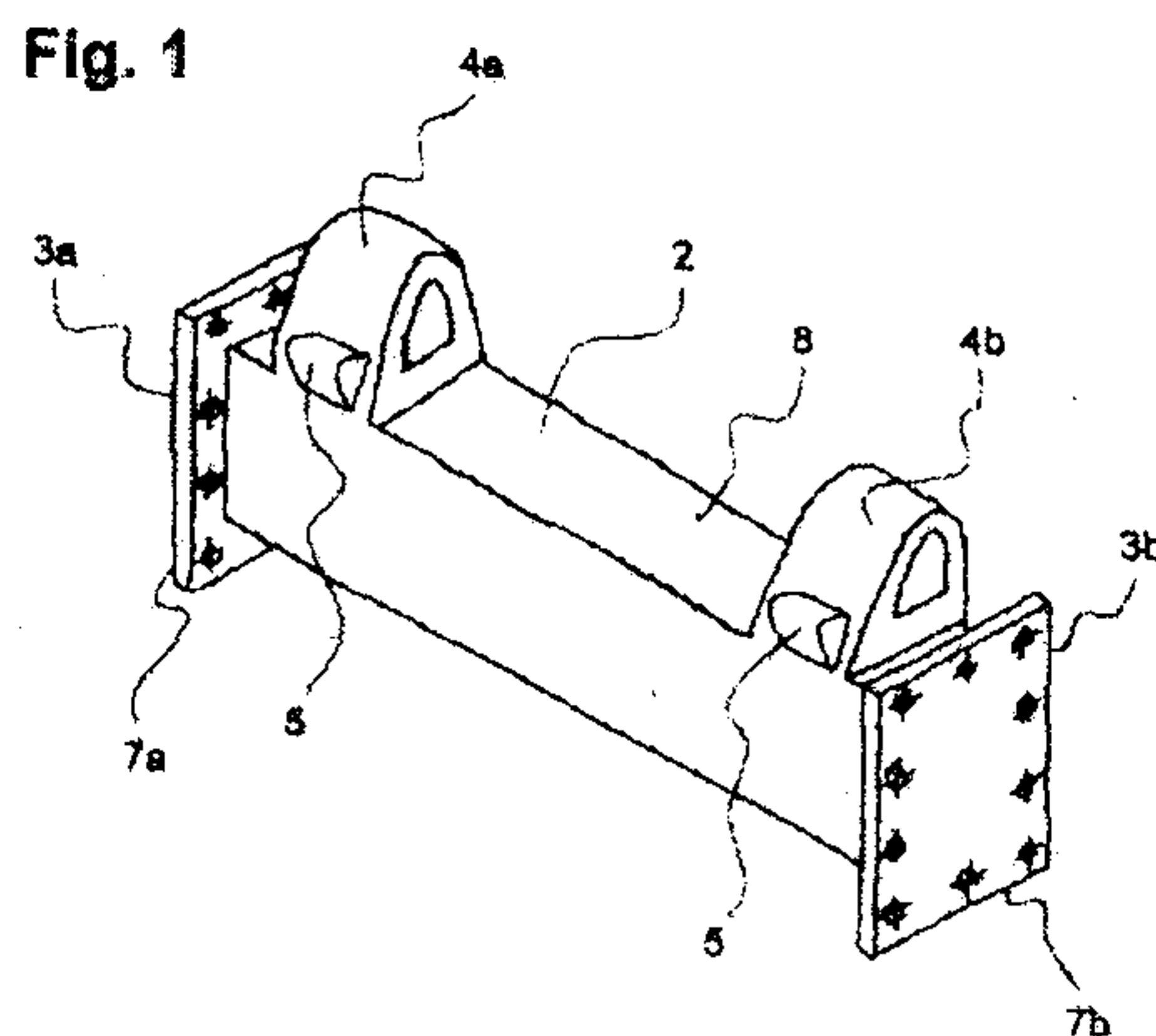
(74) Attorney: **FUCHS**; Söhnleinstrasse 8; 65201 Wiesbaden (DE).

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(54) Title: SUPPORTING TRAVERSE.



(57) Abstract: The invention relates to a supporting traverse for reinforcing a vehicle frame (1), comprising a cross-member (2) with a fastening region (3a, 3b), which is integrally formed thereon on the end and can be connected to the vehicle frame (1), and bearing blocks (4a, 4b) acting between the fastening regions (3a, 3b) on the cross-member (2). The aim of the invention is to refine a supporting strut with which the risk of the bearing block (4a, 4b) breaking away from the cross-member (2) due to wear is considerably reduced. According to the invention, said aim is achieved by a supporting traverse, wherein the bearing blocks (4a, 4b) and the cross-member (2) are connected to each other in a non-detachable way.

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Supporting traverse

Specification

The invention concerns a supporting traverse for reinforcing a vehicle frame, comprising a cross member with a fastening region formed thereon at each end, which can be connected to the vehicle frame, and bearing blocks acting between the fastening regions on the cross member. Furthermore, an arrangement of the supporting traverse on the vehicle frame is protected.

Such supporting traverses are constructed in particular on vehicle frames of semitrailer vehicles and carry the bearing blocks on which the fifth wheel rests. Due to the swivel mounting of the fifth wheel, it can perform a tilting movement about a horizontal pivot axis relative to the bearing blocks fastened to the tractor vehicle in stationary manner. The forces occurring when driving are conducted via the fifth wheel, the bearing blocks and the cross member into the vehicle frame of the tractor vehicle.

A supporting traverse of this kind is known from EP 1 764 290 A1. The fifth wheel described therein comprises one coupling plate and at least two bearing blocks, which are fastened in detachable manner on a cross member of the supporting traverse. The detachable fastening, however, has the drawback that settling can occur between the bearing blocks and the cross member, which becomes greater as the loading continues. In extreme driving situations, it can ultimately result in the bearing blocks being ripped off of the cross member.

For this reason, the basic problem of the invention is to further develop a supporting strut for which the risk of a wear-induced ripping of the bearing block from the cross member is distinctly reduced.

The problem is solved according to the invention with a supporting traverse in which the bearing blocks and the cross member are joined together in an undetachable manner.

By an undetachable connection is meant primarily a fabrication of bearing blocks and cross member as a single cast piece. Therefore, the cross member and the bearing blocks have a homogeneous structure. Furthermore, the fabrication as a cast piece has the advantage of especially low production costs.

Alternatively to the above-described embodiment, the bearing blocks can also be fastened by means of a rivet connection to the cross member. It is likewise possible to weld the bearing blocks to the cross member and thereby produce a cohesive and single-piece connection.

Preferably, at least one end stop is formed on the cross member and/or the bearing blocks, which limits the angle of tilting of a fifth wheel supported on the bearing blocks. The end stop effectively prevents a collision of the fifth wheel with the vehicle frame. The end stop also should be formed undetachably, such as a cast lug, on at least one bearing block or the cross member.

Advantageously, the cross member is an open or closed section, which achieves an especially torsion-proof structure. By an open section is meant especially a C-section or double T-section.

Closed sections are, for example, rectangular or round sections.

It has proven to be beneficial if the fastening regions are flange plates oriented perpendicular to the axial dimension of the cross member. The flange plates should close off the cross member at the ends, which accomplishes an especially effective protection against corrosion, particularly for cross members fashioned as a hollow section. The configuration of the flange plate also enables a good connection to the frame.

Advisedly, the bearing blocks act on the cross member at its top side. As a result, the cross member has a constant width and can be installed without adjustments in the overwhelming majority of vehicle frames without structural adjustments.

The problem is also solved by an arrangement of a supporting traverse between two stringers of a vehicle frame, wherein the stringers have boreholes set off from each other in the longitudinal axis of the vehicle, enabling a fastening of the supporting traverse in different positions. This yields the benefit that the spacing between the fifth wheel and the driver's cabin and thus the gap between the front end of the semitrailer and the driver's cabin is adjustable. Furthermore, one can influence the axle load by the choice of the installation position in the driving direction.

In accordance with an aspect of the present invention there is provided a supporting traverse for reinforcing a vehicle frame, comprising:

a cross member with a fastening region at each end and fashioned as a hollow section, which is connected to the vehicle frame and bearing blocks located between the fastening regions on the cross member, wherein the bearing blocks and cross member are fabricated as a single cast piece or the bearing blocks are fastened by means of a rivet or welded connection to the

3a

cross member, wherein the cross member is provided with a closed profile, and wherein the fastening regions are flange plates oriented perpendicular to an axial dimension of the cross member closing off the hollow cross member at the ends.

In accordance with a further aspect of the present invention there is provided supporting cross-member for reinforcing a vehicle frame comprising a transverse carrier having a securing region which is formed thereon at each end, respectively, and which can be connected to the vehicle frame, and bearing blocks which engage between the securing regions on the transverse carrier being permanently connected to each other, wherein the securing regions are flange plates which are orientated perpendicularly relative to the axial extent and which terminate the transverse carrier which is constructed as a hollow profile-member at the end side.

For a better understanding, the invention will be explained more closely by means of four figures. There are shown:

- Figure 1:** a perspective front view of a supporting traverse;
- Figure 2:** a perspective rear view of a supporting traverse with fifth wheel coupling plate attached to it;
- Figure 3:** a front view of a supporting traverse with fifth wheel coupling plate attached to it in the installed state, and
- Figure 4:** a perspective top view of a supporting traverse mounted in a tractor vehicle.

Figure 1 shows the supporting traverse of the invention in a perspective front view with a cross member 2 fashioned as a rectangular section, having fastening regions 3a, 3b at the ends for mounting on a vehicle frame 1 (see Fig. 3 and 4). Each fastening region 3a, 3b is formed from a rectangular flange plate 7a, 7b, in which boreholes not otherwise designated are introduced for mounting on the vehicle frame 1. The flange plate 7a, 7b is oriented at right angles to the axial dimension of the cross member 2 and joined to it as a single piece.

One notices two bearing blocks 4a, 4b spaced apart from each other on only the top side 8 of the cross member 2. Each bearing block 4a, 4b has a convex shape and acts only on the top side 8 of the cross member 2. Furthermore, an end stop 5 projects from the peripheral wall of the bearing blocks 4a, 4b, likewise being joined to the respective bearing block 4a, 4b as a single piece. On the opposite, back

side of the bearing blocks 4a, 4b there can likewise be provided a correspondingly shaped end stop 5 (not shown). The end stops 5 limit the angle of tilt of the fifth wheel 6 (see Fig. 2) about its horizontal swivel axis, oriented perpendicular to the direction of travel.

In Fig. 2 the supporting traverse is shown with a fifth wheel 6 located thereon in a perspective rear view. To achieve the most stable possible mounting of the fifth wheel 6 transversely to the direction of travel, the bearing blocks 4a, 4b are located as far to the outside as possible, underneath the edge region of the fifth wheel. Thus, the bearing blocks 4a, 4b are located essentially in spatial proximity to the flange plates 7a, 7b.

Figure 3 shows a front view of the supporting traverse in the installed state between stringers 9a, 9b of a vehicle frame 1. One notices that the cross member 2 reaches into the U-section of the stringers 9a, 9b. In this installed position, an extremely small structural spacing exists between the upper horizontally oriented legs of the stringers 9a, 9b and the respective bearing block 4a, 4b.

In Fig. 4, the installed position of the supporting traverse in a tractor vehicle 11 is especially well seen. The supporting traverse in the mounted state is located approximately in the region of the rear axle, but it can also be installed in other positions, set off in the longitudinal axis of the vehicle, by its fastening regions 3a, 3b, of which only fastening region 3a is apparent, and the boreholes 10 arranged in the stringers 9a, 9b. The fastening screws 12 extend through the boreholes 10 (see Fig. 3).

List of reference numbers

- 1 vehicle frame
- 2 cross member
- 3a, b fastening region
- 4a, b bearing block
- 5 end stop
- 6 fifth wheel
- 7a, b flange plate
- 8 top side of cross member
- 9a, b stringers of vehicle frame
- 10 borehole
- 11 tractor
- 12 fastening screws

Patent Claims

What is claimed is:

1. A supporting traverse for reinforcing a vehicle frame, comprising:
a cross member with a fastening region at each end and fashioned as a hollow section, which is connected to the vehicle frame and bearing blocks located between the fastening regions on the cross member, wherein the bearing blocks and cross member are fabricated as a single cast piece or the bearing blocks are fastened by means of a rivet or welded connection to the cross member, wherein the cross member is provided with a closed profile, and wherein the fastening regions are flange plates oriented perpendicular to an axial dimension of the cross member closing off the hollow cross member at the ends.
2. The supporting traverse according to claim 1, wherein at least one end stop is formed on one or more of the cross member and the bearing blocks, which limits the angle of tilting of a fifth wheel supported on the bearing blocks.
3. The supporting traverse according to claim 2, wherein the bearing blocks act on the cross member exclusively at its top side.
4. The supporting traverse according to claim 2, wherein the cross member is a rectangular section.
5. The supporting traverse according to claim 4, wherein the bearing blocks act on the cross member exclusively at its top side.
6. The supporting traverse according to claim 1, wherein the cross member a rectangular section.
7. The supporting traverse according to claim 1, wherein the bearing blocks act on the cross member exclusively at its top side.
8. An arrangement of a supporting traverse according to claim 1 between two stringers of a vehicle frame, wherein the stringers have boreholes set off from each other in the longitudinal axis of the vehicle, enabling a fastening of the supporting traverse in different positions.

9. Supporting cross-member for reinforcing a vehicle frame comprising a transverse carrier having a securing region which is formed thereon at each end, respectively, and which can be connected to the vehicle frame, and bearing blocks which engage between the securing regions on the transverse carrier being permanently connected to each other, wherein the securing regions are flange plates which are orientated perpendicularly relative to the axial extent and which terminate the transverse carrier which is constructed as a hollow profile-member at the end side.
10. The supporting cross-member according to claim 9, wherein the bearing blocks and the transverse carrier are produced as an integral cast component.
11. The supporting cross-member according to claim 9, wherein characterised in that the bearing blocks are secured to the transverse carrier by means of a rivet connection.
12. The supporting cross-member according to any one of claims 9 to 11 wherein there is formed on the transverse carrier and/or on the bearing blocks at least one end stop which delimits the tilting angle of the fifth wheel which is supported on the bearing blocks.
13. The supporting cross-member according to any one of claims 9 to 12 wherein the transverse carrier is a square profile-member.
14. The supporting cross-member according to any one of claims 9 to 13 wherein the bearing blocks engage on the transverse carrier only at the upper side thereof.
15. An arrangement of a supporting cross-member according to any one of claims 9 to 14 between two side rails of a vehicle frame wherein the side rails have holes which are offset relative to each other in the vehicle longitudinal axis and which allow the supporting cross-member to be secured in different positions.

Fig. 1

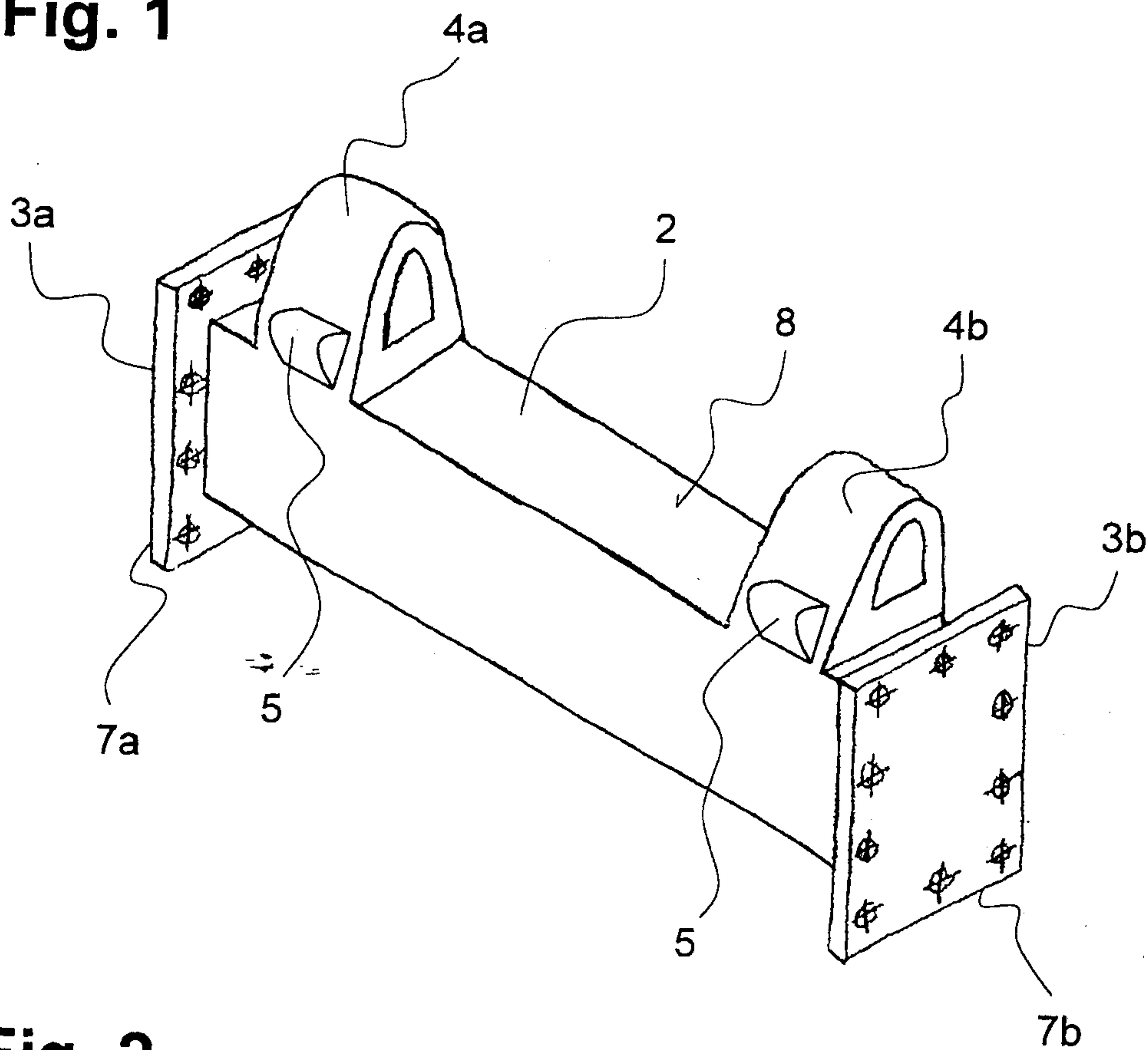


Fig. 2

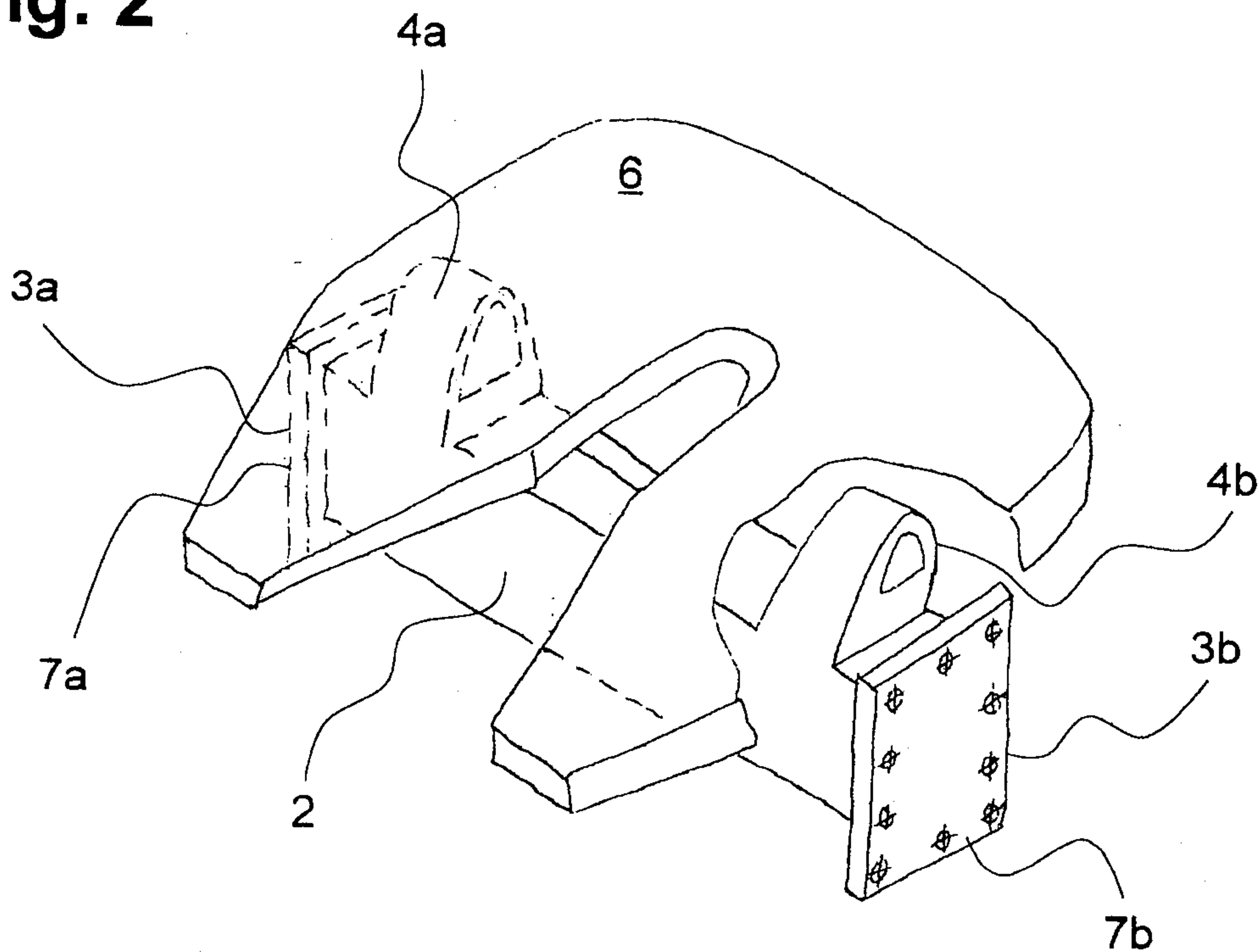


Fig. 3

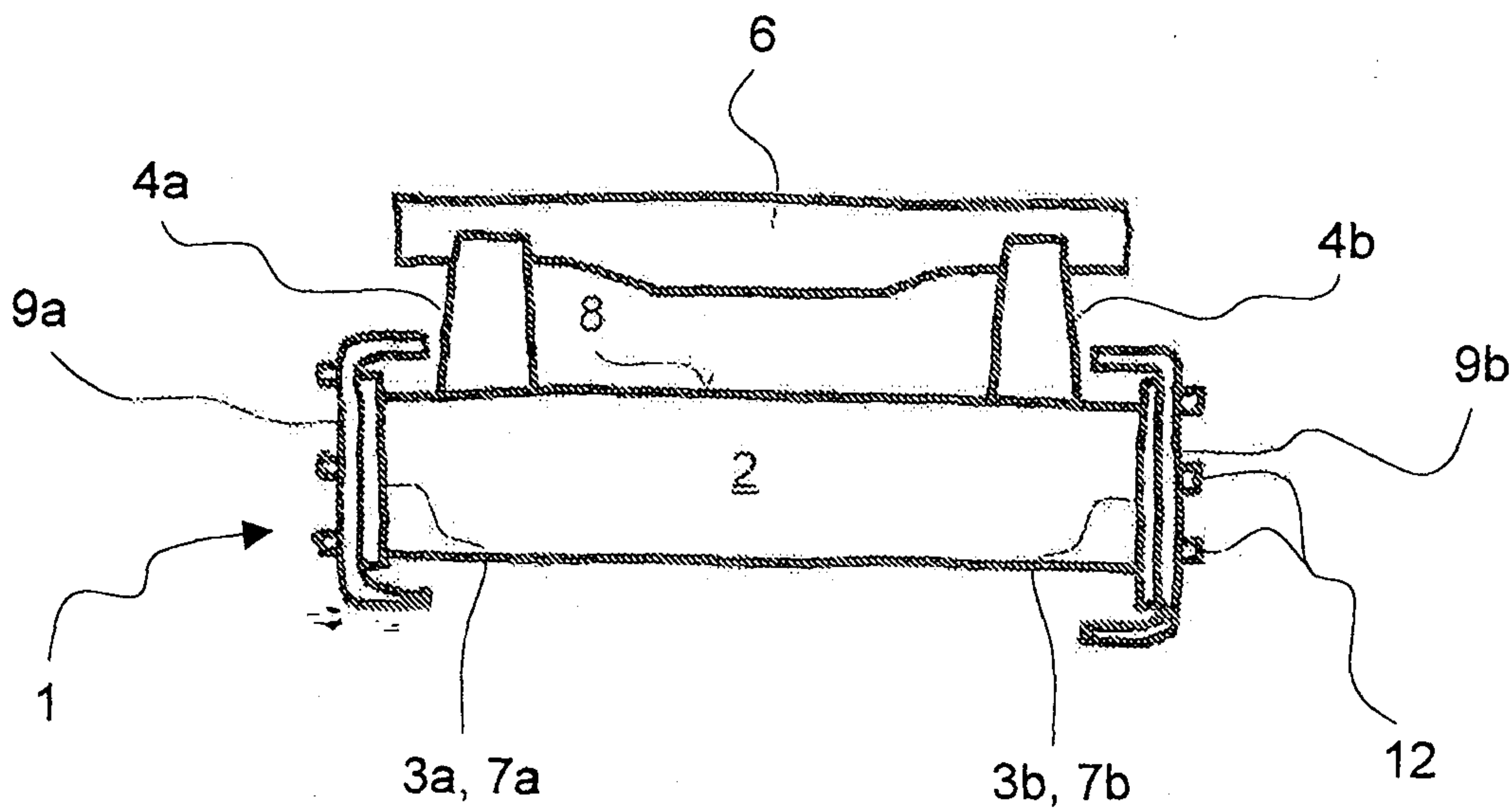


Fig. 4

