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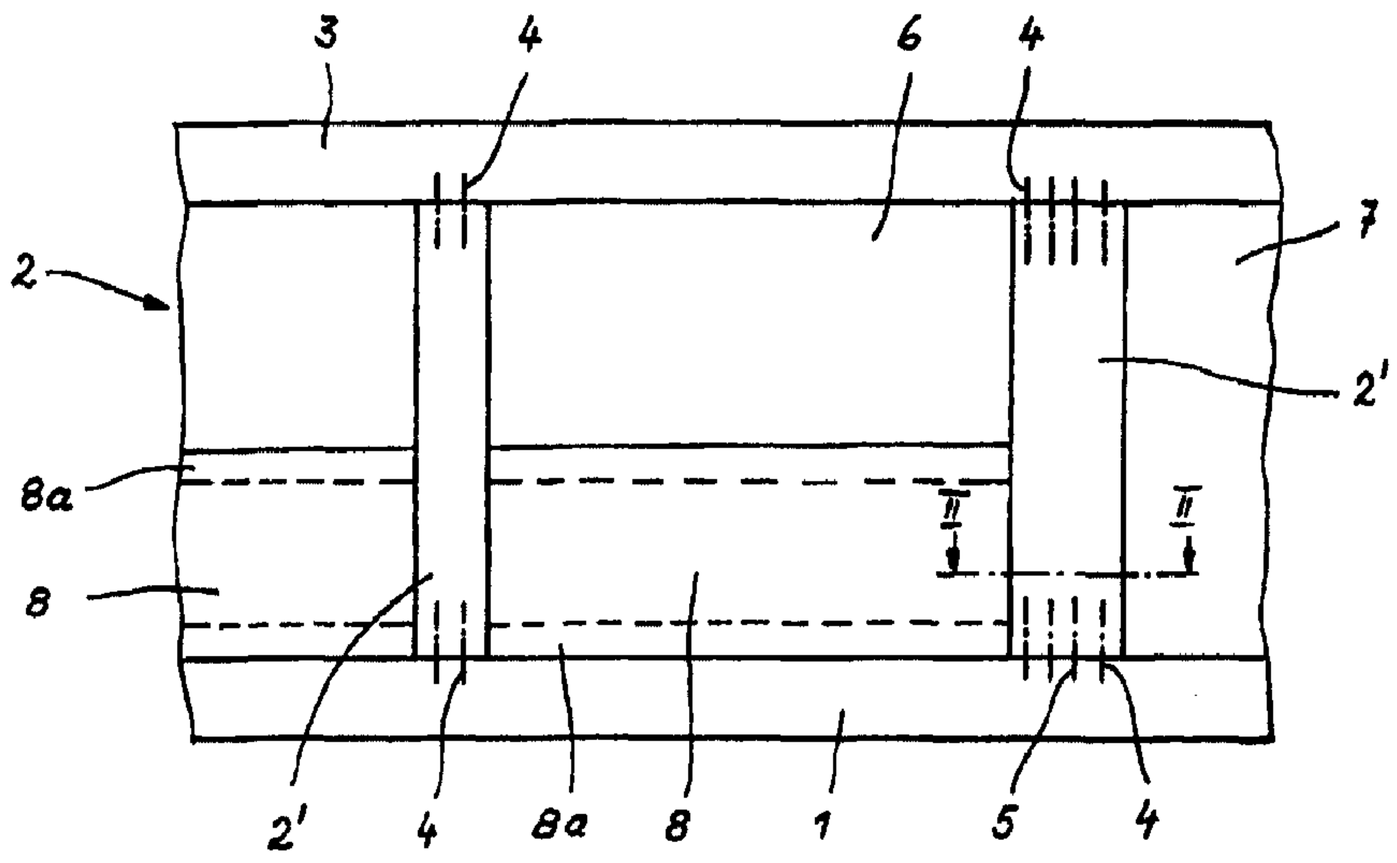
(54) **CAISSE D'UN VEHICULE A GRANDE CAPACITE, EN PARTICULIER D'UN VEHICULE FERROVIAIRE**

(54) **BODY FOR A LARGE VOLUME VEHICLE, ESPECIALLY A RAIL VEHICLE**



(57) Caisse d'un véhicule à grande capacité, en particulier d'un véhicule ferroviaire, comprenant essentiellement un châssis (1), des parois latérales (2) et un toit (3), les parois latérales (2) présentant des colonnes (2') agencées entre le châssis (1) et le toit (3). Les colonnes (2') des parois latérales constituées par un profilé présentent un nervurage (2a) permettant l'agencement de trous taraudés (2b), les colonnes (2') étant assemblées, par transmission de force, avec le châssis (1) et/ou le toit (3) au moyen de boulons (4) s'engageant dans ces trous taraudés (2b).

(57) The body of a large volume vehicle, especially a rail vehicle, essentially comprises an undercarriage (1), sidewalls (2) and a roof (3). The sidewalls (2) include columns (2') arranged between the undercarriage (1) and the roof (3). The sidewall columns (2') formed by a profile have a ribbing (2a) enabling threaded holes (2b) to be made. The sidewall columns (2') are in working connection with the undercarriage (1) and/or the roof (3) by means of screws (4) that engage in the threaded holes made in the sidewall columns.

PCT

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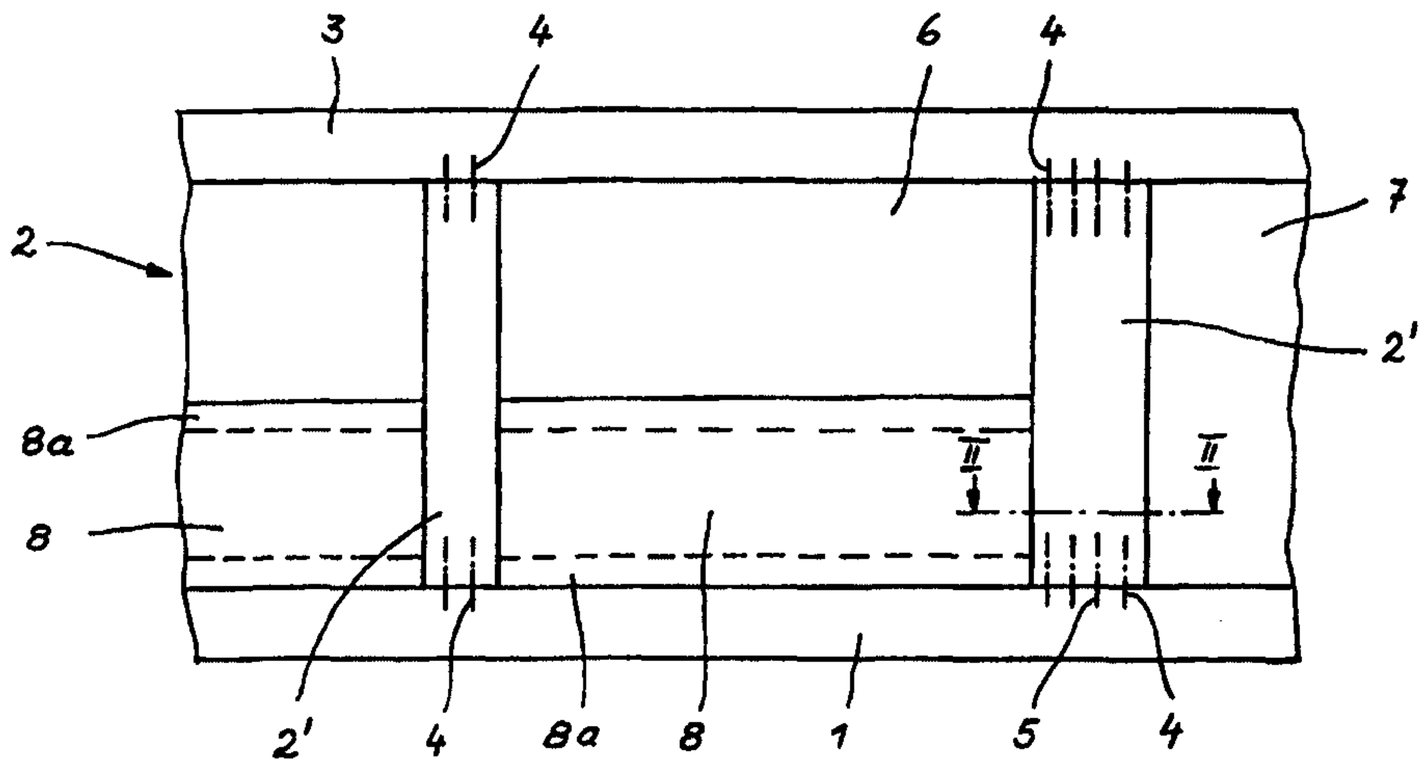
Veröffentlicht

Mit internationalem Recherchenbericht.

Vor Ablauf der für Änderungen der Ansprüche zugelassenen Frist; Veröffentlichung wird wiederholt falls Änderungen eintreffen.

(54) Title: BODY FOR A LARGE VOLUME VEHICLE, ESPECIALLY A RAIL VEHICLE

(54) Bezeichnung: WAGENKASTEN EINES GROSSRÄUMIGEN FAHRZEUGES, INSBESONDERE EINES SCHIENENFAHRZEUGES



(57) Abstract

The body of a large volume vehicle, especially a rail vehicle, essentially comprises an undercarriage (1), sidewalls (2) and a roof (3). The sidewalls (2) include columns (2') arranged between the undercarriage (1) and the roof (3). The sidewall columns (2') formed by a profile have a ribbing (2a) enabling threaded holes (2b) to be made. The sidewall columns (2') are in working connection with the undercarriage (1) and/or the roof (3) by means of screws (4) that engage in the threaded holes made in the sidewall columns.

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Body for a Large Volume Vehicle, Especially a Rail Vehicle

The present invention relates to a body for a large volume vehicle, in particular, a rail vehicle, this comprising an undercarriage, side walls, and a roof, the side walls incorporating columns that are arranged between the undercarriage and the roof.

It is generally known that a body with the above-cited features can be made either as a welded-steel construction using rolled, bent, and hollow profiles, with sheeting that is welded directly onto the framing, or can be made as a welded self-supporting structure using large, extruded-aluminum profiles. Because of the fact that welding is used as the connecting method, as a rule, it is not possible for the chassis, the side walls, and a roof to be of different materials. For the remainder, it is frequently necessary to use costly production machinery and tools in order to carry out the welding operations, when distortion caused by the heat involved therein makes it necessary to perform additional alignment and smoothing operations on the body.

It is the objective of the present invention to make assembly of the wagon body considerably simpler by using suitable joining technologies and eliminate alignment and smoothing operations and, at the same time, make it possible to use various

combinations of materials-- primarily steel, aluminum, and plastics--in the sense of a building-block system.

According to the present invention, this objective has been achieved in that the side-wall columns that are formed from a profile incorporate ribbing that enables them to incorporate threaded bores, the side wall columns being connected to the chassis and/or the roof by screws that engage in these threaded bores so as to form a working connection.

In a body according to the present invention, a rigid connection between the side-wall columns and the chassis and the roof is formed in a particularly simple and cost-effective manner by cold-joining technology. Materials that are matched to the particular use for which the body will be put can be used for the chassis, the side walls, and the roof, when the joining technique that is used is always the same. Similarly, special production machinery and tools, as well as alignment and smoothing operations on the wagon body are also made unnecessary.

Advantageous versions of the present invention are set out in the secondary claims.

The present invention will be described in greater detail below

on the basis of one embodiment shown in the drawings appended hereto. These drawings are as follows:

Figure 1: a side view of the body of a large-volume vehicle

Figure 2: a cross section on the line II-II in Figure 1, at larger scale.

Essentially, the body comprises an undercarriage 1, a roof 3, and side walls 2 that incorporate columns 2' that are arranged between the undercarriage 1 and the roof 3. The side walls 2 incorporate window openings 6 and at least one door opening 7 on at least one long side of the body, although it is also possible to have a wagon body that has no door openings 7 in its side walls 2. Between the side wall columns 2' (window columns in Figure 1, left-hand side, and wider door columns, Figure 1, right-hand side) there are side-wall fields 8 that can each be formed, for example, from a sandwich-type panel with outside covering layers, a foam core, and metal edging profiles 8a. Independent side wall elements can be built up from a suitable arrangement of side-wall columns 2' in connection with the side-wall fields 8 that are interposed between them.

In the embodiment shown, the side-wall columns 2' are formed from an extruded aluminum profile and are cut to length by mechanical

processing, optionally by means of a simple separating cut. They incorporate ribbing 2a (see Figure 2), that has tubular elements 2c that permit the incorporation of threaded bores 2b. In the embodiment shown, the ribbing 2a is arranged so as to be completely invisible from the outside; as an alternative, it is possible to provide suitable ribbing 2a for the threaded bores 2b on the outsides of the column profiles.

The side-wall columns 2' are joined to the undercarriage, which is built, for example, from steel profiles, and with the side upper member of the roof 3 by screws 4 that fit in the threaded bores 2b so as to form a working connection, when, for example, the upper head rail of the roof 3 can be of aluminum, and its roof panel of plastic. All tensile and compressive forces are transferred with the help of the screws 4. In order to transfer shearing forces, it is recommended that a smooth-walled pin 5 be inserted into at least one tubular element 2c of the side-wall column 2' wall fields 8, this matching the bores in the undercarriage 1 and the roof 3. For the remainder, the side-wall fields 8 contribute to the shear strength of the body.

As can be seen from Figure 2, the side wall columns 2' incorporate a step 2d, the depth of which is matched to the technical and geometrical demands for the thickness of the side-

wall fields 8, so that a flush outside wall surface of the side wall to is achieved. In addition, the side wall column 2' incorporates a C-shaped groove 2e, in which tenon blocks can be inserted; these are used to screw down corner profiles or corner pieces to the side-wall fields 8. This stable connection is used

to transfer shear forces and as an alternative to or to supplement the above-described use of at least one smooth-walled pin 5.

Key to Drawings

1 - undercarriage

2 - side wall

2' - side-wall column

2a - ribbing

2b - threaded bore

2c - tubular element

2d - step

2e - C-shaped groove

3 - roof

4 - bolt

5 - smooth-walled pin

6 - window opening

7 - door opening

8 - side-wall field

8a - metal edging profile

Patent Claims

1. Body for a large-volume vehicle, in particular a rail vehicle, with an undercarriage (1), side walls (2), and a roof (3), the side walls (2) incorporating columns (2') that are arranged between the undercarriage (1) and the roof (3), characterized in that the side-wall columns (2') that are formed from a profile have ribbing (2a) that permits the incorporation of threaded bores (2b), the side-wall columns being joined to the undercarriage (1) and/or the roof (3) by bolts (4) that fit into theses threaded bores (2b) so as to form a working connection.

2. Body as defined in Claim 1, characterized in that the side-wall columns (2') can be formed from a large aluminum extrusion, a glass-fibre pulltrusion, or a rolled-steel profile.

3. Body as defined in Claim 1 or Claim 2, characterized in that smooth-walled pins (5) that transfer the shear forces between the side-wall columns (2') and/or the undercarriage (1) or the roof (3) are inserted into the the ribbing (2a)

of the side-wall columns (2'), parallel to the screws (4).

4. Body as defined in Claim 1 to Claim 3, characterized in that the ribbing (2a) of the side-wall columns (2') incorporates tubular elements (2c).

5. Body as defined in Claim 1 to Claim 4, characterized in that the ribbing of the side-wall columns (2') is arranged so that it cannot be seen from the outside.

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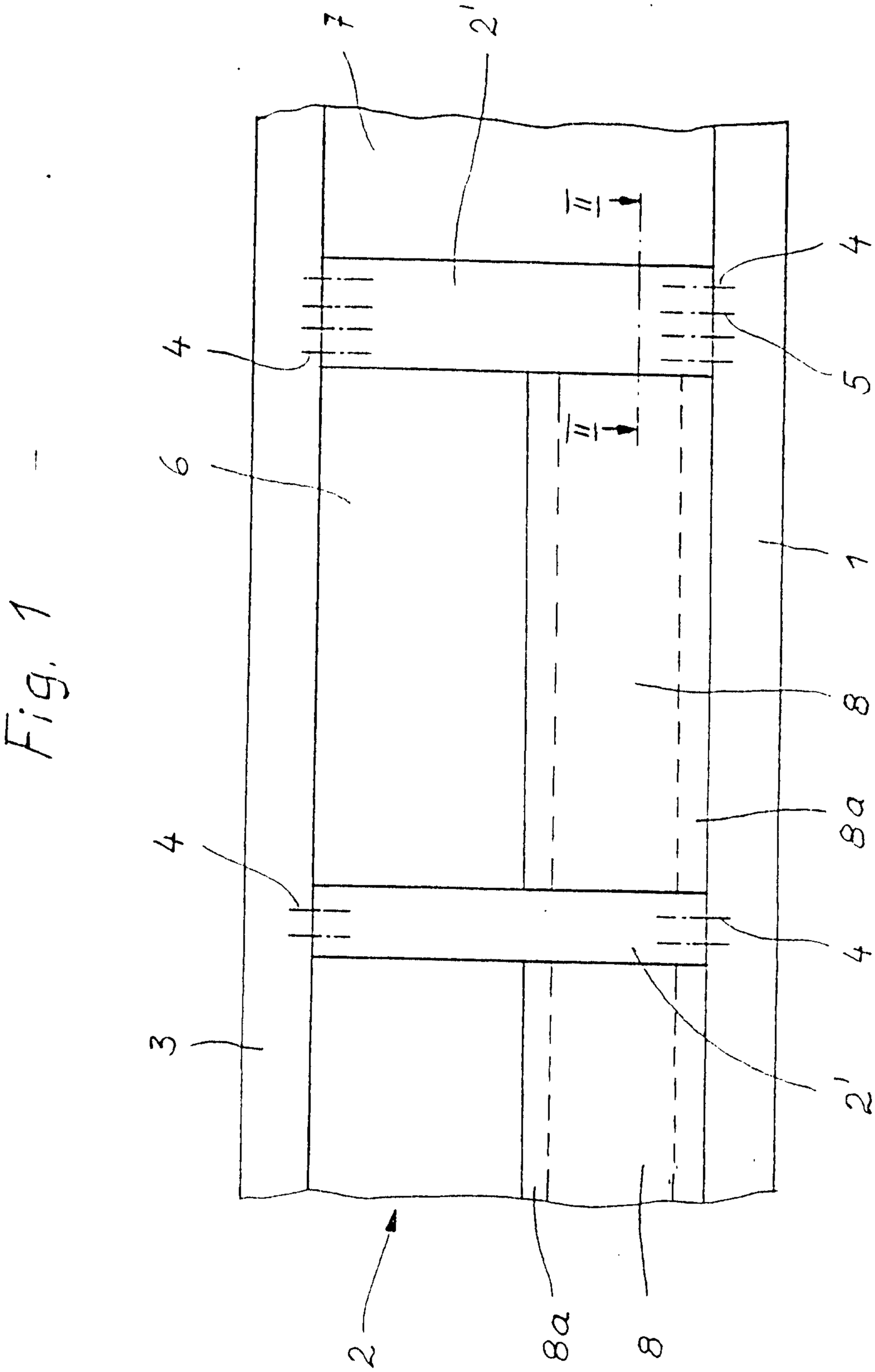


Fig. 1

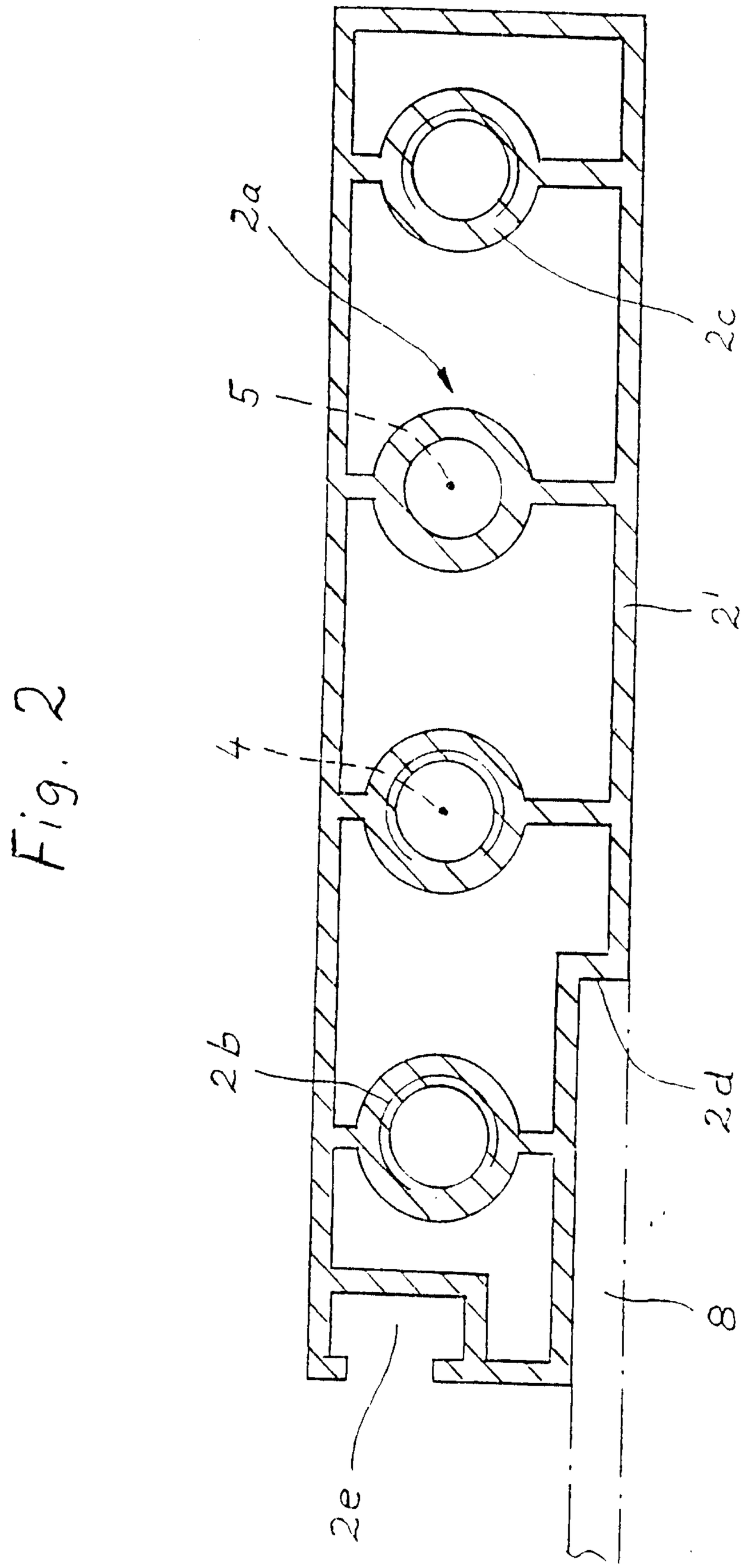
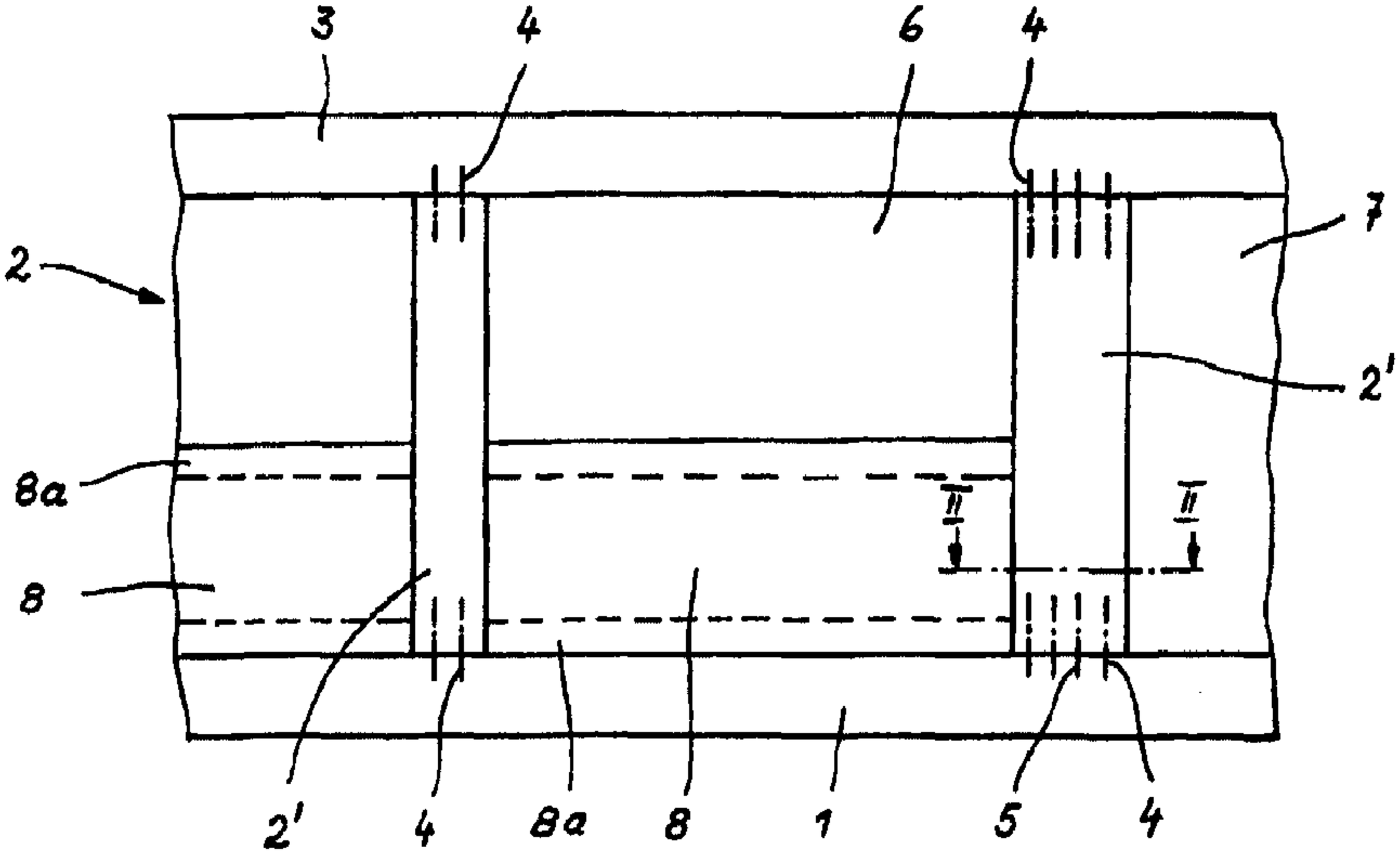


Fig. 2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