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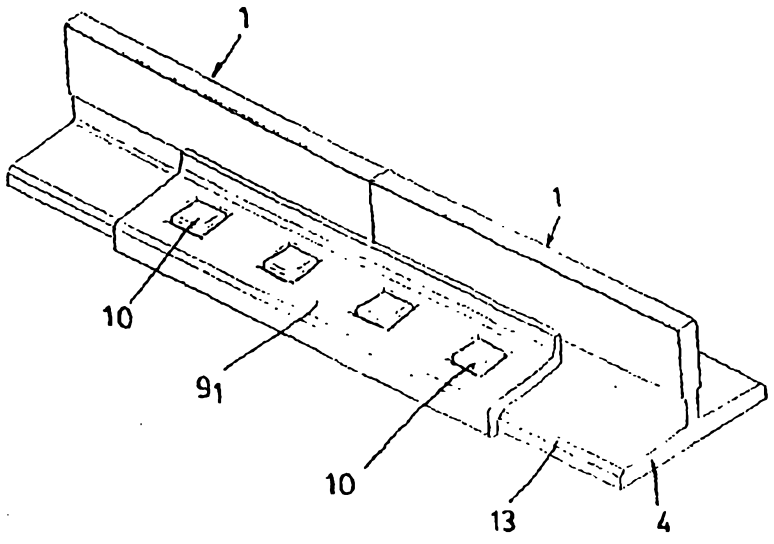
[Continúa en la página siguiente]

(54) Title: ELEVATOR GUIDE ASSEMBLY SYSTEM

(54) Título: SISTEMA DE UNION DE GUIAS DE ASCENSOR



(57) Abstract: The invention concerns an elevator guide assembly system, characterized in that a fish plate (9)is placed on both sides of the assembly of the two guides (1), said fish plate consisting of a central body (91), which is placed on the top part of the wings (4) of the two guides (1) that are to be assembled and extends along a top overlapping (92) supported on the central plate (3) on one edge and along a lower overlapping (93) on the other edge, the central body (91) being screwed to the wings (4) so that the top overlapping (92) presses against the plate (3). The top overlapping (92) and the lower overlapping (93) form an obtuse angle with the central body (91). The system can be used in elevators.

(57) Resumen: Sistema de unión de guías de ascensor, caracterizado porque a cada lado de la unión de las dos guías (1) se dispone una placa de unión-apriete (9) que consta de un cuerpo central (91) que se dispone sobre la superficie superior de las alas (4) de las dos guías(1) a unir que se prolonga por un borde por una solapa superior (92) que se apoya en el alma-hongo

[Continúa en la página siguiente]

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Para códigos de dos letras y otras abreviaturas, véase la sección "Guidance Notes on Codes and Abbreviations" que aparece al principio de cada número regular de la Gaceta del PCT.

(3) y por el otro borde por una solapa inferior (93) quedando el cuerpo central (91) atornillado a las alas (4) de modo que la solapa superior (92) presione contra el hongo (3) y formando la solapa superior (92) y la solapa inferior (93) ángulo obtuso con el cuerpo central (91). De aplicación en ascensores.

Lift guides require higher and higher quality coefficients each day due to the increase in speed of the lifts and due to the comfort demands of the users.

On the other hand, and even in the event that a high quality is achieved in the manufacture of the guides, the assembly problem still exists, as this requires measurements, regulation and adjustments of the joints of the different guide lengths, which must be done in the place where the lift is going to be located and by qualified personnel that do not belong to the manufacturer of the guides.

It is perfectly understood that any improvement in the simplification of the assembly will represent a great advance in this technological field.

A traditional guide has a blade-head and flange-base, each piece of guide being joined to the next one by grooving and tonguing.

The applicant considers that one of the main causes of these problems is the grooving and tonguing currently used to join the different lengths of the guides, so it is not used in the invention.

In patent US-4079817 the guide joint system uses a plate screwed to the lower surface of the two lengths of guide to be joined together. An additional control is required to align the two lengths of guide and the alignment is only carried out on one axis, such as the OX-axis.

The system targeted by the invention is based on using a joint-anchorage plate on each side of the guides and on each connection, and which are anchored (screwed) to the flanges, preferably above them.

With the system targeted by the invention, an additional control of the alignment is not necessary because by tightening the screws of the plate, the two guides to be joined together are simultaneously and perfectly aligned on both OX and OY axes.

The guides do not require machining tongue and groove (grooving and tonguing joint) or planing of the base.

Advantages of the system:

- The guides are the same on both sides by not having tongue and groove.
- The tongue does not have to be spliced with the groove with the subsequent time saving.
- The guides are automatically aligned when the screws are tightened, which saves a lot of time.

- The gaps in the joints are much less as it only affects the thickness of the head so the joint quality is much higher.

- Only one wrench is required to tighten the screws (as a system is used which avoids turning the screw).

- It is not necessary to control the roller path because the joint is guaranteed by the assembly system on not having adjustments (time saving and no need for specialised personnel).

- The plate weighs less as it is in two parts, so it is better to handle.

- The plate joint is rigid with respect to both OX and OY axes, without the possibility of the guides moving on the plate.

For a better understanding of the object of this invention, practical embodiments are illustrated in the drawings.

Figure 1 is a perspective view of a current known guide.

Figure 2a is a perspective view of a first practical embodiment of the invention with the joint-bridge plates already mounted on the guides.

Figure 2b is a side view of figure 2a with the screws still not tightened.

Figure 2c is a side view of figure 2a with the screws tightened.

Figure 3a is a perspective view of a second practical embodiment of the invention with the joint-bridge plates already mounted on the guides.

Figure 3b is a side view of figure 3a.

Figure 4a is a perspective view of a third practical embodiment of the invention.

Figure 4b is a side view of figure 4a.

Figure 5a is a perspective view of a fourth practical embodiment of the invention.

Figure 5b is a side view of figure 5a.

Figure 6a is a perspective view of a fifth practical embodiment of the invention.

Figure 6b is a side view of figure 6a.

Below examples of non-limiting practical embodiments of this invention are described.

Figure 1 shows a lift guide (1) already known with its groove (2) combined with the tongue (2m) of the next guide that it must be joined to.

This type of guide (1) is comprised of a blade-head (3) and flanges (4) with divergent upper surface (5) and lower surface (6).

In order for the lift to correctly slide on these known guides (1), the following conditions must be satisfied for a good alignment on the OX and OY axes of the guides:

- The upper surface (7) of the head (3) must be strictly parallel to the lower surface (6) of the flanges (4), which involves two independent machining operations, the upper surface (7) of the head (3) normally being brushed and the lower surface (6) of the flanges (4) planed.

- Minimum play in the grooving and tonguing of the combined groove (2) and tongue (2m).

- To join the guides (1) together a plate is used (not illustrated), screwed to the lower surfaces (6) of the flanges (4) of both guides (1), which means that the play between the relative screws and holes (8) must be thoroughly controlled.

- Assembly of the guides with the relative adjustment/alignment means to be handled "in situ" at the installer's discretion (the operator does not usually come from the guide manufacturer).

In the system targeted by the invention the grooving and tonguing joint and planing is no longer used.

Two guides (1) are seen in Figure 2a, butt-joined by means of two equal joint-bridge plates (9), one on each side.

A joint-bridge plate (9) is comprised of a central body (9_1), which is partially placed on the upper surface (5) of the flanges (4) of the two guides (1) to be joined, and which extends along one edge with an upper arm (9_2) in contact with the head (3) and on the other edge with a lower arm (9_3).

Preferably the upper and lower arms (9_2), (9_3) form obtuse angles (α_1) (α_2) with the central body (9_1) (figure 4b).

In this first practical execution the lower arm (9_3) extends below the flanges (4) of the guides (1).

The joint-bridge plates (9) are secured to the guides (1) with tightening screws (10) arranged on the central body (9_1).

In this first practical embodiment, when the screws (10) (figure 2c) and anchorage nut (14) are tightened, the support area between plate (9) and guides (1) is the lower surface (6) of the flanges, with the extension (9_4) of the lower arm (9_3).

In the case of figure 2 the grip is due to the nut (14) without the head of the screw (10) pressing against the joint-bridge plate (9) as seen in sectioned figure 2c.

In the rest of the practical embodiments illustrated it is the screw head (10) that exercises pressure on the joint-bridge plate (9).

When the screws (10) are tightened, this gives rise to a side thrust force of the upper arm (9_2) against the head (3) so that the heads (3) of the two guides (1) to be joined together are centred, as a result minimising the gap between them and aligning both guides (1) on the OY axis.

In the third and fourth embodiments (figures 4 and 5) the joint-bridge plate (9) presents a central body (9_1) and similar upper (9_2) and lower (9_3) arms that are preferably parallel.

In the manufacturing process the upper surface (5) of the flanges (cuts (12) as a support area for the central body (9_1)) and the upper surface (7) of the head (3) are machined at the same time thus managing to align both guides on the OX-axis, the gap in that direction being minimum.

By tightening screws (10) the thrust force of the upper arm (9_2), already explained, on the head (3), gives rise to the OY alignment.

In this case, applicable to other embodiments, the relative openings and heads of screw are non-rotating, for example square.

In the variant of figure 5 the head of tightening screw (10) is a side moving cam.

In the second practical embodiment, figure 3, the tightening screws (1) are non-rotating as in the variant of figure 4, but the support area of the joint-bridge plate (9) on the guide (1) is carried out on a bevelling (13) carried out on the upper edge of the flanges (4).

In figures 6ª, 6b, it can be seen that the joint-bridge plate (9) has a longitudinal protuberance (p), which is located in a combined channel (r) executed in the flanges (4) of the guide (1).

In the figures, the channel (r) appears with a wedge shape and on the upper surface (5) of the flanges , but it can be placed in any part of the flanges and may have any shape whatsoever, the shape and location of the protuberance (p) resulting, therefore, from the plate (9).

In all the embodiments explained, the "in situ" installer just has to place the two joint-bridge plates (9) of each joint (one on each side of each joint), tighten the screws and the running path is left without having to make readjustments, settings or measurements, like a continuous guide, perfectly aligned according to the OX and OY axes.

Where the terms "comprise", "comprises", "comprised" or "comprising" are used in this specification, they are to be interpreted as specifying the presence of the stated features, integers, steps or components referred to, but not to preclude the presence or addition of one or more other feature, integer, step, component or group thereof.

The claims defining the invention are as follows:

1. A lift guide alignment and assembly system, said system including at least two aligned guides, each guide including a blade-head and a flange on each side, a joint-bridge plate on each side of the assembly of the two guides, said plate having a central body which is placed on the upper surface of the flanges of the two guides to be assembled, said central body having on one edge an upper arm which is supported on the blade-head, and on the other edge with a lower arm, the joint-bridge plate being screwed to the flanges with screws, so that the upper arm presses on the blade-head.

2. The lift guide alignment and assembly system according to claim 1, further including a cut on the upper surface of the flanges where the central body of the joint-bridge plate is placed.

3. The lift guide alignment and assembly system according to claim 1, further including a chamfer on the upper edge of the flanges where the joint-bridge plate is placed.

4. The lift guide alignment and assembly system according to any one of the preceding claims, wherein the upper arm and the lower arm form an obtuse angle with the central body.

5. The lift guide alignment and assembly system according to claim 4, wherein the upper and lower arms are similar.

6. The lift guide alignment and assembly system according to claim 1, wherein the lower arm extends under the flanges being screwed to the flanges together with the central body.

7. The lift guide alignment and assembly system according to any one of the preceding claims, wherein the screws are non-rotating.

8. The lift guide alignment and assembly system according to claim 1, wherein the joint-bridge plate has a longitudinal protuberance which is located in a corresponding channel of the flanges.

9. The lift guide alignment and assembly system according to any one of claims 1 to 7, wherein the screws are side moving cams.

10. A lift guide alignment and assembly system, as hereinbefore described with reference to Figures 2 to 6 of the accompanying drawings.

Dated this 7th day of April, 2004

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By Their Patent Attorneys
CALLINAN LAWRIE

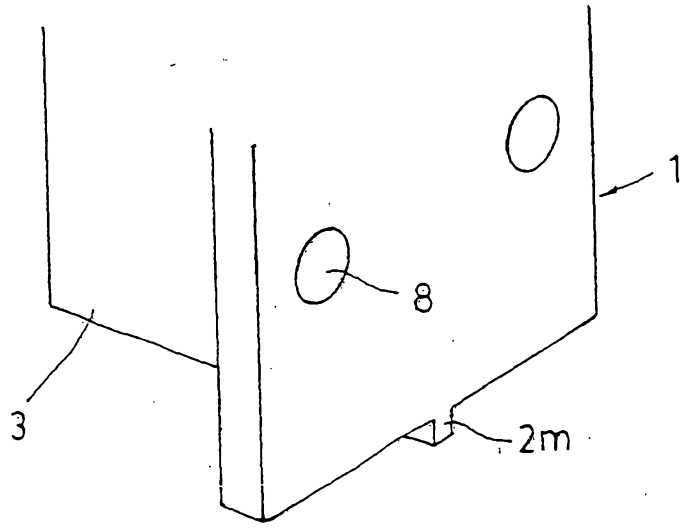


Fig. 1

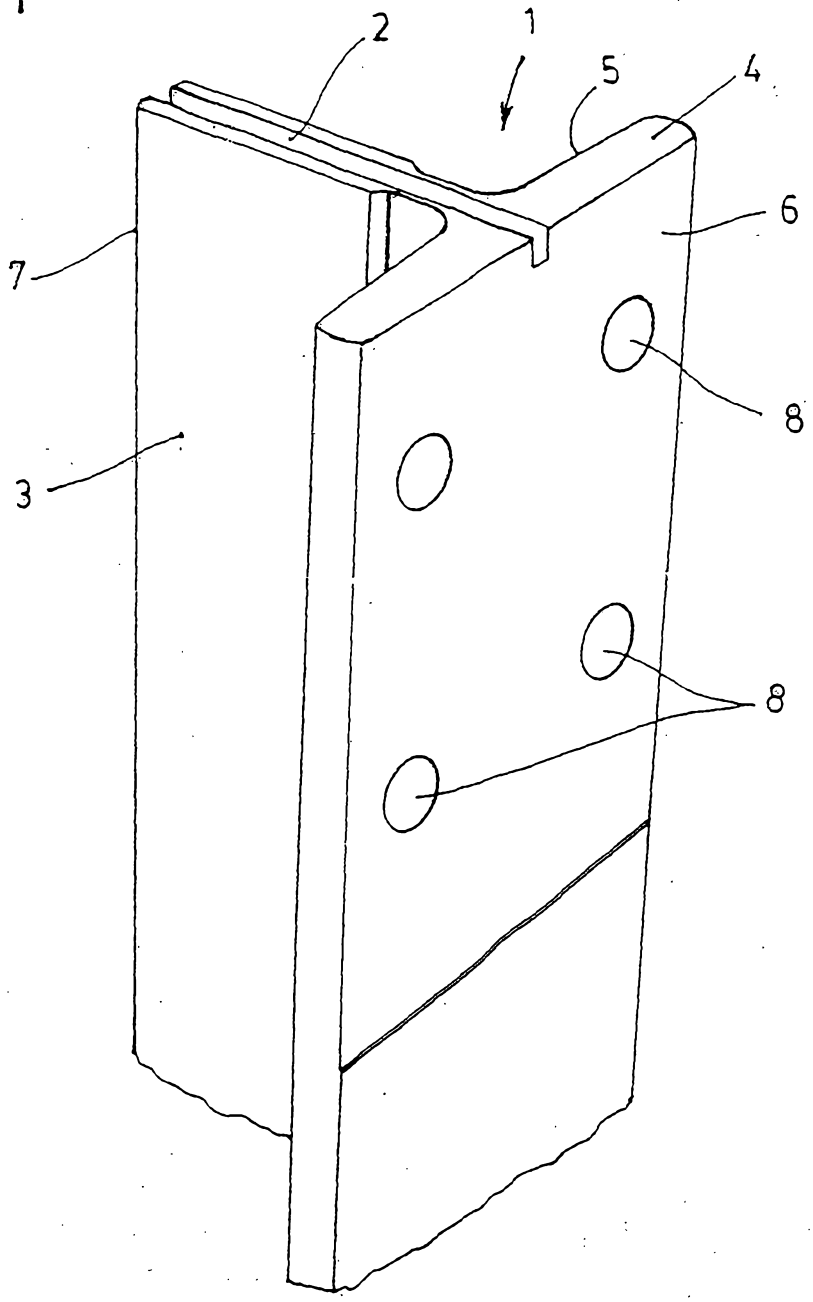
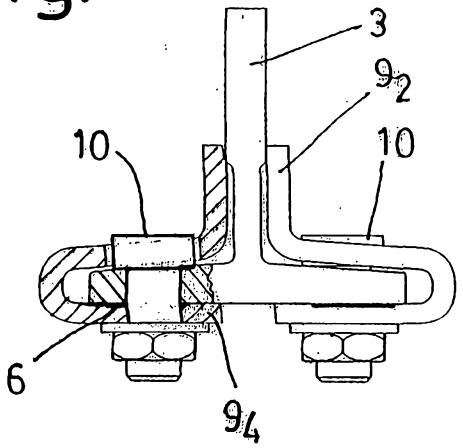


Fig. 2c



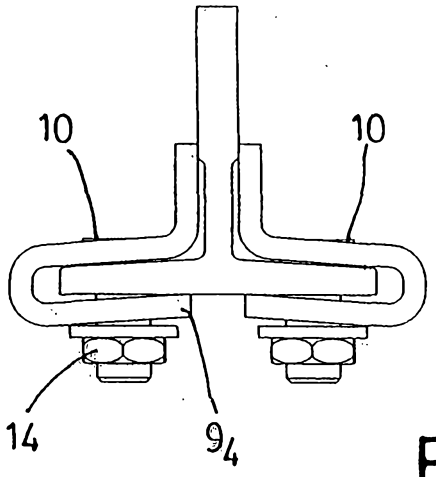


Fig. 2b

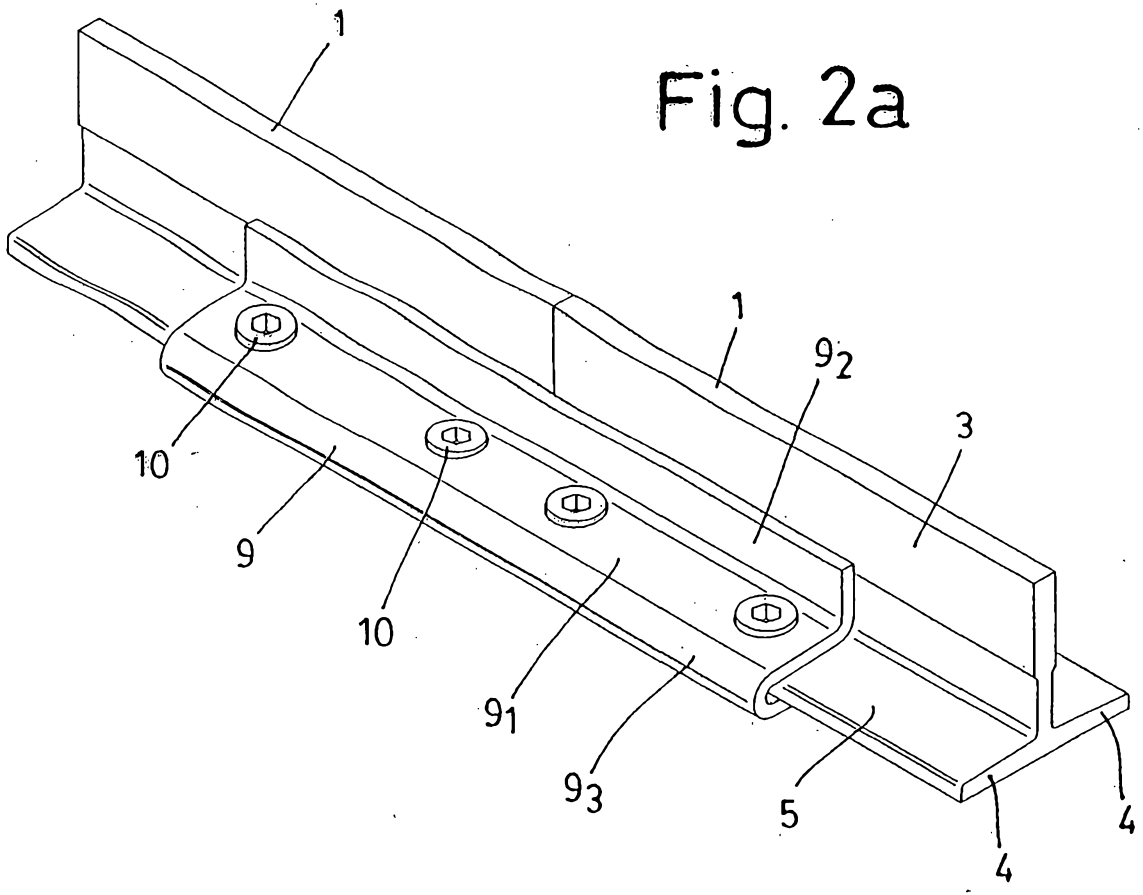
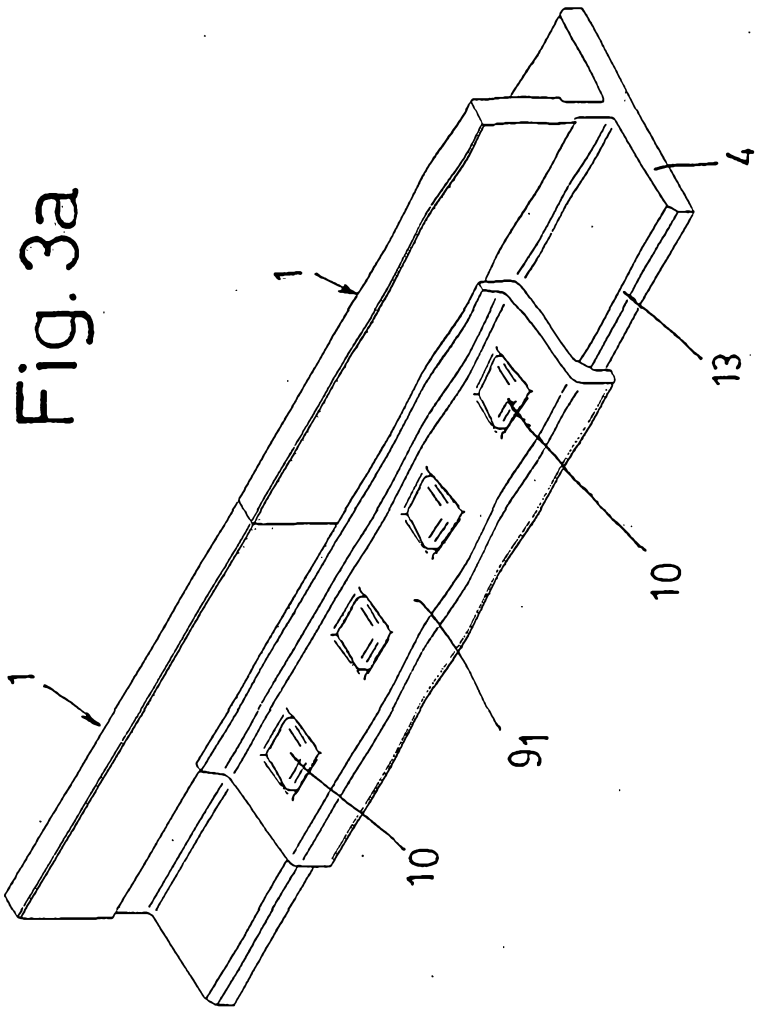


Fig. 2a

Fig. 3a



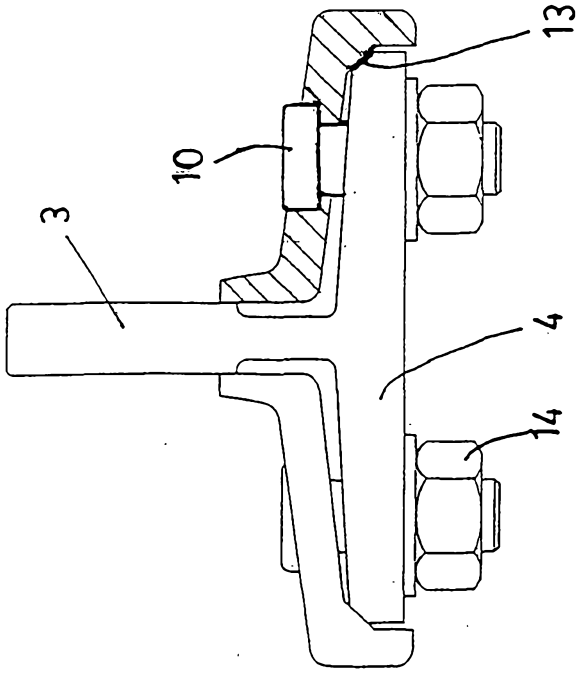


Fig. 3b

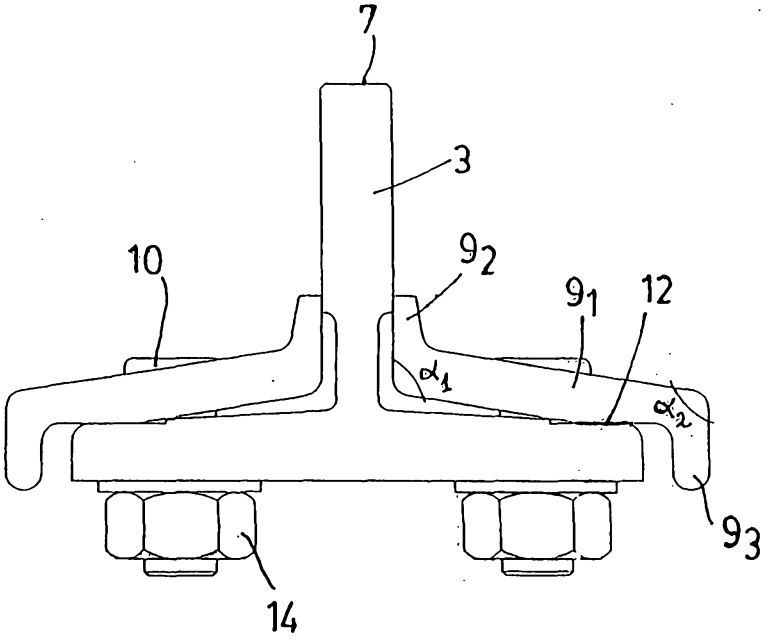


Fig. 4b

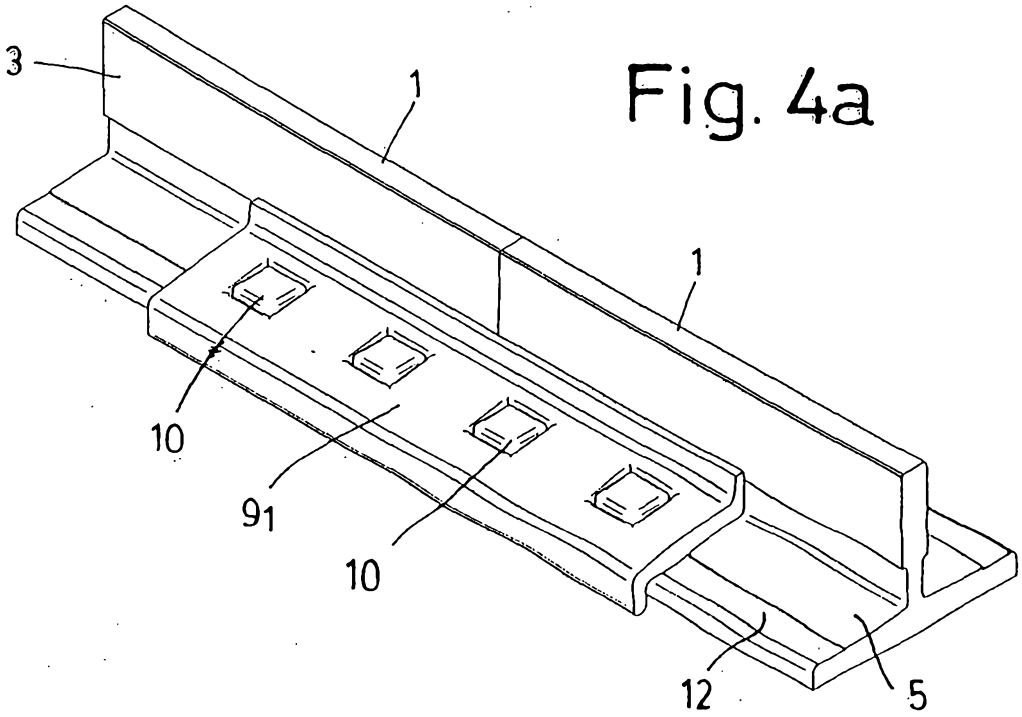


Fig. 4a

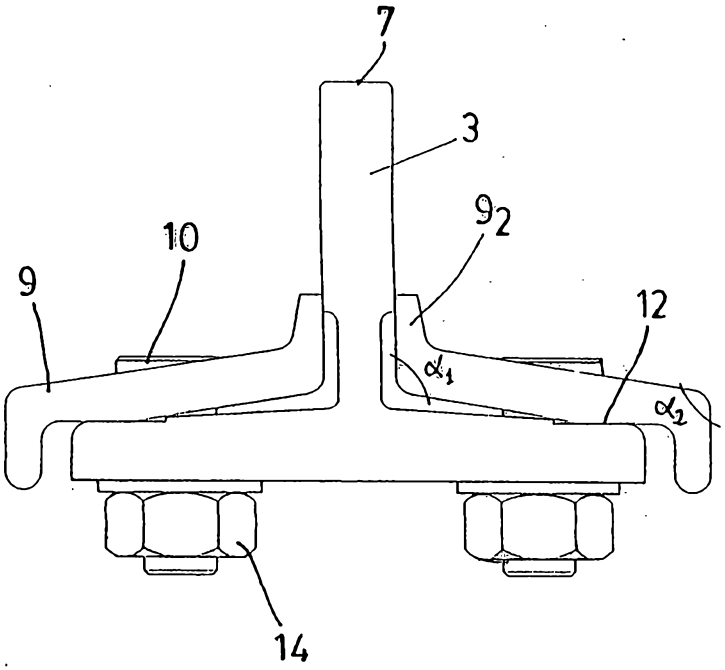


Fig. 5b

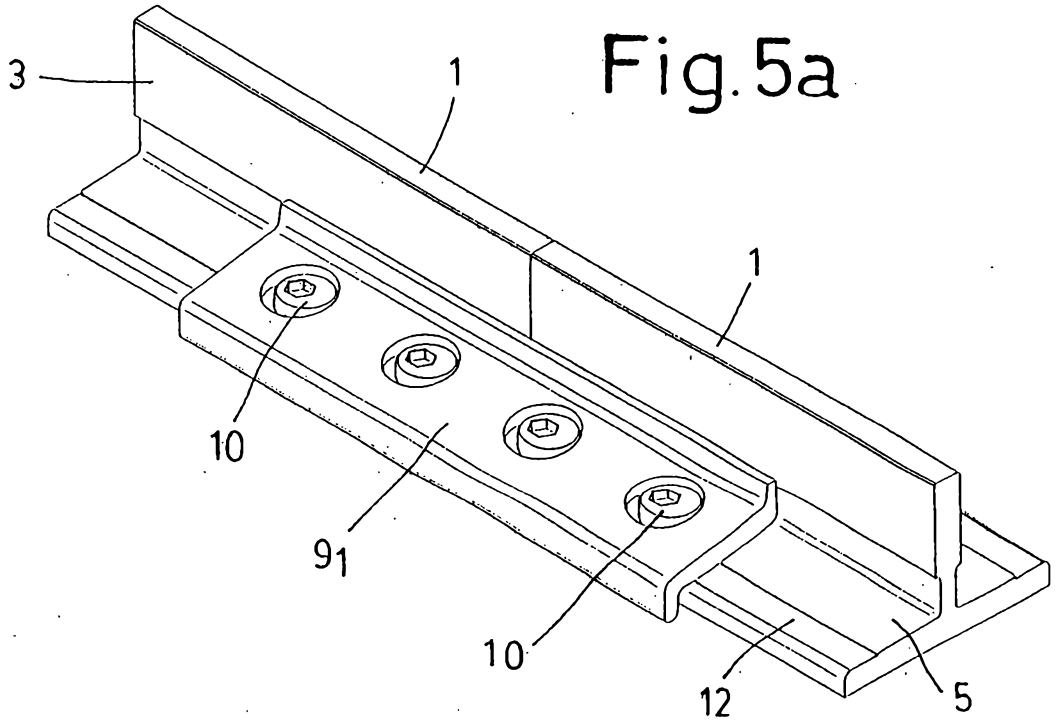


Fig. 5a

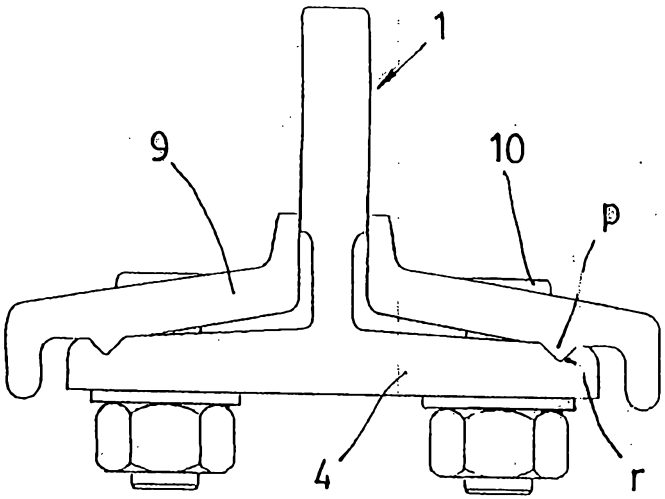


Fig. 6b

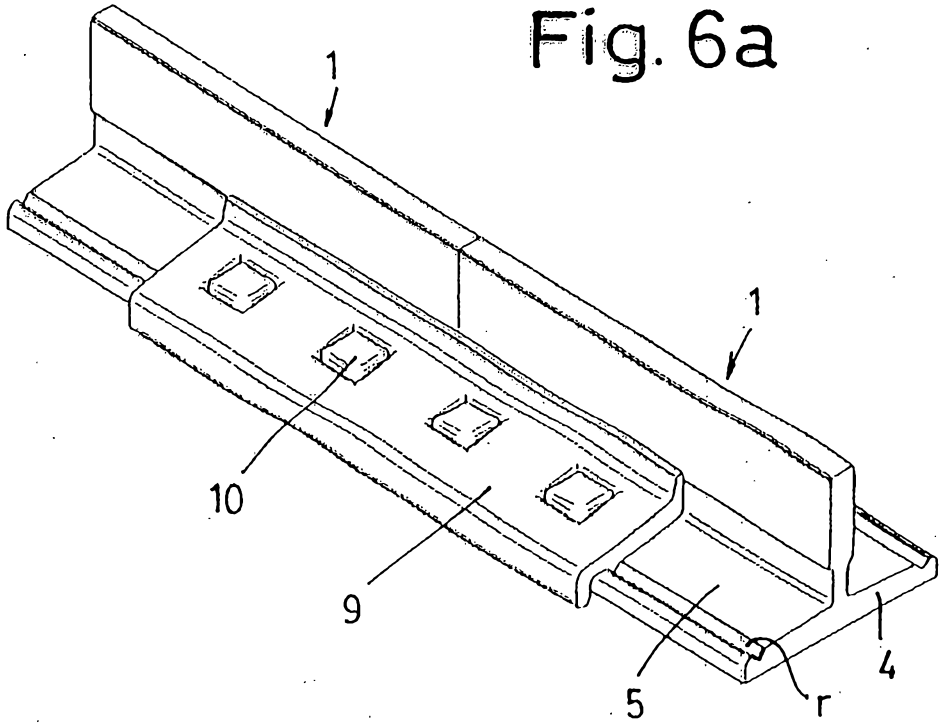


Fig. 6a