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(54) **A T-BAR WITH CONNECTING SLAT FOR FIXING COMPONENTS OF SUSPENDED CEILING**

(57) A subject of this invention is a T-bar with connecting slat (1) for fixing components of suspended ceiling which in web (3) has a rectangular opening (4). The opening (4) slide fits the slat (5), formed from parallel metal sheets (5' and 5'') joined permanently together. The opposite pairs of boundary strips of each sheet metal are bent outside so that they embrace edges of the opening (4), in parallel to the longitudinal axis of bar (1). On

the bent boundary strip of metal sheet, there is at least one groove forming a notch (9) from the side of web (3), and on the surface of web (3), on the edge of opening (4), there is at least one groove (8), which forms a latch together with the notch (9). The connecting slat (5), in the light of opening (4) made in the web (3) incorporates pass-through shaped slots (6).

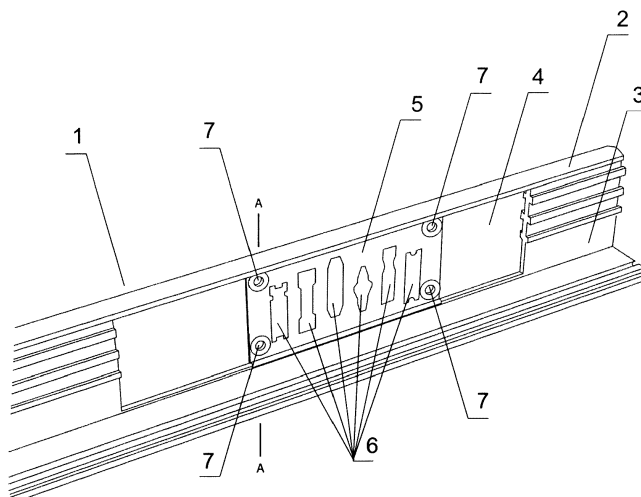


Fig. 1

Description

[0001] A subject of this invention is the T-bar with connecting slat for fixing components of suspended ceiling, which can be installed in any structure of suspended ceiling with no need to make any additional preparations before installation and also with no need to use special tools during installation.

[0002] Suspended ceilings usually incorporate a rectangular grid generally made from parallel main bars and lateral bars installed between and perpendicular to the main bars. The lateral bars are usually equipped with end links which fit the same links of other lateral bars connected with their ends. The end links of lateral bars are inserted in suitably shaped slots made and secured in the main bar web. The lateral bars may also have slots that enable linking other lateral bars by inserting suitable end links into these slots. Such solutions are disclosed, among others, by the following patents: PL184798, PL188085, EP2516764 or EP2556200. Bars made by different manufactures have end links of various shapes, therefore, before installation of the suspended ceiling structure, the main bars must be prepared appropriately by making holes of a shape matching that of the end link of the lateral panel used. This is not a problem for the manufacturer of ceiling components having a particular design. A problem arises when in the ceiling made by a given manufacturer, a bar must be installed which is a structural beam for specialist equipment, for example, lighting element. Then, it is necessary to make holes dedicated for a specific type of ceiling bars. It is burdensome both for the manufacturer and for the user of such specialist equipment.

[0003] The objective of this invention was a solution in which the bar to fix suspended ceiling components could be connected with lateral bars having different end links.

[0004] The T-bar with connecting slat to fix components of suspended ceiling, in accordance with the invention, has a rectangular opening in the web, and in the light of opening there is a slat slide fit on the opposite edges of the opening, parallel to the longitudinal axis of the T-bar. The connecting slat is made from parallel metal sheets joined permanently. The opposite pairs of boundary strips of each sheet metal are bent outside so that they embrace the lower and upper edge of opening in the web. Therefore, the connecting slat can slide in the direction parallel to the longitudinal axis of the T-bar. On the surface of T-bar web, above the opening, there is at least one groove, and on the edge of connecting slat, a corresponding crease forming notch from the web side. The notch inserted in the groove in the web wall forms a latch which allows for retaining desired position of the connecting slat. The connecting slat incorporates a series of pass-through slots used to accommodate, in a known way, the links of lateral bars matching various links used to fix lateral bars. While installing the invented T-bar in the suspended ceiling, it is enough to fix position of the connecting slat in such a way that a shaped slot

that fits the end link of lateral bar is in place of expected position of the lateral bar.

[0005] It is advantageous that the T-bar is made of metal or plastic material.

5 [0006] It is advantageous that the metal sheets which form the connecting slat are joined together by riveting or spot welding.

[0007] It is advantageous that the grooves on the surface of web and notches on the connecting slat are located so that any selected slot on the bar will be aligned with the end link of lateral bar.

10 [0008] A subject of this invention is explained in more details on the example of fabrication illustrated on drawing in which fig. 1 presents a fragment of T-bar with connecting slat to fix components of suspended ceiling in the axonometric projection, fig. 2 presents the axonometric projection of T-bar fragment with connecting slat in exploded view, and fig. 3 presents the enlarged section of the T-bar along the A-A line in fig. 1.

15 [0009] The T-bar with connecting slat to fix components of suspended ceiling 1, in accordance with the invention, in this example of fabrication incorporates a structural beam 2, which has a T-shape cross section. In the web 3 of structural beam 2, there is a rectangular opening 4. In the light of opening 4, there is a sliding slat 5 with pass-through shaped slots 6, oriented in perpendicular to the longitudinal axis of structural beam 2 and having shapes matching typical links of lateral bars. Slat 5 is made of two permanently joined metal sheets 5' and 5''. In this fabrication example, the metal sheets are joined with rivets 7. The lower and upper edge of sheets 5' and 5'' forming a slat 5 are bend over so that they embrace the lower and upper edges of the opening 4 in the web 3, which is illustrated very well in fig. 3. Above opening 4 in web 3, there is a groove 8, and on the edge of slat 5, there is a crease forming the notch 9 from the web 3 side. Groove 8 and notch 9 form a latch which retains position of the connecting slat so that in place where bar 1 is expected to join a lateral bar a shaped slot 6 matching the end link of lateral bar will be positioned.

20 [0010] The advantage of T-bar with connecting slat for fixing components of suspended ceiling, in accordance with the invention, is the ease of installation of bars in different types of suspended ceilings with no need to previously prepare a bar in a manner to adapt the bar to link it with structural components of a specific ceiling.

Claims

1. The T-bar with connecting slat for fixing components of suspended ceiling, having in the web a shaped slot to accommodate, in a known way, fasteners of lateral bars, **characterised by** the fact that T-bar (1) incorporates in its web (3) a rectangular opening (4), which has a slide fit slat (5), formed from parallel metal sheets (5' and 5'') permanently joined together, and two opposite boundary strips of each metal

sheet are bent so that they embrace edges of the opening (4), parallel to the longitudinal axis of the bar (1), and the bent boundary strip of metal sheet incorporates at least one crease forming a notch (9) from the web (3) side, and on the surface of the web (3), on the edge of opening (4) there is accordingly at least one groove (8), forming a latch together with the notch (9), and in the slat (5), in the light of the opening (4) there are pass-through shaped slots (6).

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2. The T-bar with connecting slat for fixing components of suspended ceiling, as claimed under 1, **characterised by** the fact that the bar (1) is made of metal or plastic material.

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3. The T-bar with connecting slat for fixing components of suspended ceiling, as claimed under 1, **characterised by** the fact that the metal sheets (5' and 5''), forming the connecting slat (5) are joined together by riveting or spot welding.

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4. The T-bar with connecting slat for fixing components of suspended ceiling, as claimed under 1, **characterised by** the fact that the grooves (8) on the surface of web (3) and notches (9) on the connecting slat (5) are located so that any selected shaped slot (6) will be aligned with the end link of lateral bar.

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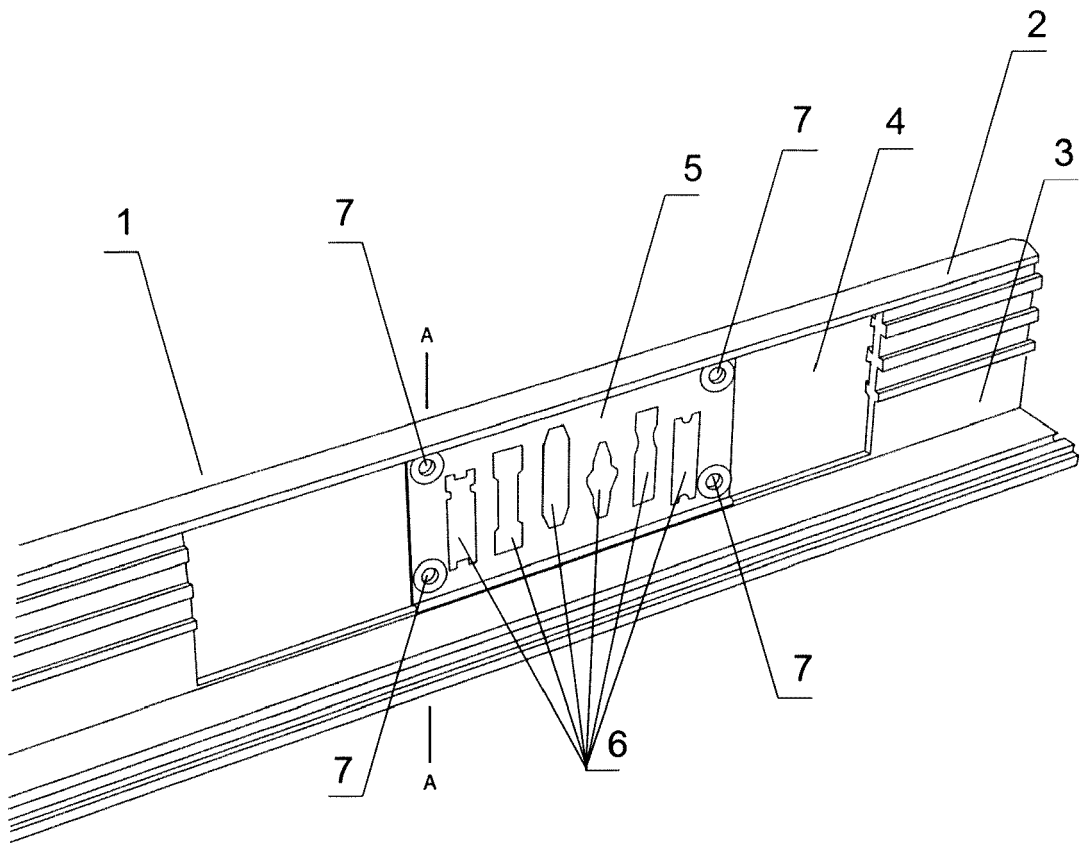


Fig. 1

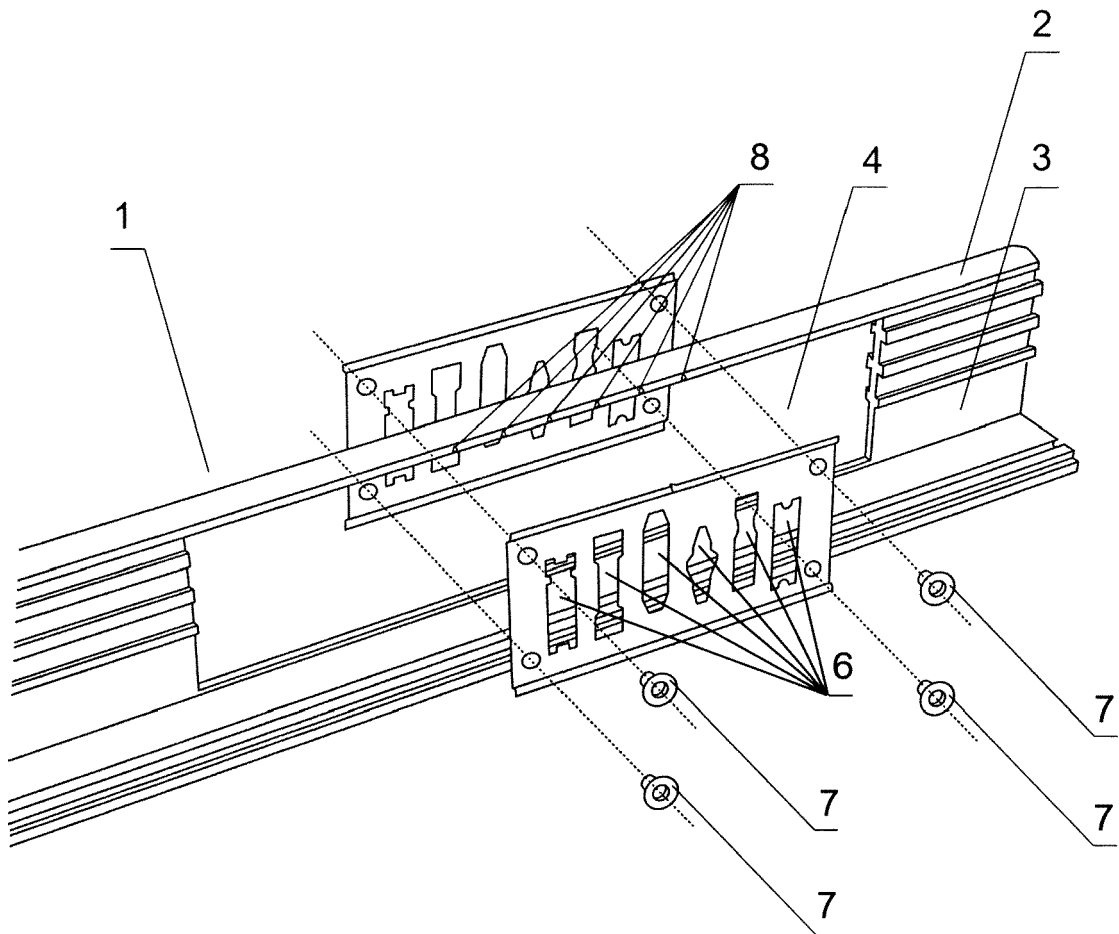


Fig. 2

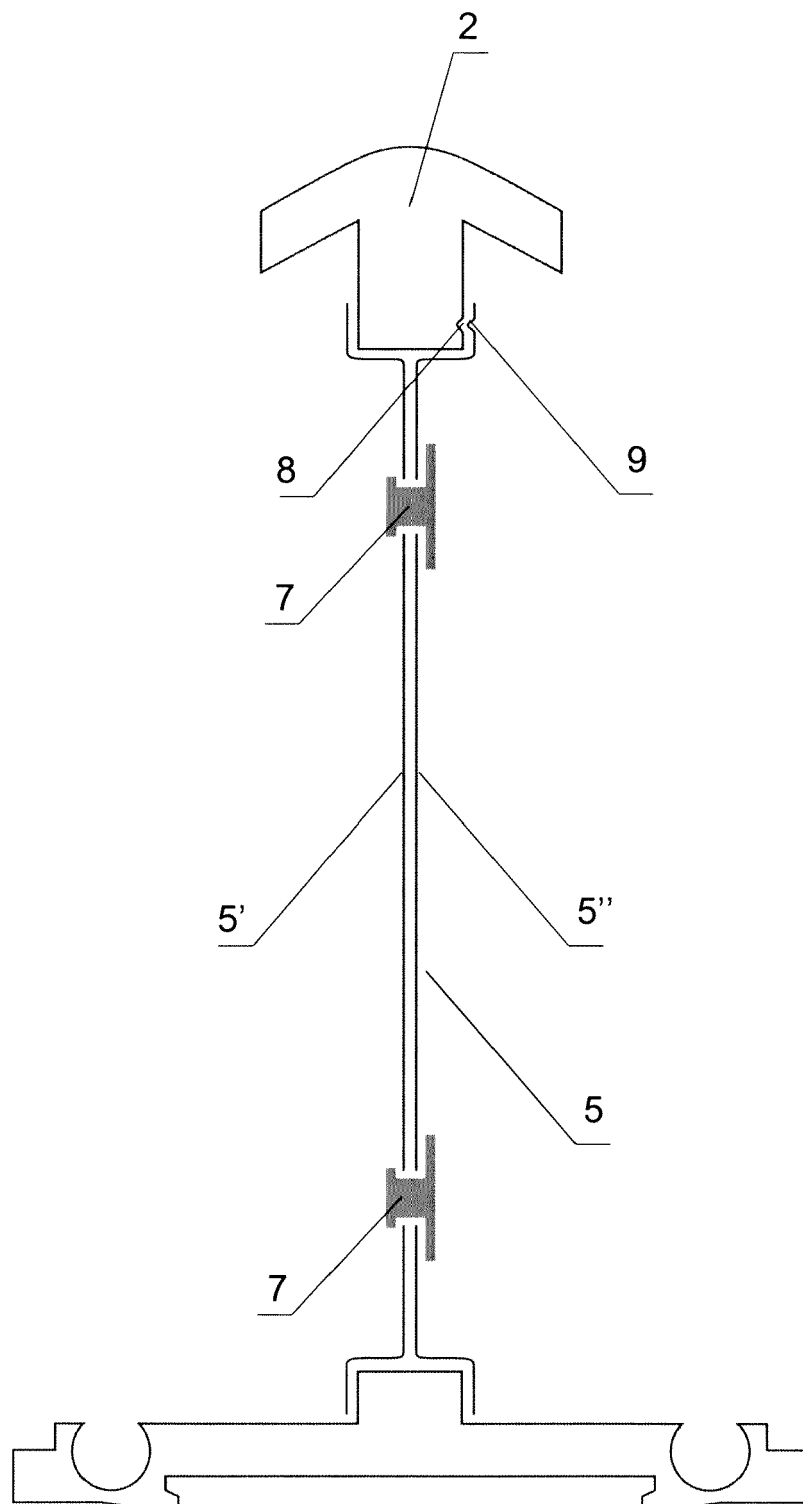


Fig. 3

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- PL 184798 [0002]
- PL 188085 [0002]
- EP 2516764 A [0002]
- EP 2556200 A [0002]