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(54) **TELESCOPIC APRON FOR AN ELEVATOR CAR**

TELESKOPIISCHE SCHÜRZE FÜR EINE AUFZUGSKABINE

TABLIER TÉLESCOPIQUE POUR CABINE D'ASCENSEUR

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## Description

**[0001]** The present invention relates to a telescopic apron for an elevator car.

**[0002]** A car apron or platform guard is a safety device that prevents the inadvertent fall of rescued persons into the lift shaft beneath the car. The apron shall at least cover the clear width of the cabin door with the lowest sheet.

**[0003]** According to EN 81-20/50 standard, the minimum open length of the car apron is 750 mm.

**[0004]** The telescopic or foldable design allows the car apron to fit in new plants of existing buildings, where the minimum open length may be an issue. From EP 2042463 it is known a telescopic apron in which panels may mutually slide thanks to rails of the ball bearing type.

**[0005]** The low friction of the ball bearings may result in a fast fall of the panels, with a high risk of injuring for the operator when the apron is opened. Thus, a hydraulic damper is usually provided for preventing the uncontrolled fall of the panels.

**[0006]** In this context, the technical task underlying the present invention is to propose a telescopic apron for an elevator car, which overcomes the drawbacks in the prior art as described above.

**[0007]** In particular, the aim of this invention is to make available a telescopic apron for an elevator car, having a simplified structure with respect to the known solutions and achieving the same level of safety in terms of preventing the fast fall of the panels when the apron is opened.

**[0008]** A further aim of the present invention is to propose a telescopic apron for an elevator car that is easy and fast to assemble.

**[0009]** The technical task and the aims specified are substantially achieved by a telescopic apron for an elevator car, comprising:

- a plurality of panels that are mounted in a telescopic arrangement by means of rails so that the panels are movable from a retracted configuration to an extended configuration and vice versa, each rail comprising two mutually slidable rail pieces that are fixed to adjacent panels by screws,

characterized in that each rail comprises a sliding block made of steel having a longitudinal extension and two longitudinal protrusions, each rail piece being made of cast polyamide and having a longitudinal groove in which one of the longitudinal protrusion of the sliding block is slidably inserted.

**[0010]** According to one embodiment of the invention, each rail piece is fixed to the corresponding panel by two screws that are applied to the two ends of the rail piece. Advantageously, these two screws are also stop elements for the sliding of the corresponding sliding block when the panels are in the retracted configuration.

**[0011]** According to one embodiment, each longitudi-

nal protrusion of the corresponding sliding block has a hole with a longitudinal extension. The hole is coupled to a further screw that is fixed to the facing rail piece. Advantageously, the further screw is a stop element for the mutual sliding of the sliding block and the rail piece when the panels are in the extended configuration.

**[0012]** Additional features and advantages of the present invention will become more apparent from the approximate and thus non-limiting description of a preferred but not exclusive embodiment of a telescopic apron for an elevator car.

**[0013]** This description will be given below with reference to the attached drawings, provided solely for illustrative and therefore non-limiting purposes, in which:

- figures 1 and 2 illustrate a telescopic apron in an extended configuration, in accordance with the invention, in two perspective views, respectively from the front and from the back;
- figure 3 illustrates the telescopic apron of figure 2 in a retracted configuration;
- figure 4 illustrates the telescopic apron of figures 2-3 seen from one side;
- figures 5-6 illustrate a part (rail) of the telescopic apron, in accordance with the invention, respectively in an open and closed configuration;
- figures 7-8 illustrate the rail of figures 5-6, in cut view;
- figure 9 illustrate a part of the telescopic apron of figure 3, from the top. With reference to the figures, 1 indicates a telescopic apron for an elevator car. The telescopic apron 1 comprises a plurality of panels 2 that are mounted in a telescopic arrangement.

**[0014]** In fact, the panels 2 are movable, i.e mutually slidable, so that the telescopic apron may assume two limit configurations, i.e.

- a retracted or folded configuration, illustrated in figure 3;
- an extended or unfolded configuration, illustrated in figures 1-2.

**[0015]** The telescopic arrangement is obtained by means of rails 3.

**[0016]** Each rail 3 comprises two mutually slidable rail pieces 3a, 3b that are fixed to adjacent panels 2 by screws 4, 5 each.

**[0017]** Each rail 3 comprises a sliding block 6 having a longitudinal extension and two longitudinal protrusions 6a, 6b.

**[0018]** Each rail piece 3a, 3b has a longitudinal groove 7 in which one of the longitudinal protrusion 6a, 6b of the sliding block 6 is slidably inserted. Advantageously, the rail pieces 3a, 3b are made of plastic material, preferably cast polyamide.

**[0019]** The sliding block 6 is made of metal, preferably steel.

**[0020]** Advantageously, each rail piece 3a, 3b is fixed

to the corresponding panel 2 by at least two screws 4, 5 that are applied to the two ends of the rail piece 3a, 3b. The two screws 4, 5 are stop elements for the sliding of the corresponding sliding block 6 when the telescopic apron 1 is in the folded configuration.

**[0021]** For each sliding block 6, the longitudinal protrusion 6a, 6b has a blind hole or a through hole 8 that has longitudinal extension. Each hole 8 is coupled to a further screw 9 that is fixed to the rail piece 3a, 3b in order to allow and guide the sliding of the sliding block 6.

**[0022]** The further screw 9 represents a stop element for the mutual sliding of the sliding block 6 and the rail piece 3a, 3b when the telescopic apron 1 is in the unfolded configuration (see for example figure 9).

**[0023]** The rail 3 may therefore assume:

- an open configuration (see figure 7), in which the further screw 9 stops the mutual sliding of the sliding block 6 and the rail pieces 3a, 3b, and
- a closed configuration (see figure 8), in which the two screws 4, 5 stop said mutual sliding.

**[0024]** In the embodiment illustrated here, there are five panels 2. Anyway, the number of panels may be lower or higher than five.

**[0025]** The characteristics of the telescopic apron for an elevator car, according to the present invention, are clear as are the advantages.

**[0026]** In particular, thanks to the specific structure of the rail, together with the choice of material of its parts, i.e. two plastic rail pieces and a metallic sliding block, a higher friction is obtained, which prevents fast fall of the panels when the apron is opened.

**[0027]** In addition, the special materials employed for the rail avoid the use of lubricant, thus simplifying the maintenance of the apron. In addition, the screws of each rail piece are also used as stop elements for the sliding of the corresponding sliding block (in the folded and in the unfolded configuration), thus simplifying the overall structure of the apron.

## Claims

1. Telescopic apron (1) for an elevator car, comprising:

a plurality of panels (2) that are mounted in a telescopic arrangement by means of rails (3) so that the panels (2) are movable from a retracted configuration to an extended configuration and vice versa, each rail (3) comprising two mutually slidable rail pieces (3a, 3b) that are fixed to adjacent panels (2) by screws (4, 5, 9),

**characterized in that** each rail (3) comprises: a sliding block (6) made of steel having a longitudinal extension and two longitudinal protrusions (6a, 6b), each rail piece (3, 3b) being made of cast polyamide and having a longitudinal

groove (7) in which one of the longitudinal protrusion (6a, 6b) of the sliding block (6) is slidably inserted.

2. Telescopic apron (1) according to claim 1, wherein each rail piece (3a, 3b) is fixed to the corresponding panel (2) by two screws (4, 5) that are applied to the two ends of the rail piece (3a, 3b), said two screws (4, 5) being stop elements for the sliding of the corresponding sliding block (6) when the panels (2) are in the retracted configuration.

3. Telescopic apron (1) according to claim 2, wherein each longitudinal protrusion (6a, 6b) of the corresponding sliding block (6) has a hole (8) with a longitudinal extension, said hole (8) being coupled to a further screw (9) that is fixed to the facing rail piece (3a, 3b), said further screw (9) being a stop element for the mutual sliding of the sliding block (6) and the rail piece (3a, 3b) when the panels (2) are in the extended configuration.

## Patentansprüche

1. Teleskopische Schürze (1) für eine Aufzugskabine, umfassend:

eine Vielzahl von Paneelen (2), die in einer teleskopischen Anordnung mittels Schienen (3) montiert sind, sodass die Paneele (2) von einer eingefahrenen Konfiguration in eine ausgefahrene Konfiguration und

umgekehrt bewegbar sind, wobei eine jede Schiene (3) zwei gegenseitig verschiebbare Schienenstücke (3a, 3b) umfasst, die an angrenzenden Paneelen (2) mit Schrauben (4, 5, 9) fixiert sind,

**dadurch gekennzeichnet, dass** eine jede Schiene (3) umfasst:

einen Gleitblock (6), bestehend aus Stahl, aufweisend eine Längsausdehnung und zwei Längsvorsprünge (6a, 6b), wobei ein jedes Schienenstück (3, 3b) aus Polyamidguss besteht und eine Längsnut (7) aufweist, in die einer der Längsvorsprünge (6a, 6b) des Gleitblocks (6) verschiebbar eingefügt ist.

2. Teleskopische Schürze (1) nach Anspruch 1, wobei ein jedes Schienenstück (3a, 3b) am entsprechenden Paneel (2) mit zwei Schrauben (4, 5) fixiert ist, die an den zwei Enden des Schienenstücks (3a, 3b) angebracht sind, wobei die zwei Schrauben (4, 5) Arretierelemente für das Gleiten des entsprechenden Gleitblocks (6) sind, wenn die Paneele (2) in der eingefahrenen Konfiguration sind.

3. Teleskopische Schürze (1) nach Anspruch 2, wobei

ein jeder Längsvorsprung (6a, 6b) des entsprechenden Gleitblocks (6) ein Loch (8) mit einer Längsausdehnung aufweist, wobei das Loch (8) mit einer weiteren Schraube (9) gekuppelt ist, die am zugewandten Schienenstück (3a, 3b) fixiert ist, wobei die weitere Schraube (9) ein Arretierelement für das gegenseitige Gleiten des Gleitblocks (6) und des Schienenstücks (3a, 3b) ist, wenn die Paneele (2) in der ausgefahrenen Konfiguration sind.

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## Revendications

1. Tablier télescopique (1) pour une cabine d'ascenseur, comprenant :

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une pluralité de panneaux (2) étant montés dans un agencement télescopique au moyen de rails (3) de sorte que les panneaux (2) sont mobiles d'une configuration rétractée à une configuration étendue et vice versa,

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chaque rail (3) comprenant deux pièces de rail (3a, 3b) pouvant coulisser l'une par rapport à l'autre étant fixées aux panneaux (2) adjacents par des vis (4, 5, 9),

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**caractérisé en ce que** chaque rail (3) comprend :

un bloc coulissant (6) en acier ayant une extension longitudinale et deux saillies longitudinales (6a, 6b), chaque pièce de rail (3, 3b) étant constituée de polyamide coulé et ayant une rainure longitudinale (7) dans laquelle l'une des saillies longitudinales (6a, 6b) du bloc coulissant (6) est introduite de manière coulissante.

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2. Tablier télescopique (1) selon la revendication 1, dans lequel chaque pièce de rail (3a, 3b) est fixée au panneau correspondant (2) par deux vis (4, 5) étant appliquées aux deux extrémités de la pièce de rail (3a, 3b), lesdites deux vis (4, 5) étant des éléments de butée pour le coulisement du bloc coulissant (6) correspondant lorsque les panneaux (2) se trouvent dans la configuration rétractée.

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3. Tablier télescopique (1) selon la revendication 2, dans lequel chaque saillie longitudinale (6a, 6b) du bloc coulissant (6) correspondant comporte un trou (8) ayant une extension longitudinale, ledit trou (8) étant couplé à une vis supplémentaire (9) étant fixée à la pièce de rail (3a, 3b) faisant face, ladite vis supplémentaire (9) étant un élément de butée servant au coulisement mutuel du bloc coulissant (6) et de la pièce de rail (3a, 3b) lorsque les panneaux (2) sont dans la configuration étendue.

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FIG. 1

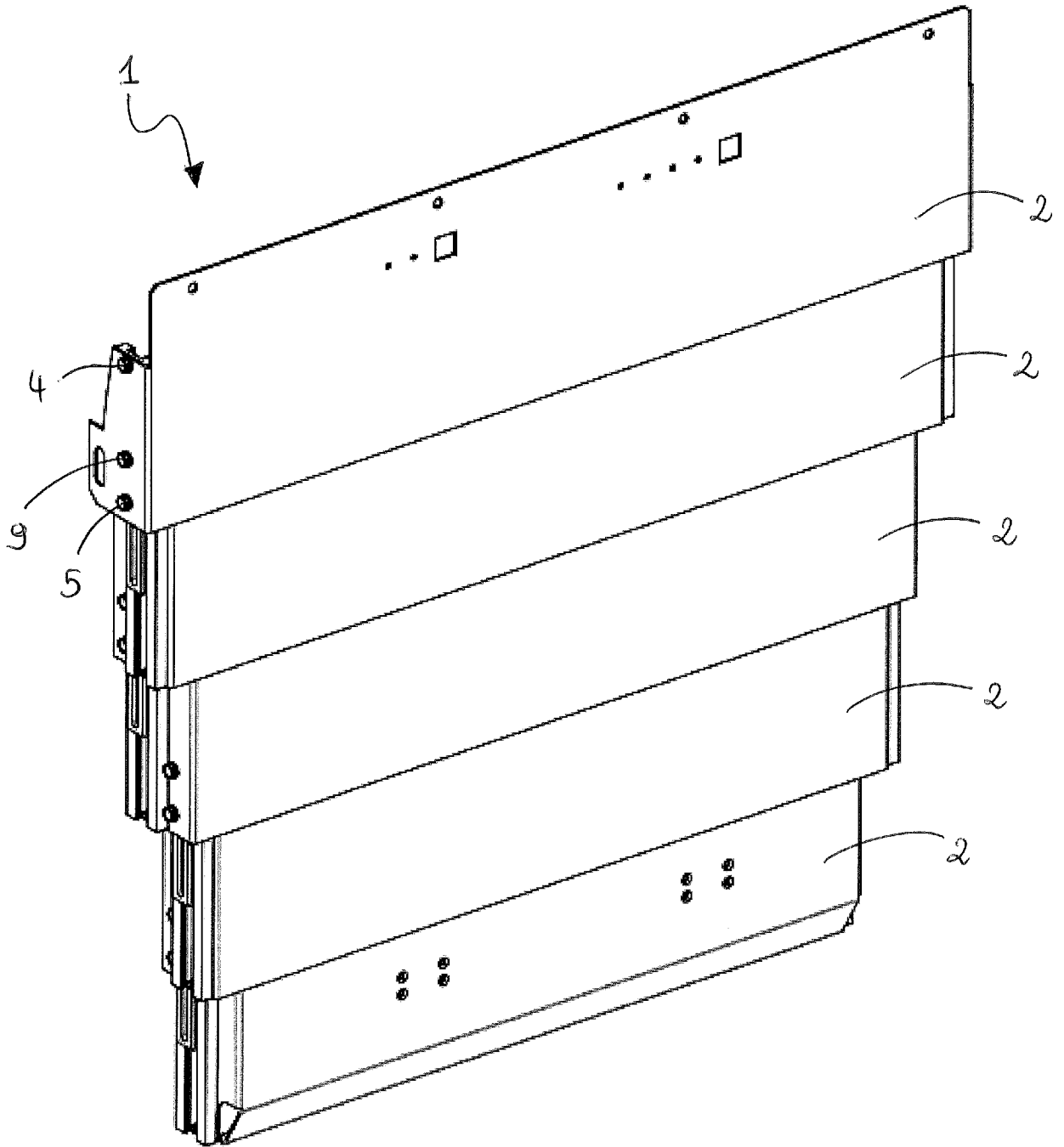


FIG. 2

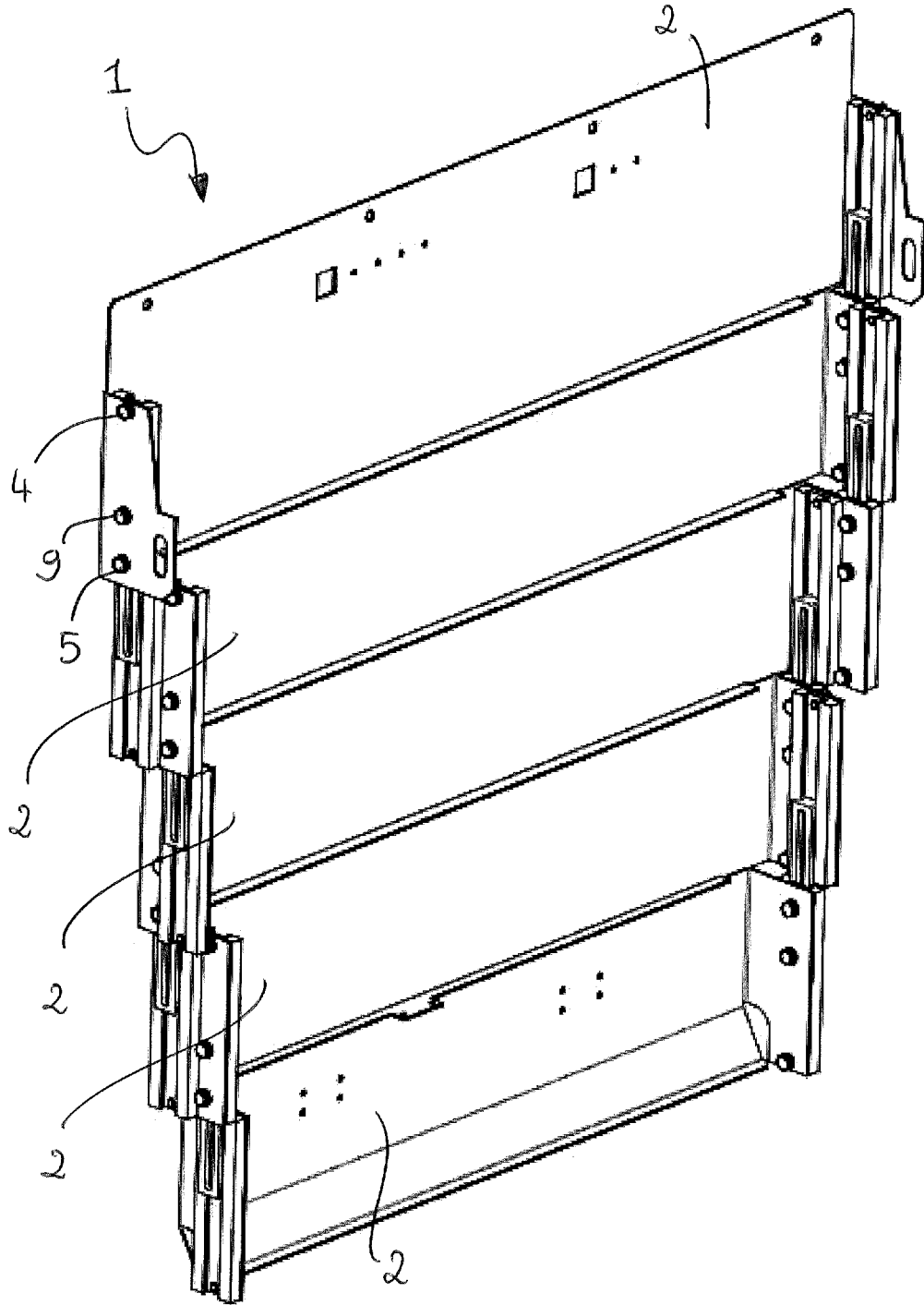


FIG. 3

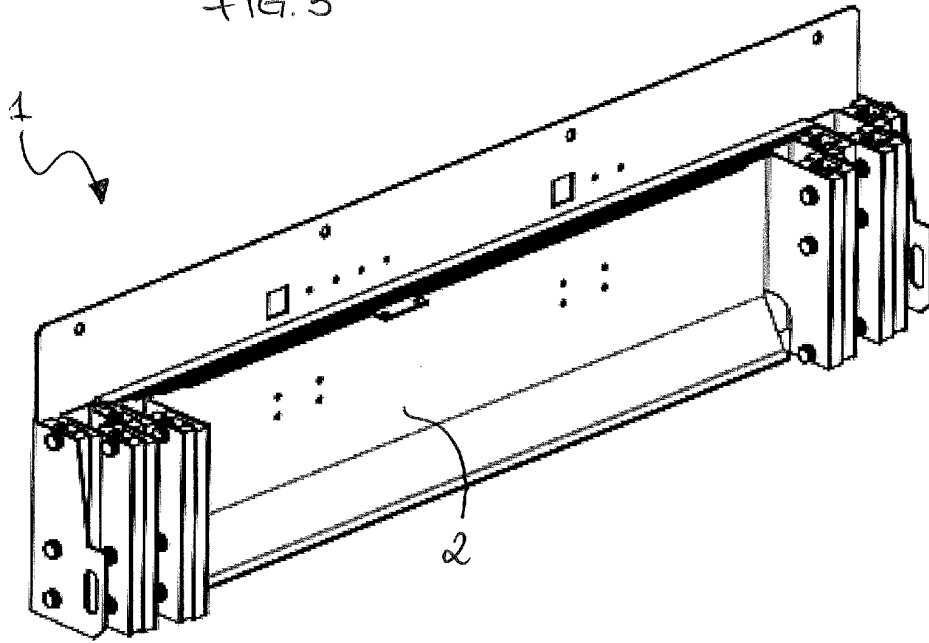


FIG. 4

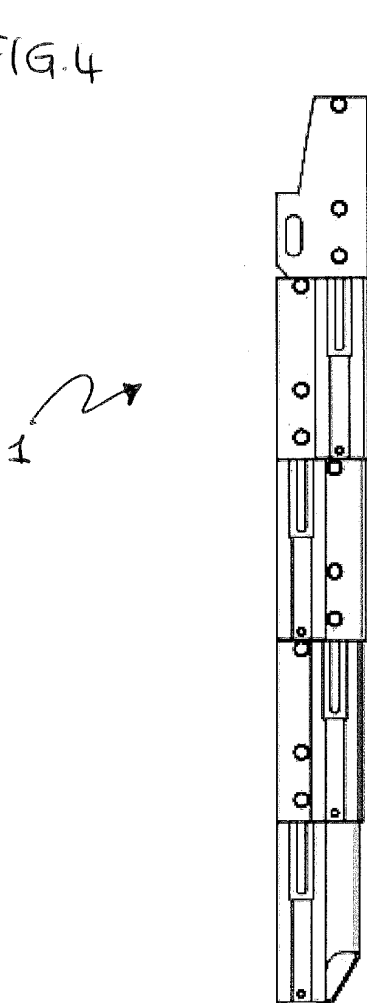


FIG. 5

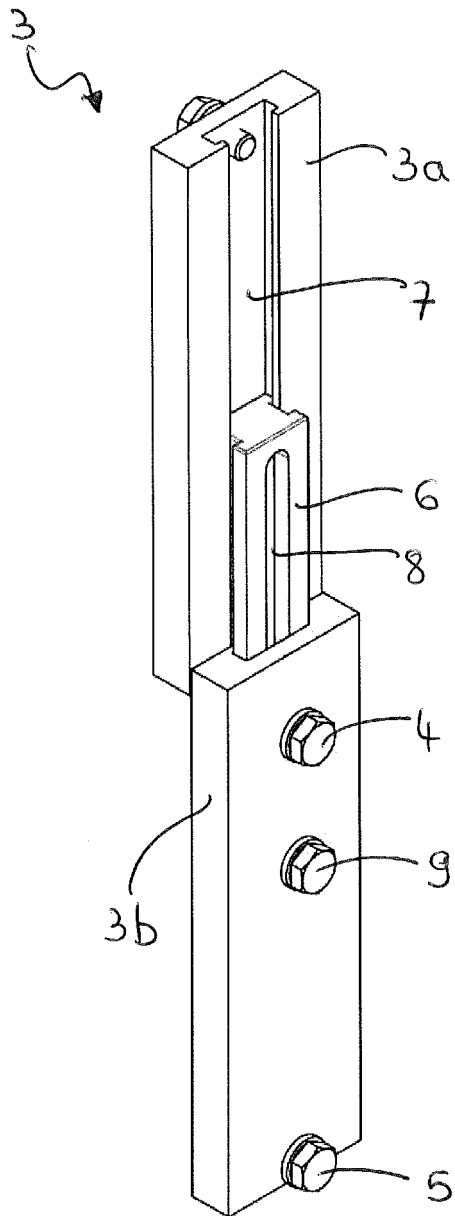


FIG. 6

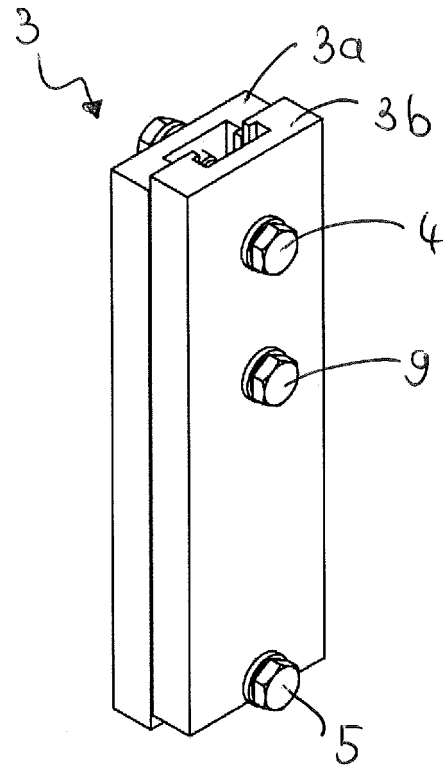


FIG. 7

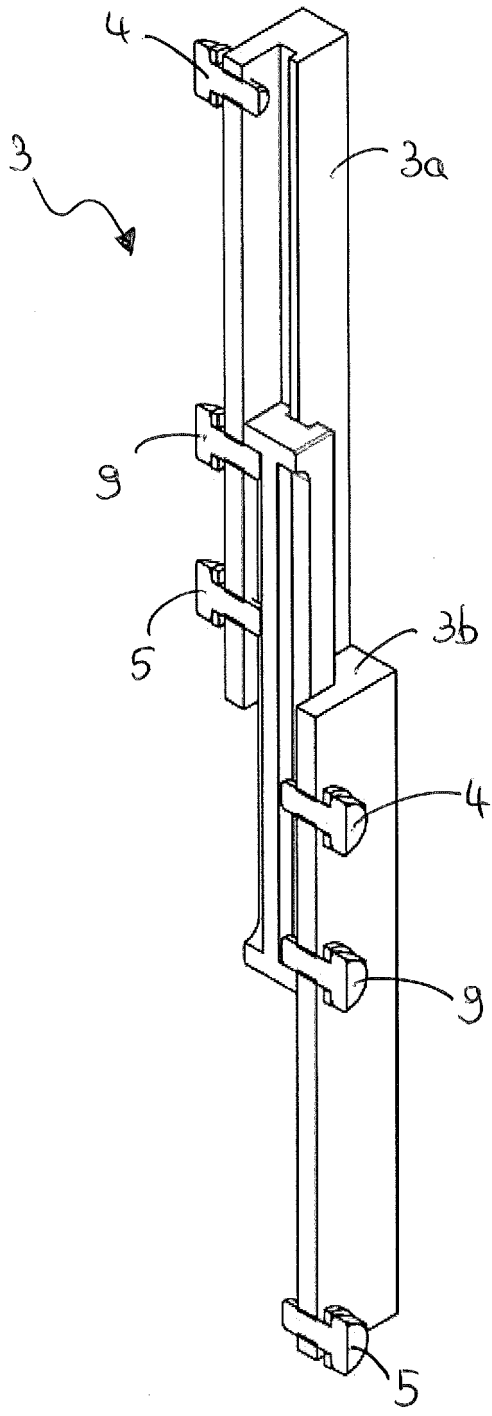


FIG. 8

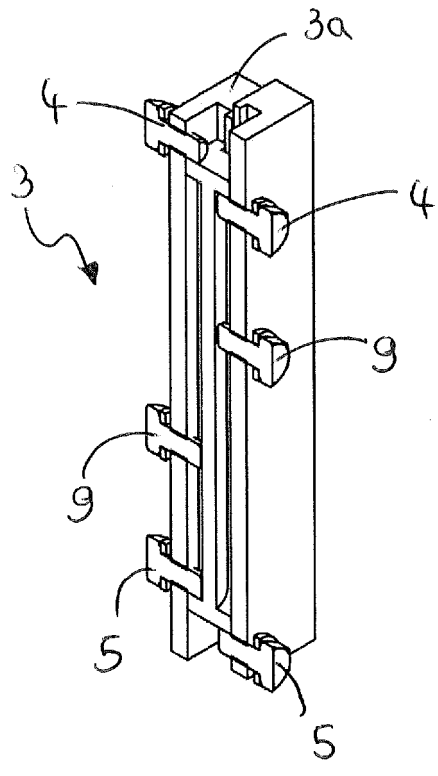
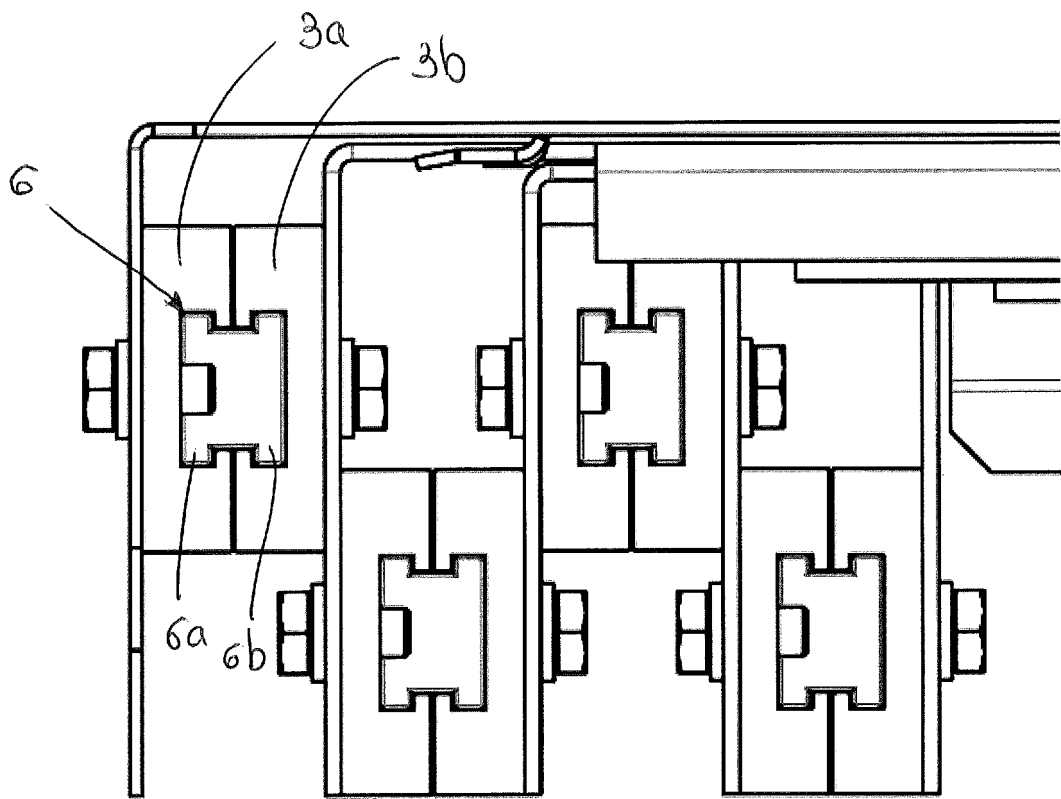


FIG. 9



**REFERENCES CITED IN THE DESCRIPTION**

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