

(19) **DANMARK**

(10) **DK/EP 3164560 T3**



(12)

Oversættelse af europæisk patentskrift

Patent- og
Varemærkestyrelsen

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- (51) Int.Cl.: **E 05 D 15/56 (2006.01)** **E 05 D 15/06 (2006.01)** **E 05 D 15/58 (2006.01)**
E 06 B 3/50 (2006.01)
- (45) Oversættelsen bekendtgjort den: **2020-06-29**
- (80) Dato for Den Europæiske Patentmyndigheds bekendtgørelse om meddelelse af patentet: **2020-04-29**
- (86) Europæisk ansøgning nr.: **15815084.7**
- (86) Europæisk indleveringsdag: **2015-06-22**
- (87) Den europæiske ansøgnings publiceringsdag: **2017-05-10**
- (86) International ansøgning nr.: **SE2015050718**
- (87) Internationalt publikationsnr.: **WO2016003353**
- (30) Prioritet: **2014-07-02 SE 1450824**
- (84) Designerede stater: **AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR**
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- (54) Benævnelse: **BALKONGLASARRANGEMENT**
- (56) Fremdragne publikationer:
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DESCRIPTION

Technical Field

[0001] The present invention relates to a balcony glazing arrangement comprising a window pane, which is horizontally displaceable along a track and is pivotable, about a vertical pivot axis situated on one vertical side edge of the window pane, between a closed setting, in which the pane extends along said track, and an open setting, in which the window pane is pivoted away from said track, wherein the window pane has a first magnetic coupling part, which is arranged to cooperate with a second magnetic coupling part arranged level with the first magnetic coupling part.

[0002] The present invention also relates to a balcony comprising such a balcony glazing arrangement.

Background of the Invention

[0003] US 2011/0094161 shows an arrangement comprising a stationary door leaf and a displaceable door leaf, which are provided with a first and a second magnetic coupling part respectively.

[0004] This arrangement has the drawback that horizontal displacement of an individual door leaf can be perceived as complicated and/or be difficult to achieve.

Summary of the Invention

[0005] The object of the present invention is to provide a balcony glazing arrangement which allows smooth and easy horizontal displacement of a window pane.

[0006] This object is achieved with a balcony glazing arrangement according to claim 1.

[0007] When the magnetic coupling parts are transported in relation to one another, the attraction between them is reduced, which considerably facilitates horizontal displacement of the window pane in its closed setting. A user thus does not need to pull or dislodge the magnetic coupling parts away from one another, since the magnetic transport member transports them in relation to one another, in order to be able to displace the window pane when the shutter is pivoted into its closed setting.

[0008] Furthermore, the magnetic coupling parts together form a coupling arrangement which is arranged to keep the magnetic coupling parts coupled to one another when the window

pane is pivoted away from the guide rail. A balcony glazing arrangement which is designed in this way allows very easy and robust pivoting into the closed setting, since the first magnetic coupling part, in the course of the pivoting, can be coupled together with the second magnetic coupling part. The bearing device of the window pane can thus be temporarily "fixed", for example to a second window pane arranged beside the window pane, or to a fixed-mounted frame part when it is pivoted away from the guide rail, thereby helping to provide smooth and reliable pivoting of the window pane from the open setting into the closed setting and from the closed setting into the open setting.

[0009] According to one embodiment, the magnetic transport member comprises a projection.

[0010] According to one embodiment, the magnetic transport member is arranged to transport the magnetic coupling parts away from one another so that a gap is formed between them, which allows a robust and very reliable solution with few moving parts.

[0011] Said support and/or said magnetic transport member comprises an inclined or a curved contact surface, whereby wear on parts which come into contact with one another when the magnetic coupling parts are transported in relation to one another is minimized.

[0012] Said window pane is suspended from an upper guide rail. By making the arrangement hang from an upper guide rail, larger tolerances, for example relating to the distance between the upper guide rail and a lower guide rail, in the installation of a balcony side are permitted, which allows time-efficient assembly of the balcony glazing arrangement.

[0013] According to one embodiment, said window pane is disposed between an upper and a lower guide rail, which gives a very robust and stable arrangement.

[0014] Another object is to provide an improved balcony.

[0015] This object is achieved with a balcony which has a balcony glazing arrangement on at least one balcony side and which is characterized in that the balcony glazing arrangement is a balcony glazing arrangement according to the present invention.

[0016] Further advantages and characteristics of the invention emerge from the description below and from the following patent claims.

Brief description of the drawings

[0017] The invention will now be described in greater detail with reference to the accompanying drawings.

Fig. 1a shows a balcony glazing arrangement according to one embodiment of the present invention, with all window panes in a closed setting.

Fig. 1b shows the balcony glazing arrangement shown in fig. 1a, with two window panes in an open setting.

Fig. 2a is a perspective view and shows two of the window panes integral to the glazing arrangement shown in fig. 1a, in an open setting.

Figs 2b-c illustrate pivoting of one of the window panes integral to the glazing arrangement shown in fig. 1a into a closed setting.

Figs 3a-e show a section along the line A-A in fig. 3a and illustrate pivoting of one of the window panes integral to the glazing arrangement shown in fig. 1a from an open setting into a closed setting.

Figs 4a-b illustrate a balcony glazing arrangement according to an alternative embodiment of the present invention.

Fig. 5 illustrates a part of a balcony glazing arrangement according to a further alternative embodiment of the present invention.

Description of preferred embodiments

[0018] Fig. 1a and fig. 1b comprise a balcony glazing arrangement 1 according to one embodiment of the present invention. The balcony glazing arrangement 1, which is intended for use in the installation of the front side of a balcony, comprises an upper 3 and a lower 5 horizontal guide rail. The upper guide rail 3 supports a plurality of - in the here shown example five - vertical window panes 7, 9, 11, 13 and 15 arranged side by side, which are horizontally displaceable along the guide rails 3, 5 and are pivotable between a closed setting, in which the window pane extends along the guide rails 3, 5, and an open setting, in which the window pane is pivoted away from the guide rails 3, 5. When a window pane is in its closed setting, it can be displaced along the guide rails 3, 5. Each window pane 7, 9, 11, 13, 15 is thus horizontally displaceable along a track.

[0019] Each window pane 7, 9, 11, 13, 15 is suspended from the upper guide rail 3 by means of a suspension trolley 17, 19, 21, 23, 25, which is displaceable along the upper guide rail 3. Each suspension trolley 17, 19, 21, 23, 25 is provided with three suspension wheels, illustrated in fig. 2a, which are guided in the upper guide rail 3. In fig. 1a and fig. 1b, each window pane is shown provided with a suspension trolley 17, 19, 21, 23 and 25 respectively, which is disposed near to the, with respect to fig. 1a, left side edge 27 of the window pane. Each window pane 17, 19, 21, 23, 25 has on its lower edge a guide trolley 29, which is placed vertically directly in front of the suspension trolley and is provided with three guide wheels which are guided in the lower rail 5.

[0020] Each window pane 7, 9, 11, 13, 15 is mounted pivotably about a vertical pivot axis S placed on one vertical side edge 27 of the window pane. The pivot axes of the window panes are defined in this embodiment by an upper and a lower pivot pin, which is mounted in the suspension trolley and the guide trolley respectively, i.e. in an upper and lower bearing trolley respectively. For example, the pivot axes of the second window pane 9 are thus defined in this embodiment by an upper and a lower pivot pin 19a and 21a respectively, which is mounted in the suspension trolley 21 and the guide trolley 29 respectively.

[0021] Each window pane 7, 9, 11, 13, 15 is pivotable between an closed setting (fig. 1a), in which the window pane extends along the guide rails 3, 5, and an open setting (fig. 1b), in which the window pane is pivoted away from the guide rails 3, 5.

[0022] The suspension trolley 17 of the first window pane 7 is provided with a first magnetic coupling part 31, in the form of a magnet, and a second magnetic coupling part 33, in the form of an L-shaped element made of a magnetic material, such as steel. The first magnetic coupling part 31 of the first window pane 7 is arranged to cooperate with a magnetic coupling part 37, anchored in a vertical frame part 35, in the form of an L-shaped element made of a magnetic material.

[0023] The suspension trolley 19 of the second window pane 9 is provided with a first magnetic coupling part 39, in the form of a magnet, and a second magnetic coupling part 41, in the form of an L-shaped element made of a magnetic material. The first magnetic coupling part 39 of the second window pane 9 is arranged to cooperate with the second magnetic coupling part 33 of the first window pane 7.

[0024] Each window pane has on its upper edge a magnetic transport member, which is arranged at a distance from the pivot axis S and level with a support. The magnetic transport member is further arranged to, when the window pane is pivoted from its open setting into its closed setting, come into contact with the support and transport a magnetic coupling part in relation to the magnetic coupling part with which it cooperates when the window pane is in its open setting, and thereby reduce the attraction between the magnetic coupling parts, so that subsequent horizontal displacement of the window pane is facilitated.

[0025] The first window pane 7 thus has on its upper edge 43 a magnetic transport member 45. The magnetic transport member 45 of the first window pane 7 has a projection 45a, which is arranged level with a support 37a that in this case constitutes a part of the magnetic coupling part 37 anchored in the frame part 35, and to, when the window pane 7 is pivoted from its open setting (fig. 1b) into its closed setting (fig. 1a), come into contact with the support 37a of the coupling part anchored in the frame part 35 and transport the first magnetic coupling part 31 of the first window pane 7 from the magnetic coupling part 37 anchored in the frame part 35, and thereby reduce the magnetic attraction between the magnetic coupling parts.

[0026] The second window pane 9 has on its upper edge 43 a magnetic transport member 47, which is arranged at a distance from the pivot axis S. The magnetic transport member 47 of

the second window pane 9 has a projection 47a, which is arranged level with the support 33a, the latter in this case constituting a part of the second magnetic coupling part 33 of the first window pane 7, and, when the window pane 9 is pivoted from its open setting (fig. 1b) into its closed setting (fig. 1a), come into contact with the support 33a and transport the first magnetic coupling part 39 of the second window pane 9 from the second magnetic coupling part 33 of the first window pane 7, and thereby reduce the magnetic attraction between them.

[0027] The support 33a has in this embodiment an inclined contact surface 34 (fig. 3a), which reduces the wear to which the support 33 and the magnetic transport member 47 are subjected when the window pane 9 is pivoted from its open setting into its closed setting. Furthermore, the projection 47a of the magnetic transport member has in this embodiment a curved contact surface 48 (fig. 3a), which further reduces the wear to which the support 33 and the magnetic transport member 47 are subjected when the window pane 9 is pivoted from its open setting into its closed setting.

[0028] With reference to figs 2a-c and figs 3a-e now comes pivoting of the second window pane 9 from the position shown in fig. 1b, i.e. from its open setting, into the position shown in fig 1a, i.e. into its closed setting.

[0029] Fig. 2a and fig. 3a show the first and the second window pane 7 and 9, respectively, in an open setting. In this setting, the first magnetic coupling part 39 of the second window pane 9 is coupled together with the second magnetic coupling part 33 of the first window pane 7. The two magnetic coupling parts 33, 39 together form a magnetic coupling, which couples together the bearing trolley 19 of the second window pane 9 with the bearing trolley 17 of the first window pane in a very robust manner, thereby facilitating the subsequent pivoting into the closed setting.

[0030] When the window pane 9 is pivoted from the position shown in fig. 2a, the window pane pivots about the pivot pin 19a, as is illustrated by the arrow A in fig. 2b and fig. 3b. In the course of this pivoting, the magnetic transport member 47 of the second window pane 9 moves in the direction of the support 33a of the first window pane 7, as is illustrated by the arrow B in fig. 2c.

[0031] Upon continued pivoting, the projection 47a of the magnetic transport member 47 comes into contact with the support 33a of the first window pane 7 and transports the second window pane 9 away from the first window pane 7, as is illustrated by the arrows C in fig. 2c and fig. 3d. In connection with this transport, the first magnetic coupling part 39 of the second window pane 9 is decoupled from the second magnetic coupling part 33 of the first window pane 7, whereupon a gap D1 (fig. 3d) is formed between the magnetic coupling parts 33, 39.

[0032] Once the first magnetic coupling part 39 of the second window pane 9 is decoupled from the second magnetic coupling part 33 of the first window pane 7, i.e. once the second window pane 9 is in its closed setting, which is illustrated in fig. 3e, the second window pane 9 can be easily displaced along the guide rails 3 and 5, as is illustrated by the arrow C in fig. 3e.

[0033] With the aid of the above-described balcony glazing arrangement according to the invention, one of the window panes of the balcony glazing arrangement can thus be pivoted in an easy and robust manner from its open into its closed setting and easily displaced along the guide rails in its closed setting.

[0034] Figs 4a-b illustrate a balcony glazing arrangement according to an alternative embodiment of the present invention. A first window pane 107 of the window panes of the balcony glazing arrangement has on its upper edge a bearing trolley 117 provided with a first magnetic coupling part 133, and a second window pane 109 of the window panes of the balcony glazing arrangement has a bearing trolley 119 provided with a second magnetic coupling part 139. The second window pane 109 has on its upper edge a wedge-shaped magnetic transport member 147, which is arranged to, when the window pane 109 is pivoted into its closed setting, come into contact with and tilt the first magnetic coupling part 133, as is illustrated in fig. 4b. One of the magnetic coupling parts, in this case the first magnetic coupling part 133, is thus in this embodiment supported by means of a ball joint 149 so as to be able to be tilted in relation to the second magnetic coupling part 39. When the first magnetic coupling part 33 is tilted, the magnetic coupling parts 33, 39 are transported in relation to one another.

[0035] In this embodiment, the magnetic transport member thus tilts one of the magnetic coupling parts, instead of displacing the magnetic coupling parts in parallel away from one another. When the first magnetic coupling part 133 is tilted, the magnetic attraction between the magnetic coupling parts 133, 139 is reduced, and once the first magnetic coupling part 133 has been tilted, the second window pane 109 can be horizontally displaced in a simple and smooth manner, as is illustrated by the arrows F, fig. 4b.

[0036] The magnetic transport member is thus arranged to, when a window pane is pivoted into its closed setting, change the position of the magnetic coupling parts in relation to one another, which can be done by moving the magnetic coupling parts apart, as has been described above with reference to figs 2a-c and figs 3a-e, or by tilting at least one of the coupling parts, as has been described with reference to figs 4a-b.

[0037] It will be appreciated that many variants of the above-described embodiments are possible within the scope of the appended patent claims.

[0038] In the above it has been described that a second magnetic coupling part 133 can be fixedly arranged in a frame part, i.e. stationary. Alternatively, a second coupling part can be movably arranged, as is exemplified in fig. 1a by the second magnetic coupling part 41 of the second window pane 9.

[0039] In the embodiment described with reference to figs 4a-b, one of the magnetic coupling parts is supported by means of a ball joint 149, which allows tilting of the particular coupling part 133. It will be appreciated, however, that tilting of one of the magnetic coupling parts can be provided differently provided, as is exemplified schematically in the embodiment shown in

fig. 5, in which a magnetic coupling part 233 is disposed on a shaft 251 which is pivotably arranged and can be pivoted about an axis 253, as is illustrated by the arrow G in fig. 5.

[0040] In the embodiment described with reference to figs 4a-b, the magnetic transport member is arranged in such a way that, upon pivoting, it ends up behind a magnetic coupling part and tilts this. It will be appreciated, however, that the magnetic transport member can instead be arranged in such a way that, upon pivoting, it ends up between the first 133 and the second 139 magnetic coupling part and moves them apart from one another so that a gap is formed between them.

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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P A T E N T K R A V

1. Balkonglasarrangement (1) som omfatter

en vinduesrude (7, 9, 109), som er horisontalt forskydelig langs et spor og er drejbar rundt om en lodret drejeakse (S) placeret på en lodret sidekant af vinduesruden (7, 9, 109), mellem en lukket indstilling, i hvilken ruden (7, 9, 109) strækker sig langs et spor og en åben indstilling, i hvilken vinduesruden (7, 9, 109) er drejet væk fra sporet, vinduesruden er ophængt fra en øvre styreskinne (3) med en ophængvogn (17, 19, 119) som har en første magnetisk koblingsdel (31, 39, 139), som er arrangeret på ophængvognen (17, 19, 119) for at samarbejde med en anden magnetisk koblingsdel (33, 37, 133, 233) af balkonglasarrangementet (1) arrangeret på niveau med den første magnetiske koblingsdel (31, 30, 139),

ken d e t e g n e t ved, at vinduesruden (7, 9, 109) yderligere har et transportlegeme (45, 47, 147), som er arrangeret på en øvre kant (43) af vinduesruden (7, 9, 109) i en distance fra drejeaksen (S) og på niveau med en støtte (33a, 37a; 133; 233), hvori en del af den anden magnetiske koblingsdel (33, 37, 133, 233) er fastgjort i en karmdel (35) af balkonglasarrangementet (1) eller arrangeret på en ophængvogn (17, 19, 109) af en anden vinduesrude (7; 107) af balkonglasarrangementet (1) og når vinduesruden (7, 9, 109) drejes fra en åben indstilling til en lukket indstilling for at komme i kontakt med støtten (33a, 37a; 133; 233) og ændre positionen af de magnetiske koblingsdele (31, 33, 37, 39, 133, 139, 233) i forhold til hinanden, hvori mindst én af de magnetiske transportlegemer (45, 47, 147) og støtten (33a, 37a; 133; 233) har en skrå eller kurvet kontaktflade.

2. Balkonglasarrangement ifølge krav 1, hvori det magnetiske transportlegeme (45, 47) omfatter et fremspring (45a, 47a)

3. Balkonglasarrangement ifølge et hvilket som helst af de foregående krav, hvori det magnetiske transportlegeme (45, 47, 147) er arrangeret til at transportere de magnetiske koblingsdele væk fra hinanden for at danne en åbning (D1) mellem dem.

4. Balkonglasarrangement ifølge et hvilket som helst af de foregående krav, hvori vinduesruden (7, 9, 109) er anbragt mellem den øvre styre- (3) og en nedre styreskinne (5).

5. Balkon hvilken har et balkonglasarrangement på mindst én balkonside, k e n d e t e g n e t ved, at balkonglasarrangementet er et balkonglasarrangement (1) ifølge et hvilket som helst af de foregående krav.

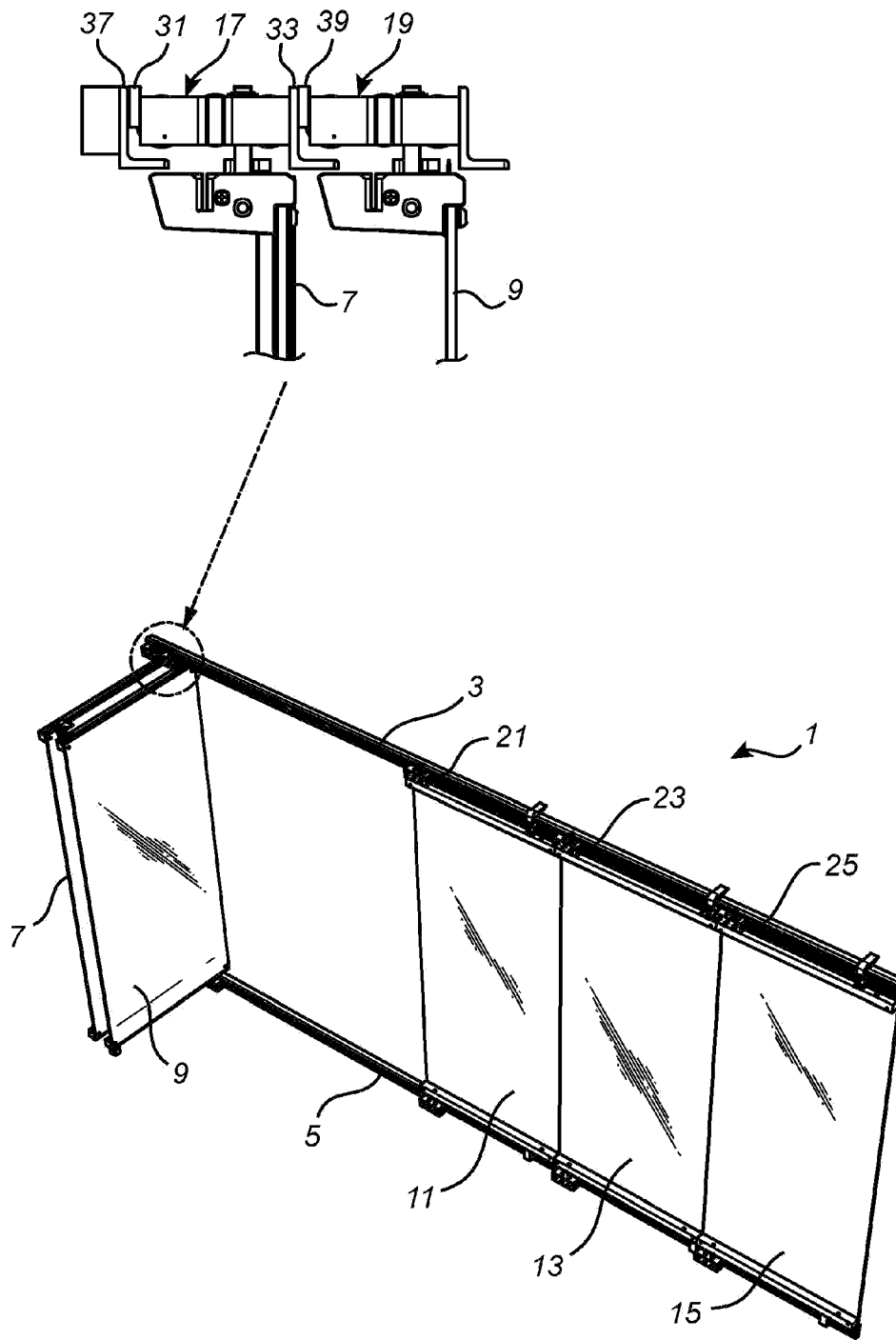


Fig. 1b

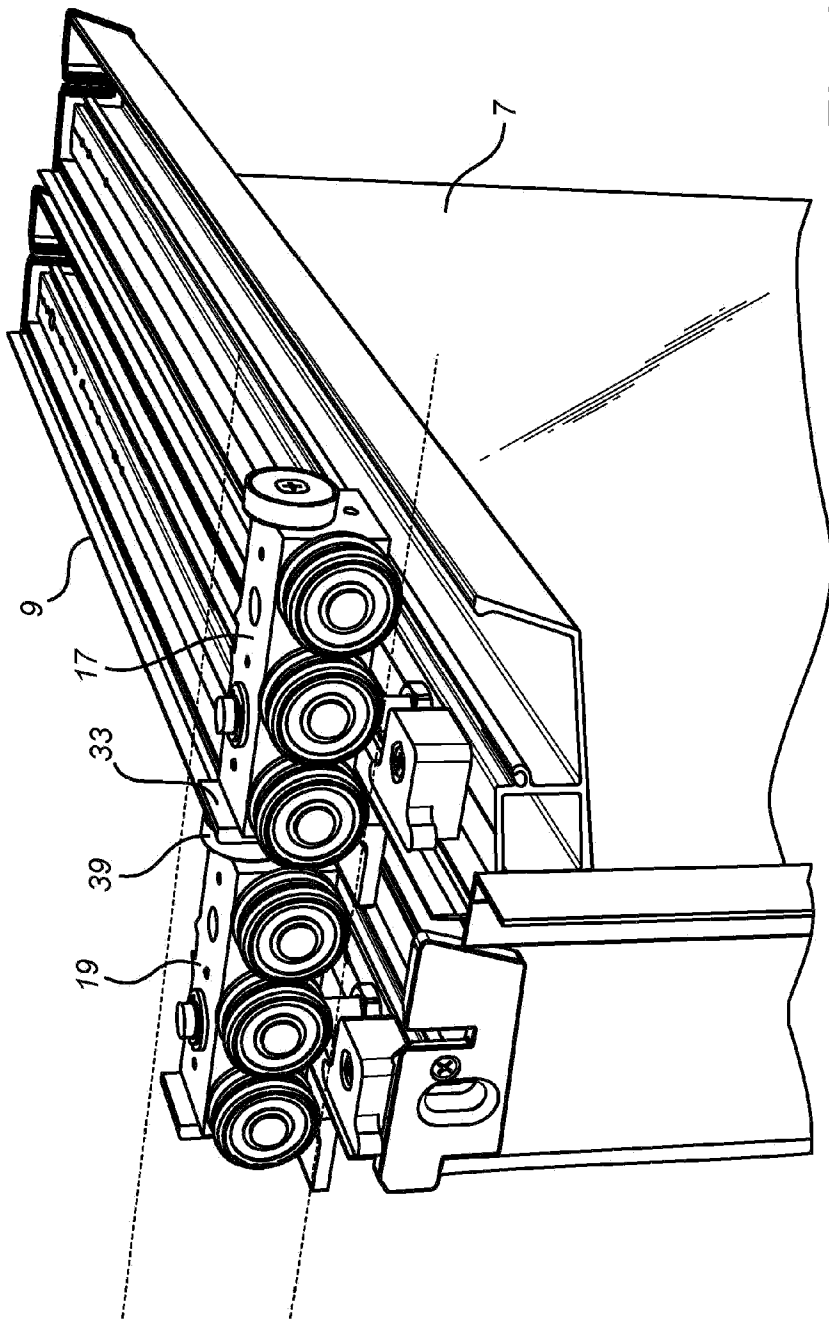
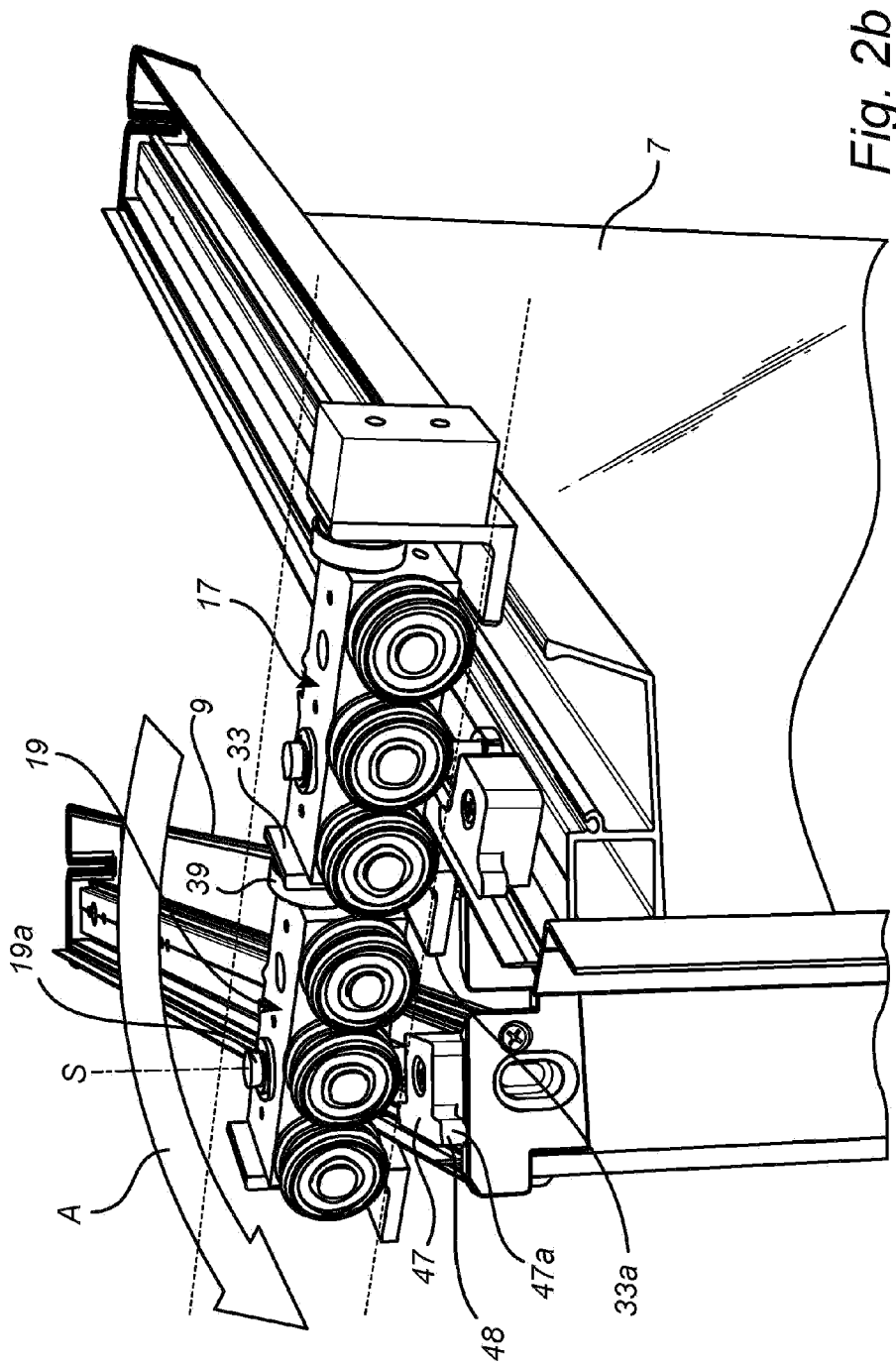


Fig. 2a



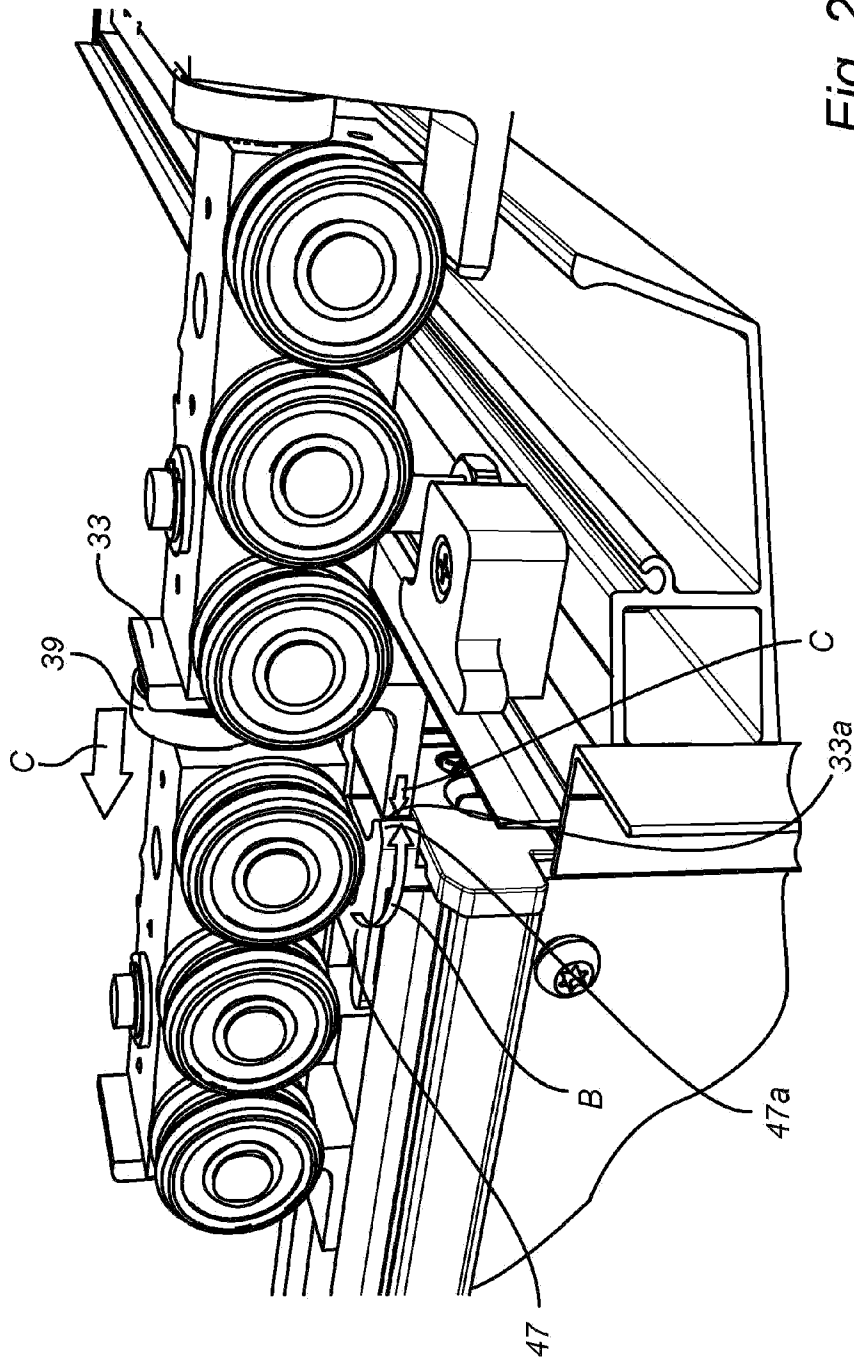


Fig. 2c

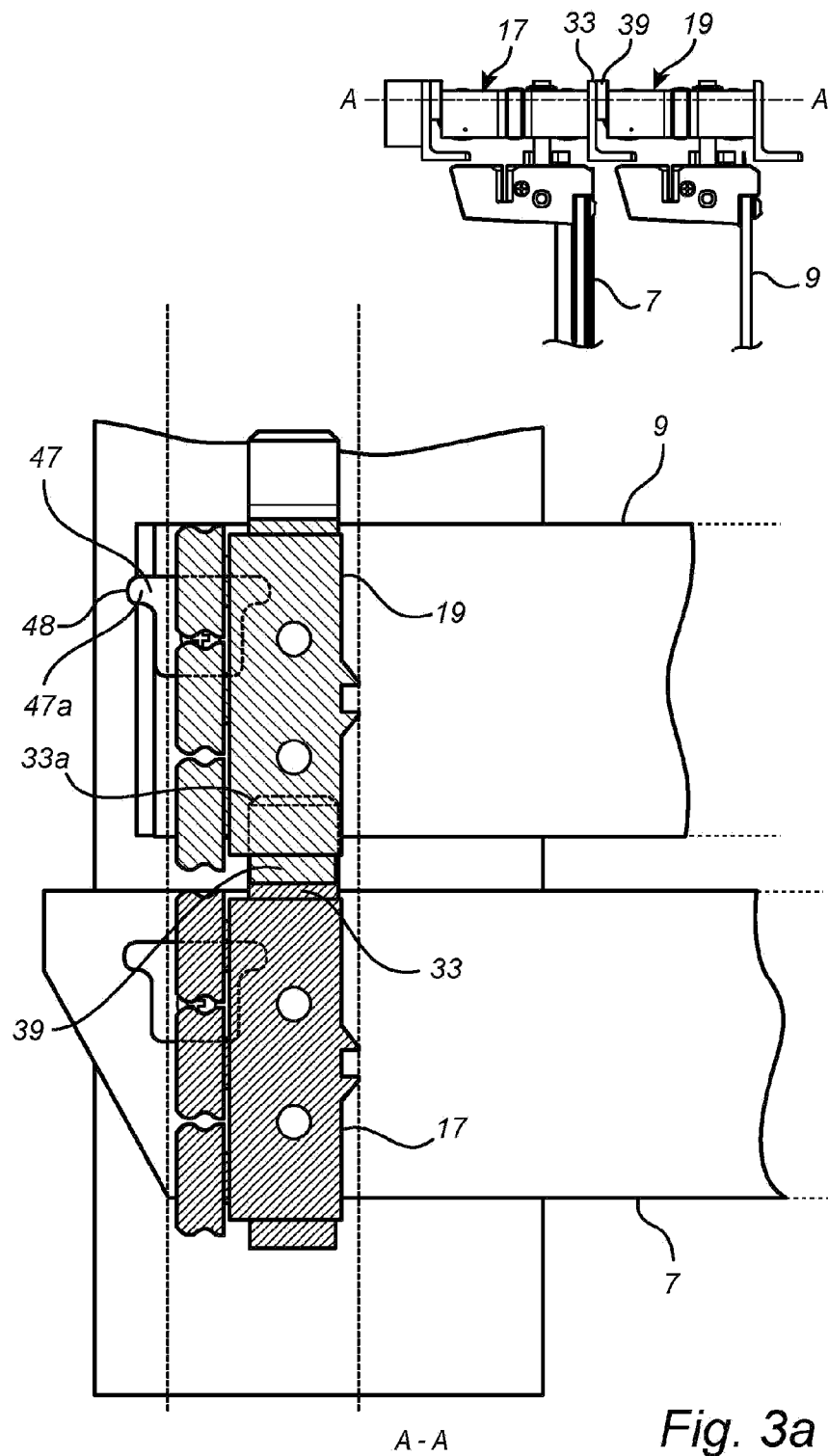


Fig. 3a

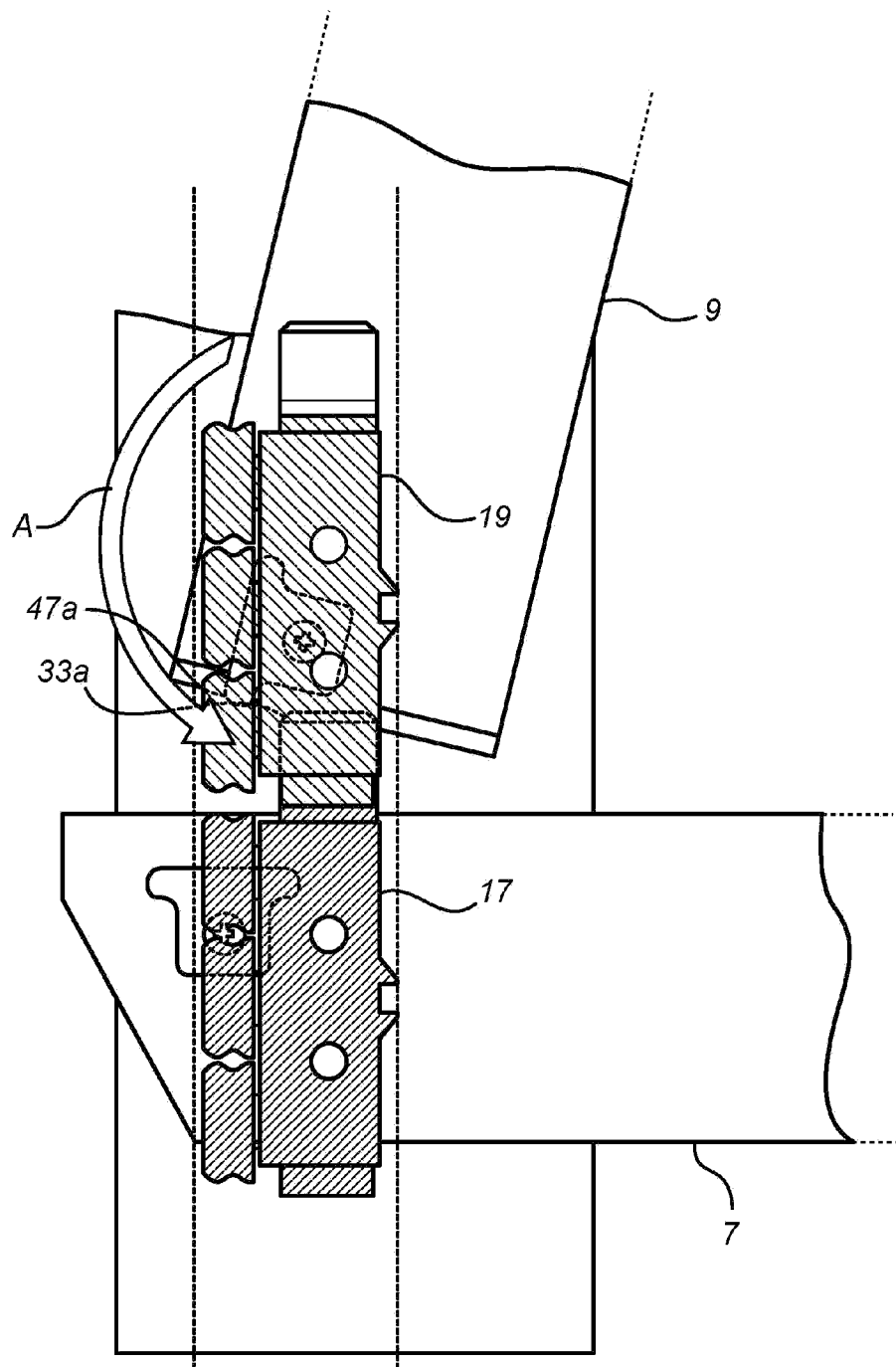


Fig. 3b

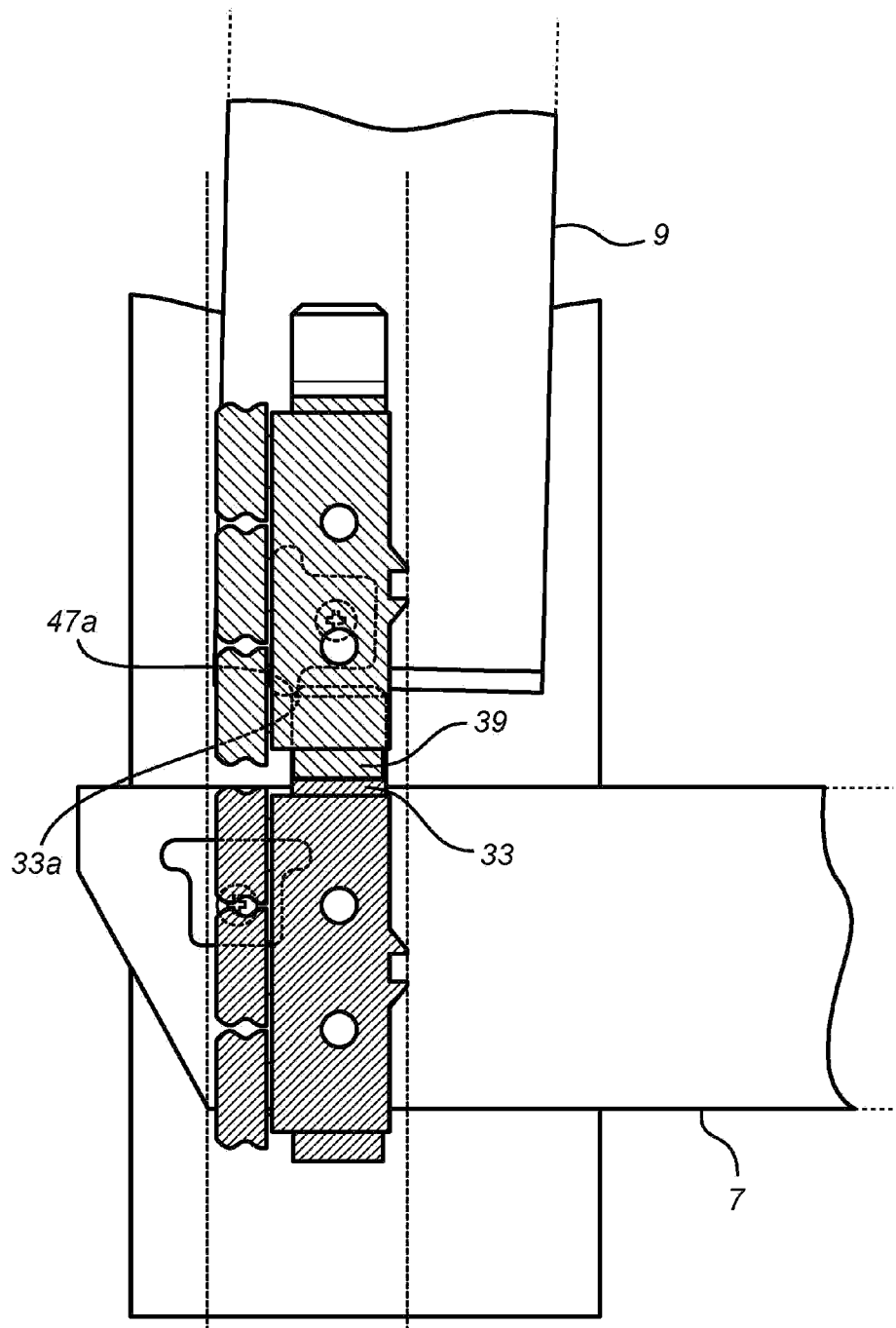
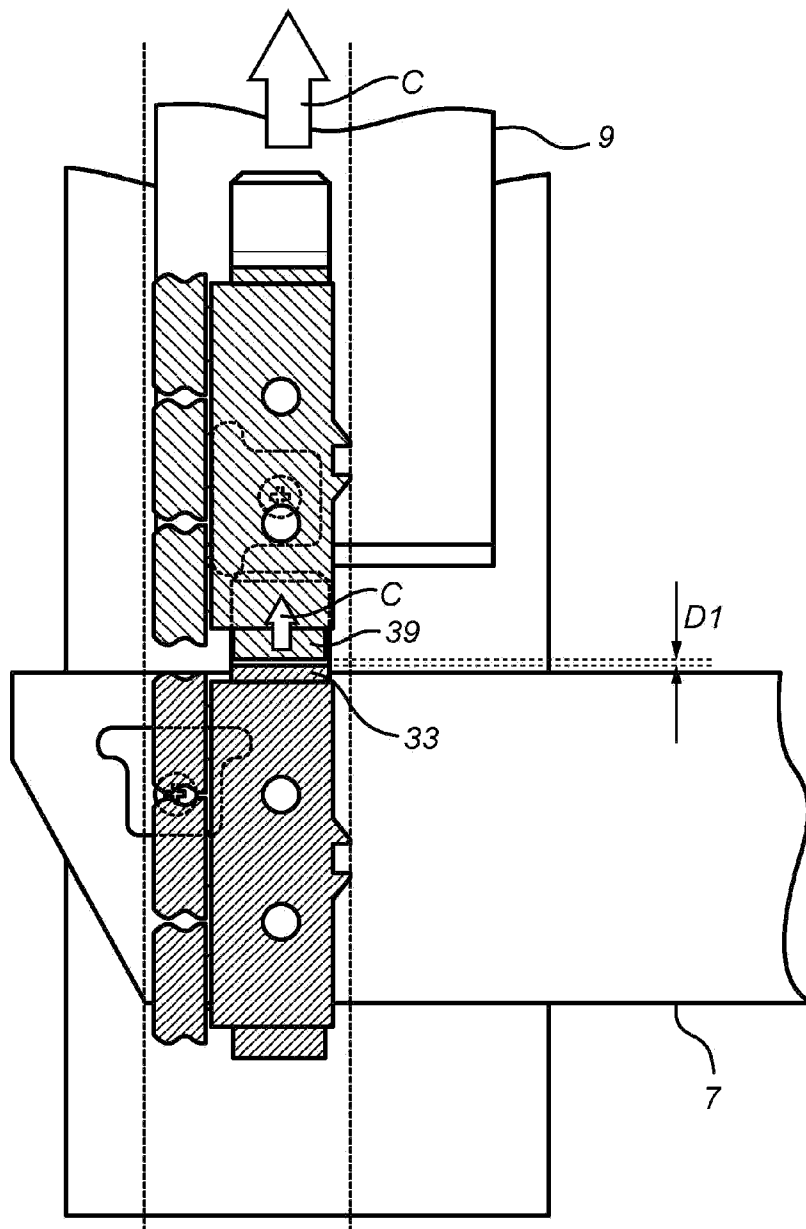


Fig. 3c

*Fig. 3d*

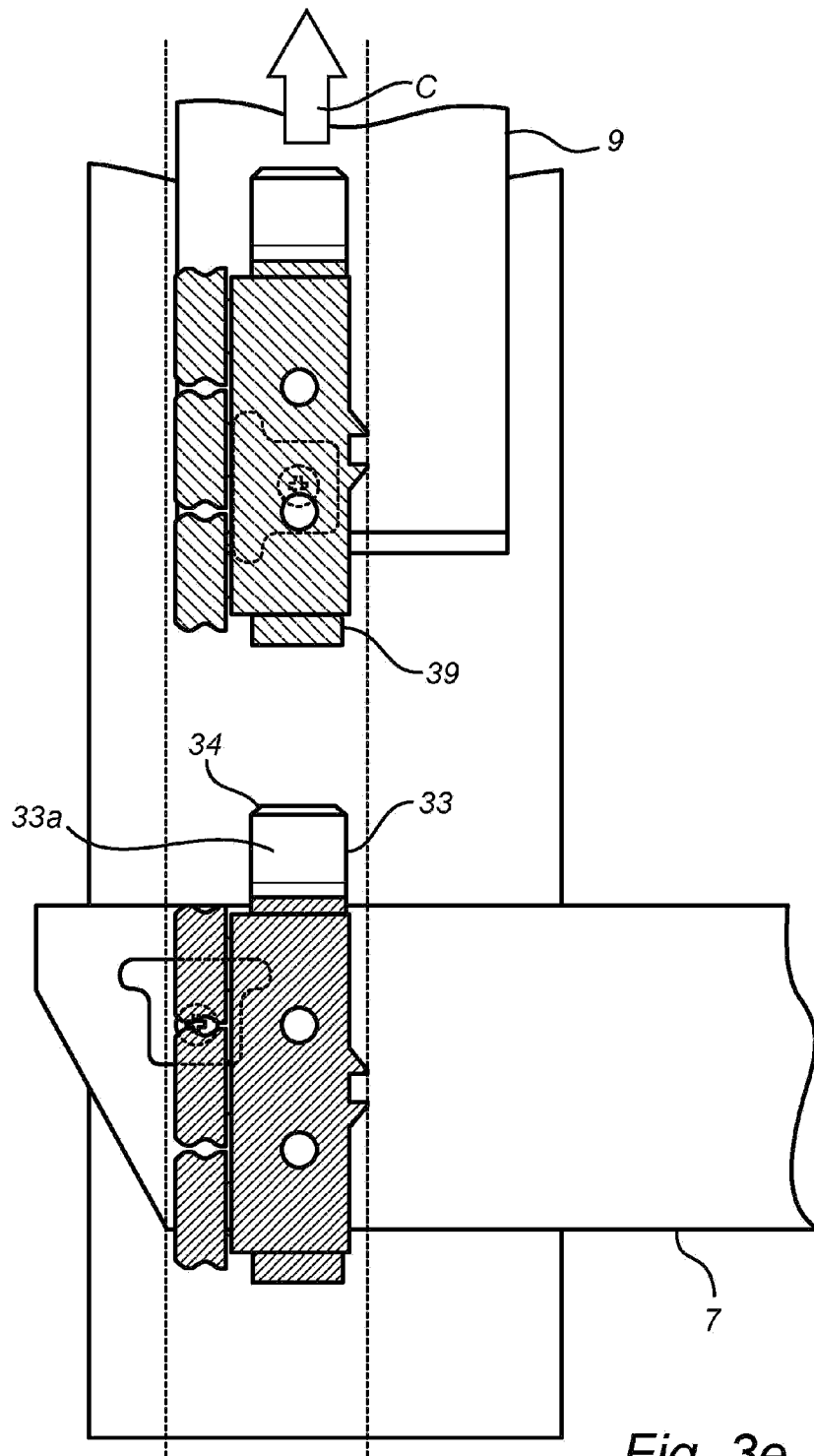
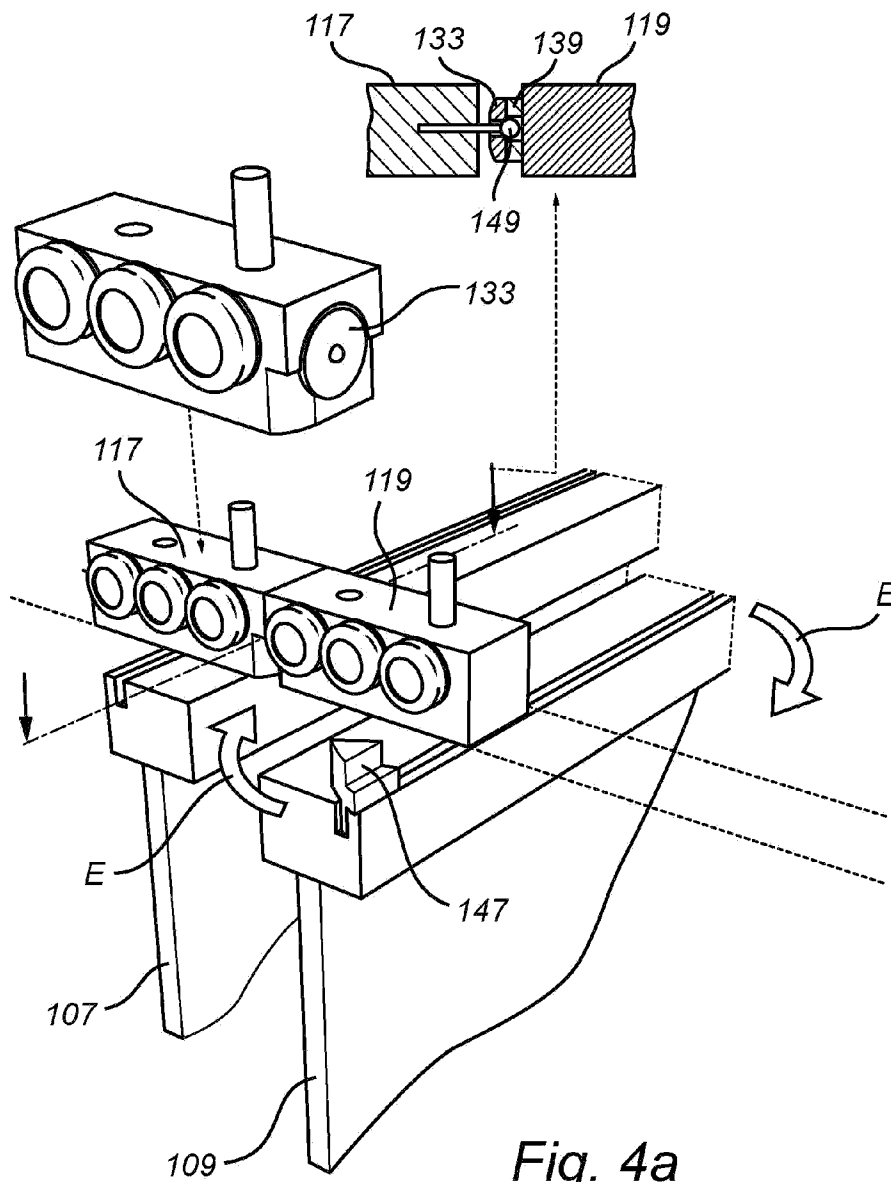


Fig. 3e

*Fig. 4a*

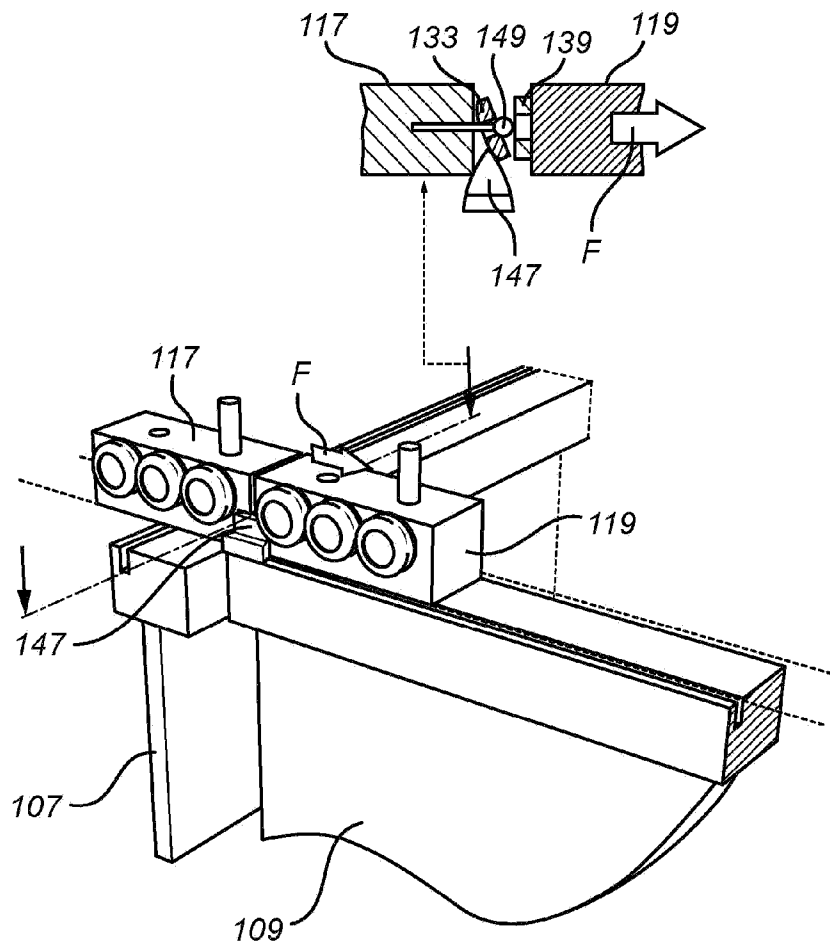


Fig. 4b

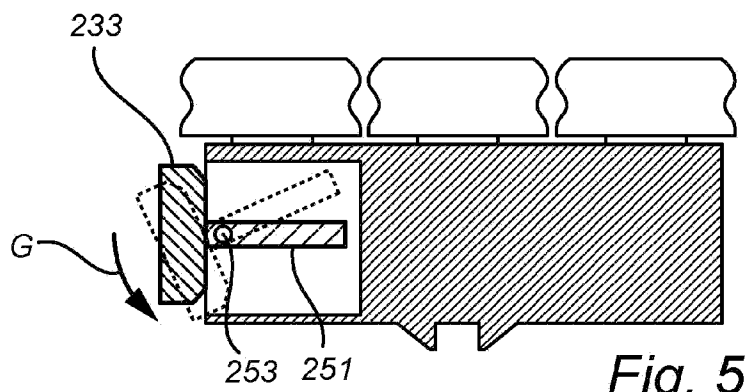


Fig. 5