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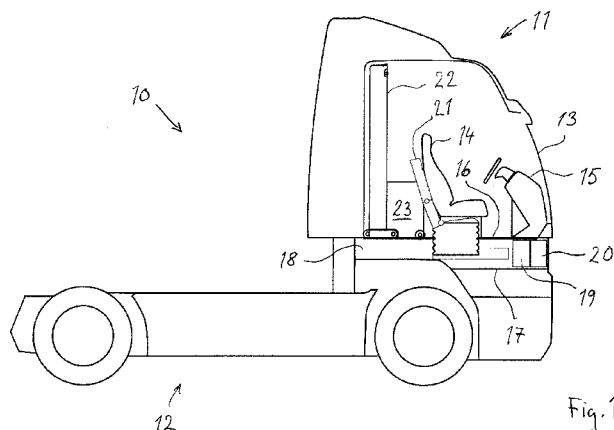
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(54) Title: A DRIVER'S CAB FOR A HEAVY TRUCK



(57) Abstract: The invention is related to a driver's cab (11) for a heavy truck, comprising a floor structure with a primary floor (16) and a secondary floor (17). Together, the two floors form a cavity (18) which is closed off from an engine compartment and contains electrical components (19) and means (20) for controlling the cab interior temperature and ventilation. According to the invention, a bed (22) is arranged to be deployed longitudinally in the cab, in the direction of travel and having a continuous mattress. The bed (22) has a substantially vertical storage position close to a rear wall (24) of the cab (11) and a deployed position extending between said rear wall (24) and the cab windscreen (13).

Title:

A driver's cab for a heavy truck

TECHNICAL FIELD

The present invention relates to a driver's cab for a heavy truck, comprising a floor structure with a primary floor and a secondary floor, together forming a cavity closed off from an engine compartment and containing electrical components and means for controlling the cab interior temperature and ventilation.

BACKGROUND OF THE INVENTION

Trucks used for long distance hauling usually need at least one bed for sleeping in the driver's cab. The interior of a driver's cab should be flexible to provide an ergonomic workplace when driving on the road, and also to provide a functional living space when resting in between driving times. As the total length of the vehicle is limited in many countries, cab length is limited to maximize cargo capacity.

A long haul truck cab interior layout traditionally comprises a full width instrument panel in front of driver and passenger seats. A bed is arranged behind the seats transverse to the direction of travel. This layout leaves not enough floor room for adding more functionality to the cab interior. For example, a kitchen module with a sink for running water, and/or a camper type toilet would enhance cab functionality considerably.

German document DE 10 2008 053 961 A1 discloses a cab interior comprising a seat which can be converted into a bed. The seat has a back rest with two foldable portions. The seat bottom is hinged at the front and conversion into a bed is started by pivoting the seat bottom forward toward the instrument panel. A latch securing the back rest to the seat bottom is released so that a front portion of the back rest can be supported upon the top of the instrument panel, then a rear portion of the back rest is folded toward the rear wall of the cab. The result is a horizontal bed

extending longitudinally above the instrument panel between the windscreen and the rear wall of the cab.

The approximate height of an instrument panel of a commercial truck can be around 80 cm. When a bed according to DE 10 2008 053 961 A1 with a mattress is positioned on top of said panel, the height of the bed will be in the range of 90 cm. This height can be a problem making entering and leaving the bed difficult. Also, the use of many pivot points and latches increase cost and weight of this design.

SUMMARY OF THE INVENTION

It is an object of the invention to provide a multi-functional driver's cab for a commercial vehicle while also providing enhanced bed comfort.

This object is achieved according to the invention by a driver's cab as claimed in claim 1. The driver's cab comprises a floor structure with a primary floor and a secondary floor, together forming a cavity closed off from an engine compartment. The cavity contains electrical components and means for controlling the cab interior temperature and ventilation. According to the invention, a bed is arranged to be deployed longitudinally, in the direction of travel and has a continuous mattress. The bed has a substantially vertical storage position close to a rear wall of the cab and a deployed position extending between said rear wall and the cab windscreen. The double floor cavity makes it possible to locate systems, traditionally integrated within an instrument panel, inside the cavity. Accordingly, the available floor space is increased and a bed can be deployed at a comfortable level. The vertical storage position allows for a full length bed without any gaps in the mattress. The configuration of the cab in accordance with the invention makes it possible to add functionality at the rear wall behind the driver seat, for example a kitchen module with a sink for running water, and/or a camper type toilet.

The instrument panel is preferably positioned in front of the driver seat and covers less than half the width of the cab interior to allow the windscreen end of the deployed bed to extend alongside the instrument panel toward the windscreen.

Preferably, the backrest of a passenger seat can be folded down horizontally in the direction of the windscreen to form a support surface for the windscreen end of the deployed bed. Advantageously, the folded passenger seat can be lowered vertically into a storage position inside the cavity, with the backrest flush with the primary floor.

According to an advantageous embodiment of the invention, a storage cabinet is attached to the rear wall end of the bed. The storage cabinet can form a support surface for the rear wall end of the deployed bed, substantially level with the support surface of the folded down passenger seat.

Preferably the storage cabinet is provided with means for sliding along the primary floor when moving the bed between the storage position and the deployed position. The movement of the storage cabinet between the bed storage position and the deployed bed position can be controlled by a link arrangement. This link arrangement can extend between a first pivot point near the conjunction between the cab rear wall and the primary floor and a second pivot point connected to the storage cabinet. Preferably, a latch mechanism is provided for securing the bed in the storage position.

According to another advantageous embodiment of the invention, the primary floor is substantially flat extending across the cab interior.

Further embodiments of the invention are illustrated and explained in the figures.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 shows a commercial truck with a driver's cab according to the invention in a schematic side view,

Fig. 2 shows the truck according to Fig. 1 with the driver's cab in a schematic plan view,

Fig. 3 shows cab interior illustrating movement of a bed from a storage position to a deployed position,

Fig. 4 illustrates the bed movement in steps a-c,

Fig. 5 illustrates the release of a bed latch mechanism in steps a-c, and

Fig. 6 illustrates raising of a passenger seat from a storage position in steps a-d.

DETAILED DESCRIPTION OF THE INVENTION

Fig. 1 shows a commercial truck 10 comprising a driver's cab 11 and a chassis 12. The driver's cab is provided with a windscreen 13, a driver seat 14 and an instrument panel 15 with a steering wheel. The cab 11 is suspended in a conventional manner in relation to the chassis 12 via not shown suspension means.

The lower part of the cab is provided with a double floor comprising a primary floor 16 and a secondary floor 17, together forming a cavity 18 below the cab. This cavity is used for housing equipment including electrical components 19, for example a vehicle control unit, and also means 20 for controlling the cab interior temperature and ventilation, for example a heating, ventilating and air conditioning unit.

As seen in Fig. 1, the interior of the cab 11 also contains a passenger seat 21, and a full length bed 22, which is attached to a storage cabinet 23. In Fig. 1, the bed is shown in a vertical storage position.

Fig. 2 shows the truck in a plan view with the bed 22 in its deployed position extending between the rear wall 24 and the windscreen 13. This is possible because the instrument panel 15 covers less than half the width of the cab interior, allowing the bed 22 to use the entire length of the cab.

Kitchen, toilet or other preferred modules 25, 26 are arranged beside the bed 22, behind the driver seat 14 along the rear wall 24. The kitchen module 25, 26 may comprise a sink with a water tap and an apparatus for heating food, as well as a fridge for storing food supplies.

Fig. 3 shows the bed 22 with the storage cabinet 23 being moved from the vertical storage position (position 1.) to the horizontal deployed position (position 3.). Before the bed is moved, the passenger seat 21 backrest will be folded down horizontally to serve as a support surface for the deployed bed 22.

When in the vertical position, the storage cabinet 23 can serve as an office work place with the passenger seat 21 in a rotated rearward facing position. For this purpose, the storage cabinet can be provided foldable board to extend its upper work surface toward the seat 21.

The movement of the bed 22 from its vertical storage position to its horizontal deployed position is controlled by a link arrangement 27, connecting a first pivot point 28 near the conjunction between the cab rear wall 24 and the primary floor 16, and a second pivot point 29 at the storage cabinet 23. During the movement, rollers 30 at the bottom front corner of the storage cabinet takes the weight of the bed/cabinet combination allowing it to slide along the primary floor 16 until the link arrangement 27 is pivoted anti-clockwise from horizontal to vertical. In this position, the bed 22 is vertically supported by the storage 23 cabinet at its rear end, and by the horizontal backrest of the passenger seat 21 at its front end.

Fig. 4 also illustrates the movement of the bed 22 from its storage position to its deployed position in steps a-c. The bed is secured in the storage position by a latch mechanism 31 shown in a larger scale in Fig. 5, illustrating release of the latch in three steps a-c. The latch mechanism 31 comprises a pivotally hinged wedge which is biased by a spring means into a locking position in cooperation with a catch means at the inside of the cab roof 32. A release button 33 is moved in the direction of the arrow 34 (step b) to release the latch wedge.

Fig. 6 illustrates in steps a-d how the passenger seat can be deployed inside the cavity 18 with the backrest 35, 36 flush with the primary floor 16 (step a). In this position, with the bed 22 in its storage position, there is a generously dimensioned free floor space available within the driver's cab. In step b, the passenger seat is raised vertically to an intermediate position in preparation for becoming a support for the bed 22 when it is moved to its deployed position. In step c, the backrest 35, 36 is folded anti-clockwise upwards. In step d, an upper segment 36 of the backrest is folded forward vertically to function as support for the bed 22.

The above described cab interior layout provides a truck driver with more flexible functionality than a conventional cab interior layout. The full length bed is wide and can be supplied with a thick comfortable mattress with no longitudinal or transverse gaps.

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The provision of a double floor cavity 18 containing electrical components and means for controlling the cab interior temperature and ventilation makes it possible to reduce the instrument panel 15 so that it may cover less than half the width of the cab interior. This allows the use of a bus type windscreen 13 and enhances driver frontal visibility considerably. Also, the fact the instrument panel 15 does not compromise the vertical positioning of the bed 22 is a benefit, because the bed can be deployed at a comfortable low height. This low height is also a benefit allowing the space above the bed to be used for storage or for deployment of an extra bed.

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The double floor cavity 18 has plenty of room for additional storage, for example for containing a water tank and/or a motorhome type cassette toilet.

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The invention has mainly been described above with reference to the disclosed embodiments. However, as is readily appreciated by the person skilled in the art, embodiments other than the ones disclosed above are equally possible within the scope of the invention, as defined by the appended claims. For example, a second bed can be positioned between the bed 22 and the cab roof 32 at the rear wall 24, and arranged to be folded down from the rear wall transversely in the cab.

18-05-2011

CLAIMS

5 1. A driver's cab (11) for a heavy truck, comprising a floor structure with a primary floor (16) and a secondary floor (17), together forming a cavity (18) closed off from an engine compartment and containing electrical components (19) and means (20) for controlling the cab interior temperature and ventilation,

10 c h a r a c t e r i z e d in a bed (22) arranged to be deployed longitudinally, in the direction of travel and having a continuous mattress, said bed having a substantially vertical storage position close to a rear wall (24) of the cab (11) and a deployed position extending between said rear wall (24) and the cab windscreen (13).

15 2. The driver's cab as claimed in claim 1, c h a r a c t e r i z e d in that an instrument panel (15) is positioned in front of the driver seat (14) and covers less than half the width of the cab interior to allow the windscreen end of the deployed bed (22) to extend alongside the instrument panel toward the windscreen (13).

20 3. The driver's cab as claimed in claim 1 or 2, c h a r a c t e r i z e d in that the backrest (35, 36) of a passenger seat (21) can be folded down horizontally in the direction of the windscreen (13) to form a support surface for the windscreen end of the deployed bed (22).

25 4. The driver's cab as claimed in claim 3, c h a r a c t e r i z e d in that the folded passenger seat (21) can be lowered vertically into a storage position inside the cavity (18), with the backrest (35, 36) substantially flush with the primary floor (16).

5. The driver's cab according to any one of claims 1-4, c h a r a c t e r i z e d in that a storage cabinet (23) is attached to the rear wall end of the bed (22).

30 6. The driver's cab according to claim 5, c h a r a c t e r i z e d in that the storage cabinet (23) forms a support surface for the rear wall end of the deployed bed (22), substantially level with the support surface of the folded down passenger seat (21).

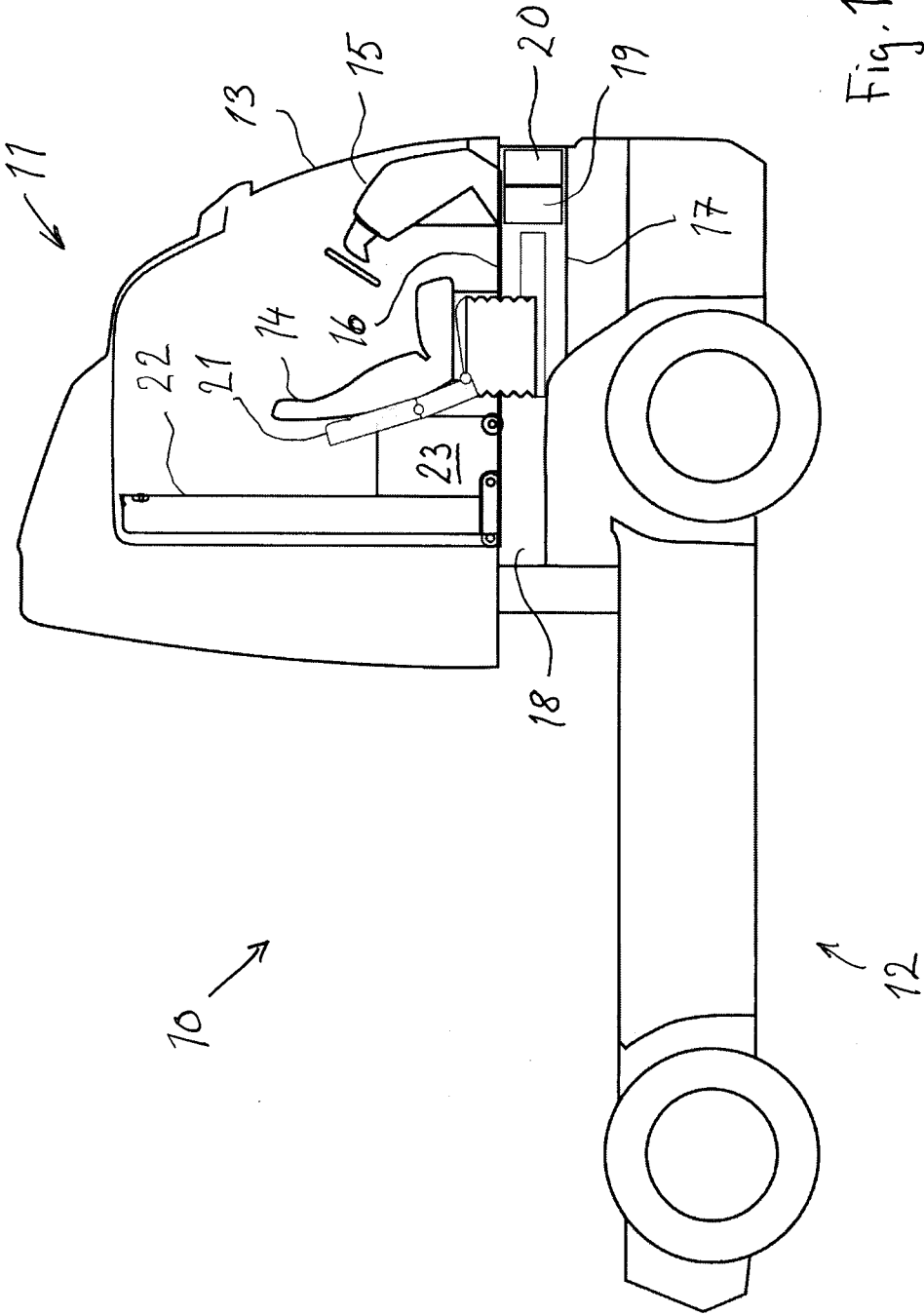
7. The driver's cab according to claim 6, characterized in that the storage cabinet (23) is provided with means (30) for sliding along the primary floor (16) when moving the bed (22) between the storage position and the deployed position.

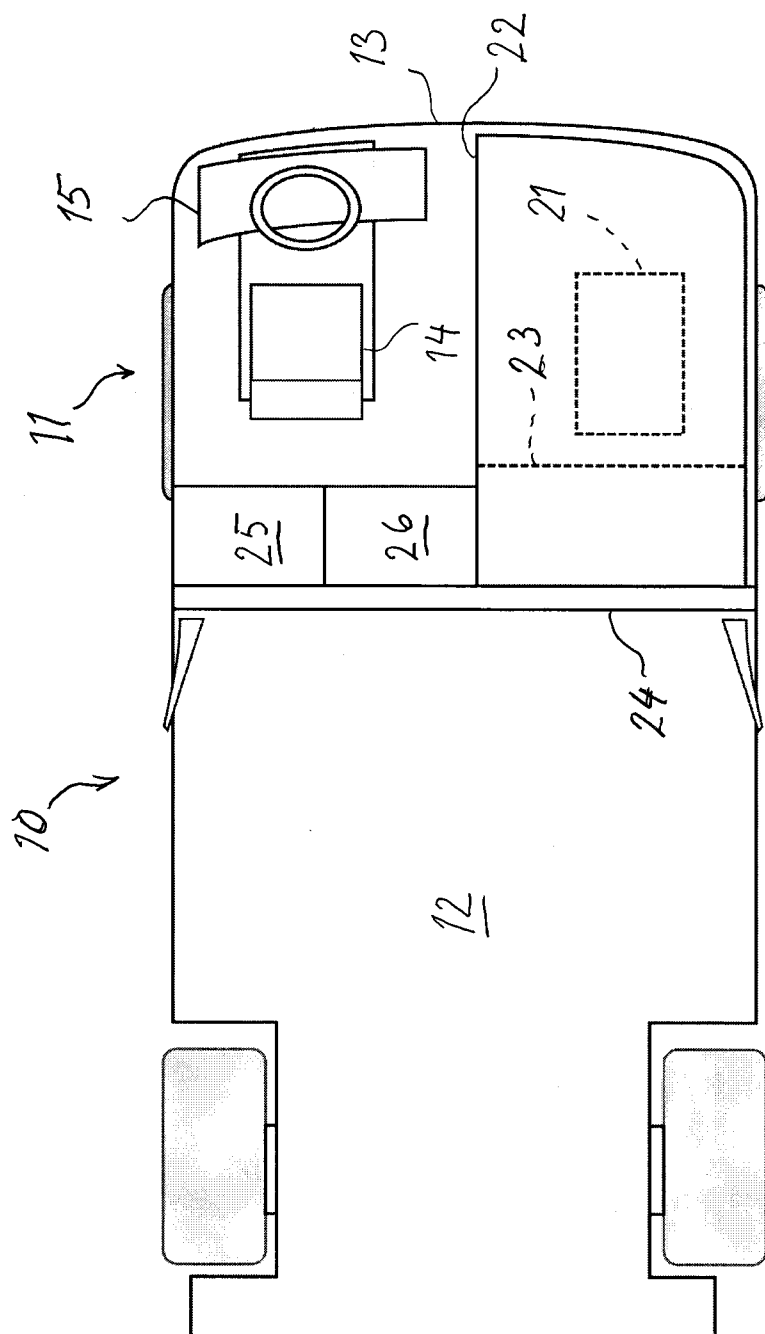
5 8. The driver's cab according to claim 7, characterized in that the storage cabinet (23) is attached to the cab (11) via a link arrangement (27) controlling the movement between the storage position and the deployed position.

10 9. The driver's cab according to claim 8, characterized in that the link arrangement (27) extends between a first pivot point (28) near the conjunction between the cab rear wall (24) and the primary floor (16) and a second pivot point (29) connected to the storage cabinet (23).

15 10. The driver's cab according to any one of claims 1-9, characterized in that a latch mechanism (31) is provided for securing the bed (22) in the storage position.

20 11. The driver's cab according to any one of claims 1-10, characterized in that the primary floor (16) is substantially flat extending across the cab interior.





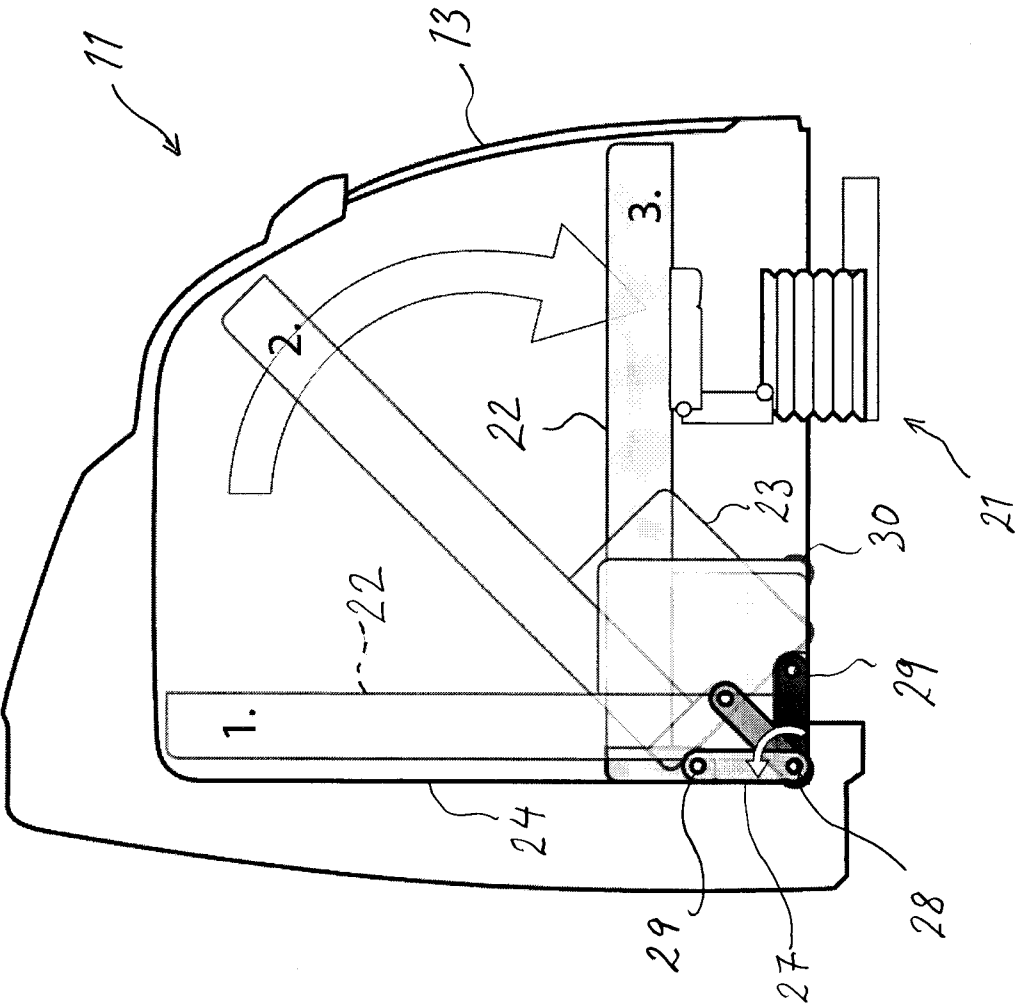
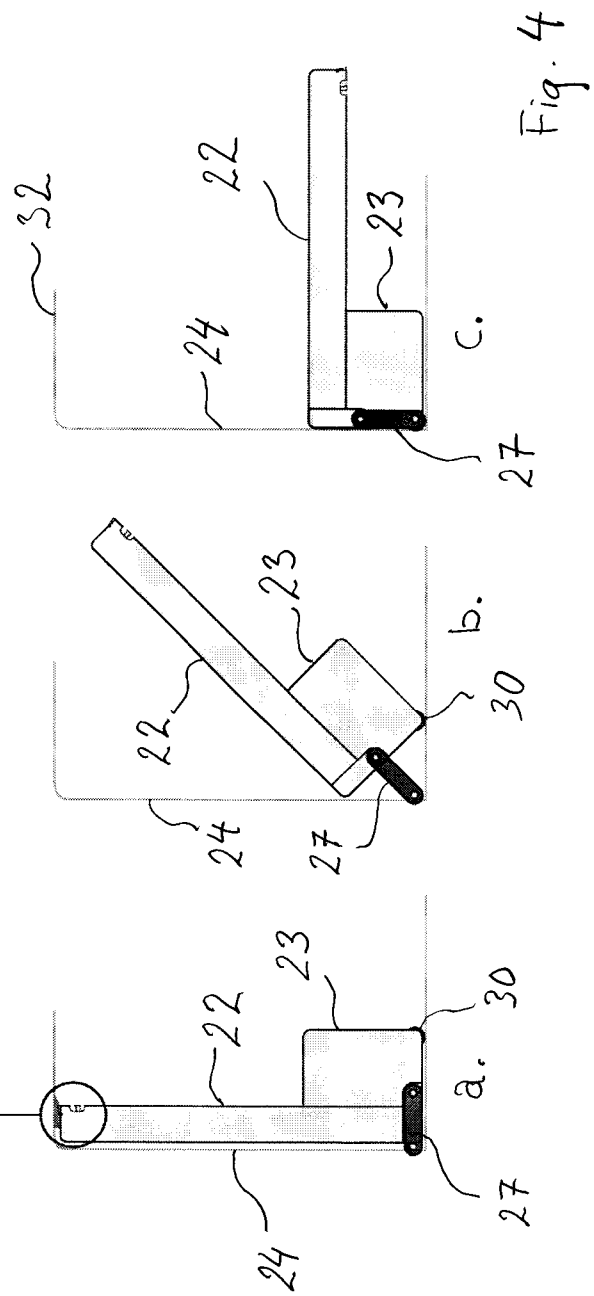
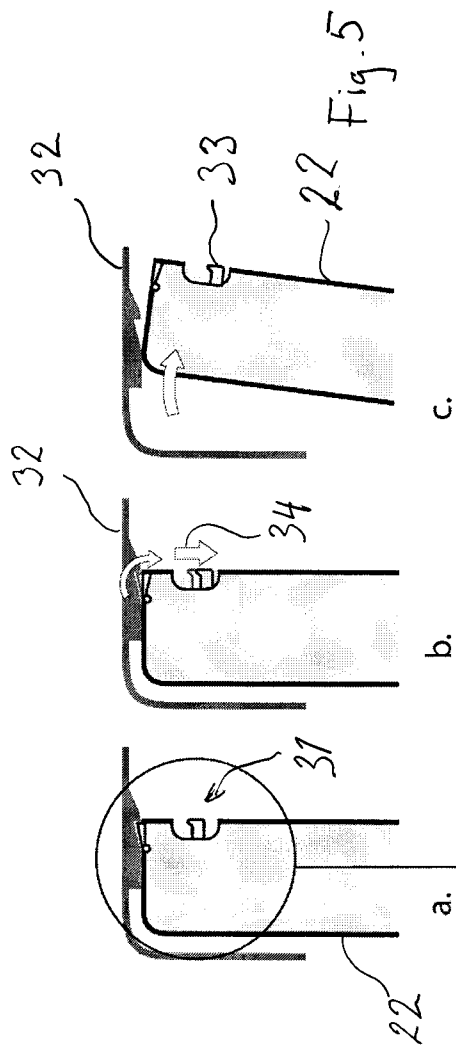
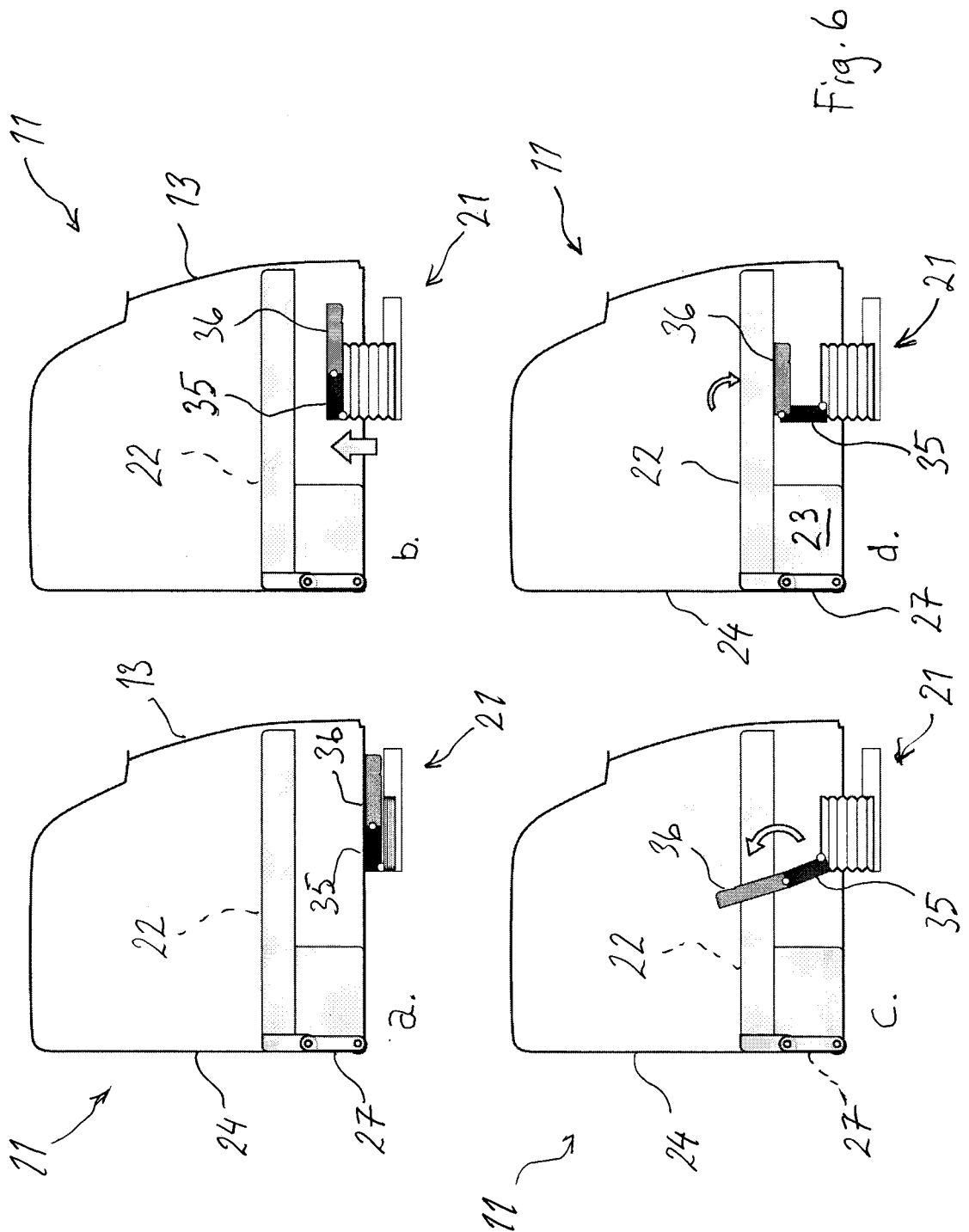


Fig. 3





INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE2011/000085

A. CLASSIFICATION OF SUBJECT MATTER

IPC: see extra sheet

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC: A47C, B60K, B60N, B60P, B62D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE, DK, FI, NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, PAJ, WPI data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE 102008053961 A1 (DAIMLER CHRYSLER AG), 6 May 2010 (2010-05-06); whole document --	1-11
A	EP 1900617 A1 (GRAMMER AG), 19 March 2008 (2008-03-19); whole document --	1-11
A	US 3910626 A (HOBSENSIEFKEN DEAN), 7 October 1975 (1975-10-07); whole document --	1-11
A	US 20060170250 A1 (BERNSTEIN WILLIAM M ET AL), 3 August 2006 (2006-08-03); whole document --	1-11



Further documents are listed in the continuation of Box C.



See patent family annex.

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“O” document referring to an oral disclosure, use, exhibition or other means

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“X” document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

“Y” document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

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Date of the actual completion of the international search

22-12-2011

Date of mailing of the international search report

30-01-2012

Name and mailing address of the ISA/SE

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PCT/SE2011/000085

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0982221 A1 (RENAULT VEHICULES IND), 1 March 2000 (2000-03-01); whole document -- -----	1-11

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Cited literature, if any, will be enclosed in paper form.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/SE2011/000085

DE	102008053961	A1	06/05/2010	NONE		
EP	1900617	A1	19/03/2008	DE	102007044317	A1 10/04/2008
US	3910626	A	07/10/1975	NONE		
US	20060170250	A1	03/08/2006	US	7210724	B2 01/05/2007
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				FR	2782055	B1 08/09/2000