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(54) Title: MOVEMENT SYSTEM FOR ONE LEAF OF A LIFT-SLIDING DOOR OR LIFT-SLIDING DOOR - WINDOW, AS WELL AS LIFT-SLIDING DOOR OR LIFT-SLIDING DOOR - WINDOW INCLUDING THE MOVEMENT SYSTEM

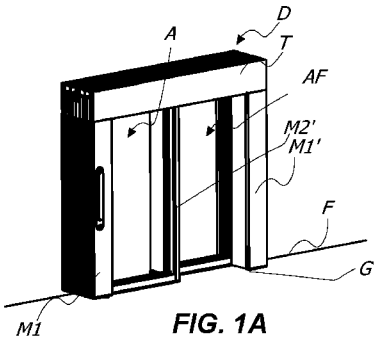

FIG. 1A

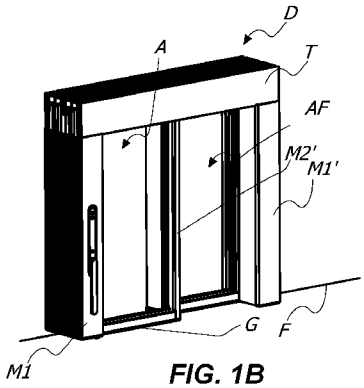

FIG. 1B

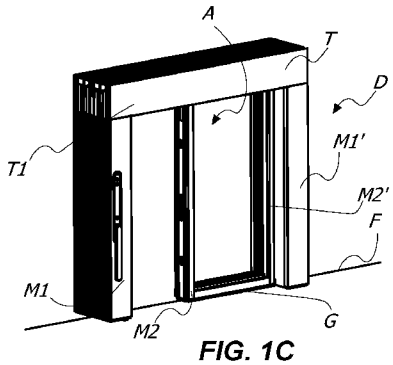

FIG. 1C

(57) Abstract: A system for moving at least one leaf (A) of a slidable lifting door or door-window (D) which comprises the at least one leaf (A) and a frame (T) which can be fixed to a stationary support structure over a floor (F), the at least one leaf (A) including insulating means (G) facing the latter, the system being suitable to move the at least one leaf (A) between a locked lowered closed position in which the insulating means (G) are compressed against the floor (F) so that the sliding is hindered, and at least two unlocked raised closed and open positions between which the leaf (A) is free to slide. The system comprises a guide rail (10) which can be anchored to the frame (T) above the at least one leaf (A) and defining an axis (X) and sliding means (11) slidably engaged in said guide rail (10). The system comprises movement means (30) of the at least one leaf (A) between the locked lowered closed position and the unlocked raised

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[Continued on next page]

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closed position. The movement means (30) and the sliding means (11) are operatively connected so that the latter slidably support at least one leaf (A) once in unlocked raised closed position. The system further includes actuator means (20) which can be controlled by a user and engaged with the movement means (30) so that the user can control the movement of the at least one leaf (A) between the locked lowered closed and unlocked raised closed positions exclusively when the at least one leaf (A) is in such positions.

MOVEMENT SYSTEM FOR ONE LEAF OF A LIFT-SLIDING DOOR OR LIFT-SLIDING DOOR - WINDOW, AS WELL AS LIFT-SLIDING DOOR OR LIFT-SLIDING DOOR - WINDOW INCLUDING THE MOVEMENT SYSTEM

DESCRIPTION

Technical field

The present invention generally relates to the technical field of doors and windows and it particularly relates to a system for moving a leaf of a slidable lifting door or door-window, as well as a slidable lifting door or door-window comprising the system.

State of the Art

There is known the use of slidable lifting doors or door-windows for civil and industrial building industry.

Generally, such doors or door-windows have a slidable lifting leaf provided with wheels which slide in a rail arranged on the floor.

An example of such known doors or door-windows is described in documents DE 102013218948 and EP3940179.

An acknowledged drawback of such doors or door-windows lies in the presence of the rail which occupies the passage door step and tends to rapidly get dirty, with ensuing need for frequent cleaning. Furthermore, foreign bodies can accumulate in the rail impacting against the coating of the wheels of the leaf, with ensuing danger of damage, breakage or malfunctions.

To this end, there have been provided slidable lifting doors or door-windows without rail on the floor. To this end, such doors or door-windows are provided with a guide rail fixed above the slidable lifting leaf, to which the latter is operatively connected by means of a slidable carriage.

The vertical movement of the leaf is controlled by a movement system which includes a manual actuator provided with handle which interacts with means for lifting/lowering the leaf arranged above the latter and operatively connected with the guide rail.

The connection between the manual actuator and the lifting/lowering means is carried out using appropriate motion transmission means, generally a kinematic chain.

Some known examples of such known doors or door-windows are described in the international applications WO2017/068555 and WO2015/033270.

Typically, such movement systems are cumbersome and have leaves whose upright has a large thickness, with ensuing weight that is heavy to lift and move.

In addition, uprights with large thicknesses entail a significant reduction of the optically transparent portion of the leaf.

On the other hand, to date there are not known movement systems for such types of doors or door-windows of the electrical type.

Summary of the invention

An object of the present invention is to at least partly overcome the drawbacks illustrated above by providing a system for moving a leaf of a slidable lifting door or door-window that is highly efficient and cost-effective.

Another object of the present invention is to provide a movement system which allows to have a leaf with low thickness profiles.

Another object of the present invention is to provide a movement system which allows to have a leaf with high aesthetic appeal.

Another object of the present invention is to provide a movement system which allows to have a leaf that is easy to move.

Another object of the present invention is to provide a movement system that is particularly safe and effective.

A further object of the present invention is to provide a movement system that is easy to assemble.

A further object of the present invention is to provide a movement system that is easy to maintain.

These and other objects which will be more apparent hereinafter, are attained by a lifting system and/or a door or door-window and/or movement means as described, illustrated and/or claimed herein.

Therefore, the movement system of the present invention may essentially include one or more guide rails which can be anchored to a frame of a slidable lifting door or door-window above one or more liftable slidable leaves, means for sliding the leaf slidably engaged in the

guide rail, means for moving the leaf and actuator means which can be controlled by a user to control the lifting/lowering of the leaf.

The movement means, which may include means for lifting/lowering the leaf and motion transmission means which can be selectively connected with the actuator means, may allow to move the leaf between a locked lowered closed position, in which the insulating means of the leaf are compressed against the floor so that the sliding thereof is hindered, and an unlocked raised closed position, in which the leaf is free to slide toward one or more open positions.

Suitably, the movement means and the sliding means may be operatively connected so that the latter slidably support the leaf during the sliding.

Thanks to this characteristic, the slidable lifting door or door-window may be without rail on the floor.

In a preferred but non-exclusive embodiment of the invention, the movement system may further include safety means selectively acting on the movement means, and preferably on the means for lifting/lowering the leaf, to lock the latter upon reaching the unlocked raised closed position.

The above will allow to slidably move the leaf which is supported, during the sliding, by the relative sliding means.

In addition, the safety means may preferably cooperate with the sliding means to counter the weight of the leaf, so as to keep the latter in the unlocked raised closed position and hinder the lowering thereof toward the locked lowered closed position.

In an embodiment, the movement system may be manual, wherein the actuator means may be arranged on the frame, preferably exclusively, while the movement means may be arranged on the leaf, preferably exclusively.

This will allow to provide the leaf with low thickness profiles, in particular minimising the exposed parts thereof, so as to make it easy to move and aesthetically appealing.

As a matter of fact, the actuator means are particularly cumbersome, and the positioning on the frame allows to minimise the overall dimensions thereof. On the other hand, the positioning of the movement means on the leaf allows a simple and quick installation of the door or door-window, as well as easy maintenance.

Furthermore, the actuator and movement means may be suitable to be selectively engaged to each other so that the user can control the vertical movement of the leaf exclusively when the latter is in the locked lowered and unlocked raised closed positions. On the other hand, the actuator and movement means may be mutually disengaged when the leaf is free to slide.

In a preferred but non-exclusive embodiment of the invention, the movement and actuator means may comprise one or more respective male-female elements which can be selectively engaged with respect to each other when the leaf is in the locked lowered and unlocked raised closed positions and which can be disengaged when the leaf is free to slide between the unlocked raised closed and open positions.

The separation between the actuator and movement means during the free sliding of the leaf actually ensures - in the absence of restrictions - that the weight of the leaf, which can be significantly high, does not return it to the locked lowered closed position.

On the other hand, in an embodiment the movement system may be electrical, wherein the actuator and movement means may be both positioned on the leaf.

It is clear that such a solution will allow to reduce the overall dimensions of the movement system, and it will also allow to reduce the components thereof, hence simplifying assembly, maintenance and reducing wear.

In addition, when the leaf reaches the unlocked raised position, the actuator means and the movement means may be electrically disengaged and the door will be free to translate between the unlocked raised and open positions.

The dependent claims define advantageous embodiments of the invention.

Brief description of the drawings

Further characteristics and advantages of the invention will be more apparent in light of the detailed description of a preferred but non-exclusive embodiment of the invention, illustrated by way of non-limiting example with reference to the attached drawings, wherein:

FIGS. 1A, **1B** and **1C** are axonometric schematic views of a door or door-window **D** according to the invention, respectively with leaf **A** locked, unlocked and open, regarding which **FIG. 2** is an axonometric schematic view of the frame **T**, of the movement system **1** in manual version;

FIGS. 3A and **3B** are axonometric schematic views of the interaction between the actuator means **20** and the motion transmission mechanism **50**;

FIG. 4 is an axonometric schematic view of the actuator means **20** engaged in the striker plate **53**;

FIG. 5 is an axonometric schematic view of the complete movement system **1**, regarding which **FIGS. 6** and **7** are views of some details;

FIG. 8 is an axonometric schematic view of the movement means **30**;

FIGS. 9A and **9B** are front cross-sectional views of a first embodiment of the lifting and lowering mechanism of the leaf **A**, regarding which **FIG. 9C** is a lateral schematic view;

FIGS. 10A and **10B**, **11A** and **11B**, **12A** and **12B** are front schematic views of a second, third and fourth embodiment of the lifting and lowering mechanism of the leaf **A**;

FIG. 13A is an axonometric schematic view of the lifting means **40** with two integrally joined carriages **11**;

FIG. 13B is a front cross-sectional schematic view of the lifting means **40** with two integrally joined carriages **11**, regarding which **FIG. 13C** is the enlargement of a detail;

FIGS. 14A and **14B** are respectively a lateral cross-sectional view along a longitudinal plane and an axonometric view of an electric actuator **230** in the manual version;

FIG. 15 is an axonometric schematic view of the movement system **1** in electric version with a linear actuator **21** positioned on the upright **M2** of the leaf **A**;

FIGS. 16A and **16B** are axonometric schematic views of the movement system **1** in electric version with a linear actuator **21** positioned on the crosspiece **T2** of the leaf **A**, regarding which **FIGS. 16C** and **16D** are enlargements of some details;

FIGS. 17A, **17B** are front and axonometric cross-sectional views of the guide mechanism **80** at the open leaf **A**, regarding which **FIGS. 17C**, **17D** are lateral cross-sectional views of the mechanism of **FIG. 17A** at the magnetic dowel **81** and at the telescopic pivot **90**;

FIGS. 18A, **18B** are front and axonometric cross-sectional views of the guide mechanism **80** at the leaf **A** sliding towards the closure;

FIGS. 19A, **19B** are front and axonometric cross-sectional views of the guide mechanism **80** at the leaf **A** sliding towards the unlocked closed position;

FIG. 20 is a front cross-sectional view of the guide mechanism **80** at the leaf **A** in

unlocked closed position;

FIG. 21A is a front cross-sectional view of the guide mechanism **80** at the leaf **A** in locked closed position, regarding which **FIGS. 21B**, **21C** are lateral cross-sectional views of the mechanism of **FIG. 21A** at the magnetic dowel **81** and at the telescopic pivot **90**;

FIGS. 22A, **22B** and **22C** are axonometric schematic views of a door or door-window **D** according to the invention, respectively with leaf **A** locked, unlocked and open, of the system **1** in electric version.

Detailed description of some preferred embodiments

With reference to the attached figures, herein described is a movement system **1** for a liftable slidable leaf **A** of a slidable lifting door or door-window **D**.

In particular, **FIGS. 1A** to **8** and **14A**, **14B** refer to a manual version of the movement system **1**, **FIGS. 15** to **16D** and **22A** to **22C** refer to an electric version of the movement system **1**, while **FIGS. 9A** to **13C** and **17A** to **21C** refer to both the manual and electric versions of the movement system **1**.

The slidable lifting door or door-window **D** may include at least one slidable leaf **A** and a fixed or slidable leaf **AF** in a stationary support structure, such as for example a wall facing a floor **F**.

It is clear that although in the description outlined hereinafter reference will be made to a stationary support structure in the form of a wall, other types of stationary support structures may be considered without departing from the scope of protection of the attached claims.

Preferably, the leaves **A** and **AF** may be suitable to be anchored to a frame **T** which can be fixed to the same stationary support structure.

In a per se known manner, the leaf **A** may comprise an insulated glazing inserted into a pair of uprights **M2** and **M2'** and two crosspieces **T2** and **T2'**, while the frame **T** may include a pair of uprights **M1** and **M1'** and a crosspiece **T1**.

The leaf **A** may include insulating means, for example insulating elements in the form of gaskets of the per se known type, positioned along the perimeter of the same leaf **A**.

In particular, the insulating means may include the insulating elements **G** which can be arranged facing the floor **F**.

Suitably, the insulating elements **G** will be compressed when the leaf **A** rests against the floor **F** so as to ensure an airtight and/or soundproof and/or watertight sealing, thermally and/or acoustically and/or hydraulically insulating the internal environment from the external environment.

Therefore, the system **1** may move the leaf **A** between a locked lowered closed position, hereinafter identified with locked position and for example shown in **FIG. 1A** and **22A**, in which the insulating elements **G** are compressed against the floor **F** so as to prevent the sliding of the leaf **A**, an unlocked raised closed position, hereinafter simply identified with unlocked position and for example shown in **FIG. 1B** and **22B**, and one or more open positions, for example shown in **FIG. 1C** and **22C**.

In particular, the leaf **A** may freely slide between the unlocked and open positions.

Described below are two versions of the movement system **1**, that is a manual version and an electric version.

Both versions may include a guide rail **10** which can be anchored to the frame **T** which extends along an axis **X**, which may be substantially horizontal.

In particular, the rail **10** may be positioned on the upper part of the frame **T**, for example on the crosspiece **T1**.

Therefore, the rail **10** may be arranged facing the crosspiece **T2** of the leaf **A**.

Furthermore, the system **1** may include sliding means **11**, for example a carriage, which slide along the rail **10** to allow the translation of the leaf **A** along the latter.

Furthermore, it is clear that the sliding means **11**, as particularly shown in **FIG. 13A**, may include two or more carriages rigidly connected to each other for example using a rod **110**, which slide along the rail **10** in an integrally joined fashion. In this case, the movement of one of the carriages will cause the movement even of the others connected thereto.

Although in the description hereinafter the sliding means will be in the form of a carriage **11**, it is however clear that the sliding means may be other types without departing from the scope of protection of the attached claims.

Preferably, the system **1** may include movement means **30** of the leaf **A** to move it between the locked position and the unlocked position.

The movement means **30** and the carriage **11** may therefore be connected so that the

latter supports the leaf **A** during the sliding once lifted, as explained in greater detail below.

Suitably, the system **1** may include actuator means **20** which can be engaged with the movement means **30** to move the leaf **A** between the locked position and the unlocked position.

Specifically, when the leaf **A** is in open position or during the sliding, the actuator means **20** and the movement means **30** will not be engaged to each other.

Preferably, the movement means **30** may include a mechanism for lifting and lowering the leaf **A**.

In particular, the lifting and lowering mechanism may have a portion **47** integrally joined with the latter and a portion **48** integrally joined with the carriage **11**.

Basically, the control of the actuator means **20** by the user will cause the movement of the movement means **30** as well as the relative movement of the portions **47** and **48**.

In this manner the user may control the movement of the latter between a first operative position corresponding to the locked position of the leaf **A** and a second operative position corresponding to the unlocked position of the latter.

In a first configuration particularly shown in **FIGS. 9A** and **9B**, the lifting and lowering mechanism may comprise an interface element **60**, for example in the form of a square, integrally joined with the leaf **A**.

Although in the description hereinafter the interface element **60** will be identified with a square **60**, the interface element may also be of any other type without departing from the scope of protection of the attached claims.

In addition, the carriage **11** may include an upper portion **11''** with wheels **1100** slidable on the rail **10** in a per se known manner.

Furthermore, the carriage **11** may include a lower portion **11'** with a pair of brackets **110'** and **110''** facing each other.

Preferably, the brackets **110'** and **110''** and the upper portion **11''** will define a U-shaped housing.

Therefore, it is clear that the brackets **110'** e **110''** may be sufficiently spaced apart for the insertion of the aforementioned square **60** between them, in particular in the U-shaped housing.

As a matter of fact, the brackets **110'** and **110''** may guide the sliding of the square **60** during the sliding and lowering of the leaf **A**.

Suitably, the portions **11'** and **11''** will be coupled to each other, for example by means of shape coupling.

In addition, the brackets **110'** and **110''**may include a pair of through holes faced to which there may be pivoted a slider **43**.

Preferably, the square **60** may include a slot **61** with two inclined zones **63** and **47**, preferably consecutive.

Therefore, it is clear that the number **47** may therefore identify the portion of the lifting and lowering mechanism integrally joined with the leaf **A**, as well as the zone of the slot **61** involved in lifting and lowering the latter.

In particular, the zones **63** and **47** may have a different inclination so that they are mutually incident and with respect to the axis **X**.

However, it is clear that the inclined zones **63** and **47** they may not be consecutive, that is there may be a zone interposed between them, without departing from the scope of protection of the attached claims.

On the other hand, the lifting and lowering mechanism may include the aforementioned slider **43** slidable in the zone **47**.

In this manner, the slider **43** may define the portion **48**.

In particular, the linear movement of the slider **43**, that is of the portion **48**, along an axis **X'** parallel to the axis **X** in a determined direction may allow the movement of the leaf **A** from the locked position to the unlocked position, while the movement of the slider **43** in the opposite direction will allow the movement of the leaf **A** from the unlocked position to the locked position.

As a matter of fact, the constraining reaction developed by the interaction between the slider **43** and the zone **47** will cause the lifting of the leaf **A**.

In a second configuration particularly shown in **FIGS. 10A** and **10B**, the lifting and lowering mechanism may comprise a pair of inclined planes **57** and **59** respectively including the portion **47** and the portion **48**.

More particularly, the inclined planes **57** and **59** may be constrained to each other in a

per se known manner so that the movement of one causes the relative movement of the portions **47** and **48**.

In a third and fourth configuration particularly shown in **FIGS. 11A** to **12B**, the lifting and lowering mechanism may include two longitudinal elements **58** and **59** respectively integrally joined with the leaf **A** and with the sliding means **11**.

Therefore, the element **58** may include the portion **47** while the element **59** may include the portion **48**.

In this case, the lifting and lowering mechanism may include one or more levers **45** or cams **46** constraining the two elements **58** and **59**.

Specifically, the levers **45** and the cams **46** may be pivoted at the elements **59** and they may rotate around an axis perpendicular to the axis **X**.

In particular, the linear movement of the portion **47** along the axis **X'** will cause the rotation of the levers **45** or of the cams **46** around the aforementioned axis perpendicular to the axis **X**, as well as the lifting of the leaf **A**.

Even in this case, the rotation of the levers **45** or cams **46** in clockwise or anti-clockwise direction will allow the movement of the leaf **A** from the unlocked position to the locked position and vice versa at a rotation in the opposite direction.

Preferably, the system **1** may include safety means **31** which may act on the movement means **30** to lock the leaf **A** when it reaches the unlocked position, so as to counter the return thereof to the locked position under the thrust of its weight.

Specifically, the safety means **31** may act on the portions **47** and **48** so as to lock them in the second operative position.

For example, in the first configuration, the interaction between the zone **63** and the slider **43** will generate a force such to oppose the return of the portions **47** and **48** to the first operative position.

In addition, the square **60** may include further safety means **64**, for example longitudinal slots with an inclination defining an incident direction with respect to the extension of the zone **47**.

On the other hand, in the second, third and fourth configuration, the portions **47** and **48** may include a constraint suitable to lock them in the second operative position.

According to an aspect of the invention, the system **1** may include a guide mechanism **80**.

In particular, the latter will allow to prevent possible oscillations of the leaf **A** for example under the thrust of the wind or a sudden movement thereof, as well as for leaves **A** with particularly large dimensions.

In addition, the guide mechanism **80** may also serve as an anti-break-in mechanism as shown below.

Preferably, the guide mechanism **80** may include a magnetic dowel **81** which can be inserted - for example in a dropping fashion - along an axis **Z** perpendicular to the axis **X**, as well as concealably in a special housing **82** positioned in a support body **83** in turn positioned at the floor **F**, preferably flush.

In this manner, the dowel **81** may be easy to remove to allow the cleaning thereof.

Preferably, the dowel **81** may have a longitudinal hollow body **81'**, for example cylindrical, containing a magnet **81''** and a head **810**.

The latter may have a cross-section with greater extension with respect to the cross-section of the body **81'**.

This means that the head **810** may have a protruding edge **810'**.

On the other hand, the mechanism **80** may include an abutment element **84** for the magnetic dowel **81**.

The abutment element **84** may include a support **85** flush-inserted into a hollow zone **B1** of the lower edge **B** of the leaf **A**, preferably at the end facing the upright **M1**.

The abutment element **85** may further include a metal plate **86** connected to the support **85** by means of a spring **87**, facing the dowel **81** and with a movable end **86'** protruding from the edge **B** and an opposite end **86''** fixed in the zone **B1**.

In particular, the spring **87** will allow the plate **86** to move between a position proximal to the support **85** and one distal thereto, respectively at the locked position, wherein the spring is compressed given that the edge **B1** rests on the floor **F**, and at the unlocked or open position.

Specifically, during the sliding of the leaf **A** from the open position, corresponding to the **FIG. 17A**, to the unlocked position, corresponding to the **FIG. 20,** the end **86'** and then

magnet **81''** will be mutually attracted so as to facilitate the exit of the dowel **81** from the housing **82**.

The sliding of the leaf **A** will therefore cause the sliding of the head **810** and of the plate **86**, at the end of which the protruding edge **810'** will be suitable to be inserted into special guides **88** obtained in the cavity **B1** and particularly shown in **FIG 17A**.

It is therefore clear that the protruding edge **810'** may prevent the dowel **81** from slipping off from the guides **88**.

At the locked position, particularly shown in **FIG. 21A**, the end **86'** will therefore be proximal to the support **85**, while the dowel **81** may slide along the axis **Z** so as to be at least partially recessed into the housing **82**.

In addition, the guide mechanism **80** may include an optional telescopic guide pivot **90** with a longitudinal body **91**, for example cylindrical, having a bottom wall **911** and a head **910** inserted into the guides **88**.

The body **91** may be inserted into a housing **92** with a bottom wall **920** and obtained in the support **83** and it may move along an axis parallel to the axis **Z** under the thrust of a spring **97** connected to the bottom wall **920** and inserted into the body **91** through the bottom wall **911**.

As shown in **FIGS. 17A** to **21A** it is clear that during the entire movement of the leaf **A**, the head **910** will be constantly inserted into the guides **88** under the thrust of the spring **97**.

In this manner, such pin **90** will not only act as a guide for the leaf **A** but also as a security anti-break-in mechanism.

Below is the description of the embodiment of the manual movement system **1**, particularly shown in **FIGS. 1A** to **8**.

In such version, the movement means **30** may include lifting means **40** of the leaf **A** which may comprise the aforementioned lifting and lowering mechanism.

Furthermore, the movement means **30** may include motion transmission means **50** connected with the actuator means **20** and the lifting means **40**.

In particular, the motion transmission means **50** may be interposed between the actuator means **20** and the lifting means **40** to transmit to the latter the control imparted by the user through the former.

Specifically, the movement means **50** may be connected with the portion **48**.

In this manner, the movement of the means **50** will specifically allow the relative movement of the portions **47** and **48** between the first and second operative position, as well as the movement of the leaf **A** between the locked and unlocked position.

Preferably, the actuator means **20** may for example be a handle **23** which can be positioned at the leaf **A** or at the frame **T** and which can be gripped by the user.

In a preferred but non-exclusive embodiment, the actuator means **20** may be suitable to be positioned exclusively at the frame **T**, while the movement means **30** may be suitable to be positioned exclusively on the leaf **A**.

This will allow to reduce the overall dimensions of the profiles of the leaf **A**, in particular the exposed parts thereof, allowing a significant decrease in their thickness, as well as the weight of the leaf **A** to be supported and moved.

Although in the description hereinafter there will be described the actuator means **20** in the form of a handle **23** which can be rotated by a user, it is however clear that they may also be of any other type without departing from the scope of protection of the attached claims.

For example, the actuator means **20** may be in the form of an electric motor **230**, shown in **FIGS. 14A** and **14B**, connected with the power supply and an appropriate push-button panel which can be controlled by a user in a per se known manner, wherein the electric motor **230** may be inserted into the frame **T**, for example at the upright **M1**, connected with the movement means **50**.

According to the preferred embodiment mentioned above, the handle **23** may be positioned on the upright **M1** of the frame **T** so as to face the corresponding upright **M2** of the leaf **A**, as particularly shown in **FIG. 1A**.

The user may therefore control the lifting of the leaf **A** by rotating the handle **23** around an axis **Y** perpendicular to the axis **X**, as shown in **FIG. 4**.

As shown in **FIGS. 3A** and **3B**, the actuator means **20** may include a rack and pinion mechanism **24'** - **24''** inserted into the upright **M1**.

In addition, as shown in **FIGS. 4**, **8**, **14A**, **14B,** the actuator means **20** may include a male element **25** which can be engaged with a female element **26** of the movement means **30** when

the leaf **A** is in the locked position.

However, it is clear that also the contrary may occur without departing from the scope of protection of the attached claims.

The male element **25** may for example be a slider integrally joined with the rack and pinion **24''**, where present.

In this manner, the movement of the rack and pinion **24''** will cause the movement of the slider **25**.

On the other hand, the movement means **30**, specifically the motion transmission means **50**, may include striker plate **53** which includes the female element **26**, for example an opening obtained therein.

Specifically, the slider **25** may be engaged in the respective opening **26** respectively in a direction parallel to the axis **X**, along an axis **X'''**, or to the axis **Y**, as respectively shown in **FIGS. 3A** and **4**.

On the other hand, it is clear that should the actuator means **20** instead comprise an electric motor **230**, the latter may be connected to the slider **25**, for example by means of a dowel **250** interposed between them, as shown in **FIGS. 14A** and **14B**.

In addition, the motion transmission means **50** may include a pair of closing elements **5000**, for example in the form of striker plates, each with a pair of slots **5000'** and **5000''** with different width.

In particular, the lower slot **5000''** may have a width smaller than the slot **5000'**.

It is clear that the motion transmission means **50** may include one or more closing elements **5000**, for example one, two, three, four and so on and so forth, without departing from the scope of protection of the attached claims.

Furthermore, as shown in **FIG. 4**, the actuator means **20** may include two sliders **2500**, for example in the form of studs, which can be engaged in the respective closing elements **5000**.

It is clear that the actuator means **20** may include one or more sliders **2500,** one, two, three, four and so on and so forth, which can be engaged with respective closing elements **5000** without departing from the scope of protection of the attached claims.

Specifically, the sliders **2500** may be engaged in the slots **5000'** at the unlocked

position, while the sliders **2500** may be engaged in the slots **5000''** at the locked position.

Such solution will mechanically lock the leaf **A** in the latter position, cooperating with the action of the weight force thereof.

Preferably, as shown in **FIG. 8**, the motion transmission means **50** may therefore include - in succession - a first closing element **5000**, the striker plate **53**, a connection rod **54**, a second closing element **5000**, one or more strips **55**, an angular guide **56**, a slide **52** and possibly a slidable element **51** connected with the lifting means **40**.

For example, the closing elements **5000**, the striker plate **53** and the connection rod **54** may be positioned along the edge of the upright **M2**, the strips **55** may be positioned at the corner of the leaf **A** by means of the angular guide **56**, while the slide **52** and the slidable element **51** may be positioned along the edge of the crosspiece **T2** and be concealed by the crosspiece **T1**.

In a first example, such slidable element **51** may be a connecting rod, as shown in **FIG. 8**.

Suitably, the slidable element may include a foot **511** connected with the slide **52** and a head corresponding to the slider **43**.

Therefore, the foot **511** may be connected with the female element **26** so as to transmit the motion from the actuator means **20** to the slider **43**.

From an operative point of view, when the leaf **A** is in locked position, the user may move the handle **23** by rotating it around the axis **Y**, for example clockwise, or otherwise by actuating the aforementioned motor **230**, so that the slider **25** engaged in the opening **26** drives the latter along a direction perpendicular to the axes **X** and **Y**, toward the floor.

Such action will cause the translation of the striker plate **53**, of the connection rod **54** and of part of the strips **55** along a direction perpendicular to the axis **X** and the translation of the remaining strips **55**, of the slide **52** and of the slidable element **51** along a direction parallel to the latter.

Therefore, the slider **43** may slide in the zone **47** to impact against it, move the portion **47** from the first to the second operative position and allow the unlocking, that is the lifting of the leaf **A**.

In such position, the safety means **31** may lock the portion **47** at the second operative

position to allow the translation of the leaf **A**.

On the other hand, the movement described above may also occur on the contrary so as to allow the locking of the leaf **A** from the unlocked position to the locked position.

Below is the description of the embodiment of the electric movement system **1**, particularly shown in **FIG. 16A**.

In such embodiment, the actuator means **20** may be electric.

Specifically, the actuator means **20** may be exclusively electric.

For example, the latter may be suitable to be controlled by a user in wireless mode or there may be provided for a specific circuitry which electrically connects them with an actuation push-button panel, for example positioned at the wall.

To this end, the actuator means **20** may be power-supplied by means of electrical power supply means **70**, which may possibly include a buffer battery **73**, only when the leaf **A** is in locked or unlocked position to move it between the one and the other.

In other words, when the leaf **A** slides between the unlocked position and the open position, the electrical power supply means **70** do not power-supply the actuator means **20**.

Suitably, there may be provided for at least one male electrical connector **71** and one female electrical connector **72**.

As particularly shown in **FIG. 16D**, the connectors power-supply the actuator means **20** only when they are in contact.

However, it is clear that also the opposite may be provided for without departing from the scope of protection of the attached claims.

According to a preferred but not exclusive embodiment, such connectors may be of the sliding type.

However, it is clear that other types of electrical connectors may be provided for without departing from the scope of protection of the attached claims.

Suitably, the actuator means **20** may be directly connected with the aforementioned portions **47** and **48**.

For example, the actuator means **20** may be a linear actuator **21** positioned above the leaf **A**.

This will allow to conceal the actuator **21** in the frame **T**, with ensuing high aesthetic

appeal.

In addition, not only the actuator means **20**, but also the movement means **30** may be exclusively positioned on the crosspiece **T2** of the leaf **A**.

It is clear that such a solution will allow to reduce the overall dimensions of the movement system **1**, and it will also allow to reduce the components thereof, hence simplifying assembly, maintenance and reducing wear.

In any case, the actuator **21** may also be positioned at the upright **M2** of the leaf **A,** as particularly shown in **FIG. 15**, or of the opposite upright **M2'**, without departing from the scope of protection of the attached claims.

Furthermore, the actuator means **20** may be directly connected to the movement means **30**, as well as to the lifting and lowering mechanism described above.

As a matter of fact, as particularly shown in **FIG. 16A**, in the case of the linear actuator **21** slidable along an axis **X''** parallel to the axis **X**, it may be connected to the movement means **30** using a stem **510**.

Even more specifically, the stem **510** may be connected to the portion **48**.

In this manner, the actuation of the linear actuator **21** will cause the relative movement of the portions **48** and **47** as well as the movement of the leaf **A** between the locked and unlocked position.

Also in this case, when the leaf **A** reaches the unlocked position, the actuator means **20** and the movement means **30** may be electrically disengaged and the leaf **A** will be free to translate between the unlocked and the open position.

In addition, the linear actuator **21** may ensure that the unlocked position of the leaf **A** is maintained in safe conditions in a per se known manner.

According to a further aspect of the invention, as particularly shown in **FIGS. 1A** to **1C** and in **FIGS. 22A** to **22C**, there may be provided for a door or door-window **D** which includes the manual or electric movement system **1** as described above.

The present invention may include various parts and/or similar or identical elements. Unless otherwise specified, similar or identical parts and/or elements will be indicated using a single reference number, it being clear that the described technical characteristics are common to all similar or identical parts and/or elements.

The invention is susceptible to numerous modifications and variants, all falling within the scope of protection of the attached claims. All details can be replaced by other technically equivalent elements, and the materials can be different depending on the needs, without departing from the scope of protection defined by the attached claims.

5

CLAIMS

1. A system for manually moving at least one leaf (**A**) of a slidable lifting door or door-window (**D**) which comprises the at least one leaf (**A**) and a frame (**T**) which can be fixed to a stationary support structure over a floor (**F**), the at least one leaf (**A**) including insulating means (**G**) facing the latter, the system being suitable to move the at least one leaf (**A**) between a locked lowered closed position in which the insulating means (**G**) are compressed against the floor (**F**) so that the sliding is hindered, and at least two unlocked raised closed and open positions between which the leaf (**A**) is free to slide, the system comprising:

- a guide rail (**10**) which can be anchored to the frame (**T**) above the at least one leaf (**A**) and defining an axis (**X**);
- sliding means (**11**) slidably engaged in said guide rail (**10**);
- means (**30**) for moving the at least one leaf (**A**) between the locked lowered closed position and the unlocked raised closed position, said movement means (**30**) and said sliding means (**11**) being operatively connected so that the latter slidably support the at least one leaf (**A**) once in unlocked raised closed position;
- actuator means (**20**) which can be controlled by a user;

wherein said actuator means (**20**) can be positioned on said frame (**T**), said movement means (**30**) being suitable to be positioned on the at least one leaf (**A**), said actuator means (**20**) and said movement means (**30**) being suitable to be mutually selectively engaged so that the user can control the movement of the at least one leaf (**A**) between said locked lowered closed and unlocked raised closed positions exclusively when the at least one leaf (**A**) is in such positions.

2. System according to claim 1, wherein upon the sliding of the leaf (**A**) between the unlocked raised closed and open positions, said actuator means (**20**) and movement means (**30**) are mutually disengaged.

3. System according to claim 1 or 2, wherein the one of said movement means and said actuator means (**20**) comprise at least one male or female element (**25**), the other of said movement means (**30**) and said actuator means (**20**) comprising at least one male or female element (**26**), said at least one male element (**25**) and at least one female element (**26**) being mutually engaged when the at least one leaf (**A**) is in said locked lowered closed and unlocked

raised closed positions and mutually disengaged when the at least one leaf (**A**) slides between said unlocked raised closed and open positions.

4. System according to any one of the preceding claims, wherein said actuator means (**20**) can be positioned exclusively on said frame (**T**), said movement means (**30**) being suitable to be positioned exclusively on the at least one leaf (**A**).

5. System according to one or more of the preceding claims, wherein said movement means (**30**) further include means (**40**) for lifting/lowering the leaf (**A**) to move it between the locked lowered closed and unlocked raised closed positions, said lifting/lowering means (**40**) being suitable to be positioned on the upper part of the at least one leaf (**A**), said movement means (**30**) further including motion transmission means (**50**) operatively connected with said lifting/lowering means (**40**) to transmit to the latter the motion of said actuator means (**20**) when the actuator means (**20**) and said movement means (**30**) are mutually selectively engaged, said motion transmission means (**50**) preferably including said at least one female or male element (**26**).

6. System according to the preceding claim, wherein said lifting/lowering means (**40**) have at least one lifting/lowering mechanism (**61**, **43**; **58**, **59**; **45**; **46**) having at least one first portion (**47**) integrally joined with the leaf (**A**) and a second portion (**48**) integrally joined with the sliding means (**11**), one of said at least one first and one second portion (**47**, **48**) further being operatively connected with said motion transmission means (**50**) so that the user can control the mutual movement of the at least one first and one second portion (**47**, **48**) between a first and a second operative position respectively corresponding to the locked lowered closed and unlocked raised closed positions of the leaf (**A**).

7. System according to the preceding claim, wherein said at least one lifting/lowering mechanism (**61**, **43**; **58**, **59**; **45**; **46**) comprises at least one interface element (**60**) integrally joined with at least one leaf (**A**) which includes a slot (**61**) with a first inclined zone (**47**) defining said at least one first portion (**47**), said at least one lifting/lowering mechanism (**61**, **43**; **58**, **59**; **45**; **46**) further comprising a slider (**43**) defining said at least one second portion (**48**) slidably engaged in said first inclined zone (**47**) of said slot (**61**) and pivoted on said sliding means (**11**), said slider (**43**) being operatively connected with said motion transmission means (**50**) so as to slide parallel to said axis (**X**) to promote the movement of the first inclined zone (**47**) of the

slot (**61**) between said first and second operative positions, so as to promote the movement of the leaf (**A**) between the locked lowered closed and unlocked raised closed positions.

8. System according to the preceding claim, wherein said motion transmission means (**51**) include a connecting rod (**51**) having a head defined by said slider (**43**) and a foot (**511**) slidably movable in direction parallel to said axis (**X**), said foot (**511**) being preferably operatively connected with said at least one female or male element (**26**).

9. System according to one or more of the preceding claims, further comprising safety means (**31**) selectively acting on said movement means (**30**) to lock the leaf (**A**) upon reaching the unlocked raised closed position, so as to allow the slidable movement thereof between said unlocked raised closed and open positions supported by said sliding means (**11**), said safety means (**31**) preferably acting on said lifting/lowering means (**40**) of the leaf (**A**).

10. System according to the preceding claim, wherein said safety means (**31**) cooperate with said sliding means (**11**) to counter the weight of the leaf (**A**), so as to keep the latter in the unlocked raised closed position and prevent the lowering thereof toward the locked lowered closed position.

11. System according to claim 9 or 10 when dependent on claim 6, wherein said safety means (**31**) act on at least one of said at least one first and one second portion (**47**, **48**) of said at least one lifting/lowering mechanism (**61**, **43**; **58**, **59**; **45**; **46**) to keep them in the second operative position.

12. System according to claims 7 and 11 or 8 and 11, wherein said slot (**61**) further comprises a second zone (**63**) designed to house said slider (**43**) when it reaches said second operative position, said second zone (**63**) of said slot (**61**) being substantially parallel to said axis (**X**) or inclined with an inclination opposite to that of said first zone (**47**) of said slot (**61**) to define said safety means (**31**).

13. Slidable lifting door or door-window comprising a movement system according to one or more of the preceding claims.

14. Slidable lifting door or door-window according to the preceding claim, wherein said actuator means (**20**) are exclusively positioned on said frame (**T**), said movement means (**30**) being exclusively positioned on the at least one leaf (**A**).

15. A system for moving at least one leaf (**A**) of a slidable lifting door or door-window

(**D**) which comprises the at least one leaf (**A**) and a frame (**T**) which can be fixed to a stationary support structure over a floor (**F**), the at least one leaf (**A**) including insulating means (**G**) facing the latter, the system being suitable to move the at least one leaf (**A**) between a locked lowered closed position in which the insulating means (**G**) are compressed against the floor (**F**) so that the sliding is hindered, and at least two unlocked raised closed and open positions between which the leaf (**A**) is free to slide, the system comprising:

- a guide rail (**10**) which can be anchored to the frame (**T**) above the at least one leaf (**A**) and defining a first axis (**X**);
- sliding means (**11**) slidably engaged in said guide rail (**10**);
- means (**30**) for moving the at least one leaf (**A**) between the locked lowered closed and unlocked raised closed positions, said movement means (**30**) and said sliding means (**11**) being operatively connected so that the latter slidably support the at least one leaf (**A**) once in unlocked raised closed position;
- electrical actuator means (**20**) operatively connected or which can be connected with said movement means (**30**), said electric actuator means (**20**) being suitable to be selectively controlled by a user;
- means (**70**) for the electrical power supply of said electrical actuator means (**20**);

wherein said actuator means (**20**) and said movement means (**30**) can be positioned on the at least one leaf (**A**), said electrical power supply means (**70**) power-supplying said actuator means (**20**) so that the user can control the movement of the at least one leaf (**A**) between said locked lowered closed and unlocked raised closed positions.

16. System according to claim 15, wherein said electrical power supply means (**70**) and said actuator means (**20**) are mutually configured so that the former selectively power-supply the latter exclusively when the at least one leaf (**A**) is in the locked lowered closed and unlocked raised closed positions.

17. System according to the preceding claim, wherein upon the sliding of the leaf (**A**) between the unlocked raised closed and open positions, the electrical power supply means (**70**) do not power-supply said actuator means (**20**).

18. System according to claim 16 or 17, wherein the one of said electrical power supply means (**70**) and said actuator means (**20**) comprise at least one male of female electrical

connector (**71**, **72**), the other of said electrical power supply means (**70**) and said actuator means (**20**) comprising at least one female or male electrical connector (**71**, **72**), said at least one male (**71**) and female (**72**) electrical connector being electrically connected to each other when the at least one leaf (**A**) is in said locked lowered closed and unlocked raised closed positions and electrically disconnected when the at least one leaf (**A**) slides between said unlocked raised closed and open positions.

19. System according to any one of the preceding claims, wherein said actuator means (**20**) and said movement means (**30**) can be positioned at the upper part of the at least one leaf (**A**).

20. System according to one or more of claims 15 to the preceding claim, wherein said actuator means (**20**) include at least one linear actuator (**21**) comprising a stem (**510**) which is preferably directly connected with said movement means (**30**).

21. System according to one or more of claims 15 to the preceding claim, wherein said movement means (**30**) have at least one lifting/lowering mechanism (**61**, **43**; **58**, **59**; **45**; **46**) of the leaf (**A**) having at least one first portion (**47**) integrally joined with the leaf (**A**) and a second portion (**48**) integrally joined with the sliding means (**11**), one of said at least one first and one second portion (**47**, **48**) further being operatively connected with said actuator means (**20**) so that the user can control the mutual movement of the at least one first and one second portion (**47**, **48**) between a first and a second operative position respectively corresponding to the locked lowered closed and unlocked raised closed positions of the leaf (**A**).

22. System according to the preceding claim wherein said at least one lifting/lowering mechanism (**61**, **43**; **58**, **59**; **45**; **46**) comprises at least one interface element (**60**) integrally joined with the at least one leaf (**A**) which includes a slot (**61**) with a first inclined zone (**47**) defining said at least one first portion (**47**), said at least one lifting/lowering mechanism (**61**, **43**; **58**, **59**; **45**; **46**) further comprising a slider (**43**) defining said at least one second portion (**48**) slidably engaged in said first inclined zone (**47**) of said slot (**61**) and pivoted on said sliding means (**11**).

23. System according to the preceding claim, wherein said slider (**43**) is operatively connected with said actuator means (**20**) so as to slide parallel to said axis (**X**) to promote the movement of the first inclined zone (**47**) of the slot (**61**) between said first and second

operative positions, so as to promote the movement of the leaf (**A**) between the locked lowered closed and unlocked raised closed positions.

24. System according to one or more of claims 15 to the preceding claim, further comprising safety means (**31**) selectively acting on said movement means (**30**) and/or on said actuator means (**20**) to lock the leaf (**A**) upon reaching the unlocked raised closed position, so as to allow the slidable movement thereof between said unlocked raised closed and open positions supported by said sliding means (**11**).

25. System according to the preceding claim, wherein said safety means (**31**) act on said movement means (**30**), the latter being connected with said actuator means (**20**).

26. System according to claim 24 or 25 claim, wherein said safety means (**31**) cooperate with said sliding means (**11**) to counter the weight of the leaf (**A**), so as to keep the latter in the unlocked raised closed position and prevent the lowering thereof toward the locked lowered closed position.

27. System according to claim 24, 25 or 26 when dependent on claim 21, wherein said safety means (**31**) act on at least one of said at least one first and one second portion (**47**, **48**) of said at least one lifting/lowering mechanism (**61**, **43**; **58**, **59**; **45**; **46**) to keep them in the second operative position.

28. System according to claims 22 and 27, wherein said slot (**61**) further comprises a second zone (**63**) designed to house said slider (**43**) when it reaches said second operative position, said second zone (**63**) of said slot (**61**) being substantially parallel to said axis (**X**) or inclined with an inclination opposite to that of said first zone (**47**) of said slot (**61**) to define said safety means (**31**).

29. System according to one or more of claims 15 to the preceding claim, without guide rails positioned below the at least one leaf (**A**), at the support structure over the floor (**F**) or at the latter.

30. System according to one or more of claims 15 to the preceding claim, without sliding means positioned beneath the at least one leaf (**A**).

31. System according to one or more of claims 15 to the preceding claim, wherein the at least one leaf (**A**) is without insulating means (**G**) above it.

32. Slidable lifting door or door-window comprising a movement system according to

one or more of claims 15 to the preceding claim, wherein said actuator means (20) and said movement means (**30**) are positioned on the at least one leaf (**A**).

33. Means (**30**) for moving at least one leaf (**A**) of a slidable lifting door or door-window (**D**) which comprises the at least one leaf (**A**) and a frame (**T**) which can be fixed to a stationary support structure over a floor (**F**), the at least one leaf (**A**) including insulating means (**G**) facing the latter, the movement means (**30**) being suitable to be used in a system comprising:

- a guide rail (**10**) which can be anchored to the frame (**T**) above the at least one leaf (**A**) and defining a first axis (**X**);
- sliding means (**11**) slidably engaged in said guide rail (**10**);
- actuator means (**20**) which can be selectively controlled by a user;

wherein said movement means (**30**) move the at least one leaf (**A**) between a locked lowered closed position in which the insulating means (**G**) are compressed against the floor (**F**) so that the sliding is hindered, and at least two unlocked raised closed and open positions between which the leaf (**A**) is free to slide;

wherein said movement means (**30**) can be operatively connected with said electrical actuator means (**20**);

wherein said movement means (**30**) and said sliding means (**11**) can be operatively connected so that the latter slidably support the at least one leaf (**A**) once in unlocked raised closed position; and

wherein said movement means (**30**) comprise at least one lifting/lowering mechanism (**61**, **43**; **58**, **59**; **45**; **46**) of the leaf (**A**) having at least one first portion (**47**) integrally joined with the leaf (**A**) and a second portion (**48**) integrally joined with the sliding means (**11**), one of said at least one first and one second portion (**47**, **48**) further being suitable to be operatively connected with said actuator means (**20**) so that the user can control the mutual movement of the at least one first and one second portion (**47**, **48**) between a first and a second operative position respectively corresponding to the locked lowered closed and unlocked raised closed positions of the leaf (**A**).

34. Movement means (**30**) according to the preceding claim, wherein said at least one lifting/lowering mechanism (**61**, **43**; **58**, **59**; **45**; **46**) comprises at least one interface element

(**60**) integrally joined with the at least one leaf (**A**) which includes a slot (**61**) with a first inclined zone (**47**) defining said at least one first portion (**47**), said at least one lifting/lowering mechanism (**61**, **43**; **58**, **59**; **45**; **46**) further comprising a slider (**43**) defining said at least one second portion (**48**) slidably engaged in said first inclined zone (**47**) of said slot (**61**) and pivotable on said sliding means (**11**).

35. Movement means according to the preceding claim, wherein said slider (**43**) can be operatively connected with said actuator means (**20**) so as to slide parallel to said axis (**X**) to promote the movement of the first inclined zone (**47**) of the slot (**61**) between said first and second operative positions, so as to promote the movement of the leaf (**A**) between the locked lowered closed and unlocked raised closed positions.

36. Movement means according to one or more of claims 33 to the preceding claim wherein the system further comprises safety means (**31**) cooperating with said sliding means (**11**) to counter the weight of the leaf (**A**), said safety means (**31**) being susceptible to act on at least one of said at least one first and one second portion (**47**, **48**) of said at least one lifting/lowering mechanism (**61**, **43**; **58**, **59**; **45**; **46**) to keep them in the second operative position.

37. Movement means according to claims 34 and 36 or 35 and 36, wherein said slot (**61**) further comprises a second zone (**63**) designed to house said slider (**43**) when it reaches said second operative position, said second zone (**63**) of said slot (**61**) being substantially parallel to said axis (**X**) or inclined with an inclination opposite to that of said first zone (**47**) of said slot (**61**) to define said safety means (**31**).

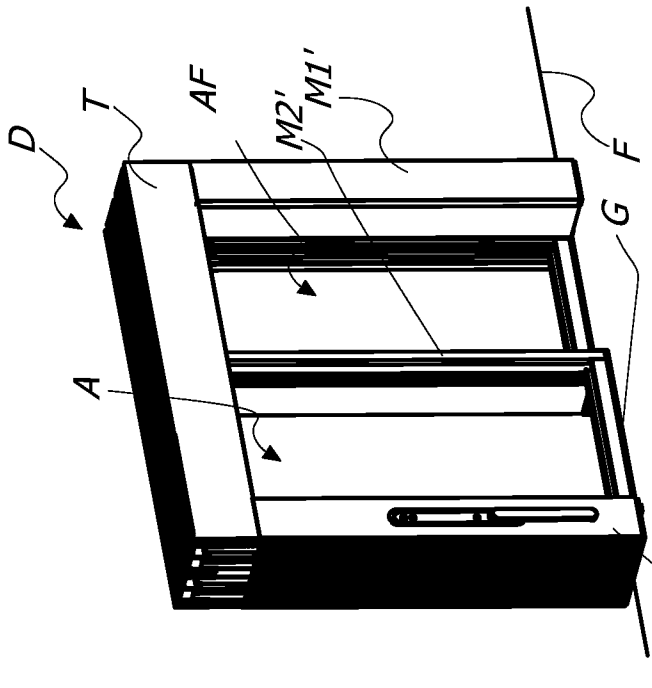

FIG. 1B

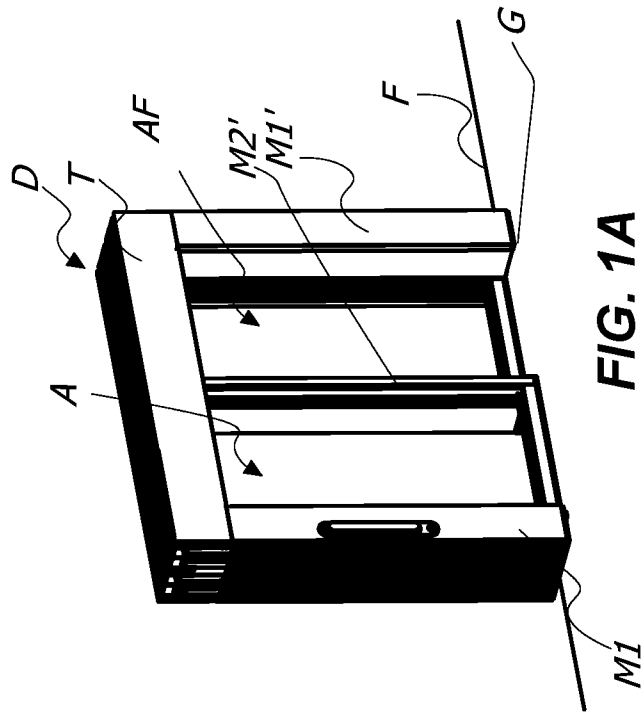

FIG. 1A

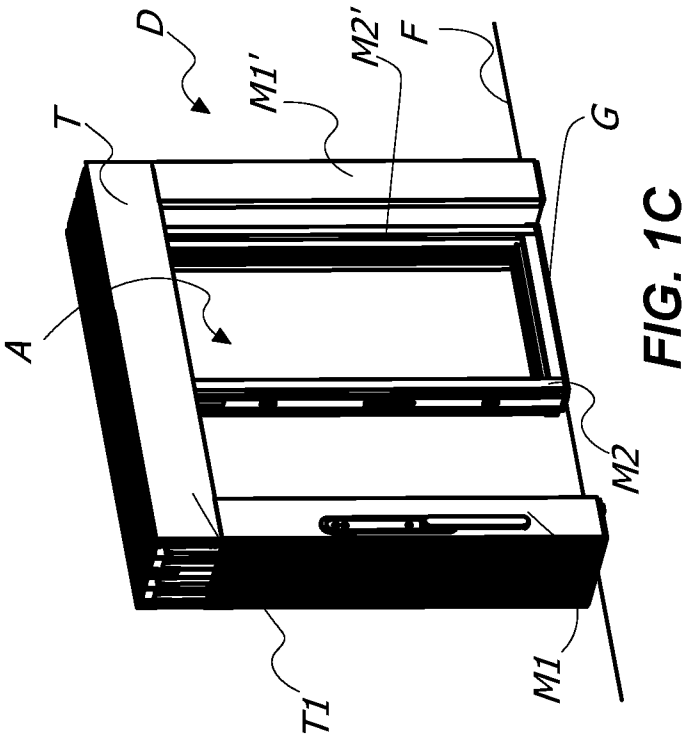

FIG. 1C

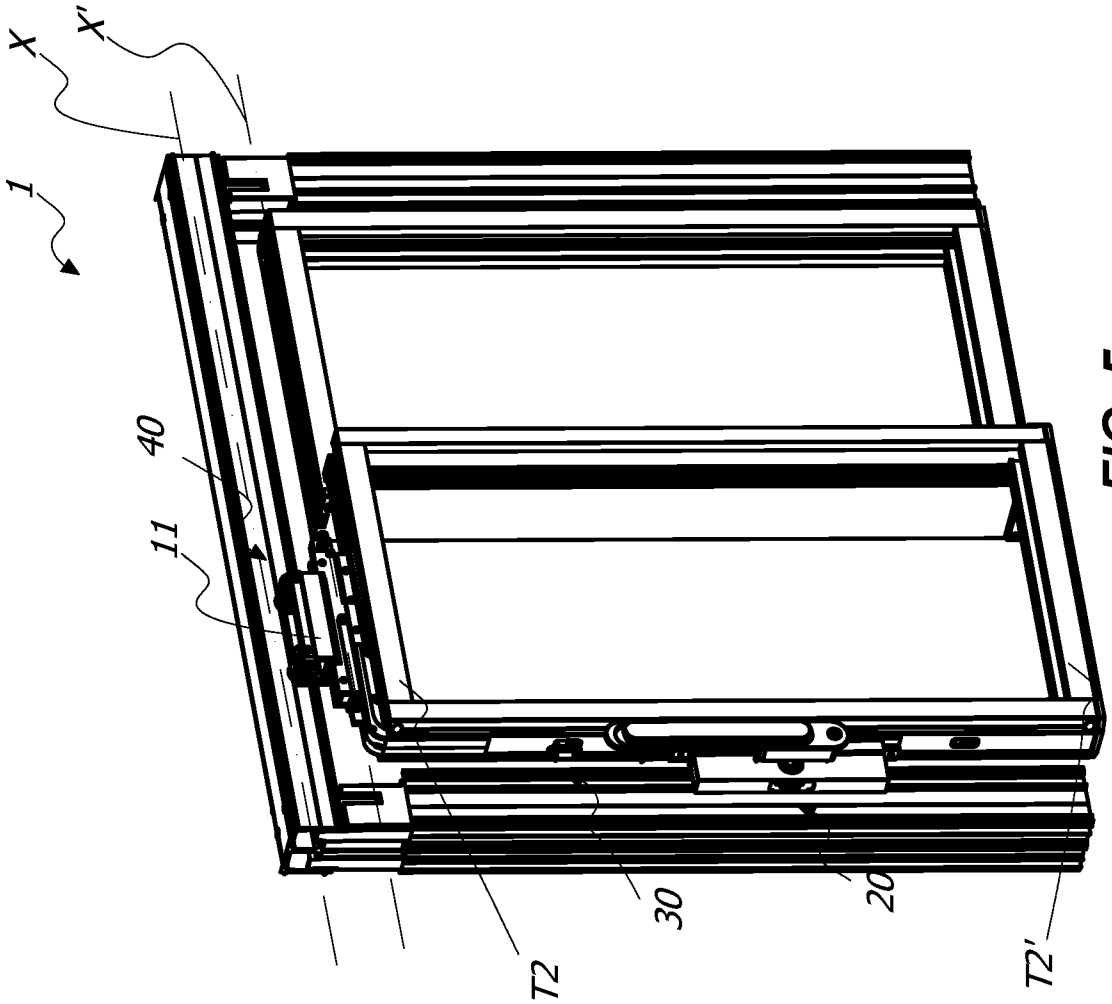

FIG. 5

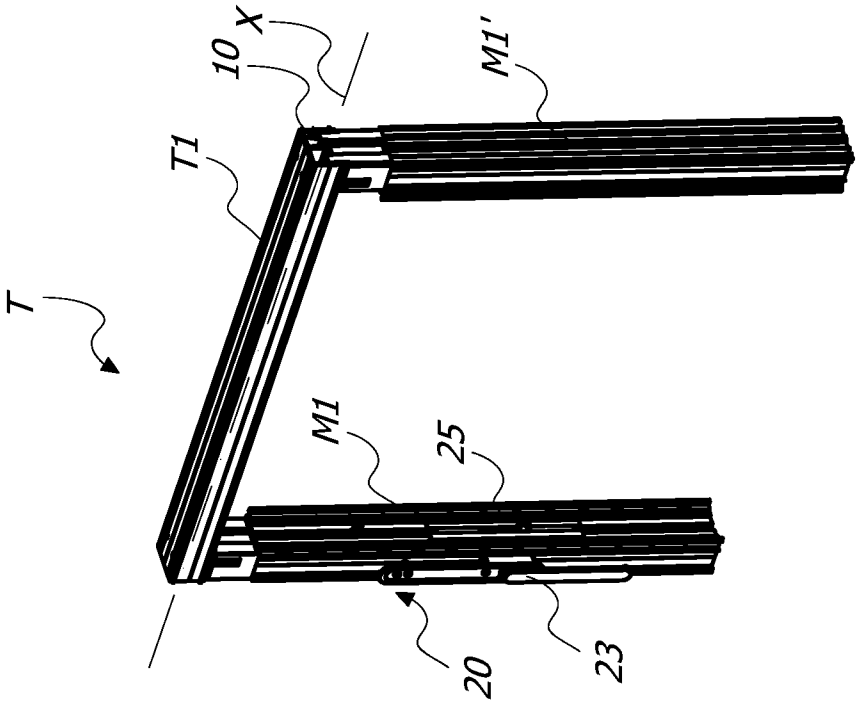

FIG. 2

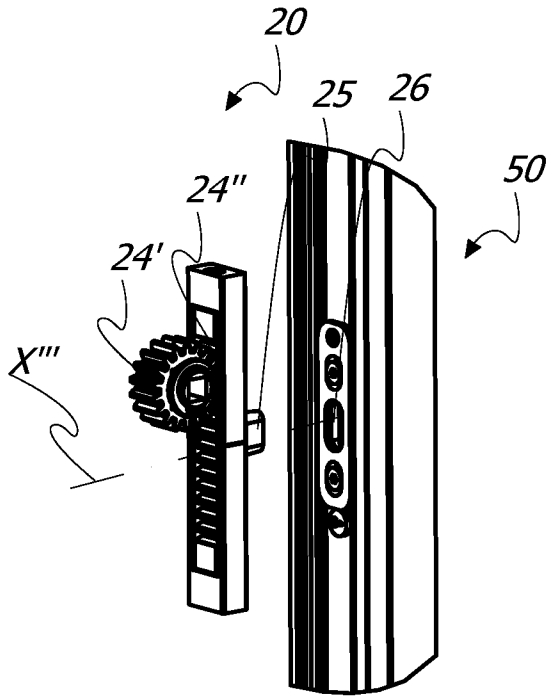

FIG. 3A

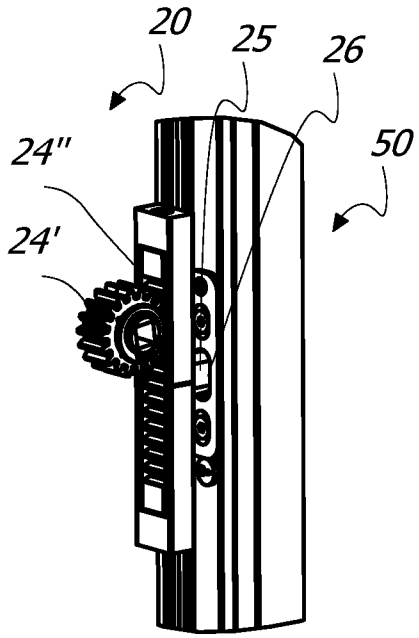

FIG. 3B

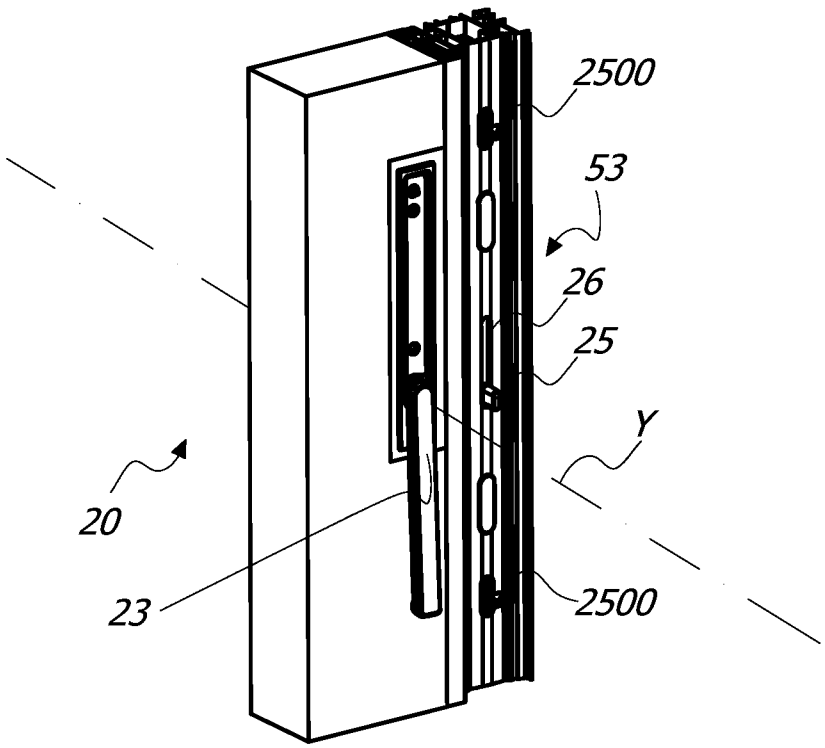

FIG. 4

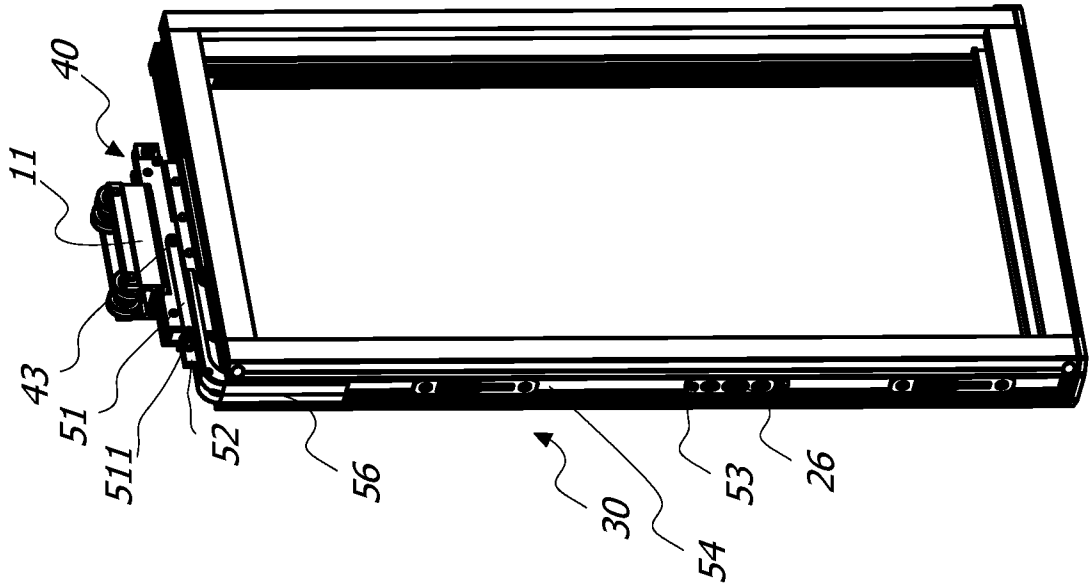

FIG. 7

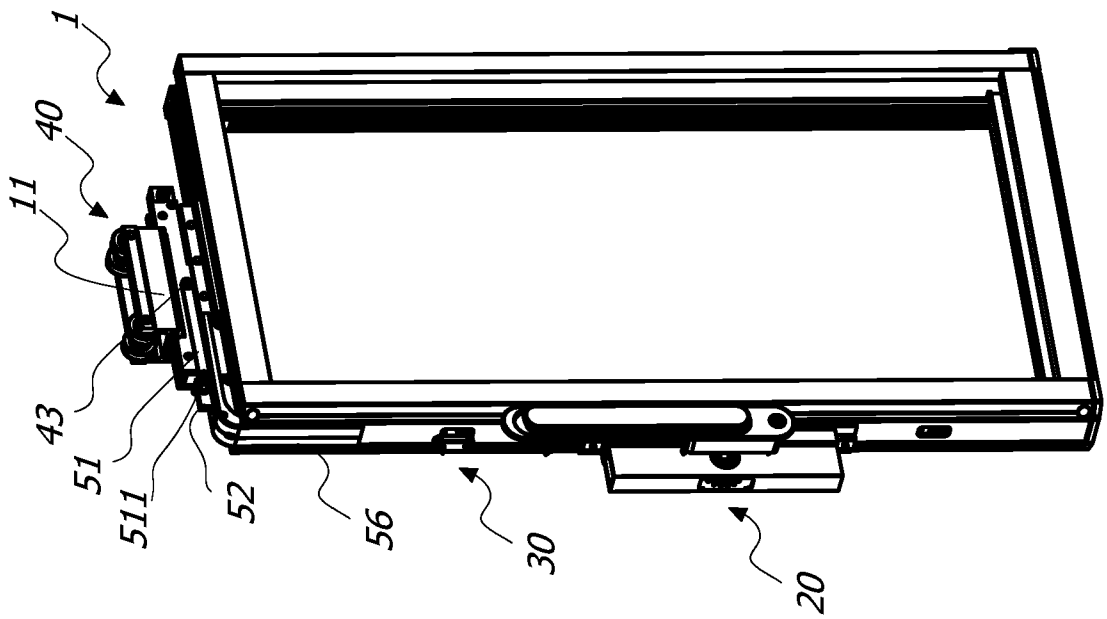

FIG.6

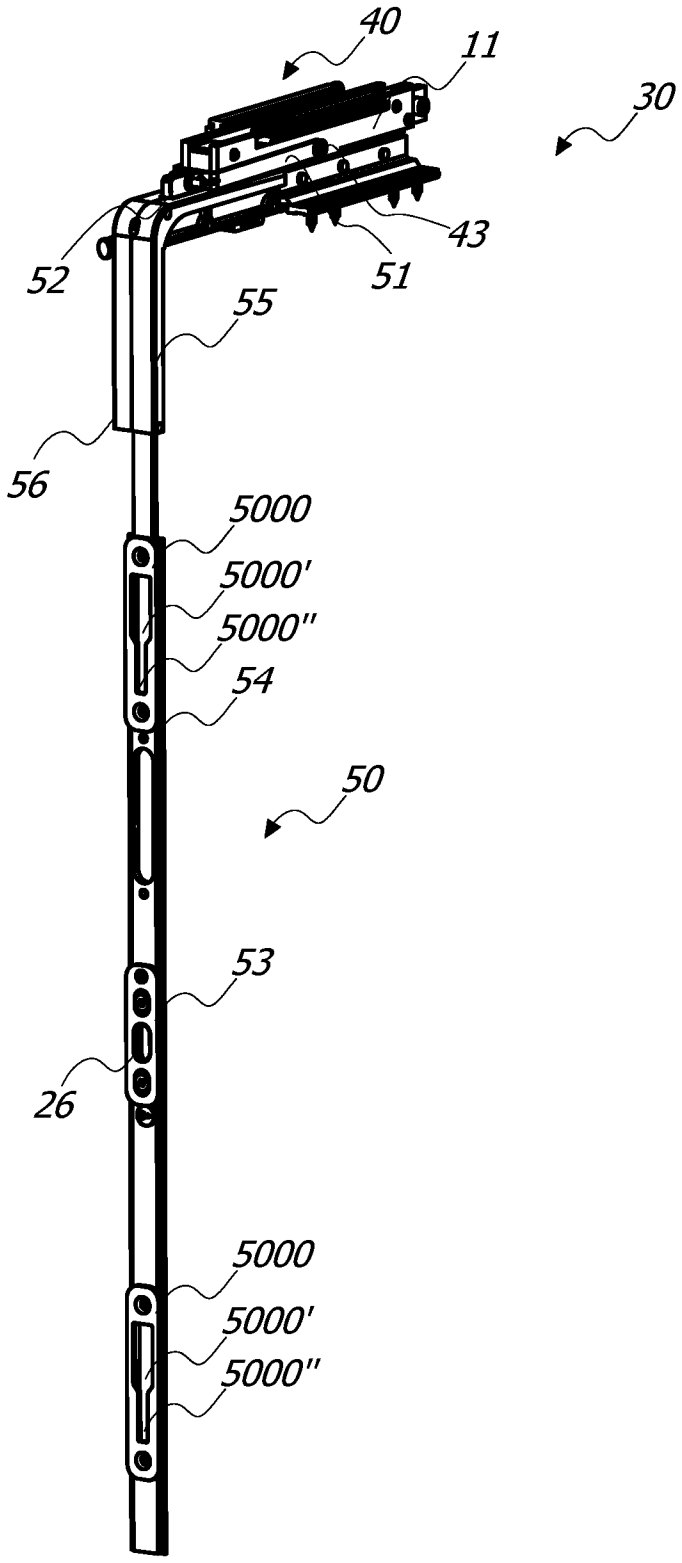

FIG.8

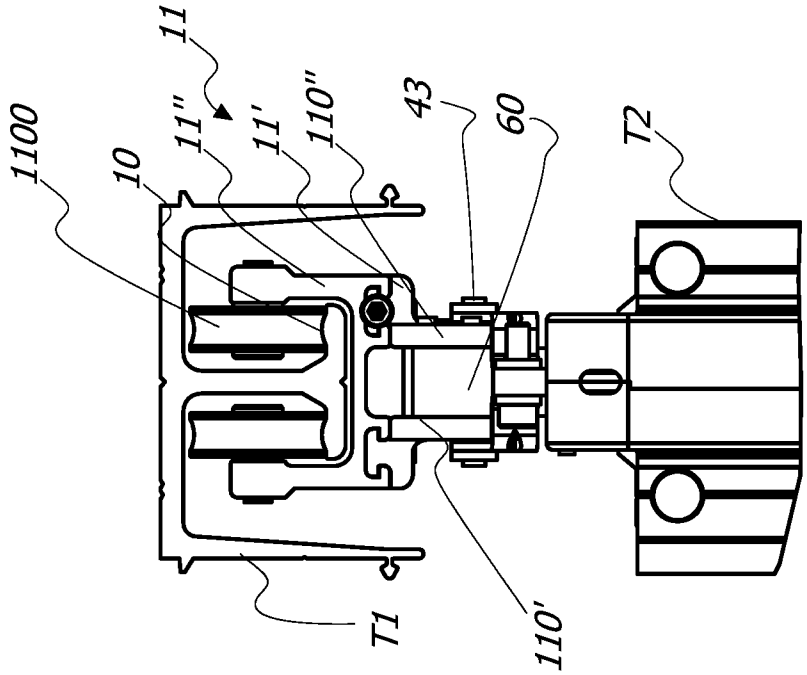

FIG. 9C

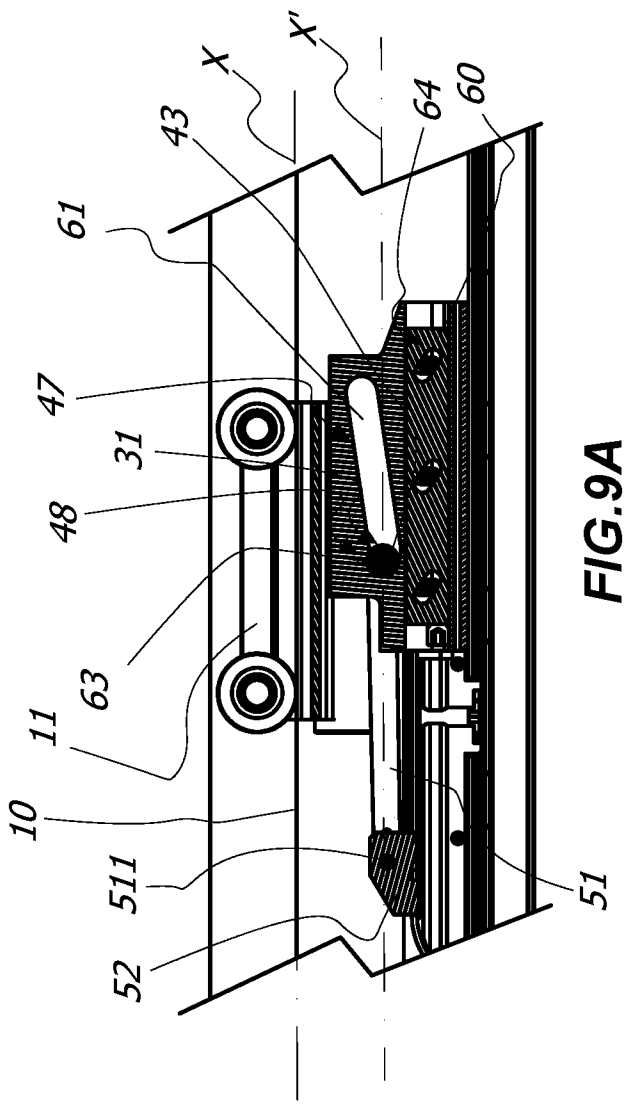

FIG.9A

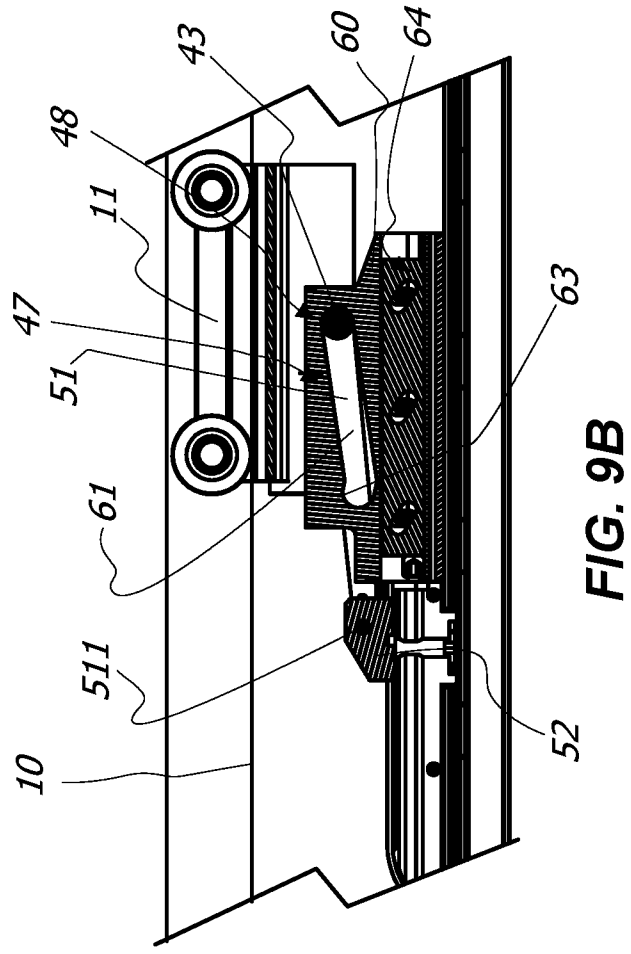

FIG. 9B

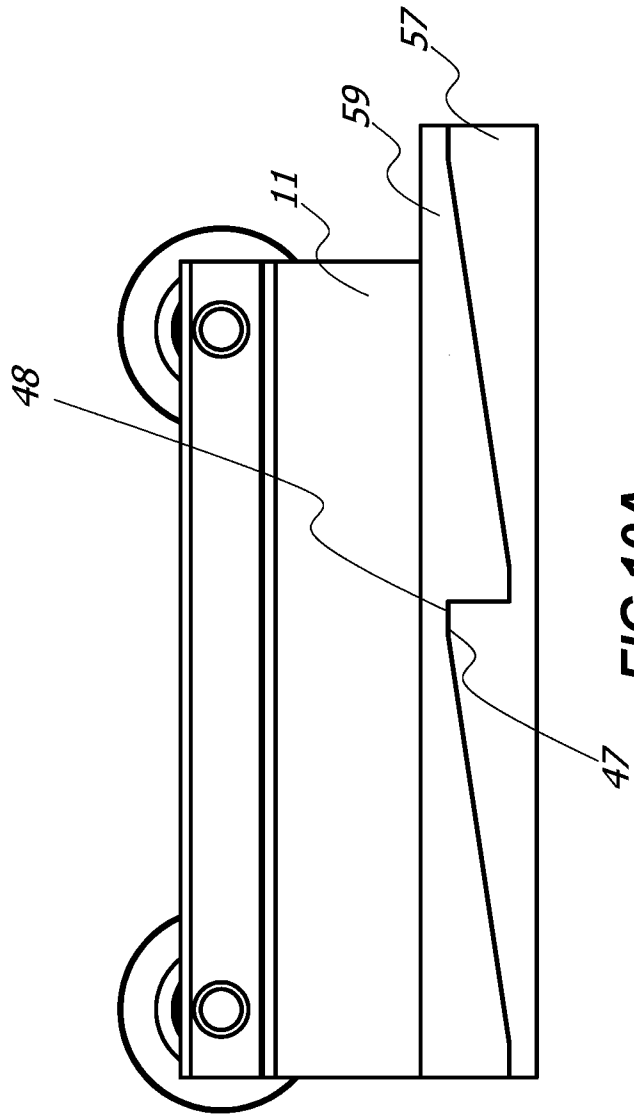

FIG.10A

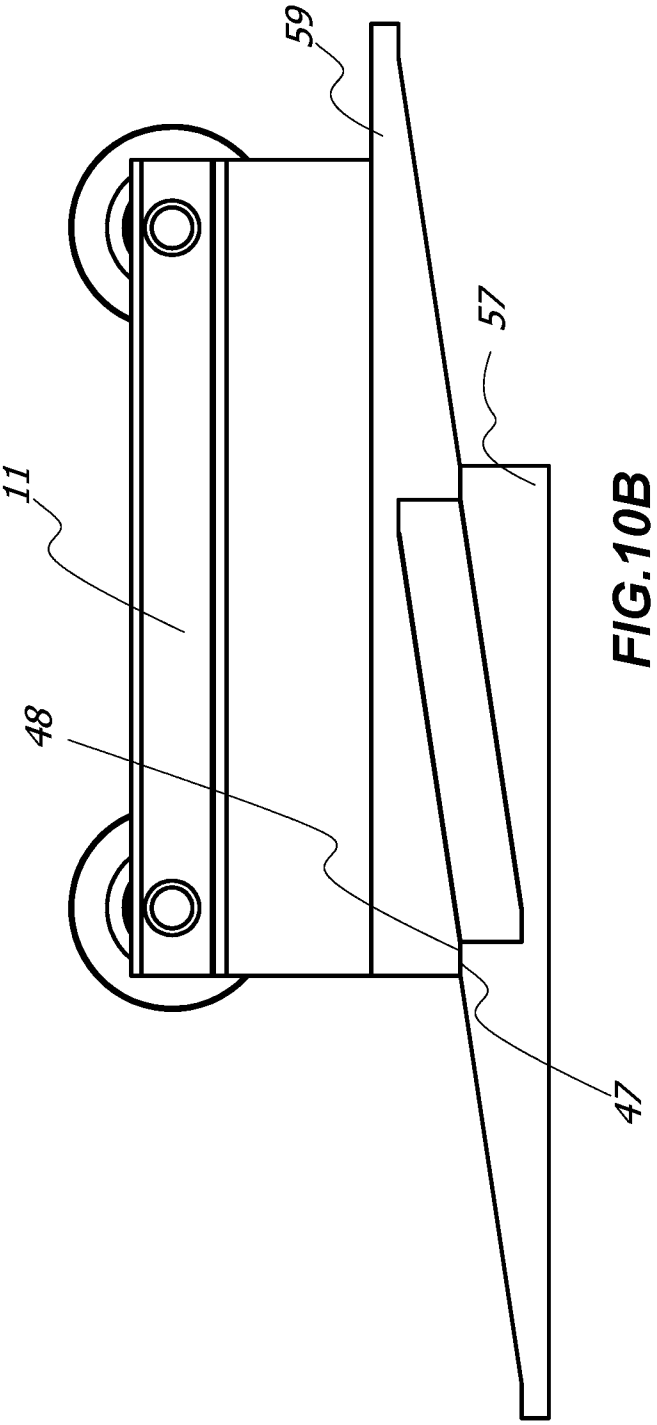

FIG.10B

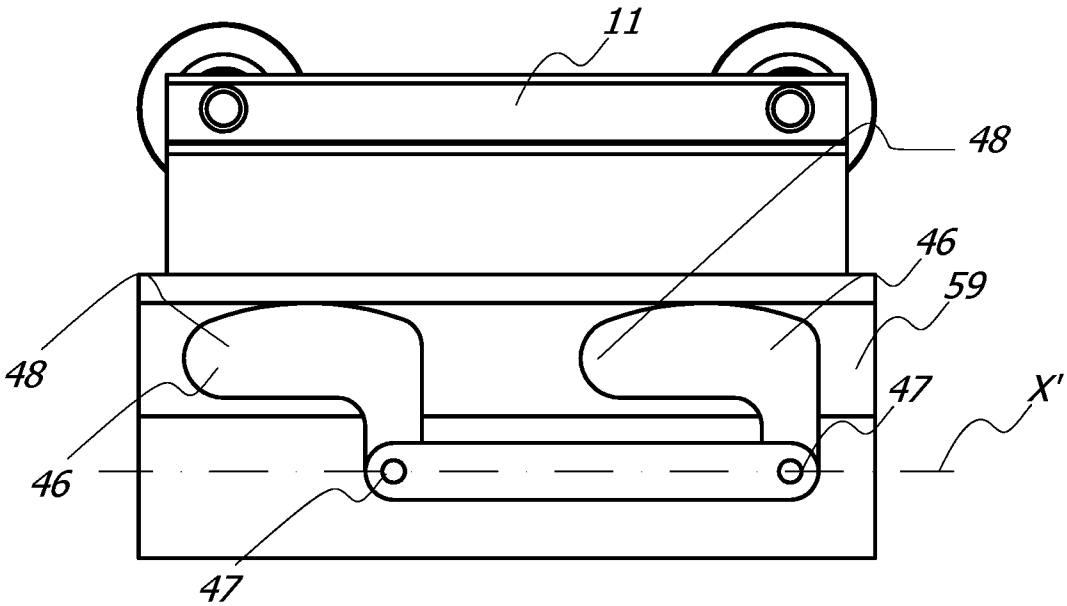

FIG.11A

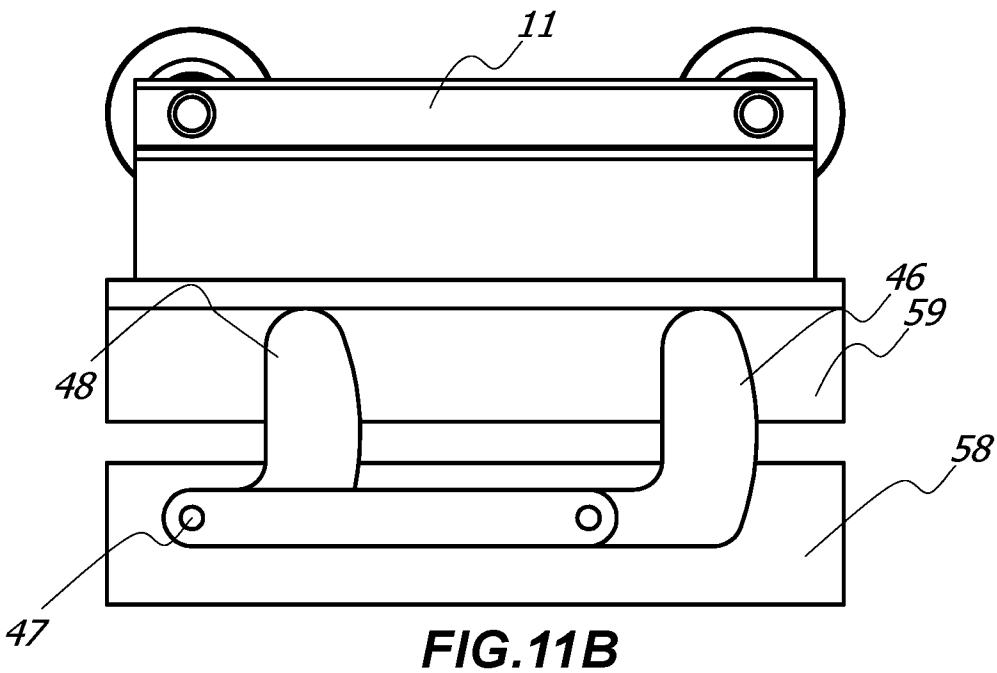

FIG.11B

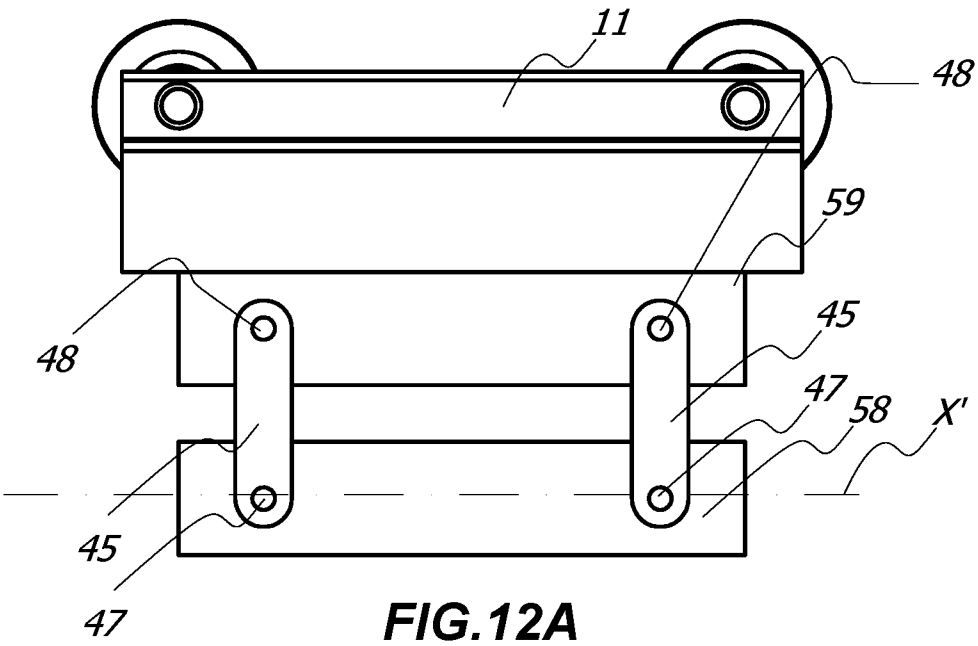

FIG.12A

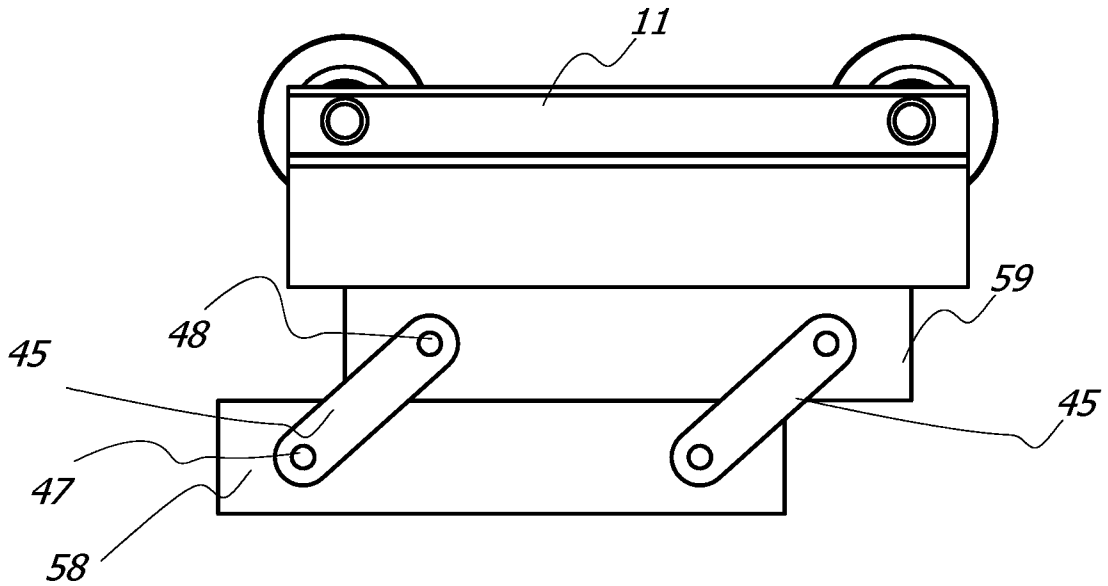

FIG.12B

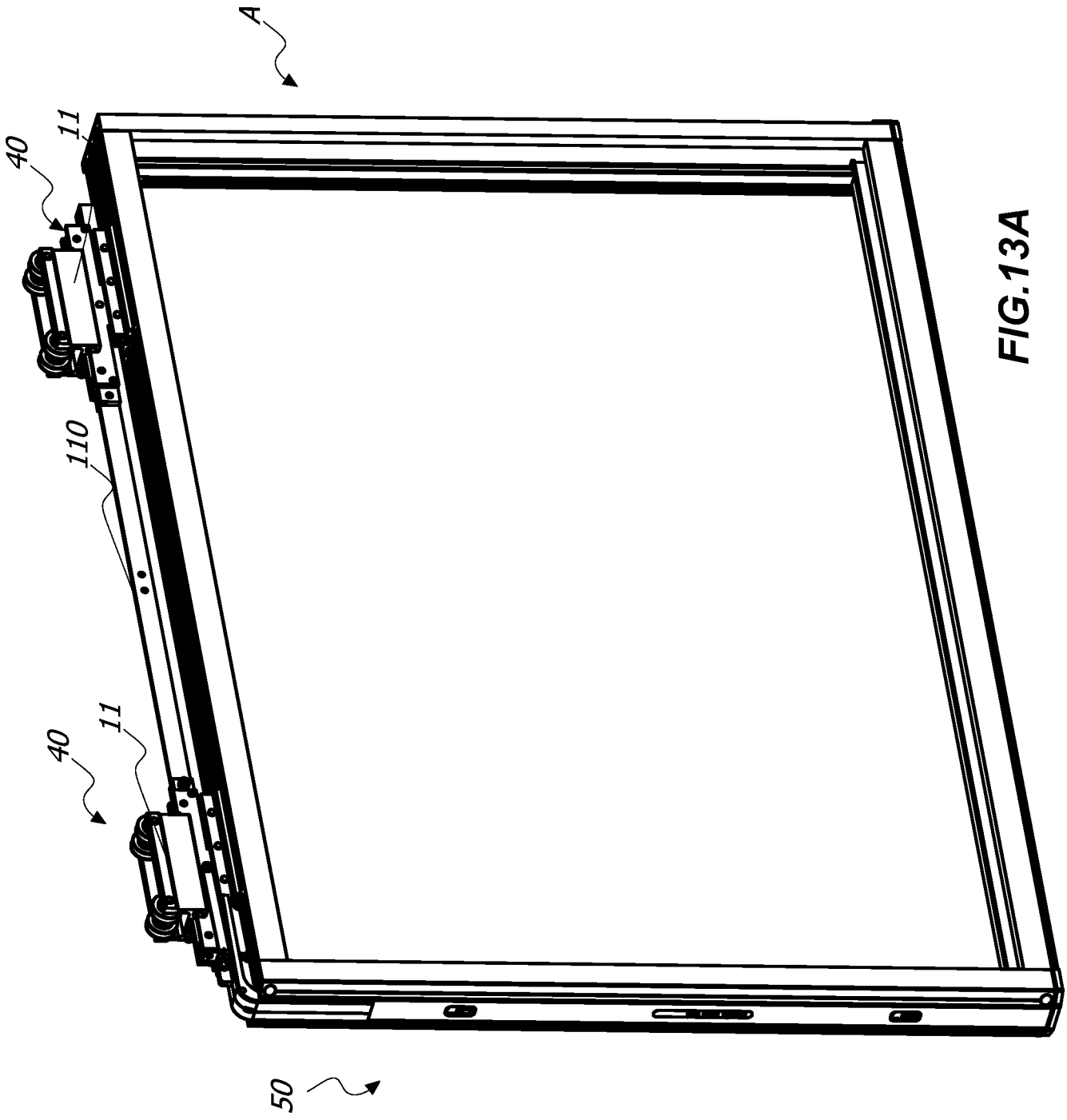

FIG.13A

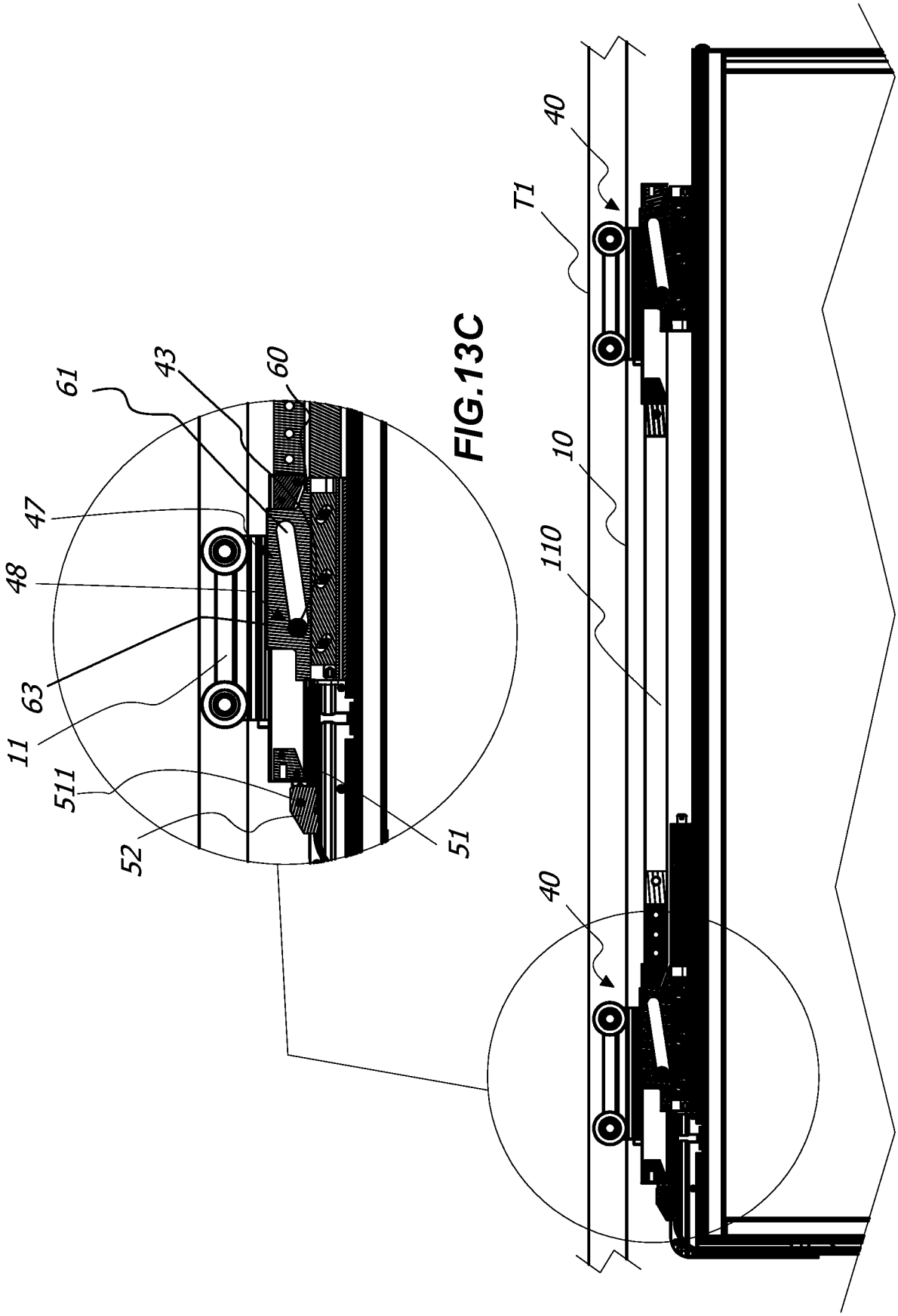

FIG.13B

FIG.13C

FIG.15

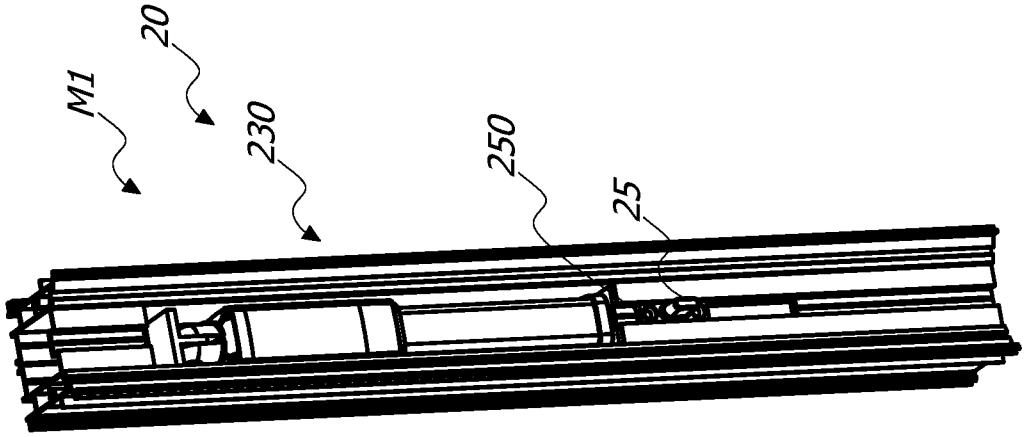

FIG.14B

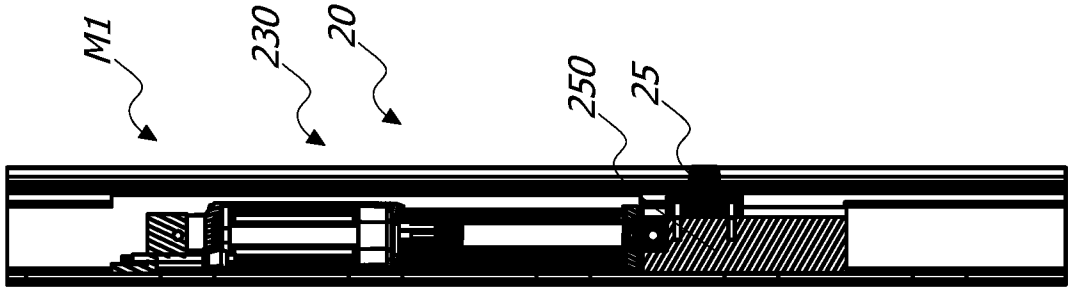

FIG.14A

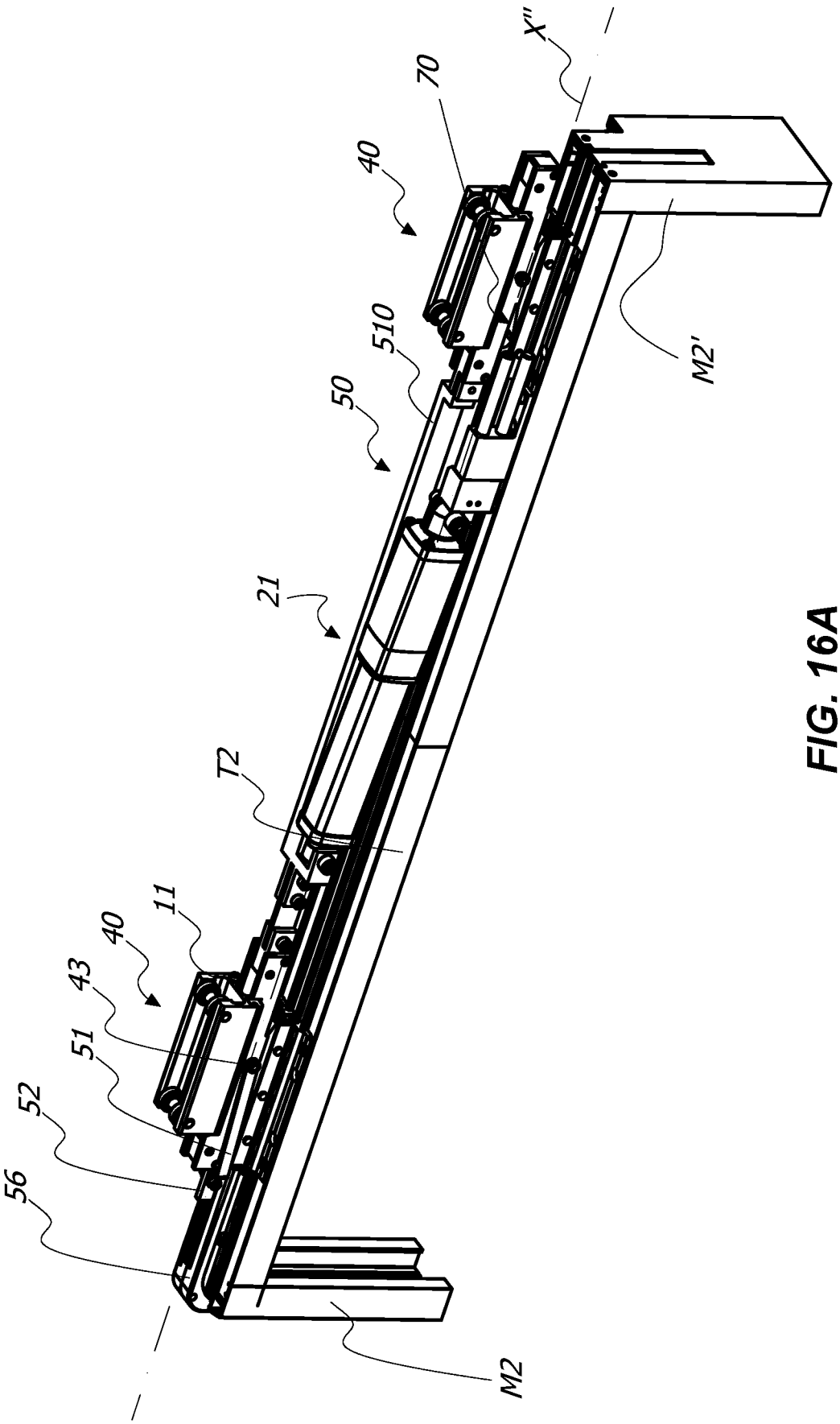

FIG. 16A

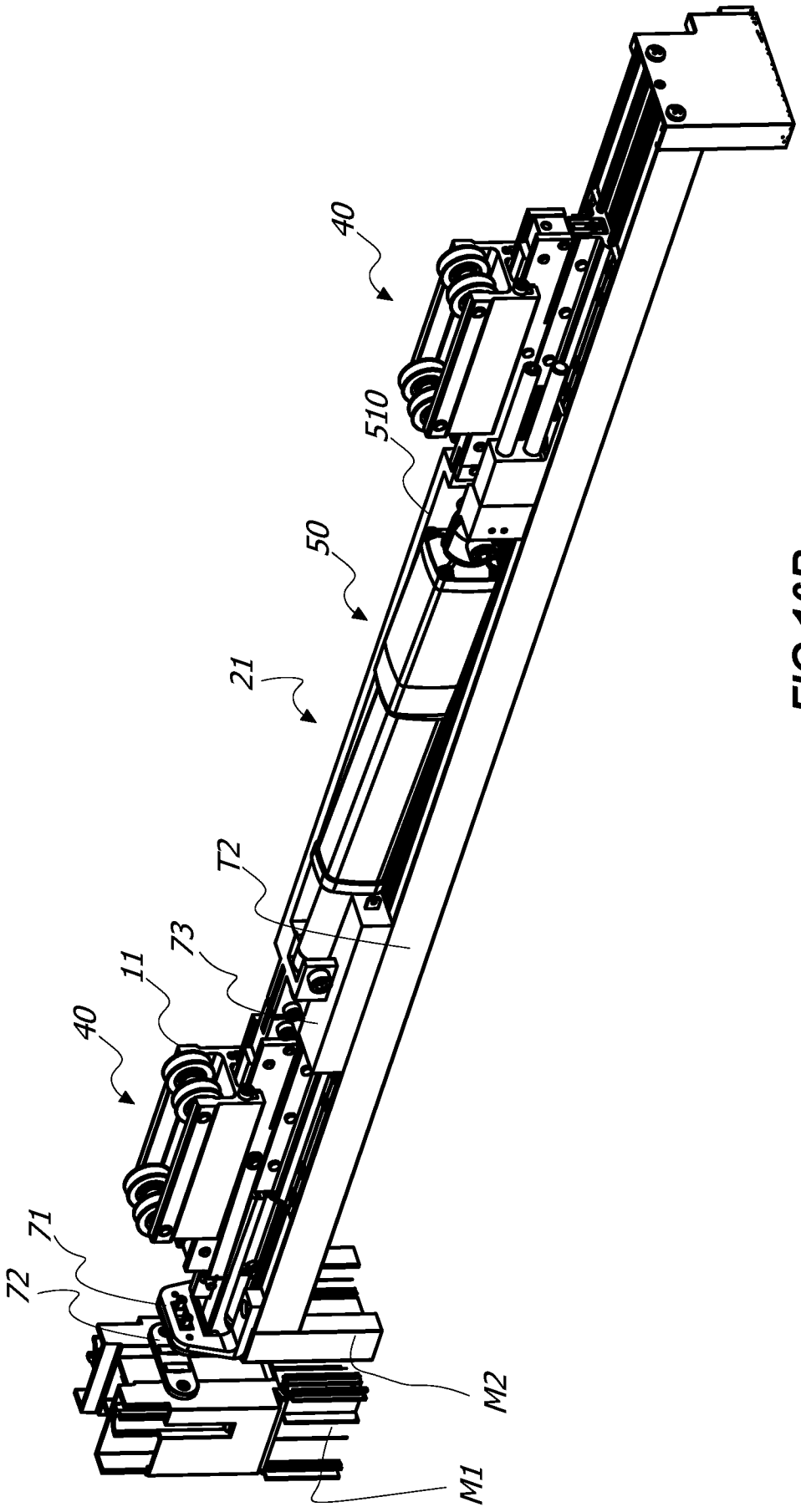

FIG.16B

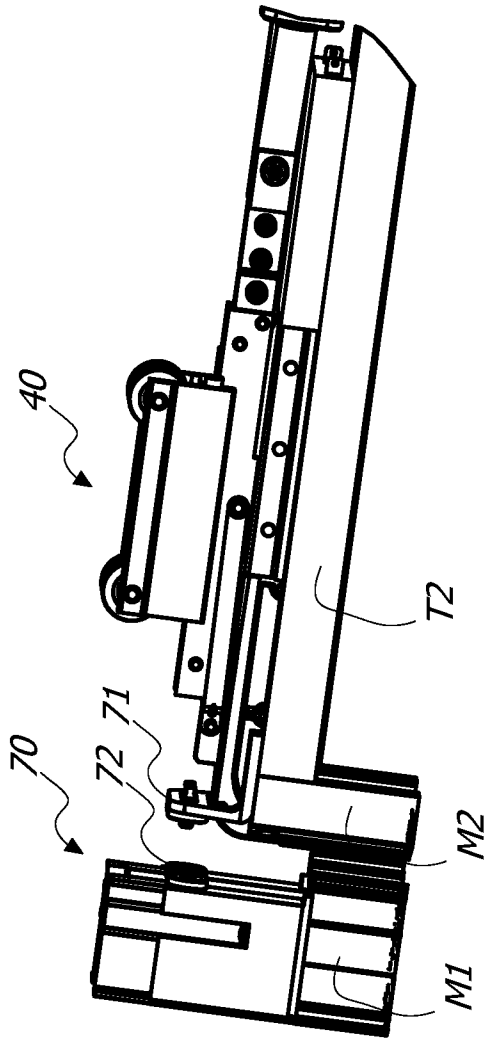

FIG.16C

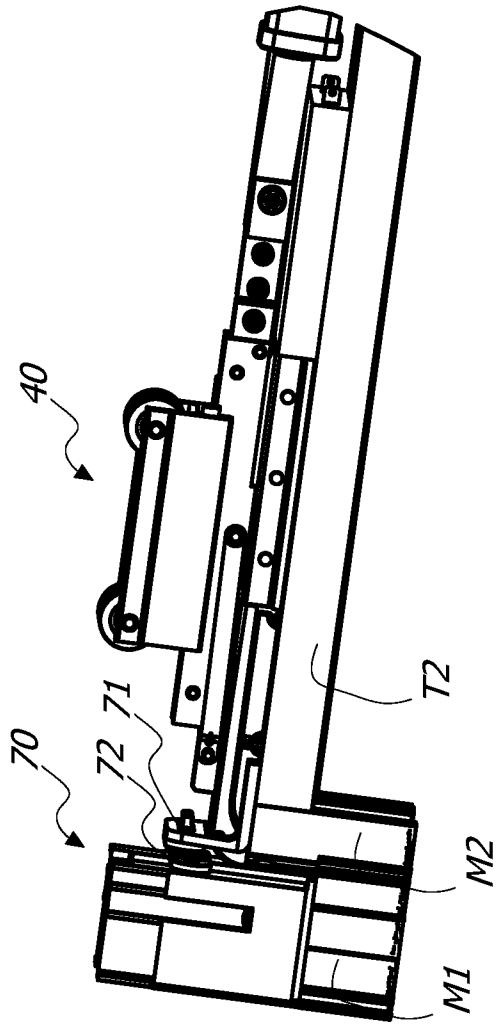

FIG.16D

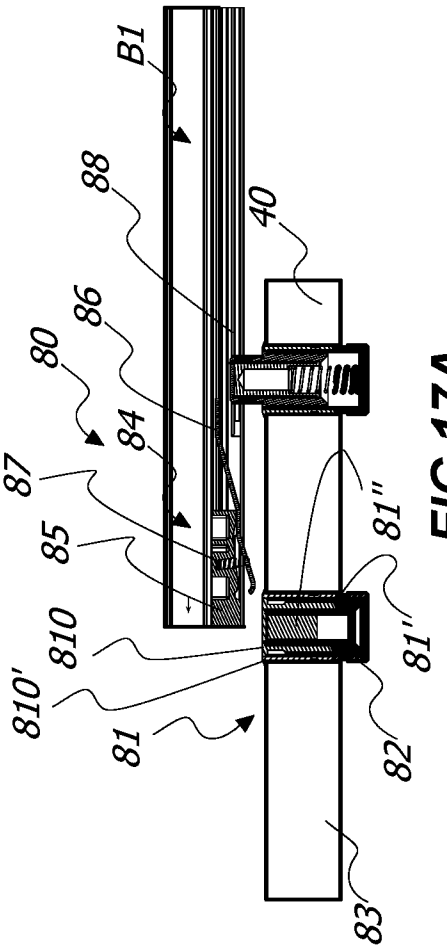

FIG.17A

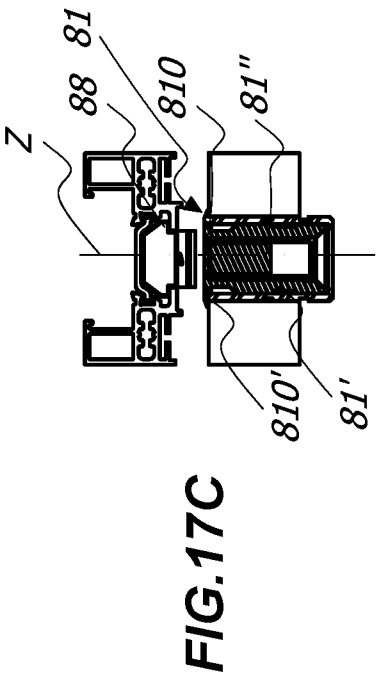

FIG.17C

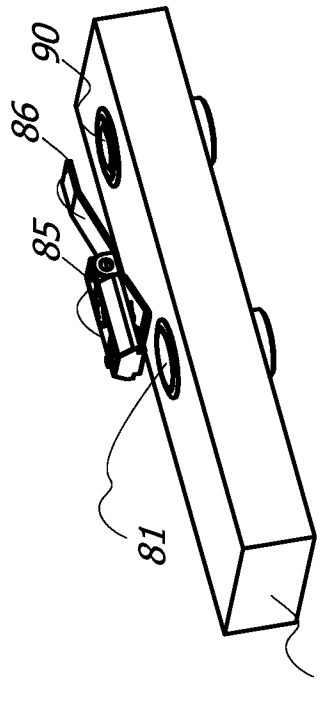

FIG.17B

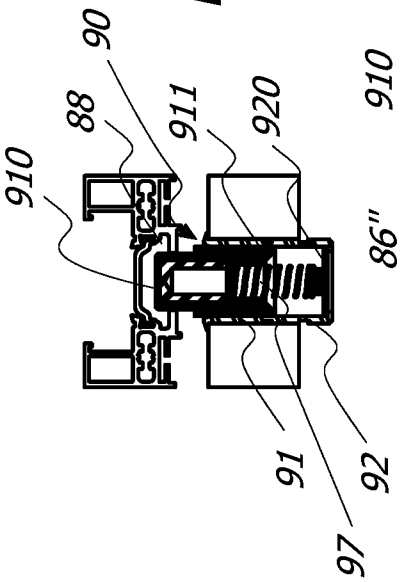

FIG.17D

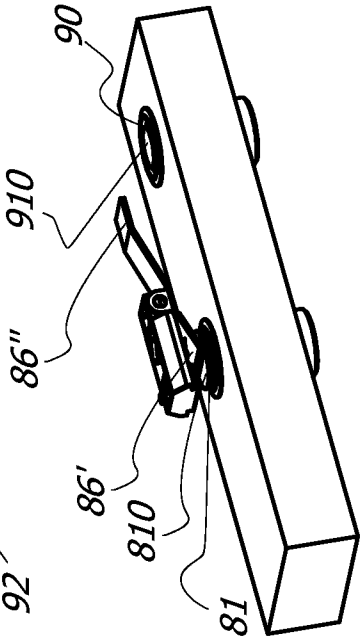

FIG.18B

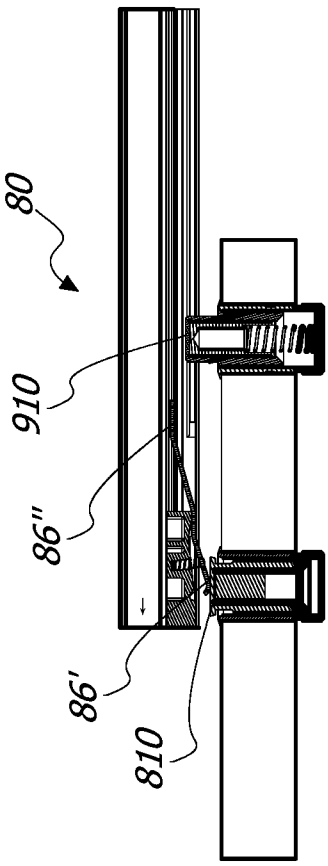

FIG.18A

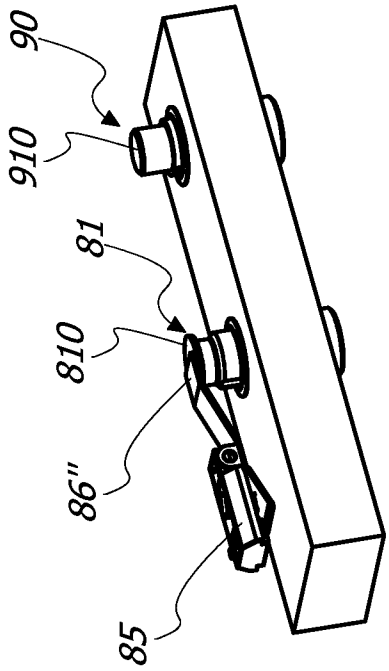

FIG.19B

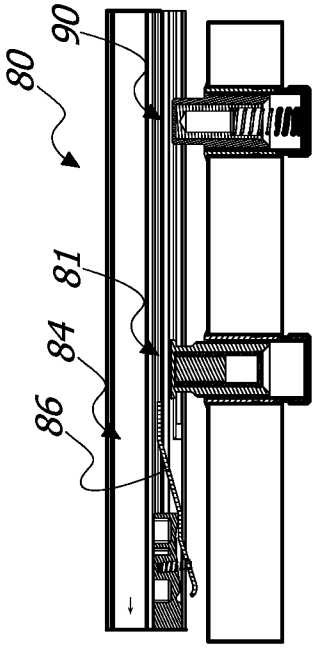

FIG.20

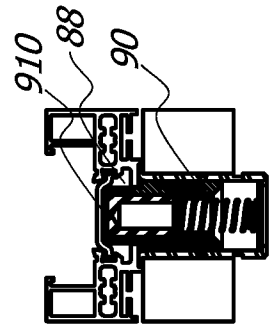

FIG.21C

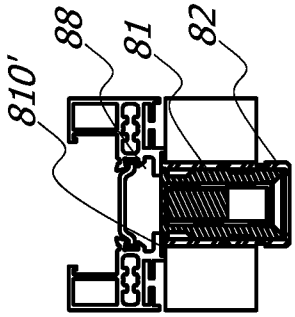

FIG.21B

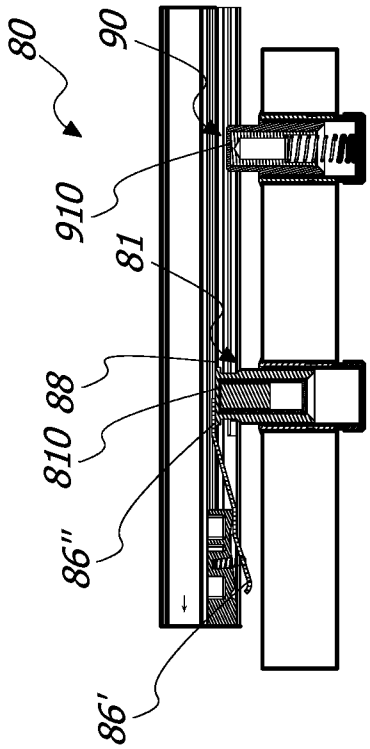

FIG.19A

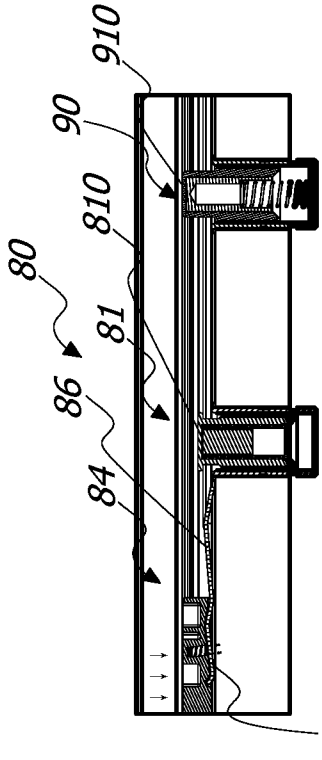

FIG.21A

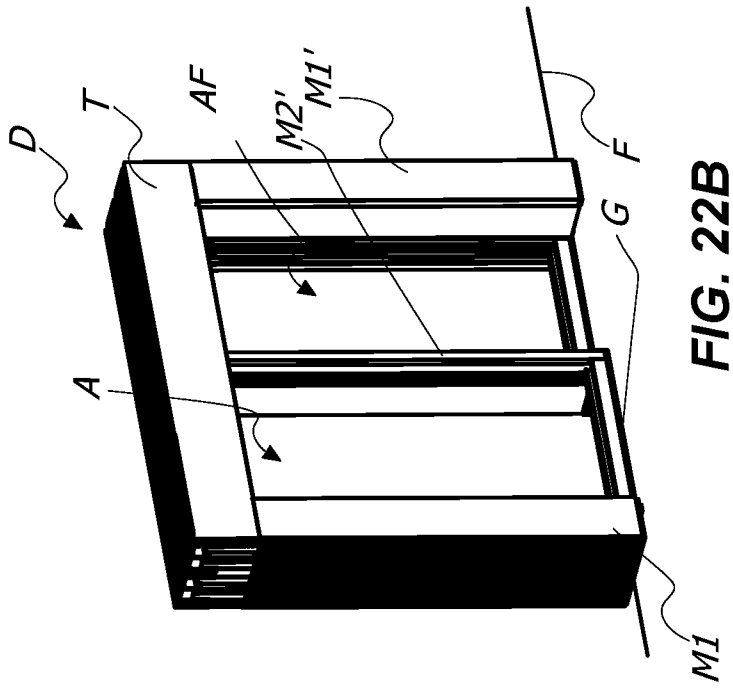

FIG. 22B

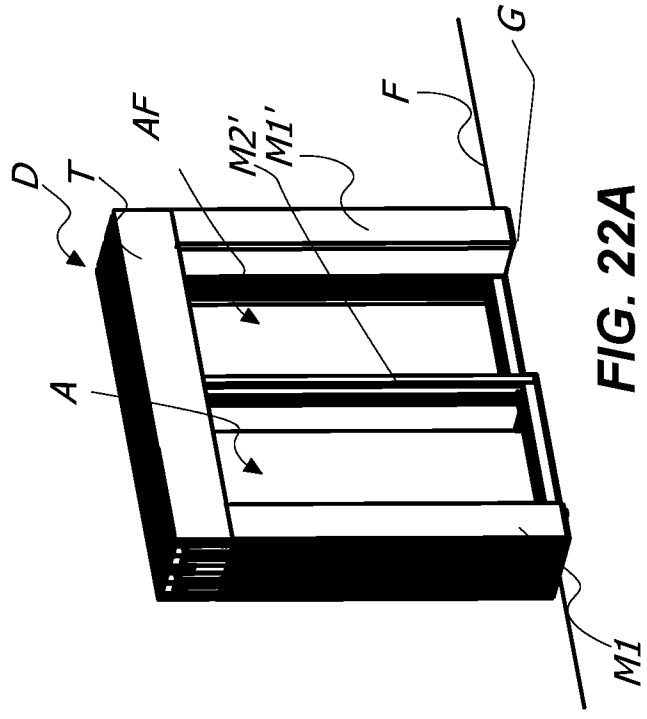

FIG. 22A

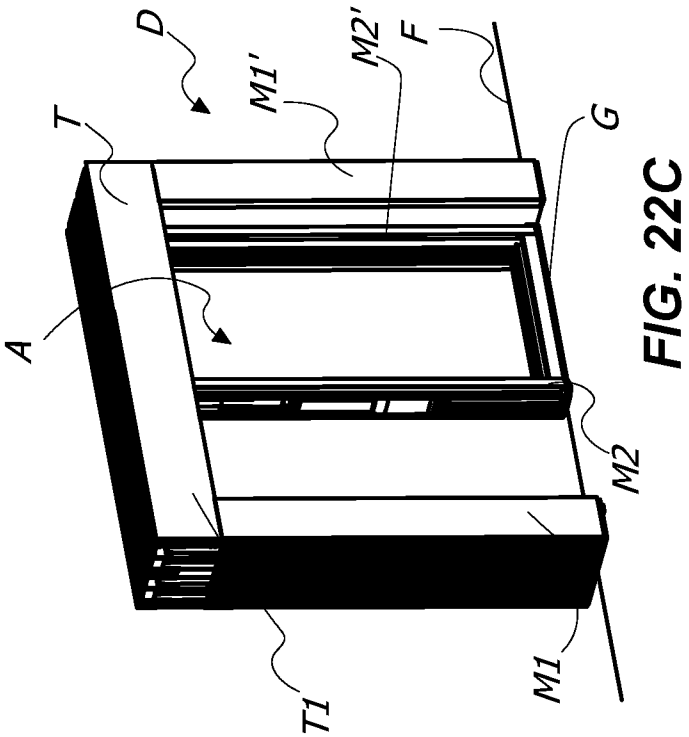

FIG. 22C

INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2023/051330

A. CLASSIFICATION OF SUBJECT MATTER
INV. E05D15/06 E05D15/56
ADD.

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)
E05D

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

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

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	KR 100 385 305 B1 (HANWHA L & C CORP [KR]) 23 May 2003 (2003-05-23) paragraphs [0020] - [0046]; figures 1-5	1-14
A	WO 2017/068555 A1 (SAVIO SPA [IT]) 27 April 2017 (2017-04-27) cited in the application page 5, paragraph 2 - page 10, line 1; figures 1-4, 7, 10, 11	1-14

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

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

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"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

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
23 May 2023	25/07/2023

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Klemke, Beate

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB2023/051330

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims;; it is covered by claims Nos.:

1-14

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-14

A system for manually moving at least one leaf of a slidable lifting door, comprising movement means for lifting and lowering the leaf, and comprising actuator means to manually activate these movements means, wherein the actuator means are positioned on the frame and the movement means are positioned on the leaf.

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2. claims: 15-32

A system for moving at least one leaf of a slidable lifting door, comprising movement means for lifting and lowering the leaf and electrical actuator means, wherein both the movement means and the actuator means are positioned on the leaf.

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3. claims: 33-37

Means for moving at least one leaf of a slidable lifting door, comprising at least one lifting/lowering mechanism and an electrical actuator means.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/IB2023/051330

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
KR 100385305 B1	23-05-2003	NONE	
WO 2017068555 A1	27-04-2017	AU 2016340374 A1	10-05-2018
		BR 112018008145 A2	06-11-2018
		CA 3002746 A1	27-04-2017
		CA 3002921 A1	27-04-2017
		CN 108368719 A	03-08-2018
		CN 108431356 A	21-08-2018
		EA 201891017 A1	28-09-2018
		EP 3365521 A1	29-08-2018
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		ES 2911003 T3	17-05-2022
		HU E053373 T2	28-06-2021
		HU E057945 T2	28-06-2022
		IL 258868 A	28-06-2018
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		JP 2018531338 A	25-10-2018
		PL 3365521 T3	11-04-2022
		PL 3365522 T3	31-05-2021
		PT 3365521 T	28-02-2022
		PT 3365522 T	25-02-2021
		US 2019153763 A1	23-05-2019
		US 2019390495 A1	26-12-2019
		WO 2017068554 A1	27-04-2017
		WO 2017068555 A1	27-04-2017