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(54) **Deflector barrier for smoke and heat vents and a smoke and heat vent provided with said deflector barrier**

Deflektorbarriere für Rauch- und Wärmeablässe sowie mit einer solchen Deflektorbarriere ausgestatteter Rauch- und Wärmeablass

Barrière déflectrice pour évents de fumée et de chaleur, et évent de fumée et de chaleur équipé de ladite barrière déflectrice

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Description

[0001] The invention concerns a deflector barrier for smoke and heat vents suited to let smoke and heat out of the rooms of a building in case of fire.

[0002] The invention also concerns a smoke and heat vent using said deflector barrier.

[0003] The deflector barrier that is the subject of the invention is particularly suited to be applied to natural smoke and heat vents of the type that can be installed on walls.

[0004] It is known document US 2 311 413 describing a window screen for windows which is extended and pulled back at the opening and closing movement of the window sash, respectively.

[0005] The window screen is not provided with protective surfaces preventing, when it is open and in case of wind, the entry of external air flow. In case of fire, the absence of said protective surfaces hinders the exit of the smoke through the window.

[0006] As is known, the Italian standard UNI 9494 of 2007 requires that buildings are provided with automatic opening vents that in case of fire ensure the quick extraction of smoke and heat from the rooms.

[0007] Said smoke and heat vents substantially comprise a cover that is connected by means of hinges to a fixed frame or to a base that delimits an opening made in a building or in the vertical wall of a shed, which is in communication with one or more rooms.

[0008] In case of fire, operating means automatically open the cover towards the outside in order to let out the smoke and heat produced by combustion.

[0009] Smoke and heat vents are preferably installed on the roofs of buildings, but smoke and heat vents are also known that are installed on walls, for example on the vertical walls that delimit buildings or on the vertical walls of sheds, in all the cases where installation on the roof isn't possible or when, even in the presence of vents on the roof, the extraction effect must be enhanced. According to a known embodiment of the invention, the wall-mounted vents available on the market substantially comprise a fixed frame that delimits an opening made in a wall or in the vertical wall of a shed, and a flap that can be opened towards the outside and is provided with a movable sash that cooperates with the fixed frame.

[0010] The lower side of the movable sash is hinged to the fixed frame and therefore the flap can be opened towards the outside like a hopper window to define an opening at the level of the upper side.

[0011] Furthermore, on each side of the flap of the vent there is a side wall connected to both the fixed frame and the movable sash, whose surface varies following the flap during the opening and closing manoeuvres.

[0012] The side walls can be constituted by flexible lamina-shaped elements that are recessed in the wall of the building and therefore not visible when the flap is closed, or by rigid thin surfaces that open like a fan and are permanently projecting from the wall, or again by walls of a different type, whose presence prevents the inlet of external air through the sides of the flap when this is completely open.

[0013] The presence of said side walls avoids the formation of a transversal flow of air from the outside towards the inside of the room, which would hinder the extraction of smoke through the upper opening.

[0014] The smoke and heat vents described above, even if provided with the side walls, however don't guarantee the optimal extraction of smoke and heat always and in all conditions.

[0015] There is still the recognized and unresolved drawback represented by the non optimal extraction of smoke and heat when the flap is open if this is hit frontally by an air flow.

[0016] In fact, when the flap is open its upper edge is lower than the upper edge of the fixed frame to which it is hinged and the air flow that hits it frontally can easily get in through the upper opening defined between the upper and lower edges, creating an antagonist flow that hinders or even prevents the extraction of smoke and heat from the room.

[0017] For this purpose, embodiments are known in which the upper edge of the flap is associated with a fixed deflector barrier that when the flap is open makes it possible to deviate upwards any air flow hitting the flap frontally.

[0018] It can be easily understood that the presence of a fixed deflector barrier determines an aesthetic result that sometimes is unacceptable, especially in the case of prestigious buildings.

[0019] Furthermore, said permanently projecting deflector barrier is subjected to damage and therefore requires maintenance interventions.

[0020] The present invention aims to overcome also this recognized drawback.

[0021] In particular, it is the object of the invention to provide a deflector barrier for smoke and heat vents suited to be installed on walls which projects from the upper edge of the flap only when the flap is open.

[0022] It is a further object of the invention to ensure that the deflector barrier automatically projects from the flap when the flap is opened.

[0023] The objects described above are achieved by a deflector barrier for smoke and heat vents to be installed on walls, having the characteristics described in the main claim, to which the reader should refer for the sake of brevity.

[0024] Other details of the invention are described in the dependent claims.

[0025] According to the construction variant described here below, the deflector barrier comprises a foil-shaped body suited to be applied to the upper part of the movable sash of the flap and connected to operating means constituted by rotation actuators.

[0026] When the flap is closed, the foil-shaped body that makes up the deflector barrier is arranged against the flap and completely contained within the perimeter

defined by the movable sash of the flap itself.

[0027] When the operating means open the flap, the rotation actuators arrange the foil-shaped body so that it projects from the upper side of the movable sash of the flap and faces upwards.

[0028] In this way, when the flap is open, the foil-shaped body deviates upwards any air flow hitting it frontally from the outside and prevents the formation of an air flow getting in through the upper opening of the vent and preventing the extraction of smoke and heat from the room.

[0029] When the flap is closed again, the foil-shaped body is placed back within the upper edge of the flap with a manual rotation.

[0030] In the embodiment described herein, the foil-shaped body is positioned on the inner side of the flap.

[0031] According to a construction variant, the foil-shaped body is positioned on the outer side of the flap.

[0032] According to another embodiment of the invention, the foil-shaped body is moved by means of a sliding motion via linear translation actuators.

[0033] Also according to said construction variant, the foil-shaped body is positioned either on the inside or on the outside of the flap.

[0034] The deflector barrier that is the subject of the invention can in any case be applied to wall-mounted vents of any type, even without side walls.

[0035] The deflector barrier that is the subject of the invention is described here below with reference to its different embodiments illustrated by way of example without limitation in the attached drawings, wherein:

- Figure 1 shows a front view of the deflector barrier that is the subject of the invention in the rest position, applied to a smoke and heat vent arranged in the closed position;
- Figure 2 shows the deflector barrier of Figure 1 in the operating position, with the smoke and heat vent arranged in the open position;
- Figure 3 shows a cross section of Figure 1 according to the vertical plane III-III;
- Figure 4 shows the cross section of Figure 3 with the vent in the open position;
- Figure 5 shows the deflector barrier of Figure 1 in the rest position, seen from the inside of the vent;
- Figures 6 and 7 show some details of Figure 5;
- Figure 8 shows the deflector barrier of Figure 5 in the operating position, seen from the inside of the vent when the vent is open;
- Figure 9 shows a detail of Figure 8;
- Figure 10 shows the deflector barrier of Figure 8 during its return to the rest position with the vent open, seen from the inside of the vent;
- Figures 11 and 12 show some details of Figure 10;
- Figures 13 and 14 show some details of the deflector barrier that is the subject of the invention at the end of its return movement to the rest position;
- Figures 15 and 16 show a construction variant of the deflector barrier of the invention arranged respectively in the operating position with open vent and in the rest position before the vent is closed, seen from the inside of the vent;
- Figures 17 and 18 show a further construction variant of the deflector barrier of the invention arranged respectively in the operating position with open vent and in the rest position with closed vent, seen from the inside of the vent.

[0036] The deflector barrier of the invention, indicated as a whole by **1,** is shown in Figures 1 and 2 respectively in the rest and in the operating position, and is applied to a smoke and heat vent of the type to be installed on walls, indicated as a whole by **2.**

[0037] Regarding the smoke and heat vent **2,** it can be observed that it comprises a fixed frame **3** applied to the perimeter of an opening **A** made in a wall **P** of a building and communicating with the inside of one or more rooms, and a flap **4** provided with a movable sash **5** associated with the fixed frame **3** via hinges **6** that define a rotation axis **X** for opening and closing the flap itself.

[0038] It should be noted that the wall where the vent is applied can be any wall of the building or a vertical wall of the sheds.

[0039] The smoke and heat vent **2** also comprises operating means **7** suited to rotate the flap **4** around the rotation axis **X** and means **8** for coupling and releasing the movable sash **5** with/from the fixed frame **3** that can be observed in Figures 2, 6, 7, 13 and 14.

[0040] It is also possible to observe the presence of side walls **9** that prevent the inlet of air through the sides of the vent, each side wall being connected to both the fixed frame **3** and the movable sash **5.**

[0041] Each side wall **9** consists of a flexible lamina-shaped element that follows the flap **4** during the opening and closing operation and then fits completely into an apposite housing when the flap is closed.

[0042] It should be noted that the smoke and heat vent of the type just described above, whose different operating stages are illustrated in the attached drawings, is described herein only for the purpose of describing the technical characteristics of the deflector barrier of the invention applied thereto and of explaining how it works.

[0043] In fact, the deflector barrier of the invention can be applied to wall-mounted smoke and heat vents of any type and size, provided or not with side walls for preventing the inlet of air through the sides.

[0044] In particular, the side walls can be provided in different construction variants, and therefore can be made up of flexible lamina-shaped elements completely recessed with respect to the wall of the building, and even of rigid thin surfaces that open like a fan and project permanently from the walls.

[0045] According to the invention and with reference also to Figures from 5 to 7, the deflector barrier **1** comprises:

- a foil-shaped body **10** that can be associated with the movable sash **5** on the opposite side of the rotation axis **X;**
- actuator means **11** that can be associated with the movable sash **5** and are suited to arrange the foil-shaped body **10** so that it projects from the movable sash **5** when the flap **4** is open;
- constraining means **12** that can be associated with the movable sash **5** and interact with the actuator means **11** when the flap **4** is closed, in order to retain the foil-shaped body **10** in a recessed position with respect to the movable sash **5.**

[0046] As regards the actuator means **11,** it can be observed with particular reference to Figures 6 and 7 that they comprise at least one linear actuator **13** having the rod **14** associated with a connecting rod **15,** which in turn is connected to a stem **16** supporting the foil-shaped body **10.**

[0047] The stem **16** can be associated with the movable sash **5** at the level of the opening upper edge **5a** and defines a rotation axis **X'** for the foil-shaped body **10** that is substantially parallel to the rotation axis **X** of the flap **4.**

[0048] As regards the constraining means **12,** it can be observed, always in Figures 6 and 7, that they comprise a spring lock **17** provided with a latch **18** that can be connected with the operating means **7** of the flap **4** and cooperates with counteracting means **22** that lock the stem **16** and prevent it from rotating when the flap **4** is closed.

[0049] In particular, it can be noted that the latch **18** can be connected to the operating means **7** through a first tie element **19,** preferably but not necessarily consisting of a chain or a metal cable, while the counteracting means **22** comprise a threaded bar **20** screwed into the stem **16** and having the head **20a** that cooperates with the free end **18a** of the latch **18.**

[0050] The latch **18,** in particular, is elastically yielding, being housed inside a case **21** in which a spring, not illustrated, makes its movement elastic when it is moved by the first tie element **19,** as will be described below.

[0051] As regards the operating means **7** that serve to rotate the flap **4** around the rotation axis **X** defined by the hinges **6,** they comprise an actuator **25** having the body **26** hinged to the fixed frame **3** and the end of the rod **27** constrained to the movable sash **5** by means of a lever **28.**

[0052] The latter, visible also in Figures 8 and 9, is provided with a centre pin **28a** hinged to the movable sash **5** and with a first end **28b** hinged to the end of the rod **27.**

[0053] The second end **28c** of the lever **28,** instead, is connected to the first tie element **19** and also to a second tie element **30,** the latter being connected to the coupling and release means **8.**

[0054] Preferably but not necessarily both the tie elements **19** and **30** consist of a chain or a mechanical cable.

[0055] Regarding the coupling and release means **8,** they comprise, as shown in the already mentioned Figures 2, 6, 7, 13 and 14, a manoeuvring rod **40** applied to the opening upper edge **5a** of the movable sash **5,** to which one or more springs **41** are associated, which make the rotation of the manoeuvring rod **40** elastic.

[0056] Two beak-like elements **42** are fixed in the manoeuvring rod **40** and are suited to interact with corresponding coupling elements **43** attached to the fixed frame **3** and visible in particular in Figures 2, 5, 8 and 10.

[0057] It is also possible to observe the presence of means for fixing the second tie element **30** to the manoeuvring rod **40** that, as shown in particular in Figures 7 and 12, preferably but not necessarily comprise a screw **35** screwed into a sleeve **36** externally coaxial with the manoeuvring rod **40.**

[0058] It is finally possible to observe the presence of a damper **50** interposed between the fixed frame **3** and the movable sash **5** at the level of the operating means **7** and in particular of the actuator **25.**

[0059] Operatively, when the smoke and heat vent **2** is arranged in the closed position, the deflector barrier **1** is arranged as shown in Figures 1, 3 and 5, with the foil-shaped body **10** substantially parallel to the flap **4** and completely recessed with respect to the upper edge **5a** of the movable sash **5.**

[0060] In this position the spring lock **17** belonging to the constraining means **12** keeps the foil-shaped body **10** in position, as the elastically yielding latch **18,** as shown in Figure 3, constrains the head **20a** of the threaded bar **20** and prevents the rotation of the rod **16.**

[0061] In fact, the linear actuator **13** that makes up the actuator means **11** is a compressed-gas cylinder and the force that it exerts against the connecting rod **15** is counteracted by the interference of the latch **18** against the head **20a** of the threaded counteracting bar **20.**

[0062] Therefore, when the flap **4** is closed, the deflector barrier **1** is kept in the rest position with the foil-shaped body **10** contained within the perimeter of the flap itself.

[0063] In case of emergency, the actuator **25** that makes up the operating means **7** thrusts the lever **28** and, from the position shown in Figures 5 and 6, through a rotation around the centre pin **28a** with which it is hinged to the movable sash **5,** arranges it in the position visible in Figures 8 and 9.

[0064] The rotation of the lever **28** tightens the first tie element **19** and also the second tie element **30,** both fixed to the second end **28c,** which respectively cause:

- the release of the constraining means **12** due to the shift of the latch **18** that frees the threaded bar **20** and arranges the foil-shaped body **10** in the operating position shown in Figures 8 and 9 through the rotation of the rod **16** due to the thrusting action of the linear actuator **13;**
- the rotation of the manoeuvring rod **40** that releases the beak-like elements **42** from the corresponding coupling elements **43.**

[0065] At the same time as these actions deriving from

the tightening of the tie elements occur, the actuator **25** exerts a thrusting action on the flap **4** that opens with a rotation around the rotation axis **X** until reaching the configuration shown in the already mentioned Figures 8 and 9.

[0066] The objects of the invention are thus achieved, as the deflector barrier **1,** and in particular the foil-shaped body **10** that belongs to it, projects from the flap **4** only when the flap **4** is open and this takes place automatically when the flap is opened.

[0067] Furthermore, the deflector barrier that is the subject of the invention carries out its natural function of deviating the air flow upwards, preventing it from getting into the room and thus avoiding a dangerous counter current that would negatively affect the extraction of smoke and heat from the room.

[0068] The flap **4** is closed again manually by an operator, once the deflector barrier **1** has been placed back in the rest position with the foil-shaped body **10** adhering to the flap **4.**

[0069] This operation is carried out manually by applying a manual rotation to the foil-shaped body **10** in the direction indicated by the arrows, as shown in Figures 10 and 11, until restoring the condition in which the threaded bar **20** has its head **20a** constrained to the latch **18** in the position shown in Figure 7.

[0070] For this purpose, as shown in Figure 14, the free end **18a** of the latch **18** has a curved surface that, coming into contact with the head **20a** of the threaded bar **20,** generates an axial component that pushes the latch **18** downwards in the direction indicated by the arrow, until it is overtaken by the head **20a** of the threaded bar **20.**

[0071] At the end of the rotation and when the head **20a** of the threaded bar **20** returns to be positioned under the latch, as shown in Figures 3, 6 and 7, the deflector bar **1** returns to the rest condition shown in fact in Figures 13 and **14.** At this point the flap **4** can be closed again through the manual intervention of the operator who rotates it until engaging the beak-like elements **42** with the coupling elements **43.**

[0072] The presence of a damper **50** interposed between the fixed frame **3** and the movable sash **5** serves as a braking element during the opening of the flap **4.**

[0073] A construction variant of the deflector barrier of the invention indicated by **60** is visible in Figures 15 and 16, where it can be observed that it differs from the embodiment just described only due to the fact that the actuator means, indicated as a whole by **61,** comprise a linear actuator **62** having the rod **63** associated with the foil-shaped body **64,** which is constrained to guide means **65** that define a sliding plane substantially parallel to the surface of the flap **66** of the vent **67.**

[0074] In particular, the guide means **65** are constituted by two U-shaped elements **65a** fixed at the sides of the movable sash **68** of the flap **66** and arranged on its internal part.

[0075] According to a further construction variant of the deflector barrier of the invention, indicated by **70** and illustrated in Figures 17 and 18, the actuator means **71** also in this case comprise at least one linear actuator **72** having the rod **73** associated with the foil-shaped body **74,** which is still constrained to guide means **75** fixed at the sides of the movable sash **78** and suited to define a sliding plane substantially parallel to the surface of the flap **76** of the vent **77,** but are arranged outside the flap itself and therefore face towards the outside. In this case, as can be observed, the linear actuator **72** is arranged outside the flap **76** and is housed inside a seat **79** specifically created therein.

[0076] A further construction variant, not illustrated herein, is also possible, in which the deflector barrier comprises a foil-shaped body, even in this case associated with a bar that sets it rotating, which in the rest position is arranged opposite the surface of the flap that faces towards the outside.

[0077] The above clearly shows that the deflector barrier that is the subject of the invention achieves all the set objects.

[0078] In particular, the invention achieves the object to provide a deflector barrier that projects from the flap of the vent only when the flap is open.

[0079] Vice versa, when the flap is closed, the deflector barrier is in the rest position, completely contained within the perimeter of the flap.

[0080] Furthermore, the deflector barrier automatically moves to the operating position, projecting from the upper edge of the flap, only when the flap is opened.

[0081] Advantageously, the deflector barrier that is the subject of the invention can be applied to the flap of any type of smoke and heat vent available on the market. Finally, the deflector barrier of the invention, in addition to the advantages connected to the achievement of the set objects, also serves its natural function of allowing the optimal extraction of smoke and heat in case of emergency, preventing an air flow that hits the skylight frontally when this is open from creating an antagonist flow that hinders or even prevents the extraction of smoke and heat.

[0082] In the construction stage the deflector barrier of the invention can be subjected to modifications intended to improve its functionality or to make its construction and/or assembly more economical.

[0083] Said modifications and variants, even if they are neither described herein nor illustrated in the drawings, must all be considered protected by the present patent, provided that they fall within the scope of the following claims.

[0084] In the cases where the technical characteristics illustrated in the claims are followed by references, these have been added only with the aim to facilitate the comprehension of the claims themselves, and therefore said references do not have any limiting effect on the degree of protection to be granted to each element they identify only by way of example.

Claims

1. Deflector barrier (1; 60; 70) for smoke and heat vents (2; 67; 77), said smoke and heat vents comprising:

   - a fixed frame (3) applied to the perimeter of an opening (A) made in a wall (P) of a building and communicating with the inside of one or more rooms;
   - a flap (4; 66; 76) provided with a movable sash (5; 68; 78) associated with said fixed frame (3) via hinge means (6) that define a rotation axis (X) for opening and closing the flap (4; 66; 76);
   - operating means (7) for the rotation of said flap (4; 66; 76) around said rotation axis (X);
   - means (8) for coupling and releasing said movable sash (5; 68; 78) with/from said fixed frame (3),

   characterized in that said deflector barrier comprises:

   - a foil-shaped body (10; 64; 74) that can be associated with said movable sash (5; 68; 78) on the opposite side of said rotation axis (X);
   - actuator means (11; 61; 71) that can be associated with said movable sash (5; 68; 78) and are suited to arrange said foil-shaped body (10; 64; 74) in a position projecting from said movable sash (5; 68; 78) when said flap (4; 66; 76) is open;
   - constraining means (12) that can be associated with said movable sash (5; 68; 78) and interact with said actuator means (11; 61; 71) when said flap (4; 66; 76) is closed, in order to retain said foil-shaped body (10; 64; 74) in a recessed position with respect to said movable sash (5; 68; 78).

2. Deflector barrier (1) according to claim 1, **characterized in that** said actuator means (11) comprise at least one linear actuator (13) having a rod (14) associated with a connecting rod (15) connected to a stem (16) that supports said foil-shaped body (10), said stem (16) being suited to define for said foil-shaped body (10) a rotation axis (X') substantially parallel to the rotation axis (X) of said flap (4).

3. Deflector barrier (60; 70) according to claim 1, **characterized in that** said actuator means (61; 71) comprise at least one linear actuator (62; 72) having a rod (63; 73) associated with said foil-shaped body (64; 74), said foil-shaped body being constrained to guide means (65; 75) suited to define a sliding plane substantially parallel to the surface of said flap (66; 76).

4. Deflector barrier (1) according to claim 2, **characterized in that** said constraining means (12) comprise a spring lock (17) having an elastically yielding latch (18) that can be connected to said operating means (7) and is suited to cooperate with counteracting means (22) in order to lock the rotation of said stem (16) when said flap (4) is closed.

5. Deflector barrier (1) according to claim 4, **characterized in that** said latch (18) can be connected to said operating means (7) via a first tie element (19).

6. Deflector barrier (1) according to claim 4, **characterized in that** said counteracting means (22) comprise a threaded bar (20) screwed in said stem (16) and having a head (20a) that cooperates with the free end (18a) of said latch (18).

7. Deflector barrier (1; 60; 70) according to any of the claims 2 to 6, **characterized in that** said linear actuator (13; 62; 72) is of the type with compressed gas.

8. Smoke and heat vent (2; 67; 77) comprising:

   - a fixed frame (3) applied to the perimeter of an opening (A) made in a wall (P) of a building and communicating with the inside of one or more rooms;
   - a flap (4; 66; 76) provided with a movable sash (5; 68; 78) associated with said fixed frame (3) via hinge means (6) that define a rotation axis (X) for opening and closing the flap (4; 66; 76);
   - operating means (7) for the rotation of said flap (4; 66; 76) around said rotation axis (X);
   - means (8) for coupling and releasing said movable sash (5; 68; 78) with/from said fixed frame (3),

   characterized in that it comprises a deflector barrier (10; 60; 70) according to any of the preceding claims.

9. Smoke and heat vent (2; 67; 77) according to claims 8 and 5, **characterized in that** said operating means (7) comprise an actuator (25) having a body (26) hinged to said fixed frame (3) and the end of a rod (27) constrained to said movable sash (5; 68; 78) through a lever (28) having a centre pin (28a) hinged to said movable sash (5; 68; 78), a first end (28b) hinged to said end of said rod (27) and a second opposite end (28c) connected to said first tie element (19) and to a second tie element (30) connected to said coupling and release means (8).

10. Smoke and heat vent (2; 67; 77) according to claim 9, **characterized in that** said coupling and release means (8) comprise:

- a manoeuvring rod (40) rotatingly applied to the upper edge (5a) of said movable sash (5; 68; 78) on the opposite side of said rotation axis (X) of said flap (4; 66; 76);
- one or more springs (41) associated with said manoeuvring rod (40);
- at least two beak-like elements (42) fixed to said manoeuvring rod (40) and suited to interact with corresponding coupling elements (43) attached to said fixed frame (3);
- means (35) for fixing said second tie element (30) to said manoeuvring rod (40).

11. Smoke and heat vent (2; 67; 77) according to any of claims 8 to 10, **characterized in that** it comprises at least one damper (50) interposed between said fixed frame (3) and said movable sash (5; 68; 78).

Patentansprüche

1. Deflektorbarriere (1; 60; 70) für Rauch- und Hitzeabzüge (2; 67; 77), wobei die besagten Rauch- und Hitzeabzüge Folgendes umfassen:

- einen feststehenden Rahmen (3), am Umfang einer Öffnung (A) in einer Wand (P) eines Gebäudes befestigt, welche mit dem Inneren eines oder mehrerer Räume kommuniziert;
- eine Klappe (4; 66; 76) mit einem beweglichen Schieberahmen (5; 68; 78), der mittels Scharniermitteln (6), die eine Drehachse (X) definieren, um die Klappe (4; 66; 76) zu öffnen und zu schließen, mit dem besagten, feststehenden Rahmen (3) verbunden ist;
- Betätigungsmittel (7) zum Drehen der besagten Klappe (4; 66; 76) um die besagte Drehachse (X);
- Mittel (8) zum Kuppeln und Lösen des besagten, beweglichen Schieberahmens (5; 68; 78) mit/von dem besagten, feststehenden Rahmen (3),

dadurch gekennzeichnet, dass die besagte Deflektorbarriere Folgendes umfasst:

- einen blattförmigen Körper (10; 64; 74), der an der der besagten Drehachse (X) entgegengesetzten Seite mit dem besagten, beweglichen Schieberahmen (5; 68; 78) verbunden werden kann;
- Antriebsmittel (11; 61; 71), die mit dem besagten, beweglichen Schieberahmen (5; 68; 78) verbunden werden können und geeignet sind, den besagten, blattförmigen Körper (10; 64; 74) in einer aus dem besagten, beweglichen Schieberahmen (5; 68; 78) herausragenden Position anzuordnen, wenn die besagte Klappe (4; 66; 76) geöffnet ist;
- Befestigungsmittel (12), die mit dem besagten, beweglichen Schieberahmen (5; 68; 78) verbunden werden können und mit den besagten Antriebsmitteln (11; 61; 71) interagieren, wenn die besagte Klappe (4; 66; 76) geschlossen ist, um den besagten, blattförmigen Körper (10; 64; 74) in einer bezüglich des besagten, beweglichen Schieberahmens (5; 68; 78) zurückgefahrenen Position zu halten.

2. Deflektorbarriere (1) gemäß Patentanspruch 1, **dadurch gekennzeichnet, dass** die besagte Antriebsmittel (11) wenigstens einen Linearantrieb (13) mit einer Stange (14) umfassen, welche mit einer Verbindungsstange (15) verbunden ist, die an einen Schaft (16) angeschlossen ist, der den besagten, blattförmigen Körper (10) stützt, wobei der besagte Schaft (16) dazu geeignet ist, für den besagten blattförmigen Körper (10) eine Drehachse (X') zu definieren, die im Wesentlichen parallel zu der Drehachse (X) der besagten Klappe (4) liegt.

3. Deflektorbarriere (60; 70) gemäß Patentanspruch 1, **dadurch gekennzeichnet, dass** die besagten Antriebsmittel (61; 71) wenigstens einen Linearantrieb (62; 72) mit einer Stange (63; 73) umfassen, welche mit dem besagten, blattförmigen Körper (64; 74) verbunden ist, wobei der besagte, blattförmige Körper an Führungsmitteln (65; 75) befestigt ist, die geeignet sind, eine Gleitfläche zu definieren, die im Wesentlichen parallel zu der Oberfläche der besagten Klappe (66; 76) liegt.

4. Deflektorbarriere (1) gemäß Patentanspruch 2, **dadurch gekennzeichnet, dass** die besagten Befestigungsmittel (12) ein Schnappschloss (17) mit einem elastisch nachgebenden Riegel (18) umfassen, der an die besagten Betätigungsmittel (7) angeschlossen werden kann und geeignet ist, mit entgegenwirkenden Mitteln (22) zusammenzuwirken, um die Drehung des besagten Schafts (16) zu blockieren, wenn die besagte Klappe (4) geschlossen ist.

5. Deflektorbarriere (1) gemäß Patentanspruch 4, **dadurch gekennzeichnet, dass** der besagte Riegel (18) mittels eines ersten Zugelements (19) an den besagten Betätigungsmitteln (7) angeschlossen werden kann.

6. Deflektorbarriere (1) gemäß Patentanspruch 4, **dadurch gekennzeichnet, dass** die besagten, entgegenwirkenden Mittel (22) eine Gewindestange (20) umfassen, die in den besagten Schaft (16) eingeschraubt ist und einen Kopf (20a) aufweist, der mit dem freien Ende (18a) des besagten Riegels (18) zusammenwirkt.

7. Deflektorbarriere (1; 60; 70) gemäß eines jeden der Patentansprüche 2 bis 6, **dadurch gekennzeichnet, dass** der besagte Linearantrieb (13; 62; 72) vom Typ mit Druckgas ist.

8. Rauch- und Hitzeabzug (2; 67; 77), Folgendes umfassend:

- einen feststehenden, am Umfang einer Öffnung (A) in einer Wand (P) eines Gebäudes befestigten Rahmen (3), der mit dem Inneren eines oder mehrerer Räume kommuniziert;
- eine Klappe (4; 66; 76) mit einem beweglichen Schieberahmen (5; 68; 78), der mittels Scharniermitteln (6), die eine Drehachse (X) definieren, um die Klappe (4; 66; 76) zu öffnen und zu schließen, mit dem besagten, feststehenden Rahmen (3) verbunden ist;
- Betätigungsmittel (7) zum Drehen der besagten Klappe (4; 66; 76) um die besagte Drehachse (X);
- Mittel (8) zum Kuppeln und Lösen des besagten, beweglichen Schieberahmens (5; 68; 78) mit/von dem besagten, feststehenden Rahmen (3),

dadurch gekennzeichnet, dass er eine Deflektorbarriere (10; 60; 70) gemäß eines jeden der vorstehenden Patentansprüche umfasst.

9. Rauch- und Hitzeabzug (2; 67; 77) gemäß den Patentansprüchen 8 und 5, **dadurch gekennzeichnet, dass** die besagten Betätigungsmittel (7) einen Antrieb (25) mit einem Körper (26) umfassen, der an dem besagten, feststehenden Rahmen (3) angelenkt ist, und mit dem Ende einer Stange (27) die an dem besagten, beweglichen Schieberahmen (5; 68; 78) befestigt ist mittels eines Hebels (28) mit einem mittleren Zapfen (28a), der an dem besagten, beweglichen Schieberahmen (5; 68; 78) angelenkt ist, und mit einem ersten Ende (28b), das an dem besagten Ende der besagten Stange (27) angelenkt ist und einem zweiten, entgegengesetzten Ende (28c), das an dem besagten, ersten Zugelement (19) angeschlossen ist sowie an einem zweiten Zugelement (30), das mit den besagten Kupplungs- und Lösemitteln (8) verbunden ist.

10. Rauch- und Hitzeabzug (2; 67; 77) gemäß Patentanspruch 9, **dadurch gekennzeichnet, dass** die besagten Kupplungs- und Lösemittel (8) Folgendes umfassen:

- eine drehend an der der besagten Drehachse (X) der besagten Klappe (4; 66; 76) entgegengesetzten Seite an der oberen Kante (5a) des besagten, beweglichen Schieberahmens (5; 68; 78) befestigte Manöverstange (40);
- eine oder mehrere Federn (41), die mit der besagten Manöverstange (40) verbunden sind;
- wenigstens zwei an der besagten Manöverstange (40) befestigte, schnabelförmige Elemente (42), die geeignet sind, mit entsprechenden, an dem besagten, feststehenden Rahmen (3) befestigten Kupplungselementen (43) zu interagieren;
- Mittel (35) zur Befestigung des besagten zweiten Zugelements (30) an der besagten Manöverstange (40).

11. Rauch- und Hitzeabzug (2; 67; 77) gemäß eines jeden der Patentansprüche 8 bis 10, **dadurch gekennzeichnet, dass** er zwischen dem besagten, feststehenden Rahmen (3) und dem besagten, beweglichen Schieberahmen (5; 68; 78) wenigstens einen Stoßdämpfer (50) umfasst.

Revendications

1. Barrière déflectrice (1; 60; 70) pour évents de fumée et de chaleur (2; 67; 77), lesdits évents de fumée et de chaleur comprenant:

- un châssis fixe (3) appliqué au périmètre d'une ouverture (A) réalisée sur une paroi (P) appartenant à un édifice et communiquant avec l'intérieur d'une ou plusieurs pièces;
- un volet (4; 66; 76) doté d'un châssis mobile (5; 68; 78) associé audit châssis fixe (3) par des moyens à charnière (6) qui définissent un axe de rotation (X) pour l'ouverture et la fermeture du volet (4; 66; 76);
- des moyens d'actionnement (7) pour la rotation dudit volet (4; 66; 76) autour dudit axe de rotation (X);
- des moyens (8) d'accrochage et de décrochage dudit châssis mobile (5; 68; 78) avec ledit/dudit châssis fixe (3),

caractérisée en ce que ladite barrière déflectrice comprend:

- un corps laminaire (10; 64; 74) qui peut être associé audit châssis mobile (5; 68; 78) du côté opposé dudit axe de rotation (X);
- des moyens actionneurs (11; 61; 71) qui peuvent être associés audit châssis mobile (5; 68; 78) et qui sont aptes à disposer ledit corps laminaire (10; 64; 74) dans une position saillante dudit châssis mobile (5; 68; 78) quand ledit volet (4; 66; 76) est ouvert;
- des moyens de contrainte (12) qui peuvent être associés audit châssis mobile (5; 68; 78) et qui peuvent interagir avec lesdits moyens actionneurs (11; 61; 71) quand ledit volet (4; 66; 76)

est fermé de façon à maintenir ledit corps laminaire (10; 64; 74) dans une position rentrée par rapport audit châssis mobile (5; 68; 78).

2. Barrière déflectrice (1) selon la revendication 1, **caractérisée en ce que** lesdits moyens actionneurs (11) comprennent au moins un actionneur linéaire (13) ayant une barre (14) associée à une bielle (15) reliée à une tige (16) qui soutient ledit corps laminaire (10), ladite tige (16) étant apte à définir pour ledit corps laminaire (10) un axe de rotation (X') essentiellement parallèle à l'axe de rotation (X) dudit volet (4).

3. Barrière déflectrice (60; 70) selon la revendication 1, **caractérisée en ce que** lesdits actionneurs (61; 71) comprennent au moins un actionneur linéaire (62; 72) ayant une barre (63; 73) associée audit corps laminaire (64; 74), ledit corps laminaire étant lié à des moyens de guidage (65; 75) aptes à définir un plan de coulissement essentiellement parallèle à la surface dudit volet (66; 76).

4. Barrière déflectrice (1) selon la revendication 2, **caractérisée en ce que** lesdits moyens de contrainte (12) comprennent une serrure à ressort (17) avec un verrouillage (18) cédant élastiquement, qui peut être relié auxdits moyens d'actionnement (7) et apte à coopérer avec lesdits moyens de contraste (22) pour bloquer la rotation de ladite tige (16) quand ledit volet (4) est fermé.

5. Barrière déflectrice (1) selon la revendication 4, **caractérisée en ce que** ledit verrouillage (18) peut être relié auxdits moyens d'actionnement (7) par un premier élément tirant (19).

6. Barrière déflectrice (1) selon la revendication 4, **caractérisé en ce que** lesdits moyens de contraste (22) comprennent une barre filetée (20) vissée sur ladite tige (16) et ayant une tête (20a) qui coopère avec l'extrémité libre (18a) dudit verrouillage (18).

7. Barrière déflectrice (1; 60; 70) selon l'une quelconque des revendications de 2 à 6, **caractérisée en ce que** ledit actionneur linéaire (13; 62; 72) est du type à gaz comprimé.

8. Évent de fumée et de chaleur (2; 67; 77) comprenant:

- un châssis fixe (3) appliqué au périmètre d'une ouverture (A) réalisée sur une paroi (P) appartenant à un édifice et communiquant avec l'intérieur d'une ou plusieurs pièces;
- un volet (4; 66; 76) doté d'un châssis mobile (5; 68; 78) associé audit châssis fixe (3) par des moyens à charnière (6) qui définissent un axe de rotation (X) pour l'ouverture et la fermeture du volet (4; 66; 76);
- des moyens d'actionnement (7) pour la rotation dudit volet (4; 66; 76) autour dudit axe de rotation (X);
- des moyens (8) d'accrochage et décrochage dudit châssis mobile (5; 68; 78) avec ledit/dudit châssis fixe (3),

caractérisé en ce qu'il comprend une barrière déflectrice (10; 60; 70) selon l'une quelconque des revendications précédentes.

9. Évent de fumée et de chaleur (2; 67; 77) selon les revendications 8 et 5, **caractérisé en ce que** lesdits moyens d'actionnement (7) comprennent un actionneur (25) ayant un corps (26) fixé par charnière audit châssis fixe (3) et l'extrémité d'une barre (27) bloquée audit châssis mobile (5; 68; 78) par un levier (28) ayant un pivot central (28a) fixé par charnière audit châssis mobile (5; 68; 78), une première extrémité (28b) fixée par charnière à ladite extrémité de ladite barre (27) et une deuxième extrémité opposée (28c) reliée audit premier élément tirant (19) et à un deuxième élément tirant (30) relié auxdits moyens d'accrochage et décrochage (8).

10. Évent de fumée et de chaleur (2; 67; 77) selon la revendication 9, **caractérisé en ce que** lesdits moyens d'accrochage et décrochage (8) comprennent:

- une barre de manoeuvre (40) appliquée de manière pivotante au bord supérieur (5a) dudit châssis mobile (5; 68; 78), du côté opposé dudit axe de rotation (X) dudit volet (4; 66; 76);
- un ou plusieurs ressorts (41) associés à ladite barre de manoeuvre (40);
- au moins deux becs (42) fixés à ladite barre de manoeuvre (40) et aptes à interagir avec des éléments d'accouplement correspondants (43) fixés audit châssis fixe (3);
- des moyens de fixation (35) dudit deuxième élément tirant (30) à ladite barre de manoeuvre (40).

11. Évent de fumée et de chaleur (2; 67; 77) selon l'une quelconque des revendications de 8 à 10, **caractérisé en ce qu**'il comprend au moins un amortisseur (50) interposé entre ledit châssis fixe (3) et ledit châssis mobile (5; 68; 78).

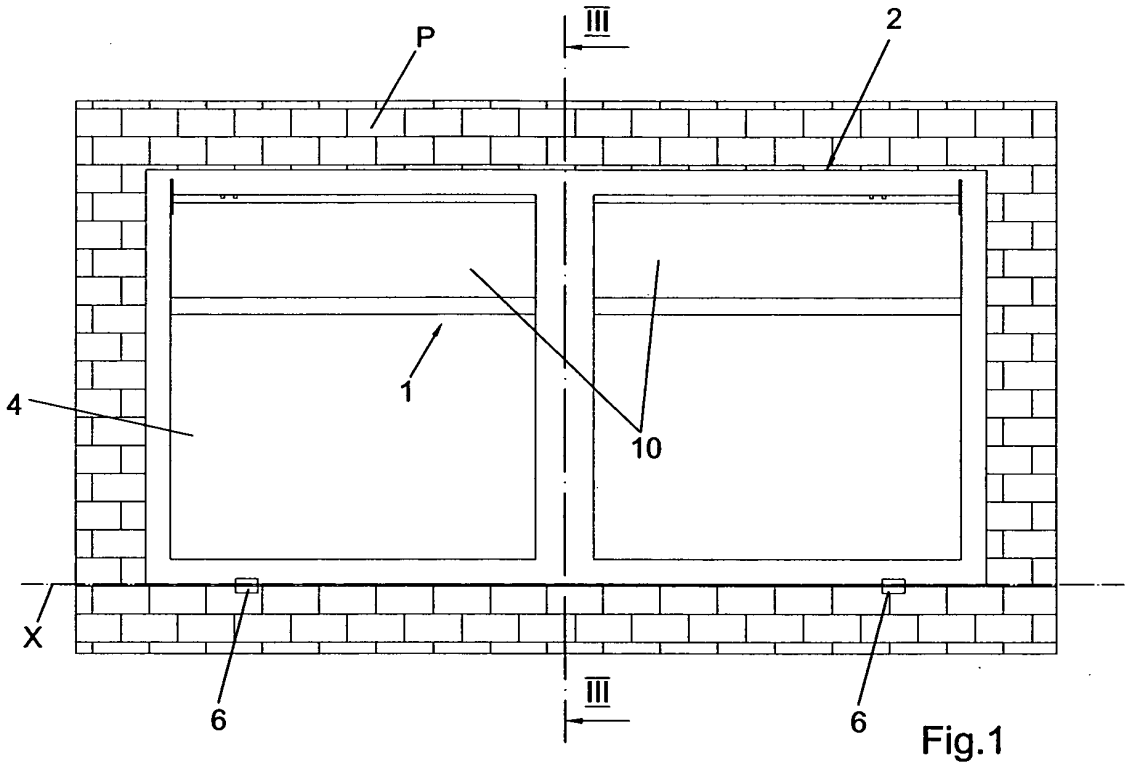


Fig.1

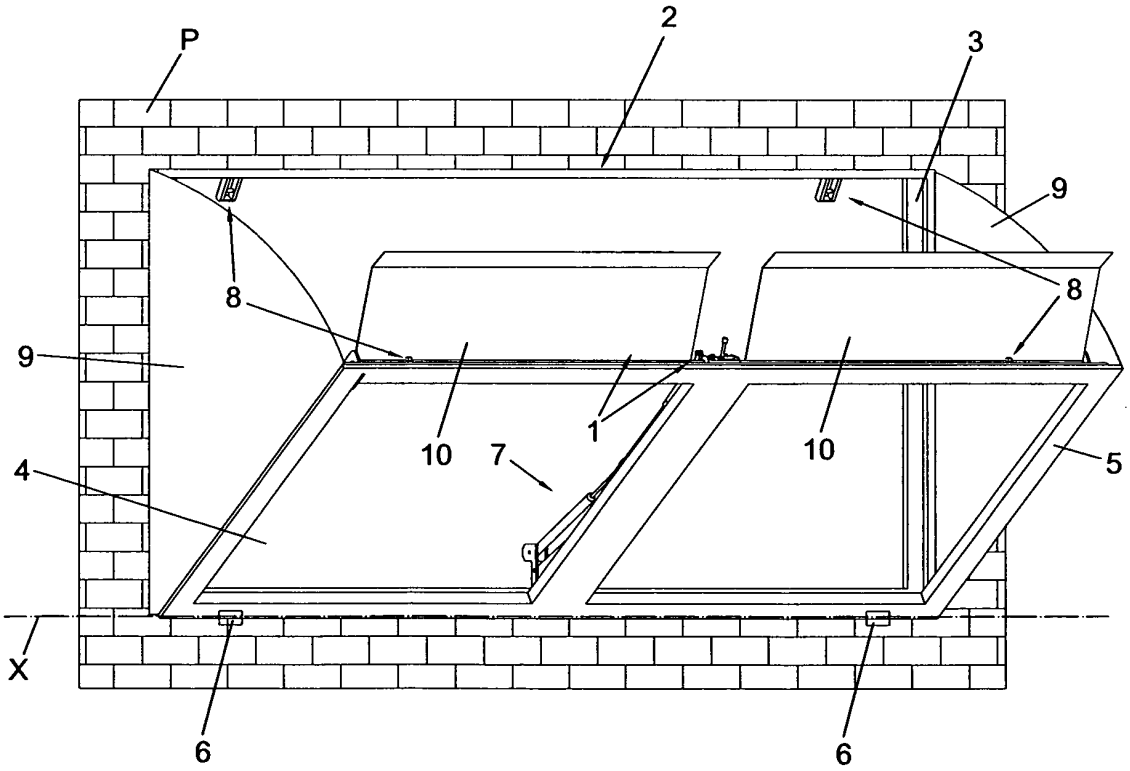


Fig.2

Fig.4

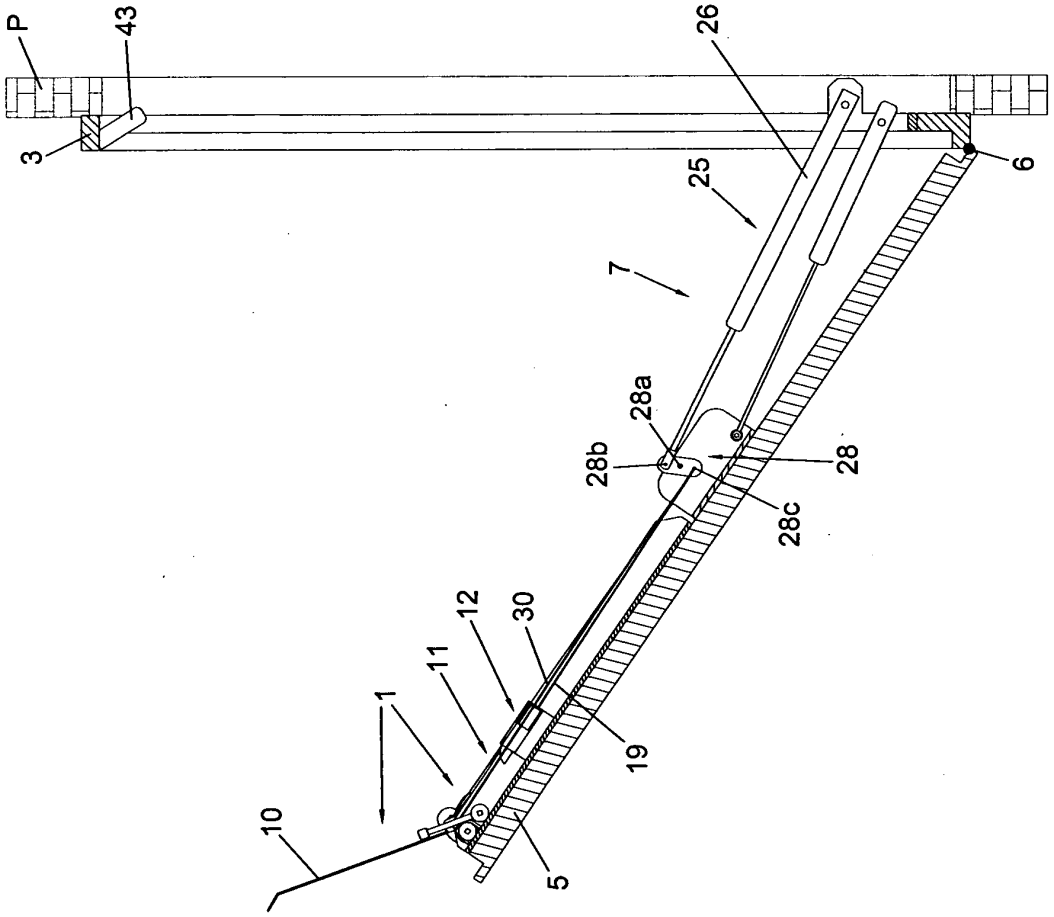
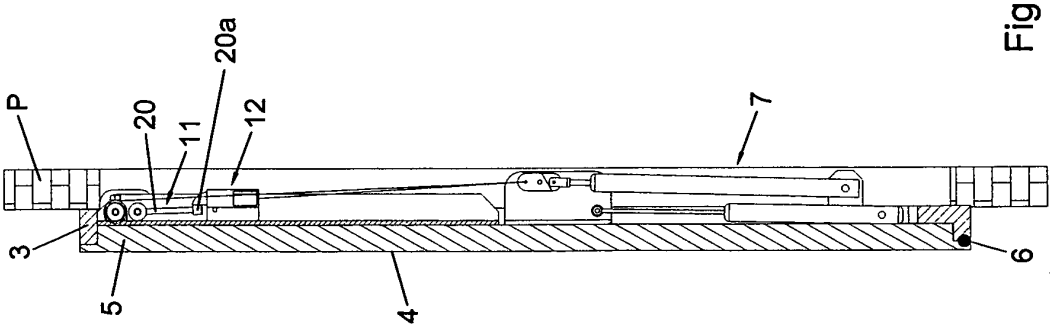


Fig.3



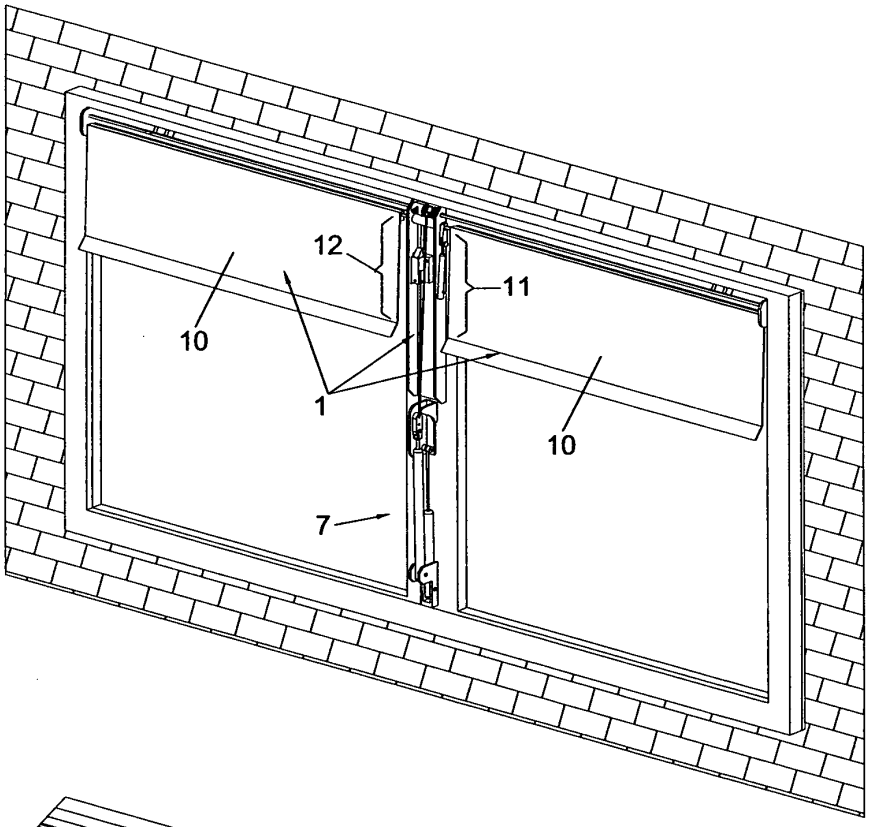


Fig.5

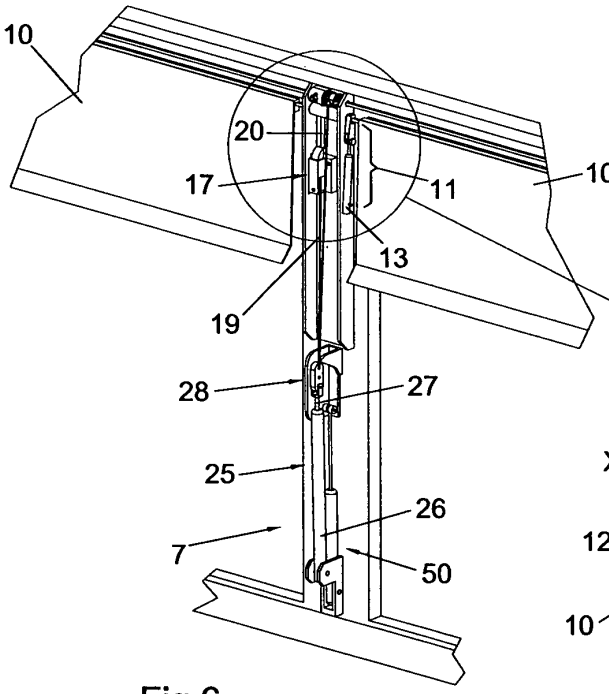


Fig.6

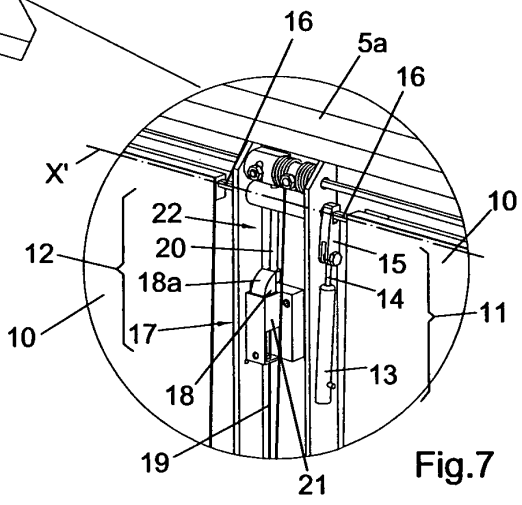


Fig.7

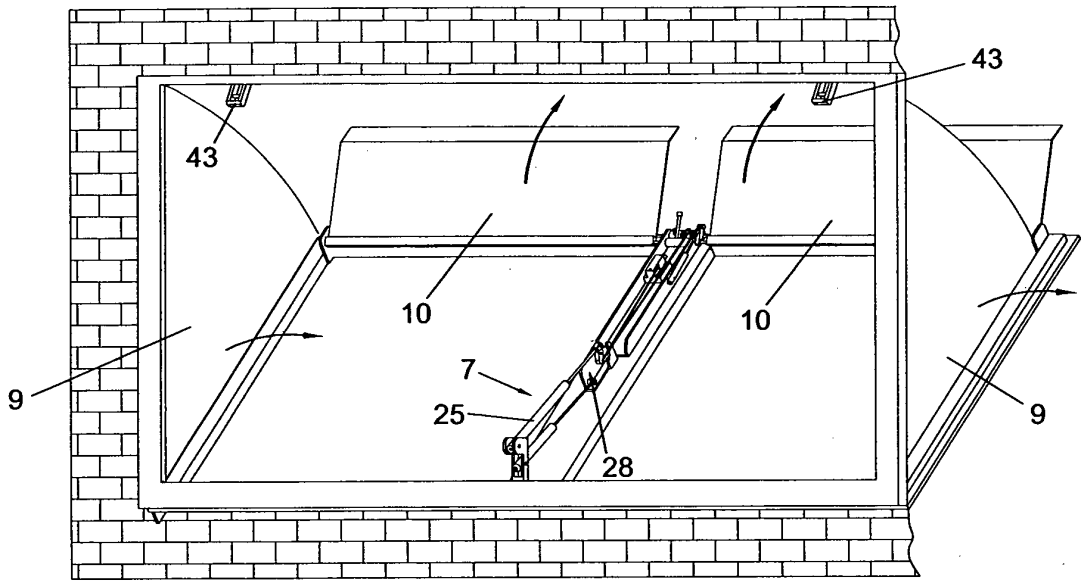


Fig.8

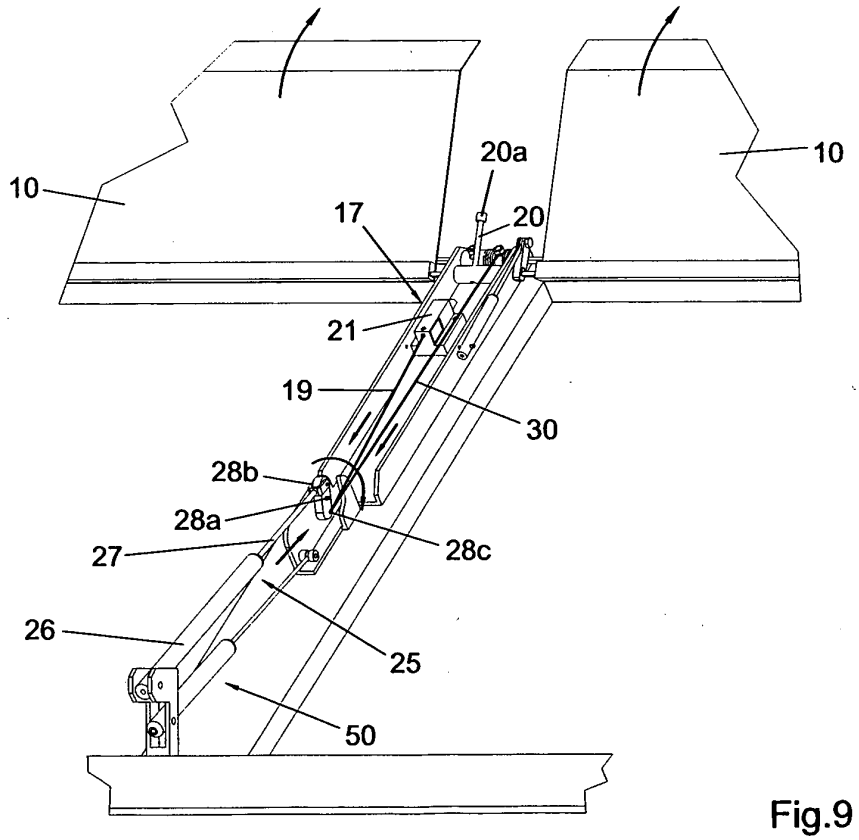


Fig.9

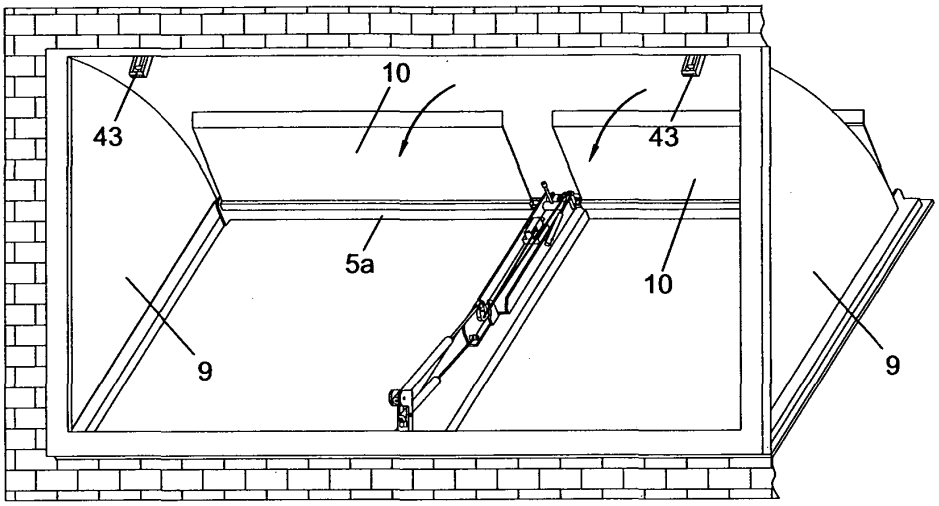


Fig.10

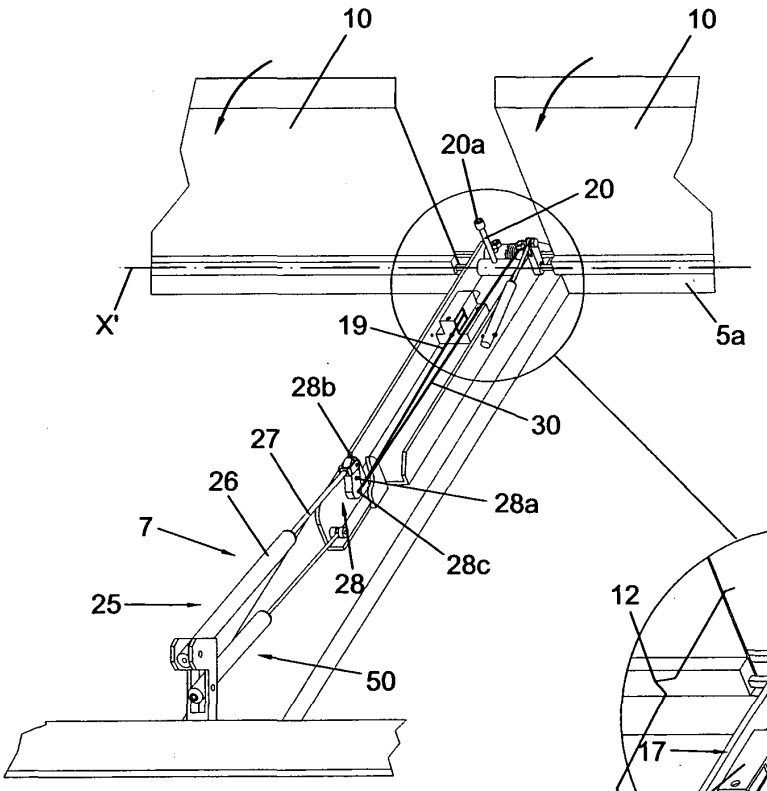


Fig.11

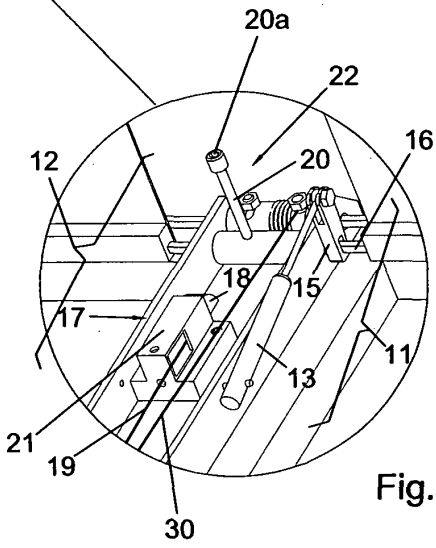


Fig.12

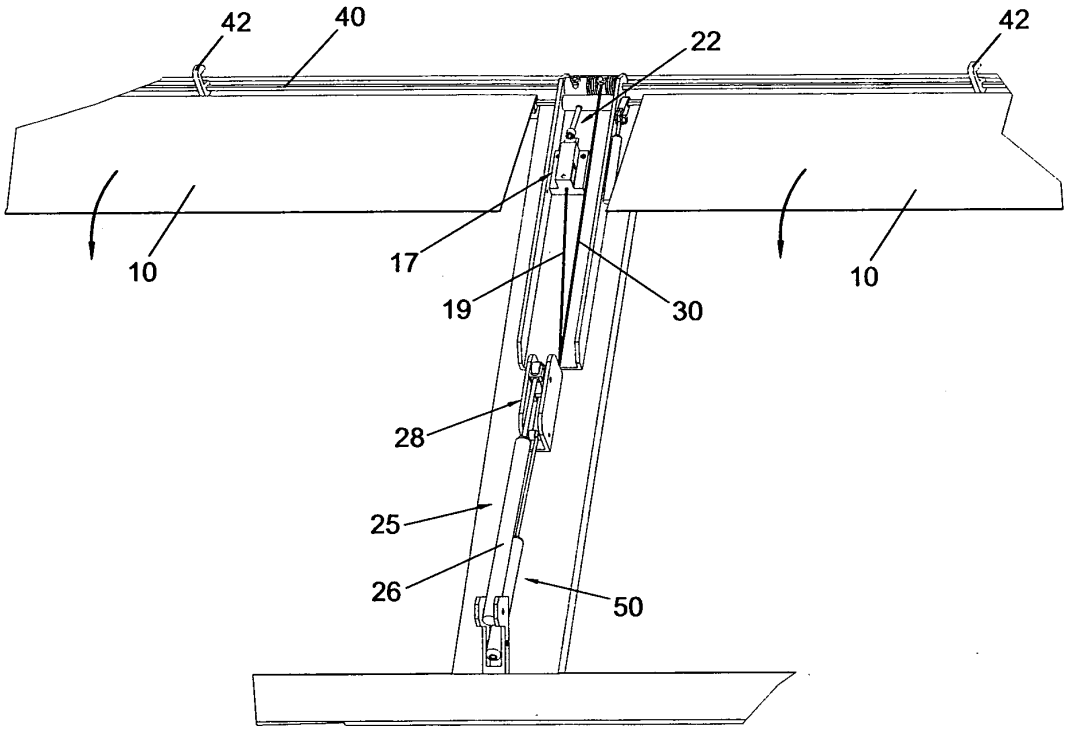

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Fig.13

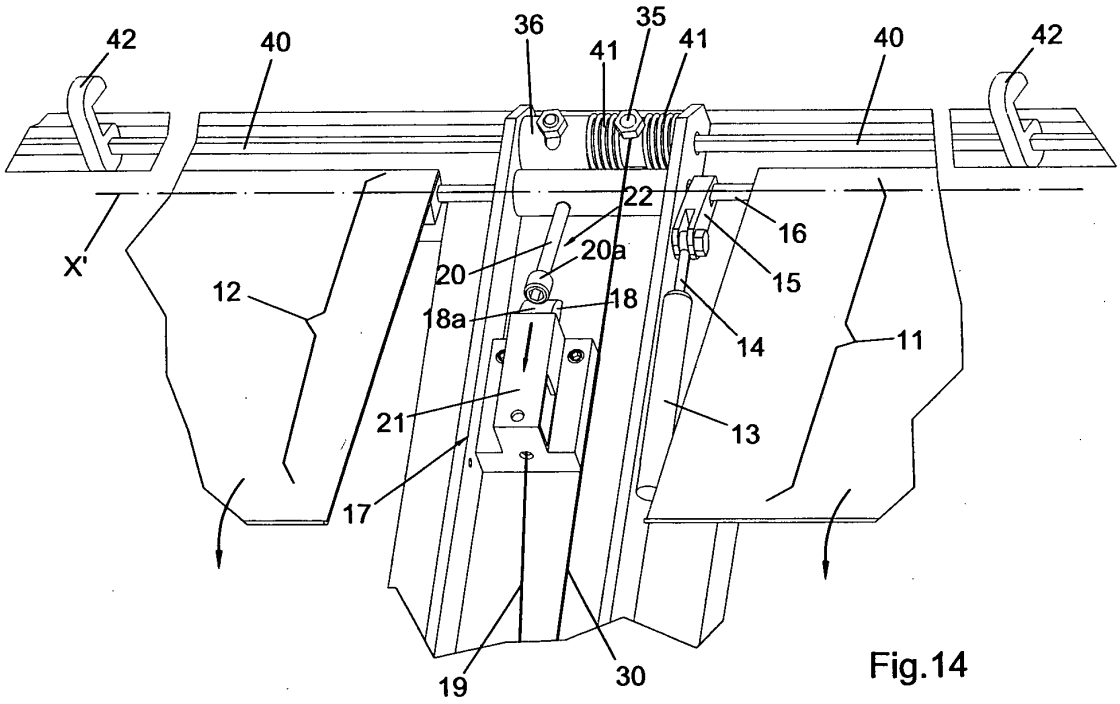

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Fig.14

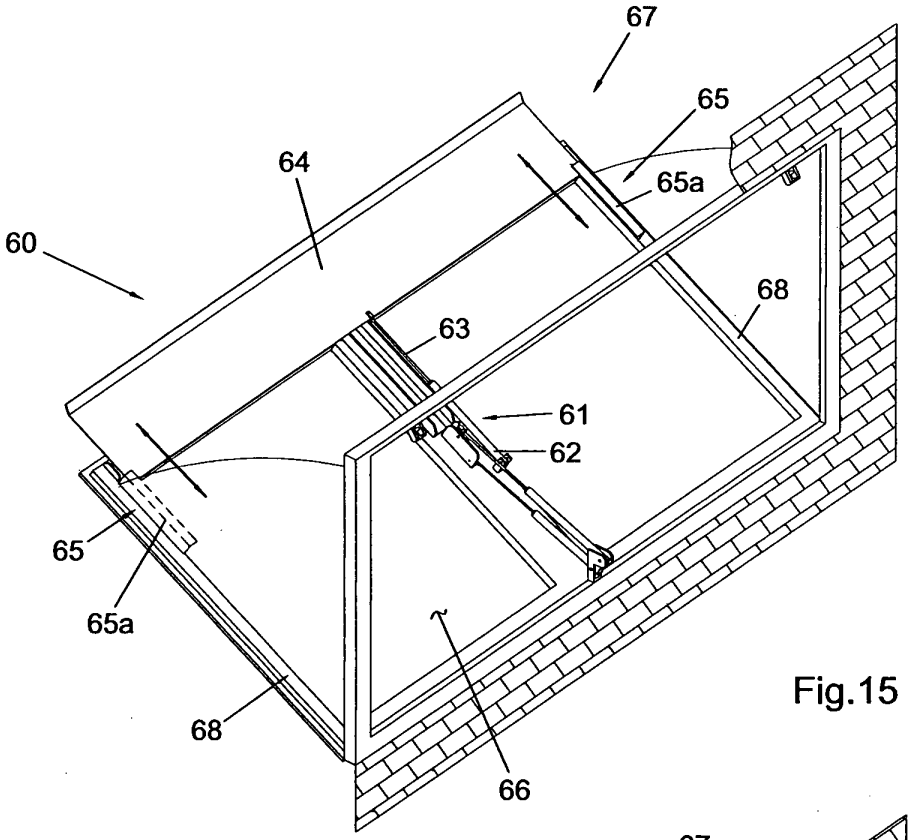


Fig.15

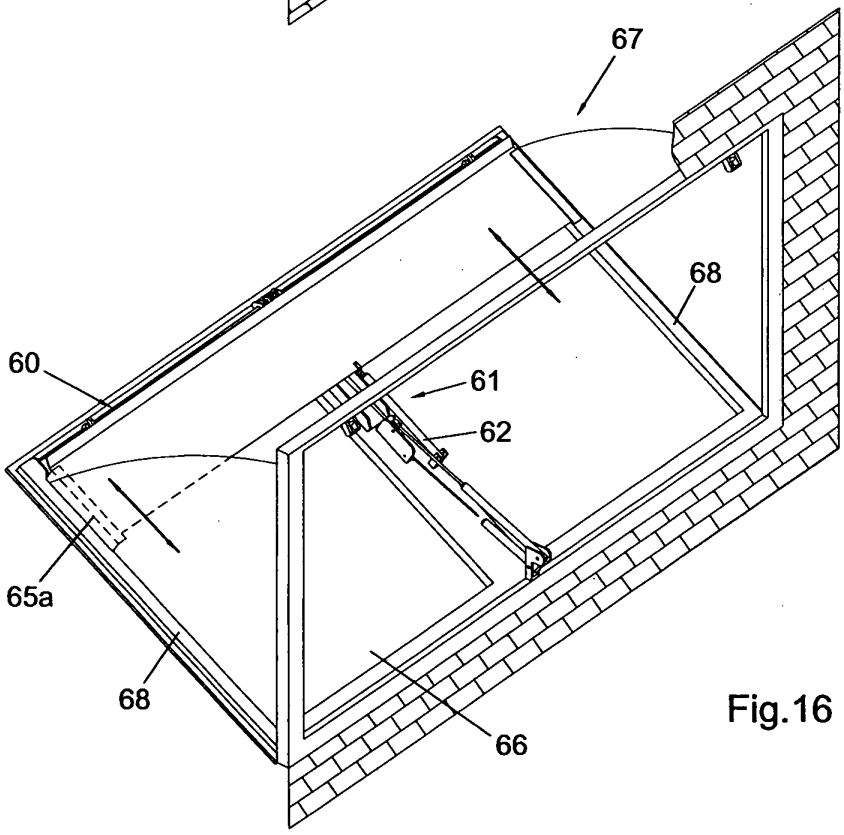


Fig.16

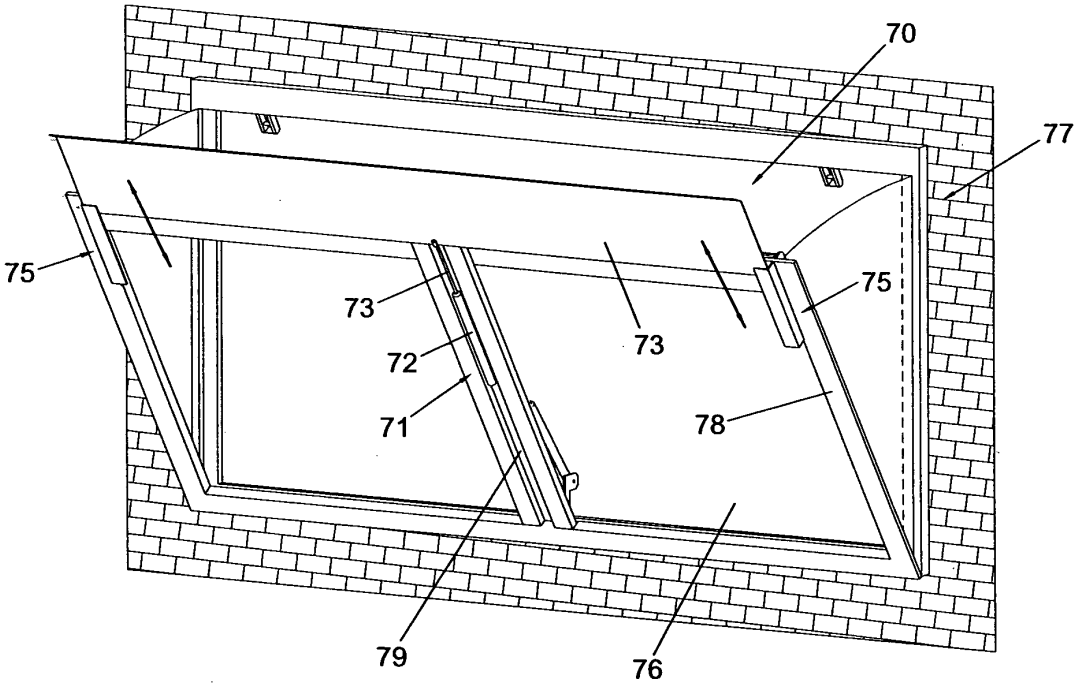


Fig.17

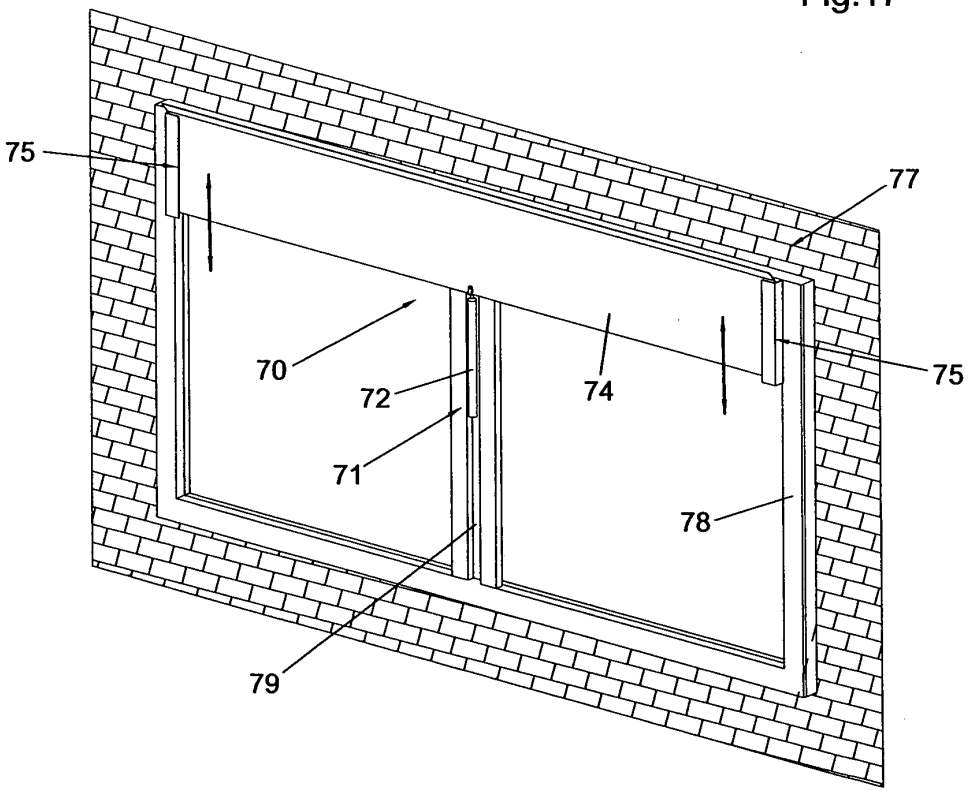


Fig.18

REFERENCES CITED IN THE DESCRIPTION

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- IT UNI9494 **[0006]**