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(54) **Energy saving blind**

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Store économe en énergie

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EP 2 431 563 B1

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Description

[0001] The present invention relates to roller-blind structure comprising a MSE-type window openable to the inside and an energy saving blind, comprising a tube being at its ends mounted in bearings, as well as a blind material having one of its ends fastened to this tube and being rollable around the tube, which blind material is intended in its unrolled state to cover the window to which the blind has been installed.

[0002] From the prior art conventional roller-blinds are known which are installed in bearings and fastened either to a wall above a window or to the inner surface of the frame of the inner window. The roller-blind of such kind certainly enables to prevent bright sunshine from entering a room and to provide a visual obstruction from the outside to the inside during the dark time but the roller-blind installed in this matter is not able to provide remarkable energy saving.

[0003] Likewise, solutions in which a roller-blind is installed to the front of a window outside a building are known. Such solutions certainly enable to prevent the sunshine and thus excess heat from entering the inside of a building, but such solutions are not suitable to hard weather conditions in the Nordic countries when the whole building is exposed to rain, wind, snow, freezing and air moisture. Furthermore, a roller-blind installed in said matter changes the facade of the building. Lastly, MSE-typ windows openable to the inside according to the preamble of claim 1 are commonly known from the person skilled in the art.

[0004] The object of the present invention is to provide such a roller-blind structure which, in addition to good properties of a conventional roller-blind, effectively prevents excess heat from entering the inside of a building in the summer as well as prevents heat from escaping from the building in the winter. This is achieved by means of an energy saving blind according to the invention, which is characterized in that bearings are fastened to the outer side of the inner frame of a conventional window openable to the inside so that said energy saving blind is located in the space between two separately openable frames of the window.

[0005] Being installed in this matter, the energy saving blind is in its uprolled state nearly invisible and forms in an unrolled state an effective shelter from the sunbeams already before their penetration through the glasses of the inner frame. At the same time it prevents the heat from escaping through the window in the winter. The energy saving blind according to the invention is well suitable to be installed to a window openable to the inside, having two frames and three glasses, the inner frame comprising a sealed glass element with a double glass, i.e. a so-called MSE-type window.

[0006] As a blind material darkening fabrics or micro perforated fabrics may be used. A further useful blind material is a so-called cellular fabric which as such has good thermal insulation properties.

[0007] The best thermal insulation property is achieved when the tube is mounted in the bearings so that the blind material is unrolled so close to the inner frame of the window as possible. With respect to the sunbeams a good thermal insulation property is also achieved when the tube is mounted in bearings so that the blind material is unrolled as close to the outer frame of the window as possible.

[0008] According to a preferred embodiment, two parallel tubes are mounted in bearings, one of which locating close to the inner frame of the window, whereas the other is locating close to the outer frame of the window. Both tubes may have a similar blind material or different blind materials so that the outer blind material is primarily intended to prevent the bright light from entering the inside of a building, while the inner blind material is primarily designed to insulate heat and light. This solution enables to remarkably improve a heat transfer coefficient of the window when both blind materials have been drawn to the front of the window to protect from the sun and the coldness.

[0009] Depending on the control mechanism of the energy saving blind, its bearings may be mounted either close to the upper edge or the lower edge of the inner frame of the window or possibly close to one vertical side edge of the inner frame.

[0010] The energy saving blind may be either manually operated or motor-operated. When being manually operated, a coiler is stationary mounted to one end of the tube, to which coiler a lifting string is fastened to be rolled around the coiler, when the energy saving blind mounted to the upper part of the window is lowered down, whereby the blind material may be rolled again onto the tube by drawing the string. Preferably, the drawstring is then conducted out from the window structure to the room through a hole made in the inner frame.

[0011] According to another alternative, the position of the energy saving blind is controllable by means of a ball chain which is left between the windows so that the inner window has to be opened to be able to change the position of the energy saving blind.

[0012] According to a third alternative the energy saving blind is spring-actuated. In this solution a tube around which a blind material is rolled, is spring-actuated so that the spring tightens when the blind material is drawn down to cover the window by means of a drawstring fastened to the end of the blind material and preferably conducted to the room through a hole made in the opposite end of the inner frame. The blind can be held in its uprolled position, for instance by winding the drawstring around a knob arranged near to the hole. When the drawstring is released, the blind material will be rolled back around the tube by the force of the spring.

[0013] In a motor-operated energy saving blind, an electric motor is mounted inside the tube. The motor is either provided with its own power source or electric current is conducted to it from the outside. According to an embodiment a motor is electrically driven by a solar cell

connected thereto. Preferably, the electric motor is controllable by a remote control, in which case no draught causing holes have to be made in the inner frame. In addition to a motor drive the tube may also be spring-loaded, the spring supporting the motor to roll the blind material back around the tube.

[0014] To further improve the insulation or darkening properties of the energy saving blind, lateral guide bars may be mounted for the blind material at both sides of the inner frame. The edges of the blind material may also be provided with bristle bands.

[0015] In the following the invention is described with reference to an accompanying drawing wherein

[0016] figure 1 shows a schematic cross section of an example of an energy saving blind, installed close to the glass surface of the inner frame of a so-called MSE-type window, and

figure 2 shows an example wherein the energy saving blind is installed close to the outer window.

[0017] The energy saving blind 1 shown in the figures is installed to a nowadays generally used MSE-type window which is a window openable to the inside and having two frames and three glasses, the inner frame 2 of which having a sealed double glazing glass element 3. The energy saving blind 1 comprises a tube 5 mounted with its ends in bearings 4 as well as a blind material 6, one end of which being fastened to this tube 5 and rollable around the tube, whereby the blind material covers in its unrolled state the whole window, to which said energy saving blind 1 has been installed. The bearings 4 of the energy saving blind are fastened to the outer side of the inner frame 2 of the window so the energy saving blind is located in the space between two separately openable frames 2 and 7 of the window. In the figures the bearings 4 are fastened to the upper part of the inner frame 2 openable to the inside. The tube 5 is mounted in bearings 4 so that the blind material 6 is unrolled as close to the inner frame 2 of the window as possible, as shown in figure 1, or close to the outer frame 7, as shown in figure 2.

[0018] In the figure 2 the bearings 4 are extended so that the tube 5 with the blind material to be unrolled is located so close to the outer frame 7 as possible. Thereby the blind material 6 is rolled onto the tube 5 so that it will be unrolled from that side of the tube 5 facing the outer frame 7.

[0019] To control the energy saving blind, an electric motor 8 is mounted to one end of the tube 5, the motor being provided with its own power source and preferably controllable with a remote control. In this installation, it is not necessary to make any holes leading through the inner frame which effectively prevents to avoid any draught.

a MSE-type window openable to the inside having three glasses and two separately openable frames (2,7), these two frames being an inner frame (5) and an outer frame (7), the inner frame (2) comprising a sealed glass element (3) with a double glass, and

an energy saving blind (1) located in the space between the two frames (2, 7) of the window, **characterized in that** it comprises

- a tube (5) being at its ends mounted in bearings (4), which bearings (4) are fastened to the inner frame (2) of said MSE-type window, as well as

- a blind material (6) having one of its ends fastened to this tube and being rollable around the tube (5), which blind material (6), when being in an unrolled state, covers the whole MSE-type window, whereby the bearings (4) are fastened to the upper part of the inner frame (2) on a surface opposing the outer frame (7) such that the tube (5) is located in the space between the opposing surfaces of the two frames (2,7) and that said tube (5) is arranged to be adjacent to the inner frame (2) and the blind material (6) is rolled onto the tube (5) so that the blind material (6) unrolls to the side of the tube (5) facing the inner frame (2), or said tube (5) is arranged to be adjacent to the outer frame (7) and the blind material (6) is rolled onto the tube (5) so that the blind material (6) unrolls to the side of the tube (5) facing the outer frame (7).

2. The roller-blind structure according to claim 1, **characterized in that** for rolling the blind material (6) the tube (5) is either manually operated or motor-operated.
3. The roller-blind structure according to claim 2, **characterized in that** a motor (8) being provided with its own power source and controllable by means of a remote control is arranged in one end of the tube (5).
4. The roller-blind structure according to claim 2 or 3, **characterized in that** side guide bars for the blind material (6) are mounted at the inner frame (2) and the edges of the blind material (6) are provided with bristle bands.

Patentansprüche

1. Rollostruktur, umfassend:

ein MSE-Typ-Fenster, das nach innen geöffnet werden kann, mit drei Glasscheiben und zwei

Claims

1. A roller-blind structure, comprising

Rahmen (2, 7), die getrennt geöffnet werden können, wobei diese beiden Rahmen ein Innenrahmen (5) und ein Außenrahmen (7) sind, wobei

der Innenrahmen (2) ein versiegeltes Glaselement (3) mit einer Doppelglasscheibe umfasst, und

ein energiesparendes Rollo (1), das in dem Raum zwischen den beiden Rahmen (2, 7) des Fensters angeordnet ist, **dadurch gekennzeichnet, dass** dieses umfasst:

- ein Rohr (5), das an seinen Enden in Lagern (4) montiert ist, wobei die Lager (4) am Innenrahmen (2) des MSE-Typ-Fensters befestigt sind, sowie

- ein Rollomaterial (6), das an einem seiner Enden an diesem Rohr befestigt ist und um das Rohr (5) aufgerollt werden kann, wobei das Rollomaterial (6), wenn es in einem entrollten Zustand ist, das gesamte MSE-Typ-Fenster abdeckt,

wodurch die Lager (4) am oberen Teil des Innenrahmens (2) an einer Fläche gegenüber dem Außenrahmen (7) derart angeordnet sind, dass das Rohr (5) im Raum zwischen den gegenüberliegenden Flächen der beiden Rahmen (2, 7) angeordnet ist, und dass das Rohr (5) eingerichtet ist, dem Innenrahmen (2) benachbart zu sein, und das Rollomaterial (6) auf das Rohr (5) gerollt ist, so dass sich das Rollomaterial (6) auf die Seite des Rohrs (5) entrollt, die dem Innenrahmen (2) zugewandt ist, oder das Rohr (5) eingerichtet ist, dem Außenrahmen (7) benachbart zu sein, und das Rollomaterial (6) auf das Rohr (5) gerollt ist, so dass sich das Rollomaterial (6) auf die Seite des Rohrs (5) entrollt, die dem Außenrahmen (7) zugewandt ist.

2. Rollostruktur nach Anspruch 1, **dadurch gekennzeichnet, dass** zum Rollen des Rollomaterials (6) das Rohr (5) entweder manuell betrieben oder mit einem Motor betrieben wird.

3. Rollostruktur nach Anspruch 2, **dadurch gekennzeichnet, dass** ein Motor (8), der mit seiner eigenen Energiequelle versehen und mittels einer Fernbedienung steuerbar ist, in einem Ende des Rohrs (5) angeordnet ist.

4. Rollostruktur nach Anspruch 2 oder 3, **dadurch gekennzeichnet, dass** Seitenführungsstangen für das Rollomaterial (6) am Innenrahmen (2) montiert sind, und die Ränder des Rollomaterials (6) mit Haftbändern versehen sind.

Revendications

1. Structure de store roulant, comprenant :

une fenêtre de type MSE ouvrable vers l'intérieur et ayant trois vitres et deux châssis séparément ouvrables (2, 7), ces deux châssis étant un châssis interne (5) et un châssis externe (7), le châssis interne (2) comprenant un élément vitré scellé (3) avec un double vitrage et un store économe en énergie (1) situé dans l'espace compris entre les deux châssis (2, 7) de la fenêtre, **caractérisée en ce qu'elle comprend :**

- un tube (5) monté à ses extrémités dans des paliers (4), lesquels paliers (4) sont fixés au châssis interne (2) de ladite fenêtre de type MSE ainsi que :

- un matériau de store (6) ayant l'une de ses extrémités fixée à ce tube et qui peut s'enrouler autour du tube (5), lequel matériau de store (6), lorsqu'il se trouve à l'état non déroulé, recouvre la totalité de la fenêtre de type MSE,

dans lequel les paliers (4) sont fixés à la partie supérieure du châssis interne (2) sur une surface opposée au châssis externe (7) de sorte que le tube (5) soit situé dans l'espace entre les surfaces opposées des deux châssis (2, 7) et que ledit tube (5) soit agencé pour être adjacent au châssis interne (2) et que le matériau de store (6) soit enroulé sur le tube (5) de sorte que le matériau de store (6) se déroule vers le côté du tube (5) en regard du châssis interne (2) ou que ledit tube (5) soit agencé pour être adjacent au châssis externe (7) et que le matériau de store (6) soit enroulé sur le tube (5) afin que le matériau de store (6) se déroule vers le côté du tube (5) en regard du châssis externe (7).

2. Structure de store roulant selon la revendication 1, **caractérisé en ce que** le tube (5) est actionné à la main ou actionné par un moteur pour enrouler le matériau de store (6).

3. Structure de store roulant selon la revendication 1, **caractérisé en ce qu'un** moteur (8) pourvu de sa propre source d'énergie et qui peut être commandé au moyen d'une commande à distance est agencé à une extrémité du tube (5).

4. Structure de store roulant selon la revendication 2 ou 3, **caractérisé en ce que** des barres de guidage latérales pour le matériau de store (6) sont montées sur le châssis interne (2) et les bords du matériau de store (6) sont pourvues de bandes de soies.

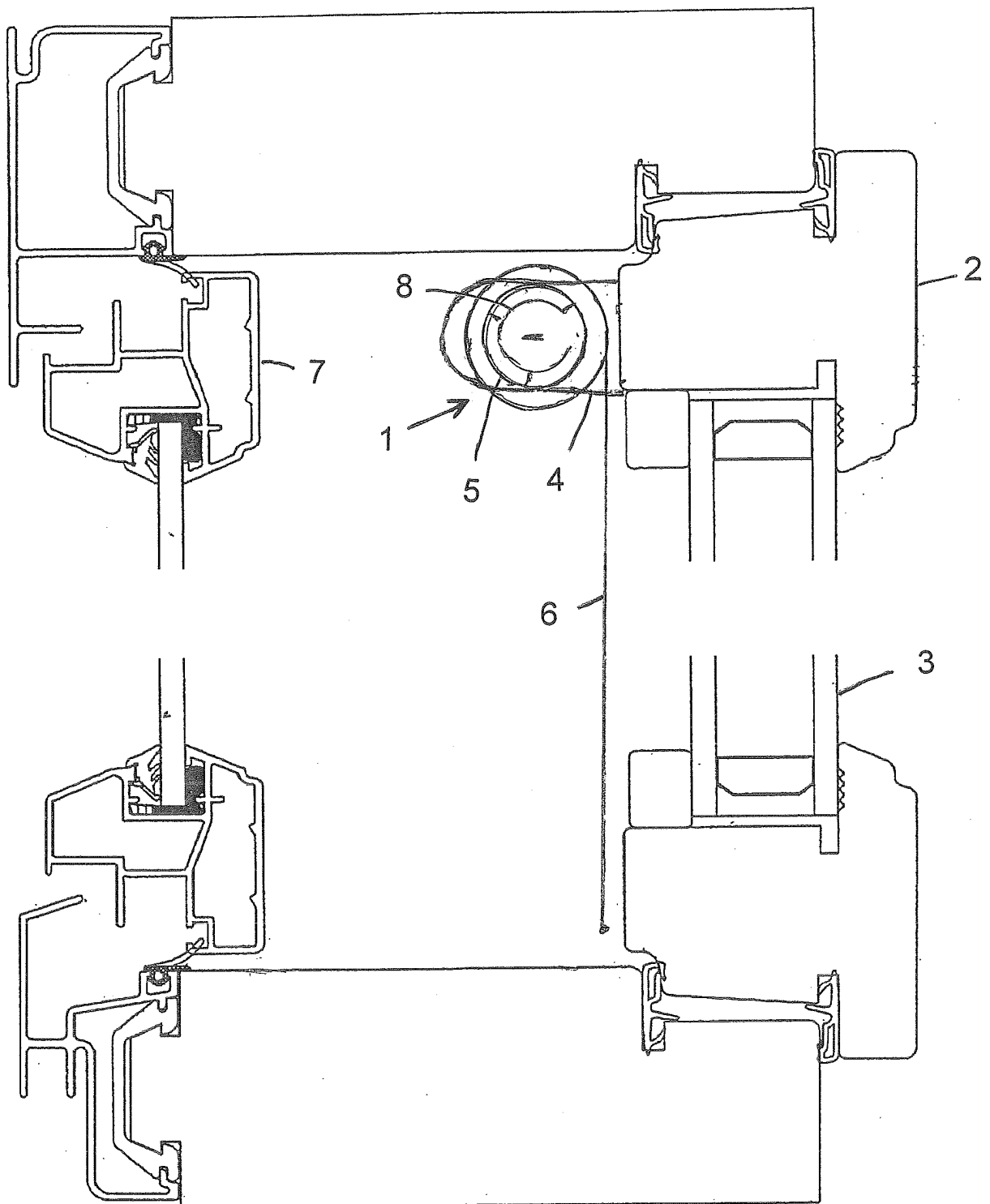


Fig. 1

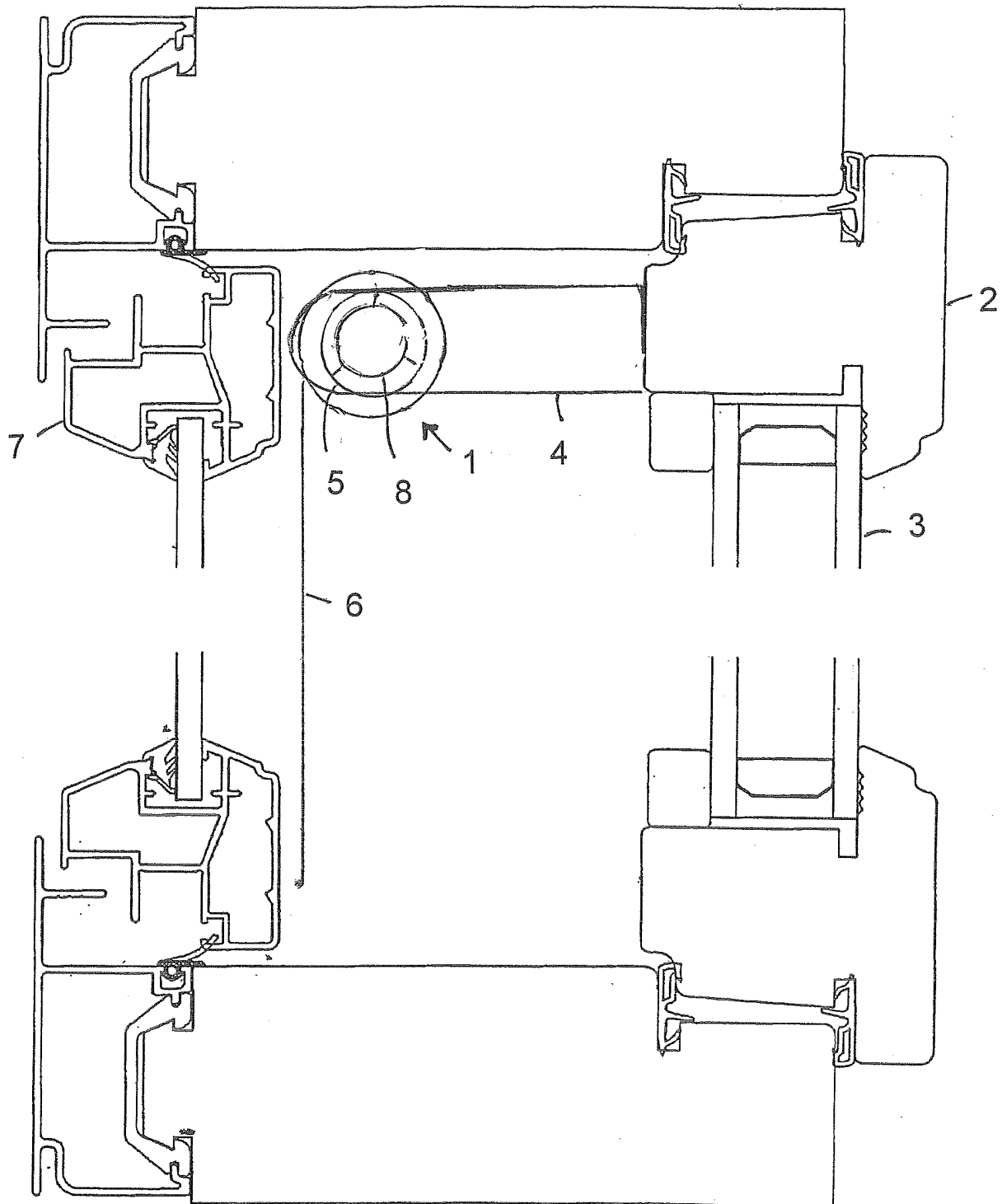


Fig. 2