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(54) Blind with vertical sliding slats

(57) It comprises a plurality of vertical slats (2) susceptible to moving in a vertical direction through lateral guiding means (3). It is **characterised in that** the guiding means comprise a plurality of lateral guides (3) parallel to each other, each of which is associated to a slat (2), each slat (2) being susceptible to moving along its corresponding guide (3), in such a manner that in their retracted position the slats (2) are disposed parallel to each other, occupying a minimum amount of space. A blind having greater wind resistance is obtained, with a box that occupies very little space, and which fulfils all the regulations in force.

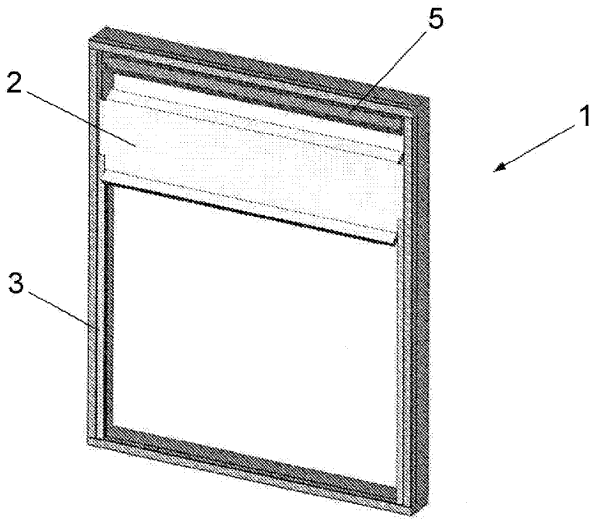

FIG. 1

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Description

[0001] The present invention relates to a slatted blind.

BACKGROUND OF THE INVENTION

[0002] At present, different types of blinds are known, the most usual being retractable-type blinds such as roller blinds and stacking blinds with horizontal slats.

[0003] Said stacking blinds comprise a plurality of horizontal slats susceptible of being collected in the upper part thereof by means of stacking thereof. Likewise, when the blind is lowered, the slats may be tilted to regulate the amount of light that passes therethrough.

[0004] Nevertheless, these have the drawback that the shape of the slats does not have very much inertia and they can be easily deformed by the wind. The blind guides must not be excessively separated in buildings exposed to the wind.

[0005] Roller blinds are formed of aluminium, PVC or wooden slats which are joined together and guided laterally. They are rolled around a spindle located in the blind box, said spindle being motorised or manually actuated.

[0006] The blind roller may vary in size from 20 cm in blinds with curved slats, which allow a better rolling action, to 30-35 cm in blinds with flat slats. This causes the blind box to occupy most of the thickness of the façade, bringing the exterior into contact with the interior with hardly any insulation and weakening the thermal and acoustic behaviour of the façade in this point.

[0007] Additionally, the blind is installed from the interior by opening the lid of the blind box, which causes said lid to be visible above the windows, producing an undesired aesthetic effect as well as the aforementioned poor thermal and acoustic behaviour.

DESCRIPTION OF THE INVENTION

[0008] The objective of the slatted blind of the present invention is to resolve the drawbacks of blinds known in the state of the art, providing a blind having greater wind resistance, with a box that occupies very little space, and that fulfils all the regulations in force.

[0009] The slatted blind that is the object of the present invention is of the type that comprises a plurality of vertical slats susceptible to moving in a vertical direction by means of lateral guiding means, **characterised in that** the guiding means comprise a plurality of parallel lateral guides, each of which is associated to a slat, each slat being susceptible to moving along its corresponding guide, in such a manner that in their retracted position the blinds are parallel to each other, occupying a minimum amount of space.

[0010] Greater wind resistance is achieved compared to stacking blinds with horizontal slats, as it has high inertia on having vertical slats with folded ends, which will be commented hereunder.

[0011] On the other hand, less space is occupied by the blind box compared to roller blinds, due to the vertical stacking of the slats of the invention.

[0012] Advantageously, each lateral guide includes an end stop that defines the end of the path of movement of the slat that moves along said guide.

[0013] Also advantageously, said lateral guides are detachable.

[0014] In accordance with a preferred embodiment of the invention, the vertical slats have an inverted-Z shape, including a substantially vertical core and two flaps disposed at each end respectively.

[0015] This structural configuration of the slats provides a high inertia due to the slats being vertical with folded flanges at the ends which increase their rigidity. The design of the slats has been calculated to resist a wind load of 150 $kg/_m{}^2$.

[0016] Preferably, the core has a height of approximately between 20 and 30 cm, and the flaps have a length of approximately 4cm.

[0017] Advantageously, the flaps do not come up to the ends, allowing the core to move along the guide.

[0018] Preferably, the slats are manufactured from a folded aluminium plate.

[0019] Advantageously, the blind comprises a box designed for housing a motor and means for collecting cables for actuating the slats.

[0020] As the blind is composed of flat vertical slats with a geometric shape that allows stacking, these can be collected in a box that occupies very little façade thickness.

[0021] Preferably, the box comprises a rectangular cross-section of approximately 8 x 30 cm.

[0022] Therefore, the box where it is located is much thinner, resolving the drawbacks of roller blinds.

[0023] Preferably, the box is manufactured from aluminium.

[0024] Advantageously, in the case of the ventilated façade, the box is located in the interior of the ventilated chamber, fastened to an inner panel of the ventilated façade, in case of being the load-bearing wall, or to an inner substructure in the event that the panel is only a closing wall.

[0025] Therefore, the blind maintains all the functional characteristics of the façade, allowing compliance thereof with the Technical Building Code, particularly in terms of energy savings (HE) and noise protection (HR). The blind of the invention is highly appropriate for positioning on ventilated façades, due to the fact that the box fits inside the space of the ventilated chamber.

[0026] Preferably, the motor comprises rails near its two ends for guiding the rolling of the cables around the spindle.

[0027] The motor housed in the interior of the box may be a product that exists on the market, such as those used in the case of roller blinds.

[0028] Preferably, the cables are manufactured from synthetic material similar to that of fishing lines, but more

resistant, or metallic material.

[0029] Advantageously, the blind comprises a first pair of cables designed for the total darkening function, disposed at the ends of the slats that pass through the exterior thereof, said cables being fixed only to the lower slat, and a second pair of cables designed for the semi-darkening function, disposed in the interior and fixed to each slat.

[0030] Therefore, it allows different degrees of darkening, from total darkness to total transparency.

[0031] Also advantageously, the blind is susceptible to being installed from below, allowing its different constituent parts to be disassembled and extracted from below for repair and maintenance thereof.

BRIEF DESCRIPTION OF THE DRAWINGS

[0032] For the purpose of providing a description of the foregoing, a set of drawings have been attached wherein, schematically and solely by way of non-limiting example, a practical case of embodiment of the slatted blind of the invention is represented wherein:

Figure 1 shows a perspective view of the slatted blind according to an embodiment of the invention;

Figure 2 shows an elevational view of a vertical slat of the blind;

Figure 3 shows a side view of the slat of figure 2;

Figure 4 shows an elevational view of the blind with all the slats lowered, i.e. in the total darkness position;

Figure 5 shows a cross-section of the blind of figure 4, showing the position of the slats in the total darkness position;

Figure 6 shows a lowering sequence of the slats from their maximum aperture position until obtaining total darkness and a representation of the absence of light that would be observed from the interior of the room where the blind is located; and

Figure 7 shows a perspective view of the blind in the semi-darkness position and a representation of the scarce light that would be observed from the interior of the room where the blind is located.

DESCRIPTION OF A PREFERRED EMBODIMENT

[0033] In reference to figures 1 to 5, the slatted 2 blind 1 of the present invention is of the type comprising a plurality of vertical slats 2 susceptible to moving in a vertical direction along a plurality of parallel lateral guides 3, each of which is associated to a slat 2, each slat 2 being susceptible to moving along its corresponding guide 3. In this manner, in their retracted position the slats 2 are disposed parallel to each other, occupying a minimum amount of space.

[0034] Each guide 3 includes an end stop at the point where the slat 2 which moves therealong ends its path of movement. Additionally, the lateral guides 3 are detachable.

[0035] The vertical slats 2 are preferably manufactured from a folded aluminium plate in an inverted-Z shape (see figures 2 and 3), including a substantially vertical core 2a and two flaps 2b disposed at each end respectively.

[0036] The core 2a has a height of approximately between 20 and 30 cm, preferably 25 cm, and the flaps 2b have a length of approximately 4 cm. The flaps 2a do not come up to the ends, allowing the core 2b to move along the guide.

[0037] The blind 1 comprises a box 4 designed for housing a motor 5 and means for collecting cables 6 which actuate the movement of the slats 2.

[0038] The fact that the system is composed of flat vertical slats 2 having a geometry which allows stacking thereof enables these to be collected in a box 4 that occupies very little façade thickness, with a section of approximately 8 x 30 cm. Said box 4 is preferably manufactured from aluminium.

[0039] If the façade is ventilated, the box 4 is located in the interior of the ventilated chamber, fastened to the inner panel of the ventilated façade in case of being the load-bearing wall or to the inner substructure in the event of only being the closing wall. The geometry of the box 4 allows the evacuation of the water that enters the ventilated chamber of the façade.

[0040] The motor 5 housed in the interior of the box 4 can be a product that already exists on the market, such as those used for roller blinds. Said motor 5 has a diameter of 4 cm. Rails are disposed near the two ends of the motor 5 to guide the rolling of the cables around the spindle.

[0041] The cables 6 are manufactured from synthetic material, similar to that of fishing lines but with greater resistance, or of metallic material. There are two sets of cables; a first pair of cables 6 designed for the total darkening function disposed at the ends of the slats 2 that pass through the outer part thereof, said cables 6 being fixed only to the outer slat, and a second pair of cables (not illustrated) designed for the semi-darkening function, disposed on the interior and fixed to each slat 2.

[0042] In the case of the first function (see figure 6), the blind 1 progressively lowers and can be stopped at any height until achieving total darkness, while in the case of the second function (see figure 7) the slats 2 are raised minimally, becoming separated and achieving a pleasant semi-darkness. In this manner, the different light requirements in the interior according to the time of day and season of the year are resolved.

[0043] It is also possible to imprint different shapes onto the aluminium slats 2 in order to achieve different ways of filtering the light.

[0044] The operation of the blind 1 of the invention is the following:

As can be observed in figure 6, the total darkness position is achieved through the operation of the out-

er cables 6, which are fixed only to the lower slat 2. In the total aperture position, the cable 6 holds up the lower slat 2 which in turn supports the upper slats 2. When the motor 5 starts spinning, the slats are jointly lowered, held up by the cable 6 until the upper slat 2 encounters the end stop on the guide 3 and remains fixed. This occurs successively in the case of all the slats 2 until the lower slat 2 stops against the window sill and total darkness is achieved by the overlapping of the slats 2.

As can be observed in figure 7, the semi-darkness position is achieved through the actuation of the rear cables. These are fixed to each slat 2 and the distance between each knot is the height of the slat 2 plus the space for entrance of light (approximately 3 cm). This second pair of cables is actuated when the blind 1 is totally closed and raises the slats 2 from behind, separating them and achieving the entrance of raking light which does not dazzle. As the flaps 2b of the slats 2 are slightly tilted outwards, this separation allows observation of the exterior without being seen.

[0045] In order to collect the blind 1 again, it is necessary to return to the total darkness position in order to then raise the slats by means of the front cable 6, which pulls up the lower slat 2.

[0046] Repair is carried out from below with open carpentry, which is more convenient as compared to roller blinds. In order to repair the slats 2, these must be completely collected in the box 4. Firstly, the lateral guides 3 are disassembled and then the part of the box 4 that is fastened to the façade is separated from the part of the box 4 that houses the motor 5 and the slats 2. This last slat 2 is extracted from below in order to carry out repair work thereon or for substitution thereof. The assembly process is carried out in reverse order.

[0047] On the other hand, it must be pointed out that the blind 1 of the invention presents innovative aesthetics with marked horizontal lines highly appreciated by architects.

[0048] Likewise, it is a comprehensive component as it is manufactured in-factory and assembled by specialised personnel, not in parts as in the case of roller blinds, where the box is often formed by builders.

Claims

1. Slatted (2) blind (1) comprising a plurality of vertical slats (2) susceptible to moving in a vertical direction along lateral guiding means (3), **characterised in that** the guiding means comprise a plurality of parallel lateral guides (3), each of which is associated with a slat (2), each slat (2) being susceptible of moving along its corresponding guide (3), in such a manner that in their retracted position the slats (2) are disposed parallel to each other, occupying a minimum amount of space.

2. Blind (1), according to claim 1, wherein each lateral guide (3) includes an end stop that defines the end of the path of movement of the slat (2) that moves along said guide (3).

3. Blind (1), according to claim 1, wherein said lateral guides (3) are detachable.

4. Blind (1), according to claim 1, wherein the vertical slats (2) have an inverted-Z shape, including a substantially vertical core (2a) and two flaps (2b) disposed at each end, respectively.

5. Blind (1), according to claim 4, wherein the core (2a) has a height of approximately between 20 and 30 cm.

6. Blind (1), according to claim 4, wherein the flaps (2b) have a length of approximately 4 cm.

7. Blind (1), according to claim 4, wherein the flaps (2b) do not reach up to the ends, allowing the core (2a) to move along the guide (3).

8. Blind (1), according to claim 1, wherein the slats (2) are manufactured from a folded aluminium plate.

9. Blind (1), according to claim 1, that comprises a box (4) designed for housing a motor (5) and means for collecting cables (6) for actuating the slats (2) .

10. Blind (1), according to claim 9, wherein the box (4) comprises a rectangular section of approximately 8 x 30 cm.

11. Blind (1), according to claim 9, wherein the box (4) is manufactured from aluminium.

12. Blind (1), according to claim 9, wherein, in the case of the ventilated façade, the box (4) is located in the interior of the ventilated chamber, fastened to an inner panel of the ventilated façade in case of being the load-bearing wall or to an inner substructure in the event that the panel is only a closing wall.

13. Blind (1), according to claim 9, wherein the motor (5) comprises rails or reels near its two ends to guide the rolling of the cables (6) around the spindle.

14. Blind (2), according to claim 9, which comprises a first pair of cables (6) designed for the total darkening function, disposed at the ends of the slats (2) that pass through the exterior thereof, said cables (6) being fixed only to the lower slat, and a second pair of cables designed for the semi-darkening function, disposed in the interior and fixed to each slat (2) .

15. Blind (1), according to claim 1, which is susceptible to being installed from below, allowing its different constituent parts to be disassembled and extracted from below for repair and maintenance thereof.

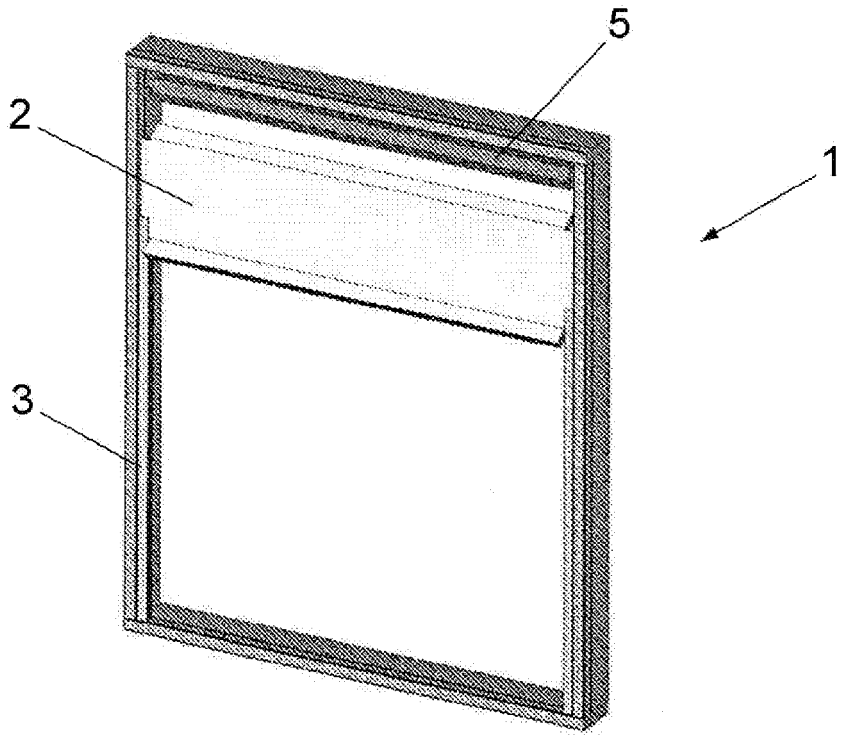

FIG. 1

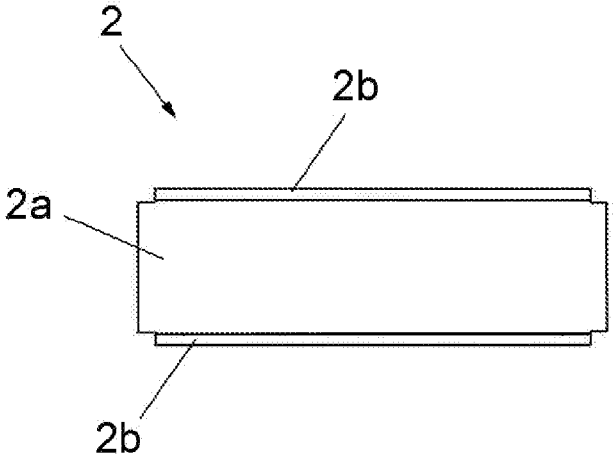

FIG. 2

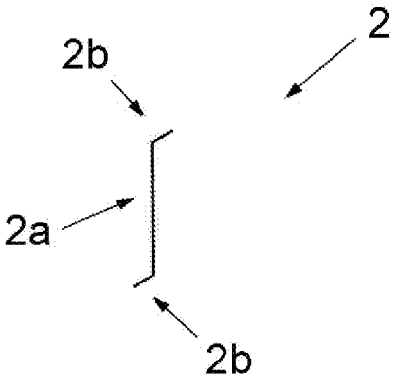

FIG. 3

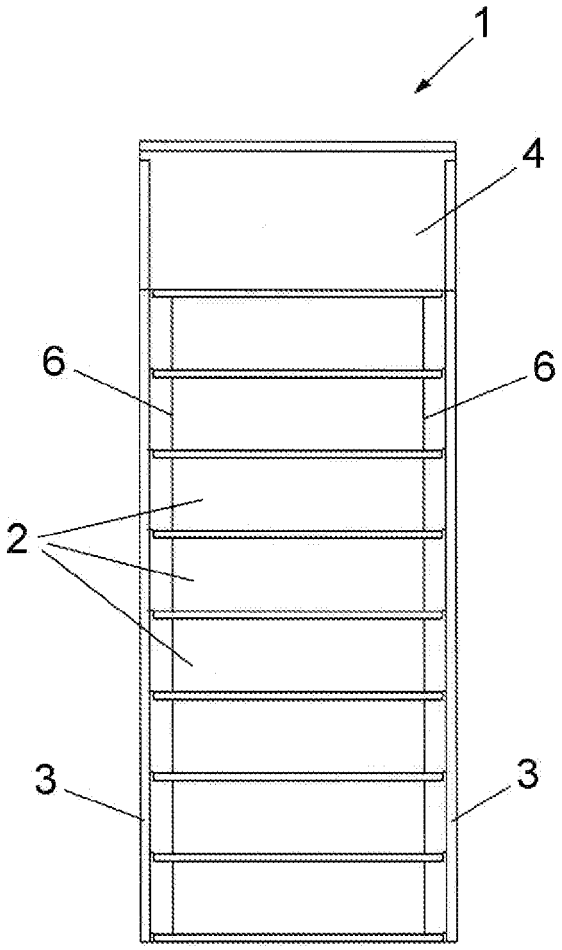

FIG. 4

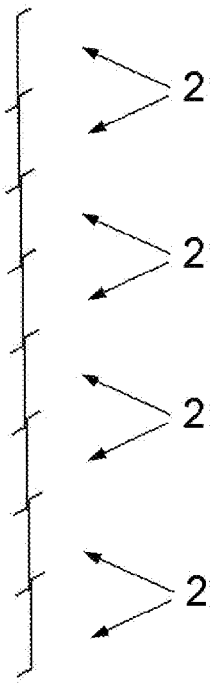

FIG. 5

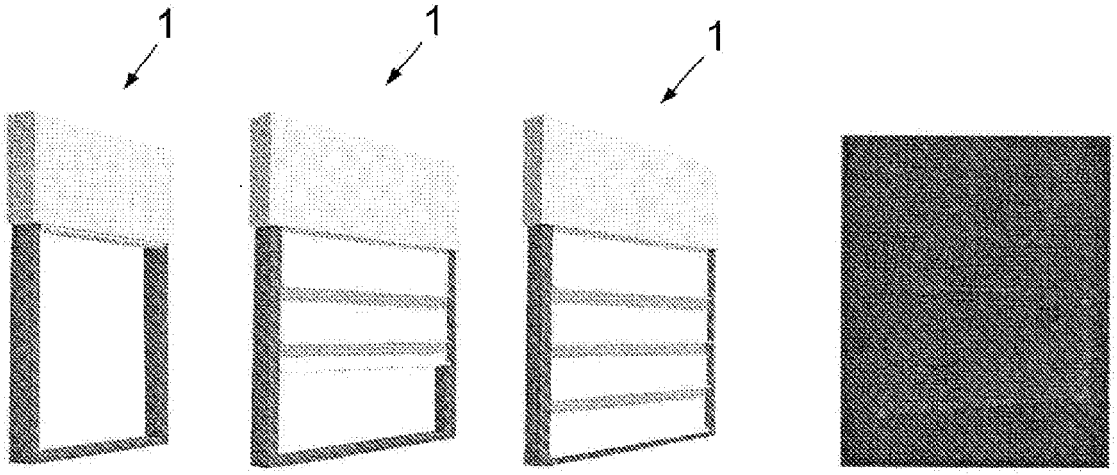

FIG. 6

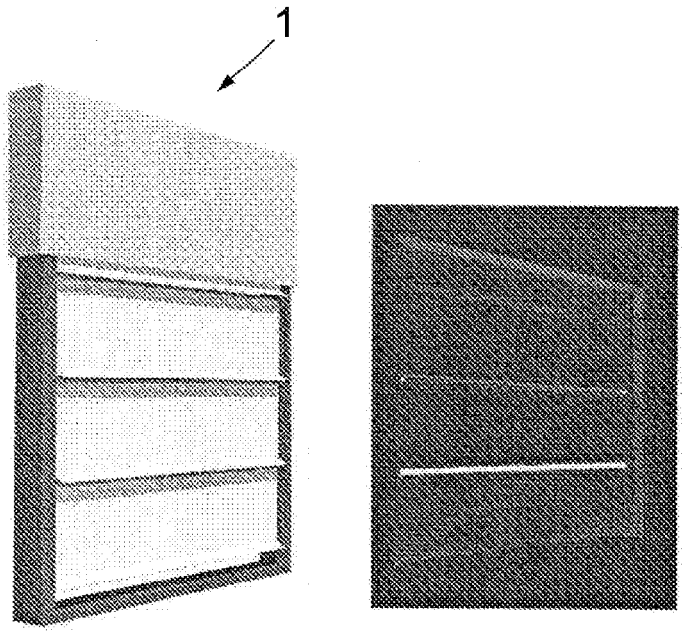

FIG. 7