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D. RAU

3,180,400

VENETIAN BLIND

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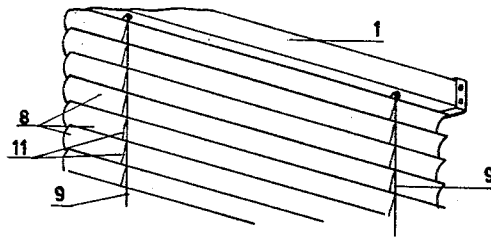


FIG. 1

FIG. 2

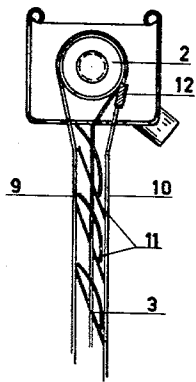


FIG. 3

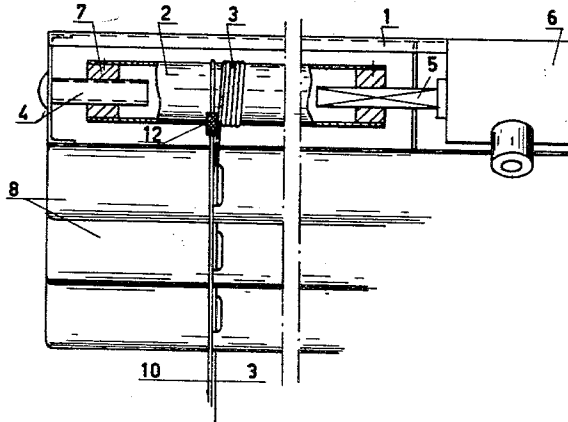


FIG. 4

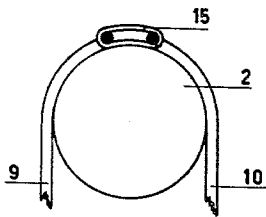


FIG. 6

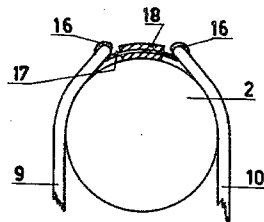


FIG. 5

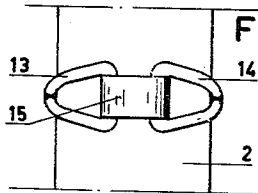
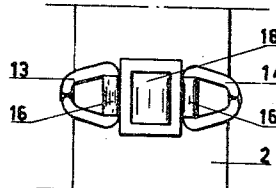


FIG. 7



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ATTORNEYS

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VENETIAN BLIND

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Claims priority, application Netherlands, July 5, 1961, 266,715

3 Claims. (Cl. 160—176)

This invention relates to a Venetian blind in which the slats are suspended to carrier members, in particular to ladders, formed by cords which have been loosely laid with a loop around a tilt shaft.

Venetian blinds of this type known so far in which the tilt shaft also serves as a winding shaft present the disadvantage that if there exists a too small friction between the carrier members and the tilt shaft the slats of the Venetian blind cannot be brought into and out of the closed position in a reliable manner, because the tilt shaft slips too much relative to the ladder cords. If there is sufficient friction the slats of the Venetian blind are, in fact, brought into the closed and open position in a reliable way, but when raising and lowering the Venetian blind a too high wear of the portion of the ladders engaging with the tilt shaft occurs in that said ladder portions slip relative to the tilt shaft. However, during the employment of the Venetian blind the shaft will become ever smoother on account of which the above-mentioned slipping of the ladder cords on the tilt shaft will occur again.

The above-mentioned disadvantages are avoided in the Venetian blind according to the invention in that the carrier members are provided with a friction member located on the tilt shaft substantially in the axial plane through said tilt shaft. Consequently, on operation of the tilt shaft, the slats are always with certainty brought into the opened or closed position.

A preferred embodiment of the Venetian blind according to the invention is characterized in that the radius of at least those parts of the tilt shaft where the carrier members have been laid around the tilt shaft is substantially equal to

$$\frac{180}{\varphi\pi}(l-a)$$

in which l is the distance along which the carrier members move between the opened and a closed position of the Venetian blind slats and a is the length of the friction member and φ the angle belonging to this arc and expressed in degrees.

According to the invention the ladder cords of each ladder may be secured to an intermediate part, said intermediate part carrying the friction member. This friction member may also be constructed as an intermediate part. The intermediate part may be provided at its ends with turned up edges with which loops of the ends of the cords belonging to a ladder are in engagement. If the friction member is constructed as an intermediate part, said intermediate part may consist of a flat tubular element of material having a high friction coefficient. The ends of the cords belonging to a ladder may be secured with loops to said intermediate part.

The invention will be explained below with reference to the accompanying drawings showing in part by way of example some embodiments of the Venetian blind according to the invention.

FIG. 1 shows diagrammatically part of a closed Venetian blind.

FIG. 2 is a cross-section of part of the Venetian blind according to FIG. 1.

FIG. 3 partly shows a longitudinal section thereof.

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FIGS. 4 and 5 show in side view and in top plan view respectively part of another embodiment.

FIGS. 6 and 7 show in the same manner part of a third embodiment.

The Venetian blind shown in FIGS. 1-3 comprises a head rail 1 in which a tilt shaft 2, which also serves as a winding shaft for the lift cords 3, is rotatably mounted on journals 4 and 5. The journal 5 is driven by a driving device 6. The journal 4 is provided with a screw thread engaging with a screw thread of a closure member 7 of the tilt shaft 2. Consequently, on rotation of the driving device 6 the tilt shaft will be moved sideways in accordance with the pitch of said screw thread so that when raising the Venetian blind the windings of the lift cords 3 are wound on the tilt and winding shaft 2 to lie one adjacent the other. The slats 8 of the Venetian blind are carried by ladders consisting of parallel cords 9 and 10 and rungs 11. The cords 9 and 10 form one unit and are laid around the tilt shaft 2. To these cords there is secured a friction member 12 which, when the Venetian blind is in closed condition, still contacts the tilt shaft 2 only with one of its ends. In consequence of the utilization of said friction member which consists of material having a high friction coefficient, the surface of the tilt shaft may be smooth so that there is little friction between the loops of the ladder cords and the tilt shaft. As a result thereof the wear of the ladder cords due to the rotation of the tilt shaft, when raising or lowering the Venetian blind, will be small. If the Venetian blind must be brought from the closed position shown in FIGS. 1-3 into the open position, the driving device 6 is operated so that the tilt shaft 2 is rotated and the friction member 12 is entrained by said tilt shaft until the Venetian blind is open. Then the friction member 12 is located on top of the tilt shaft 2.

FIGS. 4 and 5 show an embodiment in which the ladder cords 9 and 10 are provided at their ends with loops 13 and 14 engaging with a tubular friction member 15 which also serves as an intermediate part. The position of the friction member 15 here corresponds with the open position of the slats of the Venetian blind.

FIGS. 6 and 7 show an embodiment in which the ends of the ladder cords 9 and 10 are provided with loops secured in turned-up hook edges 16 of an intermediate part 17. This intermediate part carries the friction member 18 which is in contact with the tilt rod 2.

It is obvious that the invention is not restricted to the embodiments described above by way of example and shown in the drawings, but that many modifications may be made without departing from the scope of the invention.

I claim:

1. A Venetian blind comprising a plurality of spaced slats, a rotatably mounted tilt shaft, means for rotating said tilt shaft, lift cord means comprising a lift cord attached to said shaft and operably associated with said slats, ladder means comprising two lengths of a material extending transversely of said slats, one on each side of said slats, said lengths being substantially parallel, the upper end portions of said parallel lengths being interconnected by means of a friction member, said member extending from one of said lengths over the upper face of said shaft and then directly to said other length of ladder material, means connecting said parallel lengths of material to said slats whereby opposed movement of said lengths of material in a vertical direction is adapted to cause a tilting of said slats from a horizontal to a substantially vertical position, said friction member comprising a friction surface having a higher coefficient of friction than said ladder material, said friction surface being in facing engagement with said shaft and being dimensioned so that it rests centrally on the upper surface

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of said shaft when said lengths of material are in a position whereby said slats are horizontal, said friction surface barely contacting said shaft when said lengths of material are vertically moved oppositely to each other to an extent corresponding to the maximum tilting of said slats from their horizontal position.

2. The Venetian blind of claim 1, wherein said friction member comprises a reversely turned hook edge on each end, said end portions of said ladder material comprising a closed loop hooked onto respective ones of said hook edges.

3. The Venetian blind of claim 1, wherein said friction member comprises a flat tubular shaped member, said end portions of said ladder material being looped

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through said tubular member so as to form a connection with said tubular member.

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