

Description

The present invention relates to an extendable-retractable pleated shade assembly such as used for covering windows or doors with the shade moving in a horizontal direction between extended and retracted positions.

With sliding glass doors functioning both as a window and a door, it is sometimes desirable to provide appropriate shading. Because a sliding door moves in a horizontal direction, it is also desirable to have the shade move in a similar direction. In this way the shade does not have to be moved to its completely retracted condition before entering or exiting the open door. It is also desirable in some situations to have windows provided with shades that extend and retract in a horizontal direction. This is so whether the windows open and close by horizontal movement or vertical movement or are simply comprised of a fixed glass with no opening capability.

Horizontally moving shade constructions are presently available. These assemblies, however, have certain disadvantages as, for example, limitations on their size or they require complicated tracking and control mechanisms for operating the shade.

An example of a horizontally moving shade construction is disclosed in EP-A-0220074, published on 29 April 1987. This European patent application discloses many variations of vertical shade assemblies adapted to extend and retract in a horizontal direction. The assemblies include shade members comprised of slats extending vertically, single pleats extending vertically or double pleats forming honeycomb cells which extend vertically. All of these constructions include upper track assemblies and connecting means for the shade to facilitate hanging from the track and horizontal movement therealong. In addition, these assemblies include guide cord arrangements for guiding the horizontal movement of the shade. With the constructions disclosed in this application, weights are connected to the ends of the guide cords to provide a driving force in one direction. This, in turn, requires separate braking means to hold the shade in an extended or partially extended position. The weight arrangement in these constructions is such that the weight is free to move vertically along one lateral end of the shade. The vertical movement of the weight is, of course, normally limited to the vertical height of the shade. This in turn can place limitations on the horizontal movement of the shade as its horizontal movement from one extreme to the other must be within the vertical movement of the weights. Otherwise, these weights would become inoperative.

US-A-4647488 granted on 3 March 1987 also discloses a shade assembly which can be used in the vertical orientation with the pleats of the shade extending vertically and the shade itself moving horizontally between extended and retracted positions. Such an arrangement is shown in figures 25 and 27 of the patent. With this construction, the side edge seal elements, shown in figure 27, become oriented above and below the assembly when turned 90° to the position shown in figure 25. Also, in the position of figure 25, the hanging of the blind is from one side rather than from its point of hanging. Also, the lower edge seal element can be unsuitable with sliding doors because of its exposure to damage by people passing through the door.

The construction of the shade assembly shown in figure 27 of US patent 4647488 also includes a double cord assembly extending through the shade whereby the movement between extended and retracted positions of the shade can be controlled by moving the moveable end of the shade in the desired direction. There is, however, no provision made in this cord assembly for braking the movement of the shade so that it will stay in any position between fully extended and fully retracted conditions. This apparently is not a problem with the construction shown in figure 27 of the patent due to all the frictional contact between the shade and the associated structure which tends to hold the shade in any particular position.

With a vertical shade assembly, however, where the shade is hung from an overhead track and moved horizontally without any sealing elements as in the '488 patent and with the bottom edge of the shade free of any external sealing or guide structure, the pleated construction of the shade is known to have a normal tendency to collapse to its retracted position with the cells or pleats of the shade closed against each other. For example, if the width to be covered by the assembly were 6 to 8 feet, the shade may find a normal stable position with a third to a quarter of the opening covered by the shade.

US-A-4473101 granted 25 September 1984 discloses a shade assembly having a cord guiding system permitting positioning of the shade in any desired position. In the assembly disclosed in this patent, the cord guiding system is routed through the assembly with right angled turns and the cord is maintained taut in order to retain the shade in the desired position of openness. This construction further includes side guide tracks which are required to maintain the shade in the alignment within its mounting structure. The side guide structure is further required for routing the cord guide system.

Use of the shade assembly disclosed in the '101 patent for horizontal movement between opened and closed positions would require a guide track along the bottom of the assembly subjecting this member to possible damage. Also the shade member of the assembly would be secured at one side rather than from above thus creating an unbalanced system the further the shade is moved from its support.

In accordance with the teaching of the present invention, as defined in claim 1, the applicant has developed a vertical shade assembly incorporating a shade guide mechanism which is admirably suited for controlling horizontal operation between extended and retracted conditions of the shade. The guide mechanism also neatly maintains the shade in proper alignment as it is moved between extended and retracted conditions. The shade guide mechanism is routed through the shade assembly in such a manner as to function as part of a braking system for maintaining the shade in any desired location between fully extended and fully retracted positions. Furthermore, no weights, as used in prior art constructions, are required. Thus, there is no resulting limit to the extend of horizontal movement of the shade.

The shade assembly of the present invention also includes a tracking system which facilitates smooth horizontal movement of the shade between extended and retracted conditions without binding along the track. The shade guide mechanisms of the present invention functions in conjunction with this tracking system to maintain it properly aligned to assure the smooth non-binding movement.

With the present invention, the assembly can be constructed for manual operation through manipulation of the moving lateral end of the shade. Alternatively, operation can be controlled through a motor drive mechanism or through an external cord system. The embodiments include a braking mechanism operating in conjunction with and controlled by the shade guide mechanism.

Figure 1 is a perspective view of the vertical shade assembly of the present invention;

Figure 2 is a side view partially in cross-section of the shade assembly of the present invention;

Figure 3 is a cross-sectional view taken along lines 3-3 of figure 2;

Figure 4 is a cross-sectional view taken along lines 4-4 of figure 2;

Figure 5 is a cross-sectional view taken along lines 5-5 of figure 2;

Figure 6 is a cross-sectional view taken along lines 6-6 of figure 2;

Figure 7 is a cross-sectional view taken along lines 7-7 of figure 2;

Figure 8 is an exploded view showing the bracket means for connecting the shade member to

the traversing track in the assembly of the present invention;

Figure 9 is a schematic view showing a modified embodiment of the shade guide and braking means of the shade assembly of the present invention; and

Figure 10 is a schematic view showing another embodiment of the shade guide and braking means of the shade assembly of the present invention.

As shown in figures 1, 2 and 4, the pleated shade assembly of the present invention includes a pleated shade member generally designated at 1 and having vertically positioned pleats 2. The shade member is movably suspended in a vertical plane from an upper traversing track 3, more clearly shown in figure 5. The shade member shown in figure 4 is a double pleated construction defining superimposed honeycomb cells such as disclosed in Colson US-A-4450027. The shade can also be a single pleated or other construction.

The shade member is hung from the traversing track 3 by carrier members 4. These carrier members include a clip type of connector 5 at their lower ends for attachment to the pleated shades at intervals along its width. At its upper end each carrier has a roller 6 which is adapted to ride on a track section 7 of the traversing track 3.

Vertical supports 8 and 9 are connected to the opposite lateral ends 10 and 11 of the shade member 1. As shown most clearly in figure 4, the lateral end 10 of the shade member is defined by the last honeycomb cell structure. Internally of this cell structure, a stiffener member 12 is disposed. The vertical support 8, on the other hand, includes an elongated housing 13 extending between the upper and lower ends of the support. The housing has an opening 14 which is narrower than the width of the stiffener 12. With this construction, the last cell structure with the stiffener 12 contained therein can be slid into the housing 13 to releasably secure the lateral end 10 of the pleated shade member to the vertical support 8. This same arrangement is used to secure the other lateral end 11 of the shade member to the other vertical support 9.

In the construction shown in figures 1 and 2, the lateral end 10 together with the vertical support 8 is adapted to move horizontally between a first position generally aligned with the left hand and 15 of the traversing track and spaced from the vertical support 9 to a second position adjacent the vertical support 9. In the first position the shade is in a fully extended condition whereas in the second position, it will be in a fully retracted condition. In the construction shown in figures 1 and 2, the vertical support member 9 is fixed against movement.

The moveable vertical support 8 is slidably connected to the traversing track for movement in

the horizontal direction. For this purpose, a bracket 16 is provided. This bracket has a first section 17 connected to the upper end of the vertical support 8. This connection is through a sliding fit of the end section 17 into a side flange 18 formed on the vertical support 8. As shown in figure 8, this side flange 18 includes two end flanges 19 spaced from the outer central wall of the flange. The spacing is such as to accommodate the one end section 17 of the bracket 16. The fit between these members can be a friction fit or the members can be pinned or otherwise secured in assembled condition.

The bracket 16 includes a second section 20 extending at right angles to the first section 17. This section, when connected to the traversing track, extends along the track and includes two rollers 21 and 22 providing track engaging means for the track section 23 of the traversing track. See figures 5, 6 and 8. The rollers 21 and 22 are spaced from each other along the traversing track. The roller 21 is generally located adjacent the upper end of the vertical support 8 while the second roller 22 is located between the first roller 21 and the second support 9.

With reference to figures 5 and 6, it will be seen that the track section 23 includes an upper guide track 24 facing downwardly and a lower guide track 25 facing upwardly in alignment with the upper guide track. Also both the upper and lower guide tracks include side guides 26 and 27, respectively. These side guides constrain lateral movement of the rollers 21, 22 as they move along the guide track section 23.

Figures 5 and 6 show the traversing track as incorporated internally of the upper rail member 25 of the shade assembly. This rail member is adapted to be secured to an upper horizontal support or frame structure of the opening with which the assembly is to be associated. Both tracking sections 7 and 23 depend from the upper wall section 29 of the upper rail. The entire rail structure and the traversing track can all be formed as a single extrusion.

The shade assembly of the present invention also includes a unique shade guide means extending through the assembly. As shown in figure 2, the shade guide means is defined by a cord 30. This cord is of the usual construction used with shade assemblies in that it has minimum stretch characteristics. It is to be understood, however, that other shade guide means such as steel cables or elastic cords or other suitable constructions can be used. In accordance with the teachings of the present invention, the guide cord is routed through the shade assembly in such a way as to simultaneously produce a number of different functions, as explained below.

The cord guide means includes a first end section 31, a central section 32 and a second end section 33. The central section extends in moveable relationship through the vertical support 8 whereas the first and second sections extend away from the vertical support 8 in opposite directions as measured along the traversing track and in the direction of horizontal movement of the shade member.

More particularly, the first end section 31 extends away from the support 8 at a location at the upper end thereof. This first end section extends to the left end 15 of the traversing track corresponding to the position of the moving vertical support 8 in the fully extended condition of the shade member. The first end section then extends through a cord guide 34 attached to the left end of the upper rail 28 and reverses direction along the traversing track to its terminal end 35.

At its terminal end it is connected to one end of a tension adjuster connector member 36, the other end of which is mounted in a tension adjuster track section 37. See figure 7. This track section extends along the traversing track in the same direction as the track sections 7 and 23. The connector member 36 is mounted in the track section 17 for selective movement therealong to adjust the tension in the cord as more fully described below. The connector member 36 is held in any selective position along the track 37 due to twisting within the track. More particularly, the end of the connector mounted in the track is fit such that when any load is applied to the other end of the connector 36, it causes the connector to cant and jam within the track section 37.

The second end section 33 of the shade guide cord extends away from the vertical support 8 at its lower end and is directed along the lower half of the shade member from the support 8 to the second position the support will assume when the shade member is moved to its fully opened position. With the embodiment of figure 1, this position will be with the moveable support 8 located adjacent the second stationary support 9. The second end section of the guide cord is then passed through the lower end of the second support 9 and secured at its terminal end 38 to one end of a tension spring 39. The other end of the spring is attached to the stiffener 12 contained within the vertical support 9 and to which the last cell of the pleated shade is attached.

For guiding the cord through the shade assembly, cord guides are provided in both vertical support members. More particularly, in the moveable support 8 a cord guide 40 is attached to the lower end of the stiffener 12. This cord guide can be of any suitable construction having a central cylindrical section 41 extending through a complemen-

tary hole in the stiffener. At the upper end of the moveable support 8, an additional cord guide 42 is provided. This cord guide 42 can be in the form of an end cap for the vertical support. Continuing in this direction, the end section of the cord passes through the cord guide 34 connected at the end 15 to the top rail 28. This cord guide includes two openings through which the cord end section 31 passes so as to reverse its direction.

The other section 33 of the cord after it leaves the lower end of the vertical support 8 through the cord guide 40 passes through holes in the central portions in each of the cells of the pleated shade. This passage is at the lower end of the shade and internally of the cell structures and is, therefore, not visible. The lower end of the shade is otherwise free of any structure. At the lower end of the stationary vertical support 9, a cord guide 13 is provided. The construction of this cord guide is the same as the cord guide 40 and it is similarly attached to the bottom end of the stiffener 12 contained within the support 9. After leaving the cord guide 43, the terminal end 18 of the cord is, as mentioned above, attached to the tension spring 39.

With the construction shown in figures 1 and 2, the connector member 36 of the tension adjuster will be slid along the tension adjuster track section 37 until the cord extends in a taut condition between the first and second end sections. This is easily facilitated by the tension spring 39. The tension adjuster is moved to the right as viewed in figure 1 until this spring 39 is under slight tension. Although the construction shown in figures 1 and 2 includes a tension spring, it can be eliminated and the cord placed in taut condition by securing its terminal ends against movement. This in turn can be done by securing the terminal end 38 of the cord directly to the stiffener. With this construction, the movement of the tension adjuster to create tautness will be over a very small distance, using the conventional no stretch cord normally used by shade assemblies. This construction can, however, create the possibility that the cord will be moved beyond its breaking point in trying to get the proper tautness. The tension spring 39 avoids this problem. In this regard, it will be noted that the tension spring is not an active spring in the sense that tension is increased as the shade is moved in the direction towards its extended position. The spring simply maintains proper tautness of the cord throughout the system.

The cord tautness is shown in figure 2 with the cord generally extending in straight taut lines between the points of turning at the cord guides. More particularly, the first section 31 extends in generally a straight line between the upper end of the support 8 and the left end 15 of the traversing

track. Similarly, the central section 32 of the cord extends in a straight line between the upper and lower ends of the vertical support 8. With respect to the other end section 33 of the cord, it extends in a straight line between the lower ends of the two supports 8 and 9 and in a straight line between the lower end of the support 9 and its terminal end 38. With this construction, movement of the vertical support 8 in a horizontal direction shifts the support along the guide cord. For example, when the vertical support 8 is moved from the position shown in figure 2 to the right or open position of the shade, the guide cord enters the lower end of the moving support 8 and exits at the upper end of this support. The reverse relative movement occurs when the vertical support 8 is moved to the left as viewed in figure 2.

In accordance with the technique of the present invention, a braking means is provided for holding the moveable support 8, and thus the shade member 2, in any position between fully retracted conditions. With the construction shown in figures 1 and 2, this braking force is provided by the cord guide means operating in conjunction with the tautness of the cord. In particular, the guides 40 and 41 at the lower and upper ends of moveable vertical support 8 provide frictional engagement of the cord therewith when the cord is maintained taut. This frictional engagement is sufficient to hold the shade member in any selected position along the traversing track. If this tautness in the guide cord is eliminated, the friction at the cord guides 40, 41 would also be eliminated and the normal tendency of the pleated shade member to collapse will take over. This in turn will urge the shade member toward its open position. With the construction just described, it will be evident that the braking means is operatively connected to the shade guide cord and is an inherent part of the shade guiding means as opposed to being a separated braking mechanism as is typical of the prior art construction.

In conjunction with this braking system as just described or independently thereof, as for example, in situations where cord tautness is not practical or desired, a releasable brake can be employed. This releasable brake is shown in figure 3 as incorporated into a handle structure 44 attached to the moveable support 8. This releasable brake handle is mounted at a convenient height along the vertical support and includes a lever member 45 extending through an opening 46 in the housing 13 of the support. The internal half of the lever 45 includes a brake 47 which is normally held in brake clamping engagement with the central section 32 of the cord by means of a spring 48. This clamping engagement is sufficient to hold the moveable support 8 against movement along the central section 32 of the cord. When it is desired to move the shade

member toward an extended or retraced position, the person grabs the handle and lever and squeezes them together. The lever acts as a brake releasing means to release the brake and permit the operator to exert a moving force on the handle to thus effect adjustment of the position of the shade member.

With the construction shown in figures 1 and 2, the taut guide cord, by extending in opposite directions away from the upper and lower ends of the support 8, urges the support into a pivoting mode in the plane of the shade member. This cord action also urges the bracket 16 into a pivoting mode to advantageously bias the rollers 21 and 22 into moving engagement with their cooperating track sections. In particular, the lower end of the moveable support 8 is urged to the right and the upper end to the left. This will bias the roller 22 into engagement with the upper guide track 24 and the roller 21 into engagement with the lower guide track 25. With this arrangement, the rollers are snugly held on the traversing track. This together with the side guides of the track sections enhances the smooth operation of the system.

Figure 9 shows an alternative embodiment of the invention in which the movement of the shade member can be controlled by a motor. In this embodiment, the second end section 31 of the shade guide cord is directed out the upper end of the support 9 by way of the cord guide 49. The cord end section is then directed around a drive pulley 50 and secured at its terminal end 38 to the other terminal end 35 of the cord by way of a tension spring member 51 to form a closed cord loop. This tension member can either be a spring similar to the tension spring 39 or a piece of elastic cord. As with the construction shown in figures 1 and 2, the tension member 51 can be eliminated and the terminal end 35 and 38 of the cord can be connected directly to each other.

A suitable motor 52 is provided of selectively driving the pulley 50 in either direction to move the cord loop in either a clockwise or counterclockwise direction along its routing through the shade assembly. Braking is provided through the operative connection of the cord wrapping around the pulley 50 of the motor. This can be a friction engagement preventing movement except when the motor is actuated. With this construction, the moveable support 8 can be tightly secured to the central section of a cord to assure against unwanted movement of the shade member in the opening direction. This connection will not normally be necessary provided the cord is maintained in taut condition through the system. In this case, movement of the shade member can be effected either manually through the support 6 or by way of actuating the motor 52.

A third embodiment of the invention is shown in figure 10. In this embodiment, an external cord loop section 53 is provided. The terminal ends 35 and 38 of the cord are connected to the opposite ends 54 and 55 of the section 20 of the bracket 16. The bracket can in turn include slide members 56, 57 instead of the rollers 21, 22 shown in figure 8. With this construction, the slide members will move smoothly along the track section 23 when the moving force is exerted in a direction aligned with this track. With the terminal ends of the cord attached to the opposite ends of the bracket section 20 and extending in opposite directions along the track, this alignment will occur. Thus, pulling on either part of the loop section effects sliding movement of the bracket along the track.

When, however, this moving force is released, the tendency of the shade member to move to its retracted position, due to the normal tendency of the cell structure to collapse, will cause the moveable support 8 together with the bracket 16 to pivot in a counterclockwise direction as viewed in figure 10. This is because the moving force is not applied in alignment with the traversing track but occurs along the full height of the shade member. This pivoting movement will jam the slide members 56 and 57 in the track section 23 and thus immediately hold the shade member in its desired position.

The slide members 56 and 57, which function in conjunction with the track section 23 as a braking means, are operatively connected to the cord guide whereby pulling and releasing of the loop section 53 operates to release and activate the braking mechanism. Thus, as with the other embodiments of the present invention, no external braking mechanism is required.

As with the motor driven embodiment of the invention, using the external cord loop section as shown in figure 10, still permits operation of the shade member by actuation of the moveable vertical support 8. All this is necessary is that the guide cord be maintained in taut condition between the first and second end sections. With the construction of figure 10, this can be achieved by securing the bottom end of the loop section 53 to a tension roller 58. With this construction, the roller engaging means 21, 22 can be retained since the braking force is created due to the tautness of the cord causing frictional engagement at the various cord guides. The jamming of the bracket 16 in the traversing track is no longer necessary nor desirable.

With the cord guide system of figure 10 using the slide members 56, 57, the tension pulley 58 is no longer necessary. Also, with this arrangement the moving support 8 is preferably secured to the central section 32 of the cord to assure against

inadvertant collapsing of the shade member to the open position.

Claims

1. A pleated or folded shade assembly extendable and retractable in a horizontal direction and comprising a pleated or folded shade member (1) with vertically positioned pleats (2) or folds movably suspended in a plane from an upper traversing track (3), a first vertical support (8) having upper and lower ends and connected to one lateral end (10) of said shade member (1), a second vertical support (9) connected to the opposite lateral end (11) of said shade member (1), bracket means (16) or a carriage connected to said first support (8) and movably supported on said traversing track (3) for movement therealong to move the first support (8) horizontally along said track (3) between a first position spaced from the second support (9) with the shade in an extended condition and a second position adjacent thereto with the shade in a retracted condition, and shade guide means (30) extending horizontally along the lower half of the shade member (1) characterised in that the shade guide means (30) includes:
 - (a) a central section (32) extending through said first support (8);
 - (b) a first end section (31) extending away from the first support (8) at a location at least adjacent the upper end thereof, said first end section (31) extending to said first position along said track; and
 - (c) a second end section (33) extending away from the first support (8) at a location at least adjacent the lower end thereof, said second end section (33) being directed along the lower half of the shade member (1) from said first support (8) to said second position.
2. An assembly according to claim 1 wherein the shade guide means (30) includes:
 - (a) the central section (32) extending in movable relationship through said first support (8) whereby said first support (8) can be moved along said central section (32) by exerting a moving force thereon in a direction toward or away from said second support (9); and
 - (b) braking means operatively connected to said shade guide means (30) for creating a braking force to hold said first support (8) in any position between said first and second positions when not under the influence of said moving force.
3. An assembly according to claim 2 wherein the means for creating a braking force includes:
 - (a) a releasable brake handle (44) connected to said first support (8) and including a brake (47) engageable with the central section (32) of the shade guide means (30) extending between the upper and lower ends of the first support (8) to normally hold the first support (8) against movement along said central section (32), and
 - (b) brake releasing means (45) connected between said handle (44) and said brake (47) for releasing said brake (47) upon exerting said moving force on the handle (44).
4. An assembly according to claims 1, 2 or 3 wherein said shade guide means comprises a cord (30).
5. An assembly according to claim 4 wherein the braking means for creating a braking force includes:
 - (a) first and second cord guide means (42) located at least adjacent the upper and lower ends, respectively, of the first support (8) for directing said first and second end sections (31,33) of said cord away from said first support (8), and
 - (b) tensioning means for holding said cord in tension between the first and second end sections (31,33) thereof and in frictional engagement with said cord guide means.
6. An assembly according to claim 5 wherein the tensioning means includes means for securing the terminal ends (35,38) of the cord (30) against movement relative to each other with the cord extending in taut condition between the first and second end sections (31,33) thereof.
7. An assembly according to claim 5 wherein said tensioning means includes a tension spring connected to the cord (30) to hold the cord in generally straight taut lines between:
 - (a) the upper and lower ends of the first support (8);
 - (b) the upper end of the first support and the first position along the track (3); and
 - (c) the lower end of the first support and the second position along the track (3).
8. An assembly according to claim 7 wherein the tension spring (39) has one end connected to the second end section (33) of the cord (30) and its other end to the second support (9).



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Claims

1. A pleated or folded shade assembly extendable and retractable in a horizontal direction and comprising a pleated or folded shade member (1) with vertically positioned pleats (2) or folds movably suspended in a plane from an upper traversing track (3), a first vertical support (8) having upper and lower ends and connected to one lateral end (10) of said shade member (1), a second vertical support (9) connected to the opposite lateral end (11) of said shade member (1), bracket means (16) or a carriage connected to said first support (8) and movably supported on said traversing track (3) for movement therealong to move the first support (8) horizontally along said track (3) between a first position spaced from the second support (9) with the shade in an extended condition and a second position adjacent thereto with the shade in a retracted condition, and shade guide means (30) extending horizontally along the lower half of the shade member (1) characterised in that the shade guide means (30) includes:

(a) a central section (32) extending through said first support (8);

(b) a first end section (31) extending away from the first support (8) at a location at least adjacent the upper end thereof, said first end section (31) extending to said first position along said track; and

(c) a second end section (33) extending away from the first support (8) at a location at least adjacent the lower end thereof, said second end section (33) being directed along the lower half of the shade member (1) from said first support (8) to said second position.

2. An assembly according to claim 1 wherein the shade guide means (30) includes:

(a) the central section (32) extending in movable relationship through said first support (8) whereby said first support (8) can be moved along said central section (32) by exerting a moving force thereon in a direction toward or away from said second support (9); and

(b) braking means operatively connected to said shade guide means (30) for creating a braking force to hold said first support (8) in any position between said first and second positions when not under the influence of said moving force.

3. An assembly according to claim 2 wherein the means for creating a braking force includes:

(a) a releasable brake handle (44) connected to said first support (8) and including a brake (47) engageable with the central section (32) of the shade guide means (30) extending between the upper and lower ends of the first support (8) to normally hold the first support (8) against movement along said central section (32), and

(b) brake releasing means (45) connected between said handle (44) and said brake (47) for releasing said brake (47) upon exerting said moving force on the handle (44).

4. An assembly according to claims 1, 2 or 3 wherein said shade guide means comprises a cord (30).

5. An assembly according to claim 4 wherein the braking means for creating a braking force includes:

(a) first and second cord guide means (42) located at least adjacent the upper and lower ends, respectively, of the first support (8) for directing said first and second end sections (31,33) of said cord away from said first support (8), and

(b) tensioning means for holding said cord in tension between the first and second end sections (31,33) thereof and in frictional engagement with said cord guide means.

6. An assembly according to claim 5 wherein the tensioning means includes means for securing the terminal ends (35,38) of the cord (30) against movement relative to each other with the cord extending in taut condition between the first and second end sections (31,33) thereof.

7. An assembly according to claim 5 wherein said tensioning means includes a tension spring connected to the cord (30) to hold the cord in generally straight taut lines between:

(a) the upper and lower ends of the first support (8);

(b) the upper end of the first support and the first position along the track (3); and

(c) the lower end of the first support and the second position along the track (3).

8. An assembly according to claim 7 wherein the tension spring (39) has one end connected to the second end section (33) of the cord (30) and its other end to the second support (9).



9. An assembly according to any one of claims 5 to 8 wherein the tensioning means includes a tension adjuster (36) for adjusting the tension thereof.

10. An assembly according to claim 9 wherein the tension adjuster (36) includes:

- (a) a tension adjuster track section (37) extending along the traversing track (3), and
- (b) a connector means mounted in said track section (37) for selective movement therealong and connected to the terminal end (35) of the shade guide means (30) at the first end section (31) thereof to selectively locate said terminal end (35) at different locations along the track section to vary the tension in said tensioning means.

11. An assembly according to any preceding claim wherein:

- (a) the traversing track (3) includes an upper guide track (24) facing downwardly and a lower guide track (25) facing upwardly;
- (b) said bracket means (16) or carriage includes:

a first section (17) connected to the upper end of the first support (8),

a second section (20) extending along the traversing track, and

first and second track engaging means (21,22) on the second section of the bracket means (16), said first and second tracking engaging means (21,22) being spaced from each other as measured in a direction along said track; and

(c) the first and second end sections (31,33) of said shade guide means (30) extend away from the first support (8) in opposite directions as measured along said track (3) to urge said first support (8) and bracket (16) to pivot in the plane of said shade member (1) and to bias said first track engaging means (21) against the lower guide track (25) of the traversing track (3) and the second track engaging means (22) against the upper guide track (24).

12. An assembly according to claim 11 wherein:

- (a) the first track engaging means (21) includes first roller means located adjacent the upper end of the first support (8), and
- (b) the second track engaging means (22) includes second roller means located between the first roller means and the second support (9).

Patentansprüche

1. Gefaltete Sonnenschutzeinheit, die in Horizontalrichtung ausziehbar und zusammenziehbar ist und ein gefaltetes Sonnenschutzelement (1) mit vertikal angeordneten Falten (12) umfaßt, das in einer Ebene an einer oberen traversierenden Laufbahn (3) beweglich aufgehängt ist, mit einem ersten Vertikallager (8) mit einem oberen und einem unteren Ende, das mit einem seitlichen Ende (10) des Sonnenschutzelementes (1) verbunden ist, einem zweiten Vertikallager (9), das mit dem gegenüberliegenden seitlichen Ende (11) des Sonnenschutzelementes (1) verbunden ist, und einem Arm (16) oder einem Schlitten, der mit dem ersten Lager (8) verbunden und zur Durchführung einer Bewegung entlang der Laufbahn (3) an dieser beweglich gelagert ist, um das erste Lager (8) horizontal entlang der Laufbahn (3) zwischen einer ersten Position, die im Abstand vom zweiten Lager (9) angeordnet ist, wobei sich der Sonnenschutz in einem ausgezogenen Zustand befindet, und einer zweiten Position benachbart dazu, in der sich der Sonnenschutz in einem zurückgezogenen Zustand befindet, zu bewegen, sowie Sonnenschutzführungseinrichtungen (30), die sich horizontal entlang der unteren Hälfte des Sonnenschutzelementes (1) erstrecken, dadurch gekennzeichnet, daß die Sonnenschutzführungseinrichtungen (30) die folgenden Bestandteile umfassen:

(a) einen mittleren Abschnitt (32), der sich durch das erste Lager (8) erstreckt;

(b) einen ersten Endabschnitt (31), der sich vom ersten Lager (8) an einer Stelle, die zumindest benachbart zum oberen Ende desselben angeordnet ist, weg erstreckt, wobei sich der erste Endabschnitt (31) entlang der Laufbahn bis in die erste Position erstreckt; und

(c) einen zweiten Endabschnitt (33), der sich vom ersten Lager (8) an einer Stelle, die zumindest benachbart zum unteren Ende desselben angeordnet ist, weg erstreckt, wobei der zweite Endabschnitt (33) entlang der unteren Hälfte des Sonnenschutzelementes (1) vom ersten Lager (8) bis in die zweite Position verläuft.

2. Sonnenschutzeinheit nach Anspruch 1, bei der sich

(a) der mittlere Abschnitt (32) der Sonnenschutzführungseinrichtungen (30) beweglich durch das erste Lager (8) erstreckt, so daß das erste Lager (8) entlang dem mittleren Abschnitt (32) bewegt werden kann, indem



- eine Bewegungskraft darauf in einer Richtung auf das zweite Lager (9) oder von diesem weg aufgebracht wird, und bei der (b) Bremsvorrichtungen mit den Sonnenschutzführungseinrichtungen (30) verbunden sind, um eine Bremskraft zu erzeugen und damit das erste Lager (8) in einer beliebigen Position zwischen der ersten und zweiten Position zu halten, wenn es nicht unter dem Einfluß der Bewegungskraft steht.
3. Sonnenschutzeinheit nach Anspruch 2, bei der die Einrichtungen zur Erzeugung einer Bremskraft die folgenden Bestandteile umfassen:
 - (a) einen lösbaren Bremsgriff (44), der mit dem ersten Lager (8) verbunden ist und eine Bremse (47) umfaßt, die mit dem mittleren Abschnitt (32) der Sonnenschutzführungseinrichtungen (30), der sich zwischen dem oberen und unteren Ende des ersten Lagers (8) erstreckt, in Eingriff bringbar ist, um das erste Lager (8) normalerweise gegen eine Bewegung entlang dem mittleren Abschnitt (32) zu sichern, und
 - (b) zwischen dem Griff (44) und der Bremse (47) geschaltete Einrichtungen (45) zum Lösen der Bremse (47) bei Ausübung der Bewegungskraft auf den Griff (44).
 4. Sonnenschutzeinheit nach den Ansprüchen 1, 2 oder 3, bei der die Sonnenschutzführungseinrichtungen ein Seil (30) umfassen.
 5. Sonnenschutzeinheit nach Anspruch 4, bei der die Bremsvorrichtungen zur Erzeugung einer Bremskraft die folgenden Bestandteile umfassen:
 - (a) eine erste und zweite Seilführungseinrichtung (42), die mindestens benachbart zum oberen und unteren Ende des ersten Lagers (8) angeordnet sind, um den ersten und zweiten Endabschnitt (31, 33) des Seiles vom ersten Lager (8) weg zu richten, und
 - (b) Spanneinrichtungen zum Halten des Seiles unter Spannung zwischen dem ersten und zweiten Endabschnitt (31, 33) desselben und in Eingriff mit den Seilführungseinrichtungen.
 6. Sonnenschutzeinheit nach Anspruch 5, bei der die Spanneinrichtungen Einrichtungen zum Sichern der Enden (35, 38) des Seiles (30) gegen eine Bewegung relativ zueinander umfassen, wobei sich das Seil in einem straffen Zustand zwischen dem ersten und zweiten Endabschnitt (31, 33) desselben erstreckt.
 7. Sonnenschutzeinheit nach Anspruch 5, bei der die Spanneinrichtungen eine Zugfeder aufweisen, die mit dem Seil (30) verbunden ist, um dieses in einem straff gespannten Zustand zwischen
 - (a) dem oberen und unteren Ende des ersten Lagers (8),
 - (b) dem oberen Ende des ersten Lagers und der ersten Position entlang der Laufbahn (3) und
 - (c) dem unteren Ende des ersten Lagers und der zweiten Position entlang der Laufbahn (3) zu halten.
 8. Sonnenschutzeinheit nach Anspruch 7, bei der die Zugfeder (39) ein Ende aufweist, das mit dem zweiten Endabschnitt (33) des Seiles (30) verbunden ist, während sein anderes Ende mit dem zweiten Lager (9) verbunden ist.
 9. Sonnenschutzeinheit nach einem der Ansprüche 5 bis 8, bei der die Spanneinrichtungen ein Spannungseinstellelement (36) zum Einstellen der Spannung derselben umfassen.
 10. Sonnenschutzeinheit nach Anspruch 9, bei der das Spannungseinstellelement (36) die folgenden Bestandteile umfaßt:
 - (a) einen Spannungseinstellaufbahnabschnitt (37), der sich entlang der Laufbahn (3) erstreckt, und
 - (b) eine Verbindungseinrichtung, die in dem Laufbahnabschnitt (37) zur Ausführung einer wahlweisen Bewegung entlang demselben montiert und mit dem Ende (35) der Sonnenschutzführungseinrichtungen (30) am ersten Endabschnitt (31) derselben verbunden ist, um wahlweise das Ende (35) an unterschiedlichen Stellen entlang dem Laufbahnabschnitt anzuordnen und dadurch die Spannung in den Spanneinrichtungen zu variieren.
 11. Sonnenschutzeinheit nach einem der vorangehenden Ansprüche, bei der
 - (a) die Laufbahn (3) eine obere Führungsbahn (24) aufweist, die nach unten weist, und eine untere Führungsbahn (25), die nach oben weist;
 - (b) der Arm (16) oder der Schlitten umfaßt: einen ersten Abschnitt (17), der mit dem oberen Ende des ersten Lagers (8) verbunden ist, einen zweiten Abschnitt (20), der sich entlang der Laufbahn erstreckt und eine erste und zweite Laufbahneingriffseinrichtung (21, 22) am zweiten Abschnitt des Armes (16), die in einer Richtung entlang



der Laufbahn im Abstand voneinander angeordnet sind; und

(c) sich der erste und zweite Endabschnitt (31, 33) der Sonnenschutzführungseinrichtungen (30) vom ersten Lager (8) in entgegengesetzte Richtungen entlang der Laufbahn (3) weg erstrecken, um das erste Lager (8) und den Arm (16) so unter Druck zu setzen, daß sie in der Ebene des Sonnenschutzelementes (1) verschwenken, und die erste Laufbahneingriffseinrichtung (21) gegen die untere Führungsbahn (25) der Laufbahn (3) und die zweite Laufbahneingriffseinrichtung (22) gegen die obere Führungsbahn (24) vorzuspannen.

12. Sonnenschutzseinheit nach Anspruch 11, bei der

- (a) die erste Laufbahneingriffseinrichtung (21) erste Rolleneinrichtungen umfaßt, die benachbart zum oberen Ende des ersten Lagers (8) angeordnet sind, und
- (b) die zweite Laufbahneingriffseinrichtung (22) zweite Rolleneinrichtungen aufweist, die zwischen den ersten Rolleneinrichtungen und dem zweiten Lager (9) angeordnet sind.

Revendications

1. Dispositif de store plissé ou replié extensible et rétractable dans une direction horizontale, et comprenant un élément formant store plissé ou replié (1) avec des plissures ou des plis positionnés verticalement (2), suspendu de façon mobile dans un plan à un rail transversal supérieur (3) un premier support vertical (8) ayant des extrémités supérieure et inférieure et relié à une extrémité latérale (10) dudit élément formant store (1), un second support vertical (9) relié à l'extrémité latérale opposée (11) dudit élément formant store (1), un moyen à patte (16) ou un chariot relié audit premier support (8) et prenant appui de façon mobile sur ledit rail transversal (3) pour se déplacer le long de celui-ci et entraîner le premier support (8) horizontalement le long dudit rail (3), entre une première position espacée du second support (9), le store étant à l'état étendu, et une seconde position voisine de celle-ci, le store étant à l'état rétracté, et un moyen de guidage de store (30) s'étendant horizontalement le long de la moitié inférieure de l'élément de store (1), caractérisé en ce que le moyen de guidage de store (30) comporte:
 - (a) une section centrale (32) s'étendant au travers dudit premier support (8);
 - (b) une première section d'extrémité (31) s'écartant du premier support (8) à une position au moins voisine de son extrémité supérieure, ladite première section d'extrémité (31) s'étendant vers ladite première position le long dudit rail; et
 - (c) une seconde section d'extrémité (33) s'écartant du premier support (8) à une position au moins voisine de son extrémité inférieure, ladite seconde section d'extrémité (33) étant dirigée le long de la moitié inférieure de l'élément de store (1) entre ledit premier support (8) et ladite seconde position.
2. Dispositif selon la revendication 1, dans lequel le moyen de guidage de store (30) Comporte:
 - (a) la section centrale (32) s'étendant de façon relativement mobile au travers dudit premier support (8) de façon à ce que ledit premier support (8) puisse être déplacé le long de ladite section centrale (32) par application d'une force de déplacement sur celle-ci dans une direction orientée vers, ou s'écartant, dudit second support (9); et
 - (b) un moyen de freinage relié de façon fonctionnelle audit moyen de guidage de store (30) pour créer une force de freinage et maintenir ledit premier support (8) dans une position quelconque entre lesdites première et seconde positions lorsqu'il n'est pas soumis à ladite force de déplacement.
3. Dispositif selon la revendication 2, dans lequel le moyen pour créer une force de freinage comporte:
 - (a) une poignée de frein pouvant être relâchée (44), reliée audit premier support (8) et comportant un frein (47) pouvant s'engager sur la section centrale (32) du moyen de guidage de store (30) s'étendant entre les extrémités supérieure et inférieure du premier support (8), pour empêcher normalement le premier support (8) de se déplacer le long de ladite section centrale (32), et
 - (b) un moyen de relâchement (45) du frein relié entre ladite poignée (44) et ledit frein (47) pour relâcher ledit frein (47) lorsque ladite force de déplacement s'exerce sur la poignée (44).
4. Dispositif selon les revendications 1, 2, ou 3, dans lequel ledit moyen de guidage de store comprend un cordon (30).
5. Dispositif selon la revendication 4, dans lequel le moyen de freinage pour créer une force de freinage comporte:
 - (a) un premier et un second moyens de guidage de cordon (42) situés au moins au



voisinage desdites extrémités supérieure et inférieure respectives du premier support (8) pour diriger lesdites première et seconde sections d'extrémité (31,33) dudit cordon afin qu'elles s'écartent dudit premier support (8), et

(b) un moyen de tension pour maintenir ledit cordon sous tension entre ses première et seconde sections d'extrémité (31,33) et de façon à ce qu'il s'engage par frottement sur lesdits moyens de guidage de cordon.

6. Dispositif selon la revendication 5, dans lequel ledit moyen de tension comporte un moyen pour fixer les extrémités terminales (35,38) du cordon (30) afin qu'elles ne puissent pas se déplacer l'une par rapport à l'autre lorsque le cordon est tendu entre ses première et seconde sections d'extrémité (31,33).

7. Dispositif selon la revendication 5, dans lequel ledit moyen de tension comporte un ressort de tension relié au cordon (30) pour maintenir le cordon tendu suivant des lignes globalement rectilignes, entre:

- (a) les extrémités supérieure et inférieure du premier support (8);
(b) l'extrémité supérieure du premier support et la première position le long du rail (3); et
(c) l'extrémité inférieure du premier support et la seconde position le long du rail (3).

8. Dispositif selon la revendication 7, dans lequel le ressort de tension (39) a une première extrémité reliée à la seconde section d'extrémité (33) du cordon (30) et a son autre extrémité reliée au second support (9).

9. Dispositif selon l'une quelconque des revendications 5 à 8, dans lequel le moyen de tension comporte un dispositif de réglage de la tension (36) pour ajuster sa tension.

10. Dispositif selon la revendication 9, dans lequel le moyen de réglage de tension (36) comporte:
(a) une section de rail (37) d'ajustement de la tension s'étendant le long du rail transversal (3), et
(b) un moyen de raccord monté dans ladite section de rail (37) pour un mouvement sélectif le long de celui-ci et relié à l'extrémité terminale (35) du moyen de guidage de store (30), par sa première section d'extrémité (31), pour positionner sélectivement ladite extrémité terminale (35) à différents emplacements le long de la section de rail

afin de faire varier la tension dans ledit moyen de tension.

11. Dispositif selon l'une quelconque des revendications précédentes, dans lequel:

(a) le rail transversal (3) comporte un rail de guidage supérieur (24) orienté vers le bas, et un rail de guidage (25) orienté vers le haut;

(b) ledit moyen à patte (16) ou chariot comporte:

une première section (17) reliée à l'extrémité supérieure du premier support (8);

une seconde section (20) s'étendant le long du rail transversal, et

un premier et un second moyens d'engagement (21,22) sur les rails montés sur la seconde section du moyen à patte (16), lesdits premier et second moyens d'engagement à rails (21,22) étant espacés l'un de l'autre dans une direction orientée le long dudit rail; et

(c) la première et la seconde sections d'extrémité (31,33) dudit moyen de guidage de store (30) s'écartent du premier support (8) dans des directions opposées le long dudit rail (3) pour repousser ledit premier support (8) et ladite patte (16) afin de les faire pivoter dans le plan dudit élément de store (1) et repousser ledit premier moyen d'engagement sur les rails (21), contre le rail de guidage inférieur (25) du rail transversal (3) et le second moyen d'engagement sur les rails (22), contre le rail de guidage supérieur (24).

12. Dispositif selon la revendication 11, dans lequel

(a) le premier moyen d'engagement sur les rails (21) comporte un premier moyen à rouleau situé au voisinage de l'extrémité supérieure du premier support (8), et

(b) le second moyen d'engagement sur les rails (22) comporte un second moyen à rouleau situé entre le premier moyen à rouleau et le second support (9).