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(54) **Screen assembly**

(57) A screen assembly for a window comprising a tensioned screen moveable between a pair of spaced guide tracks, a handle being mounted on a free end of the screen between said guide tracks, and a locking device mounted on each end of the handle, the handle being moveable between a locking position, wherein the locking devices respectively engage a respective one of the guide tracks to prevent movement of the screen, and an unlocked position, wherein the locking devices are free to slide along respective guide tracks such that the screen is free to move with respect to the guide tracks, said handle and associated locking devices being biased towards said locked position by the action of the tensioned screen on the handle and being moveable towards said unlocked position, against said biasing force of the tensioned screen, wherein each locking device is connected to a respective end of the handle by connection means permitting limited movement of the respective locking device with respect to the handle to accommodate misalignment between the locking devices and the guide tracks.

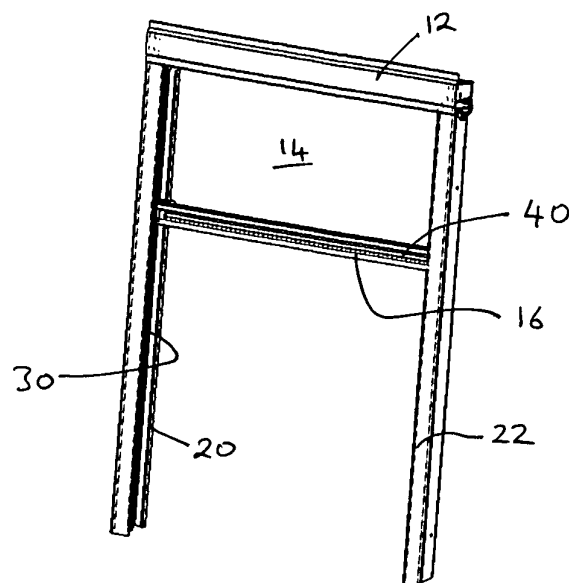


Figure 1

Description

[0001] This invention relates to screen assembly for a window, and in particular to a self-locking screen assembly for a roof light, that can be reliably locked in any desired position between fully opened and fully closed.

[0002] Windows, and in particular roof lights, are typically provided with screen assemblies fitted to the inside of the frame thereof for selectively obscuring the window. Such screen assemblies typically have a spring tensioned roller mounted at an upper side of the frame, around which a suitable screen is wound. A free end of the screen is attached to a movable beam or handle which is movably engaged, at its longitudinal ends, in side guide tracks arranged on opposite lateral sides of the screen.

[0003] Typically the ends of the handle are provided with locking devices adapted to engage the guide tracks to lock the screen in any desired position against the restoring force of the tensioned roller. The locking devices typically comprise locking members, often in the form of eccentric cams or blocks, mounted to the ends of the handle to be rotatable between a locking position, wherein they engage the guide tracks to prevent movement of the screen, and an unlocked position, wherein the screen is free to move, the locking devices being rotatable to their locking positions under the tension applied by the tensioned roller on the screen and being rotated to their unlocked position by a force applied to the handle against the tension applied by the tensioned roller.

[0004] Thus the locking devices can freely move along the guide track while the handle is being pulled against the tension of the roller and are automatically returned to their locking positions by the tension applied to the screen by the roller once the handle is released.

[0005] A particular difficulty with these known arrangements is that the locking devices are symmetrically duplicated on the relevant opposite lateral sides of these and, as a consequence, have to operate simultaneously. Manufacturing tolerances, wear and flexure in the materials of the handle, guide tracks and the locking devices can interfere with the simultaneous operation of the locking devices. As a result the screen is occasionally only locked on one lateral side of the screen and the screen can jam or become distorted.

[0006] According to the present invention there is provided a screen assembly for a window comprising a tensioned screen moveable between a pair of spaced guide tracks, a handle being mounted on a free end of the screen between said guide tracks, and a locking device mounted on each end of the handle, the handle being moveable between a locking position, wherein the locking devices respectively engage a respective one of the guide tracks to prevent movement of the screen, and an unlocked position, wherein the locking devices are free to slide along respective guide tracks such that the screen is free to move with respect to the guide tracks, said handle and associated locking devices being biased towards

said locked position by the action of the tensioned screen on the handle and being moveable towards said unlocked position, against said biasing force of the tensioned screen, wherein each locking device is connected to a respective end of the handle by connection means permitting limited movement of the respective locking device with respect to the handle to accommodate misalignment between the locking devices and the guide tracks.

[0007] Preferably said handle and associated locking devices are rotatable between said locked and unlocked positions about an axis extending transversely of the screen, each respective connection means being adapted to permit limited rotational movement of the respective locking device with respect to the handle between defined stops or abutments.

[0008] Preferably the handle is connected to the screen such that the handle and associated locking devices are pivoted towards said locked position under the action of the tensioned screen whereby the locking devices engage the guide tracks to automatically lock the screen in a desired position when the handle is released by a user. Preferably the screen is attached to the handle at a position offset from and parallel to said rotational axis of the handle such that the tension applied to the handle via the tensioned screen rotates the handle towards its locked position.

[0009] In one embodiment, each guide track comprises an elongate rail, each locking device comprises first and second parts located opposite sides of the rail such that rotation of the locking device brings said first and second parts of the locking device into engagement with either side of the rail to grip the rail. Alternatively each guide track comprises a pair of parallel rails, each locking device being located between the parallel rails of a respective guide track, each locking device having an elliptical or elongated shape having a length greater than the width of the track.

[0010] Preferably each locking device comprises a base part mountable on a respective end of the handle and a locking part mounted on the base part for limited rotational movement with respect to the base part about the rotatable axis of the locking devices. Preferably the locking part of each locking device is provided with a central spindle rotatably receivable within an aperture in the base part, cooperating faces of the locking part and base part being provided with cooperating features which permit limited rotational movement of the locking part with respect to the base part.

[0011] In one embodiment such cooperating features may comprise one or more axially projecting arcuate members provided on the base part receivable in one or more corresponding arcuate slots or recesses provided on the locking part, said one or more arcuate slots and said one or more corresponding arcuate members being arranged concentrically with said central spindle and the or each arcuate members having a circumferential extent less than that of the or each corresponding arcuate slots whereby the locking part can rotate with respect to the

base part within limits defined by the interaction of the one or more arcuate members and the one or more arcuate slots.

[0012] An embodiment of the present invention will now be described, by way of example only, with reference to the accompanying drawings, in which :-

Figure 1 is a perspective view of a roof light provided with a screen assembly according to an embodiment of the present invention;

Figure 2 is a detailed view of the blind assembly of Figure 1;

Figure 3 is a further detailed view of the blind assembly of Figure 1;

Figure 4 is a side view of a locking device of the blind assembly of Figure 1;

Figure 5 is a perspective view of the locking device of Figure 4;

Figure 6 is an exploded view of the locking device of Figure 4; and

Figure 7 is a perspective view of an operative part of the locking device of Figure 4.

[0013] As shown in Figure 1, a screen assembly 10 for a roof light comprises a spring tensioned roller 12 mounted at an upper side of the window frame, around which a suitable screen 14 is wound. A free end of the screen 14 is attached to an elongate handle 16 which is movably engaged, at its longitudinal ends, in side guide tracks 20,22 arranged on opposite lateral sides of the screen 14.

[0014] The ends of the handle 16 are provided with locking devices 30,40 adapted to engage the guide tracks 20,22 to lock the screen 14 in any desired position against the restoring force of the tensioned roller 12.

[0015] The locking devices each comprise first and second parts 50,52 located opposite sides of an elongate rail 60 of the respective guide track 20,22 such that rotation of the handle and the associated locking device 30,40 brings said first and second parts 50,52 thereof into engagement with either side of the rail 60 to grip the rail 60.

[0016] As can be seen from Figures 2 and 3, the handle and locking devices 30,40 are rotatable about an axis extending transversely to the screen 14 (omitted from Figs. 2 and 3 for clarity) between a locking position, wherein the first and second parts 50,52 of the locking devices 30,40 engage the respective rail 60 of the guide tracks 20,22 tracks to prevent movement of the screen 14, and an unlocked position, wherein the screen 14 is free to move, the handle and locking devices being rotatable to their locking positions under the tension applied by the tensioned roller on the screen and being rotated

to their unlocked position by a force applied to the handle against the tension applied by the tensioned roller. The handle 16 is provided with an elongate channel 25 for receiving the screen such that the tensioned screen acts on the handle 16 to pivot the handle about a fulcrum defined by the pivot axis of the locking devices 30,40 whereby the tensioned screen 14 pulls on the handle 16 to rotate the handle and locking devices 30,40 towards their respective locking positions.

[0017] As illustrated in Figures 4 to 7, each locking device 30,40 (which are symmetrically provided on either end of the handle 16 and are mirror images of each other) comprises a base part 100 mountable on a respective end of the handle 16 and a locking part 110 mounted on the base part 100 for limited rotational movement with respect to the base part about the rotatable axis of the locking devices 30,40.

[0018] The locking part 110 of each locking device 30,40 is provided with a central spindle 120 receivable within an aperture 130 in the base part 100. The cooperating faces of the locking part 110 and base part 100 are provided with cooperating features which permit limited rotational movement of the locking part 110 with respect to the base part 100. As best seen from Figure 6, such cooperating features comprise a pair of axially projecting arcuate members 140 on the base part receivable in corresponding arcuate slots or recesses 150 provided on the locking part 110, said arcuate slots 150 and corresponding arcuate members 140 being arranged concentrically with said central spindle 120 and the arcuate members 140 having a circumferential extent less than that of the arcuate slots 150 whereby the locking part 100 can rotate with respect to the base part 110 within limits defined by the interaction of the arcuate members 140 and the arcuate slots 150. Such difference in circumferential extent may be as little as 1° depending upon the manufacturing and fitting tolerances of the screen assembly, in particular the guide tracks 20,22, and the flexibility of the materials of the screen assembly.

[0019] Many other arrangements of cooperating features are envisaged for permitting limited rotational movement between the base part and locking part of each locking device, such as cooperating pins and recesses provided on the base and locking parts respectively, or vice versa.

[0020] The invention is not limited to the embodiment (s) described herein but can be amended or modified without departing from the scope of the present invention.

Claims

1. A screen assembly for a window comprising a tensioned screen moveable between a pair of spaced guide tracks, a handle being mounted on a free end of the screen between said guide tracks, and a locking device mounted on each end of the handle, the handle being moveable between a locking position,

wherein the locking devices respectively engage a respective one of the guide tracks to prevent movement of the screen, and an unlocked position, wherein the locking devices are free to slide along respective guide tracks such that the screen is free to move with respect to the guide tracks, said handle and associated locking devices being biased towards said locked position by the action of the tensioned screen on the handle and being moveable towards said unlocked position, against said biasing force of the tensioned screen, wherein each locking device is connected to a respective end of the handle by connection means permitting limited movement of the respective locking device with respect to the handle to accommodate misalignment between the locking devices and the guide tracks.

2. A screen assembly as claimed in claim 1, wherein the handle comprises an elongate bar mounted on a lower end of the screen.
3. A screen assembly as claimed in any preceding claim, wherein said handle and associated locking devices are rotatable between said locked and unlocked positions about an axis extending transversely of the screen, each respective connection means being adapted to permit limited rotational movement of the respective locking device with respect to the handle between defined stops or abutments.
4. A screen assembly as claimed in claim 3, wherein the handle is mounted for pivotal movement about said rotational axis with respect to the guide tracks between said locked and unlocked positions, the handle being attached to the screen such that the handle is pivoted towards its locked position under the action of the tensioned screen whereby the locking devices engage the guide tracks to automatically lock the screen in a desired position when the handle is released by a user.
5. A screen assembly as claimed in claim 4, wherein the screen is attached to the handle at a position offset from and parallel to said rotational axis of the handle such that the tension applied to the handle via the tensioned screen rotates the handle towards its locked position.
6. A screen assembly as claimed in any preceding claim, wherein each guide track comprises an elongate rail, each locking device comprises first and second parts located opposite sides of the rail such that rotation of the locking device brings said first and second parts of the locking device into engagement with either side of the rail to grip the rail.
7. A screen assembly as claimed in any of claims 1 to 5, wherein each guide track comprises a pair of par-

allel rails, each locking device being located between the parallel rails of a respective guide track, each locking device having an elliptical or elongated shape having a length greater than the width of the track.

8. A screen assembly as claimed in any preceding claim, wherein each locking device comprises a base part mountable on a respective end of the handle and a locking part mounted on the base part for limited rotational movement with respect to the base part about the rotational axis of the handle.
9. A screen assembly as claimed in claim 8, wherein the locking part of each locking device is provided with a central spindle rotatably receivable within an aperture in the base part, cooperating faces of the locking part and base part being provided with cooperating features which permit limited rotational movement of the locking part with respect to the base part.
10. A screen assembly as claimed in claim 9, wherein such cooperating features comprise one or more axially projecting arcuate members provided on the base part receivable in one or more corresponding arcuate slots or recesses provided on the locking part, said one or more arcuate slots and said one or more corresponding arcuate members being arranged concentrically with said central spindle and the or each arcuate members having a circumferential extent less than that of the or each corresponding arcuate slots whereby the locking part can rotate with respect to the base part within limits defined by the interaction of the one or more arcuate members and the one or more arcuate slots.

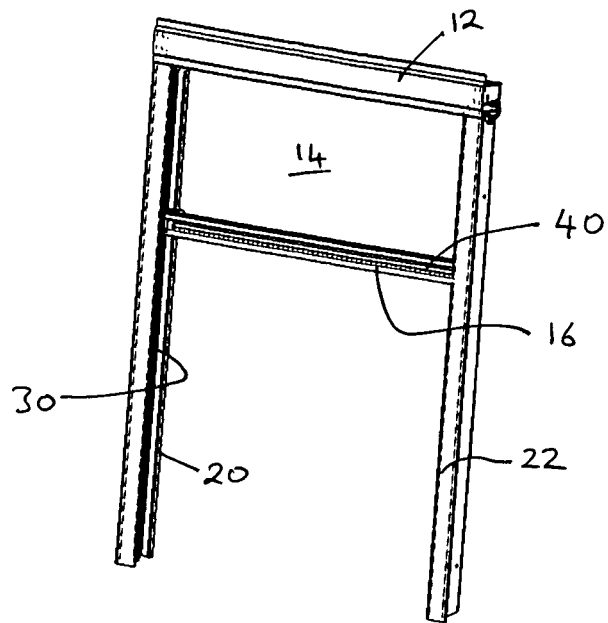


Figure 1

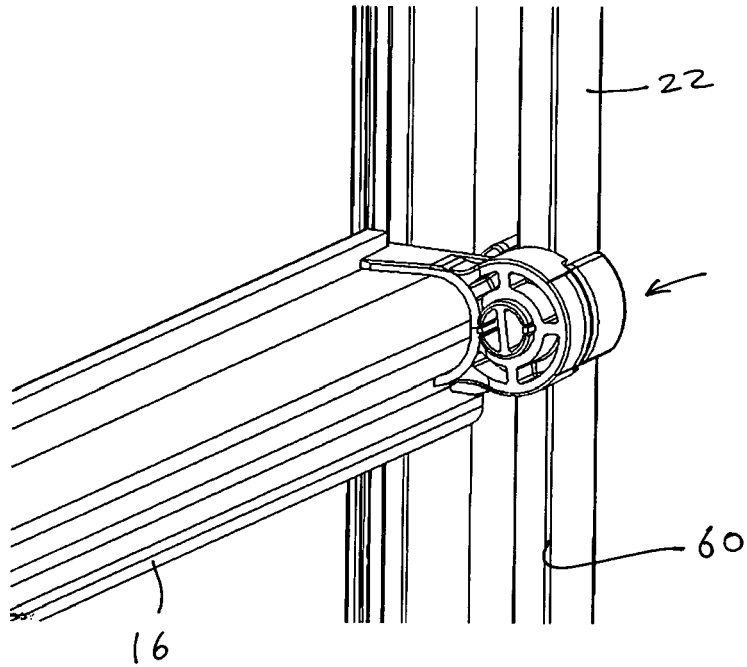


Figure 2

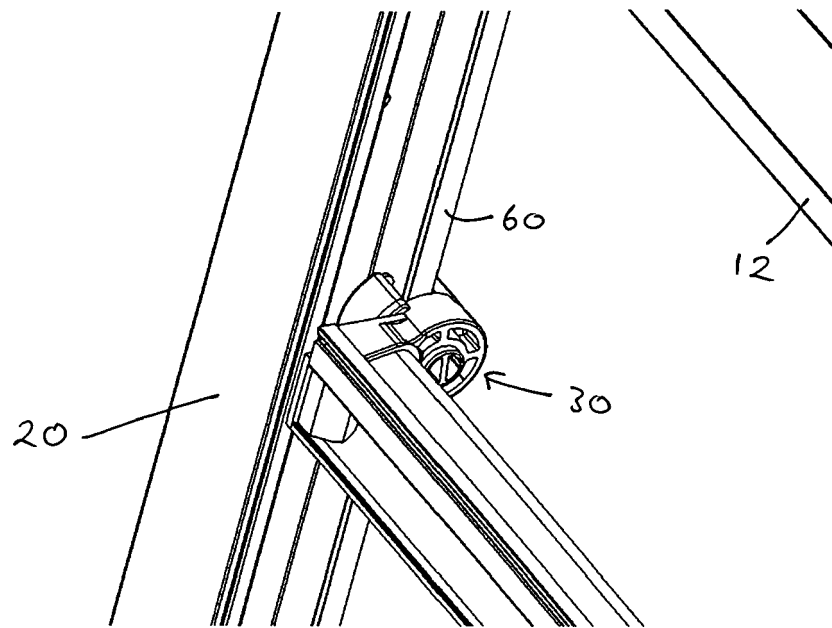


Figure 3

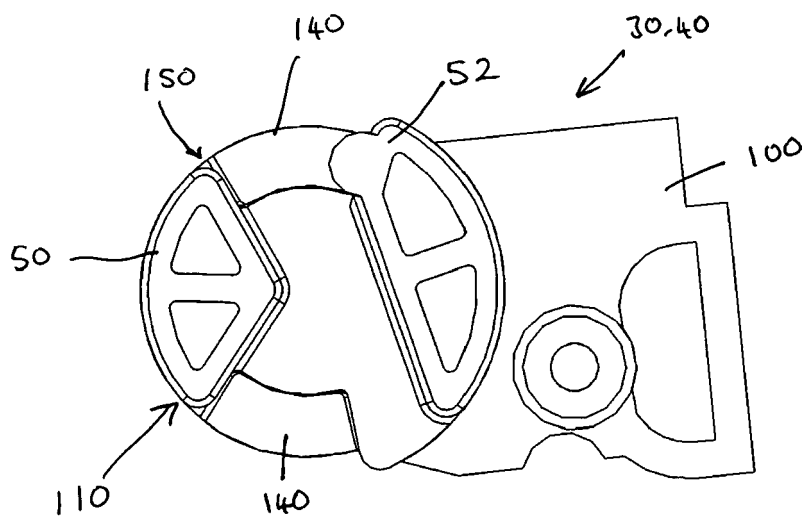


Figure 4

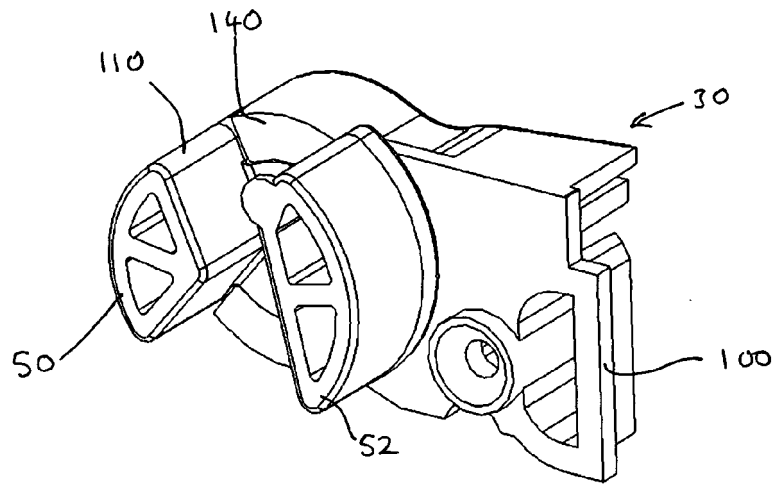


Figure 5

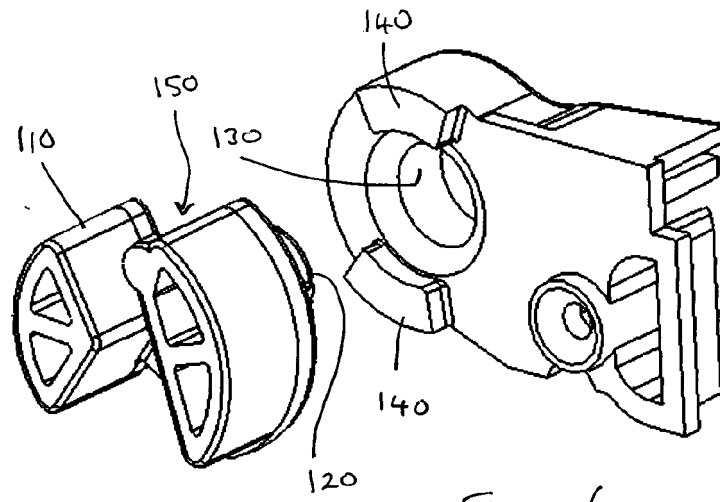


Figure 6

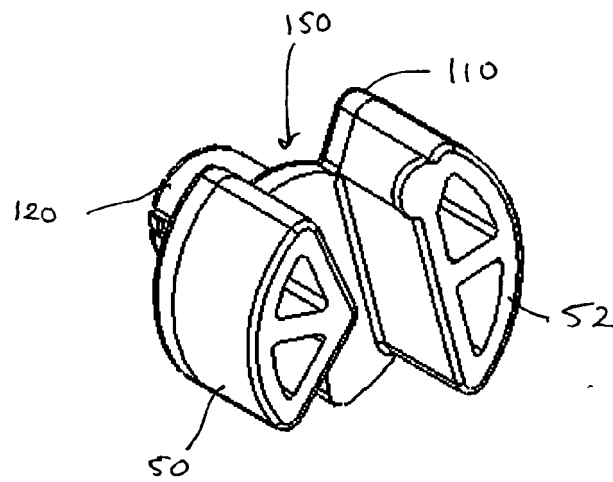


Figure 7