



(11) **EP 2 199 529 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
16.08.2017 Bulletin 2017/33

(51) Int Cl.:
E06B 9/40 (2006.01) **E06B 9/82 (2006.01)**
E06B 9/60 (2006.01)

(21) Application number: **09015468.3**

(22) Date of filing: **15.12.2009**

(54) **Screen assembly**

Schirmanordnung

Ensemble d'écran

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO SE SI SK SM TR

(30) Priority: **16.12.2008 GB 0822891**

(43) Date of publication of application:
23.06.2010 Bulletin 2010/25

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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] DE102006032933 and WO 2008/090577 are examples of known tensioned screens with locking devices engaging guide tracks between which the screen is mounted.

[0007] According to the present invention there is provided a screen assembly for a window as claimed in claim 1.

[0008] 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 de-

finied stops or abutments.

[0009] 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.

[0010] 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.

[0011] 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.

[0012] 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.

[0013] 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.

[0014] 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.

[0015] 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.

[0016] 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.

[0017] 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 flex-

ibility of the materials of the screen assembly.

[0018] 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.

[0019] 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 as defined by the appended claims.

Claims

1. A screen assembly (10) for a window comprising a tensioned screen (14) moveable between a pair of spaced guide tracks (20,22), a handle (16) being mounted on a free end of the screen (14) between said guide tracks (20,22), and a locking device (30,40) mounted on each end of the handle (16), the handle (16) being moveable between a locking position, wherein the locking devices respectively engage a respective one of the guide tracks (20,22) to prevent movement of the screen (14), and an unlocked position, wherein the locking devices (30,40) are free to slide along respective guide tracks (20,22) such that the screen (14) is free to move with respect to the guide tracks (20,22), said handle (16) and associated locking devices (30,40) being biased towards said locked position by the action of the tensioned screen (14) on the handle (16) and being moveable towards said unlocked position, against said biasing force of the tensioned screen, wherein each locking device (30,40) is connected to a respective end of the handle (16) by connection means permitting limited movement of the respective locking device (30,40) with respect to the handle (16) to accommodate misalignment between the locking devices (30,40) and the guide tracks (20,22), wherein each locking device (30,40) 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 (100) about the rotational axis of the handle (16), **characterised in that** the locking part (100) of each locking device (30,40) is provided with a central spindle (120) rotatably receivable within an aperture (130) in the base part (100), cooperating faces of the locking part (110) and base part (100) being provided with cooperating features which permit limited rotational movement of the locking part (110) with respect to the base part (100), said cooperating features comprise one or more axially projecting arcuate members (140) provided on the base part (100) receivable in one or more corresponding arcuate slots or recesses (150) provided on the locking part (110), said one or more arcuate

- slots and said one or more corresponding arcuate members being arranged concentrically with said central spindle (120) and the or each arcuate members (140) having a circumferential extent less than that of the or each corresponding arcuate slots (150) whereby the locking part (110) can rotate with respect to the base part (100) within limits defined by the interaction of the one or more arcuate members (140) and the one or more arcuate slots (150).
2. A screen assembly as claimed in claim 1, wherein the handle (16) 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 (16) and associated locking devices (30,40) are rotatable between said locked and unlocked positions about an axis extending transversely of the screen (14), 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 (16) is mounted for pivotal movement about said rotational axis with respect to the guide tracks (20,22) between said locked and unlocked positions, the handle (16) being attached to the screen (14) such that the handle is pivoted towards its locked position under the action of the tensioned screen whereby the locking devices (30,40) engage the guide tracks (20,22) to automatically lock the screen (14) in a desired position when the handle (16) is released by a user.
 5. A screen assembly as claimed in claim 4, wherein the screen (14) is attached to the handle (16) 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 (20,22) comprises an elongate rail (60), each locking device (30,40) comprises first and second parts (50,52) located opposite sides of the rail (60) such that rotation of the locking device (30,40) brings said first and second parts (50,52) of the locking device (30,40) into engagement with either side of the rail (60) to grip the rail (60).
 7. A screen assembly as claimed in any of claims 1 to 5, wherein each guide track (20,22) comprises a pair of parallel rails, each locking device (30,40) being located between the parallel rails of a respective guide track, each locking device (30,40) having an

elliptical or elongated shape having a length greater than the width of the track.

5 Patentansprüche

1. Rollobaugruppe (10) für ein Fenster mit einem gespannten Rollo (14), das zwischen einem Paar beabstandeter Führungsbahnen (20, 22) beweglich ist, wobei ein Handgriff (16) an einem freien Ende des Rollos (14) zwischen den Führungsschienen (20, 22) angebracht ist und eine Verriegelungsvorrichtung (30, 40) an jedem Ende des Handgriffs (16) angebracht ist, wobei der Handgriff (16) zwischen einer Verriegelungsposition, bei der die Verriegelungsvorrichtungen jeweils in eine der Führungsbahnen (20, 22) einrasten, um eine Bewegung des Rollos (14) zu verhindern, und einer entriegelten Position, bei der die Verriegelungsvorrichtungen (30, 40) frei sind, entlang der jeweiligen Führungsbahnen (20, 22) zu gleiten, beweglich ist, so dass sich das Rollo (14) in Bezug auf die Führungsbahnen (20, 22) frei bewegen kann, wobei der Handgriff (16) und die zugehörigen Verriegelungsvorrichtungen (30, 40) durch die Wirkung des gespannten Rollos (14) an dem Handgriff (16) in Richtung der verriegelten Position vorgespannt sind und gegen die Vorspannkraft des gespannten Rollos in Richtung der entriegelten Position beweglich sind, wobei jede Verriegelungsvorrichtung (30, 40) mit einem jeweiligen Ende des Handgriffs (16) durch Verbindungsmittel verbunden ist, die eine begrenzte Bewegung der jeweiligen Verriegelungsvorrichtung (30, 40) in Bezug auf den Handgriff (16) ermöglichen, um eine Fehlaustrichtung zwischen den Verriegelungsvorrichtungen (30, 40) und den Führungsbahnen (20, 22) aufzunehmen, wobei jede Verriegelungsvorrichtung (30, 40) ein Basisteil (100), das an einem jeweiligen Ende des Handgriffs (16) angebracht werden kann, und ein Verriegelungsteil (110), das an dem Basisteil (100) angebracht ist, für eine begrenzte Drehbewegung in Bezug auf das Basisteil (100) um die Drehachse des Handgriffs (16) umfasst, **dadurch gekennzeichnet, dass** das Verriegelungsteil (100) jeder Verriegelungsvorrichtung (30, 40) mit einer zentralen Spindel (120) versehen ist, die innerhalb einer Öffnung (130) in dem Basisteil (100) drehbar aufgenommen werden kann, wobei zusammenwirkende Flächen des Verriegelungsteils (110) und des Basisteils (100) mit zusammenwirkenden Merkmalen versehen sind, die eine begrenzte Drehbewegung des Verriegelungsteils (110) gegenüber dem Basisteil (100) ermöglichen, wobei die zusammenwirkenden Merkmale ein oder mehrere axial vorstehende bogenförmige Elemente (140) umfassen, die an dem Basisteil (100) vorgesehen sind, die in einem oder mehreren entsprechenden bogenförmigen Schlitzen oder Ausnehmungen (150), die an dem Verrie-

gelungsteil (110) vorgesehen sind, aufgenommen werden können, wobei der eine oder die mehreren bogenförmigen Schlitze und der eine oder die mehreren entsprechenden bogenförmigen Elemente konzentrisch mit der zentralen Spindel (120) angeordnet sind und das bzw. jedes bogenförmige Element (140) eine Umfangsausdehnung aufweist, die geringer ist als die des bzw. jedes entsprechenden bogenförmigen Schlitzes (150), wobei sich das Verriegelungsteil (110) in Bezug auf das Basisteil (100) innerhalb von Grenzen drehen kann, die durch die Wechselwirkung des einen oder der mehreren bogenförmigen Elemente (140) und des einen oder der mehreren bogenförmigen Schlitzes (150) definiert sind.

2. Rollobaugruppe nach Anspruch 1, wobei der Handgriff (16) einen länglichen Stab umfasst, der an einem unteren Ende des Rollos angebracht ist.
3. Rollobaugruppe nach einem der vorhergehenden Ansprüche, wobei der Handgriff (16) und zugeordnete Verriegelungsvorrichtungen (30, 40) zwischen den verriegelten und entriegelten Positionen um eine quer zum Rollo (14) verlaufende Achse drehbar sind, wobei jedes jeweilige Verbindungsmittel dafür ausgelegt ist, eine begrenzte Drehbewegung der jeweiligen Verriegelungsvorrichtung in Bezug auf den Handgriff zwischen definierten Stoppfern oder Anschlägen zu ermöglichen.
4. Rollobaugruppe nach Anspruch 3, wobei der Handgriff (16) um die Drehachse in Bezug auf die Führungsbahnen (20, 22) zwischen den verriegelten und entriegelten Positionen schwenkbar gelagert ist, wobei der Handgriff (16) an dem Rollo (14) befestigt ist, so dass der Handgriff unter der Wirkung des gespannten Rollos in Richtung seiner verriegelten Position geschwenkt wird, wodurch die Verriegelungsvorrichtungen (30, 40) in die Führungsbahnen (20, 22) eingreifen, um das Rollo (14) automatisch in einer gewünschten Position zu verriegeln, wenn der Handgriff (16) von einem Benutzer freigegeben wird.
5. Rollobaugruppe nach Anspruch 4, wobei das Rollo (14) an dem Handgriff (16) an einer Position angebracht ist, die sich versetzt von und parallel zu der Drehachse des Handgriffs befindet, so dass die Spannung, die über das gespannte Rollo auf den Handgriff angewendet wird, den Handgriff in Richtung seiner verriegelten Position dreht.
6. Rollobaugruppe nach einem der vorhergehenden Ansprüche, wobei jede Führungsbahn (20, 22) eine längliche Schiene (60) umfasst, wobei jede Verriegelungsvorrichtung (30, 40) erste und zweite Teile (50, 52) umfasst, die an gegenüberliegenden Seiten der Schiene (60) angeordnet sind, so dass die Dre-

hung der Verriegelungsvorrichtung (30, 40) die ersten und zweiten Teile (50, 52) der Verriegelungsvorrichtung (30, 40) in Eingriff mit jeder Seite der Schiene (60) bringt, um die Schiene (60) zu greifen.

7. Rollobaugruppe nach einem der Ansprüche 1 bis 5, wobei jede Führungsbahn (20, 22) ein Paar paralleler Schienen umfasst, wobei jede Verriegelungsvorrichtung (30, 40) zwischen den parallelen Schienen einer jeweiligen Führungsbahn angeordnet ist, wobei jede Verriegelungsvorrichtung (30, 40) eine elliptische oder längliche Form mit einer Länge aufweist, die größer als die Breite der Bahn ist.

Revendications

1. Ensemble formant écran (10) pour une fenêtre comportant un écran sous tension (14) mobile entre une paire de chemins de guidage espacés (20, 22), une poignée (16) qui est montée sur une extrémité libre de l'écran (14) entre lesdits chemins de guidage (20, 22), et un dispositif de verrouillage (30, 40) monté sur chaque extrémité de la poignée (16), la poignée (16) étant mobile entre une position de verrouillage, dans laquelle les dispositifs de verrouillage entrent respectivement en prise avec un chemin de guidage respectif des chemins de guidage (20, 22) pour empêcher tout mouvement de l'écran (14), et une position déverrouillée, dans laquelle les dispositifs de verrouillage (30, 40) sont libres de coulisser le long des chemins de guidage respectifs (20, 22) de telle sorte que l'écran (14) est libre de se déplacer par rapport aux chemins de guidage (20, 22), ladite poignée (16) et les dispositifs de verrouillage associés (30, 40) étant sollicités vers ladite position verrouillée sous l'action de l'écran sous tension (14) sur la poignée (16) et étant mobiles vers ladite position déverrouillée, contre ladite force de sollicitation de l'écran sous tension, dans lequel chaque dispositif de verrouillage (30, 40) est connecté à une extrémité respective de la poignée (16) par des moyens de connexion permettant un mouvement limité du dispositif de verrouillage respectif (30, 40) par rapport à la poignée (16) pour tenir compte de tout défaut d'alignement entre les dispositifs de verrouillage (30, 40) et les chemins de guidage (20, 22), dans lequel chaque dispositif de verrouillage (30, 40) comporte une partie de base (100) en mesure d'être montée sur une extrémité respective de la poignée (16) et une partie de verrouillage (110) montée sur la partie de base (100) à des fins de mouvement de rotation limité par rapport à la partie de base (100) autour de l'axe de rotation de la poignée (16), **caractérisé en ce que** la partie de verrouillage (100) de chaque dispositif de verrouillage (30, 40) comporte une broche centrale (120) en mesure d'être reçue de manière rotative à l'intérieur d'une ouverture (130) dans la

- partie de base (100), des faces de coopération de la partie de verrouillage (110) et de la partie de base (100) comportant des caractéristiques de coopération qui permettent un mouvement de rotation limité de la partie de verrouillage (110) par rapport à la partie de base (100), lesdites caractéristiques de coopération comportent un ou plusieurs éléments arqués se projetant dans le sens axial (140) mis en oeuvre sur la partie de base (100) en mesure d'être reçus dans une ou plusieurs fentes, ou évidements, arqués correspondants (150) mises en oeuvre sur la partie de verrouillage (110), lesdites une ou plusieurs fentes arquées et lesdits un ou plusieurs éléments arqués correspondants étant agencés de manière concentrique avec ladite broche centrale (120) et le ou chaque élément arqué (140) ayant une étendue circonférentielle inférieure à celle de la ou de chaque fente arquée correspondante (150) ce par quoi la partie de verrouillage (110) peut tourner par rapport à la partie de base (100) dans des limites définies par l'interaction desdits un ou plusieurs éléments arqués (140) et desdites une ou plusieurs fentes arquées (150).
2. Ensemble formant écran selon la revendication 1, dans lequel la poignée (16) comporte une barre allongée montée sur une extrémité inférieure de l'écran.
3. Ensemble formant écran selon l'une quelconque des revendications précédentes, dans lequel ladite poignée (16) et lesdits dispositifs de verrouillage associés (30, 40) sont rotatifs entre lesdites positions verrouillée et déverrouillée autour d'un axe s'étendant dans le sens transversal de l'écran (14), chaque moyen de connexion respectif étant adapté pour permettre un mouvement de rotation limité du dispositif de verrouillage respectif par rapport à la poignée entre des arrêts, ou points d'appui, définis.
4. Ensemble formant écran selon la revendication 3, dans lequel la poignée (16) est montée à des fins de mouvement pivotant autour dudit axe de rotation par rapport aux chemins de guidage (20, 22) entre lesdites positions verrouillée et déverrouillée, la poignée (16) étant attachée à l'écran (14) de telle sorte que la poignée est pivotée vers sa position verrouillée sous l'action de l'écran sous tension ce par quoi les dispositifs de verrouillage (30, 40) entrent en prise avec les chemins de guidage (20, 22) pour verrouiller automatiquement l'écran (14) dans une position souhaitée quand la poignée (16) est lâchée par un utilisateur.
5. Ensemble formant écran selon la revendication 4, dans lequel l'écran (14) est attaché à la poignée (16) au niveau d'une position décalée et parallèle par rapport audit axe de rotation de la poignée de telle sorte que la tension appliquée sur la poignée par le biais de l'écran sous tension fait tourner la poignée vers sa position verrouillée.
6. Ensemble formant écran selon l'une quelconque des revendications précédentes, dans lequel chaque chemin de guidage (20, 22) comporte un rail allongé (60), chaque dispositif de verrouillage (30, 40) comporte des première et deuxième parties (50, 52) situées sur des côtés opposés du rail (60) de telle sorte que la rotation du dispositif de verrouillage (30, 40) met lesdites première et deuxième parties (50, 52) du dispositif de verrouillage (30, 40) en prise avec un côté et l'autre du rail (60) pour saisir le rail (60).
7. Ensemble formant écran selon l'une quelconque des revendications 1 à 5, dans lequel chaque chemin de guidage (20, 22) comporte une paire de rails parallèles, chaque dispositif de verrouillage (30, 40) étant situé entre les rails parallèles d'un chemin de guidage respectif, chaque dispositif de verrouillage (30, 40) ayant une forme elliptique ou allongée ayant une longueur supérieure à la largeur du chemin.

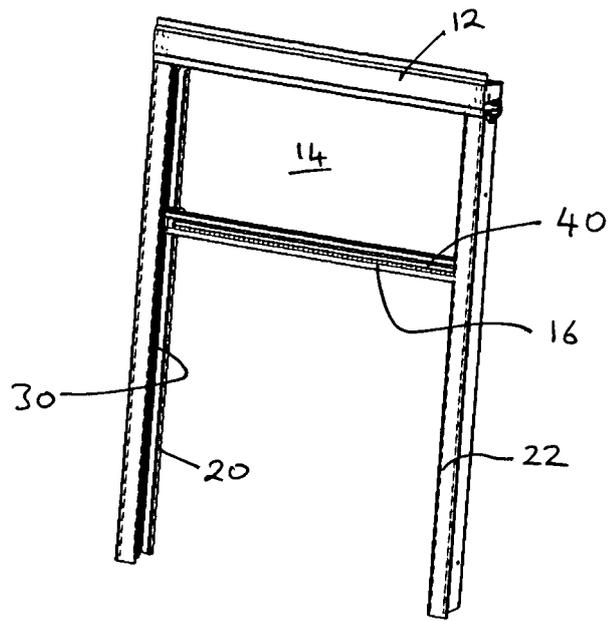


Figure 1

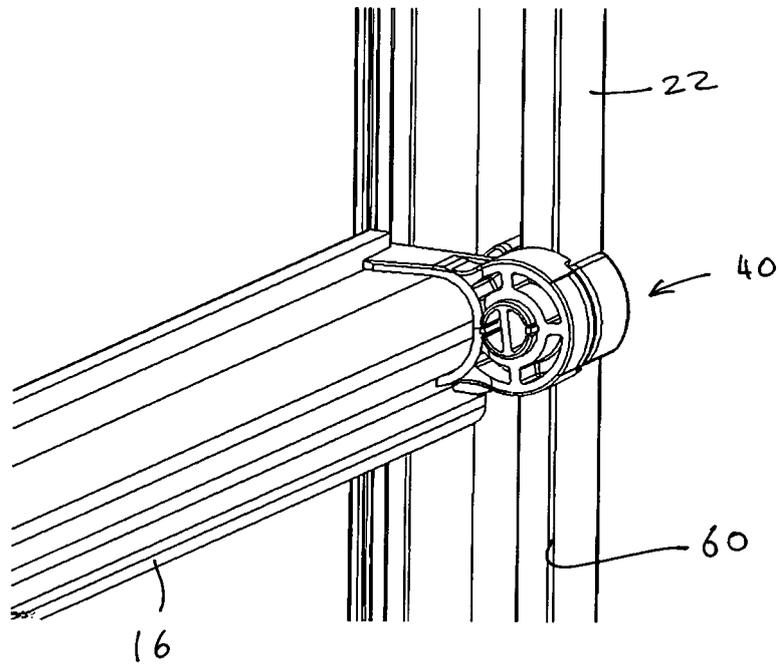


Figure 2

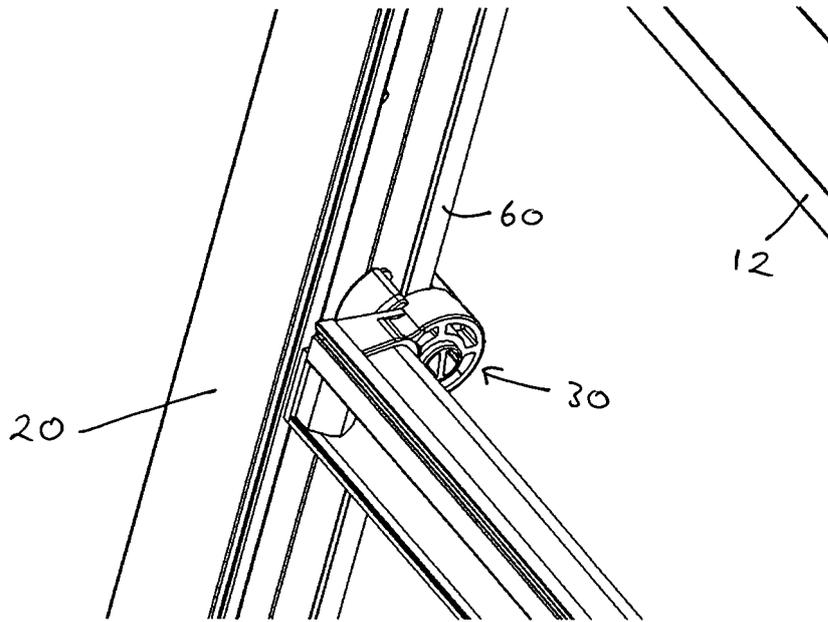


Figure 3

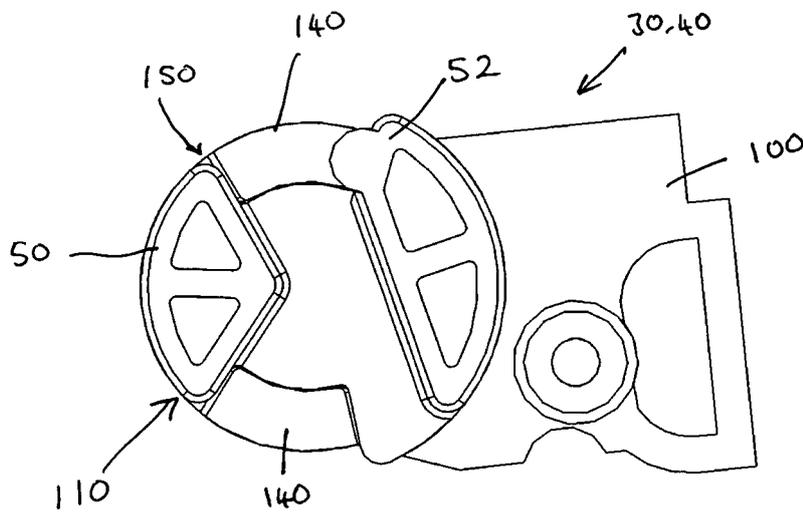


Figure 4

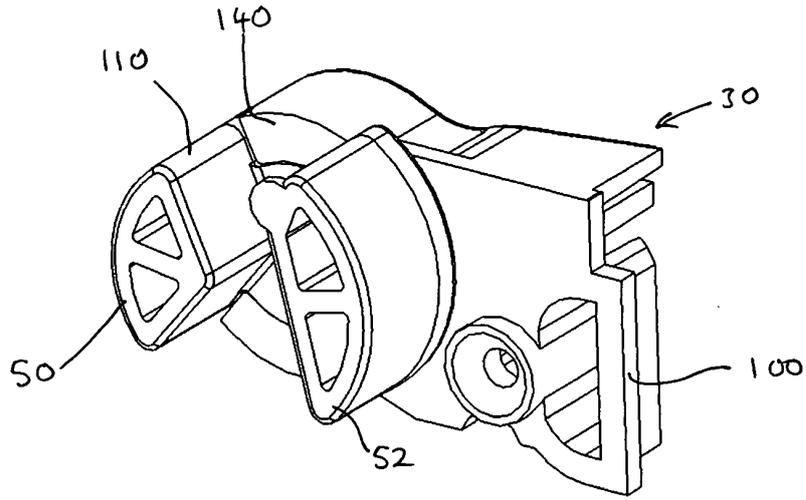


Figure 5

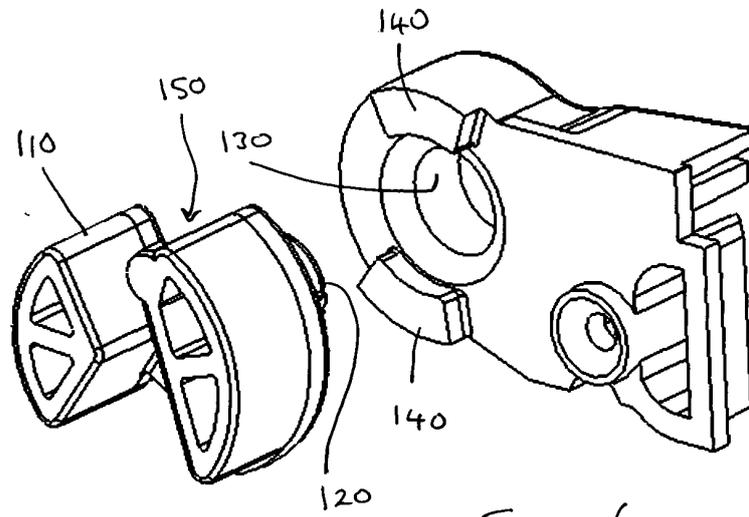


Figure 6

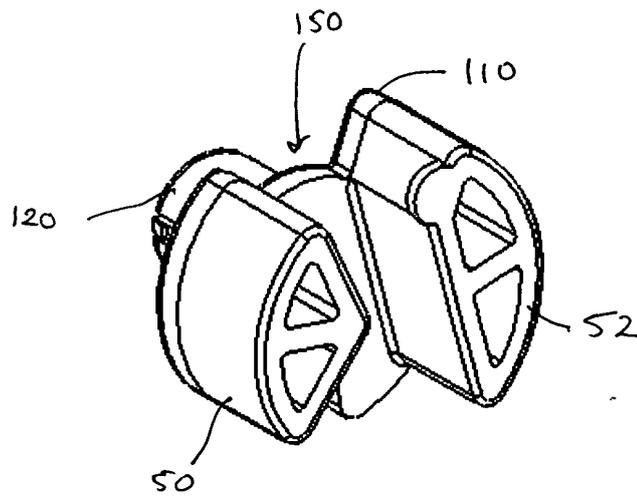


Figure 7

REFERENCES CITED IN THE DESCRIPTION

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