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(54) **Head assembly for a motorised screen**

(57) A head assembly for a motorised screen, said head assembly comprising a roller upon which is wound a screen, a motor being provided for raising or lowering the screen, control means for controlling operation of said motor and a power supply for powering said motor, said roller, motor, control means and power supply being mounted within an elongate housing to be mounted within an upper region of a window or door opening, said housing having a base portion adapted to be fitted within said window opening and a cover portion mounted on the base portion for movement between a closed position and an open position, said roller being mounted in said cover portion of the housing.

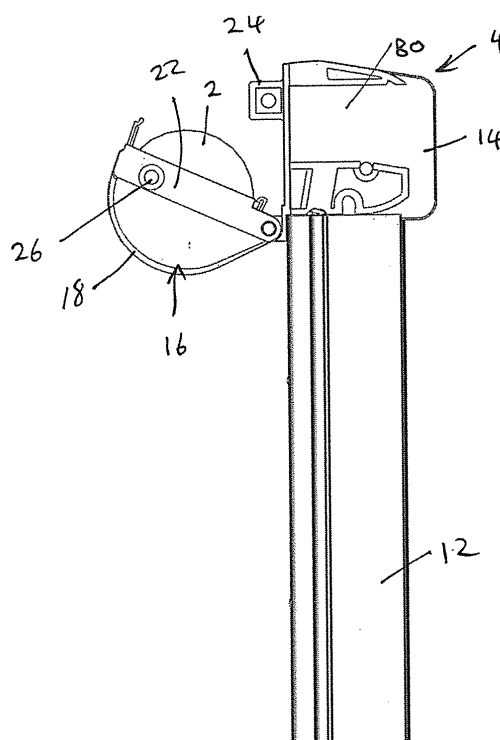


Figure 4

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Description

[0001] This invention relates to head assembly for a motorised screen, and in particular to a head assembly for a motorised window screen that provides easy access for replacing batteries or servicing the drive assembly and electronic components thereof.

[0002] It is known to provide blinds or screens fitted to a window or door opening, typically fixed to the upper face of the window opening or between the sides of the window opening adjacent the upper face thereof, for selectively obscuring the opening. In the case of a roller blind, such typically have a roller mounted at an upper side of the window or door opening around which a suitable screen is wound. The screen may be lowered and raised by rotating the roller. The lower end of the screen may be provided with a bar such that the screen hangs from the roller under gravity. It is known to provide an electric motor for rotating the roller and/or moving the guide bar to raise and lower the screen, such motor and associated gearbox and power supply, such as a plurality of batteries, being mounted adjacent the roller, typically within a housing of a head assembly of the blind.

[0003] A problem with such known motorised blinds is that the head assembly of the blind is usually located at the upper side of a window opening at a height that makes access difficult. Therefore changing batteries or servicing the electrical components of head assembly can be time consuming and difficult, often requiring complete demounting of the blind from the window opening or at least removal of the roller to gain access to the motor and electrical components.

[0004] According to a first aspect of the present invention there is provided a head assembly for a motorised screen, said head assembly comprising a roller upon which is wound a screen, a motor being provided for raising or lowering the screen, control means for controlling operation of said motor and a power supply for powering said motor, said roller, motor, control means and power supply being mounted within an elongate housing to be mounted within an upper region of a window or door opening, said housing having a base portion adapted to be fitted within said window opening and a cover portion mounted on the base portion for movement between a closed position and an open position, said roller being mounted in said cover portion of the housing.

[0005] The motor may be arranged to rotatably drive the roller or otherwise cooperate with the screen to raise and lower the screen.

[0006] Preferably said power supply comprises one or more batteries.

[0007] By mounting the roller in the cover portion the roller is able to be moved along with the cover portion to provide access to the motor and/or power supply and/or control means.

[0008] Preferably said cover portion comprises a front face of the housing.

[0009] In a preferred embodiment said cover portion

is pivotally mounted on said base portion for pivotal movement between said open and closed positions, preferably about a substantially horizontal pivot axis extending parallel to a longitudinal axis of the housing. Preferably said pivot axis is defined along a lower edge of the cover portion such that the cover portion pivots downwardly from its closed to its open positions.

[0010] Preferably said screen extends from said housing through an elongate gap in a lower portion of the housing. Preferably said elongate gap is defined between a lower side of the cover portion and an adjacent side of the base portion of the housing. Preferably said gap is arranged coaxially with said pivot axis of the cover portion.

[0011] Retaining means may be provided for retaining the cover portion in its closed position. Said retaining means may comprise at least one retaining pin arranged to extend through coaxially aligned apertures in the base portion and housing portion when the cover is in its closed position. Alternatively the retaining means may comprise a resilient tab mounted on the base portion adapted to engage a receiving aperture in the cover portion when the cover is in its closed position.

[0012] Preferably the roller of the blind is rotatably mounted between opposite end walls of said cover portion. Said cover portion may comprise a curved outer wall arranged to enclose at least a portion of the roller.

[0013] According to a further aspect of the present invention there is provided a screen assembly incorporating a head assembly in accordance with the first aspect of the present invention. A pair of mounting brackets may be provided for attachment to the window opening at or adjacent the top face of the window opening, each end of the housing having means for engaging a respective mounting bracket, whereby the mounting brackets may be attached the window opening such that the housing may be engaged onto the mounting brackets to mount the housing in the window opening. Preferably an engaging means on each end of the base portion comprises a recess or slot for receiving a portion of a respective bracket such that the housing may be engaged onto the mounting brackets to retain the housing between the sides of the window opening.

[0014] Preferably the screen is moveable between a pair of spaced guide tracks adapted to be mounted on each side of the window opening, a guide member being mounted on a free end of the screen extending between said guide tracks. Said motor may be arranged to drive the guide member up and down the guide tracks, for example via one or more drive belts. The roller may be tensioned such that the screen is biased towards a raised position.

[0015] Preferably each guide track is provided with a flange defining an extension of a front face of the guide track to extend over an outer face of window opening to close any gap between the sides of the window opening and the guide tracks. Preferably said flange is substantially contiguous with the front face of the guide track.

Preferably the flange is integral with the front face of the guide track.

[0016] 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 front view of a screen incorporating a head assembly according to an embodiment of the present invention;

Figure 2 is a front view of the head assembly of Figure 1 in an open configuration;

Figure 3 is a side view of the head assembly of Figure 1 in a closed configuration;

Figure 4 is a side view of the head assembly of Figure 1 in an open configuration;

Figure 5 is a perspective view showing the mounting arrangement of the head assembly of Figure 1;

Figure 6 is a further perspective view of the mounting arrangement of the head assembly of Figure 1;

Figures 7 and 8 illustrate the installation of the head assembly of Figure 1 in a window opening;

Figure 9 is a detailed perspective view of one side of the head assembly of Figure 1 in its closed configuration;

Figure 10 is a detailed perspective view of the head assembly of Figure 1 in its open configuration;

Figure 11 is a detailed perspective view of the head assembly of Figure 1 showing the drive arrangement;

Figure 12 is a detailed perspective view of the guide member of the screen of Figure 1;

Figure 13 is a detailed end view of the guide member;

Figure 14 is an end view of a lower side of the screen of Figure 1 showing the belt tensioning assembly; and

Figure 15 is a partly exploded perspective view of the belt tensioning assembly.

[0017] With reference to Figures 1 to 4, a motorised blind assembly for a window in accordance with an embodiment of the present invention comprises a roller 2 mounted within an elongate housing defining an elongate hollow cassette 4 adapted to be secured in an upper side of the window frame, around which a screen 6 is wound. A free end of the screen 6 is attached to an elongate

guide member 8 which is movably engaged, at its longitudinal ends, in side guide tracks 10,12 arranged on opposite lateral sides of the screen 6.

[0018] The cassette 6 comprises an elongate base portion 14 defining a rear side of the cassette, within which is mounted the drive assembly of the blind, comprising an electric motor, control circuitry and a battery pack (not shown). A cover portion 16 is pivotally mounted on a lower side of the base portion 14 to be pivotally moveable between a closed position, shown in Figures 1 and 3, and an open position, shown in Figures 2 and 4.

[0019] The cover portion 16 comprises a curved outer face 18 defining a front face of the cassette, and a pair of end walls 20,22, the roller 2 of the blind assembly being mounted between said end walls 20,22 of the cover portion 16 such that the roller 2 is housed within the cover portion 16 of the cassette 4.

[0020] The screen 6 extends through an elongate gap defined between a lower side of the cover portion 16 and a lower wall of the base portion 14 of the cassette 4.

[0021] In order to retain the cover portion 16 in its closed position, retaining members may be provided on either end of the base portion 14 arranged to project into the cover portion 16 when in its closed position. In one embodiment retaining members may comprise pins insertable through apertures 26 in the end walls of the cover portion to pass into cooperating apertures in retaining tabs 24 (as shown in Figures 3 and 4). Alternatively the retaining members may comprise resilient tabs 24 having an enlarged end adapted to engage respective receiving apertures 26 in the end walls of the cover portion, as shown in Figures 9 and 10.

[0022] By mounting the roller 2 in the cover portion 16 of the cassette 4, access to the drive assembly of the roller is greatly facilitated as the roller 2 is moved out of cassette 4 as the cover portion 16 is pivoted to its open position. This greatly facilitates replacement of the battery pack and servicing or repair of the drive assembly as well as facilitating replacement of the screen, if required.

[0023] As shown in Figures 5 to 8, the cassette may be mounted within an window opening by means of a pair of mounting brackets 40 secured to an upper side of the window opening at either end thereof. A button shaped projection 42 extends from a lower face of each mounting bracket 40 to be received in a receiving slot 44 formed in an upper side of the base portion 14 at either end thereof. The relative dimensions of the receiving slot 44 and projection 42 are such that the some lateral and/or vertical movement of the button shaped projection 42 within the corresponding receiving slot 44 is permitted to allow the cassette 4 to be centred within the window opening and/or to ensure that the screen 6 runs parallel to the sides of the window opening.

[0024] Alternatively, the cassette 4 may be mounted between the sides of the window opening adjacent the upper face of the window opening by means of a pair of mounting brackets (not shown) attachable to the sides

of the window opening. Each end of the cassette 4 may be provided with a recess 80 to be fitted over a respective bracket to locate the cassette 4 between the sides of the window opening.

[0025] The guide tracks 10,12 are provided with laterally extending flanges contiguous with the front faces of the guide tracks 10,12 to overlap the wall adjacent the sides of the window opening to cover any gaps between the sides of the guide tracks 10,12 and the sides of the window opening. The end walls 20,22 of the cassette 4 may be provided with corresponding laterally extending flanges to overlap the adjacent sides of the window opening.

[0026] The motor may be arranged to drive the guide member 8 up and down the guide tracks 10,12, for example via one or more drive belts 30, as best shown in Figure 11, located within one or both of the guide tracks 10,12, the motor being arranged to drive a spindle 32 having sprockets at one or both ends for driving the one or more belts 30. The roller 2 may be tensioned such that the screen 6 is biased towards a raised position.

[0027] As shown in Figures 12 and 13, at least one end, more preferably both ends, of the guide member 8 is coupled to the drive belt 30, preferably by mounting the free ends of the drive belt in a mounting block 34 provided on the guide member 8.

[0028] Preferably a lower guide sprocket 36 is mounted on a lower end of the respective guide track 10,12 via a tensioning assembly so that the belt 30 can be correctly tensioned. As shown in Figures 14 and 15, the tensioning assembly may comprise an first part 38, which may be located within a lower end of the respective guide track 10,12 and upon which the lower guide sprocket 36 is mounted, and a second part 40 defining a lower cap mounted on a lower end of the respective guide track 10,12. The first part 38 is adapted to receive a portion 44 of the second part, teeth 42 being formed on a cooperating surfaces of the first 38 and second parts 40 to define a ratchet arrangement, whereby the first part 38 can be moved downwardly with respect to the second part 40 to tension the belt 30, the cooperating teeth 42 retaining the position of the first part 38 with respect to the second part 40 to maintain the required belt tension.

[0029] Alternatively the motor may be arranged to rotatably drive the roller 2 to raise and lower the screen 6.

[0030] 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 head assembly for a motorised screen, said head assembly comprising a roller (2) upon which is wound a screen (6), a motor being provided for raising or lowering the screen, control means for controlling operation of said motor and a power supply for powering said motor, said roller (2), motor, control

means and power supply being mounted within an elongate housing (4) to be mounted within an upper region of a window or door opening, said housing (4) having a base portion (14) adapted to be fitted within said window opening and a cover portion (16) mounted on the base portion for movement between a closed position and an open position, said roller (2) being mounted in said cover portion (16) of the housing.

2. A head assembly as claimed in claim 1, wherein the motor is arranged to rotatably drive the roller (2) or otherwise cooperate with the screen (6) to raise and lower the screen (6).
3. A head assembly as claimed in any preceding claim, wherein said cover portion (16) comprises a front face of the housing (4).
4. A head assembly as claimed in claim 3, wherein said cover portion (16) is pivotally mounted on said base portion (14) for pivotal movement between said open and closed positions about a substantially horizontal pivot axis extending parallel to a longitudinal axis of the housing.
5. A head assembly as claimed in claim 4, wherein said pivot axis is defined along a lower edge of the cover portion (16) such that the cover portion (16) pivots downwardly from its closed to its open positions.
6. A head assembly as claimed in any preceding claim, wherein said screen (6) extends from said housing through an elongate gap in a lower portion of the housing defined between a lower side of the cover portion (16) and an adjacent side of the base portion (14) of the housing (4).
7. A head assembly as claimed in any preceding claim, wherein retaining means are provided for retaining the cover portion in its closed position, said retaining means comprising at least one retaining pin arranged to extend through coaxially aligned apertures in the base portion and housing portion when the cover is in its closed position or one or more resilient tabs (24) mounted on the base portion adapted to engage a respective receiving aperture (26) in the cover portion (16) when the cover portion (16) is in its closed position.
8. A head assembly as claimed in any preceding claim, wherein the roller (2) is rotatably mounted between opposite end walls (20,22) of said cover portion (16).
9. A head assembly as claimed in any preceding claim, wherein said cover portion (16) comprises a curved outer wall (18) arranged to enclose at least a portion of the roller (2).

10. A head assembly as claimed in any preceding claim, wherein a pair of mounting brackets (40) may be provided for attachment to the window opening at or adjacent the top face of the window opening, each end of the housing (4) having means for engaging a respective mounting bracket (40), whereby the mounting brackets (40) may be attached the window opening such that the housing (4) may be engaged onto the mounting brackets (40) to mount the housing (4) in the window opening.
11. A head assembly as claimed in claim 10, wherein an engaging means on each end of the base portion comprises a recess or slot (80, 44) for receiving a portion (42) of a respective bracket (40) such that the housing (4) may be engaged onto the mounting brackets (40) to retain the housing (4) in the window opening.
12. A motorised screen incorporating a head assembly as claimed in any of claims 1 to 11, wherein the screen (6) is moveable between a pair of spaced guide tracks (10,12) adapted to be mounted on each side of the window opening, a guide member (8) being mounted on a free end of the screen (6) extending between said guide tracks (10,12).
13. A screen as claimed in claim 12, wherein said motor is arranged to drive the guide member (8) up and down the guide tracks via one or more drive belts (30).
14. A screen as claimed in claim 13, wherein the roller (2) is tensioned such that the screen (6) is biased towards a raised position.
15. A screen as claimed in any of claims 12 to 14, wherein each guide track (10,12) is provided with a flange defining an extension of a front face of the guide track to extend over an outer face of window opening to close any gap between the sides of the window opening and the guide tracks (10,12).

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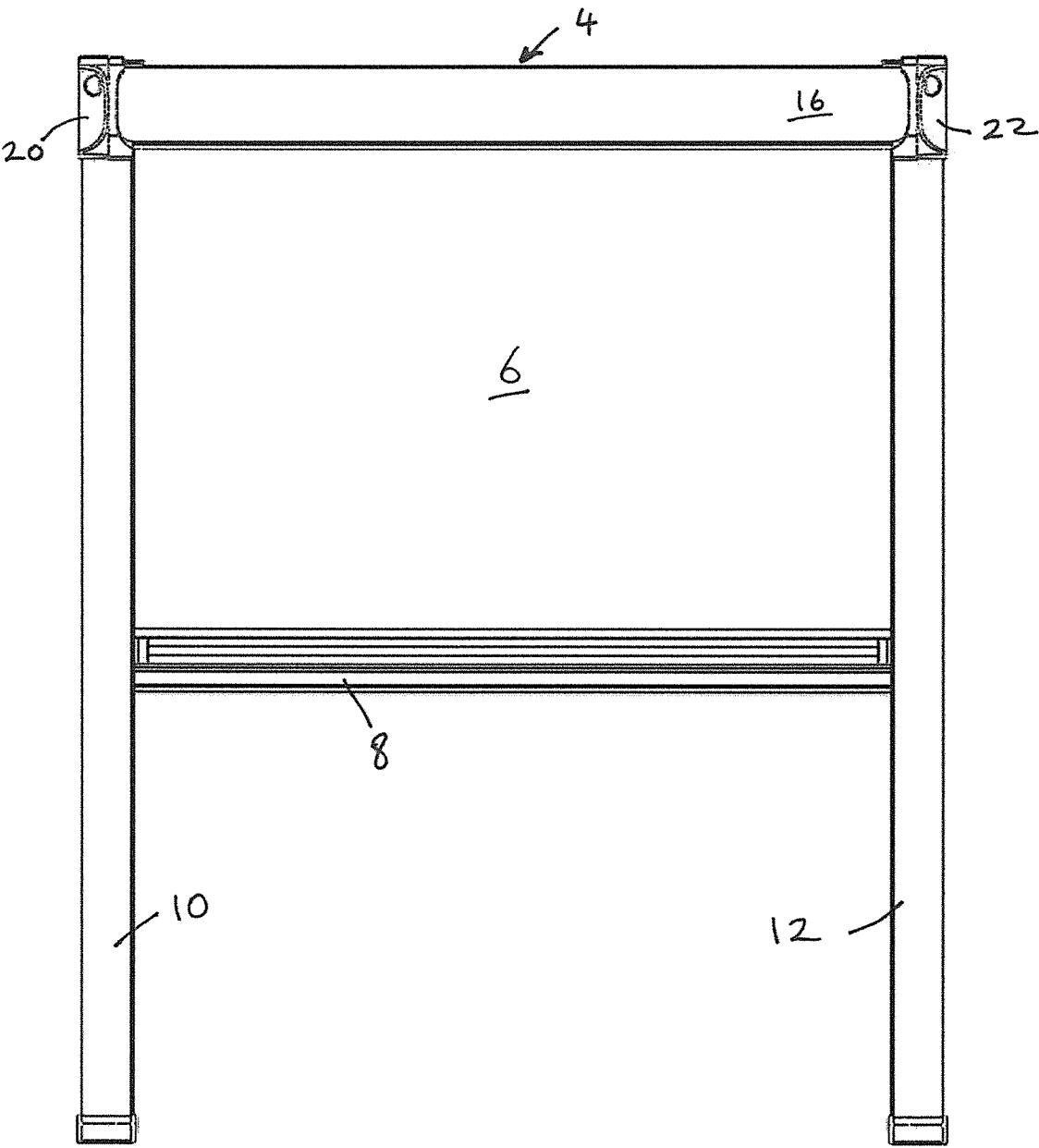


Figure 1

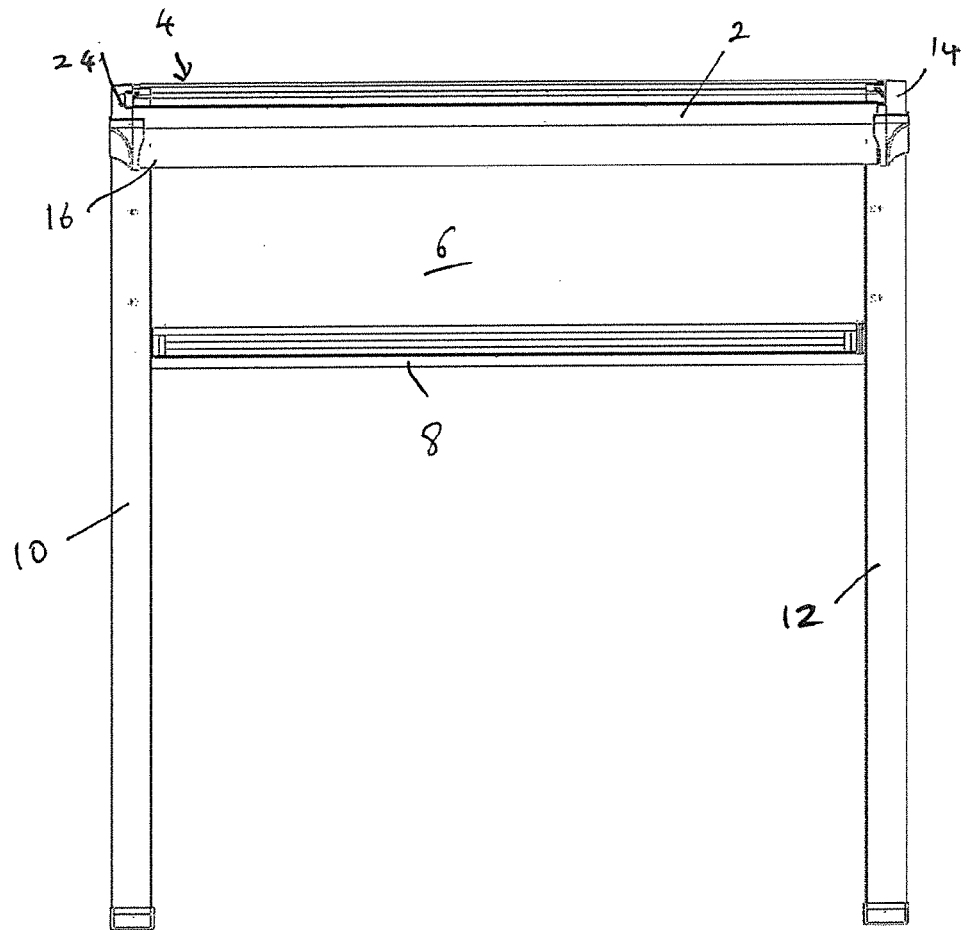


Figure 2

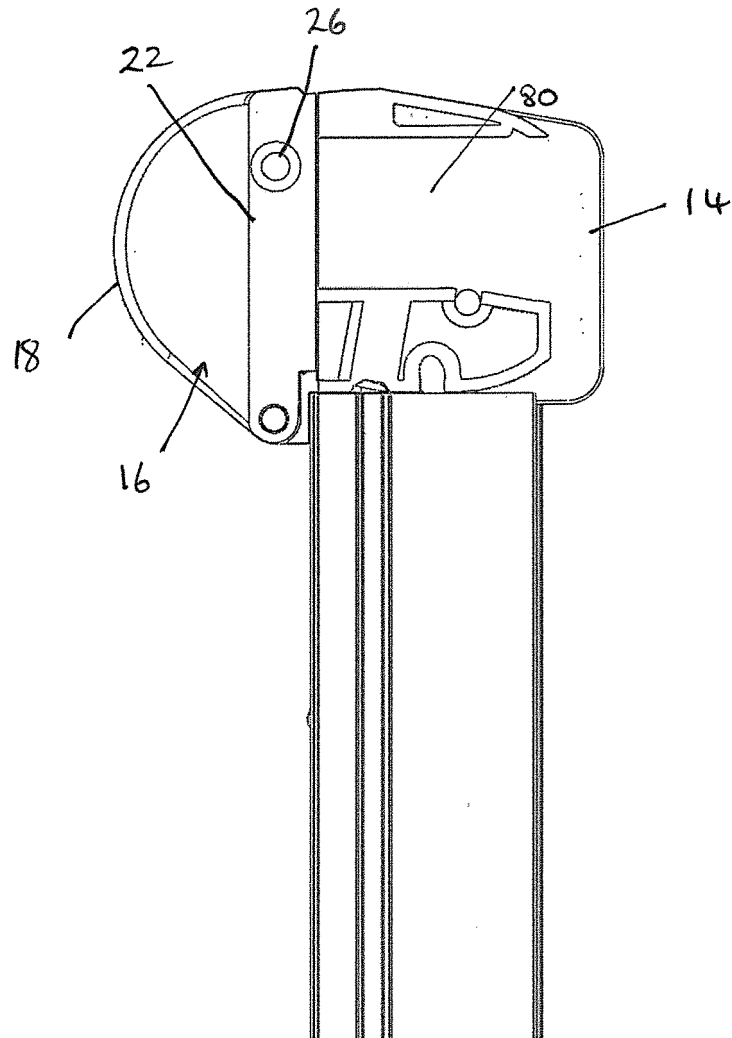


Figure 3

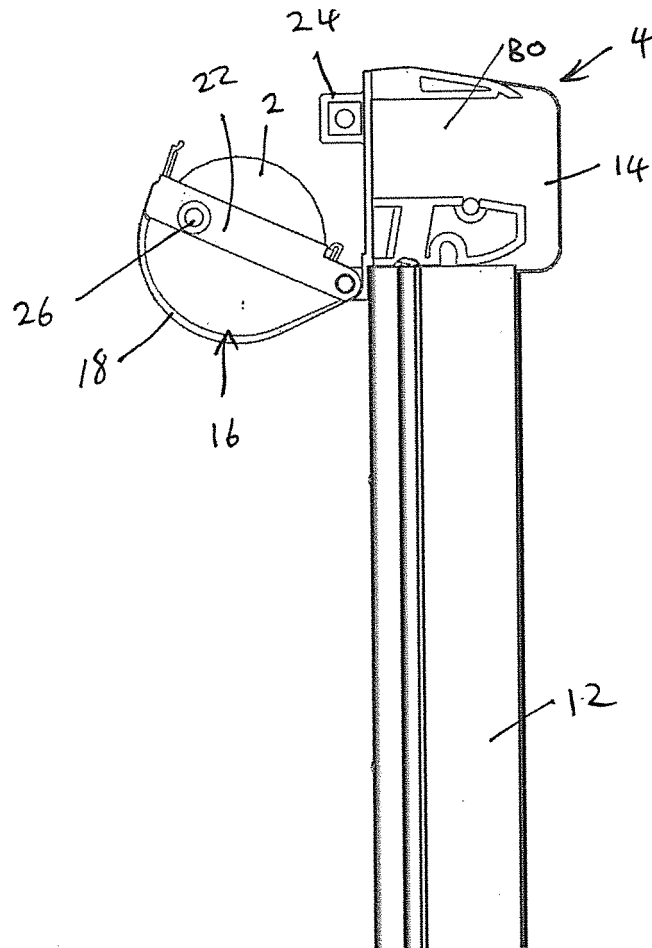


Figure 4

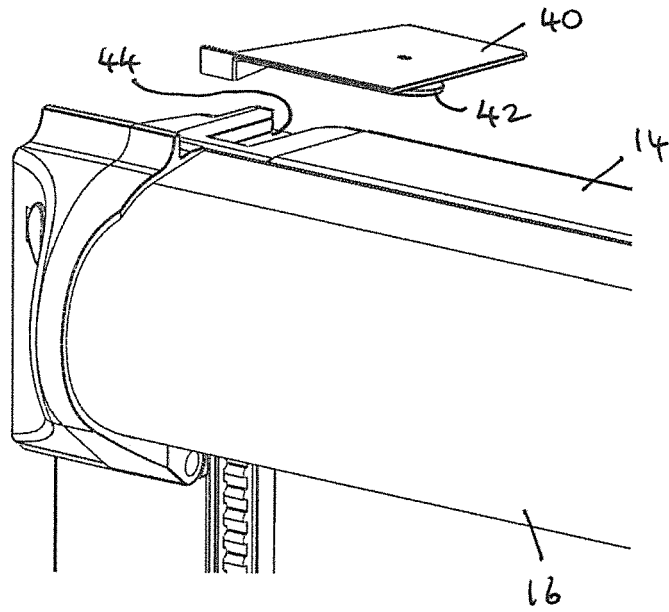


Figure 5

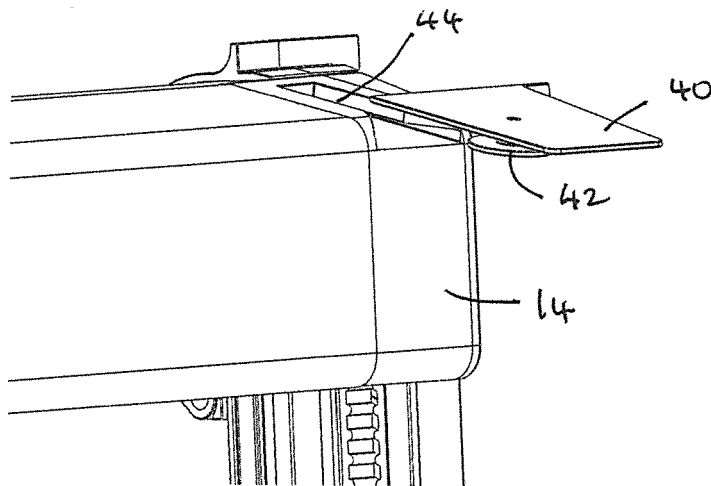


Figure 6

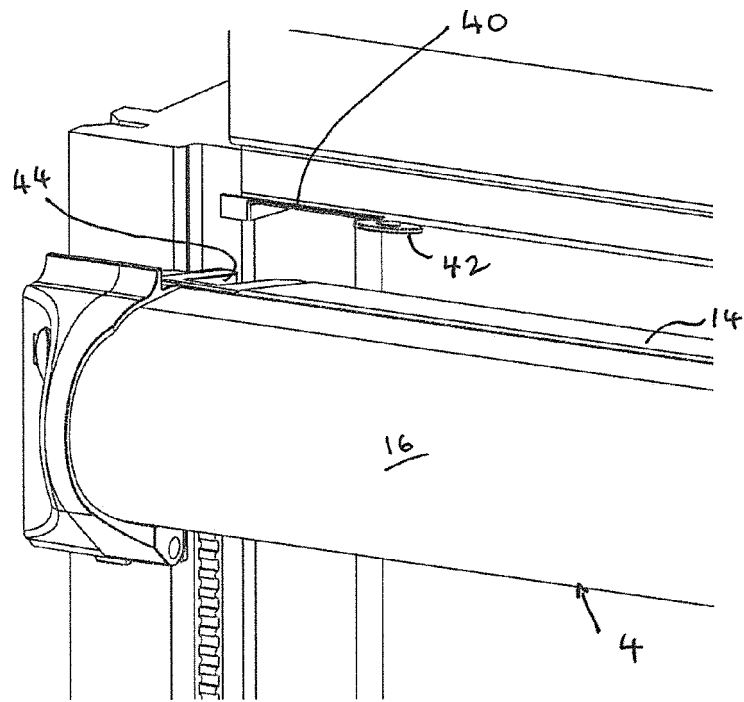


Figure 7

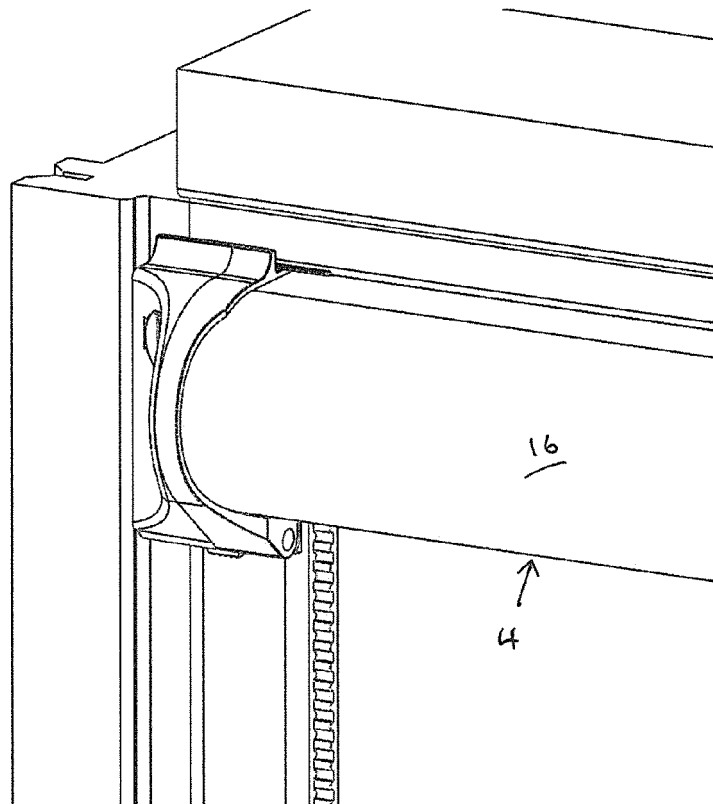
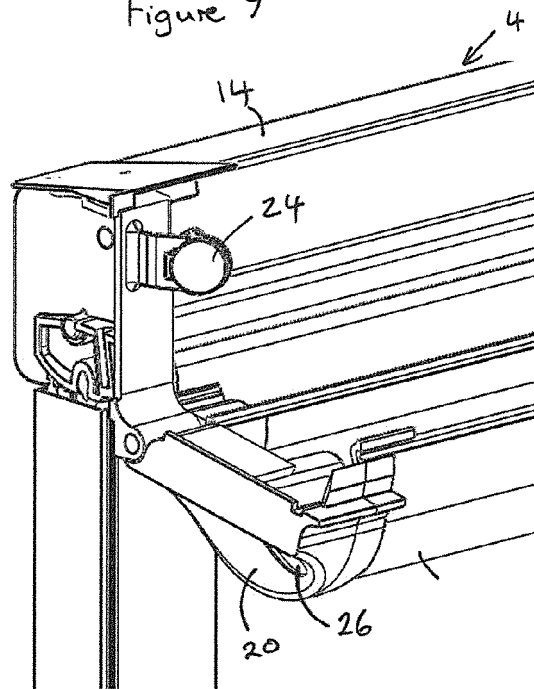
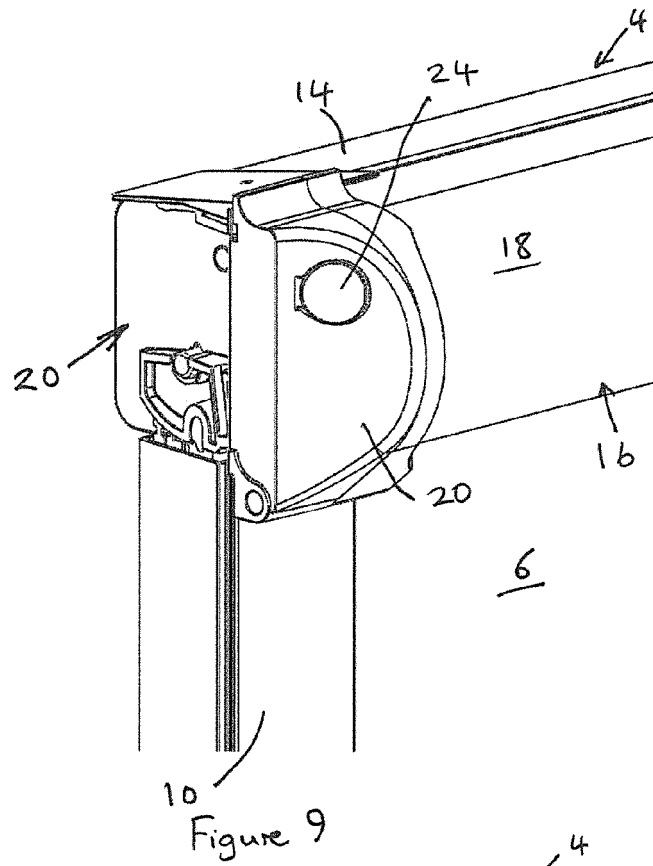


Figure 8



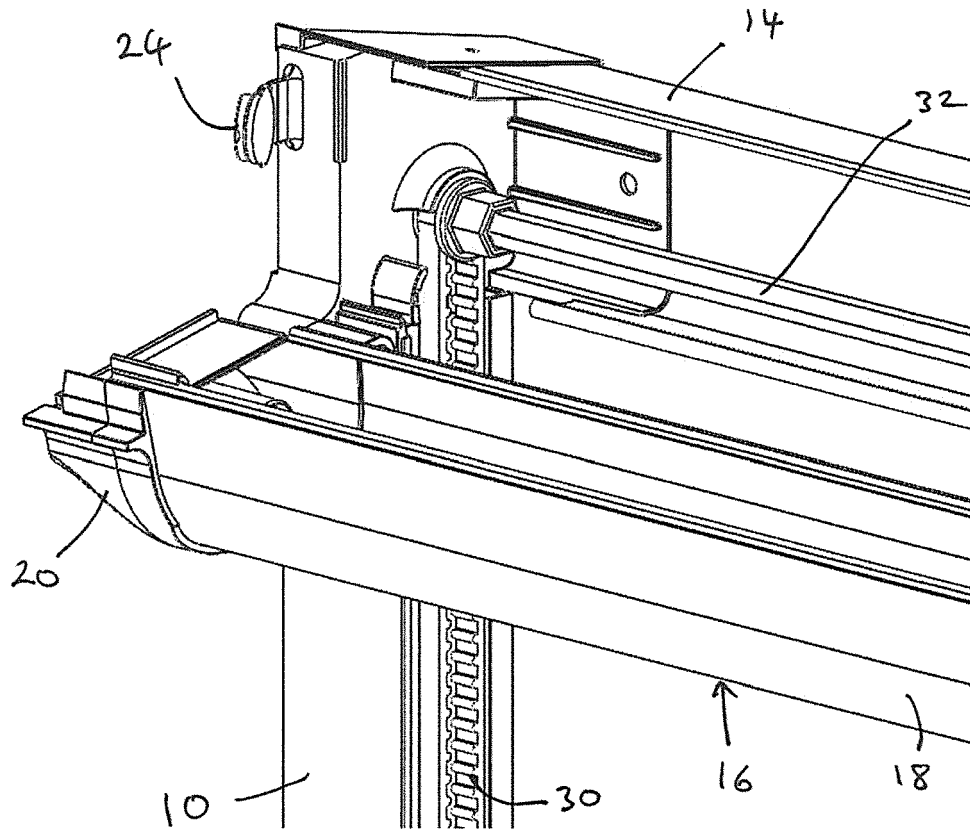


Figure 11

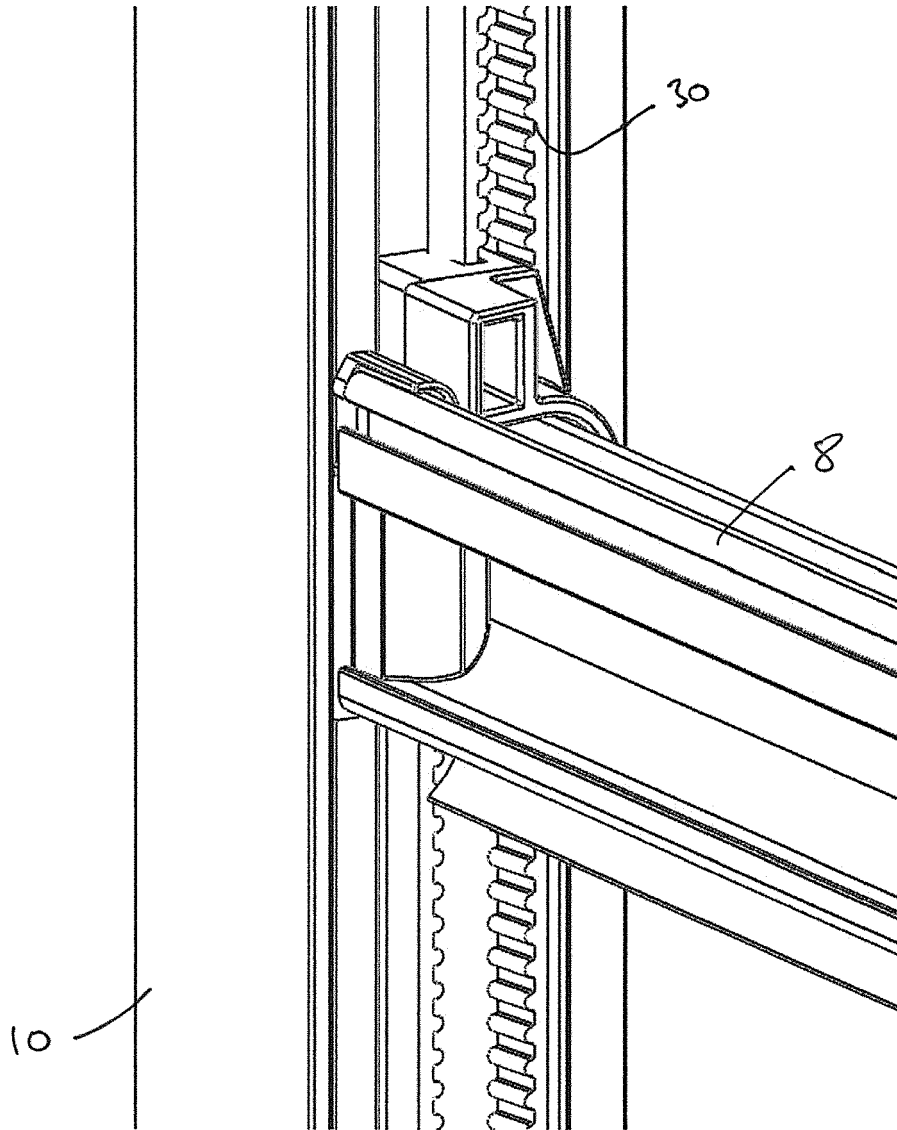


Figure 12

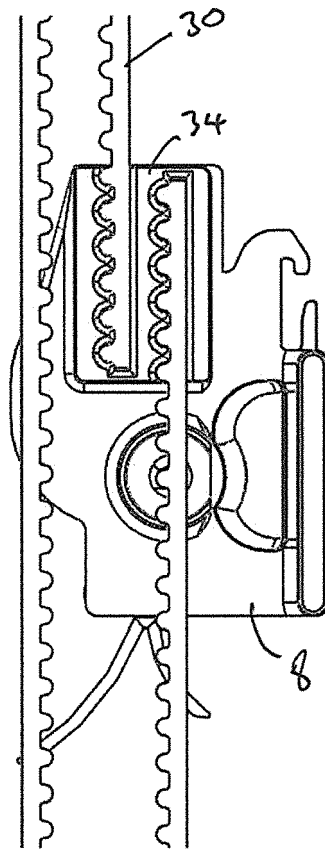


Figure 13

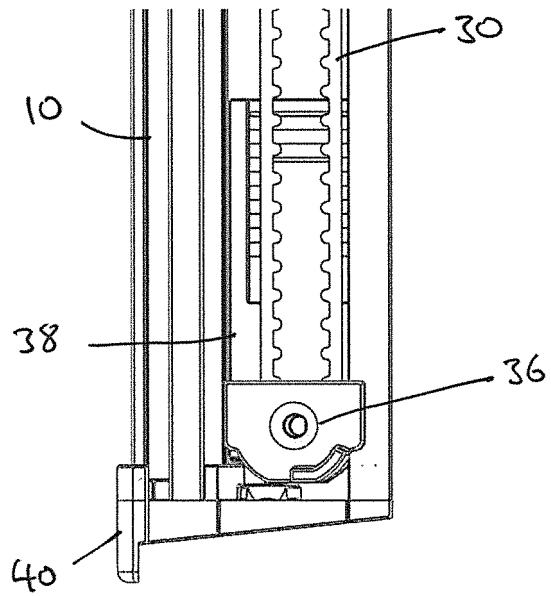


Figure 14

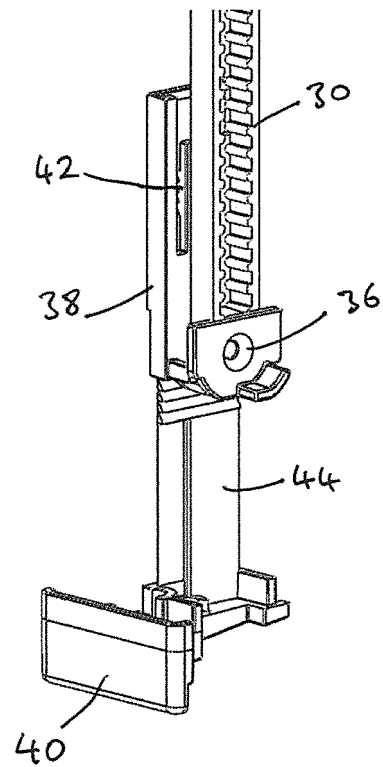


Figure 15



EUROPEAN SEARCH REPORT

Application Number
EP 13 15 6836

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	US 2012/031571 A1 (MULLET WILLIS JAY [US] ET AL) 9 February 2012 (2012-02-09) * paragraphs [0007], [0050], [0051], [0053], [0055], [0058]; figures 1A, 1B, 2A, 2B, 3, 4-6 *	1-15	INV. E06B9/42
A	DE 202 12 845 U1 (LEE PAO CHEN [TW]) 2 October 2002 (2002-10-02) * page 3, paragraph 2 - page 5, paragraph 1; claim 1; figures 1, 3, 5, 7, 8, 13, 14, 15 *	1-15	
A	US 2007/272368 A1 (HOFFMANN BRIAN M [US] ET AL) 29 November 2007 (2007-11-29) * paragraph [0037]; figures 8, 14 *	1-15	
			TECHNICAL FIELDS SEARCHED (IPC)
			E06B
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 22 May 2013	Examiner Weißbach, Mark
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

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22-05-2013

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