(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 270 865 A2

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
02.01.2003 Bulletin 2003/01

(51) Int Cl.[7]: **E06B 9/58**, E06B 9/42

(21) Application number: **02077557.3**

(22) Date of filing: **28.06.2002**

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE TR
Designated Extension States:
AL LT LV MK RO SI

(30) Priority: **28.06.2001 NL 1018406**

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(54) Sunblind

(57) The invention relates to a sunblind mainly composed of a framework or a system of tubes, respectively, which can be mounted before a window, whereof the top of the framework is formed by a casing in which a heat-resistant material, such as a prepared cloth or screen, is wrapped into a roll of which its free end is secured in a bottom lath, as a so-called, cloth string on which a relatively heavy tube is attached and whereof said bottom lath at its ends is provided with elements which stick into lateral guides of the framework and wherein they can move as such being part of the system for locking or unlocking the heat-resistant cloth which can be lowered or raised manually or otherwise from resp. into said casing.

According to the invention the locking/unlocking system (8a,8b) comprises at each end of the bottom lath (5) a pen-like element (10) which can be moved in the lateral guide (7) and whereby each element (10) inside said lateral guide is connected to a movable plate (11) which for functioning of the system will co-operate with a cam-like element (16) as arranged in said lateral guides.

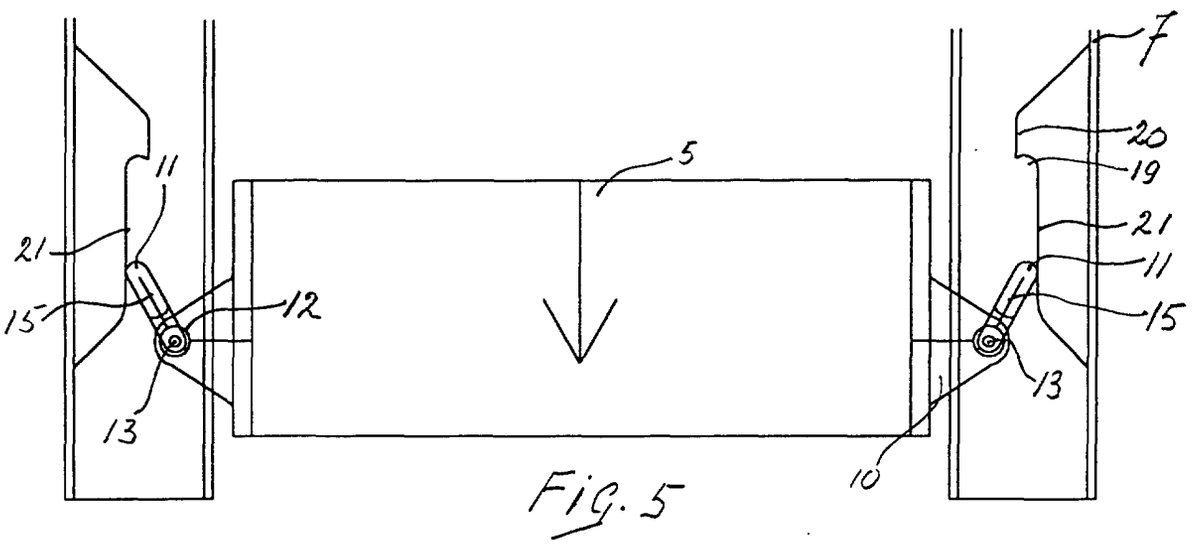

Fig. 5

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Description

[0001] The invention relates to a sunblind mainly composed of a framework or a system of tubes, respectively, which can be mounted before a window, whereof the top of the framework is formed by a casing in which a heat-resistant material, such as a prepared cloth or screen, is wrapped into a roll of which its free end is secured in a bottom lath, as a so-called, cloth string on which a relatively heavy tube is attached and whereof said bottom lath at its ends is provided with elements which stick into lateral guides of the framework and wherein they can move as such being part of the system for locking or unlocking the heat-resistant cloth which can be lowered or raised manually or otherwise from resp. into said casing.

It is known that with this type of sunblind - once it is mounted before a window - the heat-resistant cloths on the bottom lath are lowered manually or by electrical or remote operation, to screen off the sunrays that fall on the windows. When the sunrays fall off to shine, the heat-resistant cloth or screen is raised again in the same manner. When the screen is lowered or raised, it is fixed or released in the desired position by activating a mechanism or system that locks the bottom lath of the screen or unlocks it in the other situation. Such a system is often located near the bottom of the sunblind in the lateral guides. These locking systems often have a complicated construction as such systems must continue function effectively and reliably against the forces working on the screen e.g. a sudden storm and rain or hard gusts of wind.

[0002] The present invention introduces a sunblind which locking and unlocking system has a relatively simple construction combined with a long life span and a reliable functioning.

To this aim the sunblind locking/unlocking system according to the invention comprises a pen-like element at the end of the bottom lath which can be moved in the lateral guide and whereby each element inside said lateral guide is connected to a movable plate which for the functioning of the system can co-operate with a cam-like element which is arranged in said lateral guides.

In a preferred embodiment according to the invention the movable plate by means of a shaft is connected to the pen-like element of said bottom lath. Moreover, it is advantageous in case around the shaft a spring is fitted whereof one end supports against said movable plate and the other end against said pen-like element. Due to this combination an effectively and efficiently functioning part of the locking/unlocking system will be realised.

[0003] According to a preferable embodiment of the invention the front view of the sunblind the pen-like element has mainly an isosceles triangular shape which basis is fitted to the bottom lath and the shaft on which the springy plate is coupled in the top of it. This arrangement will result in an optimal connection of a pen-like element to the bottom lath such that a stable and straight moving of the screen or the cloth is achieved.

[0004] According to the invention an optimal and reliable locking/unlocking system for a sunblind is characterised in that at the inside of a lateral guide a cam-like element near the bottom of said guide is located which can co-operate with said movable plate. To achieve both effects the cam-like element comprises at some distance of each other two surfaces which in opposite direction obliquely develop into each other and of which one surface is larger than the other one.

A preferable embodiment is characterised in that the larger surface develop into a surface which parallel to the surface of a lateral guide develop into an inwardly rounded curve forming a cam. Due to this measure the locking or unlocking of the sunblind is realised in a simple but effective manner which according to the invention is caused by this specific design which introduces the co-operation between the springy plate and the camliked element indeed.

[0005] The invention will be further explained by the figures, while advantages and other characteristics will come forward. The explanation will start from a sunblind as could be mounted before a window:

Fig. 1 shows in perspective such a sunblind;
Fig. 2 shows the top view of the bottom lath and the lateral guides;
Fig. 3 shows a front view of the bottom lath and both lateral guides;
Fig. 4 to 6 show the front views of the start to the locking of the screen;
Fig. 7 to 9 show the views of the start to the unlocking of the screen;
Fig. 10 shows the position of the screen before raising;
Fig. 11 and 12 show the front view as shortened and the lateral view of the bottom lath respectively.

[0006] It is noted that for the same parts the same references will be used.

[0007] Fig. 1 shows a perspective view of a sunblind 1 to which the invention can be applied. The top of the sunblind consists of a casing 2 which contains the heat-resistant cloth or screen 3 - in the raised position - rolled up. The cloth 3 is attached to its end 4 with the so-called cloth string in the bottom lath 5. This lath is further made somewhat heavier by a bar (not shown). The ends 6 of the lath are connected to the lateral guides 7, in such a way that the cloth or screen 3 on the bottom lath 5 will be raised or lowered evenly. Moving the screen is effected in the known manner, e.g. manually by operating a system of bars or by means of an electric motor or by remote operation which is not shown in the drawing.

According to the invention the sunblind 1 comprises a specific locking/unlocking system of which the first part 8a is assembled according to an embodiment that will be explained in,

Fig. 2 which shows the top view of the two lateral guides

7, whereby the casing 2 has been left out. The sunblind 1 can be mounted to the frame work of a window (not shown) by the fastening devices 9 of the lateral guides 7. The first part 8a of the locking/unlocking system 8 mainly consists of pen-like elements 10 that are attached to the ends of the bottom lath 5 and which partly stick into the lateral guides 7. To this elements 10 plates 11 are connected which according to the their top view corresponds with the shape of the inner space of a lateral guide 7 such that a plate 10 almost closes the space in a lateral guide. According to this design the plate has a rectangular shape. According to the invention a spring 12 is mounted between plate 11 and element 10 such that the plate 11 can move or hinge under spring tension in the lateral guide 7. To realise this movement;

Fig. 3 thereto shows part 8a of the system 8 which comprises a shaft 13 which connects the plate 11 to the pen-like element 10. The spring 12 arranged on the shaft 13 for instance with a single winding. The spring ends 14,15 further support against the element 10 and the plate 11 respectively. Due to this arrangement the plate 11 can hinge - via the shaft 13 - on the pen-like element 10 and at the same time being under spring tension relative to the element 10 of the bottom lath 5.

According to the invention the locking/unlocking system 8 further consists of a system 8b which comprises a cam-liked element 16 which will co-operate with a plate 11 of element 10. To this purpose Fig. 3 shows at the bottom of a lateral guide 7 the cam-like element 16 of which a surface 17 is attached to a side of the lateral guide 7. From the top of surface 17 a surface 18 passes obliquely downward over a short vertical distance about halfway the diameter of the lateral guide 7 and then passes into a relatively short inwardly curve 19 forming a cam 20. From the curve 19 the cam-surface passes into a vertical surface 21 which about some distance passes into an obliquely downward directed surface 22 which ends against the lateral guide 7 forming the bottom edge or end of the cam-like element 16. The same parts which form the cam-like element 16 are identical on the left lateral guide 7 and are provided with the same references.

[0008] The figures 4 - 6 schematically show the locking of the sunblind 1 by the system 8 according to the invention and represented by the system parts 8a and 8b. To this purpose the screen 3 is moved downwardly on the bottom lath 5 manually or in another way. At the same time the pen-like element 10 as attached to the lath 5 and the plate 11 which is under spring tension are moved in the lateral guide 7 such that the front side of plate 11 touches the surface 18 of the cam-like element 16 (see Fig. 4). The plate 11 hinges under spring tension on the shaft 13 forming a sharp angle with the vertical. According to Fig. 5 the bottom lath 5 with element 10 and plate 11 passes cam 20 and surface 21 near the transition of this surface into the oblique surface 22. However, before reaching the oblique surface 22, the element 10 moves upward with the same tilted or hinged position of the plate 11 as in the downward movement (see Fig. 5 and 6). In this position of the plate 11, where the plate is still at a sharp angle with the vertical position, its front-side finally touches in the curve 19 of cam 20 and therefore locks the upward movement of the bottom lath 5 with the screen 3.

[0009] It is noted that the bottom lath 5 at least during locking as well as unlocking being centred relative to the lateral guides 7 such that a space for movement is reduced to a minimum.

[0010] The figures 7 - 9 schematically show the unlocking of the sunblind according to the invention. To this aim (see Fig. 7) the bottom lath 5 is moved downwardly, e.g. manually, such that - at both sides - the springy plates 11 are moved from the cam cavities 19 along the surfaces 21. Due to this movement the plates 11 come in a free position near the bottom of the lateral guides 7 (see Fig. 8). The bottom lath 5 is then raised (see Fig. 9) so that the springy plate 11 via the surface 22 but now in a reversed position i.e. downwardly and under spring tension but then can pass the entire cam-liked element 8b freely, since the front-side of plate 11 can not be locked in the cam curve 19. After passing the cam-like element 8b the pen-like element 8a at the bottom lath 5 is entirely free to move upward (see Fig. 10) such that the screen 3 can be rolled up into the casing 2.

[0011] Fig. 11 shows (partly) the lateral view of the bottom lath 5 where the pen-like element 10 is shaped in a triangle which basis 10a is attached to the lath 5 and in the top of it, on the shaft 13, the springy plate 11. Fig. 12 shows the lateral view of the bottom lath 5, particularly the element 10 which comprises two separate parts 10 b and 10 c between which the spring 14 (see also Fig. 2 and 3) is mounted.

It is noted that the pen-like element 10 may have any suitable shape provided that at least during locking or unlocking a constant distance between the lateral guides 7 and bottom lath 5 with the screen 3 as well as its passing along the cam-curve 19 being secured.

[0012] However, the invention is not limited to the embodiments as shown and explained above, since pen-like elements 10 and plates or lip-shaped projections 11, as well as cam-like elements for locking/unlocking systems of sunblinds may have different executions with the same effective results as described.

Claims

1. Sunblind mainly composed of a framework or a system of tubes, respectively, which can be mounted before a window, whereof the top of the framework is formed by a casing in which a heat-resistant material, such as a prepared cloth or screen, is wrapped into a roll of which its free end is secured in a bottom lath, as a so-called, cloth string on which a relatively heavy tube is attached and whereof said bottom lath at its ends is provided with elements

which stick into lateral guides of the framework and wherein they can move as such being part of the system for locking or unlocking the heat-resistant cloth which can be lowered or raised manually or otherwise from resp. into said casing, **characterised in that** the locking/unlocking system (8a,8b) at each end of the bottom lath (5) comprises a pen-like element (10) which can be moved in each lateral guide (7) and whereby said element (10) inside said lateral guide is connected to a movable plate (11) which for functioning of the system will co-operate with a cam-like element (16) as arranged in each lateral guide.

2. Sunblind according to claim 1, **characterised in that** said plate (11) by means of a shaft (13) is connected to said pen-like element (10) of the bottom lath (5).

3. Sunblind according to claim 2, **characterised in that** around the shaft (13) a spring (12) is fitted of which one end (15) supports against said movable plate (11) and the other end (14) against said pen-like element (10).

4. Sunblind according to one or more of the previous claims, **characterised in that** a plate (11) has a shape which mainly corresponds with the shape according to the cross-section of the inner space of said lateral guide (7).

5. Sunblind according to one or more of the previous claims, **characterised in that** at least according to the front view a pen-like element (10) has mainly an isosceles triangular shape which basis (10a) is fitted to said bottom lath (5) and said shaft (13) in the top of it.

6. Sunblind according to claim 1 and one or more of the previous claims, **characterised in that** at a side of a lateral guide (7) a cam-like element (16) is located near the bottom of said guide (7) and which can co-operate with said movable plate (11).

7. Sunblind according to claim 6, **characterised in that** said cam-like element (16) comprises at some distance of each other two surfaces (18, 22) which in opposite direction obliquely develop into each other and of which one surface (18) is larger than the other (22).

8. Sunblind according to claim 7, **characterised in that** the larger surface (18) develop into a surface that, parallel to the surface (17) of a lateral guide (7), develop into an inwardly rounded curve (19) forming a cam (20).

9. Sunblind according to one or more of the previous claims 6 - 8, **characterised in that** the surface from the rounded curve (19) or cam (20) develop into a parallel to the wall of said lateral guide running surface (21) which develop into the shorter bottom surface (22).

10. Sunblind according to one or more of the previous claims, **characterised in that** said plate (11), at least during the locking or unlocking process, continuously presses against said cam-like element (16) due to which said bottom lath (5) remains centred relative to said lateral guides (7).

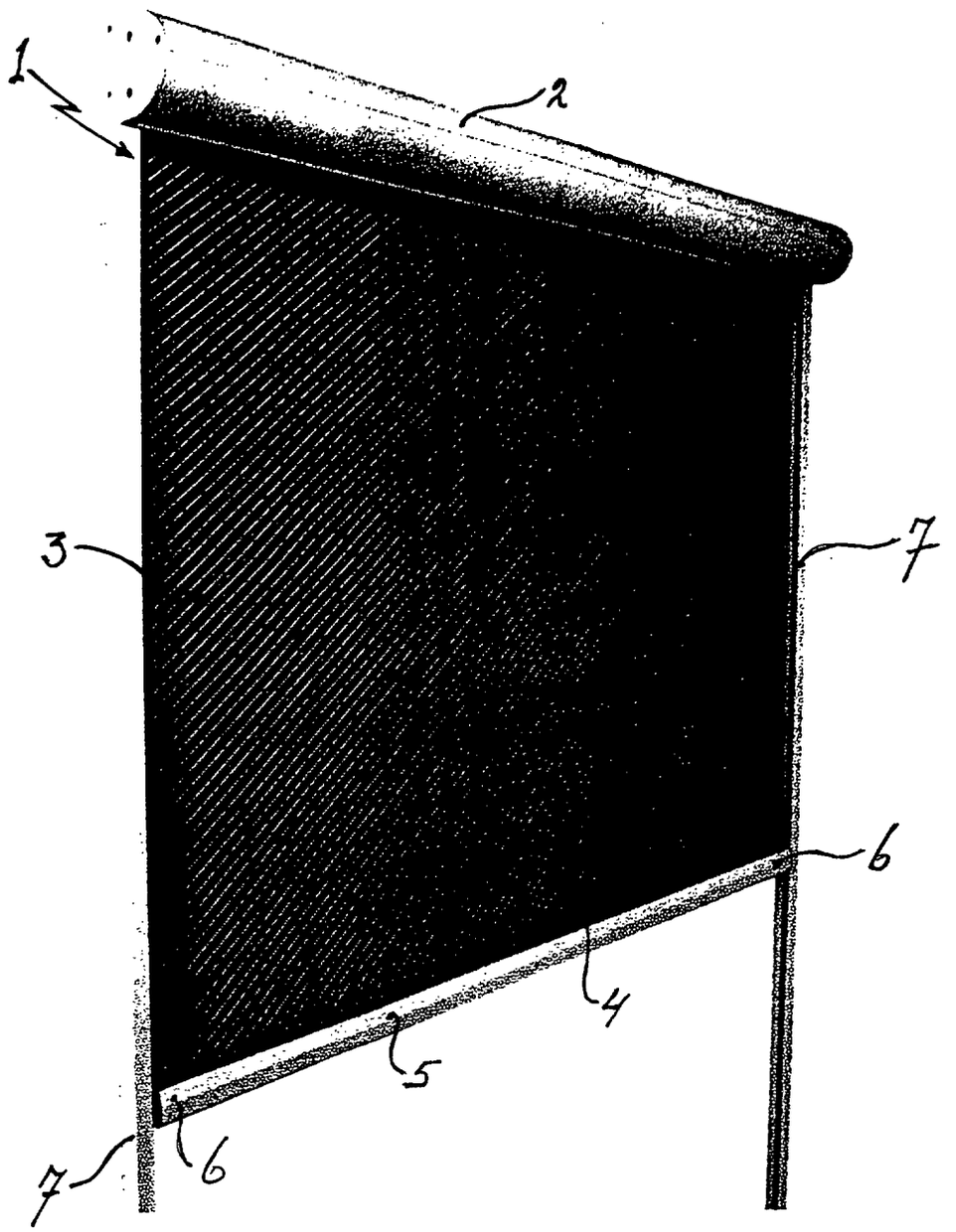

Fig. 1

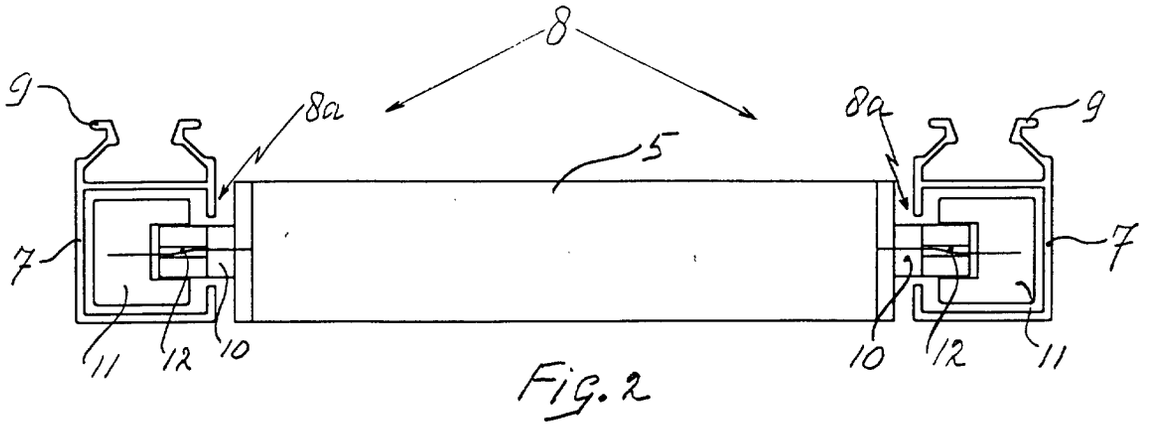

Fig. 2

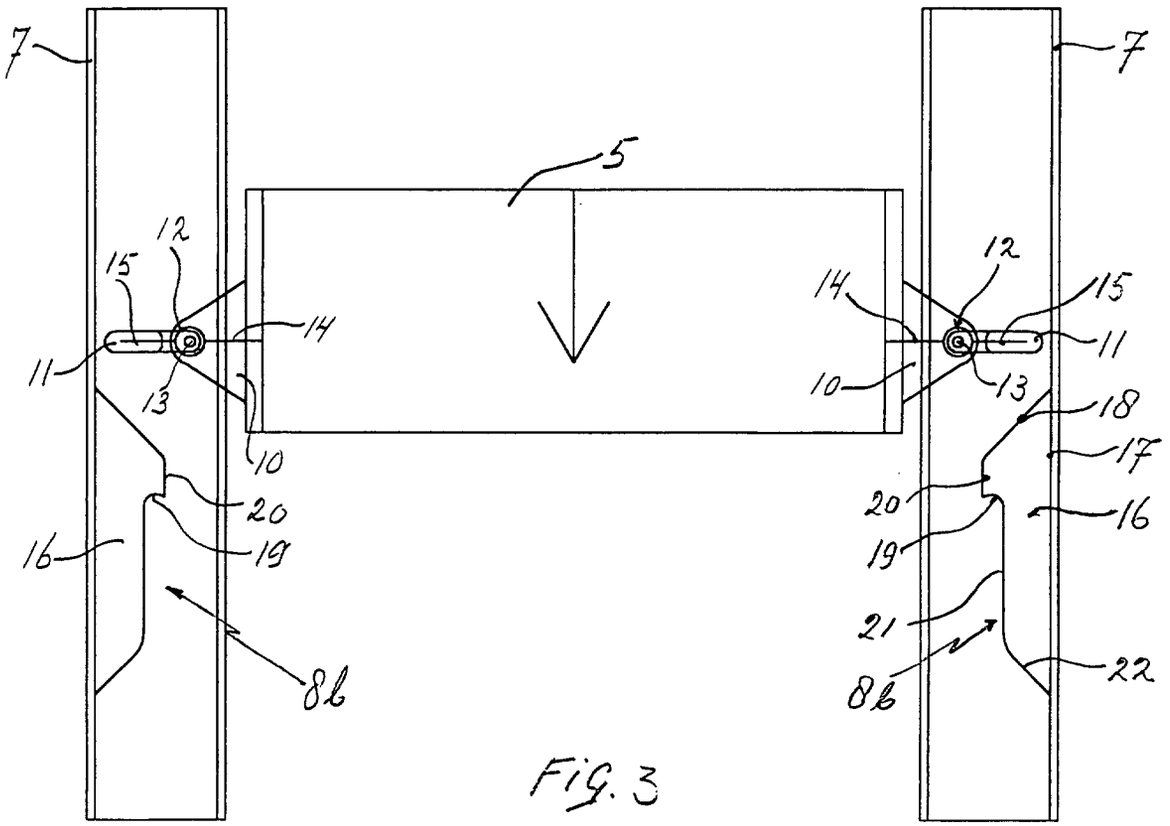

Fig. 3

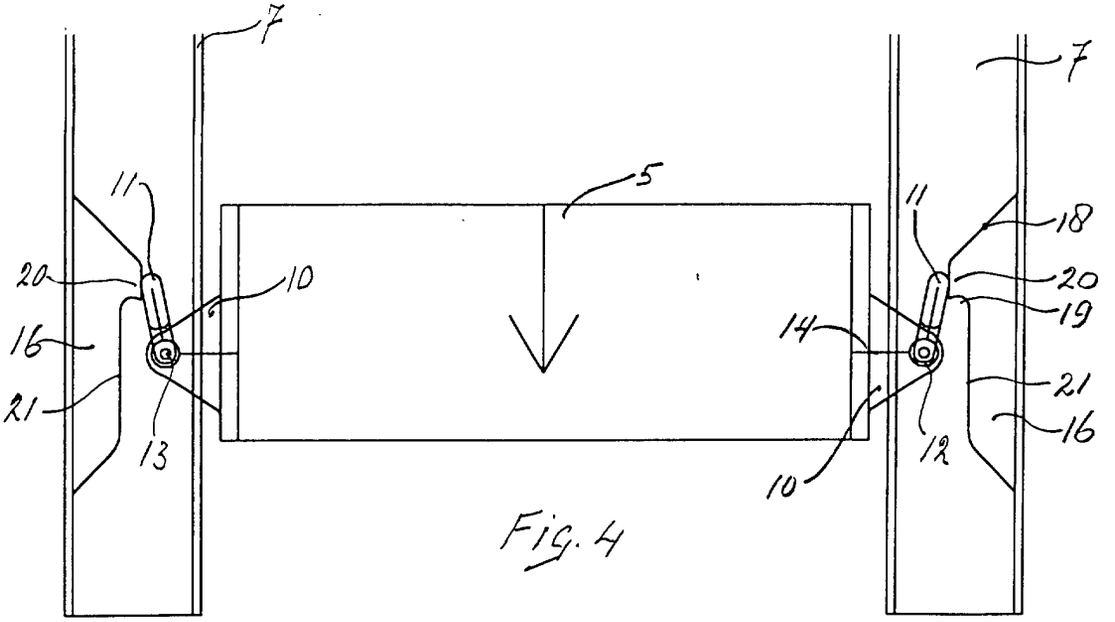

Fig. 4

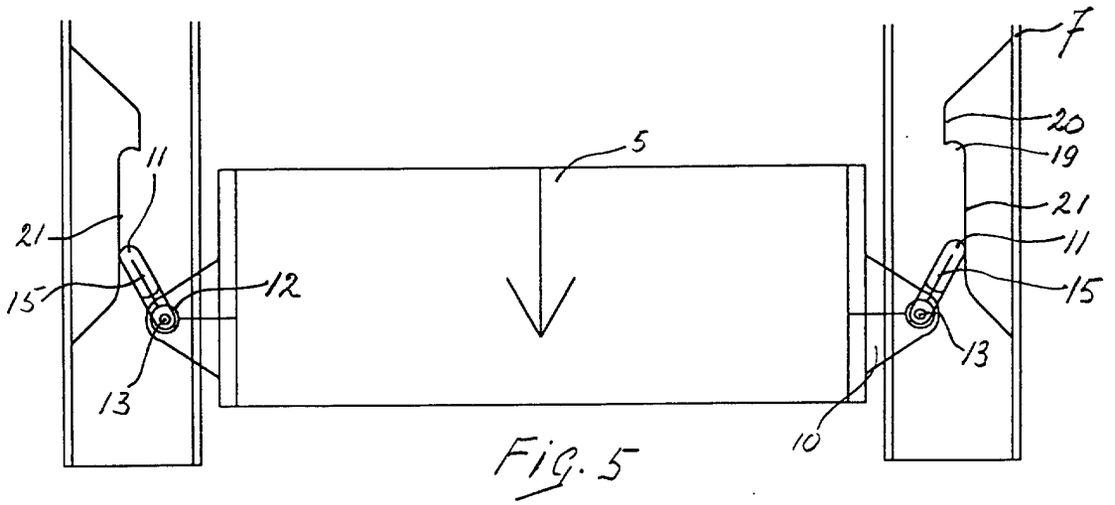

Fig. 5

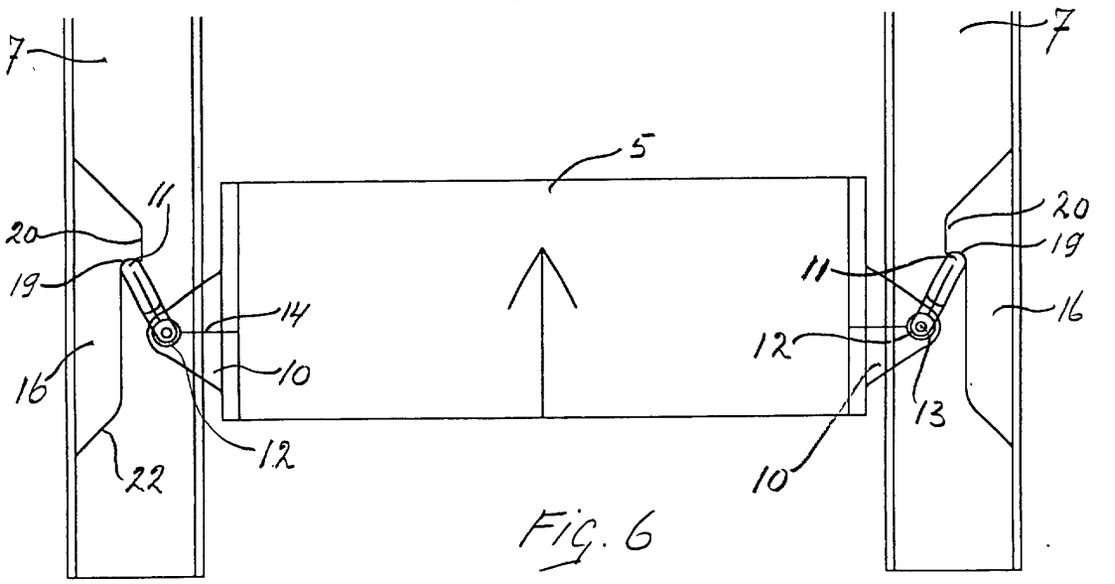

Fig. 6

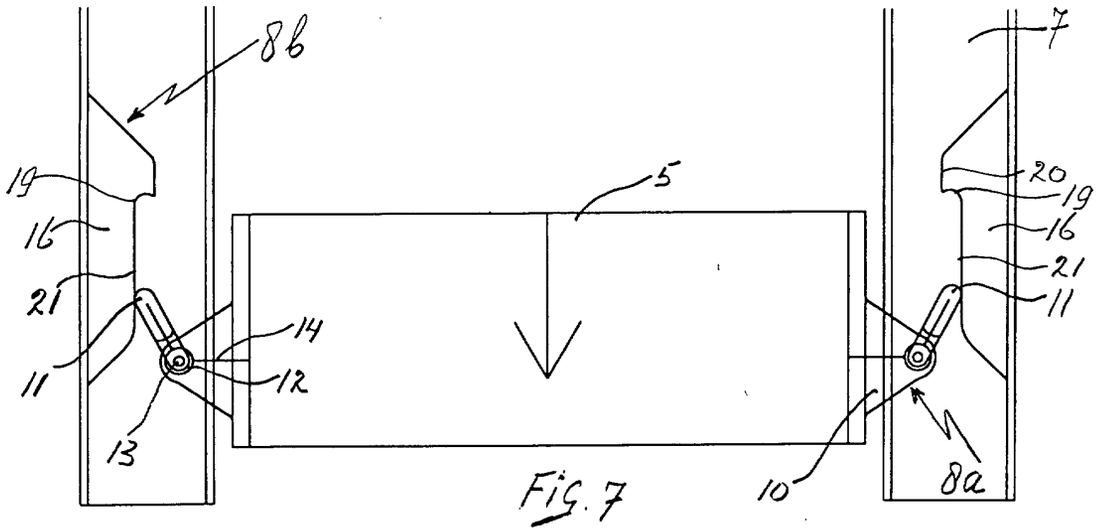

Fig. 7

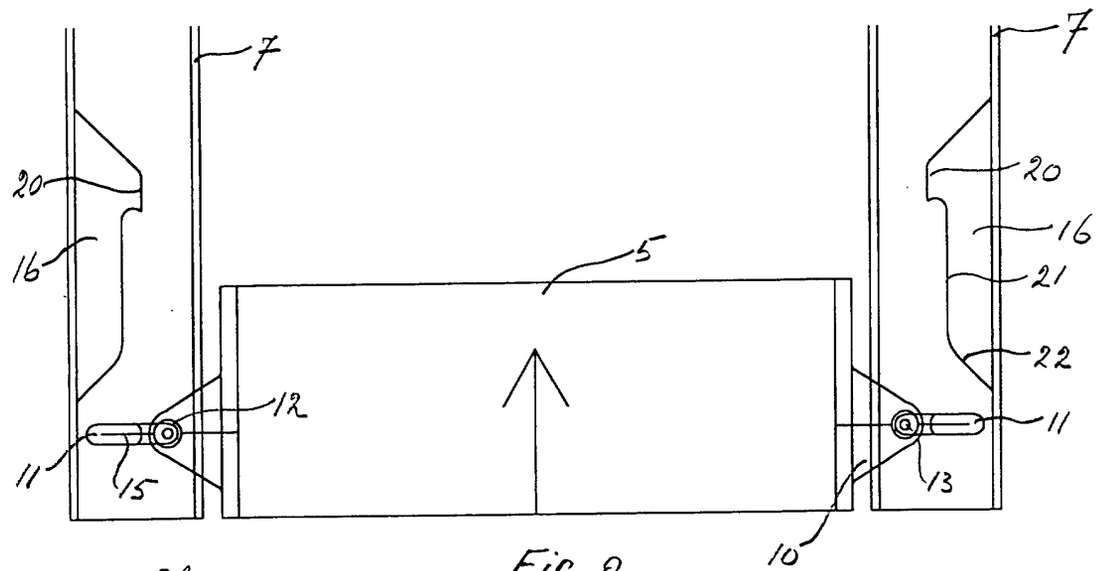

Fig. 8

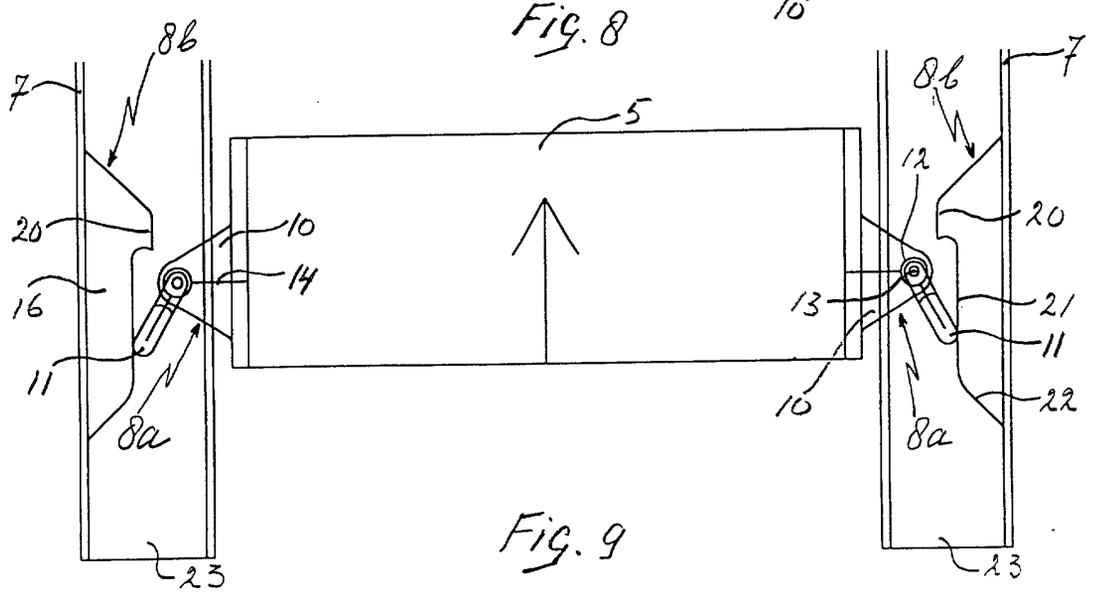

Fig. 9

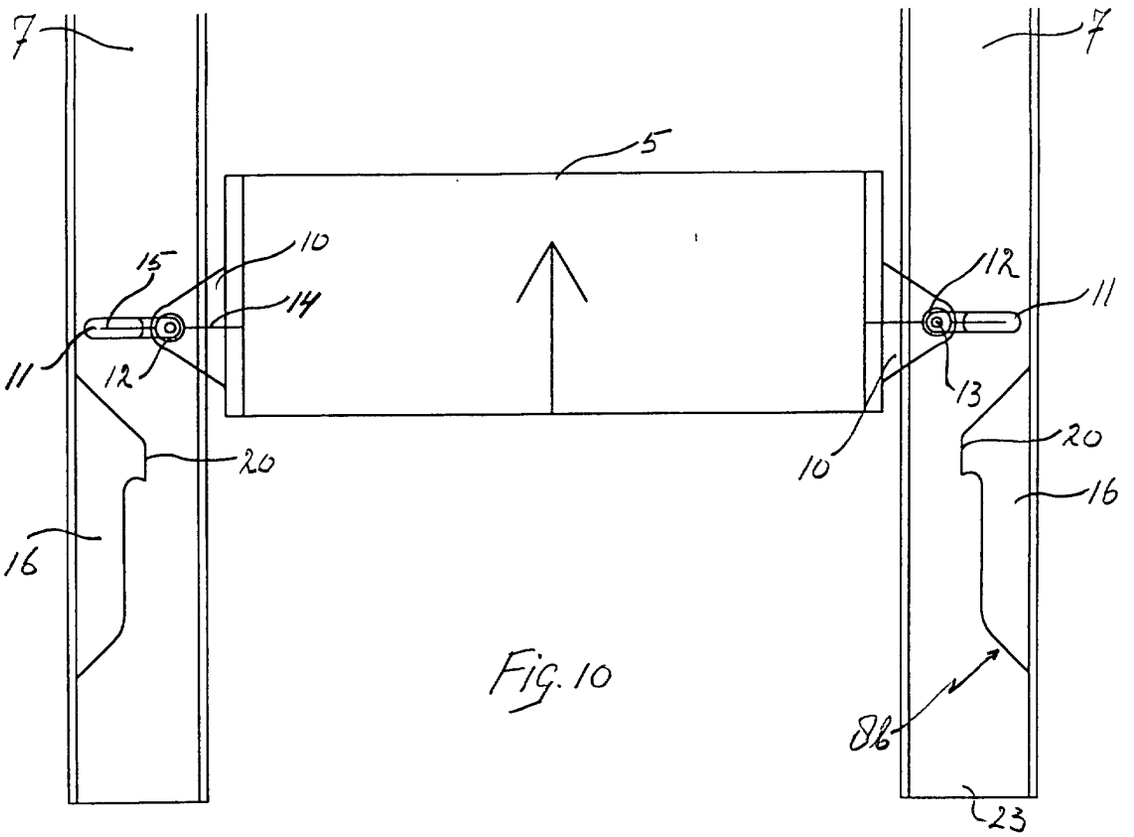

Fig. 10

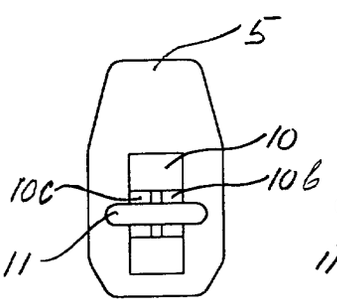

Fig. 12

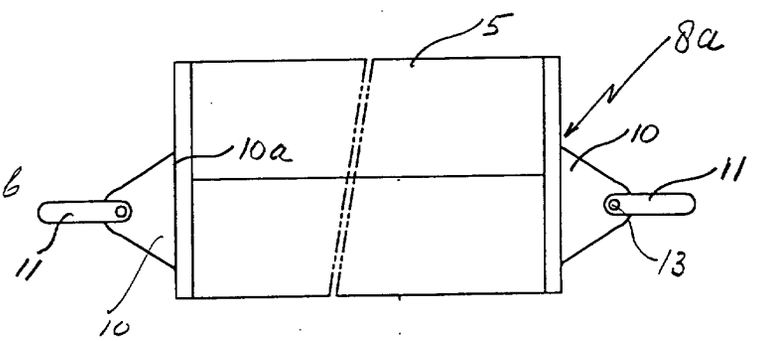

Fig. 11