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A retractable window covering assembly.

A retractable screen or blind of the type which is guided at its edges and which includes a latch mechanism. In one construction this mechanism includes a and a first part 16 secured to the end bar of the screen and is provided with a locking element 32. The locking element engages against a ramp 38 part of a catch member on a fixed second part 18. The locking element 32 slides down the ramp and then moves to the space below a locking surface 42 holds the screen in the desired position. Further downward and rearward movement of the locking element 32 enables it to pass behind a stop 46 through a gap 54 therebelow and then into a return passage which allows the blind to retract. The upper part of the ramp 38 can be arranged to flex or move out of the way to allow passage of the locking element 32. An alternative structure mounts a locking element on the lateral guide and a catch member is provided on the end bar to cooperate therewith.

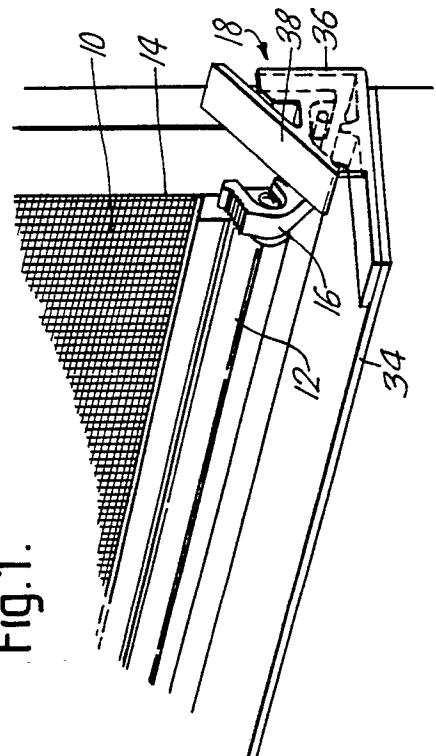


Fig. 1.

EP 0 305 081 A2

A RETRACTABLE WINDOW COVERING ASSEMBLY

The present invention relates to a retractable window covering assembly, for example a retractable screen or blind assembly.

One form of such blind, particularly an insect blind, or an energy saving blind, includes a spring-loaded roller, blind or screen material wound on the roller, guides along each edge to constrain the edges of the blind or screen material to prevent them from lifting from the plane of the blind or screen, and an end bar which is used to open and close the blind. A latch assembly is usually provided at each end of the end bar to lock the blind or screen in the required position.

Such blinds or screens may easily be drawn to the desired position and usually the latch at each end will readily engage with a latching plate on the door or on the window frame to lock the frame in the desired position. However, it is relatively difficult to disengage the two latches simultaneously to release the blind so that it may go back towards its retracted position. This is particularly so where the blind has a considerable width. While blinds are normally considered to be raised and lowered, that it with the axis of the roller horizontal, it is quite common to have the axis vertical particularly when the screen or blind is used on a door or doorway. It will be appreciated that the two latches in such circumstances may be as much as two metres apart which makes their actuation extremely difficult.

It is now proposed, according to the present invention, to provide a retractable window covering assembly, such as a blind or screen assembly, comprising a movable end bar mounted for translation along lateral guide tracks in opposition to a biasing means acting on a window covering member, to return said window covering member to a retracted position and a latch assembly for releasably holding said movable end bar and therewith said window covering member in a required position against retraction by said biasing means, said latch assembly comprising a first part connected to or integral with said movable end bar, to move with said end bar and a second part locatable in a stationary position with respect to said lateral guide tracks and engageable with, or disengageable from, the first part by translating said end bar along said lateral guide tracks, one of said first and second parts of said latch assembly including a locking element and the other of said parts including a catch member, said locking element having a free end deflectably mounted with respect to said catch member to be deflected in a direction transverse to the direction of movement of said end bar, said catch member including an inclined ramp engageable-

ble by said locking element upon moving said end bar from said retracted position, said inclined ramp merging into a recessed locking space generally behind one end of said ramp, said recessed locking space having a locking surface engageable by the free end of said locking element, to releasably hold said end bar and thereby said window covering member in a required position against retraction by said biasing means and a return passage communicating with said locking space through which the free end of said locking element may pass, to allow the end bar, and therewith the window covering member, to return towards its retracted position and a stop projecting partly into said locking space, to prevent said locking element passing directly into said return passage on its way towards said locking space, but allowing said locking element to pass into said return passage, when it is moved further after being engaged by said locking surface.

Such an assembly can be made relatively simply and cheaply and yet can enable very easy operation with one hand. In order to lock the blinds in a required position, the blind is moved away from its roller an amount which is slightly greater than that of the desired position. The locking member slides along the inclined ramp and can then be moved, or can be arranged to spring, so that it engages against the locking surface to hold the blind or screen in the required position against retraction. The locking member is prevented from moving into the return passage by the provision of the stop. However, when it is desired to retract the blind or screen, all that is necessary is for the end rail to be moved a small distance away from the retracted position so that the locking member passes over the stop and can then be pushed, or can spring, into the return passage along which it can pass to allow the blind or screen to retract.

The locking element may be provided on the end bar and the catch member may be fixed to the lateral guide. In an alternative arrangement the locking element is mounted on the lateral guide and the catch member is mounted on the end bar.

In one construction the locking member is mounted on a support on the end bar and is movable relative to said support and is spring urged relative to said support in a direction to urge said locking element against said locking surface or into said return passage. The provision of the locking element in such a way as to be spring urged saves manipulation of the end bar and renders substantially automatic firstly the engagement of the locking element against the locking surface to latch the blind or screen and secondly facilitates

the unlatching because movement of the end bar away from the retracted position will enable the locking element to spring into the return passage automatically.

Advantageously the return passage is adapted to be positioned close to the plane of the blind or screen. The other end part of the ramp may extend over said return passage but be movable away to allow said locking member to pass out of said return passage. This may be achieved by the other part of the ramp being resiliently urged to the position covering said return passage for example by being sufficiently flexible to enable it to be moved away by movement of said locking member.

With such a construction, the second part preferably has an abutment to support said other end part of said ramp to prevent it from moving beyond its normal inclined position in a direction opposite to that in which it flexes, to allow said locking member to pass.

The second part may include an additional guide ensuring that said locking member moves to the space adjacent said locking surface without accidentally moving past said stop.

In another construction said locking element is mounted at the lower end of at least one of said lateral guide tracks and said catch member is attached to said movable end bar of the corresponding end or ends.

With this arrangement the locking element may comprise a hook element formed by a resilient wire accommodated within the lower end of said lateral guide track.

Advantageously the hook element is engageable by an upstanding projection whereby the end bar may be laterally adjusted with respect to said lateral guide tracks, to allow for dimensional variations of the window, with the projection guiding the hook elements so that the free end thereof can engage said ramp.

In order that the present invention may more readily be understood the following description is given, reference being made to the accompanying drawings, in which:-

Figure 1 is a perspective view of a portion of one embodiment of retractable screen or blind according to the present invention;

Figure 2 is a schematic side elevation, from the opposite end to that shown in Figure 1, illustrating operation of the latch assembly;

Figure 3 is an exploded view showing the various parts of the latch assembly in perspective;

Figure 4 is a perspective view, with part of the lateral guide track broken away, of a corner of a second embodiment of retractable window covering assembly according to the invention;

Figure 5 is a schematic, fragmentary, perspective view of an end portion of the movable end bar at the opposite end from that shown in Figure 4, showing a portion of the locking element in two positions;

Figure 6 is a schematic side elevation, on the same end of this Figure 4, illustrating operation of the latch assembly;

Figure 7 is a schematic perspective exploded view showing the locking element being inserted into the lateral guide track;

Figure 8 is a side elevation, in cross-section along the line 8-8 of Figure 9 showing the locking element in position in the lateral guide track; and

Figure 9 is an underneath plan of Figure 8.

The blind or screen shown in Figure 1 is illustrated as an insect screen including screen material 10 which is connected, at the top, to a retractable spring loaded roller (not shown) of a perfectly conventional type, and at the lower end to an end bar 12. The sides of the screen are guided by side frame members 14 so that the blind cannot readily move in the direction transverse to its plane. This prevents insects from penetrating around the side edges of the screen

Mounted on each end of the end bar are the first part 16 of a latch assembly indicated by the general reference numeral 18. The first part 16 as can be seen in Figure 3 includes a support 20 including a plug 21 for insertion into a hollow portion 22 of the end rail. The support 20 is provided with a pivot pin 24 upon which is mounted a pivotal latch 26, the latch being secured to the pivot 24 by a screw 28 and being urged in a generally counterclockwise direction, as seen in Figure 3, by a torsion spring 30. The latch 26 includes a laterally extending locking element 32 in the form of a pin.

The assembly is shown associated with a windowsill 34 on which is mounted a second part 36 of the latch assembly. This includes an inclined ramp 38 behind which is positioned a generally rearwardly extending wall member 40, having a lower locking surface 42. Behind the rearwardly extending wall member 40 is a generally vertically extending wall 44 including a downwardly extending portion 46 forming a stop member and an upwardly extending portion 48 forming a support wall to be described later. An accommodation space 50 is formed below the locking surface 42 and in front of the stop 46. Extending upwardly into this accommodation space is an additional guide 52 which extends in front of the gap 54 below the stop member 46.

The wall 44 defines the front surface of a return passage 56. The ramp 38 includes a lower part 58 and an upper part 60 which is generally flexible and can pivot, because of its flexibility, to the

phantom line position 62. Pivoting in the opposite direction is substantially precluded by the upper surface of the support wall 48.

In use, the blind is pulled down by grasping the end bar 12 and the sequence of operations is shown schematically in Figure 2. The locking pin 32 is shown being moved down and is initially in the position A. It engages, at position B, the upper end part 60 of the ramp 38 and then slides down via position C to position D below and in front of the lower end 58 of the ramp 38. The action of the spring 30 will then pivot the locking pin 30 first to position E and then to position F at which it is engaged against the locking surface 42. Unwanted further rearward movement of the locking pin is prevented by the stop 46.

The additional guide 52 is provided to prevent the locking pin 32 from accidentally passing through the gap 54 below the stop 46. With the locking pin in the position F the blind will be retained in this position.

When it is desired to release the blind, one again grasps the end bar 12 and pulls it downwardly. The locking pin will then move, partly due to this downward movement, and partly due to the action of the spring 30 via the position G and thence under the stop 46 and through the gap 54 to the position H. If the end bar is then released, the retraction spring in the roller of the screen will pull the screen upwardly with the locking element 32 passing upwardly through the return passage 56. It will then engage the lower surface of the upper portion 60 of the ramp 38 which will then flex out to the position 62 to allow the locking pin 32 to continue to move upwardly, thereby releasing the blind or screen.

It will be appreciated that the construction illustrated is very simple to operate and can in fact both be locked and unlocked using a single hand which makes it far simpler than known latching assemblies used with blinds or screens.

If desired, the spring loading of the locking member can be omitted and the latching and unlatching can be effected by manual movement, causing the locking member 32 to move along the path A, B, C, D, E, F, G, H. However, the provision of the spring loaded member 26 with the locking pin 32 thereupon greatly facilitates the operation.

Referring now to Figures 4 to 9, like parts have been indicated by like reference numerals to those used in Figure 1, with the addition of 100.

The screen material 110 is provided with an end bar 112 and the sides of the screen are guided by side frame members 114 as previously.

In this construction, however, the latch assembly 118 includes a part 136 (Figure 5) formed integrally with or inserted into the end of the end bar 112, which includes an inclined ramp 138

which is formed as a separate element, e.g. of spring metal, mounted on a body portion 140 of the part 136 having an upper locking surface 142. Behind the body portion 140 is a generally vertically extending wall 144, including an upwardly extending portion 146 forming a stop member and a downwardly extending portion 148 forming a support wall to be described later. An accommodation space 150 is formed above the locking surface 142 and in front of the stop 146. Extending downwardly into this accommodation space is an additional guide 152 which extends in front of the gap 154 above the stop member 146.

The wall 144 defines the front surface of a return passage 156. The ramp 138 includes a lower part 158, formed in the shape of inverted U, and a lower part 160 which is generally flexible and can pivot to the phantom line position 162. Pivoting in the opposite direction is substantially precluded by the lower surface of the support wall 148. A projection 170 is mounted to extend laterally below the lower end of the passage 156.

Carried in a portion of the side frame 114 is a wire hook member 116 which forms a first part of the latch assembly. This hook is formed of wire material and includes lower web portion 123, a first leg 119, a second leg 121 and an inclined resilient arm 117 having, at its free end, an inturned end 132 forming a locking element. The first leg 119 is engaged in one of two inturned beads 115 formed on the guide frame member 114.

The operation is very similar to that of Figures 1 to 3. The blind is pulled down by grasping the end bar 112 and the sequence of operations is shown schematically in Figure 5. The locking element 132 is shown being moved relatively upwardly (since the end bar 112 is being moved downwardly) and is initially in the position A. It engages, at position B, the lower end part 160 of the ramp 138 and then slides up via the position C to the position D above and in front of the upper end part 158 of the ramp 138. The action of the resilience of the arm 117 will then pivot the locking element 132 first to the position E and then to the position F at which it is engaged against the locking surface 142. Unwanted further rearward movement of the locking element 132 is prevented by the stop 146. The additional guide 152 prevents the locking element 132 from accidentally passing through the gap 154 above the stop 146. With the locking element in position F, the blind will be retained in this position.

When it is desired to release the blind, one again clasps the end bar 112 and pulls it downwardly. The locking element will then move, partly due to this downward movement, partly due to the action of the resilience of the arm 117 via the position G and thence over the stop 146 and

through the gap 154 to the position H. If the end bar is then released, the retraction spring in the roller of the screen will pull the screen upwardly with the locking member 132 passing downwardly through the return passage 156. It will then engage the lower surface of the upper portion 160 of the ramp 138, which will then flex out to the position 162 to allow the locking element 132 to continue to move downwardly, thereby releasing the blind or screen.

As can be seen from Figure 5, during the initial upward movement, the arm 117 engages the projection 170 so that the locking element 132 will ride smoothly up the ramp 138 and this can be used to provide adjustment for windows of different widths.

Claims

1. A retractable window covering assembly, such as a blind or screen assembly, comprising a movable end bar mounted for translation along lateral guide tracks in opposition to a biasing means acting on a window covering member, to return said window covering member to a retracted position and a latch assembly for releasably holding said movable end bar and therewith said window covering member in a required position against retraction by said biasing means, said latch assembly comprising a first part connected to or integral with said movable end bar, to move with said end bar and a second part locatable in a stationary position with respect to said lateral guide tracks and engageable with, or disengageable from, the first part by translating said end bar along said lateral guide tracks, one of said first and second parts of said latch assembly including a locking element and the other of said parts including a catch member, said locking element having a free end deflectably mounted with respect to said catch member to be deflected in a direction transverse to the direction of movement of said end bar, said catch member including an inclined ramp engageable by said locking element upon moving said end bar from said retracted position, said inclined ramp merging into a recessed locking space generally behind one end of said ramp, said recessed locking space having a locking surface engageable by the free end of said locking element, to releasably hold said end bar and thereby said window covering member in a required position against retraction by said biasing means and a return passage communicating with said locking space through which the free end of said locking element may pass, to allow the end bar, and therewith the window covering member, to return towards its retracted position and a stop projecting partly into said locking space, to prevent said locking element

passing directly into said return passage on its way towards said locking space, but allowing said locking element to pass into said return passage, when it is moved further after being engaged by said locking surface.

2. An assembly according to claim 1, wherein the other end of said inclined ramp comprises a deflectable part extending over the exit of said return passage, said deflectable part being deflectable upon engagement by said locking element to allow said locking element to exit from said return passage, during release of said end bar.

3. An assembly according to claim 2, wherein said other end of the ramp is resiliently urged to the position covering said return passage and is sufficiently flexible to enable it to be moved away by movement of said locking element.

4. An assembly according to claim 3, wherein said second part has an abutment to support said other end of said ramp to prevent it from moving beyond its normal inclined position in a direction opposite to that in which it flexes to allow said locking element to pass.

5. An assembly according to any preceding claim, wherein the free end of said locking element is mounted for resilient deflection with respect to said catch member, to urge the free end into said locking space and subsequently into said return passage.

6. An assembly according to any preceding claim, wherein the deflecting movement of said locking member is in a plane closely parallel to, or in the plane of movement of said window covering member.

7. An assembly according to any preceding claim, wherein said locking member is mounted at the lower end of at least one of said lateral guide tracks and said catch member is attached to said movable end bar of the corresponding end or ends.

8. An assembly according to claim 7, wherein said locking element comprises a hook element formed by a resilient wire accommodated within the lower end of said lateral guide track.

9. An assembly according to claim 8, wherein said catch member is formed on a lateral end of said end bar, which engages within said lateral guide track.

10. An assembly according to any claim 9, wherein the hook element is engageable by an upstanding projection whereby the end bar may be laterally adjusted with respect to said lateral guide tracks, to allow for dimensional variations of the window, with the projection guiding the hook elements so that the free end thereof can engage said ramp.

11. An assembly according to any preceding claim, wherein said deflectable locking element is resiliently urged towards the undeflected position.

Fig.1.

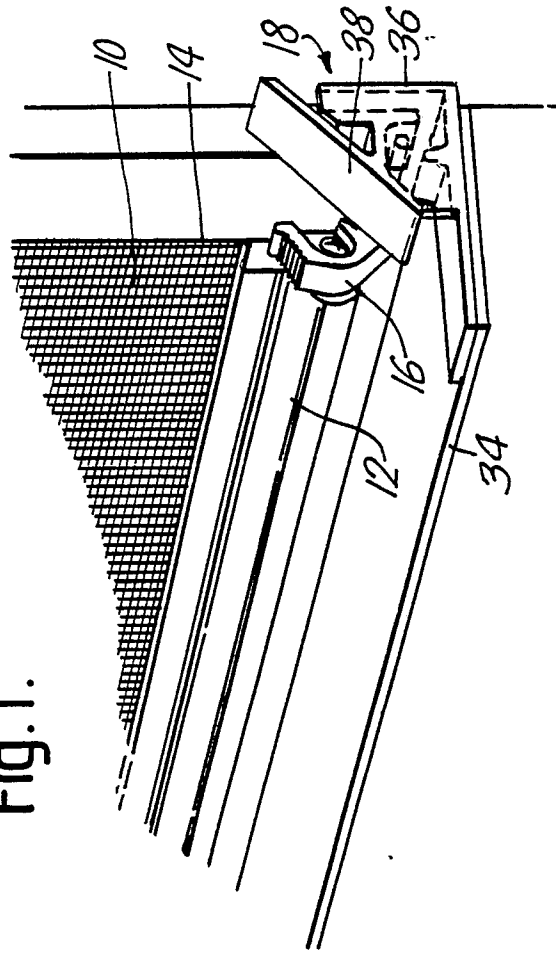
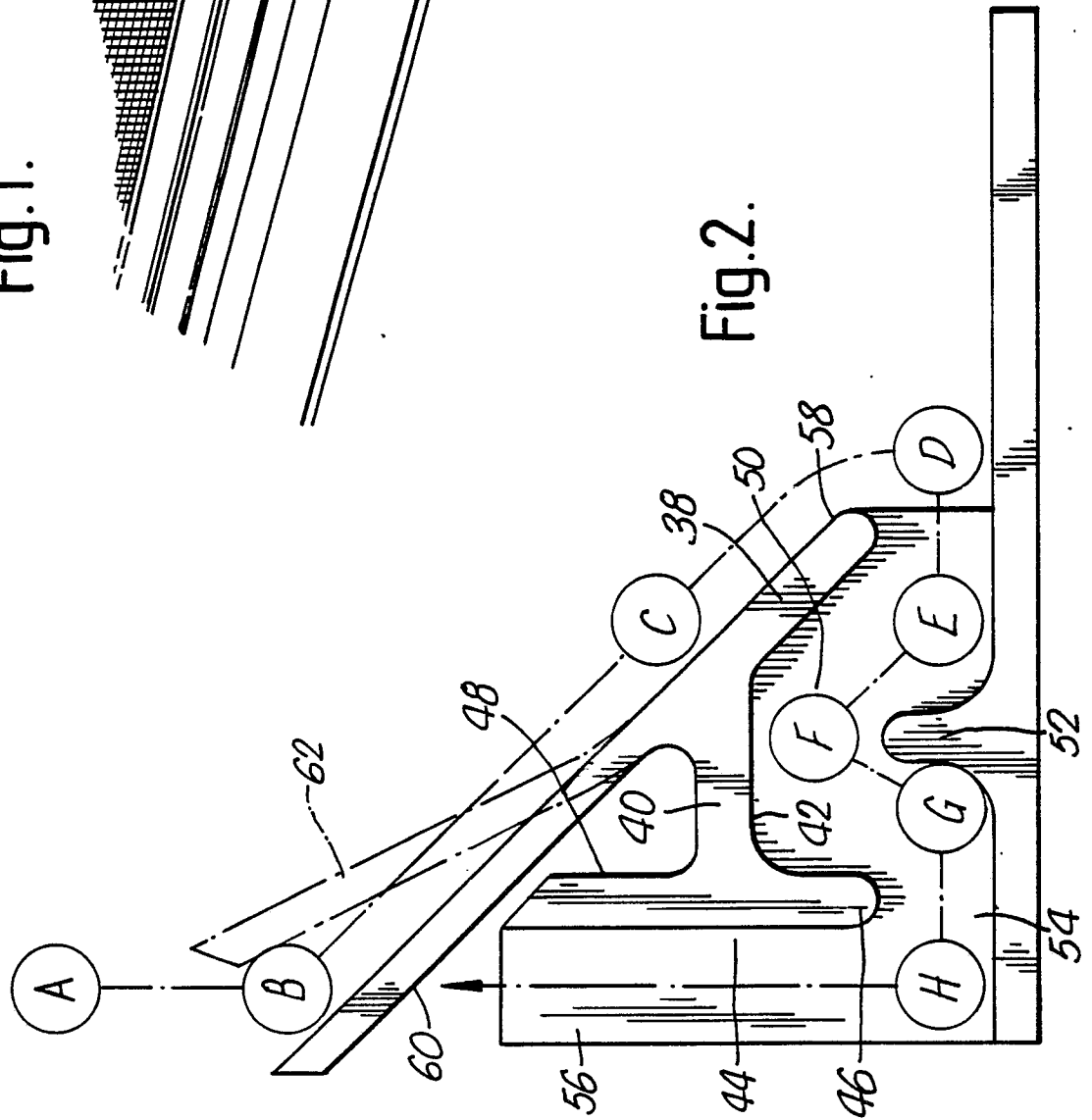


Fig.2.



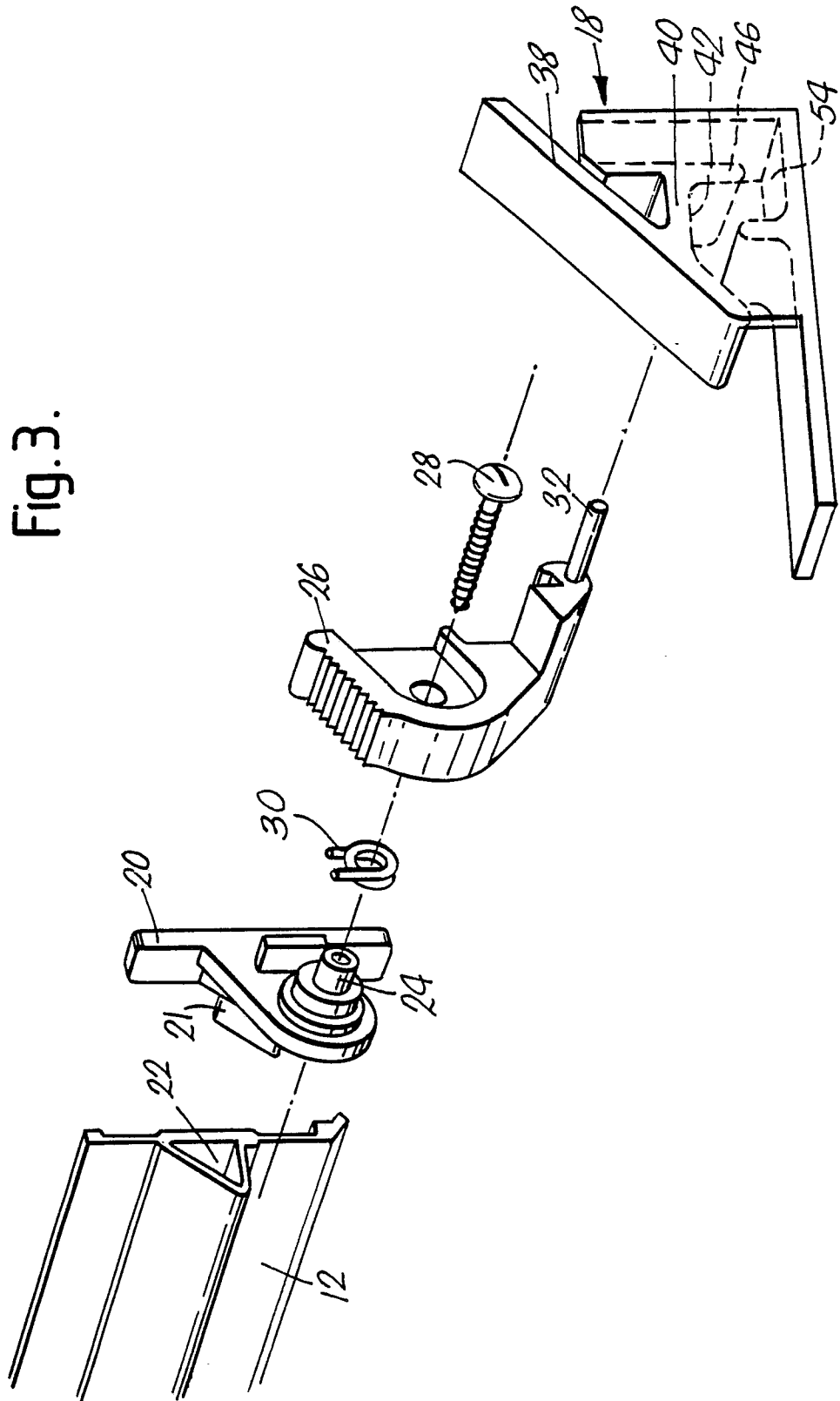


Fig.4.

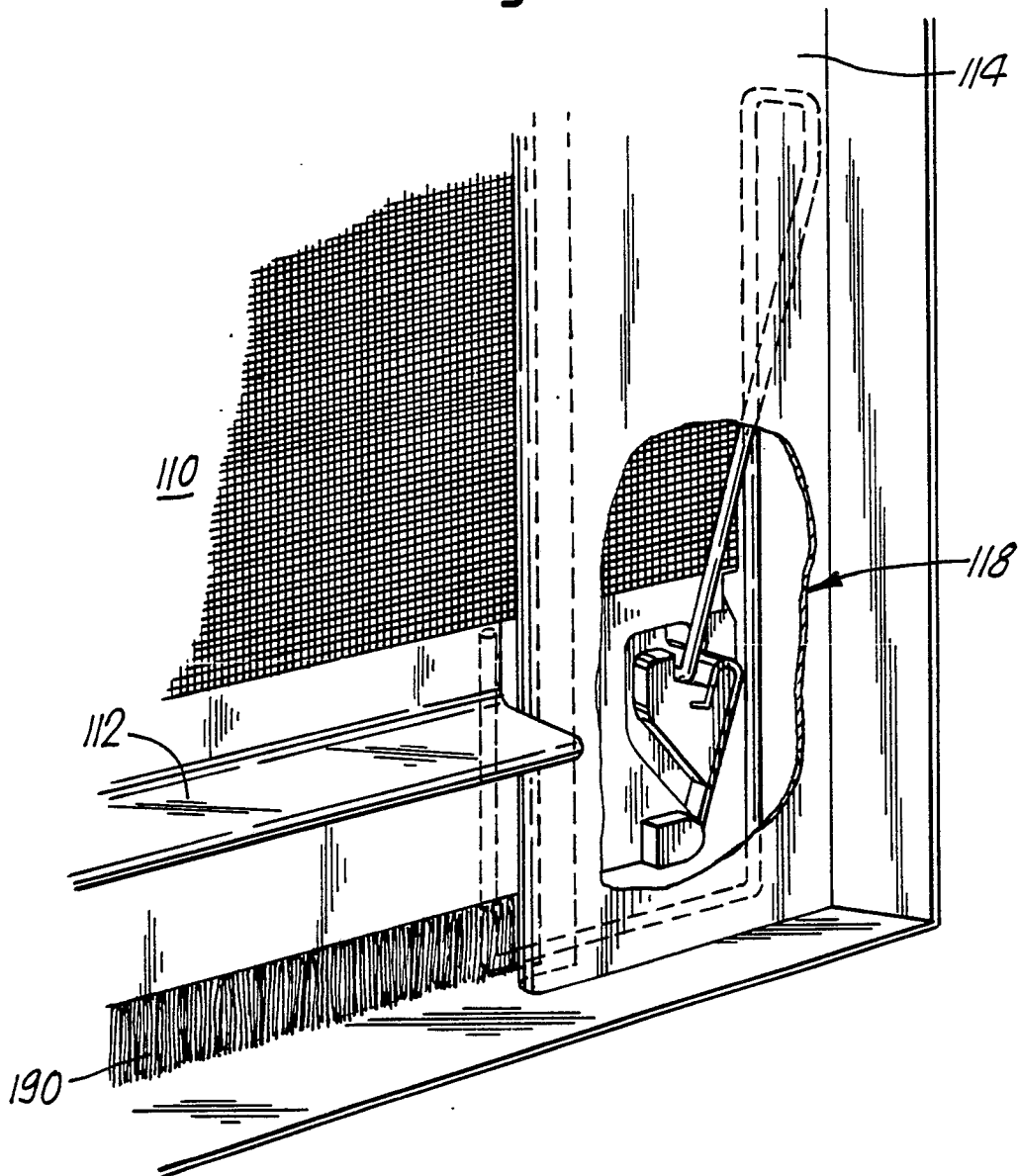


Fig. 5.

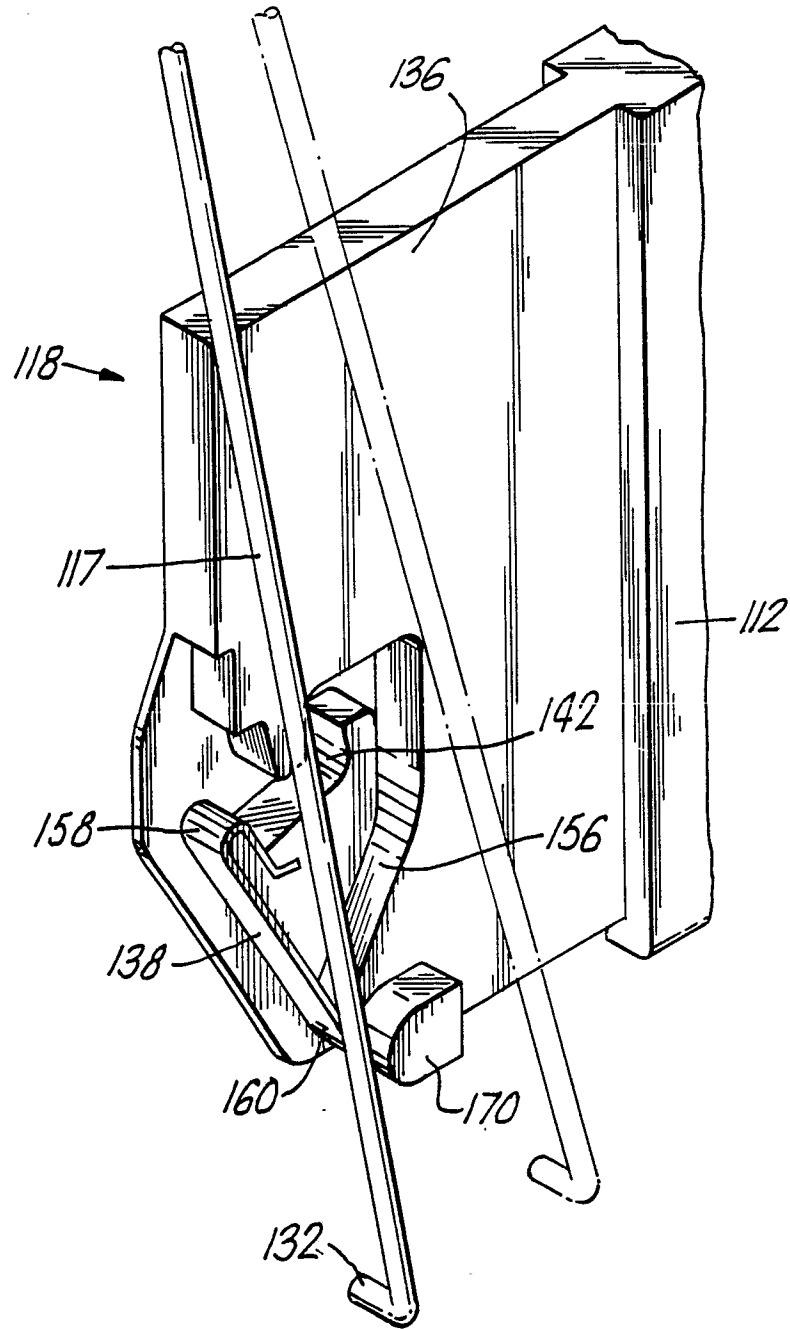


Fig.6.

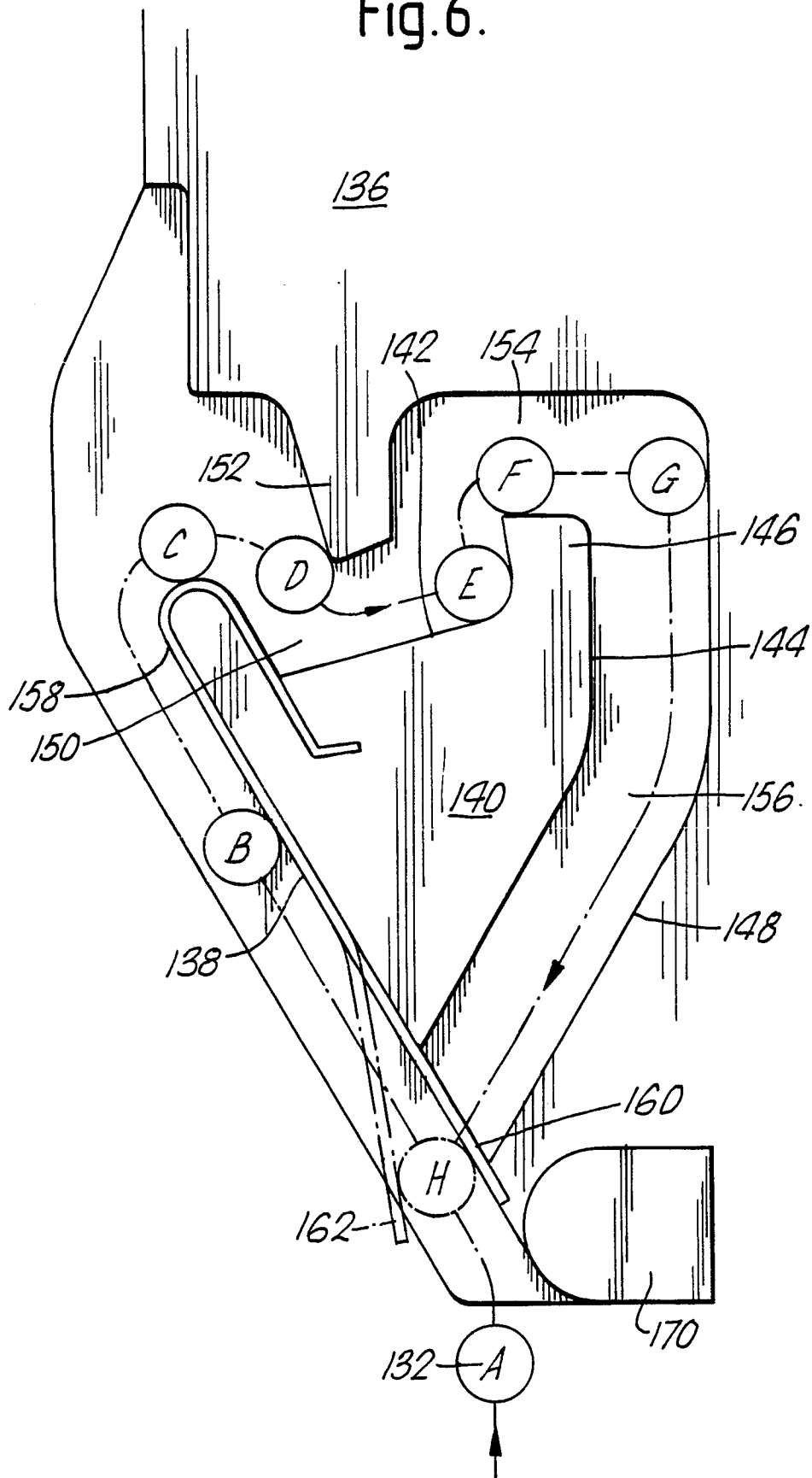


Fig.7.

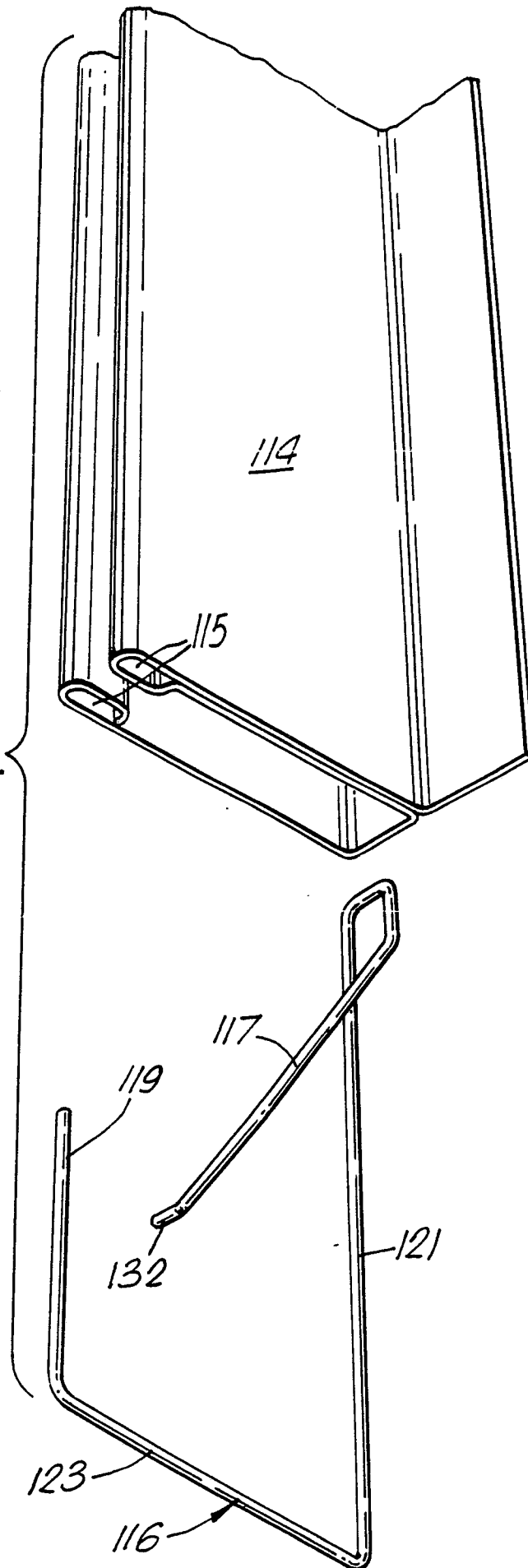


Fig.8.

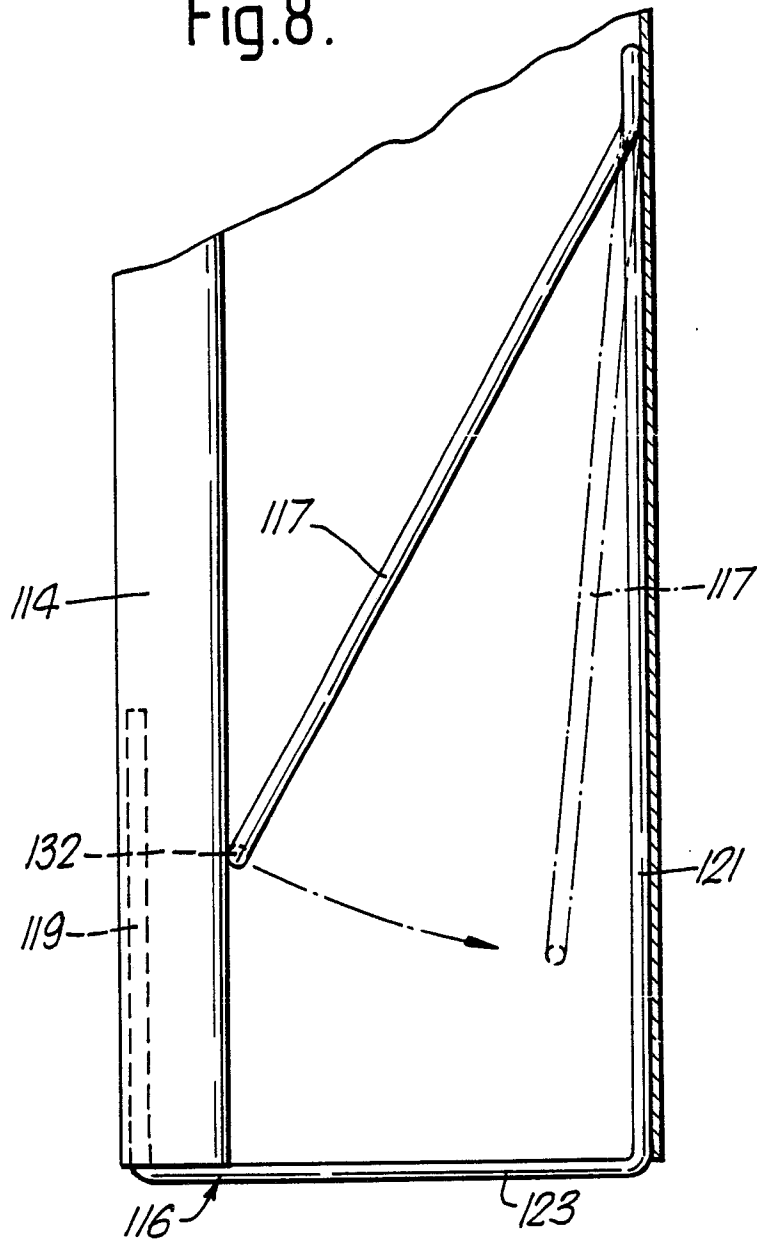


Fig.9.

