



(12) **EUROPEAN PATENT APPLICATION**

(21) Application number : **93301136.3**

(51) Int. Cl.⁵ : **E06B 9/36**

(22) Date of filing : **17.02.93**

(30) Priority : **24.02.92 GB 9203891**

(43) Date of publication of application :
29.09.93 Bulletin 93/39

(84) Designated Contracting States :
BE CH DE FR GB IT LI NL SE

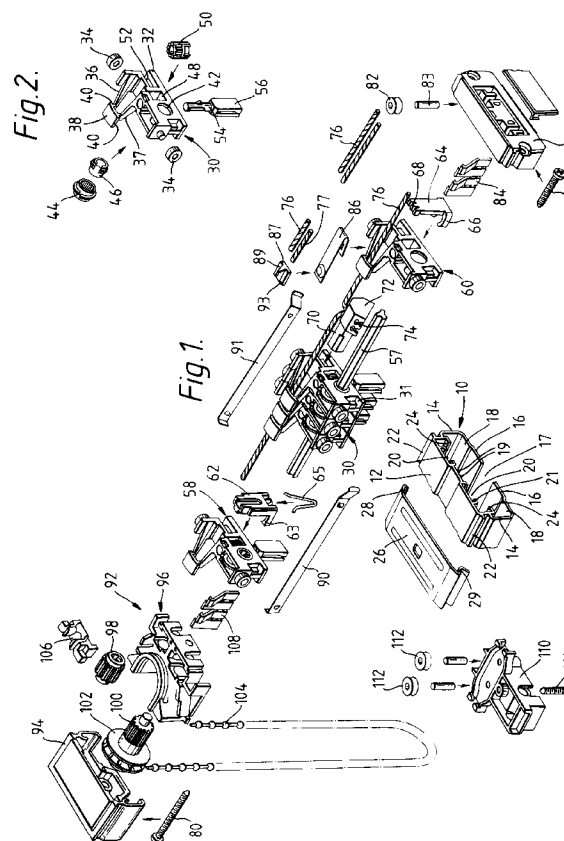
(71) Applicant : **HUNTER DOUGLAS INDUSTRIES B.V.**
P.O. Box 5072 Piekstraat 2
NL-3008 AB Rotterdam (NL)

(72) Inventor : **Oskam, Herman**
West Vlieterdijk 64A
NL-2855 AK Vlist (NL)
Inventor : **Schon, Siegfried J.**
Meersel 1
B-2321 Meer (BE)

(74) Representative : **Allen, William Guy Fairfax et al**
J.A. KEMP & CO. 14 South Square Gray's Inn
London WC1R 5LX (GB)

(54) **Vertical louver blind.**

(57) A vertical louvre blind in which a plurality of travellers (30) are mounted for movement along a headrail (10) each having a vertically extending vane depending therefrom, whereby the vanes hang downwardly therefrom and a conventional tilting mechanism on each traveller is provided for tilting all of the vanes simultaneously. The travellers have wheels (34) thereon moveable along tracks on the headrail. A controllable transmission cord (76) is connected to one of the travellers for moving it along the headrail and spacers (90,91) connect adjacent travellers to one another, whereby movement of the one traveller (60) in one direction will pull the next and subsequent traveller in one direction when they are spaced from adjacent travellers by the length of the spacer (90,91). The travellers bodies are of identical construction and each include a pair of arms (36,37) inclined towards one another and joined by a bridge (38) engaging in an undercut groove (20) in the headrail to prevent skewing.



The present invention relates to a vertical louver blind for covering a window.

One conventional form of such vertical louver blind comprises a headrail, a plurality of travellers mounted for movement along said headrail, a plurality of generally vertically extending vanes, means mounted on each traveller for supporting a separate one of said vanes, whereby said vanes hang downwardly therefrom, a tilting mechanism on each traveller for tilting the associated vane about a generally vertical axis, a tilt rod extending longitudinally of said headrail and passing through the tilt mechanisms of each traveller for rotating all of said vanes simultaneously about their respective vertical axes, wheels on said travellers movable along tracks on said headrail, a controllable transmission cord connected to one of said travellers for moving said one traveller along said headrail, spacers connecting adjacent travellers to one another, whereby movement of said one traveller in one direction will pull the next and subsequent travellers in said one direction when they are spaced from adjacent traveller by the length of said spacer.

It is an object of the present invention to provide various improvements in such a form of louver blind.

According to one aspect, each traveller is provided with two laterally spaced upstanding arms, a bridge joins the upper ends of the arms and engages the headrail, the controllable transmission cord of the blind having forward and return portions passing through a return pulley or post at one end of the headrail and both of these portions pass between the two arms and under the bridge of the traveller.

With such an arrangement the two cords can more readily assembled than hitherto and are kept very neatly in place by the two arms and the bridge and the bridge itself serves to prevent, or at least to reduce the tendency, of skewing or tilting of the travellers. This effect can be improved if the bridge engages in a longitudinal guide groove formed in the headrail, effective accurately to guide each traveller along the headrail. The structure of the invention can also be very compact, saving space in the headrail.

Conventionally the spacers can be in the form of cords or more frequently strips of springy metal or plastics. According to another aspect of the invention, individual ones of the spacers may be positioned on opposite sides of the headrail. This has the added advantage of reducing any remaining tendency of the normally aligned spacers themselves tending to skew the travellers. According to another aspect of the invention groups of spacers may be positioned alternately on opposite sides of the headrail which could provide the further important aspect that, for a wide blind, half the number of spacers are stacked on top of one another when the blind is drawn to the open position. Thus there are two smaller stacks instead of the conventional one large stack of spacers.

An end housing may be provided at the end of the

headrail opposite from the end at which said return pulley or post is provided and this may include means to rotate the tilt rod and means to control movement in opposite directions of the controllable transmission cord. The end housing may comprise a first body portion securable to the end of the headrail and a second body portion mounted within said first body portion and engaged in an end portion of the headrail, said second body portion being adapted to receive one of a plurality of different control arrangements.

Such an end housing system may be provided, according to a further aspect of the invention, in a conventional louver blind of this general type.

One of the control arrangements may comprise a first toothed pinion engaged over said tilt rod, a second toothed pinion engaged with the first pinion, a pulley drivingly mounted on said second pinion, a tilt control cord or bead chain drivingly passing over said pulley and cord guide means for guiding said transmission control cord to extend downwardly from said second body portion for manual operation.

An alternative control arrangement comprises a first bevel gear drivingly connected to the tilt rod, either directly or by first and second pinions, a second bevel gear drivingly engaging said first bevel gear, a control rod for rotating said second bevel gear and cord guide means for guiding said transmission control cord to extend downwardly from said second body portion for manual operation.

A third form of control arrangement comprises a first bevel gear drivingly connected to the tilt rod, either directly or by first and second pinions, a second bevel gear drivingly engaging said first bevel gear, a transmission pulley mounted for rotation above a vertical axis, a drive shaft passing vertically upwardly through said second bevel gear, a wand for driving said drive shaft, a clutch associated with said drive shaft and engageable in a first position with said second bevel gear to effect rotation of said tilt rod and engageable in a second position with said transmission pulley to effect operation of said controllable transmission cord.

In one particular embodiment said clutch includes a sleeve surrounding said drive shaft, axially projecting lugs on one end of the sleeve engaged in notches of the second bevel gear, recesses in the other end of the sleeve, clutch pins projecting laterally from the drive shaft and engaging in said notches only in a lower position of the drive shaft, radially inwardly extending projections of said transmission pulley, said pins engaging said projections only in an upper position of said drive shaft, whereby in said upper position said drive shaft only rotates said transmission pinion and in said lower position of said drive shaft only said tilt rod is rotated.

According to another aspect of the invention, the travellers each comprise a traveller body, said traveller bodies being of an identical construction. The blind

may then further comprise a transmission cord clamp having a clamp member with at least one notch formed therein in which said transmission cord is engaged and a spigot formed integrally with said clamp member engaged in an aperture in said one traveller.

The traveller at the other end of the headrail may then further comprise means locking said traveller against movement along the headrail.

Preferably the blind further comprises at least one additional traveller body mounted in the headrail beyond said one traveller and moveable therewith, said further traveller member having no vane depending therefrom, but moving with said one traveller to provide intermediate support for the tilt rod.

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

Figure 1 is a perspective exploded view of one embodiment of vertical louver blind according to the invention;

Figure 2 is a perspective exploded view of one of the travellers of the blind of Figure 1;

Figure 3 is a perspective exploded view of an alternative control arrangement; and

Figure 4 is an exploded view of a still further control arrangement.

Referring first to Figure 1 the blind illustrated schematically therein is mounted in a headrail 10 which is of inverted channel formation comprising a web 12, two side flanges 14 and inwardly turning rims 16 with a gap 17 therebetween, the rims 16 each having track forming portions 18 thereon. The web comprises two groove formations 20, two laterally extending beads 22 and two channels 24.

The headrail 10 can be mounted in a conventional manner by means of a clip or bracket 26 which can be attached by a screw to the lintel of a window, the beads 22 being engaged in edge rims 28,29 of the clip 26, the rim 29 capable of being flexed to enable the headrail to be fitting and removed.

The blind includes a plurality of travellers 30 which are shown in more detail in Figure 2. Each traveller includes an identical body 32 provided at its end with two wheels 34 which are so positioned as to enable them to run along the tracks 18 in the headrail. Each traveller body 32 includes two arms 36,37 which are spaced apart and are connected to one another by a bridge 38 which has outwardly extending bead portions 40 extending laterally outwardly beyond the arms 36,37. The arms are inclined towards one another giving a form of A structure, which increases stability and increases the rigidity of the combination of the arms and bridge. Furthermore, it aids in the travellers stacking against one another. The bridge 38 and beads 40 are dimensioned to engage in the grooves 20 in the web 12 of the headrail accurately to guide the traveller and to prevent it from tilting or

skewing. It will be noted that the grooves 20 also have inwardly directed beads 21, only one of which is referenced, these forming an undercut groove and engaging under the beads 40 of the bridge 48 of each traveller. This arrangement further assists in preventing skewing of the travellers.

Mounted in a first aperture 42 in the body 32 is a worm 44 with an inner clutch member 46. In a second aperture 48 is mounted a worm wheel 50 extending with its axis vertical. It will be seen that the traveller body 32 also includes a third aperture 52. Engaged in the worm wheel 50 is the shaft portion 54 of a conventional louver hook 56 used to mount the louvers of the blind, these louvers not being shown for the sake of clarity.

Referring again to Figure 1, it will be seen that a tilt rod 57 passes through all of the travellers and in particular through the inner clutch member 46, whereby rotation of the shaft will cause rotation of the worms 44 on all of the travellers and thereby simultaneous rotation of the worm wheels 50 and their hooks 56.

There are, in addition to these travellers, two further travellers 58,60. Traveller 58 is substantially identical, but it also has associated with it a locking member 62 of a generally L-shaped configuration, a lower leg 63 thereof being bifurcated and sprung over a downwardly extending cylindrical projection (not shown) through which the shaft 54 of the hook 56 passes. A spring 65 associated with the locking member 62 is used to hold the locking member, and thus the traveller 58 in a fixed position, by engaging a stop (not shown) on the headrail.

The other traveller 60 does not have a worm, worm wheel or louver hook but has a somewhat similar locking member 64 to locking member 62. This again has a bifurcated lower leg 66, again engaging over a cylindrical projection on the bottom of the traveller body 32. The member 64 is provided with three projections 68 at its upper end, which engage between ridges 19 on the undersurface of the web 12 of the headrail.

Upon installation any two of the projections 68 may be broken away to allow the remaining projection to engage a respective fixed stop of the headrail.

An end one 31, of the normal travellers has inserted into the third aperture 52 the spigot 70 of a connecting member 72 provided with notches 74. Two notches are visible in Figure 1 and two further notches, on the other side, are not so visible. These notches are used to engage a portion of a controllable transmission cord 76 which passes between the arms 36,37 and under the bridge 38 of each of the travellers 30,31,58,60. At the right-hand end, referred to herein as the one end of the headrail, a first or return end cap 78 is provided and this is secured to the headrail by screws 80 engaging in the channels 24 in the headrail. First end cap 78 is provided with a return

pulley 82 rotatably mounted on a pin 83 mounted in the end cap 78.

Spacer clips 84 of a suitable number are provided adjacent the end cap and define an end position of the traveller 60.

The controllable transmission cord 76 passes around the pulley 82 and then passes back adjacent itself in the space between the arms 36,37 and under the bridge 38 of each of the travellers, forming a return portion 77 of the cord adjacent the forward portion 76. For the sake of clarity, the return portion 77 is only shown schematically adjacent the pulley 82. The traveller 60 is provided with a spring 86 and a guide friction member 87 located under the bridge 38 of traveller 60. The guide and friction member 87 has two surfaces 89,93, the surface 89 being higher than surface 93. The spring 86 resiliently urges the two portions 76,77 of the cord upwardly towards the undersurface of bridge 38, the higher surface 89 causing frictional engagement of the forward portion 76 against the bridge.

Adjacent individual travellers 30,31 and the generally fixed traveller 58 are interconnected by spacers 90,91 of a conventional nature. Normally, however, the strip like spacers extend with the plane of each strip horizontally, while as shown in Figure 1, the strips 90,91 are mounted with their planes vertical. Moreover, according to a preferred construction of the invention, spacers 90,91 can be provided on either or both sides to reduce the possibility of skewing of the travellers, or in groups on alternate sides to reduce the bulk of a stack of spacers when the blind is in an open position. This general configuration enables the vertical height of the headrail to be reduced to a minimum.

A second end cap 92 is provided at the other end of the headrail and is shown as including a first body portion 94 securable to the headrail by further screws 80 engaged in the channels 24 as described before. Engageable in the first end cap portion 94 is a second end cap portion 96, which is shown as providing a mounting for a first pinion 98, which is engageable with the tilt rod 58 in a driving manner and a second pinion 100, which is formed integrally with a drive pulley 102, around which is looped a bead chain or cord 104, so that pulling thereof causes rotation of the pulley 102 and hence of the pinions 100 and 98 and thereby of the tilt rod 57 which in turn causes rotation of all of the worms 44, and their worm wheels 50 and louver or vane hooks 56 therewith.

Mounted on top of the housing is a cord guide 106 through which the forward and return portions 76,77 of the controllable transmission cord pass. The two portions are then guided downwardly through guide apertures (not shown) enabling the cord to be operated manually thereby causing movement in one direction or the other of the end one traveller 31. Thus, when the traveller is moved to the right by the cord

76 it will move along a certain distance determined by the spacer 90 or 91, whereupon the adjacent traveller 30 will also be moved to the right and so on as the traveller 31 moves further towards the right.

When the controllable transmission cord is moved in the opposite direction, the traveller 31 will abut the adjacent traveller 30 and move it to the left and this will continue until all of the travellers have been moved fully to the left and engage the last, essentially fixed, traveller 58. Further movement of that is prevented by additional spacers 108 similar to the spacers 84. As the traveller 31 moves to the left, friction between the forward portion 76 of the cord and the surface 89 and the undersurface of the bridge 38 will cause the traveller 60 also to move to the left. This traveller thus will provide a temporary intermediate support for the tilt rod which is otherwise, with all the travellers at the left-hand end, only supported in the end caps 78,92. This assists in preventing the tilt rod from sagging. Up to three of such temporary supports may be provided if required by the length of the blind. Any one of the projections 68 on traveller 60 may conventionally be used to define the operative position along the length of the headrail.

If one is dealing with a still wider blind or if one wishes to have individual control over the left and right hand portions of the blind, it may be necessary to have a central support member which is indicated at 110 in Figure 1. This is connected to the headrail by a screw 111 and includes two pulleys 112 for guiding the cord in a return path. This again provides support for the tilt rod. If this central support is included, then of course it will be necessary for a dual control arrangement to be provided whereby a further traveller 31 is provided on the far side of the central support 110 and the blind will be caused to open in opposite directions, rather similar to the manner of conventional curtains.

It will be appreciated that because all of the travellers are of essentially identical construction, and even the travellers 58,60 are of the same basic construction, the cost can significantly be reduced.

In certain instances, furthermore, it is desirable to have a different drive arrangement and two further drive arrangements are illustrated in Figures 3 and 4.

Referring first to Figure 3, the control arrangement is indicated by the general reference numeral 93 and includes the same housing part or end cap portion 96 as in the embodiment of Figure 1 together with identical first pinions 98 and cord guide 106. An end cap portion 95 is generally similar to the portion 94, but slightly longer in the longitudinal direction of the headrail. A second pinion 101 is formed integrally or connected to a first bevel 114 which is engageable with a second bevel 116 mounted in a bridge member 118.

Located below the bridge 118 is an inverted cup 120 which may be engaged by a wand through which

passes a generally vertical drive shaft 122, this drive shaft passing upwardly through the bevel 116, and through a sleeve 124. The shaft 122 is axially movable between a raised position and a lowered position. Projecting downwardly through the sleeve 124 are lugs 125 engageable in notches 126 in the second bevel gear 116. Alternatively the sleeve may be integral with the bevel.

The upper end of the sleeve 124 is provided with recesses 128. A pin member 130 is passed through a transverse aperture 131 in the drive shaft 122 and this, in the lower position of the drive shaft, acts as a dog clutch with the recesses 128, thereby to cause rotation of the sleeve and thus of the second pinion 116, the first bevel gear 114 and the second and first pinions 101, 98, thereby to rotate the tilt rod 58.

A transmission pulley 132 is mounted for rotation about a vertical axis and is journaled on the upper end of the sleeve 124, so that the shaft 122 extends upwardly into a hub portion thereof. In a raised position of the shaft 122, the ends of the pin 130 engage radially inwardly directed projections 134 in the transmission pulley 132.

Within the pulley 132 there is an annular bottom surface 136 in which is formed a double key-hole slot to allow for the passage of the ends of the pin 130. In the raised position these ends are above the surface 136 and in the lowered position they are positioned therebelow.

It will be appreciated, therefore, that a wand can be connected to the drive shaft 122 through the inverted cup 120 and this can be rotated by hand, in the lowered position thereof, to cause the bevel gear 126 to rotate, and thereby rotation of the tilt rod will thereby cause tilting of the louver vanes.

When it is desired to open and shut the blind, however, one can press the wand upwardly, and disengage the ends of the pin 130 from the recesses 128 and then pass them through the keyhole slots and engage them with the projections 134, so that subsequent rotation of the wand will cause the transmission pulley 132 to rotate and thereby cause movement of the transmission cord 76. The annular bottom surface 136 assist in maintaining the raised position while driving the pulley 132, whereas a slight slope of the surfaces 136 will return the drive shaft 122 to its lower position upon removal of the driving force.

Figure 4 shows an alternative structure in which many parts are identical and indicated by identical reference numerals. The control end cap structure 97 thus includes an identical second housing part 96 and the housing part 94 is the same as that illustrated in Figure 1. Again there is a first pinion 98, a second pinion 101 and associated first bevel gear 114, a second bevel gear 116 and a bridge 118. The main difference is that there is a shaft drive 140 engageable with the second bevel gear 116 instead of the bead chain drive of Figure 1. Operation of the travellers is carried out

in the same way as in Figure 1 and the transmission cords again pass through the guide 106. Figure 4 also illustrates a cord braking arrangement which may be associated with the transmission cord guide 106, this including a toothed wheel 142 having a ribbed disc 144 at one end thereof, and a downwardly projecting shaft 146. This shaft is engageable in a slot (not shown) in the bottom of the guide 106 and the housing part 96, this slot being L-shaped as indicated at 148, 150. When the projecting shaft 146 is in the slot portion 148, the disc 144 will engage the cord against the cheeks 152 of the guide 106 and the cord will be jammed between the toothed portion 142 and the cheeks. When the cord is pulled to the left as shown, the toothed wheel will be pulled along the portion 148 of the slot and then into the portion 150 so that there will be no jamming action on the cord.

This braking force only acts on the cord if the travellers under their own force would tend to move from their position such as in installations where the headrail is along a sloping upper window lintel.

If the blind is operated by means of the cord and the travellers are indeed to be moved, then the toothed wheel 142 is automatically unlocked by the pulled portion of the cord.

Claims

1. A vertical louver blind comprising a headrail, a plurality of travellers mounted for movement along said headrail, a plurality of generally vertically extending vanes, means mounted on each traveller for supporting a separate one of said vanes, whereby said vanes hang downwardly therefrom, a tilting mechanism on each traveller for tilting the associated vane about a generally vertical axis, a tilt rod extending longitudinally of said headrail and passing through the tilt mechanisms of each traveller for rotating all of said vanes simultaneously about their respective vertical axes, wheels on said travellers movable along tracks on said headrail, a controllable transmission cord connected to one of said travellers for moving said one traveller along said headrail, spacers connecting adjacent travellers to one another, whereby movement of said one traveller in one direction will pull the next and subsequent travellers in said one direction when they are spaced from adjacent traveller by the length of said spacer, wherein each traveller is provided with two laterally spaced upstanding arms, wherein a bridge joins the upper ends of said arms and engages said headrail, wherein the controllable transmission cord has forward and return portions passing around a return pulley or post at one end of the headrail and wherein both of said portions pass between the two arms and

under the bridge of each traveller.

2. A blind according to claim 1, wherein the arms are inclined so as to be closer to one another at said bridge than at the body of said traveller. 5
3. A blind according to claim 1 or 2, wherein the bridge engages in a longitudinally guide groove formed in the headrail, effective accurately to guide each traveller along said headrail. 10
4. A blind according to claim 3, wherein said groove is an undercut groove and wherein said bridge is extended beyond said arms to form beads engaging in said undercut groove. 15
5. A blind according to any one of claims 1 to 4, wherein alternate ones of said spacers are positioned on opposite sides of said headrail. 20
6. A blind according to any one of claims 1 to 4, wherein alternate groups of spacers are positioned on opposite sides of the headrail.
7. A blind according to any one of claims 1 to 4, wherein said spacers are provided on each side of the headrail. 25
8. A blind according to any preceding claim, wherein an end housing is provided at the opposite end of said headrail and includes means to rotate said tilt rod and means to control movement in opposite directions of said controllable transmission cord. 30
9. A blind according to claim 8, wherein said end housing comprises a first body portion securable to the end of the headrail and a second body portion mounted within said first body portion and engaged in an end portion of the headrail, said second body portion being adapted to receive one of a plurality of different control arrangements. 35 40
10. A vertical louver blind comprising a headrail, a plurality of travellers mounted for movement along said headrail, a plurality of generally vertically extending vanes, means mounted on each traveller for supporting a separate one of said vanes, whereby said vanes hang downwardly therefrom, a tilting mechanism on each traveller for tilting the associated vane about a generally vertical axis, a tilt rod extending longitudinally of said headrail and passing through the tilt mechanisms of each traveller for rotating all of said vanes simultaneously about their respective vertical axes, wheels on said travellers movable along tracks on said headrail, a controllable transmission cord connected to one of said travellers 45 50 55

for moving said one traveller along said headrail, spacers connecting adjacent travellers to one another, whereby movement of said one traveller in one direction will pull the next and subsequent travellers in said one direction when they are spaced from adjacent traveller by the length of said spacer, and further comprising an end housing in one end of the headrail having associated therewith a return pulley or post, wherein the controllable transmission cord has forward and return portions passing around said return pulley or post, wherein an end housing is provided at the opposite end of said headrail and includes means to rotate said tilt rod and means to control movement in opposite directions of said controllable transmission cord, wherein said end housing comprises a first body portion securable in the end of the headrail and a second body portion mounted within said first body portion and engaged in an end portion of the headrail, said second body portion being adapted to receive one of a plurality of different control arrangements.

11. A blind according to claim 9 or 10, wherein one of said control arrangements comprises a first toothed pinion drivingly engaging said tilt rod, a second toothed pinion engaged with the first pinion, a pulley drivingly mounted on said second pinion, a tilt control cord or bead chain drivingly passing over said pulley and a cord guide means for guiding said transmission control cord to extend downwardly from said second body portion for manual operation.
12. A blind according to claim 9, 10 or 11, wherein one of said control arrangements comprises a first bevel gear drivingly engaging said tilt rod, a second bevel gear drivingly engaging said first bevel gear, a control rod for rotating said second bevel gear and cord guide means for guiding said transmission control cord to extend downwardly from said second body portion for manual operation.
13. A blind according to claim 9, 10 or 11, wherein one of said control arrangements comprises a first bevel gear drivingly connected to said tilt rod, a second bevel gear drivingly engaging said first bevel gear, a transmission pulley mounted for rotation about a vertical axis, a drive shaft passing vertically upwardly through said second bevel gear, a wand for driving said drive shaft, a clutch associated with said drive shaft and engageable in a first position with said second bevel gear to effect rotation of said tilt rod and engageable in a second position with said transmission pulley, to effect operation of said controllable transmission cord.

14. A blind according to claim 12, wherein said clutch includes a sleeve surrounding said drive shaft, and connected to the second bevel gear, recesses in the other end of the sleeve, clutch pins projecting laterally from the drive shaft and engaging in said recesses only in a lower position of said drive shaft and radially inwardly extending projections of said transmission pulley, said pins engaging said projections only in an upper position of said drive shaft. 5
15. A blind according to any preceding claim, wherein said travellers each comprise a traveller body, said traveller bodies being of an identical construction, and further comprising a transmission cord connector member with at least one attachment means therein for engaging said transmission cord is engaged, and a coupling means formed integrally with said connector member for attachment to said one traveller. 10 15 20
16. A blind according to claim 1, 10 or 15, wherein a further traveller adjacent to one of the ends of the headrail further comprises means locking said traveller against movement along said headrail. 25
17. A blind according to claim 16, wherein said locking means comprises a body connected to the traveller body by coupling means, and spring which may be activated or deactivated to engage the headrail to stop or restrict movement of said traveller. 30
18. A blind according to claim 15 or 16 and further comprising an additional traveller body mounted in said headrail beyond said one traveller and moveable therewith over at least a portion of the movement of said one traveller. 35
19. A blind according to claim 17, wherein said additional traveller has an identical body to the other travellers and further comprises a friction block, a spring carrying said friction block, the spring being mounted on said traveller body and urging said friction block towards the underside of said bridge, whereby the transmission cord is frictionally clamped therebetween. 40 45
20. A blind according to claims 9 to 14, wherein said second body portion includes a guide block for the traveller cord comprising two convergent spaced apart cheeks. 50
21. A blind according to claim 20, and further comprising a cord braking arrangement associated with said guide block, said arrangement including a toothed wheel having a ribbed disc extending radially outwardly from one end thereof, a shaft

extending axially from said one end and engaging in a slot in said guide block, said toothed wheel being movable by said transmission cord, whereby the shaft moves in the slot from a position in which the cord can pass freely, to another position in the slot in which the cord is jammed between the toothed wheel and one of said cheeks.

22. A vertical louver blind comprising a headrail, a plurality of travellers mounted for movement along said headrail, a plurality of generally vertically extending vanes, means mounted on each traveller for supporting a separate one of said vanes, whereby said vanes hang downwardly therefrom, a tilting mechanism on each traveller for tilting the associated vane about a generally vertical axis, a tilt rod extending longitudinally of said headrail and passing through the tilt mechanisms of each traveller for rotating all of said vanes simultaneously about their respective vertical axes, wheels on said travellers movable along tracks on said headrail, a controllable transmission cord connected to one of said travellers for moving said one traveller along said headrail, spacers connecting adjacent travellers to one another, whereby movement of said one traveller in one direction will pull the next and subsequent travellers in said one direction when they are spaced from adjacent traveller by the length of said spacer, wherein said travellers each comprise a traveller body, said traveller bodies being of identical construction and each having means for receiving selectively one or more of a tilt mechanism, a transmission cord connector, locking means for locking the traveller to the headrail and/or means for frictionally engaging the transmission cord to be moved by said transmission cord.

Fig. 2.

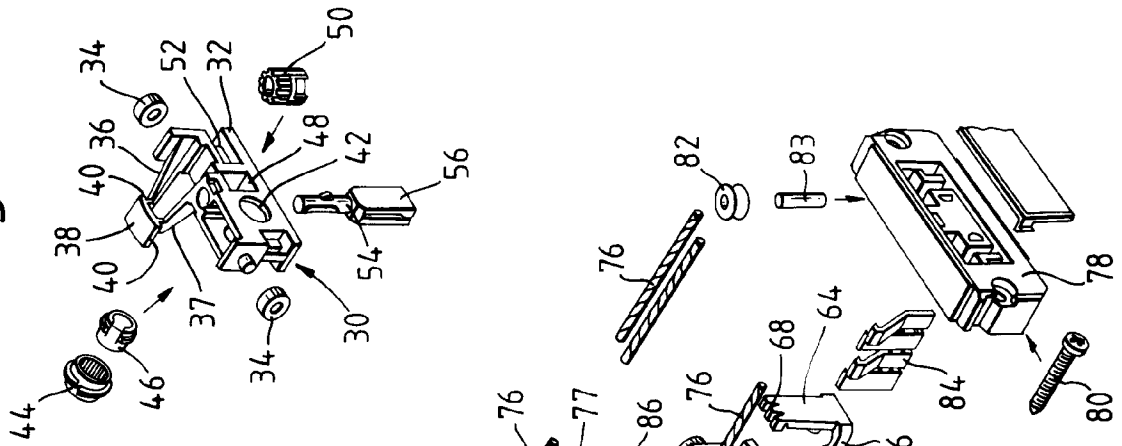


Fig. 1.

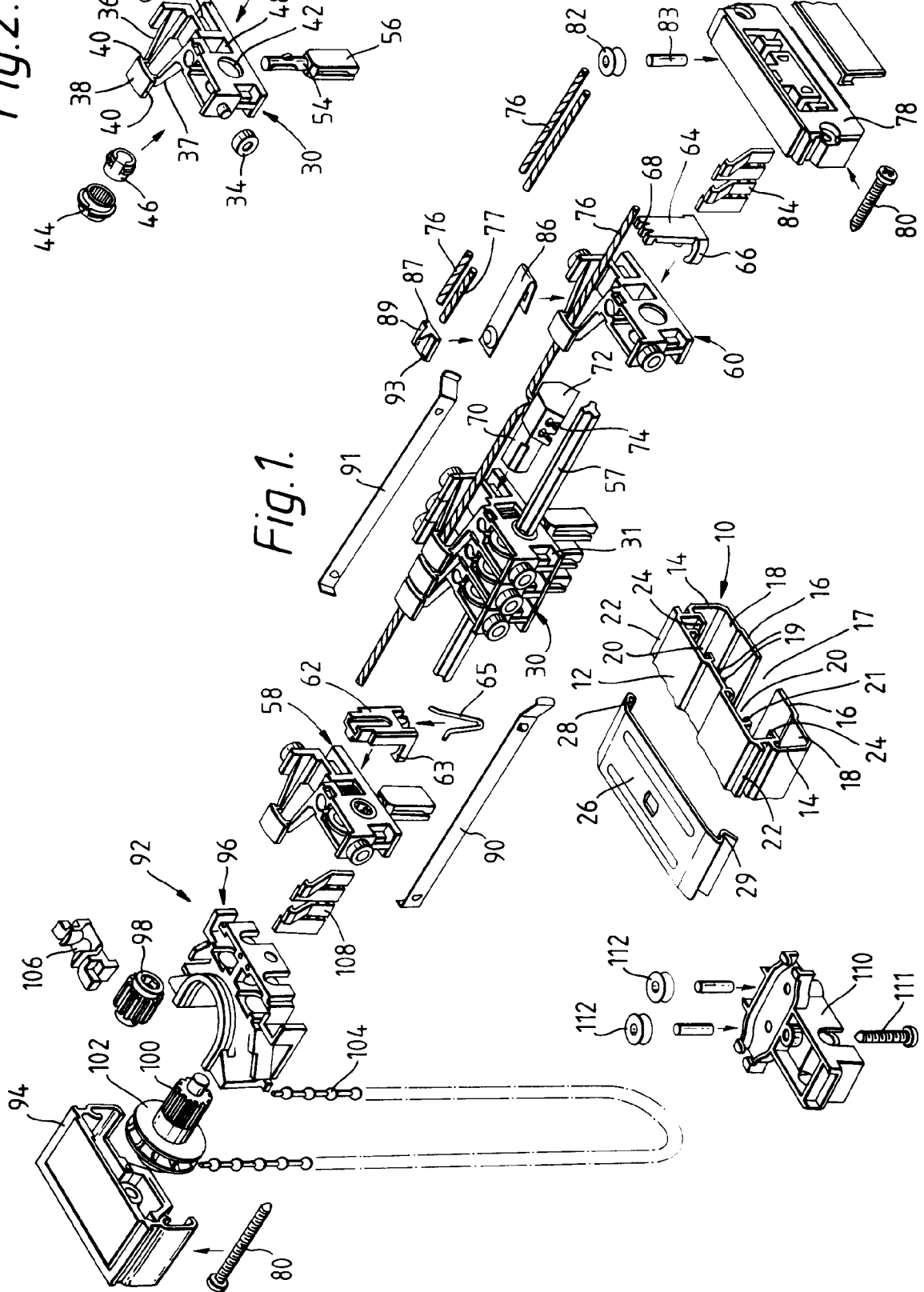


Fig. 3.

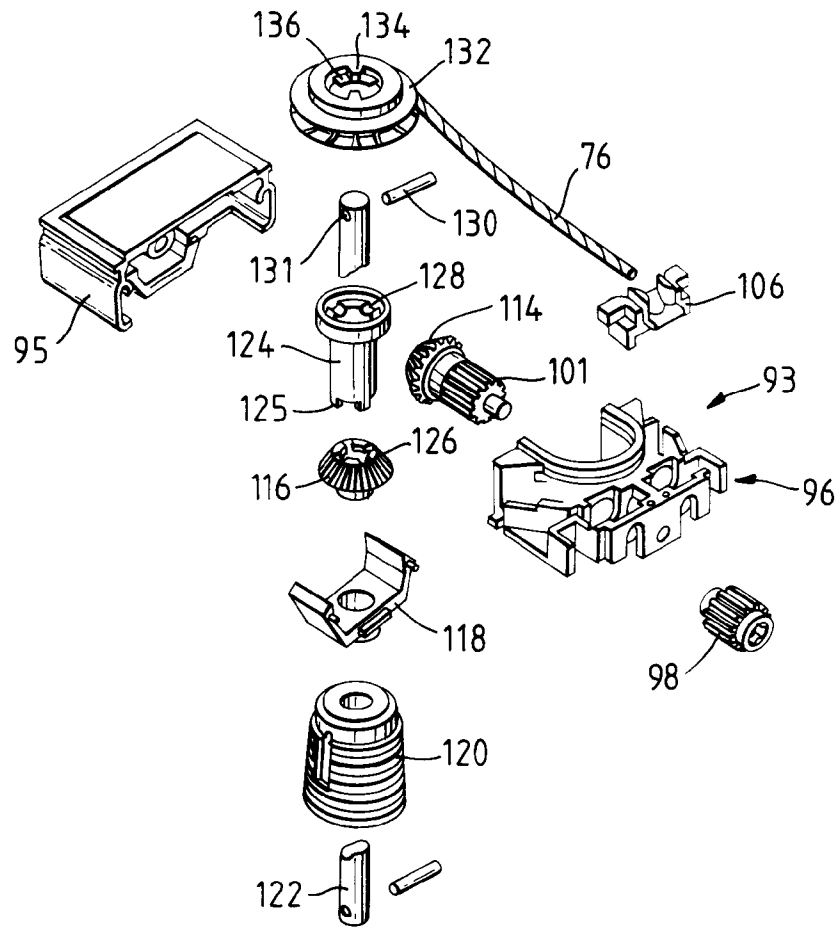


Fig. 4.

