



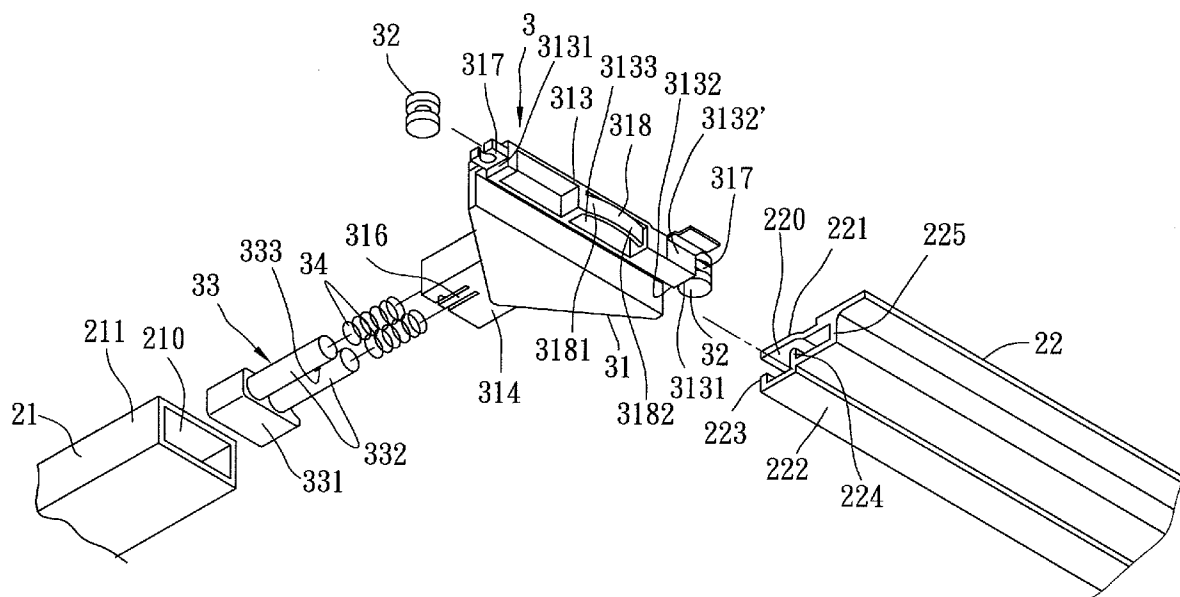
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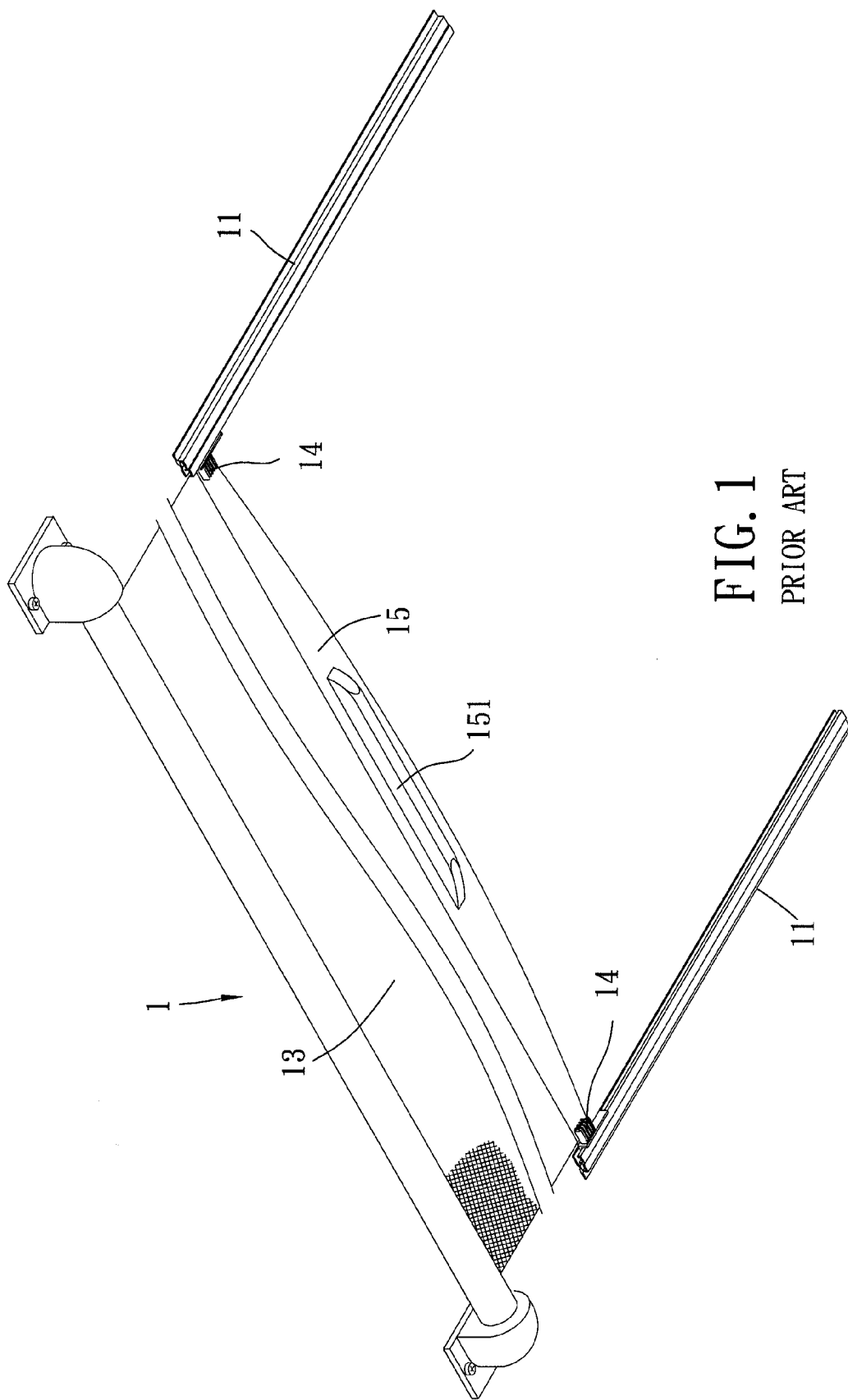
(19) **United States**(12) **Patent Application Publication**
LIN(10) **Pub. No.: US 2010/0212846 A1**(43) **Pub. Date: Aug. 26, 2010**(54) **BLIND ASSEMBLY HAVING A SLIDE MEMBER**(52) **U.S. Cl. 160/370**(76) Inventor: **Paul LIN**, Tainan Hsien (TW)

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A47H 3/00 (2006.01)(57) **ABSTRACT**

A blind assembly includes a guide rail having spaced-apart first and second walls, an end wall interconnecting outer ends of the first and second walls, a first rib projecting transversely from an inner end of the second wall, and a second rib projecting transversely from the second wall between the first rib and the end wall. The second wall and the first and second ribs cooperatively define a longitudinal slide groove. A slide member is connected to and is movable along with a pull rod of the blind assembly, and includes a slide part received slidably in the slide groove and having two transverse ends longitudinally opposite to each other, and two rollers connected respectively to the transverse ends. Each roller has a circumferential face between the first and second ribs and capable of contacting at least one of the first and second ribs.





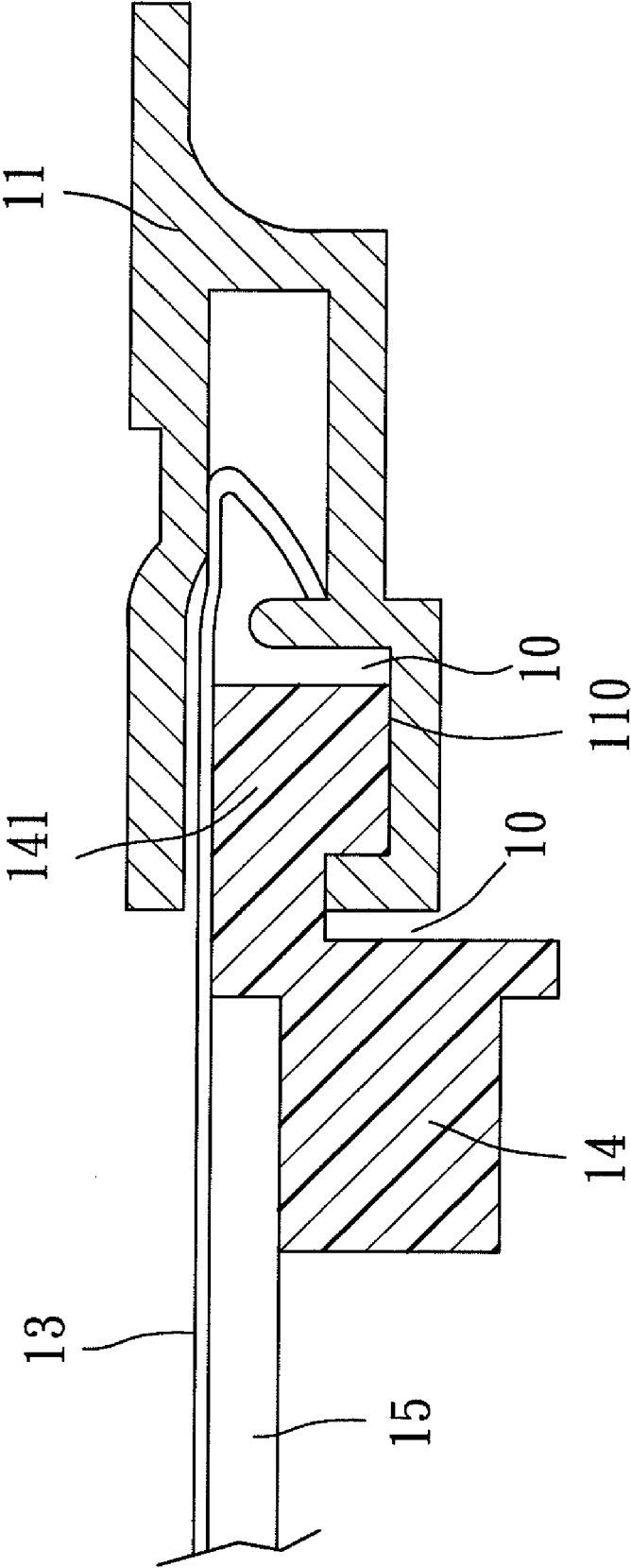


FIG. 2
PRIOR ART

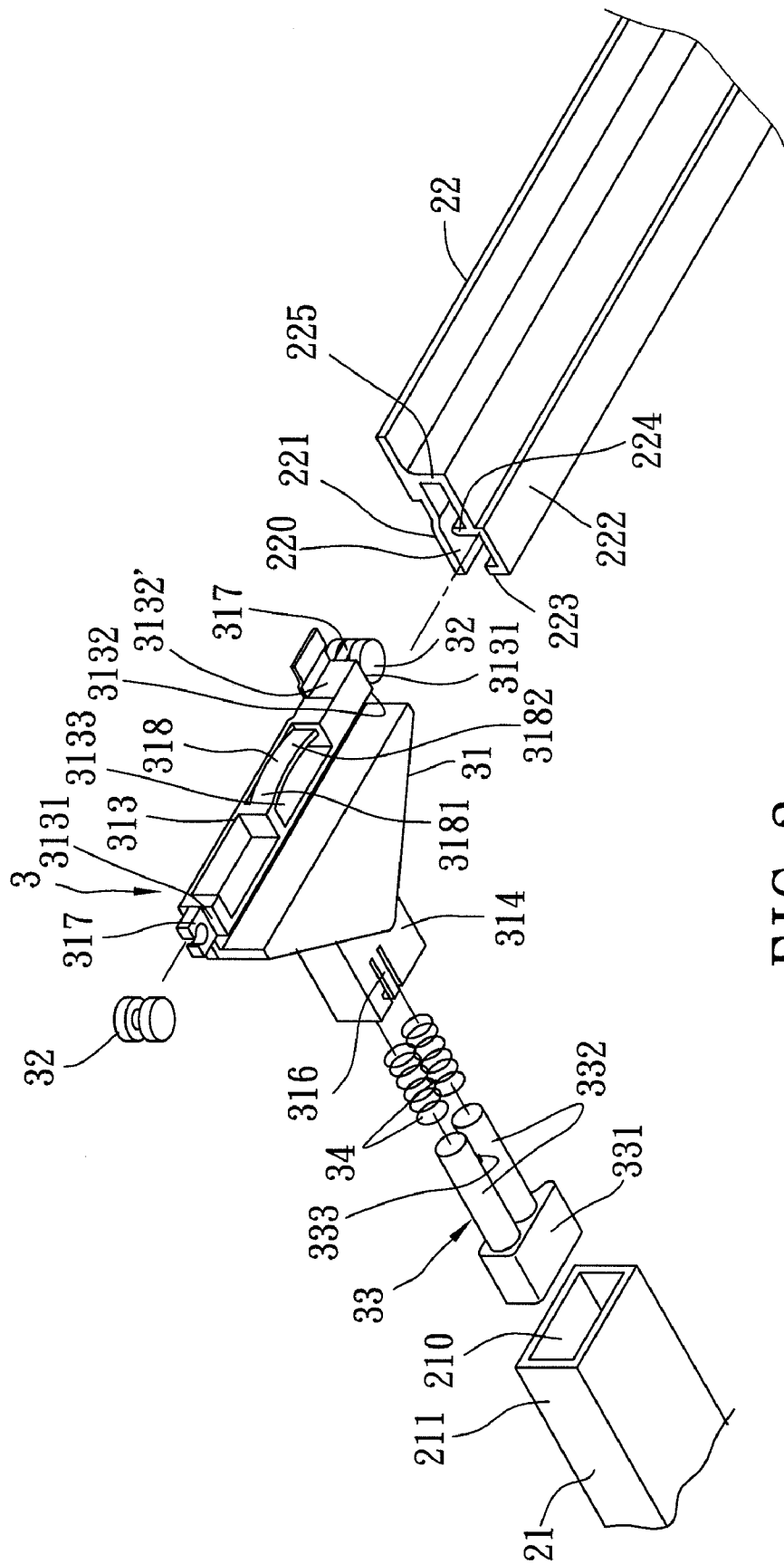


FIG. 3

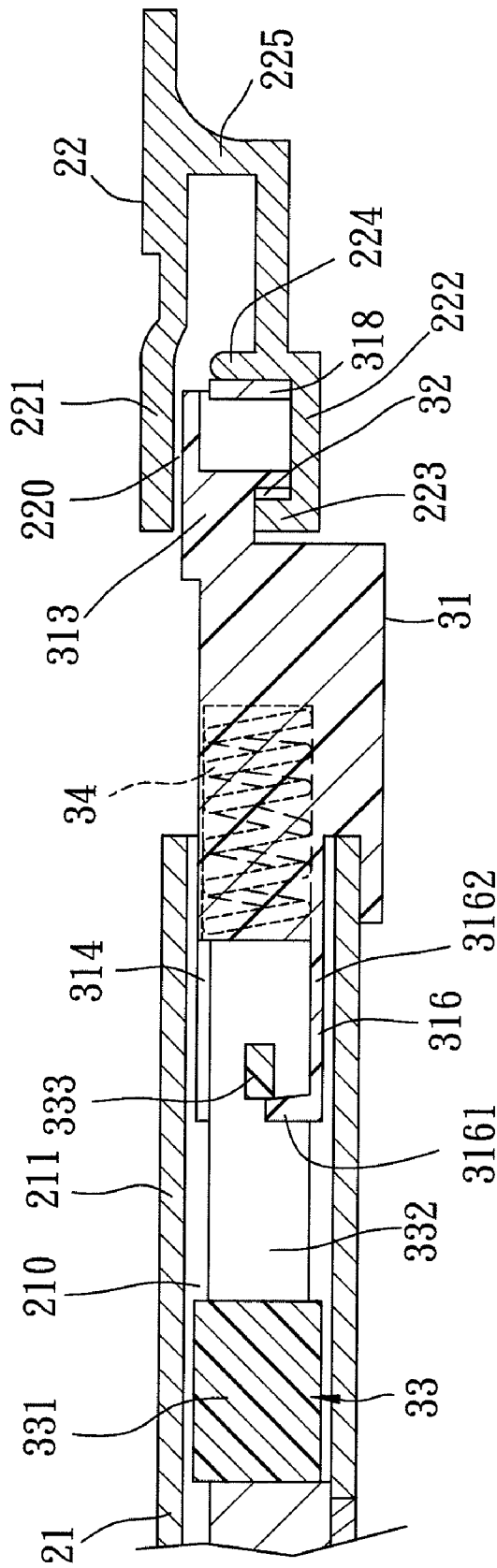
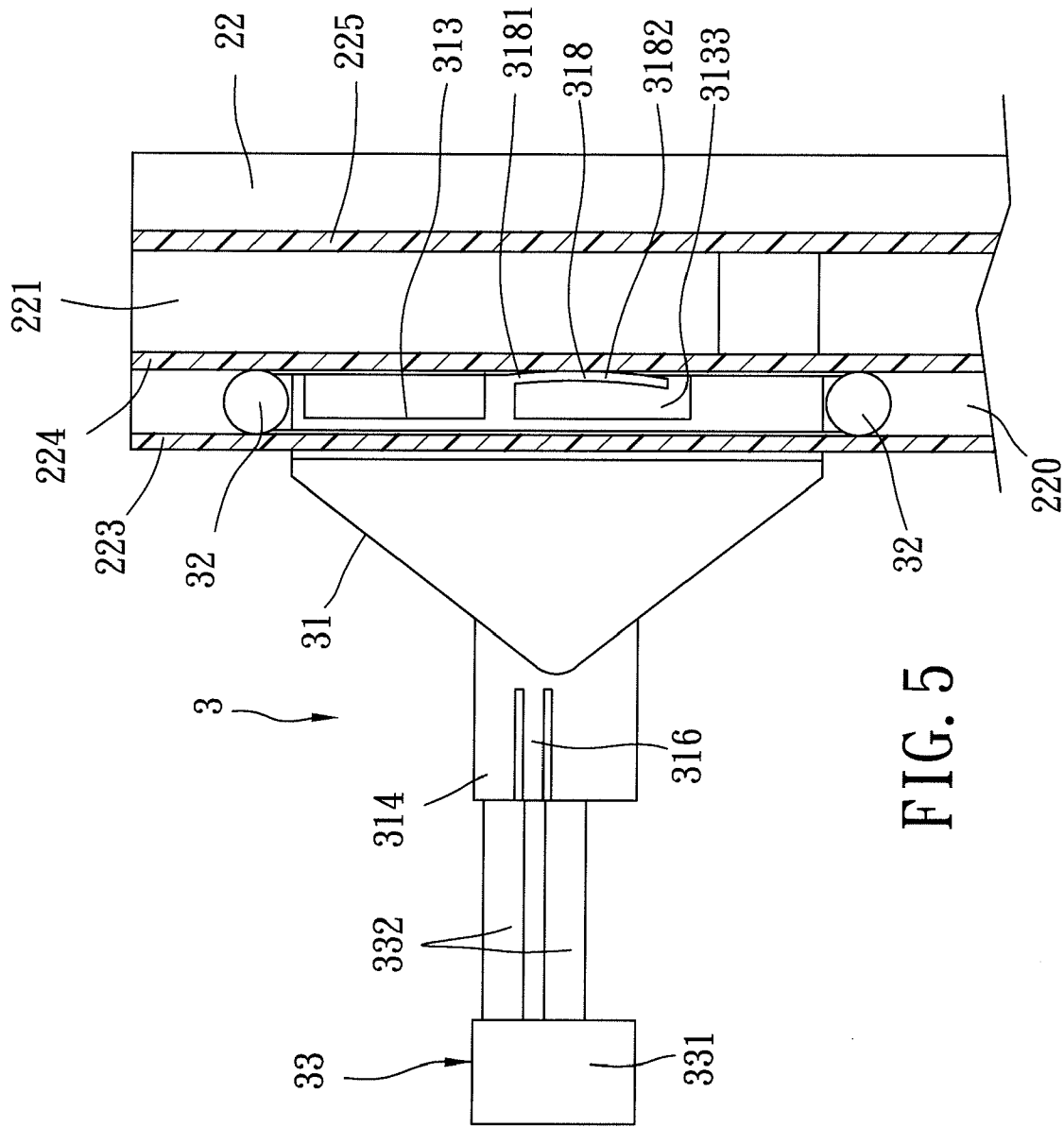


FIG. 4



BLIND ASSEMBLY HAVING A SLIDE MEMBER

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] This invention relates to a blind assembly, more particularly to a blind assembly having a slide member.

[0003] 2. Description of the Related Art

[0004] Referring to FIGS. 1 and 2, a conventional blind assembly 1 includes spaced-apart left and right guide rails 11 each having a slide groove 110, a fabric blind 13 wound by a winding device (not visible), a pull rod 15 connected to a front end of the fabric blind 13, and left and right slide members 14 each having a slide part 141 connected to one end of the pull rod 15 and received in the slide groove 110 of the respective guide rail 11. To use the conventional blind assembly 1, a handgrip 151 of the pull rod 15 is pulled forwardly so as to move the slide parts 141 along the guide rails 11 and to pull out the fabric blind 13 from the winding device to an unwind position. To reduce the frictional resistance between the slide parts 141 and the guide rails 11, gaps 10 are formed between the slide members 14 and the slide grooves 110.

[0005] However, because of the presence of the gaps 10, when a user pulls forwardly the pull rod 15, the force exerted by the user on the pull rod 15 may not be equally distributed to the two opposite sides thereof. As a result, positional deviations of the slide members 14, which are fixed to the respective ends of the pull rod 15, relative to the guide rails 11 occur. As a result, the slide members 14 may experience sticking within the guide rails 11, so that the slide members 14 cannot slide smoothly and respectively along the guide rails 11, and the fabric blind 13 cannot be unwound smoothly. Particularly, if the conventional blind assembly 1 is installed on a vehicle roof, since an opening in the vehicle roof is centered above a driver's seat and a front passenger's seat, when the driver or the front passenger pulls forwardly the pull rod 15, the force exerted on the pull rod 15 is usually in a diagonal direction, so that the fabric blind 13 cannot be unwound smoothly.

SUMMARY OF THE INVENTION

[0006] Therefore, the object of the present invention is to provide a blind assembly that can permit smooth unwinding of a fabric blind.

[0007] According to this invention, a blind assembly comprises a guide rail, a pull rod, and a slide member. The guide rail has spaced-apart longitudinal first and second walls, a longitudinal end wall interconnecting outer ends of the first and second walls, a longitudinal first rib projecting transversely from an inner end of the second wall, and a longitudinal second rib projecting transversely from the second wall between the first rib and the end wall. The second wall and the first and second ribs cooperatively define a longitudinal slide groove. The slide member is connected to one end of the pull rod, and is movable along with the pull rod. The slide member includes a main body, and a slide part that is disposed on one side of the main body, that is received slidably in the slide groove, and that has two transverse ends longitudinally opposite to each other, and two rollers connected rotatably and respectively to the transverse ends of the slide part. Each of

the rollers has a circumferential face between the first and second ribs and capable of contacting at least one of the first and second ribs.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] Other features and advantages of the present invention will become apparent in the following detailed description of the preferred embodiment of the invention, with reference to the accompanying drawings, in which:

[0009] FIG. 1 is a fragmentary perspective view of a conventional blind assembly;

[0010] FIG. 2 is a fragmentary sectional view of the conventional blind assembly of FIG. 1;

[0011] FIG. 3 is a fragmentary partly exploded perspective view of a pull rod, a slide member, and a guide rail of a blind assembly according to the preferred embodiment of this invention;

[0012] FIG. 4 is a fragmentary sectional view of the preferred embodiment in an assembled state; and

[0013] FIG. 5 is an enlarged partly sectional bottom view of the slide member and the guide rail according to the preferred embodiment in an assembled state.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0014] Referring to FIGS. 3 to 5, a blind assembly according to the preferred embodiment of the present invention is shown to comprise a pull rod 21, a guide rail 22, and a slide member 3.

[0015] The pull rod 21 has one end 211 formed with a receiving groove 210.

[0016] The guide rail 22 has spaced-apart longitudinal first and second walls 221, 222, a longitudinal end wall 225 interconnecting outer ends of the first and second walls 221, 222, a longitudinal first rib 223 projecting transversely from an inner end of the second wall 222, and a longitudinal second rib 224 projecting transversely from the second wall 222 between the first rib 223 and the end wall 225. The second wall 222 and the first and second ribs 223, 224 cooperatively define a longitudinal slide groove 220.

[0017] The slide member 3 is connected telescopically to the end 211 of the pull rod 21, and is movable along with the pull rod 21. The slide member 3 includes a main body 31, a slide part 313, a hollow guide part 314, a spring retainer 331, and a biasing element 34. The slide part 313 extends outwardly from one side of the main body 31, is received slidably in the slide groove 220, and has two transverse ends 3131 longitudinally opposite to each other, two longitudinal ends 3132, 3132' interconnecting the transverse ends 3131, and a central hollow part 3133. Two pivot parts 317 project outwardly, oppositely, and respectively from the transverse ends 3131 of the slide part 313. Two rollers 32 are connected rotatably and respectively to the pivot parts 317. In this embodiment, each roller 32 has, as best shown in FIG. 5, an outer diameter that is similar to a distance between the first and second ribs 223, 224 and that is larger than a distance between the longitudinal ends 3132, 3132' of the slide part 313, so that a circumferential face of each roller 32 is disposed tightly between and is contacting the first and second ribs 223, 224. When the slide part 313 moves along the slide groove 220, the rollers 32 are brought to rotate by the first and second ribs 223, 224.

[0018] The longitudinal end 3132 is proximate to the main body 31. The longitudinal end 3132' is distal from the main body 31. A resilient member, which is configured as a resilient plate 318, extends longitudinally at the longitudinal end 3132' between the transverse ends 3131. In this embodiment, the resilient plate 318 has a fixed end 3181 connected to the longitudinal end 3132' at the central hollow part 3133, and a free plate section 3182 extending longitudinally from the fixed end 3181 into the central hollow part 3133. The free plate section 3182 is convexed toward and abuts resiliently against the second rib 224.

[0019] The hollow guide part 314 projects from one side of the main body 31 opposite to the slide part 313 in a direction perpendicular to a sliding direction of the slide part 313, and is inserted slidably into the receiving groove 210.

[0020] The spring retainer 33 is fixed inside the receiving groove 210, and includes a fixed member 331, two spaced-apart retaining rods 332 extending from the fixed member 331 into the hollow guide part 314, and a first connecting element 333 connected between the retaining rods 332. The hollow guide part 314 has a second connecting element 316 including a hook 3161 and a stem 3162. The stem 3162 is a split part of the hollow guide part 314. The hook 3161 is engaged to the first connecting element 333 so as to retain the retaining rods 332 within the hollow guide part 314 when the hollow guide part 314 slides within the receiving groove 210 and along the length of the retaining rods 332.

[0021] The biasing element 34 is disposed in the hollow guide part 314 for biasing the main body 31 to move in a direction away from the pull rod 21. In this embodiment, two biasing elements 34 are disposed in the hollow guide part 314. Each biasing element 34 is formed as a coil spring. The retaining rods 332 extend into the hollow guide part 314 to retain respectively the biasing elements 34 within the hollow guide part 314.

[0022] During assembly of the pull rod 21, a pair of the slide members 3 (only one is shown), a pair of the guide rails 22 (only one is shown), and a fabric blind (not shown) to form the blind assembly of the present invention, the spring retainer 33 and the hollow guide part 314 of each slide member 3 are inserted into the receiving groove 210 at a respective end 211 of the pull rod 21, and the slide members 3 are resiliently pressed toward each other so that the hollow guide part 314 of each slide member 3 extends into the receiving groove 210 and compresses the biasing elements 34 against the respective retaining rods 332 so as to store a restoring force. The slide parts 313 of the slide members 3 are then inserted into the respective guide rails 22, after which, due to the restoring forces of the biasing elements 34, the slide members 3 are pushed oppositely, abuttingly, and respectively against the guide rails 22.

[0023] In use, when the pull rod 21 is pulled by a user so as to unwind the fabric blind, the pull rod 21 moves the slide members 3 therealong. Since the rollers 32 of each slide member 3 are disposed rotatably and respectively on the transverse ends 3131 of the slide part 313 and abut simultaneously against the first and second ribs 223, 224, even if the pulling force of the user cannot be distributed equally to two opposite sides of the pull rod 21, positional deviations of the slide members 3 relative to the guide rails 22 are not likely to occur. Further, because of the rotation of the rollers 32, the slide members 3 can slide smoothly and respectively along the guide rails 22, so that the fabric blind can be unwound smoothly.

[0024] Moreover, if a large error in the distance between the first and second ribs 223, 224 of each guide rail 22 occurs during manufacture of the same, i.e., the distance between the first and second ribs 223, 224 is larger than the outer diameter of each roller 32 so that the rollers 32 cannot abut simultaneously against the first and second ribs 223, 224, the resilient plate 318 of each slide member 3 can bias the slide part 313 to move toward the first rib 223 so that the rollers 32 abut against the first rib 223. In this case, due to the fact that the resilient plate 318 and the rollers 32 respectively abut against the second and first ribs 224, 223, the distance between the first and second ribs 223, 224 may be large. When the pulling force of the user is not equally distributed to the two opposite sides of the pull rod 21, the elastic force of the resilient plate 318 of each slide member 3 compensates for any positional deviation of the pull rod 21 that may occur, so that the slide members 3 can still slide smoothly along the slide grooves 220 of the respective guide rails 22 through rotation of the rollers 32 against the first ribs 223 of the guide rails 223. Even if the positional deviation of the pull rod 21 is excessively large so that the slide members 3 are moved to deviate relative to the guide rails 22, since the rollers 32 of each slide member 3 are disposed respectively on the transverse ends 3131 of the slide part 313, the rollers 32 can nevertheless still abut against the first and second ribs 223, 224, respectively. Hence, the slide members 3 can still slide smoothly and stably along the slide grooves 220 of the respective guide rails 22.

[0025] Additionally, when there is significant deviation in the distance between the guide rails 22 from the intended and design deviation, i.e., the distance between the guide rails 22 is larger or smaller than a desired and design distance, through the telescopic configuration of the slide members 3, the slide members 3 can still position the pull rod 21 between the guide rails 22. In this embodiment, the spring retainer 33 is provided with the two retaining rods 332, and the slide member 3 is provided with the two biasing elements 34 disposed in the hollow guide part 314 and abutting respectively against the retaining rods 332. Alternatively, the spring retainer 33 may be provided with only one retaining rod 332, and the slide member 3 may be provided with only one corresponding biasing element 34.

[0026] Therefore, by providing the slide part 313 of each slide member 3 with the rollers 32 disposed rotatably and respectively on the transverse ends 3131 thereof and abutting tightly against the first and second ribs 223, 224, the slide members 3 cannot be easily pulled by the pull rod 21 to result in positional deviation relative to the guide rails 22, so that the slide members 3 can slide smoothly along the slide grooves 220 of the respective guide rails 22. Even in the event that the distance between the first and second ribs 223, 224 is too large, the resilient plate 318 of the slide part 313 that abuts against the second rib 224 can bias the slide part 313 to move toward the first rib 223 so that the rollers 32 can abut against the first rib 223. Hence, the slide members 3 can still slide smoothly and stably along the slide grooves 220 of the respective guide rails 22. Further, even if the slide members 3 experience positional deviation relative to the guide rails 22, the rollers 32 can abut respectively against the first and second ribs 223, 224, thereby ensuring that the sliding movement of the slide members 3 along the slide grooves 220 of the respective guide rails 22 is stable.

[0027] While the present invention has been described in connection with what is considered the most practical and preferred embodiment, it is understood that this invention is

not limited to the disclosed embodiment but is intended to cover various arrangements included within the spirit and scope of the broadest interpretations and equivalent arrangements.

I claim:

1. A blind assembly comprising:

a guide rail having spaced-apart longitudinal first and second walls, a longitudinal end wall interconnecting outer ends of said first and second walls, a longitudinal first rib projecting transversely from an inner end of said second wall, and a longitudinal second rib projecting transversely from said second wall between said first rib and said end wall, said second wall and said first and second ribs cooperatively defining a longitudinal slide groove;

a pull rod; and

a slide member connected to one end of said pull rod and movable along with said pull rod, said slide member including a main body, and a slide part that is disposed on one side of said main body, that is received slidably in said slide groove, and that has two transverse ends longitudinally opposite to each other, and two rollers connected rotatably and respectively to said transverse ends of said slide part, each of said rollers having a circumferential face between said first and second ribs and capable of contacting at least one of said first and second ribs.

2. The blind assembly of claim 1, wherein said slide member is connected telescopically to said one end of said pull rod.

3. The blind assembly of claim 2, wherein said one end of said pull rod is provided with a receiving groove, said slide member further including a hollow guide part projecting from one side of said main body opposite to said slide part in a direction perpendicular to a sliding direction of said slide part and inserted slidably into said receiving groove, and a biasing element disposed in said hollow guide part for biasing said main body to move in a direction away from said pull rod.

4. The blind assembly of claim 3, wherein said slide member further includes a spring retainer fixed inside said receiving groove to retain said biasing element inside said hollow guide part.

5. The blind assembly of claim 4, wherein said biasing element is formed as a coil spring, said spring retainer having a retaining rod extending into said hollow guide part to retain said coil spring within said hollow guide part, and a first connecting element provided on said retaining rod, said hollow guide part being provided with a second connecting element connected to said first connecting element to retain said retaining rod within said hollow guide part.

6. The blind assembly of claim 5, wherein said second connecting element includes a hook and a stem, said stem being a split part of said hollow guide part.

7. The blind assembly of claim 4, wherein said slide member further includes two said biasing elements, each of said biasing elements being formed as a coil spring, said spring retainer having two retaining rods extending into said hollow guide part to retain respectively said biasing elements within said hollow guide part, and a first connecting element connected between said retaining rods, said hollow guide part being provided with a second connecting element connected to said first connecting element to retain said retaining rods within said hollow guide part.

8. The blind assembly of claim 7, wherein said second connecting element includes a hook and a stem, said stem being a split part of said hollow guide part.

9. The blind assembly of claim 1, wherein said slide member further includes a resilient member provided on said slide part and abutting resiliently against one of said first and second ribs, said resilient member biasing said slide part to move toward the other one of said first and second ribs so that said rollers abut against said other one of said first and second ribs.

10. The blind assembly of claim 9, wherein said slide part further has two longitudinal ends interconnecting said transverse ends, one of said longitudinal ends being proximate to said main body, and the other one of said longitudinal ends being distal from said main body, said resilient member being configured as a resilient plate extending longitudinally at said one of said longitudinal ends between said transverse ends, said resilient plate being convexed toward said one of said first and second ribs.

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