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(54) Combination blind with multiple shading sections

(57) A combination blind (10) is constructed to include a headrail (11) and a bottom rail (13) respectively connectable to the top and bottom sides of a window, and a lifting (15) rail arranged in parallel to and vertically movable between the headrail (11) and the bottom rail (13). The lifting rail (15) defines with the headrail (11) and the bottom rail (13) two vertically spaced shading sections. Two positioning cords (18A,B) are bilaterally vertically connected between the headrail (11) and the bottom rail (13) and extended through the two shading sections and inserted through the lifting rail (15). The positioning cords (18A,B) each have a part transversely extended through the lifting rail (15) at a distance. Two blind bodies (16,17) are respectively provided in the two shading sections and relatively extended out/received upon vertical movement of the lifting rail (15) between the headrail (11) and the bottom rail (13).

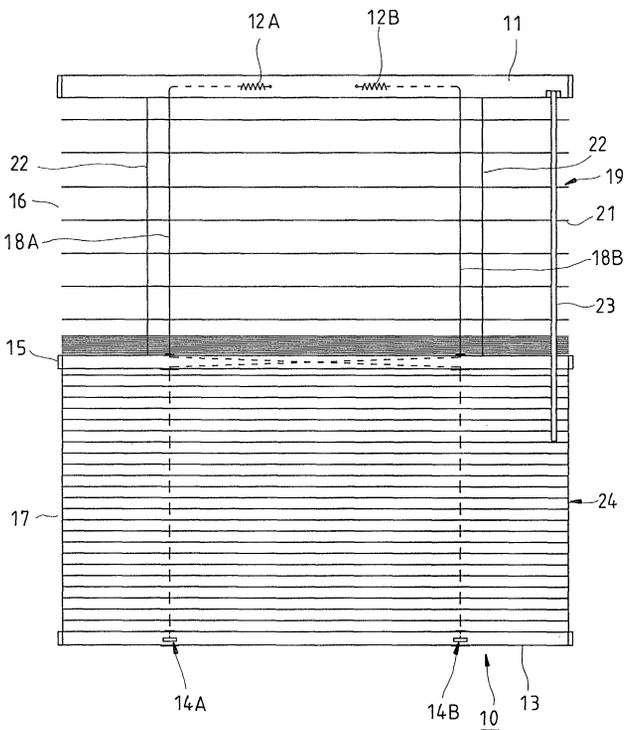

FIG.1

EP 1 416 115 A1

Description

BACKGROUND OF THE INVENTION

1. Field of the Invention:

[0001] The present invention relates to blinds and, more specifically, to a combination blind, which comprises two blind bodies respectively provided in two vertically spaced shading sections that can be relatively adjusted so as to provide multiple shading sections.

2. Description of the Related Art:

[0002] Regular vertically adjustable blinds are numerous, including Venetian blinds, Roller blinds, Pleated blinds, Honeycomb shades, Roman blinds, and etc. These blinds provide different shading effects and different styles. Generally, a vertically adjustable blind comprises a headrail, a bottom rail suspended below the headrail, and slats or shade body connected between the headrail and the bottom rail. Except the advanced motor-driven designs, a vertically adjustable blind further comprises a lift cord suspended from the headrail at one side for operation by hand to control the elevation of the bottom rail. These conventional blinds have following two common drawbacks:

1. Although different styles of blinds provide different shading characteristics and functions (for example, a silk roller blind softens the light; a Venetian blind can regulate the light), however one blind has only one fixed blind body design functioning for a particular purpose. For example, a Venetian blind can be adjusted to change its shading area and to regulate the light. However, the user cannot open the upper (or lower) part of the blind body of a Venetian blind, leaving the lower (or upper) part of the blind body closed.
2. Because the lift cord of a conventional blind is exposed to the outside, it destroys the sense of beauty of the blind. Further, because a child can easily reach the exposed lift cord, an accident may occur when a child pulling the lift cord for fun.

SUMMARY OF THE INVENTION

[0003] The present invention has been accomplished under the circumstances in view. It is the main object of the present invention to provide a combination blind, which eliminates the aforesaid drawbacks.

[0004] It is another object of the present invention to provide a combination blind, which combines multiple blind bodies into a blind assembly, so that the blind assembly provides versatile shading functions.

[0005] It is still another object of the present invention to provide a combination blind, which keeps the cord members out of reach of children.

[0006] To achieve these objects of the present invention, the combination blind comprises a headrail and a bottom rail respectively connectable to the top and bottom sides of a window, and at least one lifting rail arranged in parallel to and vertically movable between the headrail and the bottom rail. The at least one lifting rail defines with said headrail and said bottom rail at least two vertically spaced shading sections. Two positioning cords are bilaterally vertically connected between the headrail and the bottom rail and extended through the at least two shading sections and inserted through the at least one lifting rail. The positioning cords each have a part transversely extended through each of the at least one lifting rail at a distance. At least two blind bodies are respectively provided in the at least two shading sections and relatively extended out/received upon vertical movement of said at least one lifting rail between said headrail and said bottom rail.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007]

FIG. 1 is a schematic drawing of the first preferred embodiment of the present invention, showing the lifting rail held at about the mid point between the headrail and the bottom rail.
FIG. 2 is an operational view of the first preferred embodiment of the present invention, showing the lifting rail held at a relatively higher elevation.
FIG. 3 is another operational view of the first preferred embodiment of the present invention, showing the lifting rail held at a relatively lower elevation.
FIG. 4 is a schematic structural view of the second preferred embodiment of the present invention.
FIG. 5 is a schematic structural view of the third preferred embodiment of the present invention
FIG. 6 is a schematic structural view of the fourth preferred embodiment of the present invention.
FIG. 7 is a schematic structural view of the fifth preferred embodiment of the present invention.
FIG. 8 is a sectional view taken along line 8-8 of FIG. 7.
FIG. 9 is a schematic structural view of the sixth preferred embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0008] Referring to FIG. 1, a combination blind **10** is shown comprising a headrail **11**, a bottom rail **13**, a lifting rail **15**, two positioning cords **18A** and **18B**, an upper blind body **19**, and a lower blind body **24**.

[0009] The headrail **11** is fixedly transversely (horizontally) fastened to the top side of the window, having a first tensile spring **12A** and a second tensile spring **12B** bilaterally provided on the inside and horizontally aligned in line. The tensile springs **12A** and **12B** each

have an inner end respectively fixedly fastened to a part inside the headrail **11**. The other end of each of the tensile springs **12A** and **12B** is defined as a connecting end.

[0010] The bottom rail **13** is fixedly transversely (horizontally) fastened to the bottom side of the window. For example, two brackets may be used to fixedly fasten to the left and right ends of the bottom rail **13** to the bottom side of the window. Two tension control members **14A** and **14B** are bilaterally located on the bottom rail **13**. Because the tension control members **14A** and **14B** are not within the scope of the claims of the present invention, no further detailed description in this regard is necessary. It is, however, to be noted that these tension control members have been disclosed in Taiwanese patent application No.91204732.

[0011] The lifting rail **15** is a hollow transverse rod member arranged in parallel between the headrail **11** and the bottom rail **13** and vertically movably between the headrail **11** and the bottom rail **13** (this will be described further). The lifting rail **15** separates the space between the headrail **11** and the bottom rail **13** two vertically spaced shading sections **16** and **17**, i.e., the upper shading section **16** between the headrail **11** and the lifting rail **15** and the lower shading section **17** between the lifting rail **15** and the bottom rail **13**. Because the lifting rail **15** is vertically movable between the headrail **11** and the bottom rail **13**, the shading sections **16** and **17** are relatively changed subject to vertical movement of the lifting rail **15** between the headrail **11** and the bottom rail **13** (see FIGS. 2 and 3).

[0012] The positioning cords **18A** and **18B** are bilaterally symmetrically arranged in parallel between the headrail **11** and the bottom rail **13**. According to this embodiment, the positioning cords **18A** and **18B** each have a top end respectively connected to the connecting ends of the tensile springs **12A** and **12B** in the headrail **11** and a bottom end respectively connected to the tension control members **14A** and **14B** at the bottom rail **13**. The tension control members **14A** and **14B** can be controlled to roll up the positioning cords **18A** and **18B**, so as to relatively adjust the tension of the positioning cords **18A** and **18B**. As indicated in FIG. 1, one positioning cord, namely, the first positioning cord **18A** is extended horizontally leftwards in the headrail **11** from the connecting end of the first tensile spring **12A** and then vertically turned downwards to the outside of the headrail **11**, and then vertically downwardly extended through the upper shading section **16** into the inside of the lifting rail **15**, and then extended horizontally rightwards in the lifting rail **15** toward the right end of the lifting rail **15**, and then vertically downwardly extended out of the lifting rail **15** toward the bottom rail **13** through the lower shading section **17**, and then connected to the second tension control member **14B**. The other positioning cord, namely, the second positioning cord **18B** is extended horizontally rightwards in the headrail **11** from the connecting end of the second tensile spring **12B** and then vertically turned downwards to the outside of the headrail **11**, and then vertically downwardly extended through the upper shading section **16** into the inside of the lifting rail **15**, and then extended horizontally leftwards in the lifting rail **15** toward the left end of the lifting rail **15**, and then vertically downwardly extended out of the lifting rail **15** toward the bottom rail **13** through the lower shading section **17**, and then connected to the first tension control member **14A**.

[0013] The upper blind body **19** is provided in the upper shading section **16** between the headrail **11** and the lifting rail **15**. According to this embodiment, the upper blind body **19** is constructed subject to the design of a Venetian blind, comprised of a set of slats **21** arranged in parallel between the headrail **11** and the lifting rail **15**, two vertical ladder cords **22** joining the slats **21**. The upper blind body **19** further comprises a tilting control mechanism adapted for controlling the tilting angle of the slats **21**. Because the tilting control mechanism is of the known art and not within the scope of the claims of the present invention, no further detailed description in this regard is necessary. In FIG. 1, only the tilt rod **23** of the tilting control mechanism is shown. The aforesaid positioning cords **18A** and **18B** are respectively inserted through a respective through hole (not shown) in each slat **21** but not fixedly connected to the slats **21**, i.e., the positioning cords **18A** and **18B** are suspended in the upper shading section **16** within the left and right sides of the upper blind body **19**.

[0014] The lower blind body **24** is provided in the lower shading section **17** between the lifting rail **15** and the bottom rail **13**. According to this embodiment, the lower blind body **24** is constructed subject to the design of a pleated blind. The top and bottom sides of the lower blind body **24** are respectively fastened to the bottom sidewall of the lifting rail **15** and the top sidewall of the bottom rail **13**. The positioning cords **18A** and **18B** are suspended in the lower shading section **17** within the left and right sides of the lower blind body **24** and directly extended through the lower blind body **24**.

[0015] The aforesaid statement describes the structure of the combination blind according to the first embodiment of the present invention. Normally, the tension force of the positioning cords **18A** and **18B** supports the lifting rail **15** at an elevation, and at the same time the user can hold the lifting rail **15** in horizontal and move it upwards or downwards. When the user released the hand from the lifting rail **15**, the lifting rail **15** is held at the adjusted elevation.

[0016] By means of the aforesaid arrangement, the combination blind **10** provides a Venetian blind in the upper shading section **16** and a pleated blind in the lower shading section **17**. Further, when the lifting rail **15** lifted, the upper blind body **19** is received upwards in the upper shading section **16**, and the lower blind body **24** is extended upwards in the lower shading section **17** as shown in FIG. 2. On the contrary, when lowered the lifting rail **15**, the upper blind body **19** is downwardly extended out, and at the same time the lower blind body

24 is relatively received, as shown in FIG. 3. In short, the user can adjust the elevation of the lifting rail **15** to change the area ratio between the upper blind body **19** and the lower blind body **24** (when the lifting rail **15** lowered to the lower limit position, the combination blind **10** is shown as a Venetian blind). As indicated above, the combination blind **10** is indeed a versatile design for a variable application.

[0017] Further, because the combination blind **10** keeps the cords **18A** and **18B** out of reach of children, it is safety in use.

[0018] According to the aforesaid embodiment, the first ends (the top ends) of the positioning cords **18A** and **18B** are respectively connected to the connecting ends of the tensile springs **12A** and **12B** in the headrail **11**, so that the positioning cords **18A** and **18B** have a sufficient tension force to support the lifting rail **15** at a particular elevation and to let the lifting rail **15** be movable between the headrail **11** and the bottom rail **13** by the user. Alternatively, the tensile springs **12A** and **12B** can be respectively installed in the two ends of the headrail **11**. In this case, the outer end of each tensile spring **12A** or **12B** is fixedly fastened to the headrail **11**, and the inner end of each tensile spring **12A** and **12B** is connected to the corresponding positioning cord **18A** or **18B**. It is also applicable to fixedly secure the first ends (top ends) of the positioning cords **18A** and **18B** to the headrail **11**, and to connect the second ends (bottom ends) of the positioning cords **18A** and **18B** to a respective tensile spring in the bottom rail **13**. The positioning cords **18A** and **18B** can be obtained from elastic cord members without the tensile springs. The tensile springs can be eliminated even if the positioning cords have no elasticity. Further, the aforesaid tension control members **14A** and **14B** are not requisite members of the combination blind **10**.

[0019] In the aforesaid first embodiment of the present invention, the upper blind body **19** is constructed subject to the design of a Venetian blind, and the lower blind body **24** is constructed subject to the design of a pleated blind. In actual practice, the upper blind body and the lower blind body can be respectively constructed subject to the design of any of a variety of blinds including Venetian blinds, Roller blinds, Pleated blinds, Honeycomb shades, Roman blinds, and etc.

[0020] FIG. 4 shows a combination blind **30** constructed according to the second preferred embodiment of the present invention. According to this embodiment, the combination blind **30** is comprised of a headrail **31**, a bottom rail **32**, a lifting rail **33** movable between the headrail **31** and the bottom rail **32**, two positioning cords **34** adapted to hold the lifting rail **33** at the desired elevation between the headrail **31** and the bottom rail **32**, an upper blind body **37** provided in the upper shading section **35** between the headrail **31** and the lifting rail **33**, and a lower blind body **38** provided in the lower shading section **36** between the lifting rail **33** and the bottom rail **32**. The major parts of this second embodiment are same as the equivalent parts of the aforesaid first embodiment. However, the lower blind body **38** is constructed subject to the design of a roller blind, i.e., the lower blind body **38** comprises a barrel **39** axially provided within the bottom rail **32**, a reversible winding mechanism (not shown) provided inside the barrel **39**, and a shade body **41**. The shade body **41** has a top side fixedly connected to the bottom sidewall of the lifting rail **33**, and a bottom side inserted through a longitudinal slot (not shown) in the periphery of the barrel **39** and connected to the reversible winding mechanism. When the lifting rail **33** lowered, the reversible winding mechanism automatically winds up the shade body **41**. The winding force of the reversible winding mechanism does not surpass the tension force of the positioning cords **34**, so that the positioning cords **34** can hold the lifting rail **33** positively at the desired elevation. Alternatively, the barrel **39** and reversible winding mechanism of the lower blind body **38** can be installed in the lifting rail **33.**

[0021] FIG. 5 shows a combination blind **50** constructed according to the third preferred embodiment of the present invention. According to this embodiment, the upper blind body **51** and the lower blind body **52** are respectively constructed subject to the design of a Venetian blind, each having a respective tilt rod **53** or **54** (the tilt rod **53** is provided at the headrail **55**; the tilt rod **54** is provided at the lifting rail **56**). The user can operate the tilt rod **53** or **54** to regulate the tilting angles of the slats of the upper blind body **51** or lower blind body **52** respectively. Further, the upper blind body and the lower blind body can be of the same design (Roller blind or Pleated blind) but made of different materials having different permeability for light.

[0022] FIG. 6 shows a combination blind **60** constructed according to the fourth preferred embodiment of the present invention. According to this embodiment, the positioning cords **61A** and **61B** are not extended across each other, i.e., the first positioning cord **61A** has a top end connected to the headrail **63**, and a bottom end obliquely inserted through the lifting rail **62** in direction toward the left end of the lifting rail **62** and then turned vertically downwards to the bottom rail **64**; the second positioning cord **61B** has a top end connected to the headrail **63**, and a bottom end obliquely inserted through the lifting rail **62** in direction toward the right end of the lifting rail **62** and then turned vertically downwards to the bottom rail **64**. This positioning cord positioning arrangement also enables the positioning cords **61A** and **61B** to hold the lifting rail **62** at the desired elevation.

[0023] FIGS. 7 and 8 show a combination blind constructed according to the fifth preferred embodiment of the present invention. According to this embodiment, two vertical guide rails **71** are fixedly provided at two sides of the window, each having a longitudinal guide groove **72**, which receives one end of the lifting rail **73** to guide vertical movement of the lifting rail **73** along the vertical guide rails **71**. By means of the guidance of the guide rails **71**, the combination blind is prohibited from

flying in the wind.

[0024] FIG. 9 shows a combination blind constructed **80** according to the sixth preferred embodiment of the present invention. According to this embodiment, two lifting rails **81** and **82** are arranged in parallel between the headrail **83** and the bottom rail **84**, defining an upper shading section **85**, an intermediate shading section **86**, and a lower shading section **87**. Three blind bodies, namely, the upper blind body **88**, the intermediate blind body **89**, and the lower blind body **91** are respectively provided in the shading sections **85, 86**, and **87**. The arrangement of the positioning cords, referenced by **92**, is similar to the aforesaid first embodiment of the present invention, i.e., the positioning cords **92** are connected between the headrail **83** and the bottom rail **84**, and extended across each other in each of the lifting rails **81** and **82**.

Claims

1. A combination blind installed in a window for regulating the light, comprising:

a headrail connectable to a top side of said window;
a bottom rail connectable to a bottom side of said window;
at least one lifting rail arranged in parallel to and vertically movable between said headrail and said bottom rail, said at least one lifting rail defining with said headrail and said bottom rail at least two vertically spaced shading sections;
two positioning cords bilaterally vertically connected between said headrail and said bottom rail and extended through said at least two vertically spaced shading sections and inserted through said at least one lifting rail, said positioning cords each having a part transversely extended through each of said at least one lifting rail at a distance; and
at least two blind bodies respectively provided in said at least two shading sections and relatively extended out/received upon vertical movement of said at least one lifting rail between said headrail and said bottom rail.

2. The combination blind as claimed in claim 1, wherein the number of said at least one lifting rail is one, and the single lifting rail defines with said headrail and said bottom rail two vertically spaced shading sections.

3. The combination blind as claimed in claim 1, wherein the number of said at least one lifting rail is two, and the two lifting rails define with said headrail and said bottom rail three vertically spaced shading sections.

4. The combination blind as claimed in claim 1, wherein said headrail has two tensile springs provided therein, said tensile springs each having a fixed end fixedly connected to said headrail and a connecting end; wherein said two positioning cords each have a top end respectively connected to the connecting ends of said tensile springs in said headrail.

5. The combination blind as claimed in claim 1, wherein said bottom rail comprises two tension control members respectively connected to bottom ends of said positioning cords, and adapted for rolling up said positioning cords to relatively adjust the tension of said positioning cords.

6. The combination blind as claimed in claim 1, wherein said two positioning cords are extended across each other in each of said at least one lifting rail.

7. The combination blind as claimed in claim 1, wherein said at least two blind bodies are respectively constructed subject to one of the blind groups of Venetian blind, Roller blind, Pleated blind, and Roman blind.

8. The combination blind as claimed in claim 1, wherein said at least two blind bodies are constructed subject to two designs of blinds.

9. The combination blind as claimed in claim 1, wherein said at least two blind bodies are constructed subject to a same design of blind.

10. The combination blind as claimed in claim 9, wherein said at least two blind bodies are constructed subject to the design of a Venetian blind, each having a respective slat tilting control mechanism.

11. The combination blind as claimed in claim 1, further comprising two vertical guide rails vertically arranged in parallel and connectable to two opposite lateral sides of said window for guiding vertical movement of said at least one lifting rail between said headrail and said bottom rail, said vertical guide rails each having a longitudinal sliding groove, which receives one end of each of said at least one lifting rail.

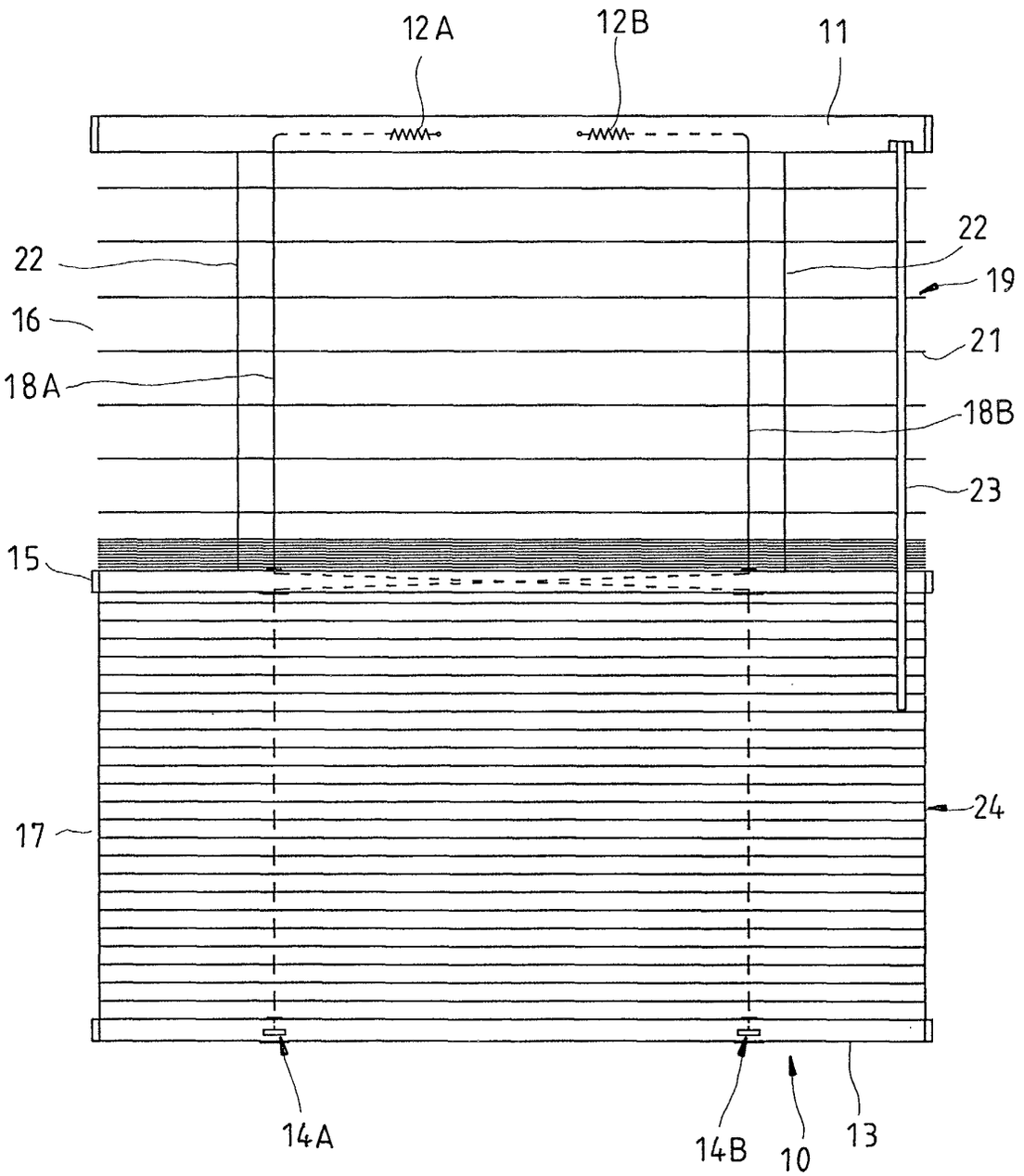

FIG.1

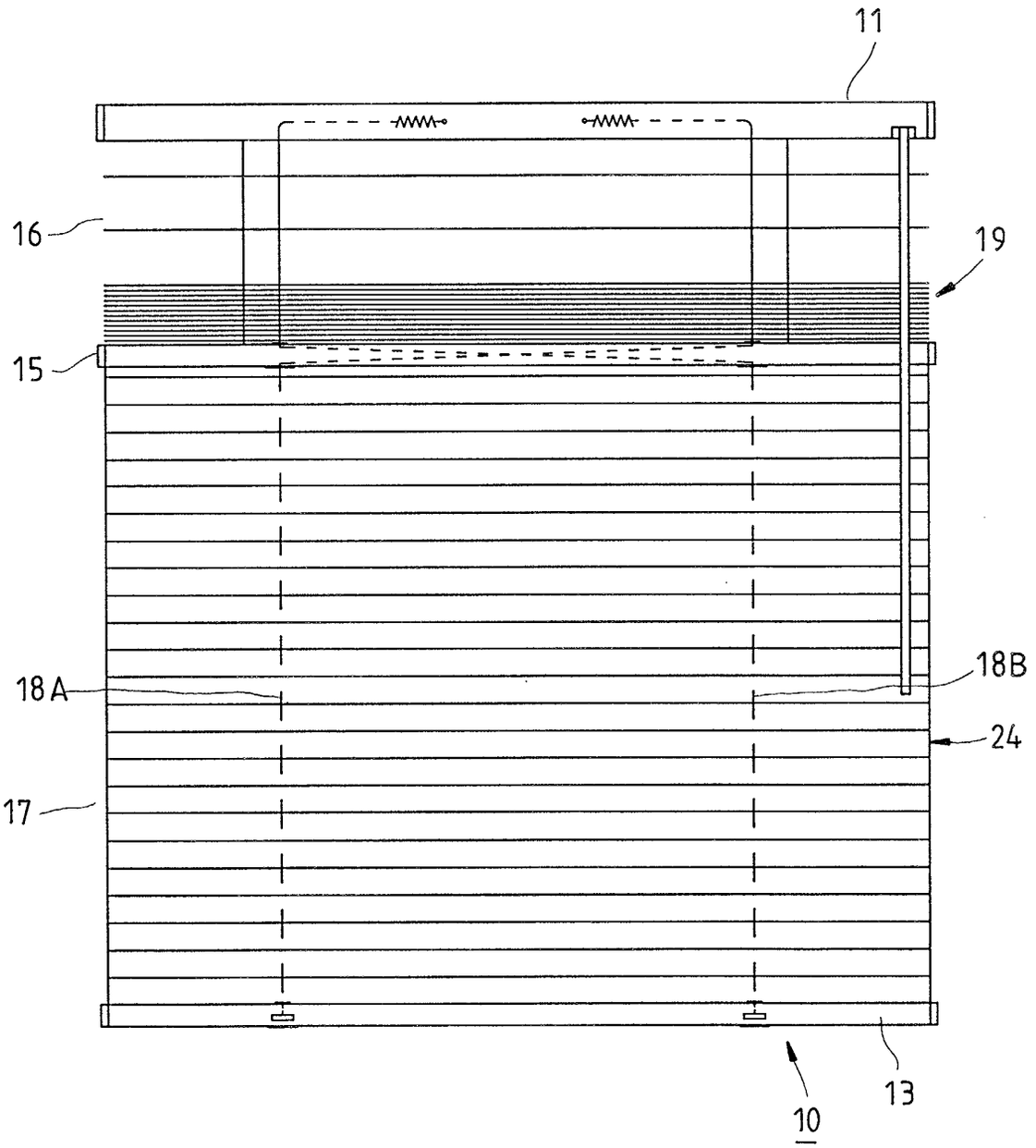

FIG. 2

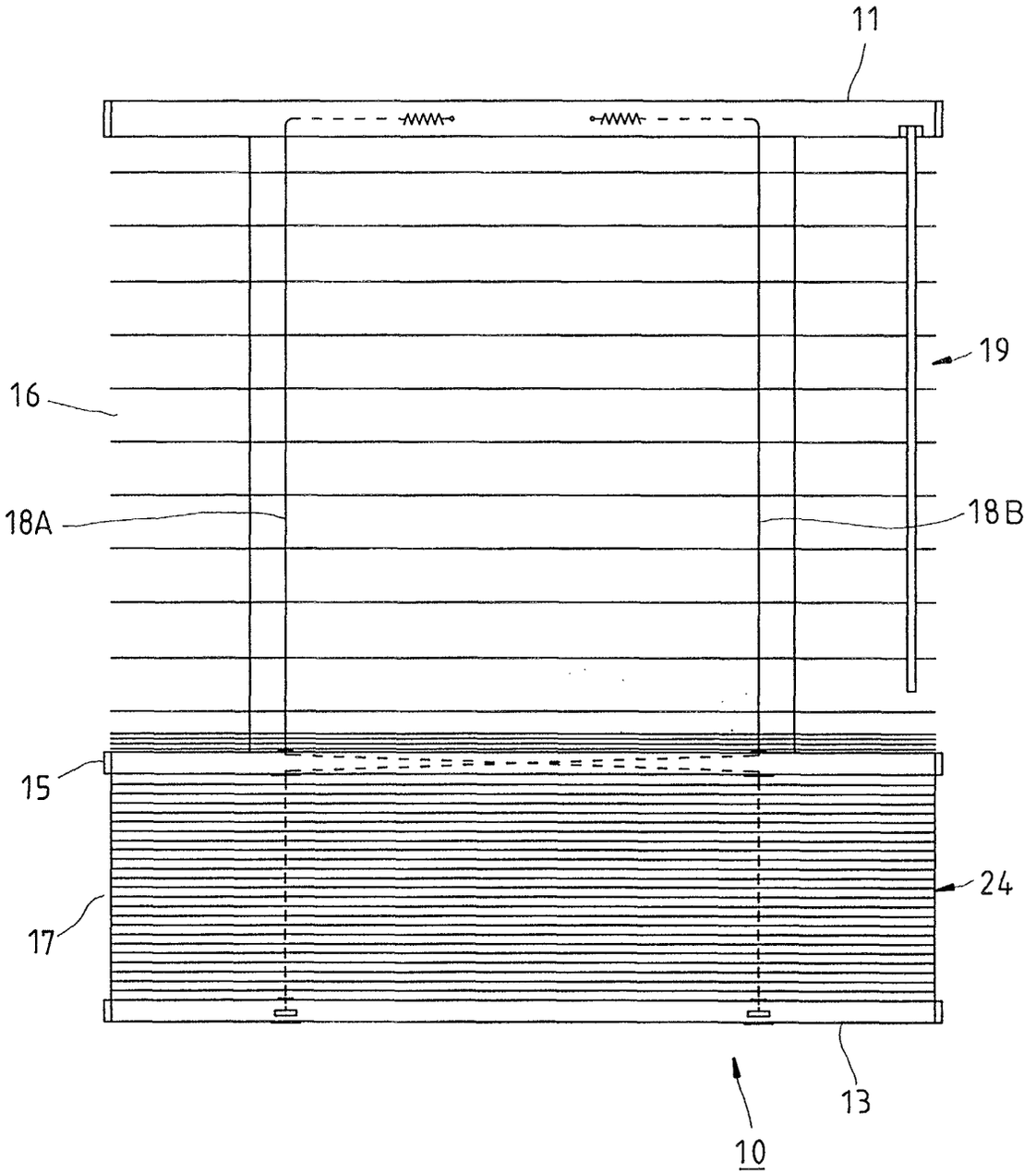

FIG. 3

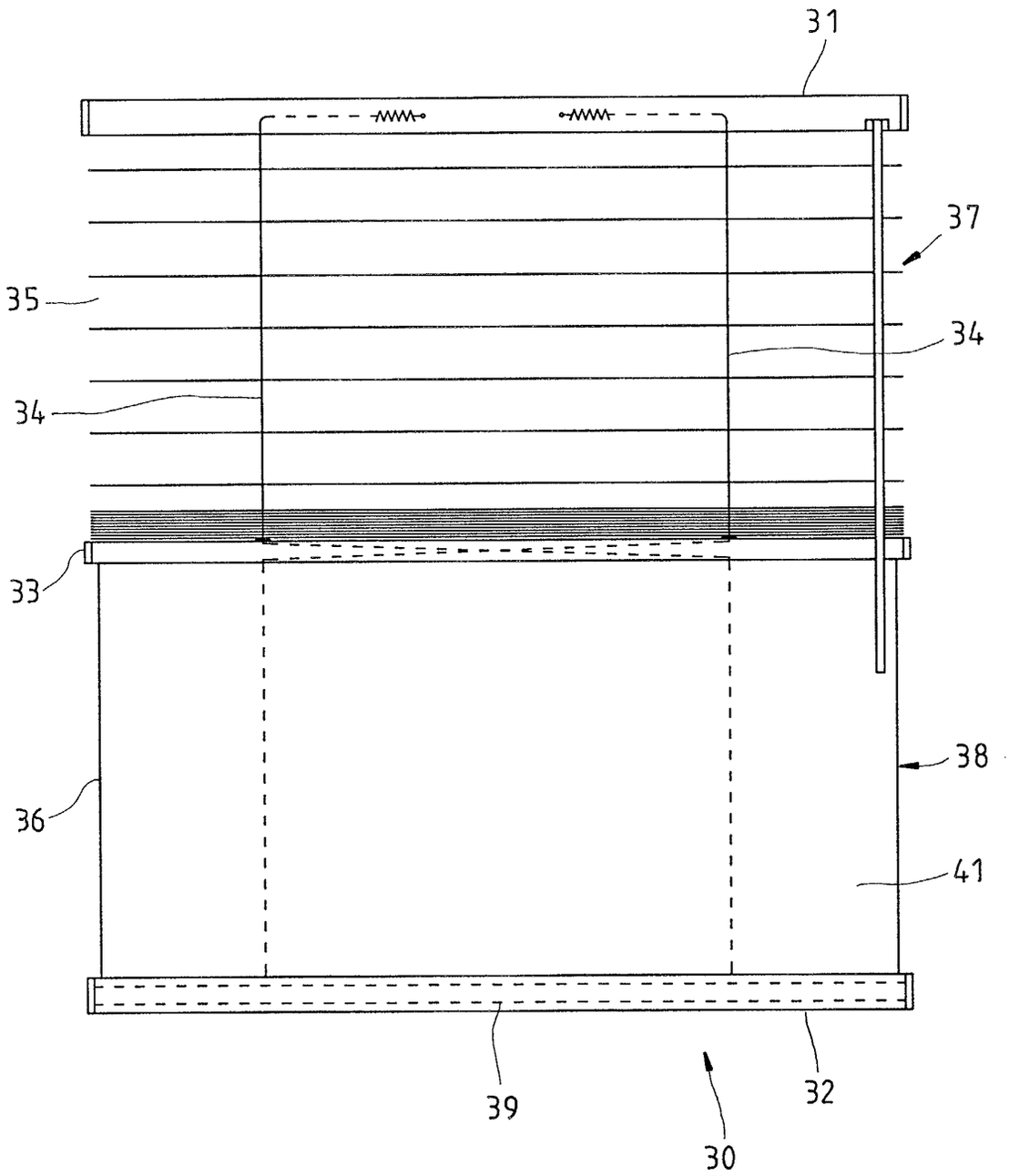

FIG. 4

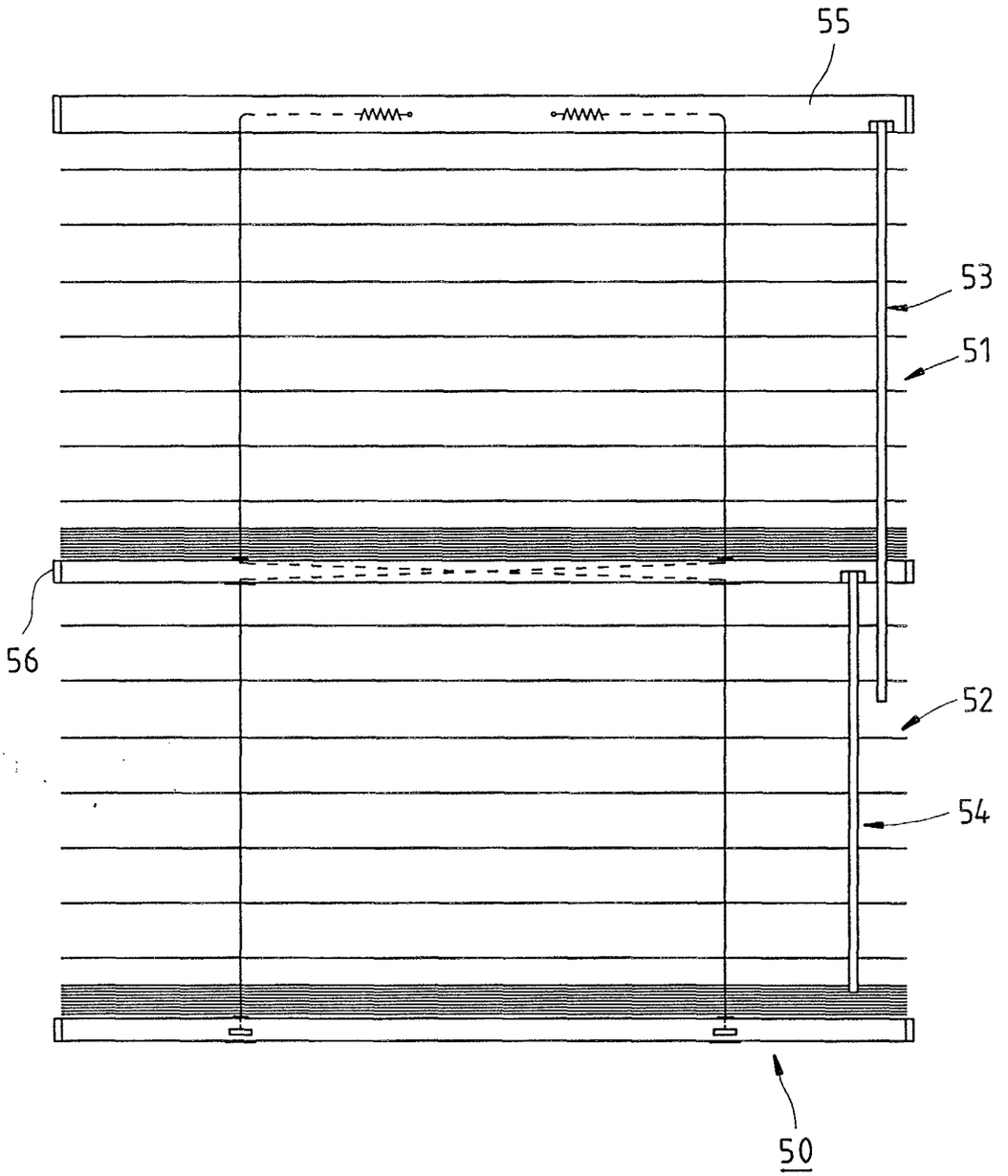

FIG. 5

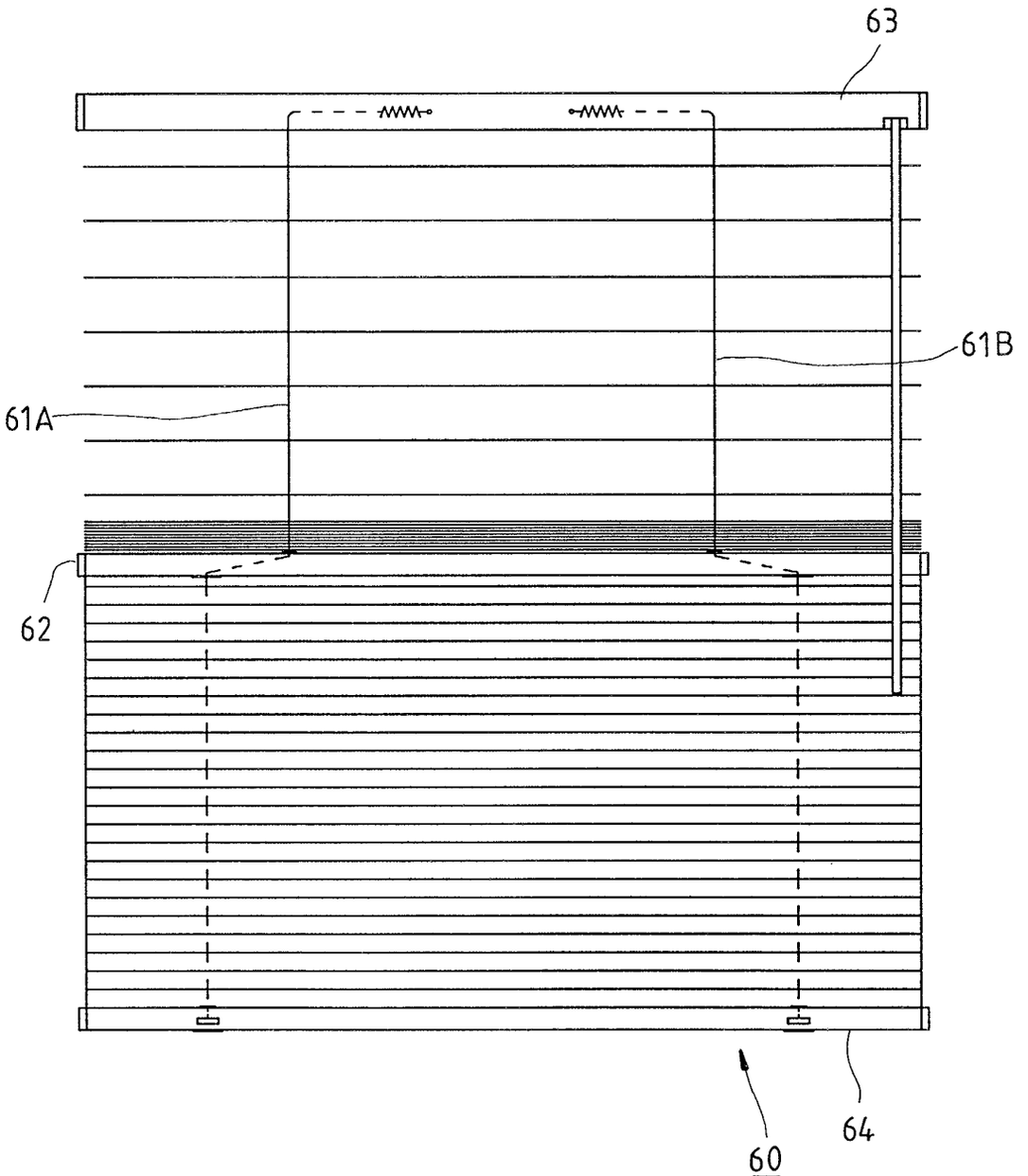

FIG. 6

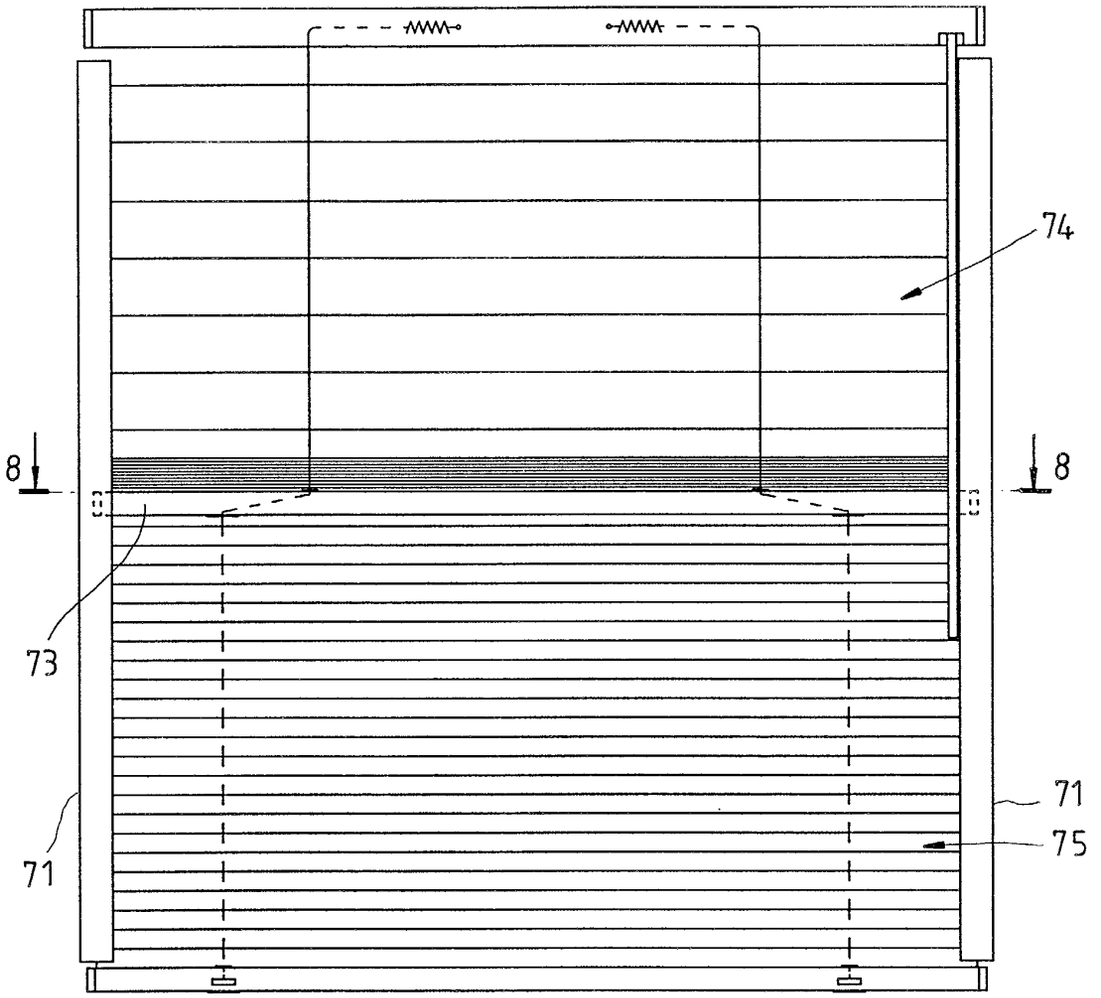

FIG. 7

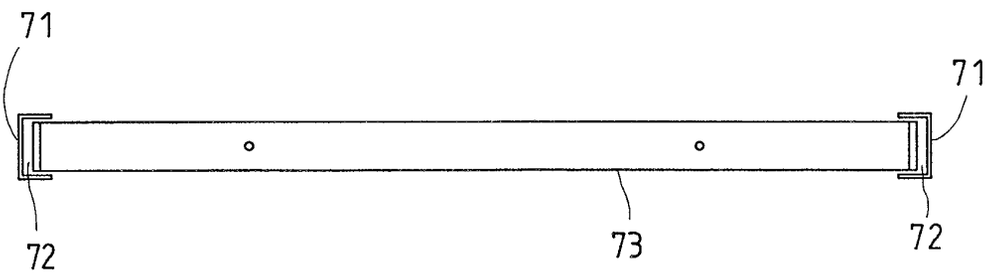

FIG. 8

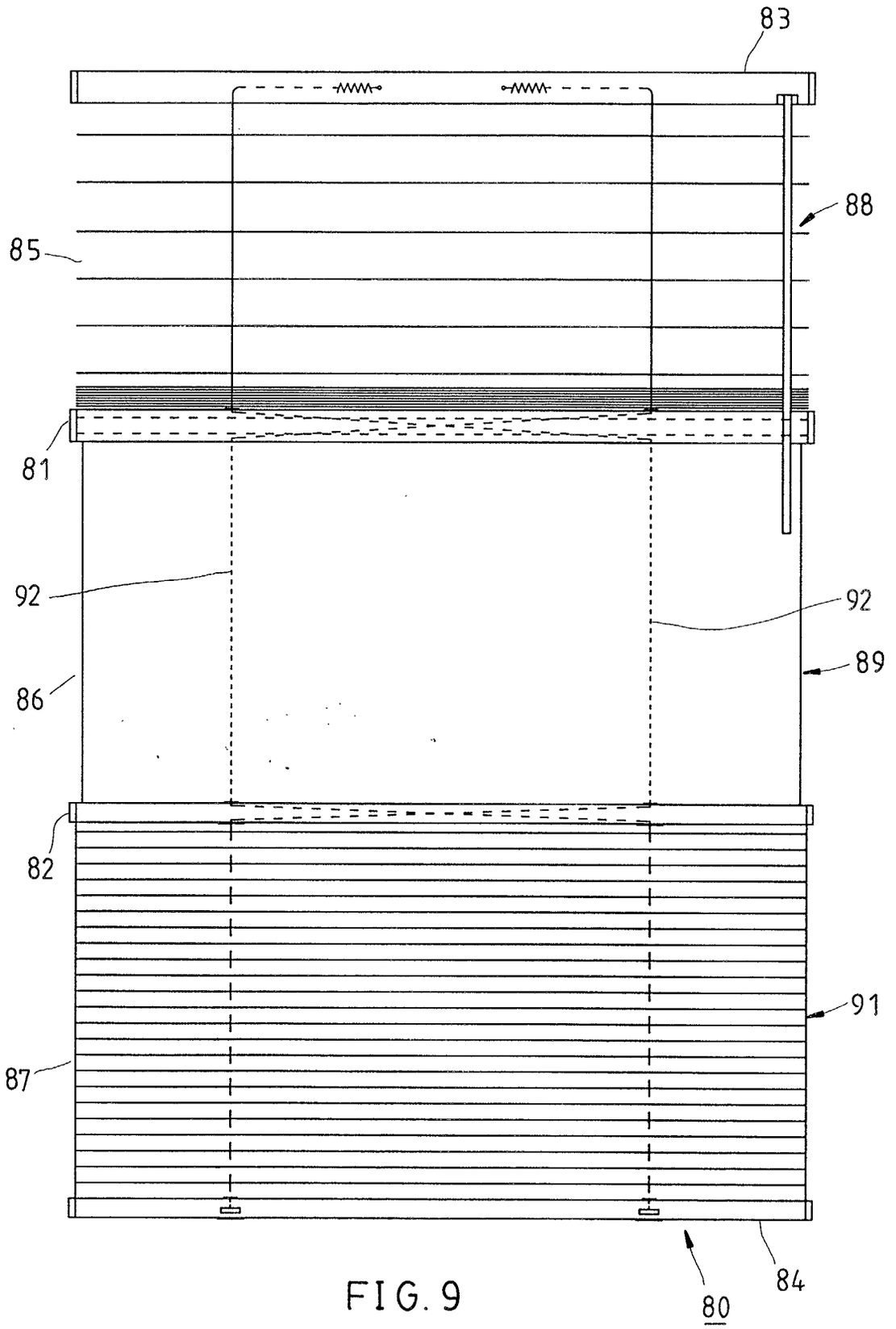

FIG. 9

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 02 25 7555

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Y		4,5,8, 10,11	
X	EP 0 674 091 A (SCHOEN BV) 27 September 1995 (1995-09-27) * column 8, line 18 - line 24 * * column 8, line 46 - line 57 * * column 9, line 45 - line 56 * * figure 6 *	1,3,6-9	
Y	US 6 196 292 B1 (JACKSON CHARLES LEO) 6 March 2001 (2001-03-06) * column 1, line 14 - line 16 * * figure 1 *	10	
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	20 March 2003	Geivaerts, D

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 02 25 7555

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82