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Remarks:
Amended claims in accordance with Rule 137(2) EPC.

(54) **Structure for curtain positioning**

(57) A structure for curtain 100 positioning provided for direct pushing/pulling of a user to draw and release a curtain 100, the structure comprises: a positioning frame 10, at least two positioning rope sets 20, a rotating axle 30, at least two reel sets 40, and a positioning control box 50; when the user stops pushing and pulling the cur-

tain 100, the curtain 100 can be kept immediately at the position when he stops; when the curtain 100 (such as a horizontal blind) is composed of multiple elongate strips 101, the curtain 100 can be pushed and pulled slightly to adjust the angular position against the horizon of the blades of the curtain 100.

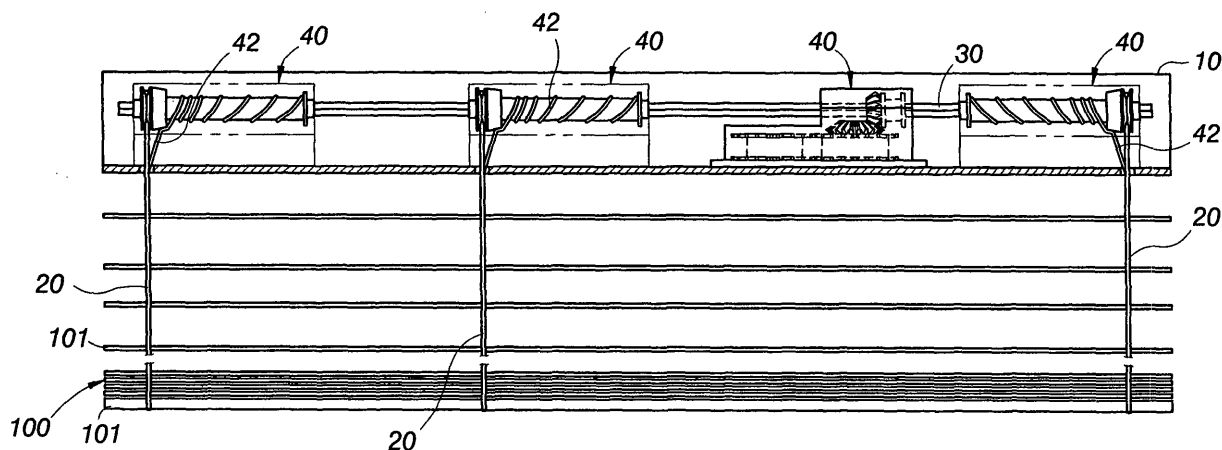


FIG.1

Description

BACKGROUND OF THE INVENTION

1. Field of the invention

[0001] The present invention relates to a structure for curtain positioning by which the two lateral sides of a curtain are raised/lowered synchronically in equal levels, and especially to a structure for curtain positioning provided for direct pushing/pulling of a user to draw and release the curtain.

2. Description of the prior art

[0002] There are many kinds of horizontally raising/lowering curtains such as: horizontal blinds, Roman shades, pleated shades etc., the mode of operation of conventional horizontally raising/lowering curtains is that by which a user can manipulate a manipulating rope and a manipulating rod to indirectly draw, release and adjust the curtain; taking a normal horizontal blind as an example, generally, a manipulating rope is hung there for a user to draw and release the curtain, and a manipulating rod is provided for the user to adjust the angular position against the horizon of the blades of the curtain, in such operations, some complicated pulling and linking up mechanisms (such as the conventional elements including connecting ropes, gearing pulleys, reverse positioning elements etc. which are not necessarily to be described further) are involved, in order to get an effect that the two lateral sides of the curtain are raised/lowered synchronically in equal levels and that the user can adjust the angular position of the curtain.

[0003] However, having the manipulating rope and the manipulating rod can affect the esthetic appearance of the curtain, and even can have a problem of safety of wrapping the neck of a child who is manipulating the rope; for the purpose of keep safety and beautiful appearance of the curtain, the pulling and linking up mechanisms in relating to operating of the manipulating rope and rod must be hidden. For example, the pulling and linking up mechanisms are hidden in a positioning frame provided on the top end of the curtain; and by the problems of being unfavorable for having beautiful appearance and for utilization of space, and that the space inside of the positioning frame for receiving the pulling and linking up mechanisms is small, related assembling and maintenance are quite difficult.

SUMMARY OF THE INVENTION

[0004] The primary object of the present invention is to provide a structure for curtain positioning by which the two lateral sides of a curtain are raised/lowered synchronically in equal levels, the structure needs not to be provided with the manipulating rope and the manipulating rod mentioned in the "mode of operation of conventional

horizontally raising/lowering curtains" stated above, and can allow a user to directly push and pull to draw and release for adjusting the curtain such as a horizontal blind, Roman shade, pleated shade etc. of which the two lateral sides of the curtain require to be raised/lowered synchronically in equal levels. When the curtain (such as a horizontal blind) is composed of multiple elongate strips, the curtain can be pushed and pulled slightly to adjust the angular position against the horizon of the blades of the curtain.

[0005] The structure for curtain positioning of the present invention comprises: a positioning frame; at least two positioning rope sets extending downwards from the positioning frame for positioning of corresponding parts of the curtain; a rotating axle horizontally provided in the positioning frame; at least two reel sets synchronically moving with the rotating axle, each reel set includes at least a reel linking up with the rotating axle, a drawing rope of which one end is reeled up on the reel and the other end is used to draw and release the curtain; and a positioning control box provided in the positioning frame, the positioning control box has therein at least a bush as a follower member of and for extending therethrough of the rotating axle, a first cogged winch linking up with the bush, a second cogged winch linking up with the first cogged winch, a resisting reed having an end reeled on the first cogged winch and having the other end engaged on the second cogged winch; the first cogged winch is provided thereon with a first bevel gear synchronically rotated with the first cogged winch, and the bush is provided thereon with a second bevel gear in cooperation with the first bevel gear. Thereby the positioning control box provides a resisting force to prevent the curtain from dropping by its own gravity, surely the resisting force provided by the positioning control box is not necessarily completely accurately identical to the gravity of the curtain, it is only necessary that the difference between the resisting force and the gravity of the curtain is smaller than the natural resisting forces created in the structure for curtain positioning (such as: the maximum stationary friction of the structure for curtain positioning itself and among the members in the structure for curtain positioning); thereby, when a user directly pushes and pulls the curtain, he can draw and release for adjusting the curtain, he needs not to use some other indirect way to adjust the curtain; when the user stops pushing and pulling the curtain, the curtain can be kept immediately at the position when he stops.

[0006] Secondly, when the abovementioned curtain composed of multiple elongate strips is in the form of a horizontal blind, the drawing rope can be extended downwards from above through each elongate strip and connected to the bottommost elongate strip; each reel is provided with a synchronous pulley; and each positioning rope set at least includes a main positioning cable of which the top is hung on the synchronous pulley and of which two ends pend parallelly to each other, and includes a plurality of transverse cables provided between the two

ends pending parallelly to each other of the main positioning cable for mounting the elongate strips; the area between the main positioning cable and the synchronous pulley is in the state of having a slight frictional impedance, that is a non-tightly matching state. When the user slightly pushes and pulls the curtain, the rotating axle will synchronically linking up with the reel sets to synchronically reel in/off the drawing ropes; at this time, the main positioning cable on the top of each of the positioning rope sets is moved by the synchronous pulley to render the transverse cables 22 and the elongate strips 101 mounted on the transverse cables 22 to get change in inclination degree; when the transverse cables are inclined to make the elongate strips engage with one another, by virtue that the area between the main positioning cable and the synchronous pulley is in the state of having a slight frictional impedance-that is a non-tightly matching state, the synchronous pulley can still rotate in an idle mode without hindering operation of the reels; in other words, the user can adjust the angular position against the horizon of the blades of the curtain.

[0007] In comparison with the prior art, the present invention at least has the following advantages:

1. The present invention needs not to provide the manipulating rope and the manipulating rod mentioned in the conventional techniques.
2. The members including the positioning frame, the positioning rope sets, the rotating axle, the reel sets and the positioning control box are all able to be modularized and are suitable for being produced for individual items of them, this can elevate convenience of production, assembling and maintenance.
3. When the curtain is a horizontal blind, the curtain positioning structure of the present invention is provided for a user to directly and slightly push and pull the curtain to adjust the angular position against the horizon of the blades of the curtain.

[0008] The present invention will be apparent in its mode of practicing according to its technical measures after reading the detailed description of the preferred embodiment thereof in reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009]

Fig. 1 is a schematic view showing the appearance of the most preferred embodiment of the present invention;

Fig. 2 is a perspective view showing the appearance of a positioning control box and a reel set of the most preferred embodiment of the present invention;

Fig. 3 is an anatomic perspective view of the positioning control box of the most preferred embodiment of the present invention;

Fig. 4 is a schematic view showing an angular position against the horizon of the blades of the curtain of the most preferred embodiment of the present invention;

Fig. 5 is another schematic view showing the angular position against the horizon of the blades of the curtain of the most preferred embodiment of the present invention;

Fig. 6 is a further schematic view showing the angular position against the horizon of the blades of the curtain of the most preferred embodiment of the present invention;

Fig. 7 is a schematic view showing a positioning rope set of the most preferred embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0010] Referring to Figs. 1 and 2 which are respectively a schematic view showing the appearance of the most preferred embodiment of the present invention and a perspective view showing the appearance of a positioning control box 50 and a reel set 40 of the most preferred embodiment of the present invention, it is depicted in these drawings that the structure for curtain positioning of the present invention comprises: a positioning frame 10; at least two positioning rope sets 20, a rotating axle 30, at least two reel sets 40 and the positioning control box 50; a curtain 100 in this embodiment is depicted as a horizontal blind for the convenience of specification, the curtain 100 is composed of multiple elongate strips 101 which are arranged from the uppermost one to the lowermost one all in horizontal disposition.

[0011] The positioning frame 10 is provided above the curtain 100 for directly or indirectly positioning of the curtain 100 for the convenience of providing of the curtain 100 at a window, on a wall or some other structure; the positioning frame 10 has therein a receiving space for receiving the rotating axle 30, the reel sets 40 and the positioning control box 50.

[0012] The positioning rope sets 20 are extended downwards from the positioning frame 10 for positioning of corresponding parts of the curtain 100; each positioning rope set 20 at least includes a main positioning cable 21 of which two ends pend parallelly to each other, and includes a plurality of transverse cables 22 provided between the two ends pending parallelly to each other of the main positioning cable 21 for mounting the elongate strips 101.

[0013] The rotating axle 30 is provided in the positioning frame 10 horizontally, for instance, it is provided in the positioning frame 10 horizontally by means of the reel sets 40 and the positioning control box 50.

[0014] The reel sets 40 are provided in the positioning frame 10 synchronically moving with the rotating axle 30, each reel set 40 includes at least a reel 41 linking up with the rotating axle 30, a drawing rope 42 of which one end

is reeled up on the reel 41 and the other end is used to draw the and release the curtain 100; the drawing rope 42 can be extended downwards from above through each elongate strip 101 and connected to the bottommost elongate strip 101. Each reel 41 is provided with a synchronous pulley 43 for hanging thereon of the top of the main positioning cable 21 of a positioning rope set 20; the main positioning cable 21 and the synchronous pulley 43 mutually are in a non-tightly matching state.

[0015] The positioning control box 50 is provided in the positioning frame 10 for extending therethrough of the rotating axle 30 to provide a suitable resisting force to resist rotation of the rotating axle 30.

[0016] Concerning combination of the positioning control box 50, please refer to Figs. 2 and 3, wherein Fig. 3 is an anatomic perspective view of the positioning control box 50 of the most preferred embodiment of the present invention, the positioning control box 50 is provided in its box body 51 at least with a bush 52 as a follower member of and for extending therethrough of the rotating axle 30, a first cogged winch 53 linking up with the bush 52, a second cogged winch 54 linking up with the first cogged winch, and a resisting reed 55 having an end reeled on the first cogged winch 53 and having the other end engaged on the second cogged winch 54; wherein the first cogged winch 53 is provided thereon with a first bevel gear 531 synchronically rotated with the first cogged winch 53, and the bush 52 is provided thereon with a second bevel gear 521 in cooperation with the first bevel gear 531.

[0017] It can be understood from the content disclosed above with Figs. 1 to 3 that, the positioning control box 50 provides a resisting force to prevent the curtain 100 from dropping by its own gravity; when a user directly pushes and pulls the curtain 100, he can draw and release for adjusting the curtain 100, he needs not to use some other indirect way to adjust the curtain 100; when the user stops pushing and pulling the curtain 100, the curtain 100 can be kept immediately at the position when he stops. The curtain 100 depicted in the drawings is a horizontal blind for the convenience of specification, in practicing, the curtain 100 can be one of those including Roman shades, pleated shades etc. that have the characteristic of raising/lowering in keeping their horizontal position.

[0018] Referring to Figs. 1 and 4, wherein Fig. 4 is a schematic view showing an angular position against the horizon of the blades of the curtain 100 of the most preferred embodiment of the present invention, when the user slightly pulls down the curtain 100 to rotate the synchronous pulley 43 by drawing of the drawing rope 42 (for description, the direction of counterclockwise rotating is depicted to represent the rotation of the synchronous pulley 43), at this time, the positioning rope sets 40 will also be moved synchronously by linking up of the rotating axle 30; by virtue that the area between the main positioning cable 21 on the top of the positioning rope sets 20 and the synchronous pulley 43 is in the state of having

a slight frictional impedance, the main positioning cable 21 will be moved by the main positioning cable 21 to render the transverse cables 22 and the elongate strips 101 mounted on the transverse cables 22 to get change in inclination degree.

[0019] Referring to Figs. 1 and 5, wherein Fig. 5 is another schematic view showing the angular position against the horizon of the blades of the curtain 100 of the most preferred embodiment of the present invention, when the user slightly pushes up the curtain 100, the user thus bears the weight of the curtain 100, thus in the mean time, the positioning rope sets 40 are allowed to be manipulated for reeling in by means of the rotating axle 30 by virtue that the weight of the curtain 100 is not balanced by the resisting force of the positioning control box 50 now; at this time, the direction of rotating of the synchronous pulley 43 is contrary to that shown in Fig. 4 (the direction of clockwise rotating is depicted to represent the rotation of the synchronous pulley 43 in this drawing), so that the transverse cables 22 and the elongate strips 101 mounted on the transverse cables 22 get change in inclination degree in the direction contrary to the original one. In other words, the user can slightly push and pull the curtain 100 to adjust the angular position against the horizon of the blades of the curtain 100.

[0020] Fig. 6 is a further schematic view showing the angular position against the horizon of the blades of the curtain 100 of the most preferred embodiment of the present invention, by virtue that the area between the main positioning cable 21 and the synchronous pulley 43 is in the state of having a slight frictional impedance - that is a non-tightly matching state, when the transverse cables 22 are inclined to make the elongate strips 101 engage with one another, the synchronous pulley 43 can still rotate in an idle mode without hindering operation of the reels 40.

[0021] Each main positioning cable 21 in the above disclosed (in all the drawings) is integrally formed with a corresponding one of the positioning rope sets 20; however, in practicing, for the convenience of producing, each positioning rope set 20 can be reformed from a conventional rope ladder; as shown in Fig. 7, the conventional rope ladder includes a main positioning cable 21 pending vertically and a plurality of transverse cables 22 provided between two side sections of the main positioning cable 21, the two side sections of the main positioning cable 21 are connected with each other (for instance connected by sewing or by means of a connecting element 23), namely, the two side sections of the main positioning cable 21 are integrally connected with each other at the middle top of them to form a circle matching with the synchronous pulley 43. Alternatively, the topmost transverse cable 22 can be regarded as the connecting element 23 between the two side sections of the main positioning cable 21 (not shown), thus the top of the main positioning cable 21 can form a circle matching with the synchronous pulley 43.

[0022] The embodiment depicted and stated above is

only for illustrating the present invention, and not for giving any limitation to the scope of the present invention. It will be apparent to those skilled in this art that various equivalent modifications or changes without departing from the spirit of this invention shall also fall within the scope of the appended claims.

Claims

1. A structure for curtain 100 positioning comprising:

a positioning frame 10 for positioning a curtain 100;
 a rotating axle 30 horizontally provided in said positioning frame 10;
 at least two reel sets 40 synchronically moving with said rotating axle 30, each of said reel sets 40 includes at least a reel 41 linking up with said rotating axle 30, a drawing rope 42 of which one end is reeled up on said reel 41 and the other end is used to draw and release said curtain 41; and
 a positioning control box 50 provided in said positioning frame 10, said positioning control box 50 has therein at least a bush 52 as a follower member of and for extending therethrough of said rotating axle 30, a first cogged winch 53 linking up with said bush 52, a second cogged winch 54 linking up with said first cogged winch 53, a resisting reed 55 having an end reeled on said first cogged winch 53 and having other end engaged on said second cogged winch 521.

2. The structure for curtain 100 positioning as in claim 1, wherein: said first cogged winch 53 is provided thereon with a first bevel gear 531 synchronically rotated with said first cogged winch 53, and said bush 52 is provided thereon with a second bevel gear 531 in cooperation with said first bevel gear 531.

3. The structure for curtain 100 positioning as in claim 1, wherein: said structure further comprises at least two positioning rope sets 20 extending downwards from said positioning frame 10 for positioning of said curtain 100; said curtain 100 is composed of multiple elongate strips 101 arranged from an uppermost one to a lowermost one all in horizontal disposition, said drawing rope 42 is extended downwards from above through each of said elongate strips 101 and connected to a bottommost one of said elongate strips 101.

4. The structure for curtain 100 positioning as in claim 3, wherein: each of said reels 41 is provided with a synchronous pulley 43; each of said positioning rope sets 20 at least includes a main positioning cable 21 of which a top is hung on said synchronous pulley

43 and of which two ends pending parallelly to each other, and includes a plurality of transverse cables 22 provided between said two ends pending parallelly to each other of said main positioning cable 21 for mounting said elongate strips 101.

5. The structure for curtain 100 positioning as in claim 4, wherein: an area between said main positioning cable 21 and said synchronous pulley 43 is in a state of having a slight frictional impedance, which state thus is a non-tightly matching state.

Amended claims in accordance with Rule 137(2) EPC.

1. A structure for curtain positioning comprising:

a positioning frame (10) for positioning a curtain (100);
 a rotating axle (30) horizontally provided in said positioning frame (10);
 at least two reel sets (40) synchronically moving with said rotating axle (30), each of said reel sets (40) including at least a reel (41) linking up with said rotating axle (30), a drawing rope (42) of which one end is reeled up on said reel (41) and the other end is used to draw and release said curtain (100); and
 a positioning control box (50) provided in said positioning frame (10), said positioning control box (50) having a bush (52) as a follower member of and for extending therethrough of said rotating axle (30), a first cogged winch (53) linking up with said bush (52), a second cogged winch (54) linking up with said first cogged winch (53), a resisting reed (55) having one end reeled on said first cogged winch (53) and the other end engaged on said second cogged winch (521); wherein said first cogged winch (53) is provided thereon with a first bevel gear (531) synchronically rotated with said first cogged winch (53), and said bush (52) is provided thereon with a second bevel gear (521) in cooperation with said first bevel gear (531); wherein said structure further comprises at least two positioning rope sets (20) extending downwards from said positioning frame (10) for positioning of said curtain (100); said curtain (100) is composed of multiple elongate strips (101) arranged from an uppermost one to a lowermost one all in horizontal disposition, said drawing rope (42) is extended downwards from above through each of said elongate strips (101) and connected to a bottommost one of said elongate strips (101); wherein each of said reels (41) is provided with a synchronous pulley (43); each of said positioning rope sets (20) at least includes a main posi-

tioning cable (21) of which a top is hung on said synchronous pulley (43) and of which two ends extend parallel to each other, and includes a plurality of transverse cables (22) provided between said two ends of said main positioning cable (21) for mounting said elongate strips (101); and wherein an area between said main positioning cable (21) and said synchronous pulley (43) is in a state of having a slight frictional impedance, which state thus is a non-tightly matching state; **characterized in that** the structure is so arranged that, when the transverse cables (22) are inclined to make the elongate strips (101) engage with one another, the synchronous pulley (43) can still rotate in an idle mode without hindering operation of the reels (40).

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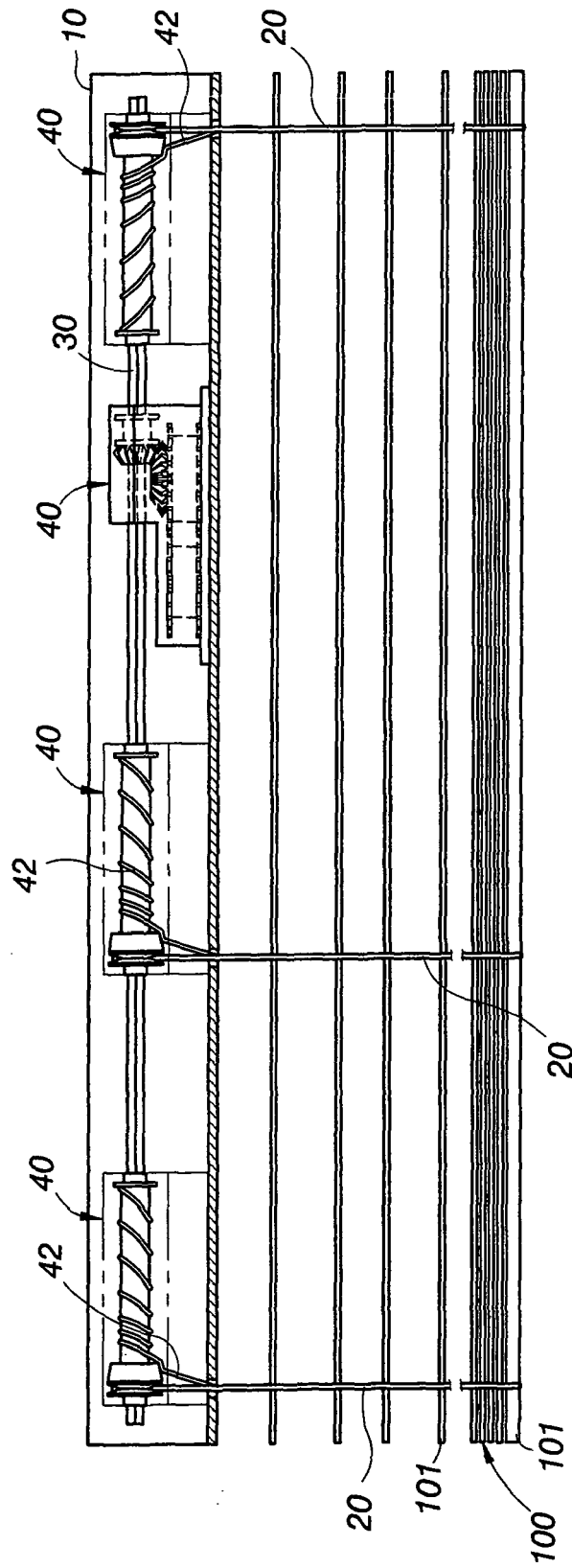


FIG. 1

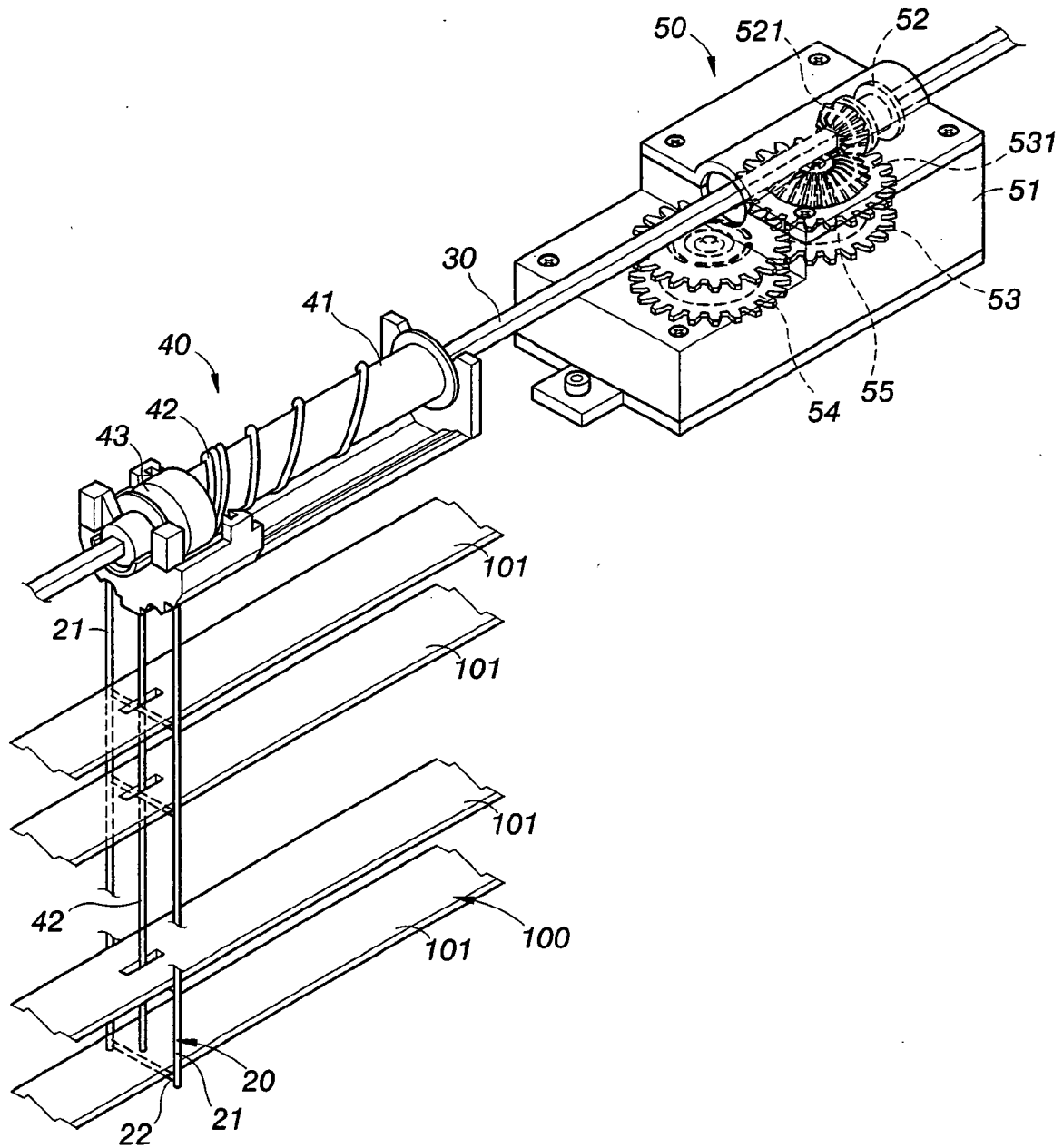


FIG.2

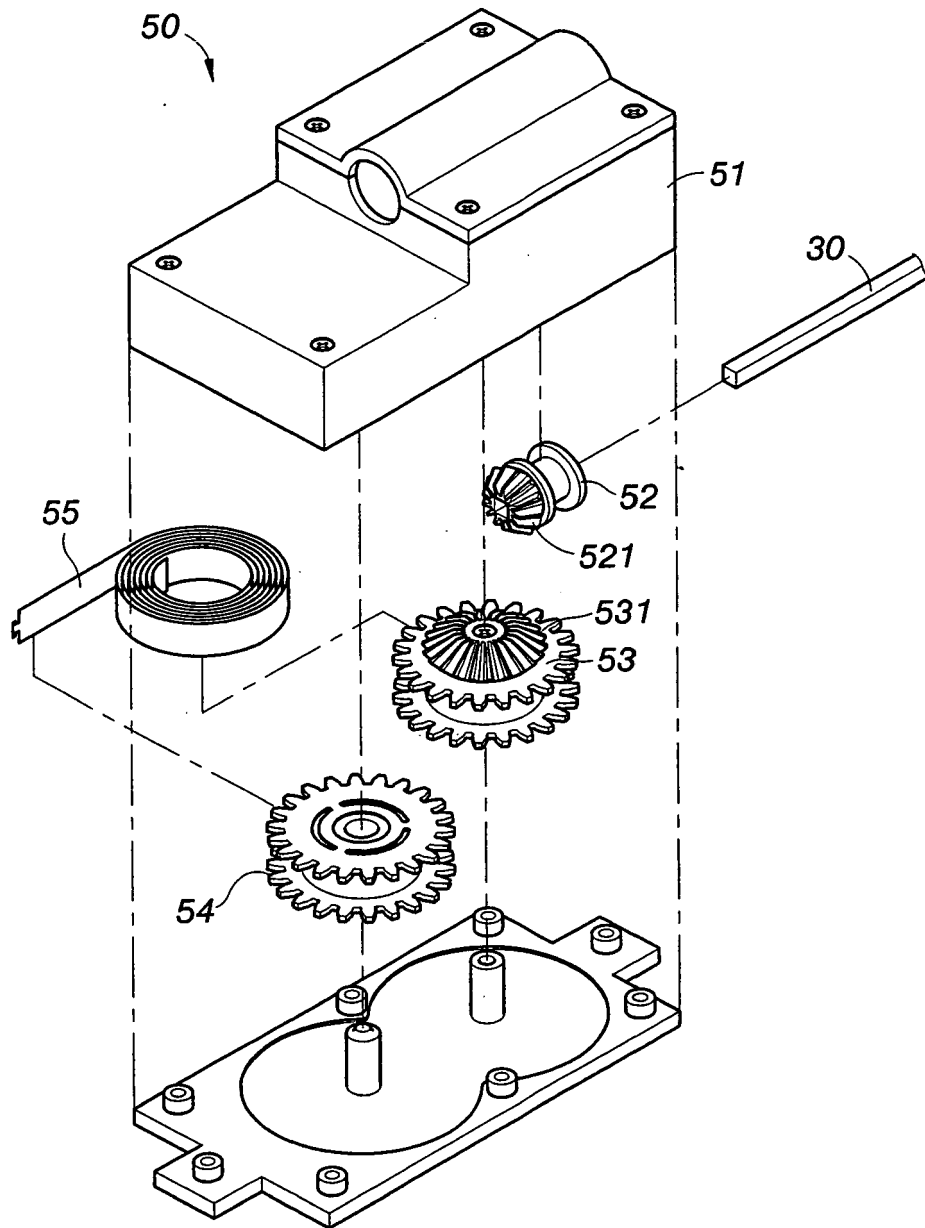


FIG.3

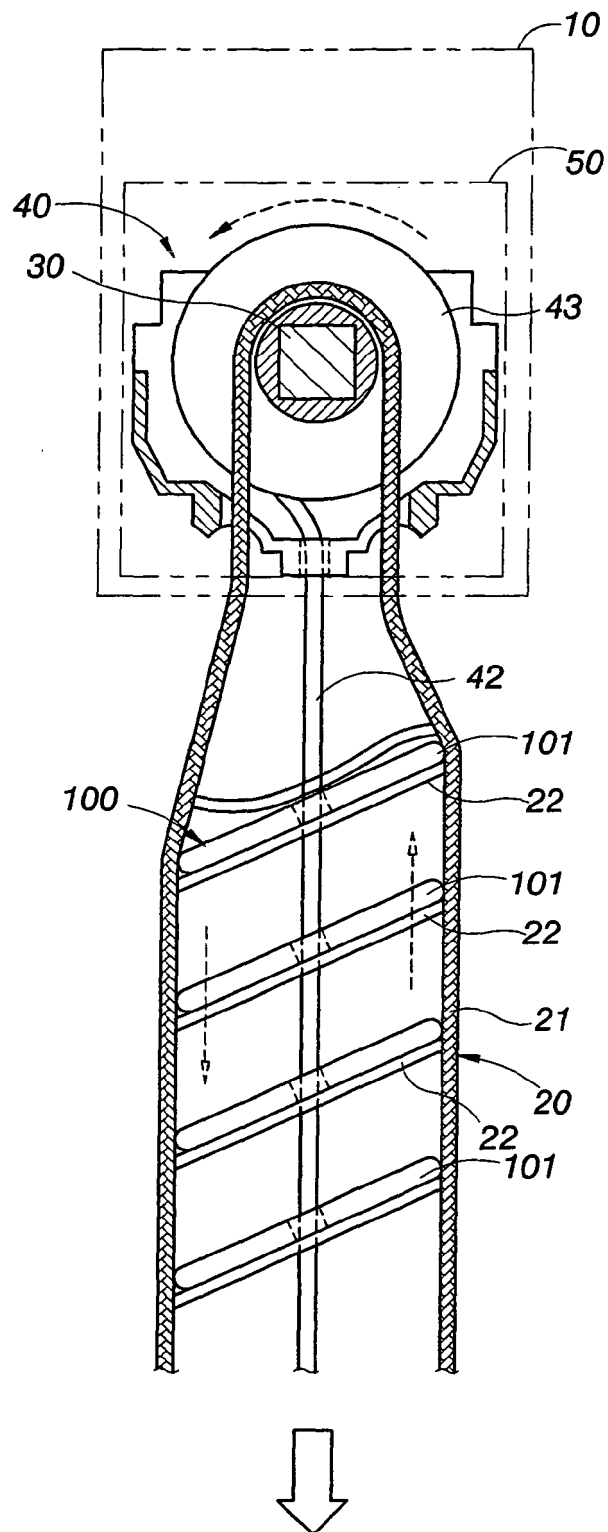


FIG. 4

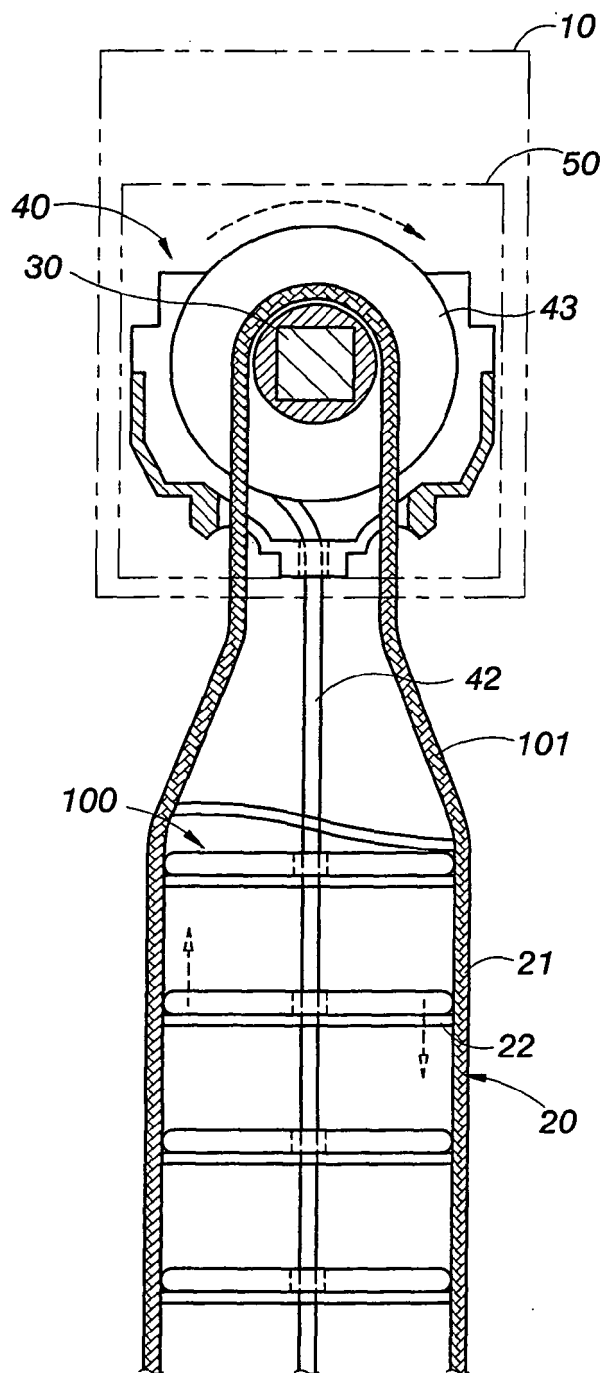


FIG.5

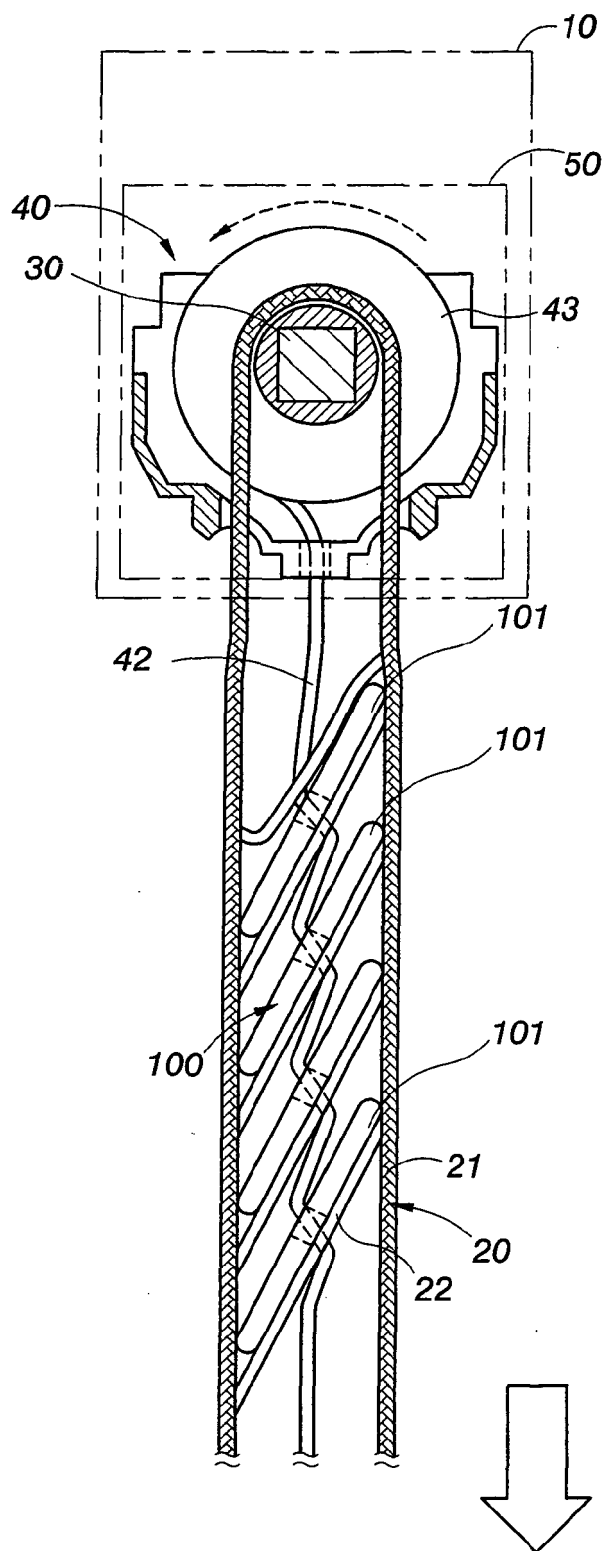


FIG. 6

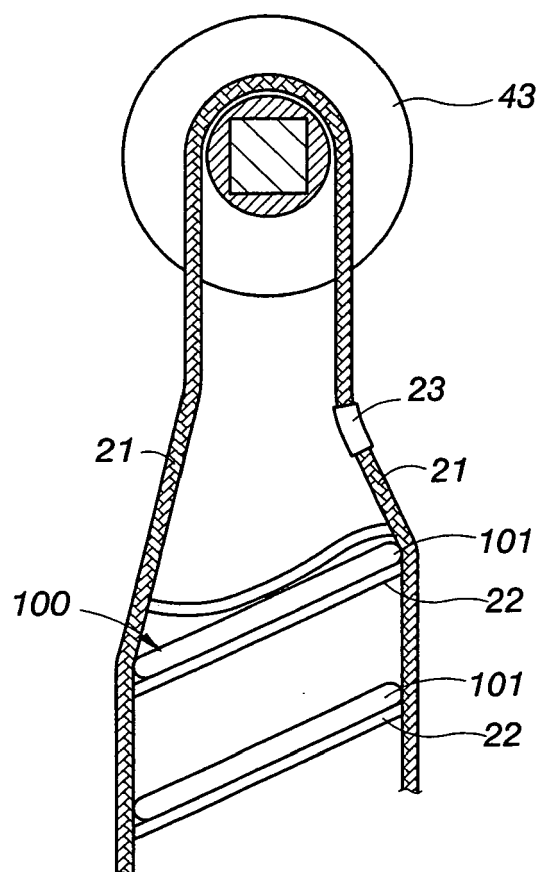


FIG. 7



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 07 25 0716

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y	US 2004/144500 A1 (NIEN MING [TW]) 29 July 2004 (2004-07-29) * figures 1,2 *	1-5	INV. E06B9/322
Y	EP 0 796 994 A2 (BARNES GROUP INC [US]) 24 September 1997 (1997-09-24) * column 4, line 19 - line 36 * * column 12, line 43 - column 13, line 5; figure 12 *	1,2	
Y	NL 301 963 A (DOUGLAS HUNTER) 11 October 1965 (1965-10-11) * page 2, line 19 - page 3, line 35; figure 1 *	3-5	
A	EP 1 696 098 A (NIEN MADE ENTPR CO LTD [TW]) 30 August 2006 (2006-08-30) * figure 1 *	1-4	
A	US 2007/023151 A1 (JUDKINS REN [US]) 1 February 2007 (2007-02-01) * figures 24,25 *	1	
A	WO 93/03250 A (GEN CLUTCH CORP [US]) 18 February 1993 (1993-02-18) * figure 3 *	3	TECHNICAL FIELDS SEARCHED (IPC)
			E06B
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		8 August 2007	Severens, Gert
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 07 25 0716

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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08-08-2007

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 2004144500	A1	29-07-2004	CA 2426145 A1 TW 553307 Y	27-07-2004 11-09-2003
EP 0796994	A2	24-09-1997	AT 312285 T AT 251276 T BR 9701347 A CA 2200022 A1 CN 1171491 A DE 69725201 D1 DE 69725201 T2 DE 69734847 T2 HK 1058537 A1 US 6318661 B1 US 6149094 A	15-12-2005 15-10-2003 17-11-1998 20-09-1997 28-01-1998 06-11-2003 05-08-2004 27-07-2006 02-06-2006 20-11-2001 21-11-2000
NL 301963	A		NONE	
EP 1696098	A	30-08-2006	NONE	
US 2007023151	A1	01-02-2007	NONE	
WO 9303250	A	18-02-1993	AT 146252 T AU 646182 B2 AU 2394292 A CA 2092300 A1 DE 69215844 D1 DE 69215844 T2 DK 551486 T3 EP 0551486 A1 ES 2095482 T3 FI 931478 A HU 67323 A2 JP 2609508 B2 JP 5507978 T NO 931259 A	15-12-1996 10-02-1994 02-03-1993 03-02-1993 23-01-1997 03-07-1997 30-12-1996 21-07-1993 16-02-1997 01-04-1993 28-03-1995 14-05-1997 11-11-1993 01-04-1993