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(54)

Curtain driving assembly

(57) A curtain driving assembly includes a control set (1), a mount (2) and a cover (3). The control set (1) includes a stationary seat (11) and a chain wheel (12) to be cooperated with a bead chain (A). The stationary seat (11) has a shaft (111) and a wall (116) is located partially around the shaft (111) to hide the bead chain (A). The chain wheel (12) has a sleeve (121) which is mounted to the shaft (111). The mount (2) has a flange (21). At least one of the flange (21) and the chain wheel (12) has a lip (22) to form a gap (S) between the flange (21) and the chain wheel (12). The cover (3) is mounted to the chain wheel (12) to hide the bead chain (A). The cover (3) is a ring-shaped cover and has multiple engaging portions (32a, 32b) on the inside thereof. The engaging portions (32a, 32b) are installed in the gap (S) and engaged with the flange (21).

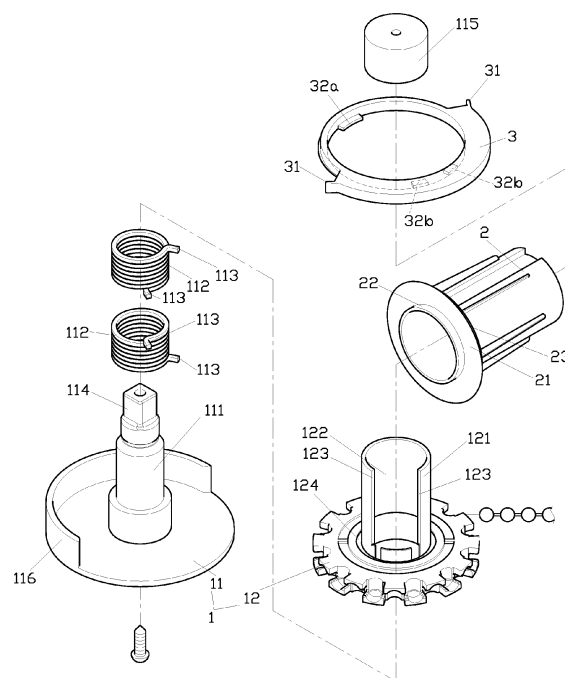


FIG . 1

## Description

### FIELD OF THE INVENTION

[0001] The present invention relates to a curtain driving assembly, and more particularly, to a driving assembly wherein the bead chain is easily connected to the driving assembly and the steps for assembling is simplified.

### BACKGROUND OF THE INVENTION

[0002] A conventional curtain driving assembly is shown in Fig. 6 and generally includes a bead chain seat 4, a mount 5 and a bead chain 6, wherein the bead chain seat 4 is pivotably connected with a chain wheel 41. A wall 42 extends from the chain seat 4 and is located around the chain wheel 41. The mount 5 is connected to the bead chain wheel 41 so as to position the chain wheel 41 located between the bead chain seat 4 and the mount 5. The mount 5 has a flange 51 located corresponding to the chain wheel 41. The bead chain 6 is wrapped to the bead chain seat 4 and does not drop from the bead chain seat 4 by the wall 42 and the flange 51.

[0003] However, the steps for assembling the curtain driving assembly are complicated and inconvenient. In the present time, concerning the requirements of the consumers on the flexibility for choosing the bead chain 6 from various specifications and types, and to avoid the inconvenience to the consumers from assembling the bead chain seat 4, chain wheel 41 and the mount 5 to be a main driving set by themselves, the main driving set is always assembled firstly, and then the chosen bead chain 6 is installed to the chain wheel 41 of the main driving set by the consumers. Because the wall 42 and the flange 51 block the bead chain 6 from assembling to the chain wheel 41, the assemblers/consumers have to separate the bead chain seat 4 and the mount 5, or to forcibly bend the wall 42 and the flange 51 to install the bead chain 6. The former way may easily lose the parts, and the latter way may break the bead chain 6 by the wall 42 and/or the flange 51.

### SUMMARY OF THE INVENTION

[0004] The present invention relates to a curtain driving assembly and comprises a control set having a stationary seat and a chain wheel which is cooperated with a bead chain. The stationary seat has a shaft extending therefrom and a wall is located partially around the shaft so as to cover the bead chain. The chain wheel has a sleeve extending therefrom which is mounted to the shaft. A mount is mounted to the sleeve and has a flange. The flange is located corresponding to the stationary seat. At least one of the flange and the chain wheel has a lip so as to form a gap between the flange and the chain wheel. A cover is mounted to the chain wheel of the control set so as to cover the bead chain. The cover is a ring-shaped cover and has multiple engaging portions on the inside

thereof. The engaging portions are installed in the gap and engaged with the flange.

[0005] Preferably, the shaft has a torsion spring mounted thereto which has two legs on two ends thereof. The sleeve has an opening defined axially therethrough so as to communicate with the inner space of the sleeve, and is located corresponding to the torsion spring. The sleeve has two contact edges on two ends defining the opening, and the two legs contact the two contact edges.

[0006] Preferably, the flange has a guide portion defined in the periphery thereof and the guide portion is an inclined face or a curved face so as to guide the engaging portions to install in the gap and engage with the flange.

[0007] Preferably, the cover has multiple stops which contact the wall of the stationary seat.

[0008] Preferably, the lip is a protrusion which extends outwardly from the flange and the chain wheel has a recess which accommodates the lip.

[0009] Preferably, the shaft of the stationary seat has an extension portion to which a cap is mounted. The cap contacts the mount.

[0010] The primary object of the present invention is to provide a curtain driving assembly and the bead chain can be easily installed to the driving assembly after the driving assembly is initially assembled without repeatedly separating all of the parts or forcibly bent the wall. The bead chain does not drop by the wall and the cover.

[0011] The present invention will become more obvious from the following description when taken in connection with the accompanying drawings which show, for purposes of illustration only, a preferred embodiment in accordance with the present invention.

### BRIEF DESCRIPTION OF THE DRAWINGS

[0012]

Fig. 1 is an exploded view to show the curtain driving assembly of the present invention;

Fig. 2 is a perspective view to show the curtain driving assembly of the present invention;

Fig. 3 is a partial cross sectional view of the curtain driving assembly of the present invention;

Fig. 4 shows the assembling configuration of the bead chain connecting to the initial assembling configuration of the curtain driving assembly of the present invention;

Fig. 5 shows the assembling configuration of the cover connecting to the initial assembling configuration of the curtain driving assembly of the present invention, and

Fig. 6 shows the assembling configuration of the bead chain connecting to the conventional main driving set of the curtain driving assembly.

## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0013] Referring to Figs. 1 to 3, the curtain driving assembly of the present invention comprises a control set 1 having a stationary seat 11 and a chain wheel 12, wherein the stationary seat 11 has a shaft 111 extending therefrom and at least one torsion spring 112 is mounted to the shaft 111. The torsion spring 112 has two legs 113 on two ends thereof. The shaft 111 of the stationary seat 11 has an extension portion 114 to which a cap 115 is mounted. A wall 116 extends from the stationary seat 11 and is partially located around the shaft 111. The chain wheel 12 further has a sleeve 121 extending therefrom which is mounted to the shaft 111. The sleeve 121 has an opening 122 defined axially therethrough which is located corresponding to the torsion spring 112. The sleeve 121 has two contact edges 123 on two ends defining the opening 122, and the two legs 113 contact the two contact edges 123. The chain wheel 12 has a recess 124.

[0014] A mount 2 is mounted to the sleeve 121 and located between the cap 115 and the chain wheel 12. The mount 2 has a flange 21 which is located corresponding to the chain wheel 12. At least one of the flange 21 and the chain wheel 12 has a lip 22 which, for example, is a protrusion. The lip 22 is located between the flange 21 and the chain wheel 12, so that a gap "S" is formed between the flange 21 and the chain wheel 12. In this embodiment, the lip 22 extends from the flange 21 and is located corresponding to the recess 124. Alternatively, the lip 22 can also extend from the chain wheel 12. The flange 21 has a guide portion 23 defined in the periphery thereof and the guide portion 23 is an inclined face or a curved face.

[0015] A cover 3 is installed on the chain wheel 12 of the control set 1 and has multiple stops 31 which contact the wall 116 of the stationary seat 11. The cover 3 is a ring-shaped cover and has multiple engaging portions 32a, 32b on the inside thereof.

[0016] As shown in Figs. 1 and 5, when assembling, the shaft 111 is installed in the sleeve 121 and is pivotably connected to the sleeve 121. The legs 113 of the torsion spring 112, extending in the opening 122, contact the contact edges 123 of the sleeve 121. The mount 2 is then mounted to the sleeve 121 of the chain wheel 12, the cap 115 is then mounted to the extension portion 114 of the shaft 111 to clamp the mount 2 between the cap 115 and the chain wheel 12 to complete the initial assembling configuration. Preferably, in another initial assembling configuration, the control set 1 is connected with the mount 2 without assembling the cap 115. After the desired bead chain "A" is chosen, the bead chain "A" is connected to the chain wheel 12. Preferably, the radial width of the flange 21 is smaller than the radial width of the chain wheel 12, so that when installing the bead chain "A" to the initial assembling configuration, the bead chain "A" can be easily assembled to the chain wheel 12. More specifically, when assembling the bead chain "A" to the

chain wheel 12, the bead chain "A" is firstly partially engaged in the chain wheel 12 and preferably forms a pulling portion and a follow-on engaging portion which are not engaged with the chain wheel 12 (not shown), and then the pulling portion of the bead chain "A" is pulled so as to rotate the chain wheel 12, and simultaneously the rotation of the chain wheel 12 gradually wraps the follow-on engaging portion of the bead chain "A" as shown in Fig. 4. By the above-mentioned arrangement, the bead chain "A" can be installed to the control set 1 after the initial assembling configuration is completed and does not have to bend the wall 116 or separate the parts to install the bead chain "A". Further, after the bead chain "A" or the follow-on portion of the bead chain "A", adjacent to the wall 116, is engaged in the chain wheel 12, the cover 3 is then mounted to the flange 21 as shown in Fig. 5. More specifically, when the cover 3 is mounted/pressed on the chain wheel 12, the engaging portions 32a, 32b are guided by the guide portion 23 so as to be installed in the gap "S" and be engaged with the flange 21.

Consequently, the curtain driving assembly is completely assembled. The bead chain "A" is prevented from being disengaged from the control set 1 by the wall 116 and the cover 3.

[0017] While we have shown and described the embodiment in accordance with the present invention, it should be clear to those skilled in the art that further embodiments may be made without departing from the scope of the present invention.

## Claims

1. A curtain driving assembly comprising: a control set (1) and a mount (2), the control set (1) having a stationary seat (11) and a chain wheel (12) with which a bead chain (A) is engaged, the stationary seat (11) having a shaft (111) extending therefrom and a wall (116) which is located partially around the shaft (111) so as to be configured to cover the bead chain (A), the chain wheel (12) having a sleeve (121) extending therefrom which is mounted to the shaft (111); **characterized in that** the mount (2) is mounted to the sleeve (121) and has a flange (21), the flange (21) is located corresponding to the chain wheel (12), at least one of the flange (21) and the chain wheel (12) has a lip (22) so as to form a gap (S) between the flange (21) and the chain wheel (12), a cover (3) is mounted to the chain wheel (12) of the control set (1) so as to be configured to cover the bead chain (A), the cover (3) is a ring-shaped cover and has multiple engaging portions (32a, 32b) on an inside thereof, the engaging portions (32a, 32b) are installed in the gap (S) and engaged with the flange (21).
2. The driving assembly as claimed in claim 1, wherein the shaft (111) has at least one torsion spring (112)

mounted thereto which has two legs (113) on two ends thereof, the sleeve (121) has an opening (122) defined axially therethrough, the opening (122) located corresponding to the torsion spring (112), the sleeve (121) has two contact edges (123) on two ends defining the opening (122), and the two legs (113) contact the two contact edges (123).

3. The driving assembly as claimed in claim 1, wherein the flange (21) has a guide portion (23) defined in a periphery thereof and the guide portion (23) is an inclined face or a curved face so as to guide the engaging portions (32a, 32b) to install in the gap (S) and engaged with the flange (21).
4. The driving assembly as claimed in claim 1, wherein the cover (3) has multiple stops (31) which contact the wall (116) of the stationary seat (11).
5. The driving assembly as claimed in claim 1, wherein the lip (22) is a protrusion which extends outwardly from the flange (21), the chain wheel (12) has a recess (124) which accommodates the lip (22).
6. The driving assembly as claimed in claim 1, wherein the shaft (111) of the stationary seat (11) has an extension portion (114) to which a cap (115) is mounted, the cap (115) contacts the mount (5).
7. The driving assembly as claimed in claim 1, wherein the radial width of the flange (21) is smaller than the radial width of the chain wheel (12).

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

1. A curtain driving assembly comprising: a control set (1) and a mount (2), the control set (1) having a stationary seat (11) and a chain wheel (12) with which a bead chain (A) is engaged, the stationary seat (11) having a shaft (111) extending therefrom and a wall (116) which is located partially around the shaft (111) so as to be configured to cover the bead chain (A), the chain wheel (12) having a sleeve (121) extending therefrom which is mounted to the shaft (111); the mount (2) is mounted to the sleeve (121) and has a flange (21), the flange (21) is located corresponding to the chain wheel (12), at least one of the flange (21) and the chain wheel (12) has a lip (22) so as to form a gap (S) between the flange (21) and the chain wheel (12), **characterized in that** a cover (3) is mounted to the chain wheel (12) of the control set (1) so as to be configured to cover the bead chain (A), the cover (3) is a ring-shaped cover and has multiple engaging portions (32a, 32b) on an inside thereof, the engaging portions (32a, 32b) being installed in the gap (S) and engaged with the

flange (21).

2. The driving assembly as claimed in claim 1, wherein the shaft (111) has at least one torsion spring (112) mounted thereto which has two legs (113) on two ends thereof, the sleeve (121) has an opening (122) defined axially therethrough, the opening (122) located corresponding to the torsion spring (112), the sleeve (121) has two contact edges (123) on two ends defining the opening (122), and the two legs (113) contact the two contact edges (123).
3. The driving assembly as claimed in claim 1, wherein the flange (21) has a guide portion (23) defined in a periphery thereof and the guide portion (23) is an inclined face or a curved face so as to guide the engaging portions (32a, 32b) to install in the gap (S) and engaged with the flange (21).
4. The driving assembly as claimed in claim 1, wherein the cover (3) has multiple stops (31) which contact the wall (116) of the stationary seat (11).
5. The driving assembly as claimed in claim 1, wherein the lip (22) is a protrusion which extends outwardly from the flange (21), the chain wheel (12) has a recess (124) which accommodates the lip (22).
6. The driving assembly as claimed in claim 1, wherein the shaft (111) of the stationary seat (11) has an extension portion (114) to which a cap (115) is mounted, the cap (115) contacts the mount (5).
7. The driving assembly as claimed in claim 1, wherein the radial width of the flange (21) is smaller than the radial width of the chain wheel (12).

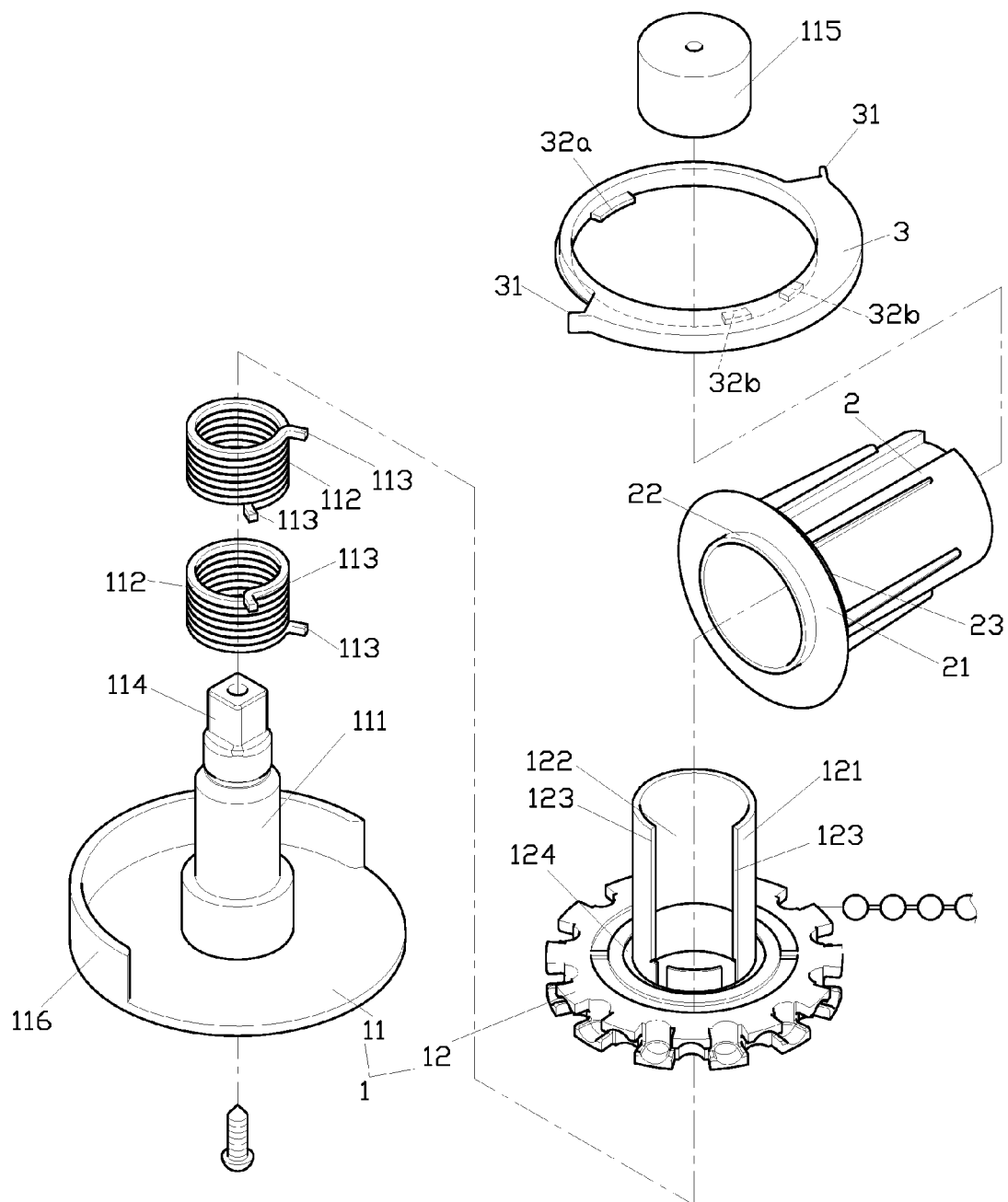


FIG. 1

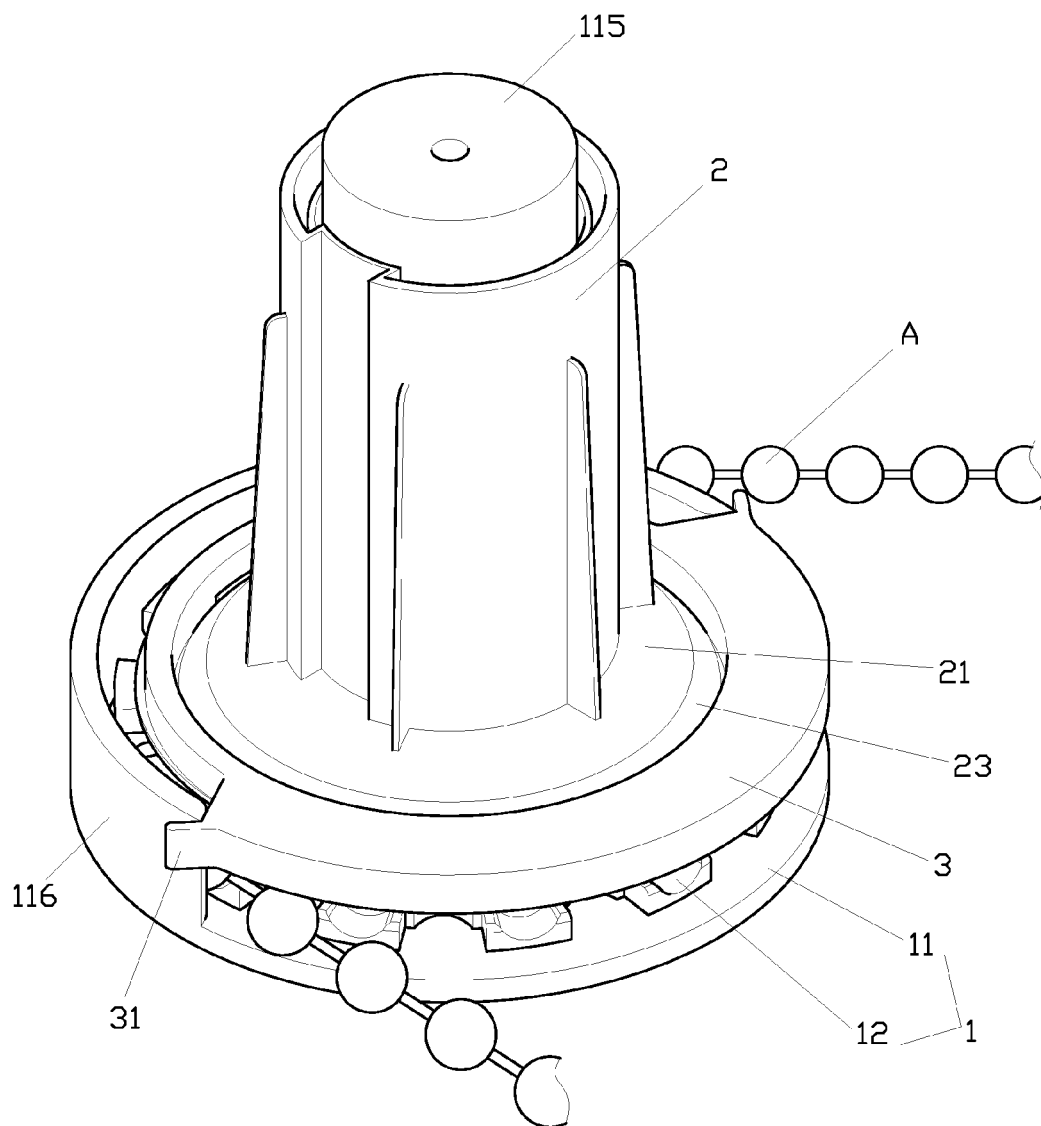


FIG. 2

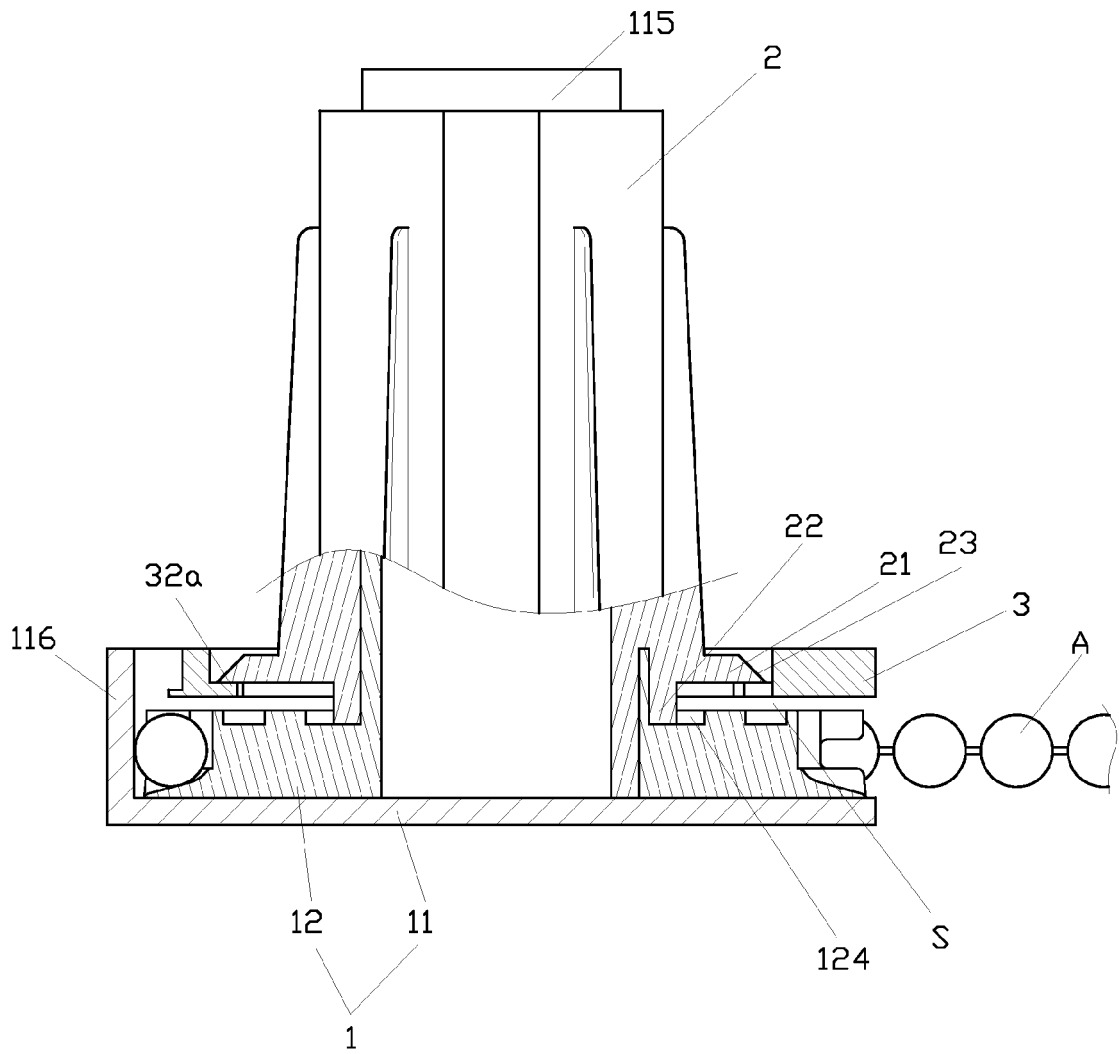


FIG. 3

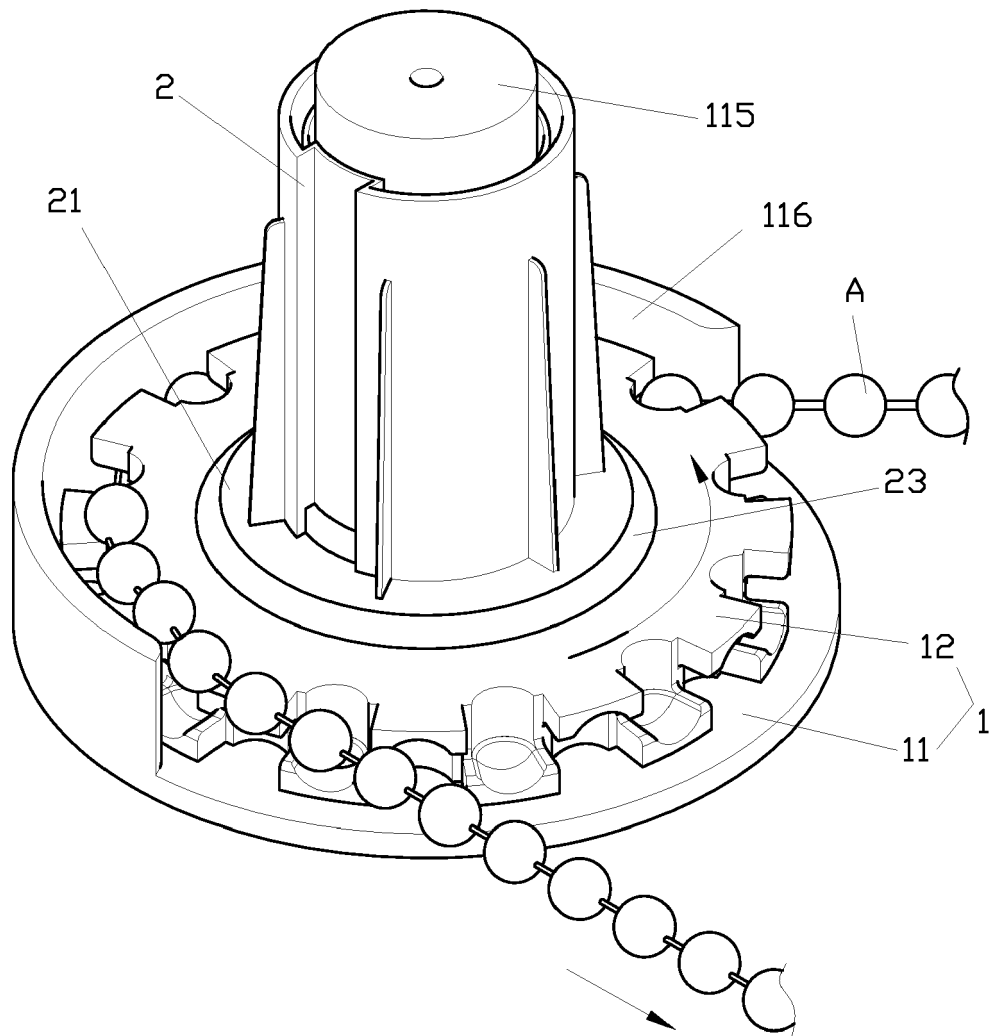


FIG. 4

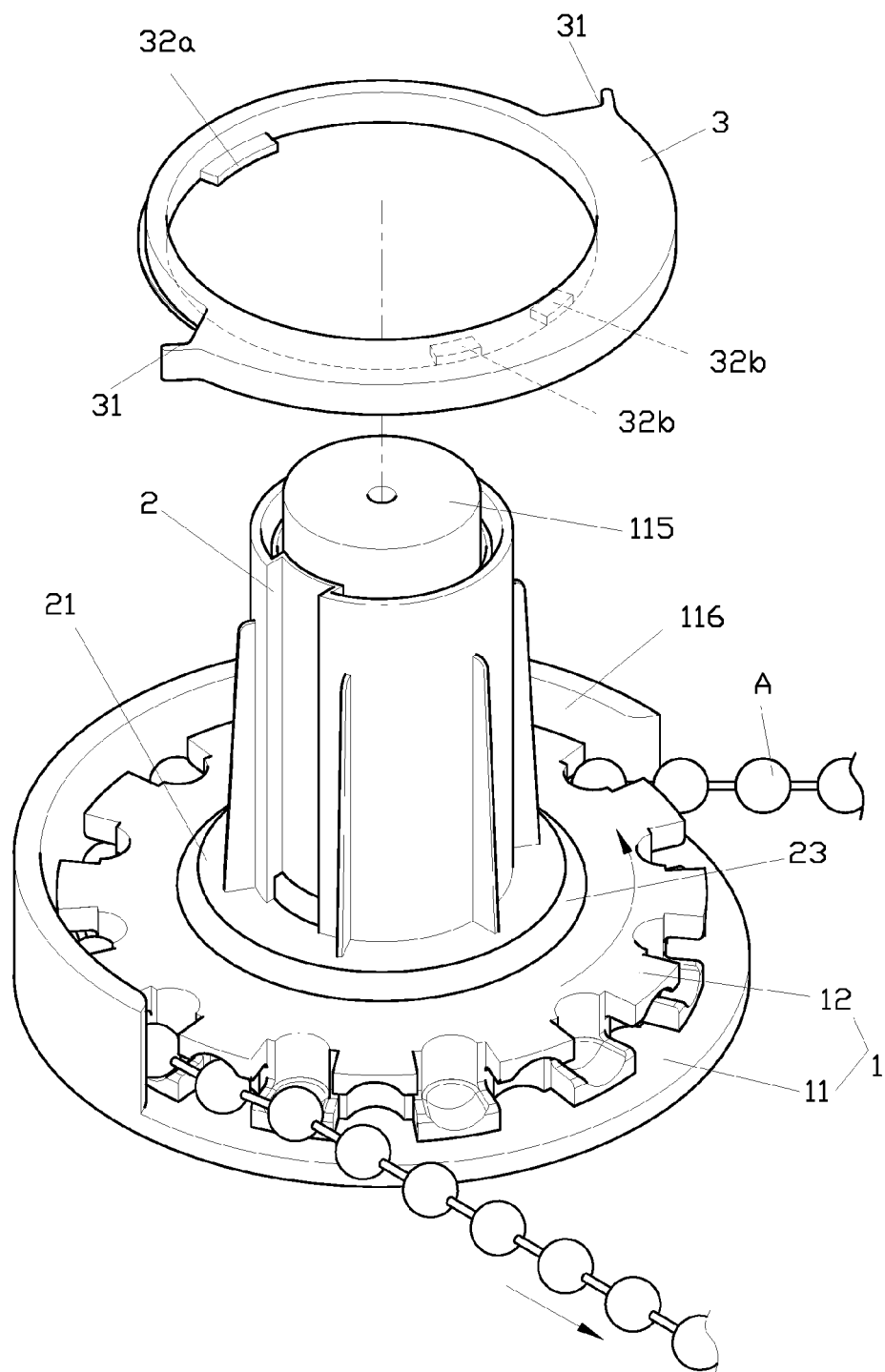
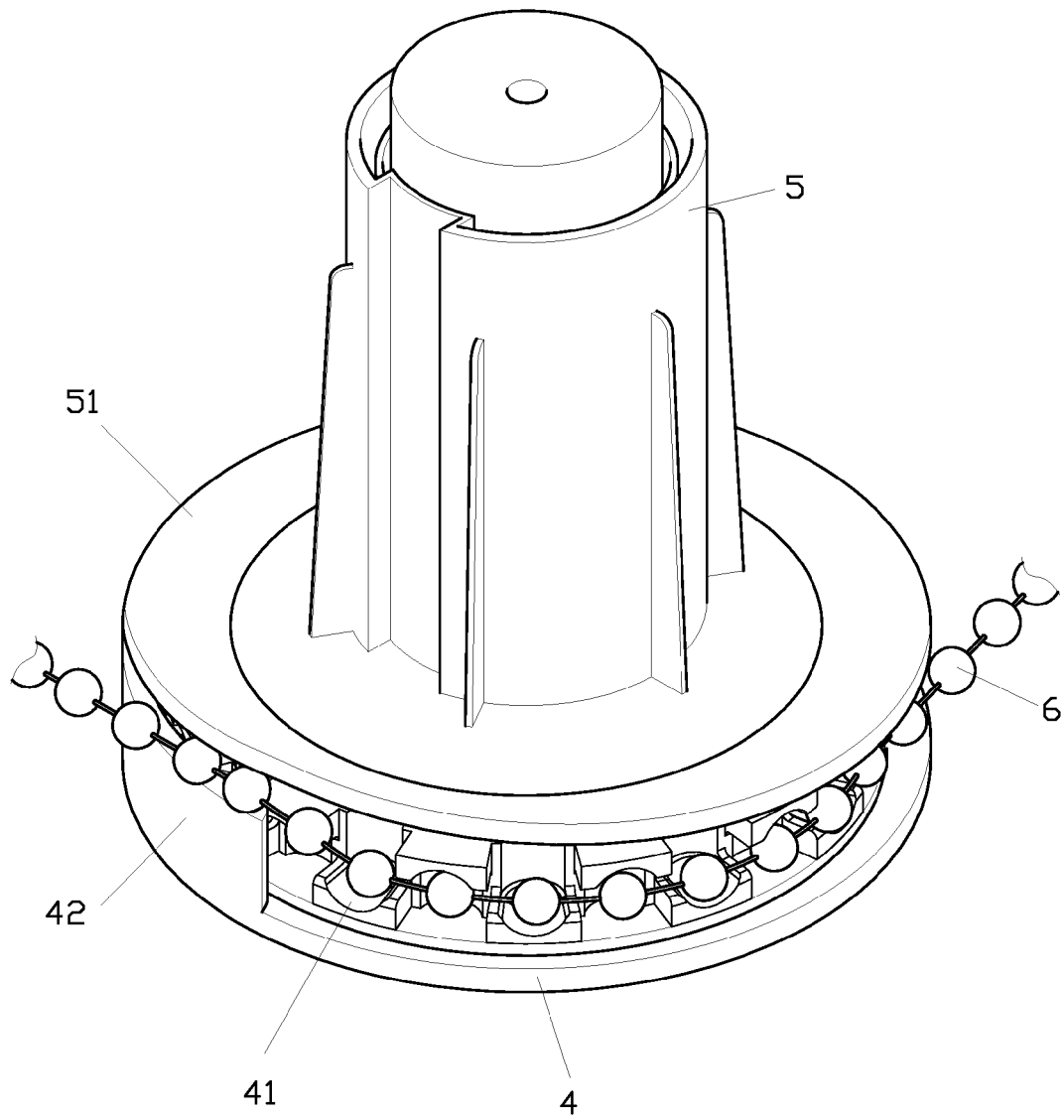


FIG. 5



F I G . 6



## EUROPEAN SEARCH REPORT

Application Number  
EP 13 15 8784

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| DOCUMENTS CONSIDERED TO BE RELEVANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                        |                                                    |                                         |
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| The present search report has been drawn up for all claims                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                        |                                                    |                                         |
| Place of search<br>Munich                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                        | Date of completion of the search<br>19 August 2013 | Examiner<br>Weißbach, Mark              |
| CATEGORY OF CITED DOCUMENTS<br>X : particularly relevant if taken alone<br>Y : particularly relevant if combined with another document of the same category<br>A : technological background<br>O : non-written disclosure<br>P : intermediate document<br>T : theory or principle underlying the invention<br>E : earlier patent document, but published on, or after the filing date<br>D : document cited in the application<br>L : document cited for other reasons<br>& : member of the same patent family, corresponding document |                                                                                                                                                                        |                                                    |                                         |

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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT  
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EP 13 15 8784

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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