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EPC.

(54) **ROLLER DEVICE FOR A WINDOW**

(57) A roller device for a window is provided. The roller device has a structure (10) and a roller assembly (20). The structure (10) has four strings. The roller assembly (20) has a shaft (21), a movable unit (22), and a roller (23). The shaft (21) is mounted on the structure (10). The movable unit (22) is movably mounted on the structure (10). Two of the strings (14) pass through the movable unit (22). The roller (23) is rolled on the shaft (21) and one edge of the roller (23) is mounted on the movable unit (22). Because the strings (14) are tightened, the frictions between two of the strings (14) clamp the movable unit (22) and the movable unit (22) cannot move without external force. One of the rollers (23) is made of blackout fabric and the other roller (33) is an insect screen.

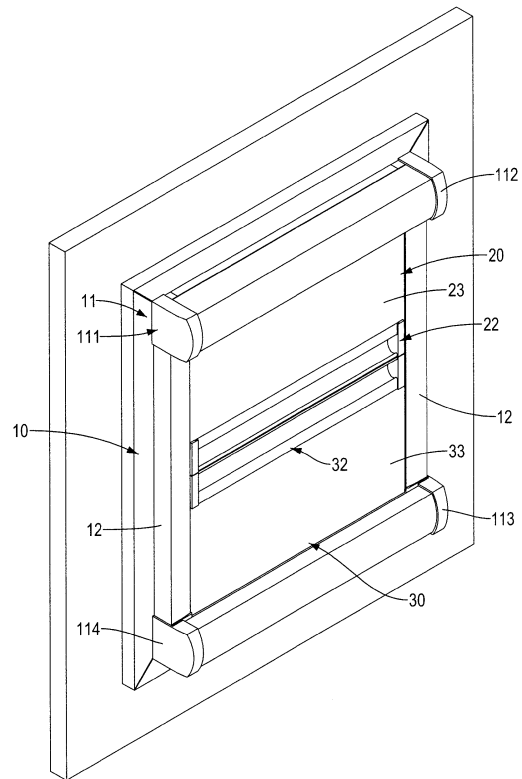


FIG. 1

Description

1. Field of the Invention

[0001] The present invention relates to a household equipment especially to a device to block the sunlight and prevent mosquitos from passing through the window.

2. Description of the Prior Arts

[0002] Normally, through windows, sunlight and breeze may enter a house, which provides people with a comfortable living experience. However, as the sunlight and breeze are capable of entering a house via windows, some defects are generated. For example, sunrise time is very early in some areas, even earlier than the time people wake up. Therefore, sunlight may disturb people sleeping, so people's sleep quality is getting worse. In addition, insects (e.g. mosquitos and flies) may enter the house along with the breeze.

[0003] Therefore, a blind may be mounted on the window to shade the sunlight and a screen mounted on the window can prevent the insects from entering the house. However, the conventional blind cannot block the insects, and the conventional screen cannot shade the sunlight, so it takes double efforts to install a blind and a screen, with is not convenient.

[0004] To overcome the shortcomings, the present invention provides a roller device for a window to mitigate or obviate the aforementioned problems.

[0005] The main objective of the present invention is to provide a roller device for a window that has a blind configured to shade the sunlight and the other one is a screen which is configured to prevent the insects from entering the house but still allow the sunlight to pass through.

[0006] The roller device for a window has a structure, a first roller assembly, and a second roller assembly. The structure is mounted on the window and comprises four bases and four strings. The four bases are located on corners of the structure. The four bases are defined as a first base, a second base, a third base, and a fourth base. A first direction is parallel with a direction from the first base to the second base, and a second direction is perpendicular to the first direction. The four strings are defined as a first string, a second string, a third string, and a fourth string. The first string connects the first base and the third base, the second string connects the second base and the fourth base, the third string connects the first base and the third base, and the fourth string connects the second base and the fourth base. The first roller assembly is mounted on the structure and comprises a first shaft, a first movable unit, a first roller, and a first rerolling unit. Two ends of the first shaft are respectively mounted on the first base and the second base. The first movable unit is mounted on the structure and is capable of moving in the second direction. The first string and the second string pass through the first movable unit. The

first roller rolled on the first shaft and has two first edges. The two first edges are parallel with the first direction. One of the first edges is mounted on the first shaft and the other first edge is mounted on the first movable unit.

5 The first rerolling unit is mounted on the first shaft and configured to roll the first roller on the first shaft.

[0007] The structure of the second roller assembly is almost the same as the first roller assembly. Thus, the second roller assembly is mounted on the structure and comprises a second shaft, a second movable unit, a second roller, and a second rerolling unit. Two ends of the second shaft are respectively mounted on the fourth base and the third base. The second movable unit is mounted on the structure and is capable of moving in the second direction. The third string and the fourth string pass through the second movable unit. The second roller is rolled on the second shaft and has two second edges. The two second edges are parallel with the first direction. One of the second edges is mounted on the second shaft and the other one of the second edge is mounted on the second movable unit. The second rerolling unit mounted on the second shaft and configured to roll the second roller on the second shaft.

[0008] The first string and the second string are tightened such that the first string and the second string clamp the first movable unit, and the third string and the fourth string are tightened such that the third string and the fourth string clamp the second movable unit.

[0009] With such structure, the roller device according to the present invention provides the first roller to shade the sunlight, and the second roller to allow breeze and sunlight to enter the house instead of the insects, so the user can close either one of the rollers as needed. Besides, with the first string and the second string clamping the first roller assembly and the third string and the fourth string clamping the second roller assembly, the first roller and the second roller can stop at wherever the user releases the first movable unit or the second movable unit.

40 IN THE DRAWINGS

[0010]

Fig. 1 is a perspective view of a roller device in accordance with the present invention, showing the roller device mounted on a window;

Fig. 2 is another perspective view of the roller device in Fig. 1, showing the roller device mounted on a window;

Fig. 3 is an exploded view of the roller device in Fig. 1;

Fig. 4 is a sectional view of one of bases of the roller device in Fig. 1;

Fig. 5 is a perspective view of the base of the roller device in Fig. 1;

Fig. 6 is another perspective view of the base of the roller device in Fig. 1;

Fig. 7 is a simplified schematic view of strings of the roller device in Fig. 1;

Fig. 8 is a perspective view of one of elastic units and the base of the roller device in Fig. 4;

Fig. 9 is a sectional view of the elastic unit and the base of the roller device in Fig. 8;

Fig. 10 is an exploded view of the base of the roller device in Fig. 4;

Fig. 11 is another sectional view of the base of the roller device in Fig. 4;

Fig. 12 is an exploded view of movable units of the roller device in Fig. 1;

Fig. 13 is a sectional view of the movable units of the roller device in Fig. 12; and

Fig. 14 is another sectional view of the movable units of the roller device in Fig. 12.

[0011] Please refer to Fig. 1, Fig. 2, and Fig. 7. A roller device for a window is provided in accordance with the present invention. The roller device can achieve two goals, i.e. shading the sunlight and preventing the insects from entering the house. Precisely, the roller device has two rollers, one of the rollers is configured to shade the sunlight and the other roller is configured to prevent the insects from entering the house, and the user can close either one of the rollers according to needs.

[0012] In this embodiment, the roller device comprises a structure 10, a first roller assembly 20, and a second roller assembly 30.

[0013] The structure 10 is mounted on the window and comprises four bases 11, two guiding rails 12, four strings 13, and four elastic units 14. However, in another embodiment, the structure 10 may not have the guiding rails 12 or the elastic units 14.

[0014] The four bases 11 are respectively four corners of the structure 10. In other words, the four bases 11 correspond to four corners of the window. The four bases 11 are defined as a first base 111, a second base 112, a third base 113, and a fourth base 114. In this embodiment, the first base 111 and the second base 112 are mounted at the upper corners, and the third base 113 and the fourth base 114 are mounted at the lower corners. Moreover, the four bases 11 are arranged in clockwise order, so the first base 111 and the third base 113 are located at diagonal corners, and the second base 112 and the fourth base 114 are located at diagonal corners.

[0015] A first direction is parallel with a direction from the first base 111 to the second base 112, so the first direction is horizontal in this embodiment. A second direction is perpendicular to the first direction, so the second direction is upright in this embodiment. However, in another embodiment, the first direction may be upright and the second embodiment may be horizontal.

[0016] Then please refer to Fig. 3 to Fig. 8. The structures of the first base 111, the second base 112, the third base 113, and the fourth base 114 are the same, and the details of the first base 111 are described hereinafter as an example. The first base 111 may comprise a main body 1111 and a fixing unit 1112. The main body 1111 forms a first passage 1110 and the first passage 1110

extends in the second direction. Two ends of the first shaft 21 are respectively and rotatably mounted on the main body 1111 of the first base 111 and the main body 1111 of the second base 112. The fixing unit 1112 is detachably mounted on the main body 1111.

[0017] Then please refer to Fig. 1, Fig. 3, and Fig. 13. The two guiding rails 12 are arranged along the second direction so the two guiding rails 12 are upright in this embodiment. One of the guiding rails 12 connects the first base 111 and the fourth base 114 and the other guiding rails 12 connect the second base 112 and the third base 113. In this embodiment, each one of the guiding rails 12 forms a groove 120.

[0018] Then please refer to Fig. 5 and Fig. 7. The four strings 13 are defined as a first string 131, a second string 132, a third string 133, and a fourth string 134. The first string 131 connects the first base 111 and the third base 113. The second string 132 connects the second base 112 and the fourth base 114. The third string 133 connects the first base 111 and the third base 113. The fourth string 134 connects the second base 112 and the fourth base 114. Therefore, the first string 131 and the third string 133 connect the same pair of diagonal corners, and the second string 132 and the fourth string 134 connect the other pair of diagonal corners.

[0019] Then please refer to Fig. 7 to Fig. 9. The four elastic units 14 are defined as a first elastic unit 141, a second elastic unit 142, a third elastic unit 143, and a fourth elastic unit 144. In this embodiment, the first elastic unit 141 connects the first string 131 and the first base 111 such that the first string 131 is tightened. The second elastic unit 142 connects the second string 132 and the second base 112 such that the second string 132 is tightened. The third elastic unit 143 connects the third string 133 and the third base 113 such that the third string 133 is tightened. The fourth elastic unit 144 connects the fourth string 134 and the fourth base 114 such that the fourth string 134 is tightened. In other words, with the four elastic units 14, the strings 13 are taut. In another embodiment, the strings 13 may be tightened or taut in any other way.

[0020] In this embodiment, the first elastic unit 141 is located in the first passage 1110 and arranged in the second direction. One end of the first string 131 extends into the first base 111 along the second direction and extends back to connect the first elastic unit 141.

[0021] Please also refer to Fig. 10 and Fig. 11. Another end of the first string 131 is tied on the fixing unit of the third base 113, and thus after the fixing unit is mounted on the main body of the third base 113, the first string 131 is securely fixed. On the other hand, in the first base 111, one end of the third string 133 is tied on the fixing unit 1112 of the first base 111. Moreover, the fixing unit 1112 comprises a mounting part 1112A and an adjusting part 1112B. The mounting part 1112A is mounted on the main body 1111 of the first base 111 and the adjusting part 1112B is mounted on the mounting part 1112A. The third string 133 is tied on both the mounting part 1112A

and the adjusting part 1112B. Precisely, after the adjusting part 1112B is detached from the mounting part 1112A, the length of the third string 133 is adjustable; after the adjusting part 1112B is mounted on the mounting part 1112A, the length of the third string 133 is secured.

[0022] Please refer to Fig. 1 and Fig. 3 again. The first roller assembly 20 is mounted on the structure 10 and connects the first base 111 and the second base 112. The first roller assembly 20 comprises a first shaft 21, a first movable unit 22, a first roller 23, and a first rerolling unit 24.

[0023] Please also refer to Figs. 12 and 13. The first movable unit 22 is mounted on the structure 10 and is capable of moving in the second direction. In this embodiment, two ends of the first movable unit 22 are connected to the two guiding rails 12 respectively. Precisely, the first movable unit 22 comprises a bar 221 and two guiding pieces 222. The bar 221 may be configured as a handle. The first string 131 and the second string 132 pass through the bar 221 of the first movable unit 22. The two guiding pieces 222 are mounted on two ends of the bar 221 respectively and movably connected to the two guiding rails 12 respectively. Each one of the guiding pieces 222 extends in the first direction and into the groove 120 of the corresponding guiding rail 12, which guides the movement of the guiding pieces 222.

[0024] Please refer to Fig. 1 to Fig. 4 and 14. The first roller 23 is rolled on the first shaft 21. Precisely, the first roller 23 comprises two first edges parallel with the first direction. One of the first edges is mounted on the first shaft 21 and the other first edge is mounted on the bar 221 of the first movable unit 22. The first rerolling unit 24 is mounted on the first shaft 21. In this embodiment, the first rerolling unit 24 is mounted in the first shaft 21 and secured on the first base 111, but it is not limited thereto. The first rerolling unit 24 is configured to roll the first roller 23 on the first shaft 21. Please also refer to Fig. 7. In this embodiment, the first rerolling unit 24 may be a coil spring. Therefore, the user can unroll the first roller 23 via the first movable unit 22, and the tightened first string 131 and second string 132 clamp the first movable unit 22 such that the first movable unit 22 can stop at wherever the user releases the first movable unit 22. In other words, the frictions between two of the first string 131 and the second string 132 clamp the movable unit 22, and the first movable unit 22 cannot move without external force. With the first rerolling unit 24, if the user pushes the first roller 23 slightly, the force of the rerolling unit may prevail over the friction between the first movable unit 22 and the first string 131 and second string 132, so the first roller 23 is capable of rerolling back on the first shaft 21.

[0025] The structure of the second roller assembly 30 is almost the same as the first roller assembly 20. For example, the second roller assembly 30 is also mounted on the structure 10. Precisely, the second roller assembly 30 is connected to the two guiding rails 12 as the first roller assembly 20, then both the first roller assembly 20

and the second roller assembly 30 is mounted on the window; however, it is not limited thereto. The second roller assembly 30 comprises a second shaft 31, a second movable unit 32, a second roller 33, and a second rerolling unit 34.

[0026] Two ends of the second shaft 31 are respectively mounted on the main body of the fourth base 114 and the main body of the third base 113. The second movable unit 32 is mounted on the structure 10 and is capable of moving in the second direction. Precisely, two ends of the second movable unit 32 are movably connected to the two guiding rails 12 of the structure 10 respectively. The third string 133 and the fourth string 134 pass through the bar 221 of the second movable unit 32. The second roller 33 is rolled on the second shaft 31 and has two second edges. The two second edges are parallel with the first direction. One of the second edges is mounted on the second shaft 31 and the other second edge is mounted on the second movable unit 32. The second rerolling unit 34 is mounted on the second shaft 31. In this embodiment, the first rerolling unit 24 is mounted in the first shaft 21 and secured on the first base 111, but it is not limited thereto. The second rerolling unit 34 is configured to roll the second roller 33 on the second shaft 31. With the third string 133 and the fourth string 134 tightened, the third string 133 and the fourth string 134 clamp the second movable unit 32, and thus the second movable unit 32 can stop at wherever the user releases the second movable unit 32.

[0027] One of the differences between the first roller assembly 20 and the second roller assembly 30 is that the first roller 23 is made of blackout fabric but the second roller 33 is made of an insect screen which allows air to pass through. In this embodiment, the first roller 23 is located above the second roller 33, so the sunlight can be shaded in any time. On the other hand, the first roller assembly 20 and the second roller assembly 30 are arranged horizontally, so the first movable unit 22 and the second movable unit 23 is moved uprightly. In another embodiment, the second roller assembly 30 may be disposed above the first roller assembly 20, i.e., the blackout fabric may locate lower than the insect screen.

[0028] Please refer to Fig. 14. Another difference between the first roller assembly 20 and the second roller assembly 30 is that the bar 221 of the first movable unit 22 forms a board portion 2210 but the bar of the second movable unit 32 forms a recess portion 320. The board portion 2210 and the recess portion 320 extend in the first direction. When the first roller assembly 20 and the second roller assembly 30 contact each other, the board portion 2210 extends into the recess portion 320 and thus contacts a surface of the recess portion 320. Therefore, there is no gap formed between the first roller assembly 20 and the second roller assembly 30, which also prevents the insects from entering the house.

[0029] With such structure, the roller device according to the present invention provides the first roller 23 to shade the sunlight, and the second roller 33 to allow

breeze to enter the house instead of the insects, so the user can close either one of the rollers according to needs. Besides, with the first string 131 and the second string 132 clamping the first roller assembly 20 and the third string 133 and the fourth string 134 clamping the second roller assembly 30, the first roller 23 and the second roller 33 can stop at wherever the user releases the first movable unit 22 and the second movable unit 32.

Claims

1. A roller device for a window, **characterized in that** the roller device comprises:

a structure (10) mounted on the window and comprising:

four bases (11) located on corners of the structure (10), the four bases (11) defined as a first base (111), a second base (112), a third base (113), and a fourth base (114); a first direction parallel with a direction from the first base (111) to the second base (112);

a second direction perpendicular to the first direction; and

a first string (131) connecting the first base (111) and the third base (113);

a second string (132) connecting the second base (112) and the fourth base (114);

a third string (133) connecting the first base (111) and the third base (113); and

a fourth string (134) connecting the second base (112) and the fourth base (114);

a first roller assembly (20) mounted on the structure (10) and comprising:

a first shaft (21), two ends of the first shaft (21) respectively mounted on the first base (111) and the second base (112);

a first movable unit (22) mounted on the structure (10) and being capable of moving in the second direction; the first string (131) and the second string (132) passing through the first movable unit (22);

a first roller (23) rolled on the first shaft (21), the first roller (23) having:

two first edges parallel with the first direction, one of the first edges mounted on the first shaft (21) and the other one of the first edges mounted on the first movable unit (22); and

a first rerolling unit (24) mounted on the first shaft (21) and configured to roll the first roller (23) on the first shaft (21); and

a second roller assembly (30) mounted on the structure (10) and comprising:

a second shaft (31), two ends of the second shaft (31) respectively mounted on the fourth base (114) and the third base (113); a second movable unit (32) mounted on the structure (10) and being capable of moving in the second direction; the third string (133) and the fourth string (134) passing through the second movable unit (32);

a second roller (33) rolled on the second shaft (31), the second roller (33) having two second edges parallel with the first direction, one of the second edges mounted on the second shaft (31) and the other one of the second edges mounted on the second movable unit (32);

a second rerolling unit (34) mounted on the second shaft (31) and configured to roll the second roller (33) on the second shaft (31);

wherein the first string (131) and the second string (132) are tightened such that the first string (131) and the second string (132) clamp the first movable unit (22), and the third string (133) and the fourth string (134) are tightened such that the third string (133) and the fourth string (134) clamp the second movable unit (32).

2. The roller device for a window as claimed in claim 1, wherein the structure (10) further comprises: a first elastic unit (141) connecting the first string (131) and the first base (111), such that the first string (131) being tightened.

3. The roller device for a window as claimed in claim 2, wherein:

the first base (111) forms a first passage (1110) in the second direction;

the first elastic unit (141) is located in the first passage (1110); and

the first string (131) extends into the first base (111) along the second direction and extends back to connect the first elastic unit (141).

4. The roller device for a window as claimed in any one of claims 1 to 3, wherein the first base (111) comprises:

a main body (1111), the first shaft (21) and the first elastic unit (141) mounted on the main body (1111); and

a fixing unit (1112) detachably mounted on the main body (1111); the third string (133) tied on the fixing unit (1112).

5. The roller device for a window as claimed in any one of claims 1 to 4, wherein the first direction is horizontal and the second direction is upright.
6. The roller device for a window as claimed in any one of claims 1 to 4, wherein:
- the first roller (23) is made of blackout fabric; and the second roller (33) is made of insect screen which allows air to pass through.
7. The roller device for a window as claimed in claim 5, wherein:
- the first roller (23) is located above the second roller (33) and is made of blackout fabric; and the second roller (33) is made of an insect screen.
8. The roller device for a window as claimed in any one of claims 1 to 7, wherein:
- the structure (10) further comprises:
two guiding rails (12), one of the two guiding rails (12) connecting the first base (111) and the fourth base (114), the other one of the guiding rails (12) connecting the second base (112) and the third base (113); and
two ends of each one of the first movable unit (22) and the second movable unit (32) are movably connected to the two guiding rails (12) respectively.
9. The roller device for a window as claimed in claim 8, wherein the first movable unit (22) comprises:
- a bar (221), one of the first edges of the first roller (23) mounted on the bar (221); and
two guiding pieces (222) mounted on two ends of the bar (221) respectively and movably connected to the two guiding rails (12) respectively.
10. The roller device for a window as claimed in any one of claims 1 to 9, wherein:
- the first movable unit (22) forms a board portion (2210) extending in the first direction; and
the second movable unit (32) forms a recess portion (320) extending in the first direction, the board portion (2210) of the first movable unit (22) selectively contacting a surface of the second movable unit (32).

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

1. A roller device for a window, characterized in that

the roller device comprises:

a structure (10) mounted on the window and comprising:

four bases (11) located on corners of the structure (10), the four bases (11) defined as a first base (111), a second base (112), a third base (113), and a fourth base (114); a first direction parallel with a direction from the first base (111) to the second base (112); a second direction perpendicular to the first direction; and
a first string (131) connecting the first base (111) and the third base (113);
a second string (132) connecting the second base (112) and the fourth base (114);
a third string (133) connecting the first base (111) and the third base (113); and
a fourth string (134) connecting the second base (112) and the fourth base (114);

a blind assembly (20) configured to shade the sunlight, mounted on the structure (10), and comprising:

a first shaft (21), two ends of the first shaft (21) respectively mounted on the first base (111) and the second base (112);
a first movable unit (22) mounted on the structure (10) and being capable of moving in the second direction; the first string (131) and the second string (132) passing through the first movable unit (22);
a first roller (23) rolled on the first shaft (21), the first roller (23) having:
two first edges parallel with the first direction, one of the first edges mounted on the first shaft (21) and the other one of the first edges mounted on the first movable unit (22); and
a first rerolling unit (24) mounted on the first shaft (21) and configured to roll the first roller (23) on the first shaft (21); and
a screen assembly (30) configured to prevent the insects from entering the house, mounted on the structure (10), and comprising:

a second shaft (31), two ends of the second shaft (31) respectively mounted on the fourth base (114) and the third base (113);
a second movable unit (32) mounted on the structure (10) and being capable of moving in the second direction; the third string (133) and the fourth string

(134) passing through the second movable unit (32);
 a second roller (33) rolled on the second shaft (31), the second roller (33) having
 two second edges parallel with the first direction, one of the second edges mounted on the second shaft (31) and the other one of the second edges mounted on the second movable unit (32);
 a second rerolling unit (34) mounted on the second shaft (31) and configured to roll the second roller (33) on the second shaft (31);

wherein the first string (131) and the second string (132) are tightened such that the first string (131) and the second string (132) clamp the first movable unit (22), and the third string (133) and the fourth string (134) are tightened such that the third string (133) and the fourth string (134) clamp the second movable unit (32).

2. The roller device for a window as claimed in claim 1, wherein the structure (10) further comprises:
 a first elastic unit (141) connecting the first string (131) and the first base (111), such that the first string (131) is tightened.

3. The roller device for a window as claimed in claim 2, wherein:

the first base (111) forms a first passage (1110) in the second direction;
 the first elastic unit (141) is located in the first passage (1110); and
 the first string (131) extends into the first base (111) along the second direction and extends back to connect the first elastic unit (141).

4. The roller device for a window as claimed in any one of claims 1 to 3, wherein the first base (111) comprises:

a main body (1111), the first shaft (21) and the first elastic unit (141) mounted on the main body (1111); and
 a fixing unit (1112) detachably mounted on the main body (1111); the third string (133) tied on the fixing unit (1112).

5. The roller device for a window as claimed in any one of claims 1 to 4, wherein the first direction is horizontal and the second direction is upright.

6. The roller device for a window as claimed in any one of claims 1 to 4, wherein:

the first roller (23) is made of blackout fabric; and the second roller (33) is made of insect screen which allows air to pass through.

7. The roller device for a window as claimed in claim 5, wherein:

the first roller (23) is located above the second roller (33) and is made of blackout fabric; and the second roller (33) is made of an insect screen.

8. The roller device for a window as claimed in any one of claims 1 to 7, wherein:

the structure (10) further comprises:
 two guiding rails (12), one of the two guiding rails (12) connecting the first base (111) and the fourth base (114), the other one of the guiding rails (12) connecting the second base (112) and the third base (113); and
 two ends of each one of the first movable unit (22) and the second movable unit (32) are movably connected to the two guiding rails (12) respectively.

9. The roller device for a window as claimed in claim 8, wherein the first movable unit (22) comprises:

a bar (221), one of the first edges of the first roller (23) mounted on the bar (221); and
 two guiding pieces (222) mounted on two ends of the bar (221) respectively and movably connected to the two guiding rails (12) respectively.

10. The roller device for a window as claimed in any one of claims 1 to 9, wherein:

the first movable unit (22) forms a board portion (2210) extending in the first direction; and
 the second movable unit (32) forms a recess portion (320) extending in the first direction, the board portion (2210) of the first movable unit (22) selectively contacting a surface of the second movable unit (32).

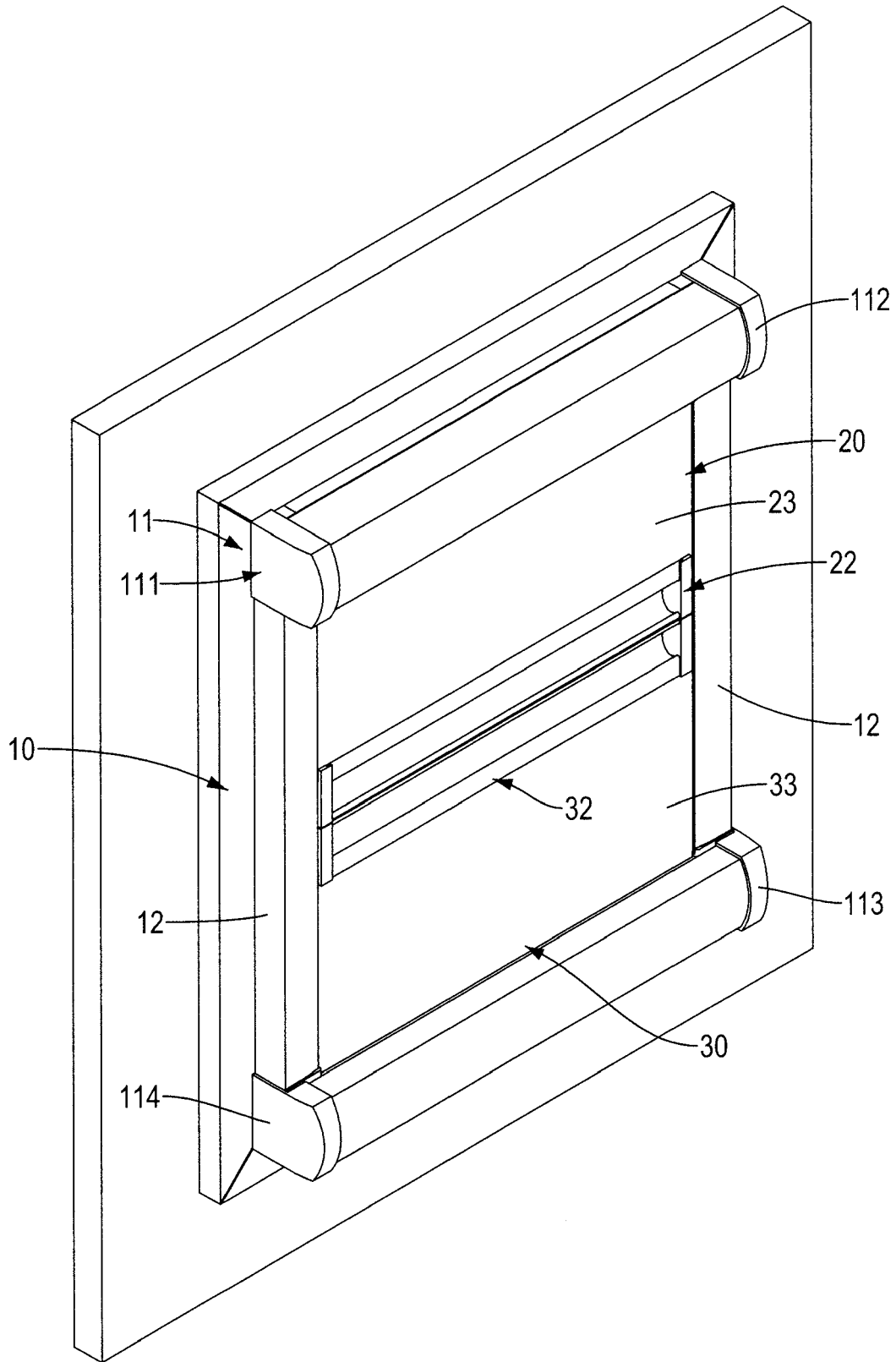


FIG. 1

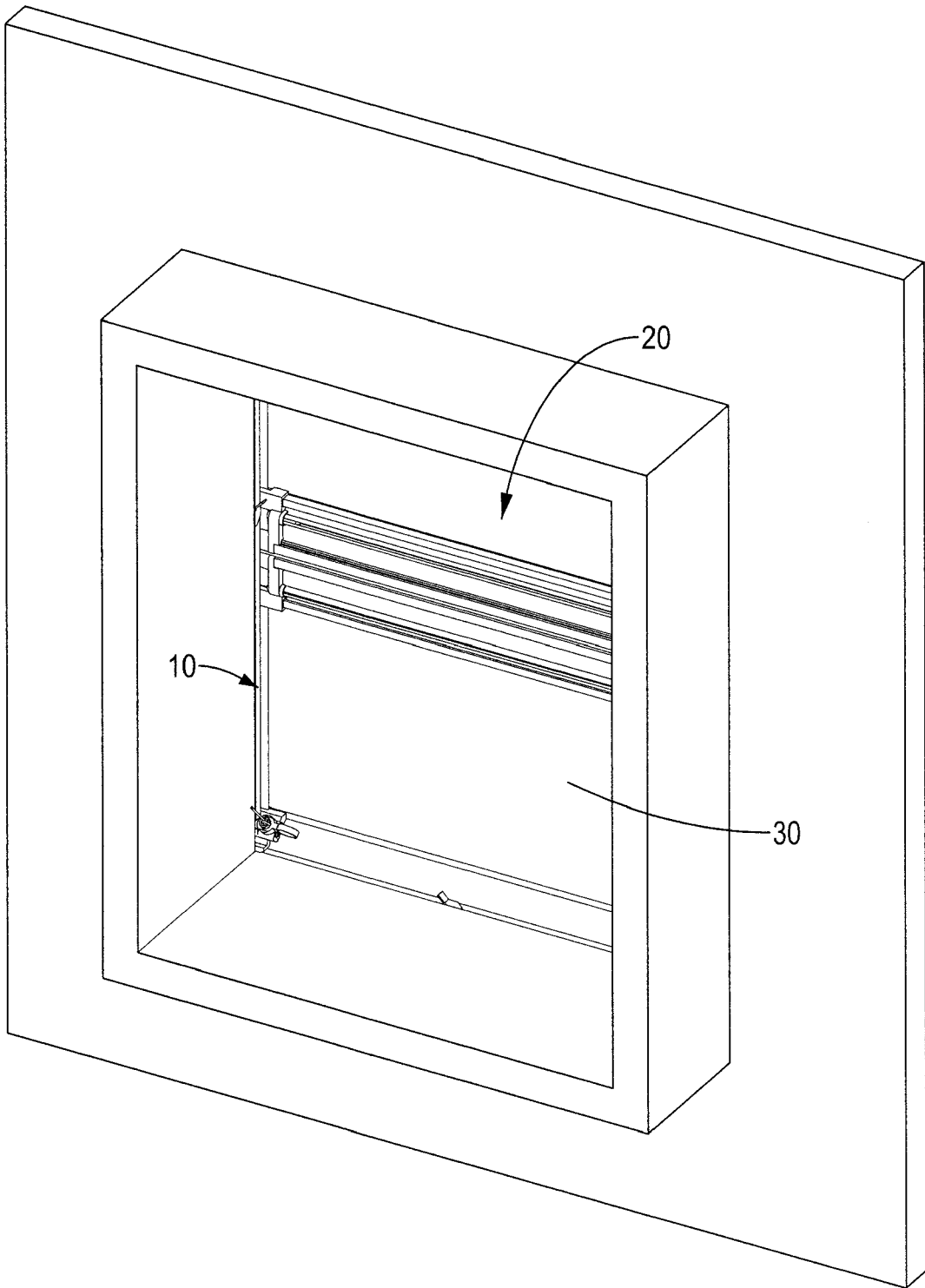


FIG. 2

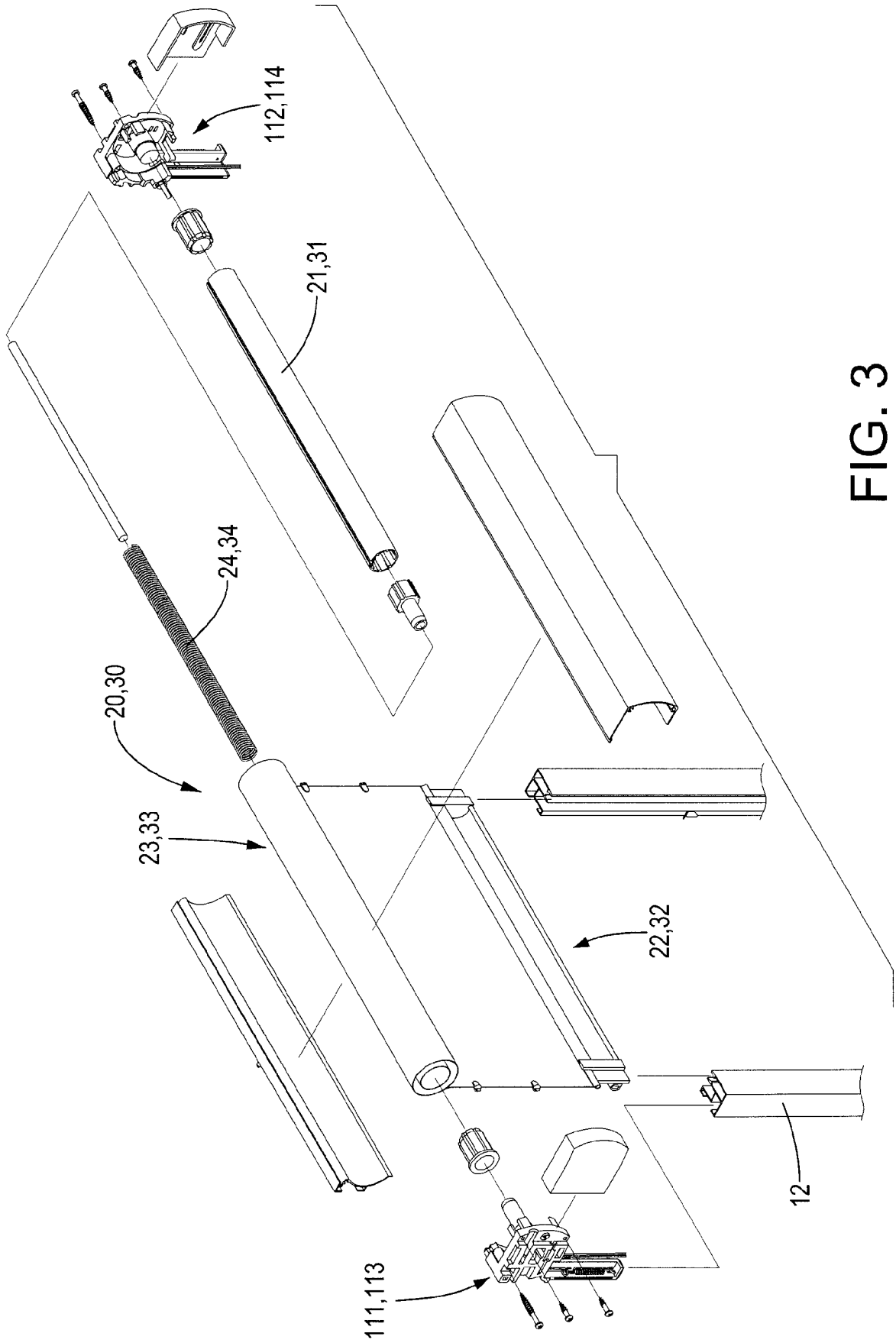


FIG. 3

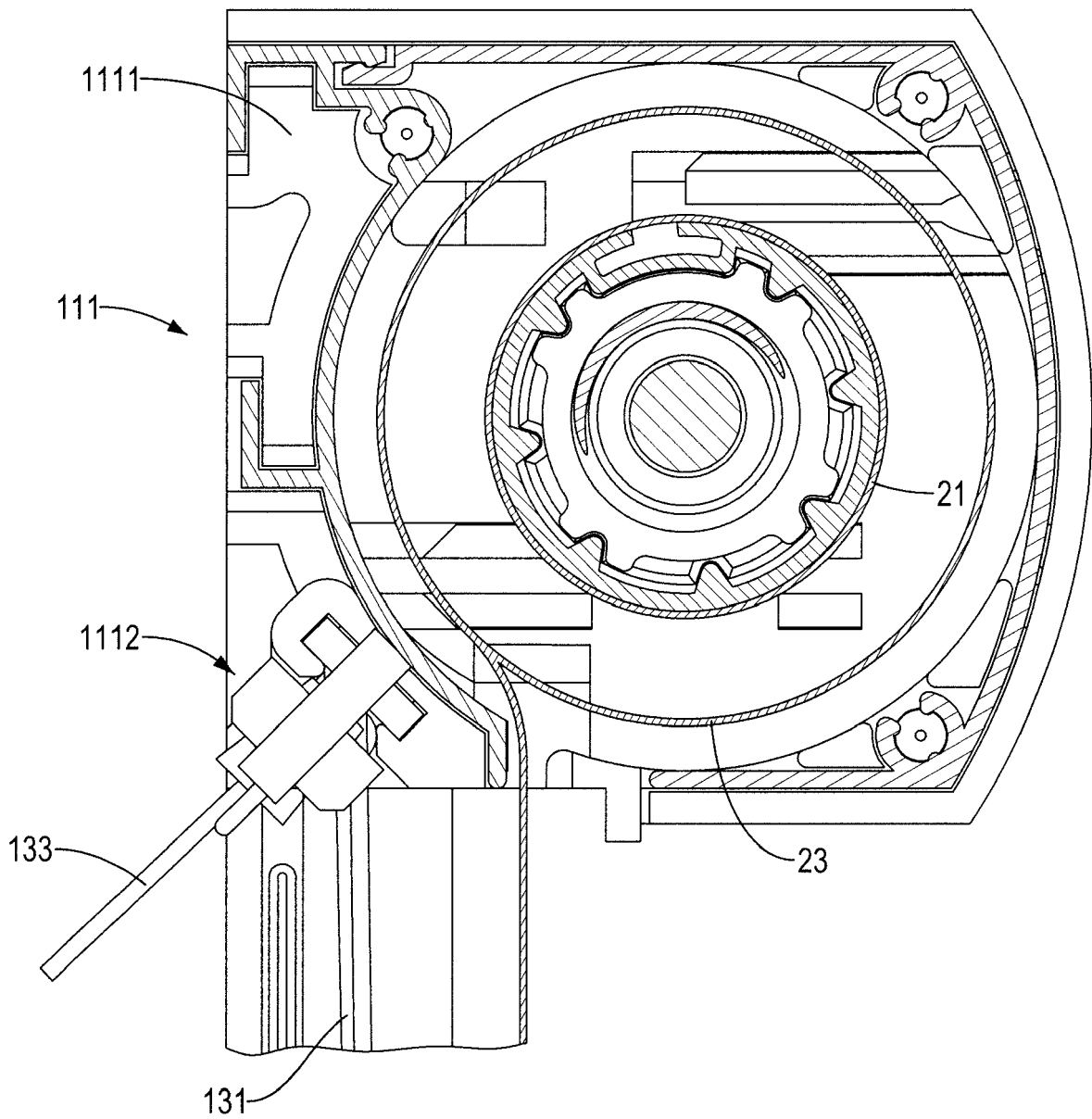


FIG. 4

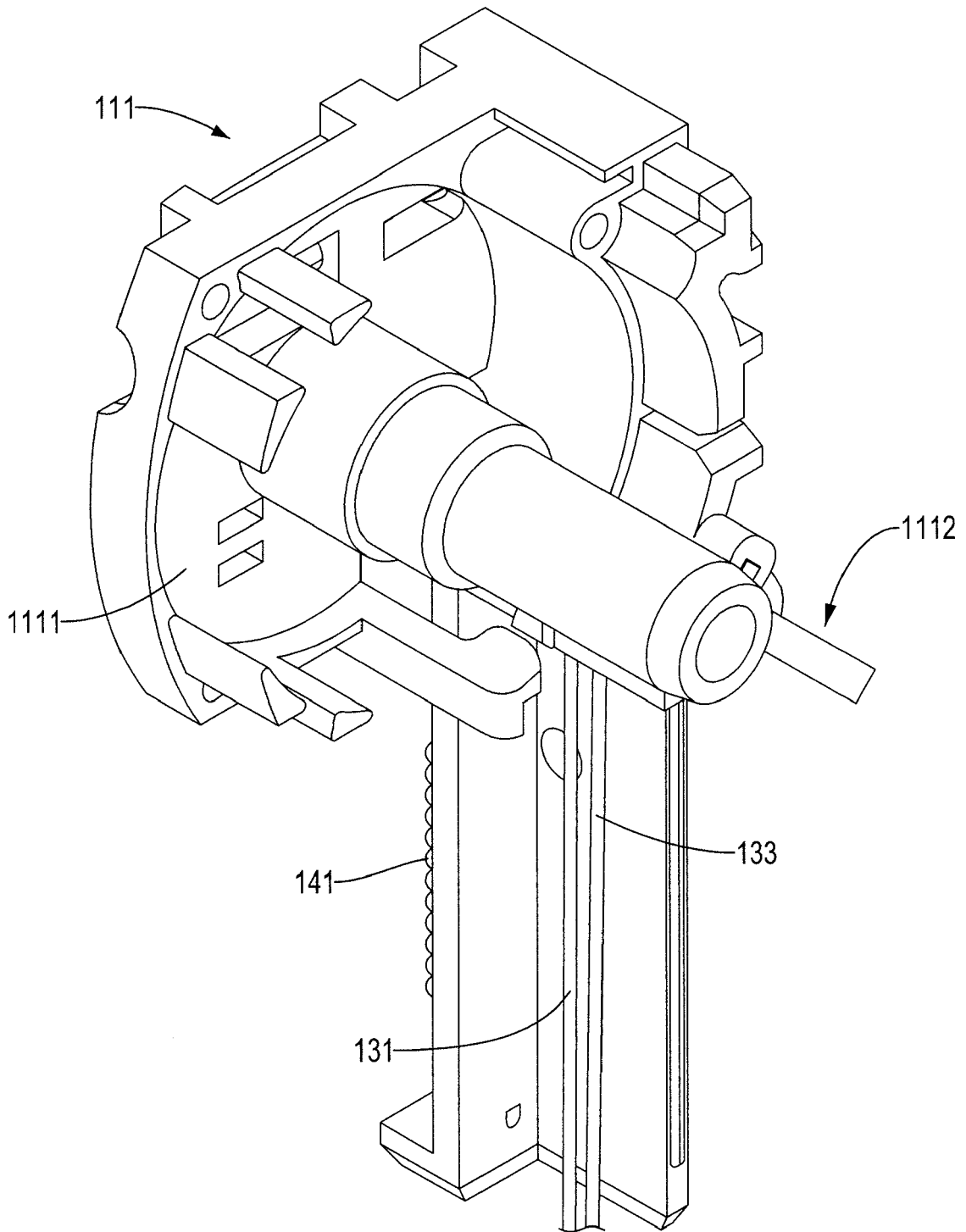


FIG. 5

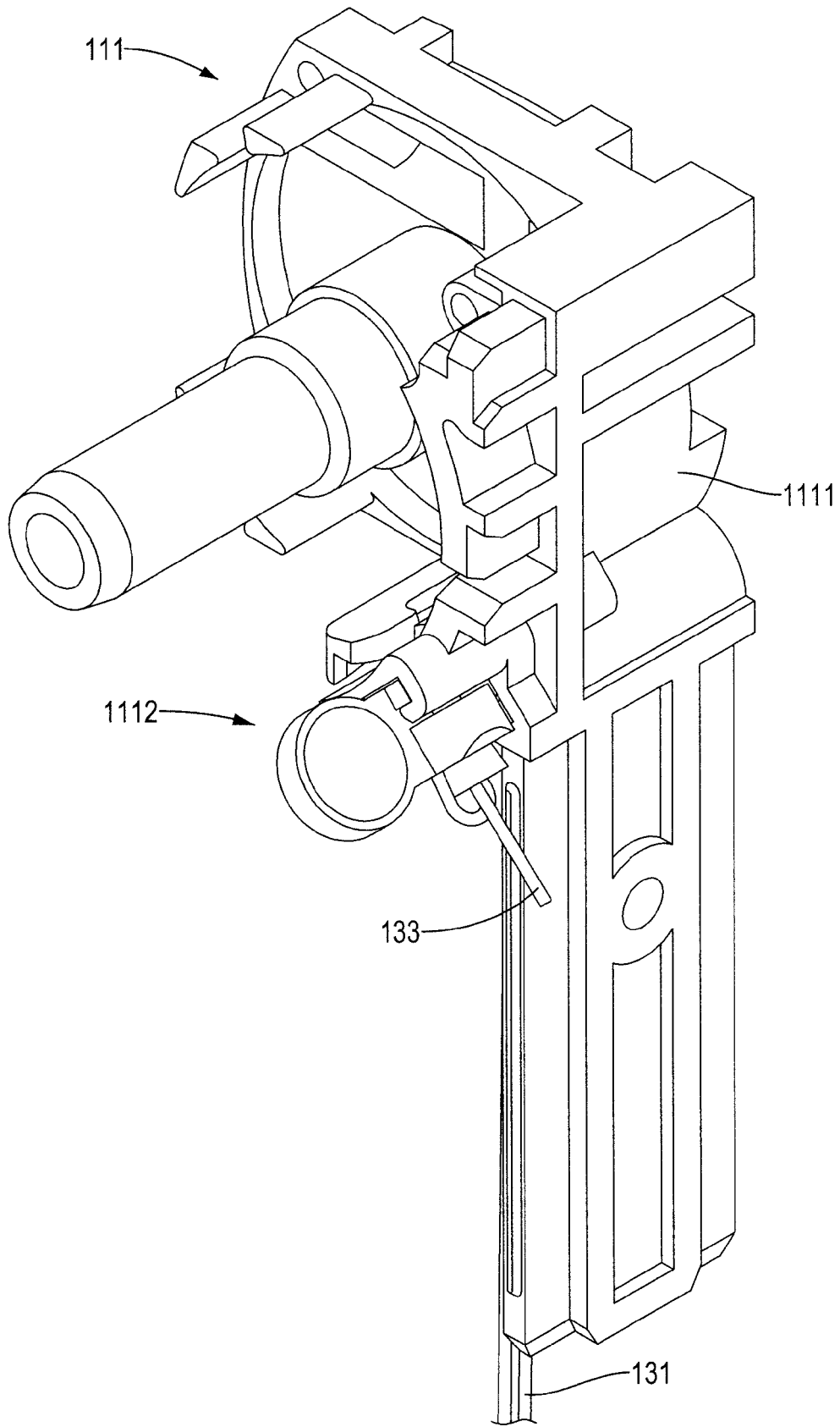


FIG. 6

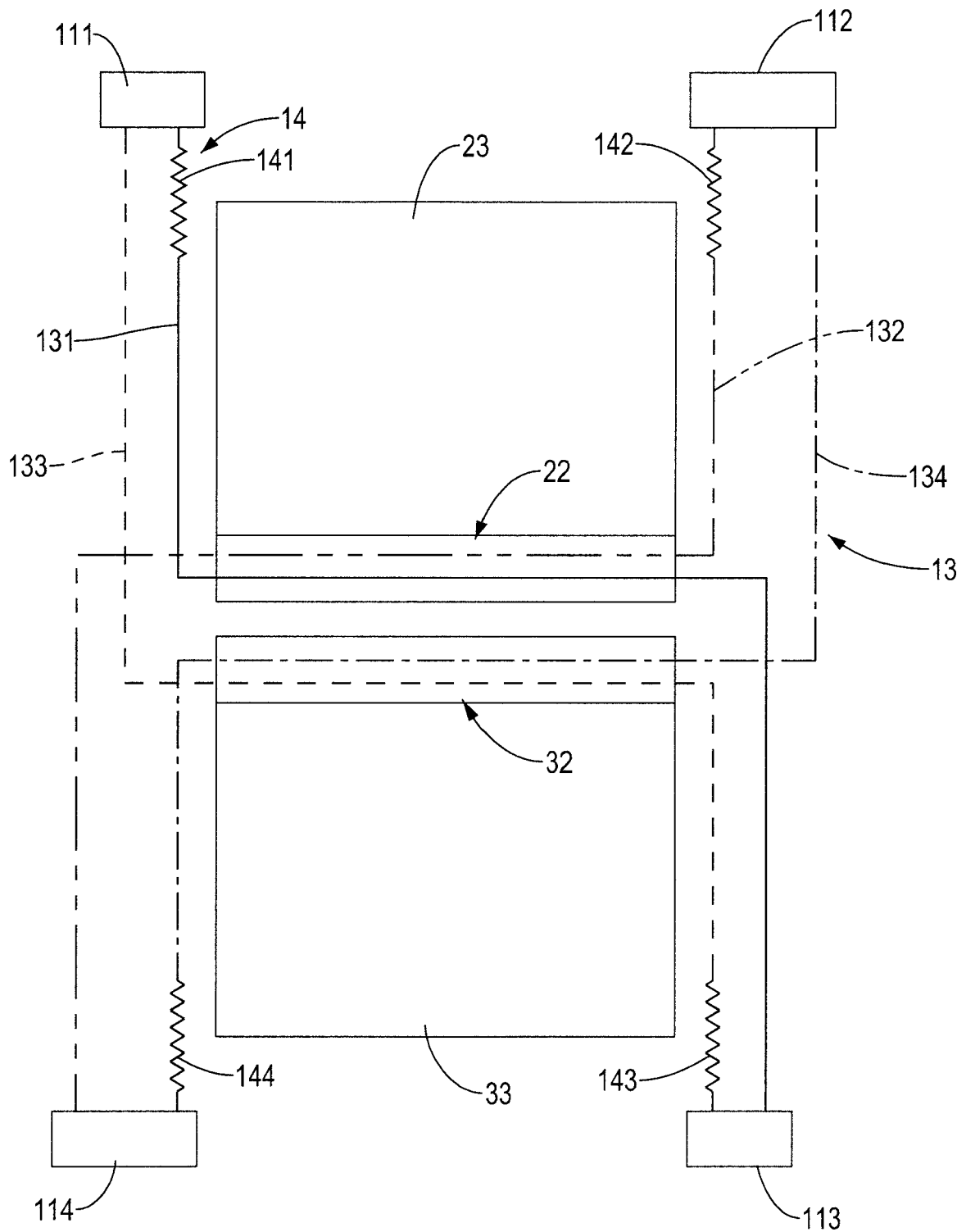


FIG. 7

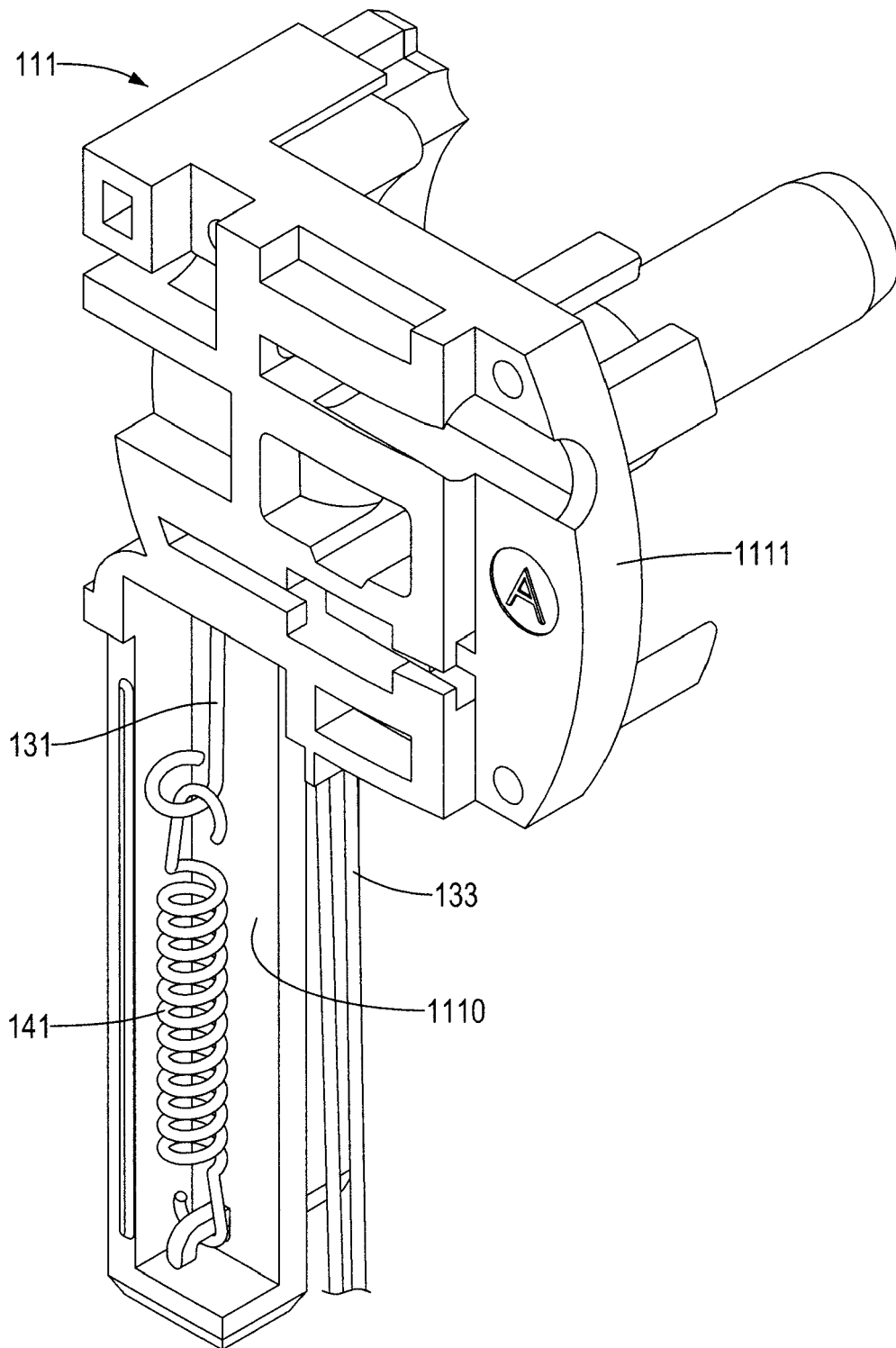


FIG. 8

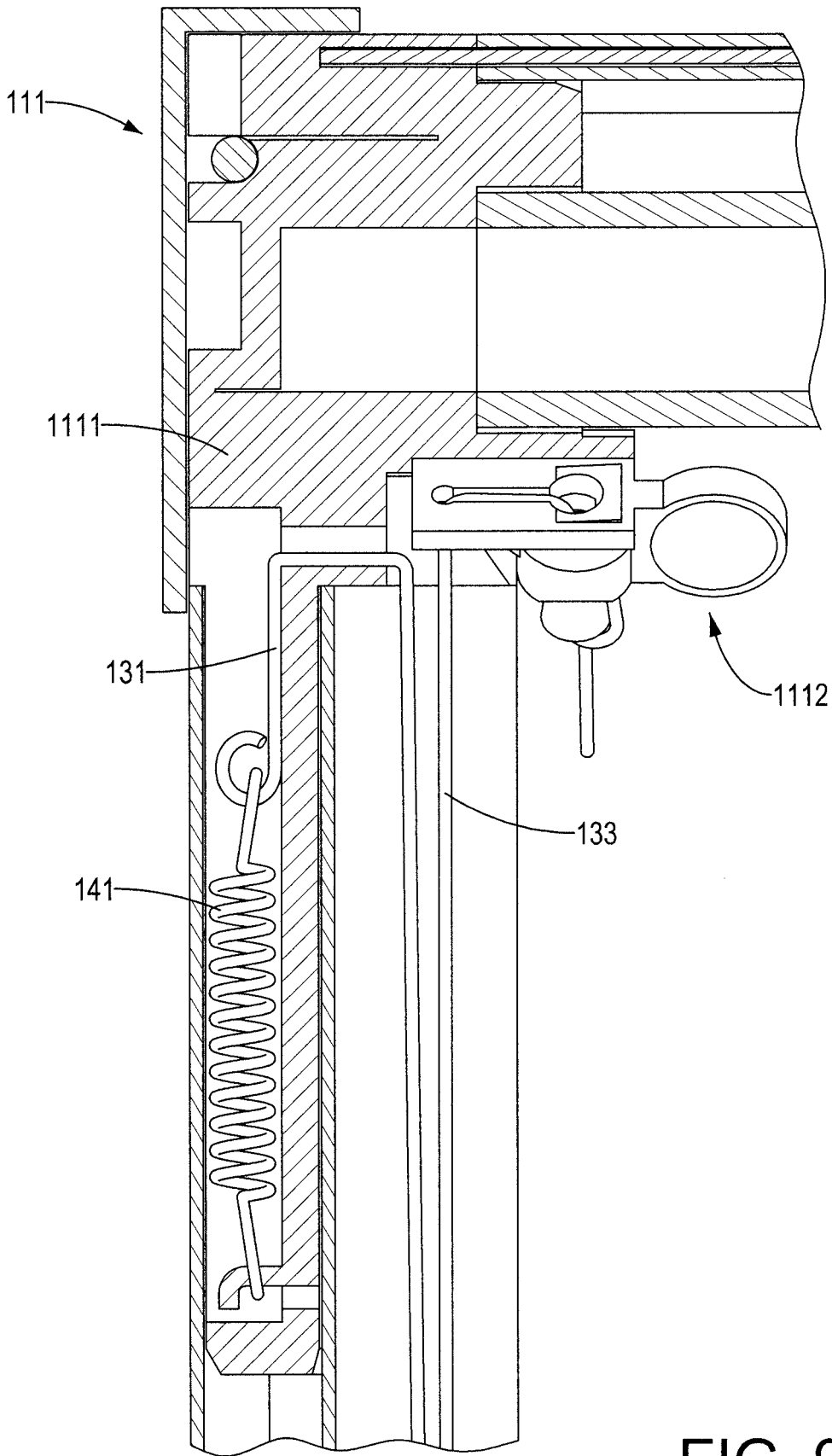


FIG. 9

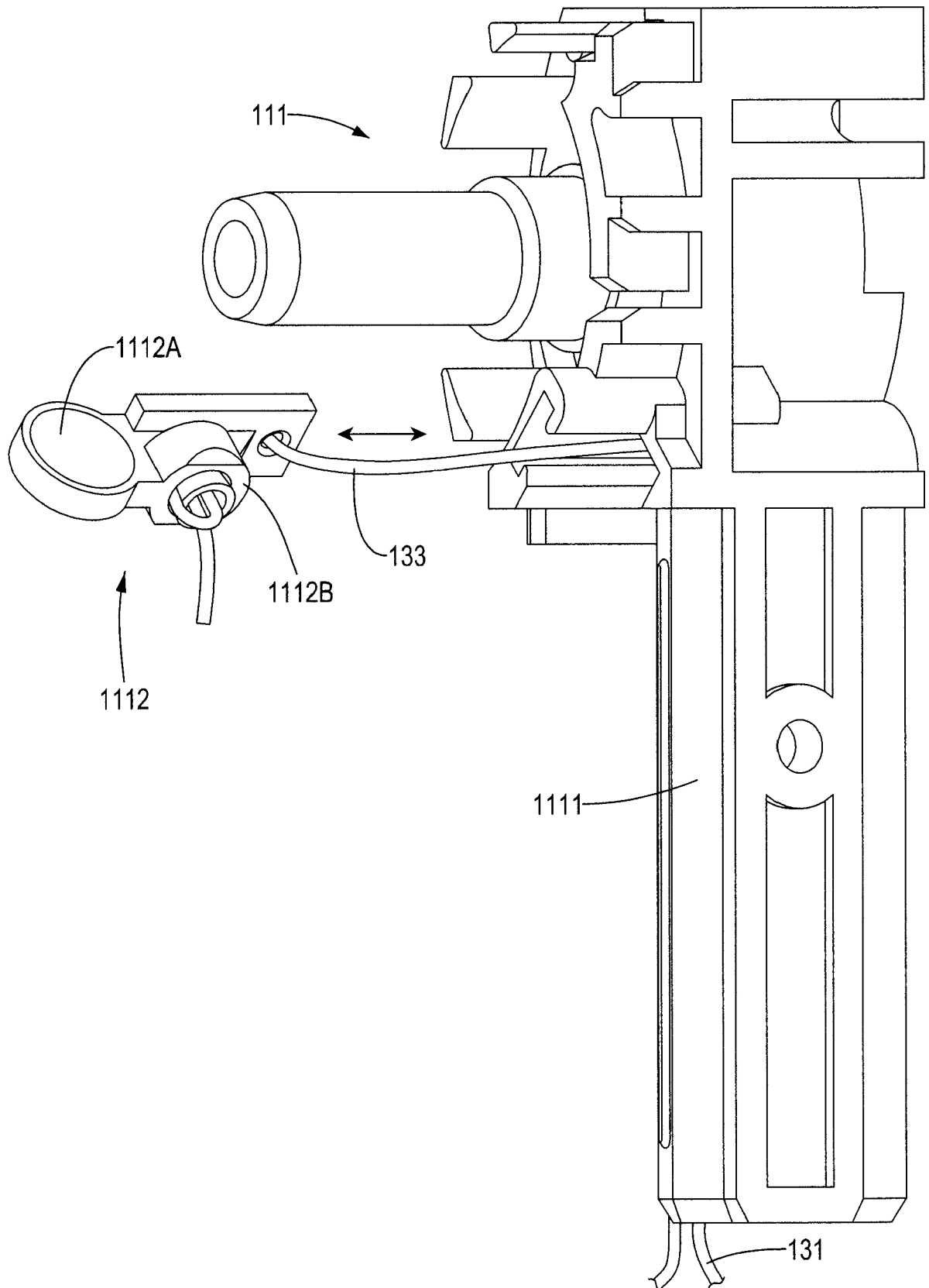


FIG. 10

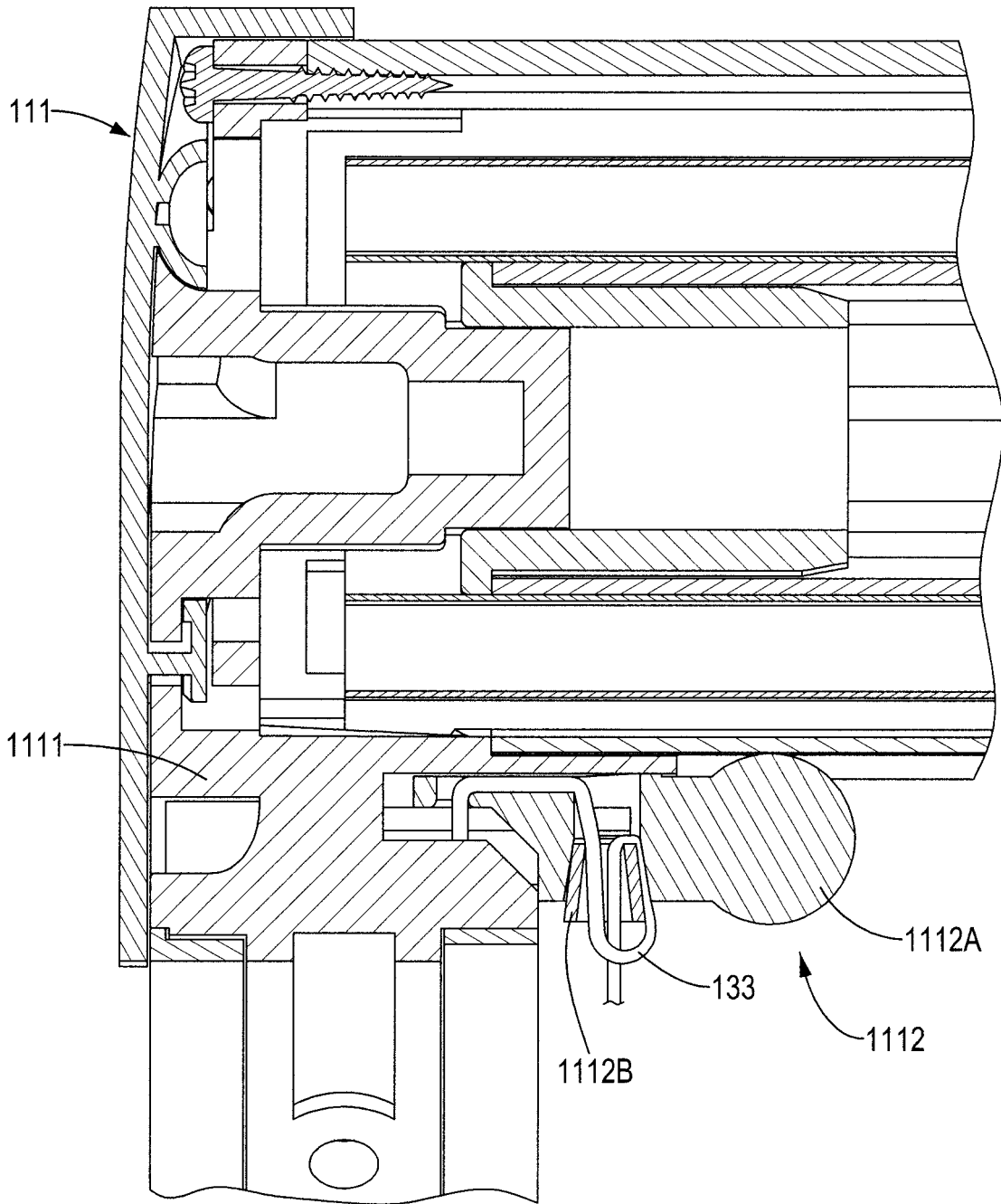


FIG. 11

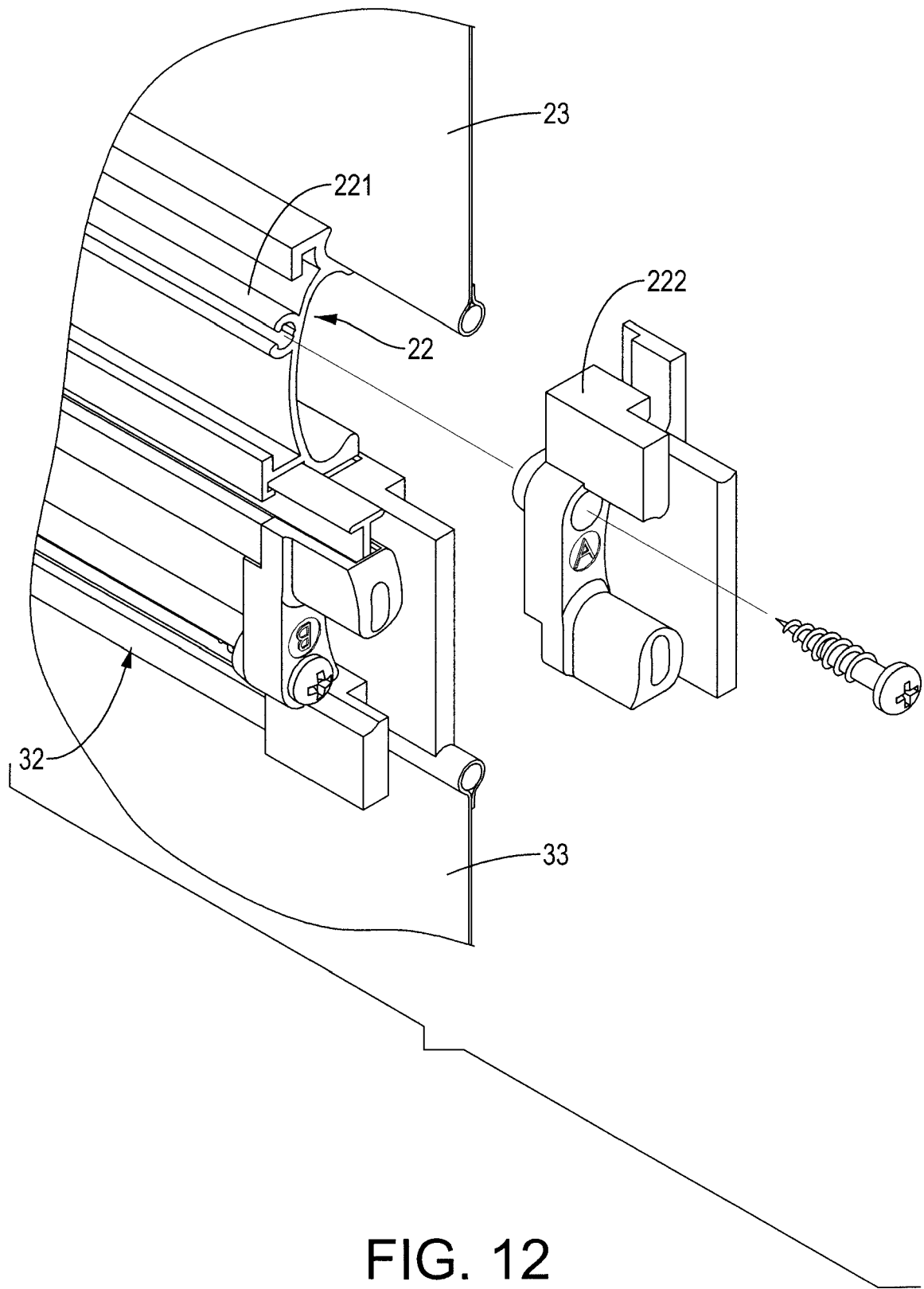


FIG. 12

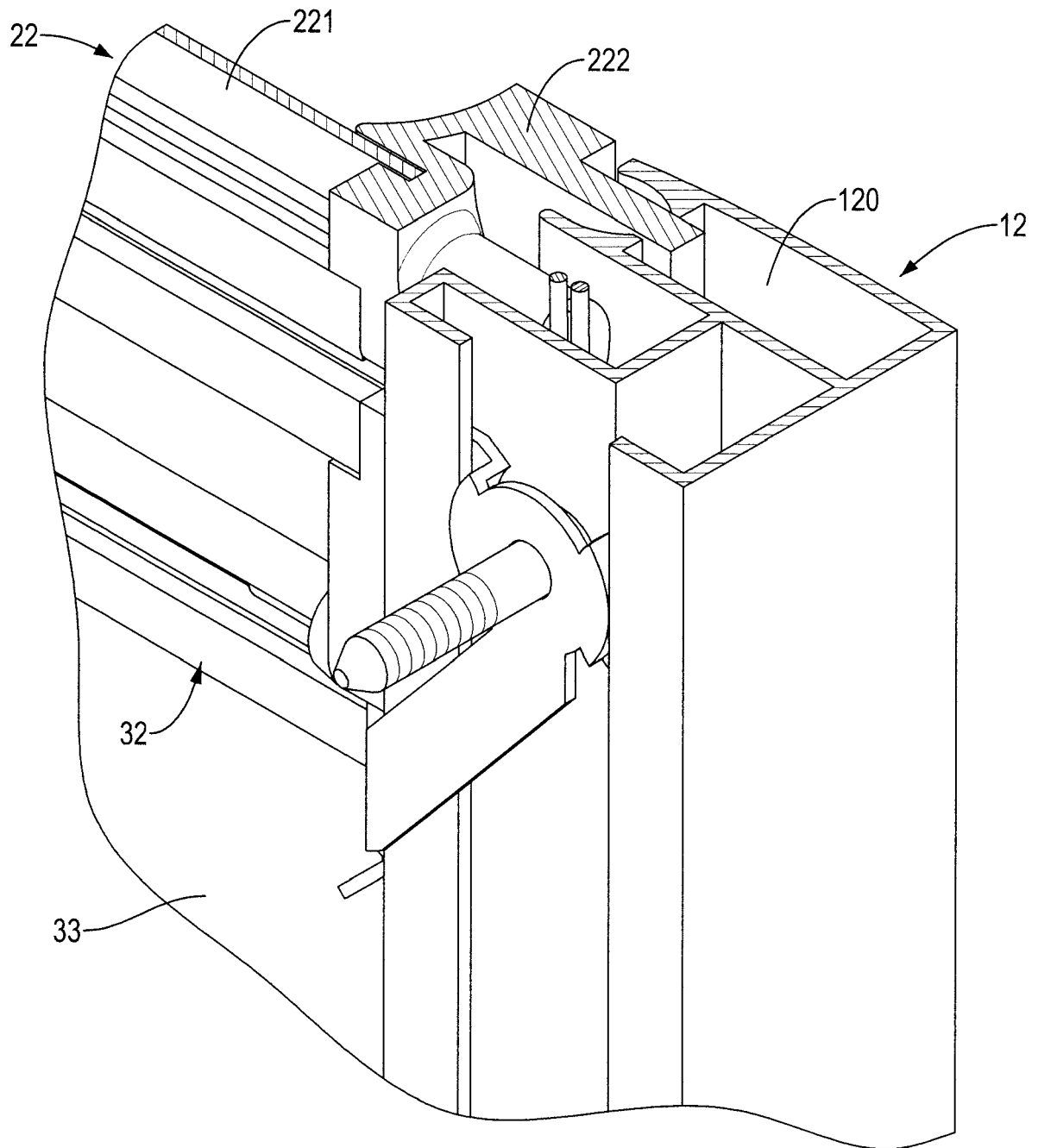


FIG. 13

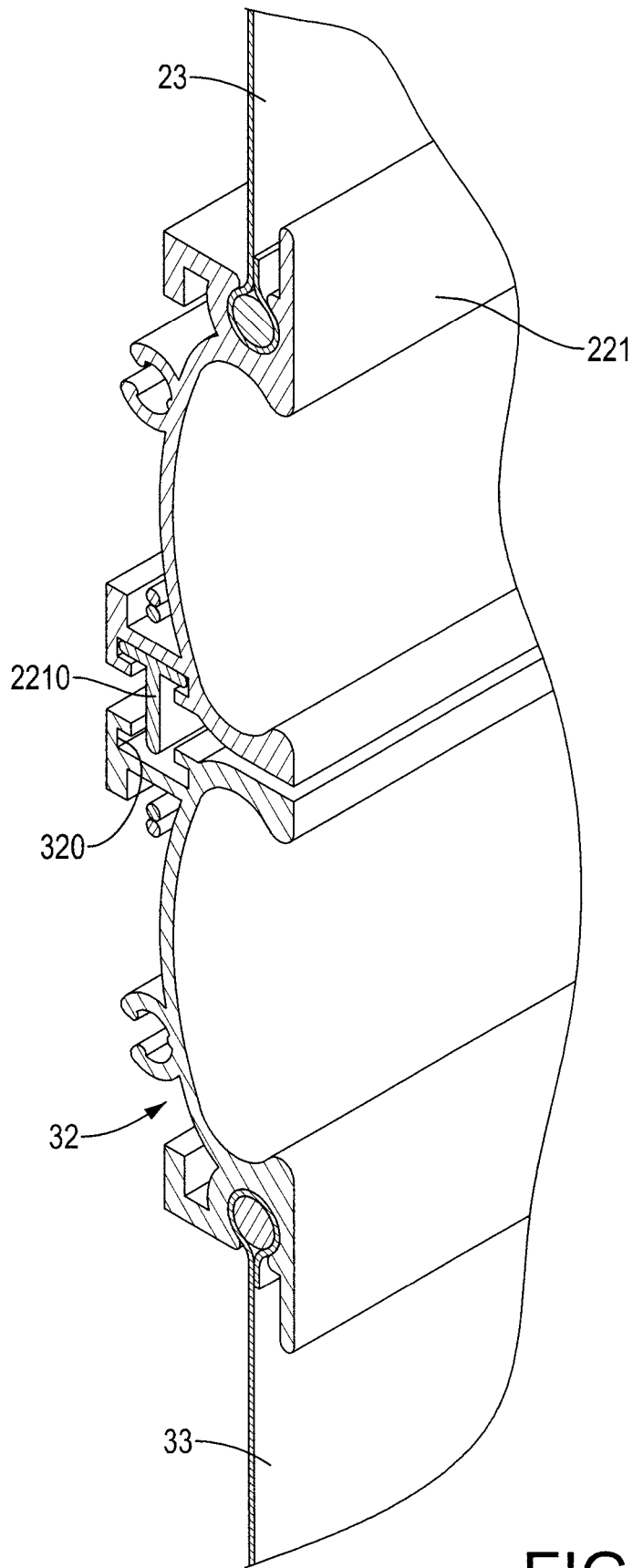


FIG. 14



EUROPEAN SEARCH REPORT

Application Number
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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	US 3 386 489 A (DENTON JAMES B ET AL) 4 June 1968 (1968-06-04) * figures 1,4,5 * -----	1-10	INV. E06B9/42 E06B9/54 E06B9/60 E06B9/66
A	CA 3 073 002 A1 (PAPADOPOULOS ARGYRIOS [GR]) 29 August 2019 (2019-08-29) * figure 2 * -----	1-10	
A	CN 216 381 172 U (LONGKOU YONGAN CAR WINDOW LTD COMPANY) 26 April 2022 (2022-04-26) * the whole document * -----	1-10	
			TECHNICAL FIELDS SEARCHED (IPC)
			E06B
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 20 December 2022	Examiner Bourgoin, J
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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 22 18 2174

5 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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20-12-2022

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 3386489	A	04-06-1968	NONE

CA 3073002	A1	29-08-2019	CA 3073002 A1
			29-08-2019
			EP 3596296 A1
			22-01-2020
			ES 2903288 T3
			31-03-2022
			HR P20212026 T1
			01-04-2022
			HU E056987 T2
			28-04-2022
			PL 3596296 T3
			28-03-2022
			PT 3596296 T
			29-12-2021
			RS 62777 B1
			31-01-2022
			US 2020115957 A1
			16-04-2020
			WO 2019162709 A1
			29-08-2019

CN 216381172	U	26-04-2022	NONE

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82