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(72) Inventors:
• **HENDRIKS, Wouter**
7548 AX Enschede (NL)
• **NIJLAND, Jochem**
7555 LC Hengelo (NL)
• **ESSINK, Ike**
7641HV Wierden (NL)

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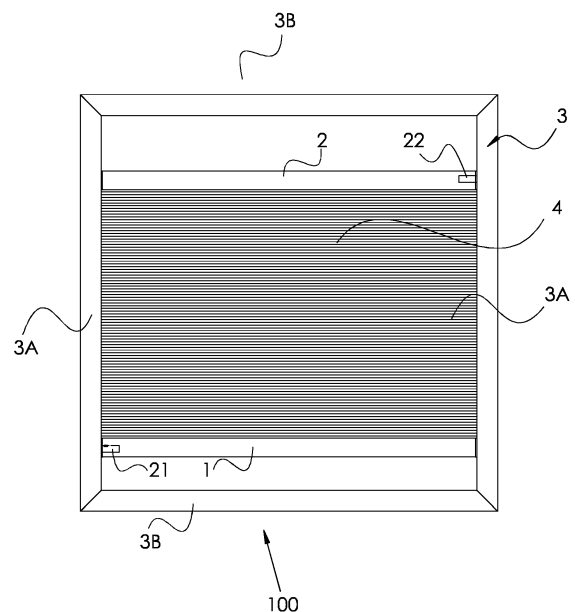
(74) Representative: **Mink-Lindenburg, Charlotte**
Hildegard
Octrooibureau Mink B.V.
P.O. Box 85658
2508 CJ The Hague (NL)

(71) Applicant: **Coulisse B.V.**
7468 DC Enter (NL)

(54) **FRAMED SCREEN WITH AT LEAST ONE MOTORIZED RAIL WITH INSTALLATION MECHANISMS**

(57) The invention relates to a screen (100), comprising a frame (3) provided with two longitudinal profiles (3A) that are to be arranged essentially in parallel, wherein guide means run in the longitudinal profiles, a retractable screen material (4) to be positioned in the frame, a motorized rail (1, 2) to which the screen material is attached and which is to be mounted movably in the longitudinal profiles, wherein in the motorized rail a drive shaft and a motor for rotating the drive shaft are accommodated, wherein engaging means are provided at both ends of the drive shaft for engaging the guide means. In both outer ends of the motorized rail an installation mechanism is accommodated, which comprises movable suspension means on which the engaging means are attached and which is provided with operating means to move and lock the suspension means into an operating position, in which the engaging means engage the guide means.

Fig. 1A



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Description

[0001] The present invention relates to a screen, such as a window covering comprising:

a frame provided with two longitudinal profiles that are to be arranged essentially in parallel;
 guide means running in the longitudinal profiles;
 a retractable screen material to be positioned in the frame;
 a motorized rail to which the screen material is attached and which is to be mounted movably in the longitudinal profiles,
 wherein in the motorized rail a drive shaft and a motor for rotating the drive shaft are accommodated,
 wherein engaging means are provided at both ends of the drive shaft for engaging the guide means.

[0002] A screen according to the preamble is known in the art and is suitable for use as a window covering for many types of windows, since it can be mounted in all sorts of positions: vertical, horizontal or diagonal.

[0003] The invention has for its object to provide a screen according to the preamble that allows for easy installation by a user.

[0004] According to the invention this object is achieved by a screen according to the preamble, wherein in both outer ends of the motorized rail an installation mechanism is accommodated, which installation mechanism comprises movable suspension means on which the engaging means are attached and which is provided with operating means to put and lock the suspension means into an operating position, in which the engaging means engage the guide means.

[0005] The screen according to the present invention can be shipped disassembled, while the users can do the installation themselves. During installation first the longitudinal profiles can be arranged in position and the motorized rail can be mounted later. After installation, the locking of the suspension means prevents a user from accidentally removing the engaging means out of the operating position.

[0006] According to a first preferred embodiment the installation mechanism comprises pushing means that force the suspension means in a free position, in which the engaging means are separate from the guide means. The pushing means ensure that, during mounting of the motorized rail in the longitudinal profiles, the engaging means remain at a distance from the guide means.

[0007] According to a further preferred embodiment the installation mechanism comprises a housing and the operating means comprise a sliding element, which protrudes out of the housing in an initial position and which is accommodated in the housing in an end position in which it locks the suspension means into the operating position. In the initial position the sliding element can be easily accessed by the user after the motorized rail has been mounted in the frame. Once the sliding element is in

the end position it is no longer accessible and consequently a one-time operation of the sliding element is ensured.

[0008] In a practical preferred embodiment the suspension means comprise a suspension arm that is pivotably arranged in the installation mechanism.

[0009] In an elegant combination of the preferred embodiments the sliding element comprises an operating leg that puts and locks the suspension arm in the operating position in the end position of the sliding element.

[0010] According to a further combination of the preferred embodiments the pushing means comprise a pushing leg that is arranged on the sliding element and that forces the suspension arm into the free position in the initial position of the sliding element. Integrating the push means in the operating means allows for a compact design with fewer components that functions reliably at lower costs.

[0011] In an alternative preferred embodiment the pushing means comprise spring means. Preferably the spring means comprise a torsion spring.

[0012] In another practical elaboration of the further preferred embodiment the housing is embodied as an end cap for the motorized rail.

[0013] Preferably the engaging means comprise pinion gears and the guide means comprise racks.

[0014] In a versatile preferred embodiment the frame of the screen comprises one or two transverse profiles that connect the longitudinal profiles, e.g. to form a rectangular frame. In further variants thereof the screen material is fixed to either one of the transverse profiles. According to yet another variant the screen comprises a further rail that is to be mounted movably in the longitudinal profiles, wherein the screen material is carried by the two rails. The further rail can be a second motorized rail as well as a manually operable rail.

[0015] According to a first and second preferred embodiment the window covering is a pleated blind.

[0016] According to a third preferred embodiment the window covering is a roller blind.

[0017] According to a fourth preferred embodiment the window covering is a roman blind.

[0018] The invention will now be described in more detail with reference to the figures, in which:

Figure 1A shows a schematic front view of a first variant of a first preferred embodiment of a screen according to the invention;

Figure 1B shows a schematic front view of a second variant of the first preferred embodiment of a screen according to the invention;

Figure 1C shows a schematic front view of a third variant of the first preferred embodiment of a screen according to the invention;

Figure 2 shows a motorized rail of the screens of figures 1A-1C in exploded view;

Figure 3A schematically shows a detailed view of the top motorized rail of the screen of figure 1A with a first

variant of an installation mechanism in an initial position;

Figure 3B schematically shows the detailed view of figure 3A with said installation mechanism in an end position;

Figure 4A schematically shows a detailed view of the installation mechanism of figure 3A;

Figure 4B schematically shows a detailed front view of the installation mechanism of figure 3B;

Figure 4C schematically shows a detailed view of a second variant of the installation mechanism in an initial position;

Figure 4D schematically shows a detailed front view of the second variant of figure 4C in an end position;

Figure 4E schematically shows a detailed view of a third variant of the installation mechanism in an initial position;

Figure 4F schematically shows a detailed view of the third variant of figure 4E in an end position;

Figure 4G schematically shows a cross section of the third variant in the initial position;

Figure 4H schematically shows a cross section of the third variant in the end position;

Figure 5A shows a schematic view of a first variant of a second preferred embodiment of a screen according to the invention;

Figure 5B shows a schematic view of a second variant of a second preferred embodiment of a screen according to the invention;

Figure 6 shows a schematic view of a third preferred embodiment of a screen according to the invention;

Figure 7A shows a schematic top view of a fourth preferred embodiment of a screen according to the invention; and

Figure 7B shows a schematic bottom view of the fourth preferred of figure 7B.

[0019] The same components are designated in the different figures with the same reference numerals.

[0020] Figures 1A-1C show schematic front views of three variants of a first preferred embodiment of a screen according to the invention. Herein the screen is a window covering, more specifically a Top-Down Bottom Up (TDBU) pleated blind.

[0021] In figure 1A the screen 100 comprises a frame 3 that is provided with two longitudinal profiles 3A that are to be arranged substantially parallel. The frame further comprises two transverse profiles 3B that connect the longitudinal profiles 3A to form a rectangular frame.

[0022] A bottom rail 1 and a top rail 2 are mounted movably in the profiles 3A. At least one pleated screen material 4 is carried by the top rail 2 and the bottom rail 1. As is known in the art of tensioned pleated blinds tensioning cords run through the pleated screen material 4 and tensioning devices (not shown) for tensioning the tensioning cords can be placed in the frame.

[0023] In the first variant of figure 1A the bottom rail 1 and the top rail 2 are both motorized. Preferably the

motorized bottom rail 1 is provided with a control element 21. Preferably the motorized top rail 2 is provided with a control element 22. Guide means (shown in figures 3A and 3B) run in the longitudinal profiles 3A and engaging means (also shown in figures 3A and 3B) are provided at both ends of the motorized rail for engaging the guide means.

[0024] In the second variant shown in figure 1B in the screen 120 only the bottom rail 1 is motorized while the top rail 102 is manually operable. Thereto on the top rail 102 a handle 121 is provided.

[0025] In the third variant shown in figure 1C in the screen 130 only the top rail 2 is motorized while the bottom rail 101 is manually operable. Thereto on the bottom rail 101 a handle 111 is provided.

[0026] In figure 2 the motorized bottom rail 1 of the screen of figures 1A and 1B is shown in exploded view. It is noted that the motorized top rail 2 comprises corresponding parts.

[0027] In the motorized bottom rail 1 a drive shaft 6 and a motor 5 for rotating the drive shaft 6 are accommodated. Engaging means 9 are provided on both ends of the drive shaft 6 for engaging the guide means 8.

[0028] The motor 5 is provided with a position sensor (not shown). The position sensor is used to detect a collision. When a sudden reduction in speed is recognized, the motor is stopped. A suitable method therefor is implemented in suitable software for controlling the motor.

[0029] An example of a suitable motor is an electrical motor. An example of a suitable position sensor is a position sensing encoder. In a preferred embodiment the position sensing encoder comprises a rotary encoder connected to the drive shaft 6.

[0030] In both outer ends of the motorized bottom rail 1 an installation mechanism 10 is accommodated that is provided with movable suspension means on which the engaging means 9 are attached. The installation mechanism 10 is provided with operating means 15 to move the suspension means into an operating position, in which the engaging means 9 engage the guide means 8.

[0031] Figure 3A schematically shows a detailed view of part of figure 1A from a different viewpoint. Herein one end of the motorized top rail 2 is shown mounted in one of the longitudinal profiles 3A of the frame 3 with the engaging means 9 in a free position. For clarity part of the longitudinal profile 3A has been broken away.

[0032] Figure 3B schematically shows the engaging means 9 of figure 3A in an operating position wherein they engage on the guide means 8. In the preferred embodiments shown the engaging means comprise pinion gears 9 and the guide means comprise racks 8.

[0033] Figure 4A schematically shows a detailed view of a first variant of the installation mechanism 10 of figure 3A.

[0034] Figure 4B schematically shows a front view of the installation mechanism 10 of figure 3B.

[0035] The installation mechanism 10 comprises a

housing 11. The operating means comprise a sliding element 15 that protrudes out of the housing 11 in the initial position shown in figures 3A and 4A and that is substantially completely retracted and accommodated in the housing 11 in the end position shown in figures 3B and 4B.

[0036] The housing 11 is embodied as an end cap for the motorized rail. The housing 11 fits in the profiles 3A.

[0037] In the preferred embodiment shown the movable suspension means comprise a suspension arm 13 that is pivotably arranged in the housing 11 on a shaft 12. The suspension arm 13 is provided with a rotating end 13A and with a supporting end 13B. The engaging means 9 are attached on the supporting end 13B of the suspension arm 13.

[0038] The suspension arm 13 is pretensioned in the free position by a spring 14 that is arranged around the shaft 12 and abuts a first inner wall of the housing 11. A suitable spring is a torsion spring.

[0039] In the first variant the sliding element 15 preferably has a general wedge shape. The sliding element 15 has an operating leg 18 with a substantially oblique side 18A and a substantially straight side 18B that slides along a second inner wall of the housing 11. In the preferred embodiment shown the sliding element 15 has a substantially oblique side 18A that corresponds to the shape of an adjacent side of the suspension arm 13. The sliding element 15 further has a cavity 15A corresponding in shape to the rotating end 13A.

[0040] The sliding element 15 is provided with a longitudinal through opening 16 accommodating a longitudinal protrusion 17 present in the housing 11. The length of the opening 16 is longer than the length of the protrusion 17, so the sliding element 15 can slide from an initial position shown in figure 4A to an end position shown in figure 4B. In the upper part of the opening 16 an edge 16A is arranged to define a space in the opening with a shape corresponding to that of the protrusion 17. In the end position the protrusion 17 has passed the edge 16A and is locked in the opening 16 thereby locking the sliding element 15 in the end position. During sliding from the initial position to the end position the sliding element 15 pushes the suspension arm 13 aside (to the left in figure 4A) against the action of the spring 14 thus putting the engaging means 9 into the operating position. In the end position the suspension arm 13 rests against the correspondingly shaped adjacent oblique side 18A. The rotating end 13A rests in the cavity 15A.

[0041] Figure 4C schematically shows a detailed view of a second variant of the installation mechanism in an initial position. Figure 4D schematically shows a detailed front view of the second variant of figure 4C in an end position.

[0042] The installation mechanism 110 comprises a housing 111. The operating means comprise a sliding element 115 that protrudes out of the housing 111 in the initial position shown in figure 4C and that is substantially completely retracted and accommodated in the housing

111 in the end position shown in figure 4D.

[0043] The housing 111 is embodied as an end cap for the motorized rail. The housing 111 fits in the profiles 3A.

[0044] In the preferred embodiment shown the movable suspension means comprise a suspension arm 113 that is pivotably arranged in the housing 111 on a shaft 112. The suspension arm 113 is provided with a rotating end 113A and with a supporting end 113B. The engaging means 9 are attached on the supporting end 113B of the suspension arm 113.

[0045] In the second variant the sliding element 115 preferably has a general U shape. The sliding element 115 has a cavity 115A corresponding in shape to the rotating end 113A. The sliding element 115 has two legs: an operating leg 118 and a pushing leg 119 that slide along opposite inner walls of the housing 111. In the variant shown the pushing leg 119 has a thickened end 119A with a pushing surface that corresponds at least partly to the shape of the rotating end 113A of suspension arm 113 arranged on the shaft 112. In the initial position of the sliding element 115 shown in figure 4C the pushing leg 119 rests against the adjacent first inner wall and forces the suspension arm 113 in the free position and blocks movement thereof. The pushing leg 119 is an alternative to the torsion spring 14 of the variant 10 of figures 4A and 4B.

[0046] The operating leg 118 is provided with two grooves 116A and 116B that are spaced apart in longitudinal direction. The adjacent second inner wall of the housing 111 is provided with a ridge 117 that fits either one of the grooves 116A and 116B. In the suspension arm 113 a resilient member 114 is arranged that extends towards the adjacent second inner wall along which the operating leg 118 slides. In the initial position of the sliding element 115 shown in figure 4C the ridge 117 is accommodated in the lower groove 116B.

[0047] The sliding element 115 can slide from the initial position shown in figure 4C to the end position shown in figure 4D. During sliding from the initial position to the end position the pushing leg 119 seizes to block the suspension arm 113 and the operating leg 118 pushes the suspension arm 113 aside (to the left in figure 4D) against the action of the resilient member 114 thus moving the engaging means 9 into the operating position. In the end position the operating leg 118 moves passed the resilient member 114 and the ridge 117 is locked in the upper groove 116A thereby locking the sliding element 115 in the end position. In the end position the rotating end 113A of the suspension arm 113 also rests in the correspondingly shaped cavity 115A of the sliding member 115.

[0048] Figure 4E schematically shows a detailed view of a third variant of the installation mechanism in an initial position. Figure 4F schematically shows a detailed view of the third variant of figure 4E in an end position. Figure 4G schematically shows a cross section through plane GH of figure 4E. Figure 4H schematically shows a cross section through the plane GH of figure 4F. The installation mechanism 210 comprises a housing 211. The operating

means comprise a sliding element 215 that protrudes out of the housing 211 in the initial position shown in figures 4E and 4G and that is substantially completely retracted and accommodated in the housing 211 in the end position shown in figures 4F and 4H.

[0049] The housing 211 is embodied as an end cap for the motorized rail. The housing 211 fits in the profiles 3A.

[0050] The movable suspension means comprise a suspension arm 213 that is pivotably arranged in the housing 211 on a shaft 212. The suspension arm 213 is provided with a rotating end 213A and with a supporting end 213B. The engaging means 9 are attached on the supporting end 213B of the suspension arm 13.

[0051] In the third variant the sliding element 215 is provided with a longitudinal through opening 216 accommodating the shaft 212. The opening 216 is slotted, so the sliding element 215 can slide from the initial position shown in figure 4E to the end position shown in figure 4F. In the upper part of the opening 216 two opposite upper edges 216A are arranged to define an upper space in the opening with a shape corresponding to that of the shaft 212. In the lower part of the opening 216 two opposite edges lower 216B are arranged to define a lower space in the opening with a shape corresponding to that of the shaft 212.

[0052] In the initial position of figure 4E the shaft 212 is situated under the lower edges 216B and is locked in the lower space of opening 216 thereby locking the sliding element 215 in the initial position. In the end position of figure 4F the upper edges 216A have passed the shaft 212 that is now locked in the upper space of the opening 216 thereby locking the sliding element 215 in the end position.

[0053] In the third variant the suspension arm 213 is provided with a protrusion 213P on one side and a contact surface 213C on the opposite side, both located between the rotating end 213A and the supporting end 213B.

[0054] The sliding element 215 has a cavity 215A corresponding in shape to the suspension arm rotating end 213A. In the third variant shown the sliding element 215 has two legs: an operating leg 218 and a pushing leg 219 that slide along opposite inner walls of the housing 211. In the variant shown the pushing leg 219 has a bulging part 219A with a pushing surface that contacts the protrusion 213P in the initial position of the sliding element 215 shown in figure 4G. Consequently the pushing leg 219 forces the suspension arm 213 in the free position and blocks movement thereof. The pushing leg 219 is an alternative to the torsion spring 14 of the variant 10 of figures 4A and 4B.

[0055] The operating leg 218 is provided with an operating and locking surface 218A arranged to cooperate with the contact surface 213C on the suspension arm.

[0056] The sliding element 215 can slide from the initial position shown in figure 4G to the end position shown in figure 4H. During sliding from the initial position to the end position the pushing leg 219 seizes to block the suspen-

sion arm 213 and the operating leg 218 pushes the suspension arm 213 aside (to the left) thus moving the engaging means 9 into the operating position. In the end position the operating leg 218 is positioned between the supporting end 213B of the suspension arm and the inner side of the housing 211. The operating and locking surface 218A is in contact with the contact surface 213C. The protrusion 213P is accommodated in a recess 219R present on the pushing leg 219. In the end position the rotating end 213A of the suspension arm 113 also rests in the correspondingly shaped cavity 215A of the sliding member 115.

[0057] Figure 5A and 5B show schematic front views of two variants of a second preferred embodiment of a screen according to the invention. Herein the screen is a window covering, more specifically a pleated blind with one motorized rail. In the variant shown in figure 5A the top rail 2 is motorized. The pleated material 4 is fixed to the lower transverse profile 3C. In the variant shown in figure 5B the bottom rail 1 is motorized. The pleated material 4 is fixed to the upper transverse profile 3C.

[0058] Figure 6 shows a schematic view of a third preferred embodiment of a screen according to the invention. In the third preferred embodiment the screen 300 is a window covering, more specifically a spring-operated roller blind with a motorized bottom rail 1. The frame 3 is provided with two longitudinal profiles 3A wherein the guide means run. The screen material is a roller blind 304 that is attached to a roller tube in the head rail 302. The roller tube preferably comprises a central rod and a tension spring.

[0059] Figures 7A and 7B show a schematic view of a fourth preferred embodiment of a screen according to the invention from different viewpoints. In the fourth preferred embodiment the screen 400 is a window covering, more specifically a roman blind with two motorized rails 1, 2. The screen material is a roman blind 404 that is attached on either side to the first motorized rail 1 and the second motorized rail 2. The screen 400 is suitable for a roof light and has a substantially horizontal orientation. The first motorized rail 1 respectively the second motorized rail 2 are now more accurately denoted as left motorized rail 1 respectively right motorized rail 2. The frame 3 is provided with two longitudinal profiles 3A wherein the guide means run and two transverse profiles 3B that connect the longitudinal profiles 3A to form a rectangular frame.

[0060] The invention provides a framed screen with at least one motorized rail that has installation mechanisms with operating means at its outer ends. In the installation mechanisms the drive shaft is movably suspended on its engaging means. After installation of the motorized rail in the frame, the engaging means need to be moved and locked into an operating position by the operating means. Preferably each installation mechanism is designed to force the engaging means in a free position by bending the drive shaft at the outer ends. The outer ends of the drive shaft are bend out of alignment with the middle portion of the drive shaft that remains in line with the

motorized rail in which it is accommodated. As a result the motorized rail can be easily mounted in the frame since the engaging means cannot engage the guide means.

[0061] Three different variants of the installation mechanism are shown and described. In all variants the sliding element incorporates an operating leg that acts, directly or indirectly, on the suspension arm. In the second and third variant the sliding element further incorporates a pushing leg that acts on the suspension arm. In all variants locking means lock the sliding element in the housing.

[0062] The invention is of course not limited to the described and shown preferred embodiments.

[0063] As an example in the preferred embodiments shown the installation mechanism comprises a pivotable suspension arm, but the invention extends to alternative embodiments wherein the installation mechanism comprising alternative movable suspension means. One non-limiting example is a suspension element that is shiftably arranged in the installation mechanism on which the engaging means are attached.

[0064] It is furthermore noted that any suitable guide means and engaging means can be used. Non limiting examples of other suitable guide means are tracks, belts, chains, rails, et cetera. Non limiting examples of other suitable engaging means are wheels, disks, rolls, et cetera.

[0065] The invention is suitable for all types of screens with movable screen material, i.e. screen material that is retractable and collapsible between an inactive position, in which it is pleated, rolled up or folded to any active position in which it is less pleated, at least partly rolled out or unfolded.

[0066] The invention explicitly extends to other types of pleated blinds, such as pleated blinds having three rails mounted movably in the longitudinal profiles, wherein a middle rail is arranged movably between the top rail and the bottom rail. Herein a first retractable screen material extends between the middle rail and the top rail and a second retractable screen material extends between the middle rail and the bottom rail. In the art in such a pleated blind usually the first and second retractable screen materials contain different types of fabric and said pleated blind is referred to as a Day/Night window covering. One, two or three of the rails can be a motorized according to the invention.

[0067] Consequently the invention extends to any embodiment falling within the scope of protection as defined in the claims and as seen in the light of the foregoing description and accompanying drawings.

Claims

1. Screen, such as a window covering, comprising:

a frame provided with two longitudinal profiles that are to be arranged essentially in parallel;

guide means running in the longitudinal profiles; a retractable screen material to be positioned in the frame;

a motorized rail to which the screen material is attached and which is to be mounted movably in the longitudinal profiles,

wherein in the motorized rail a drive shaft and a motor for rotating the drive shaft are accommodated,

wherein engaging means are provided at both ends of the drive shaft for engaging the guide means, **characterized in that**

in both outer ends of the motorized rail an installation mechanism is accommodated, which installation mechanism comprises movable suspension means on which the engaging means are attached and which installation mechanism is provided with operating means to put and lock the suspension means into an operating position, in which the engaging means engage the guide means.

2. Screen according to claim 1, wherein the installation mechanism comprises pushing means that force the suspension means in a free position, in which the engaging means are separate from the guide means when the motorized rail is mounted in the longitudinal profiles.

3. Screen according any one of the preceding claims, wherein the installation mechanism comprises a housing and wherein the operating means comprise a sliding element, which protrudes out of the housing in an initial position and which is accommodated in the housing in an end position in which it locks the suspension means into the operating position.

4. Screen according any one of the preceding claims, wherein the suspension means comprise a suspension arm that is pivotably arranged in the installation mechanism.

5. Screen according to claim 4 referring to claim 3, wherein the sliding element comprises an operating leg that puts and locks the suspension arm in the operating position in the end position of the sliding element.

6. Screen according to claim 4 referring to claim 3 and 2, wherein the pushing means comprise a pushing leg that is arranged on the sliding element and that forces the suspension arm into the free position in the initial position of the sliding element.

7. Screen according any one of the preceding claims 2-5, , wherein the pushing means comprise spring means, preferably a torsion spring.

8. Screen according any one of the preceding claims 3-7, wherein the housing is embodied as an end cap for the motorized rail.
9. Screen according any one of the preceding claims, wherein the engaging means comprise pinion gears and the guide means comprise racks. 5
10. Screen according any one of the preceding claims, wherein the frame comprises one or two transverse profiles that connect the longitudinal profiles. 10
11. Screen according to claim 10, wherein the screen material is fixed to one of the transverse profiles. 15
12. Screen according any one of the preceding claims, comprising a further rail that is to be mounted movably in the longitudinal profiles, wherein the screen material is carried by the two rails. 20
13. Screen according to claim 12, wherein the further rail is a second motorized rail.
14. Screen according to claim 12, wherein the further rail is manually operable. 25
15. Screen according any one of the preceding claims, wherein the window covering is a pleated blind, a roller blind or a roman blind. 30

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Fig. 1A

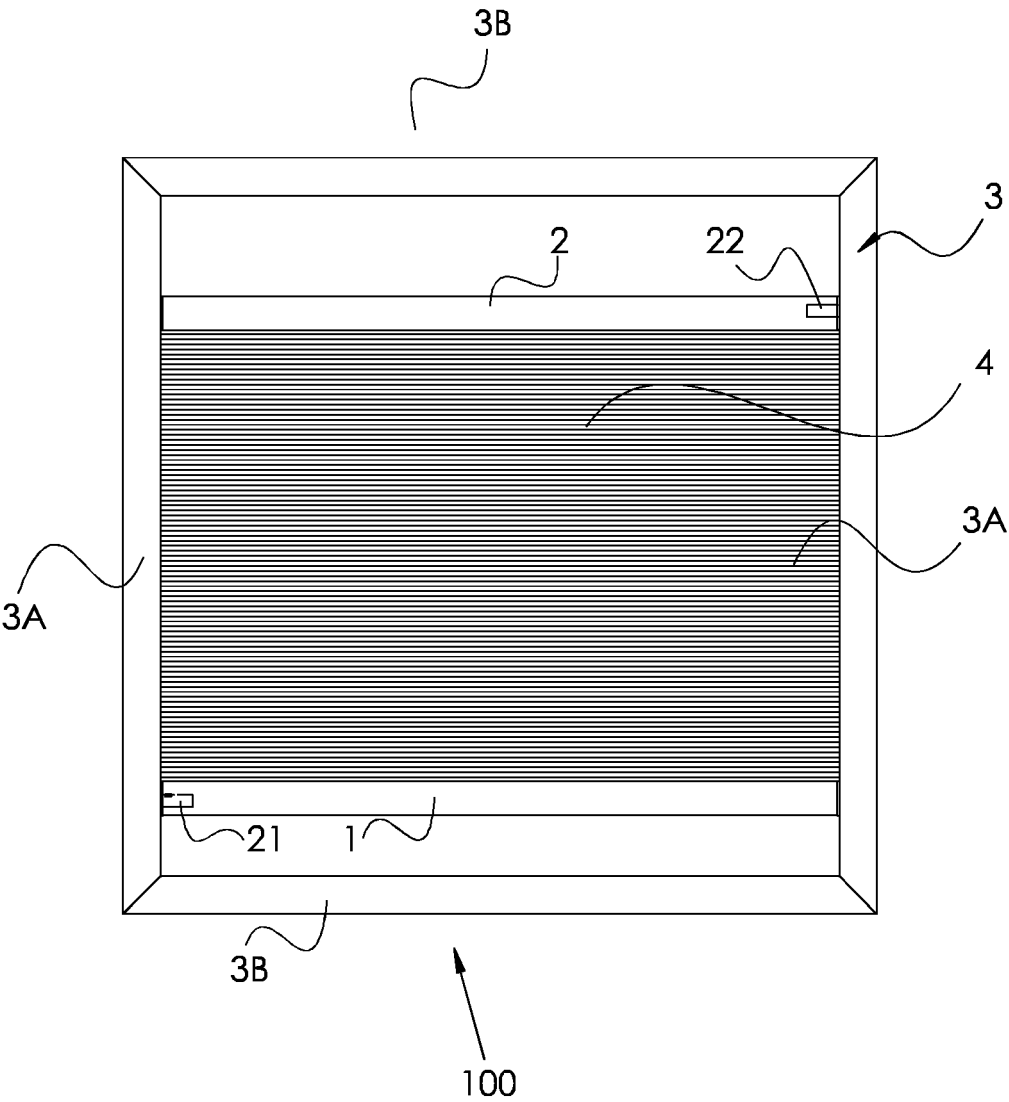


Fig. 1B

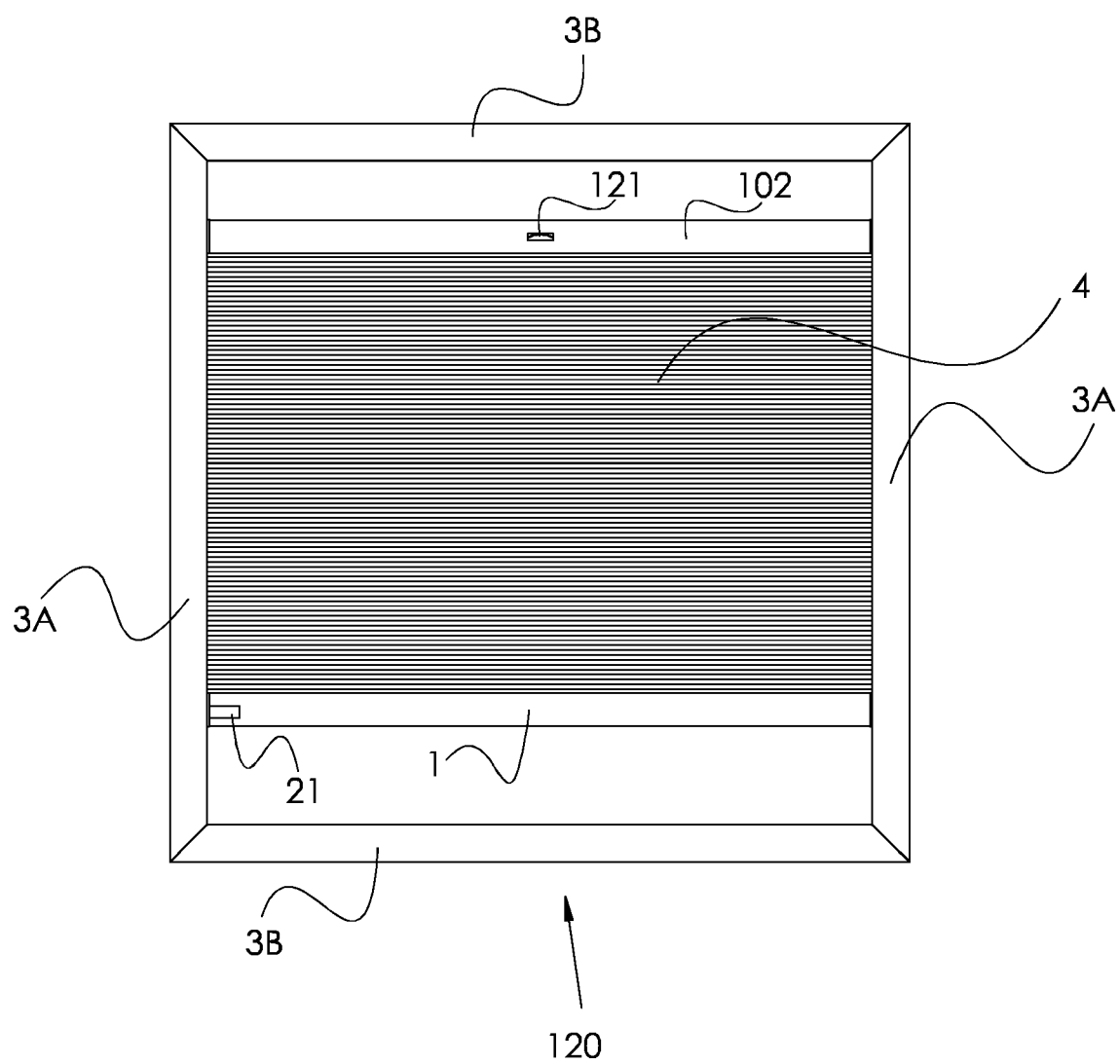


Fig. 1C

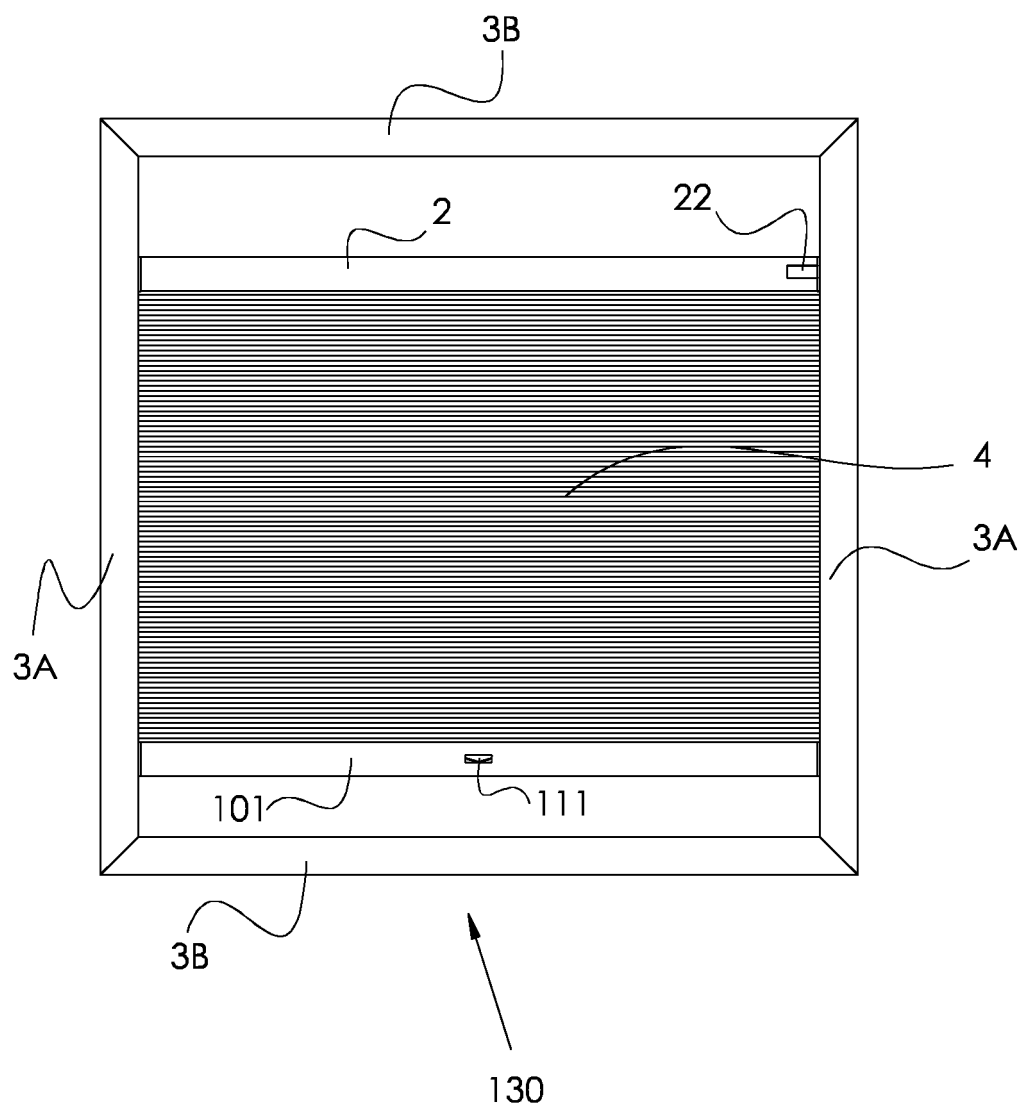


Fig. 2

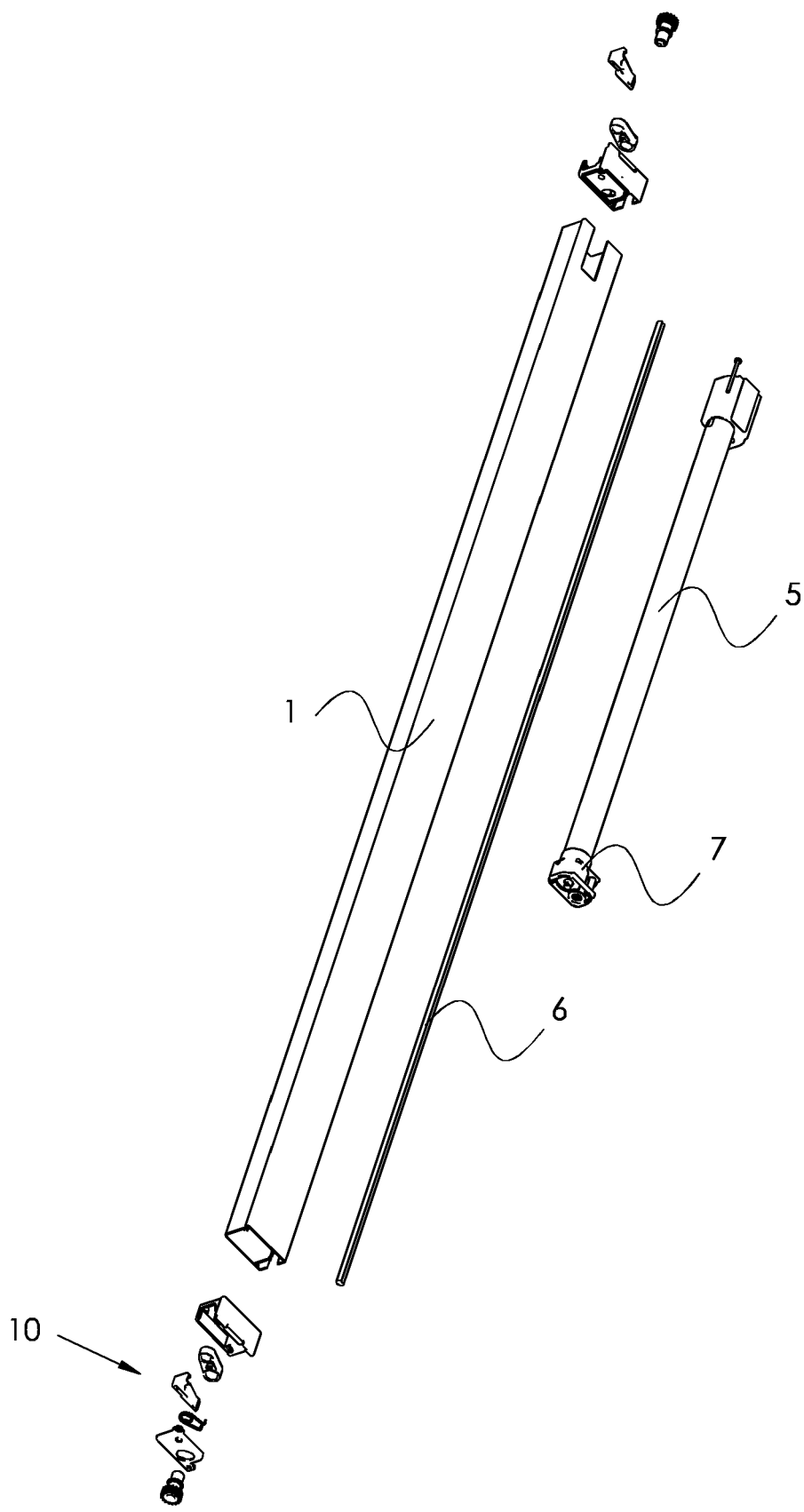


Fig. 3A

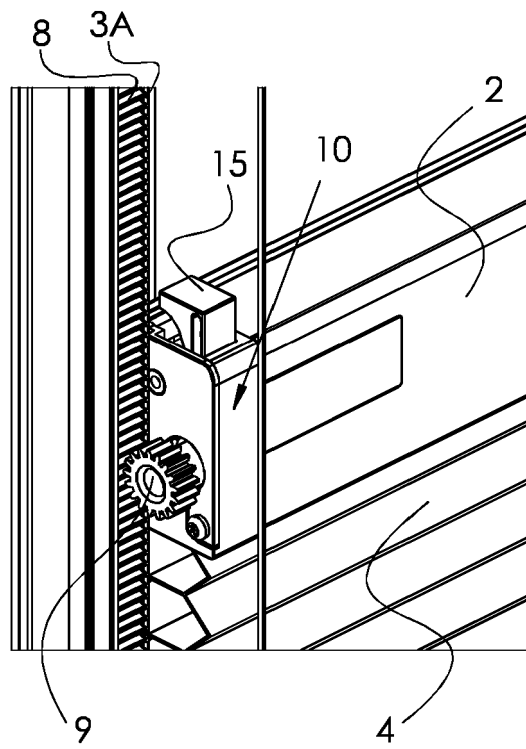
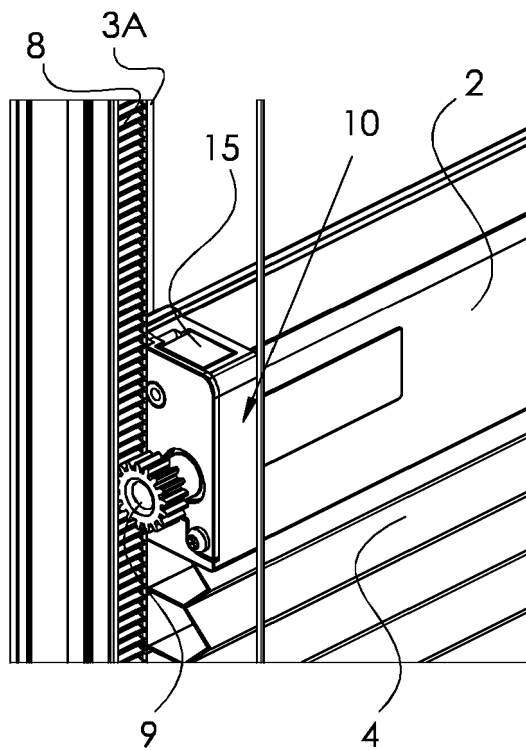


Fig. 3B



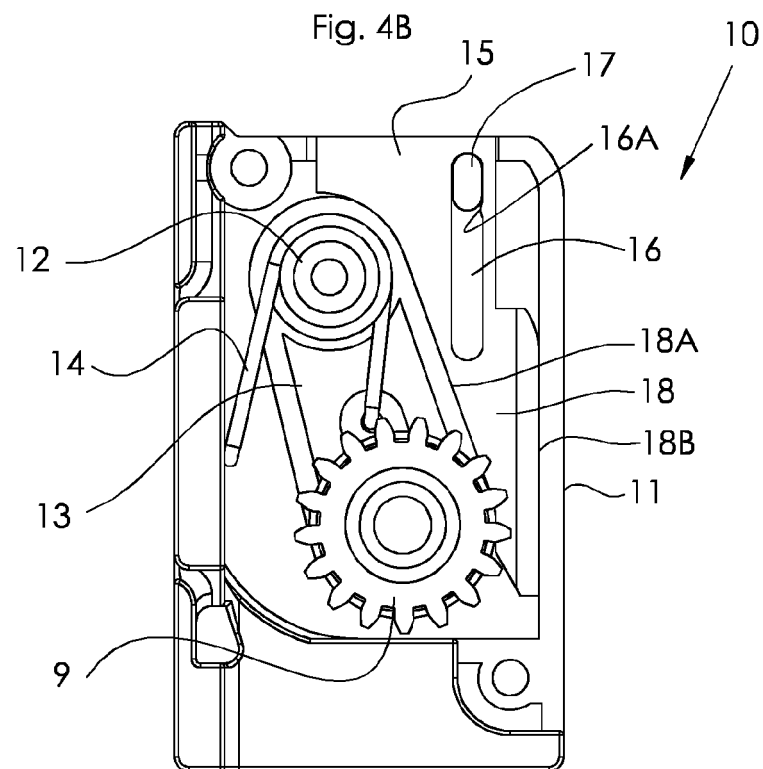
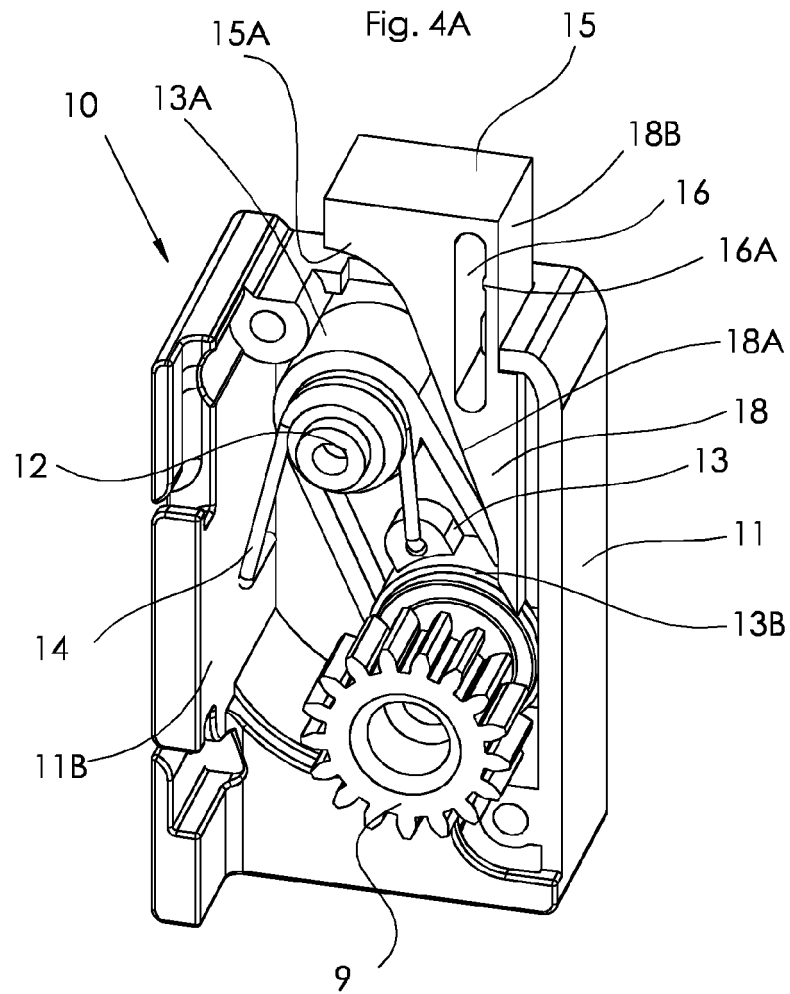


Fig. 4C

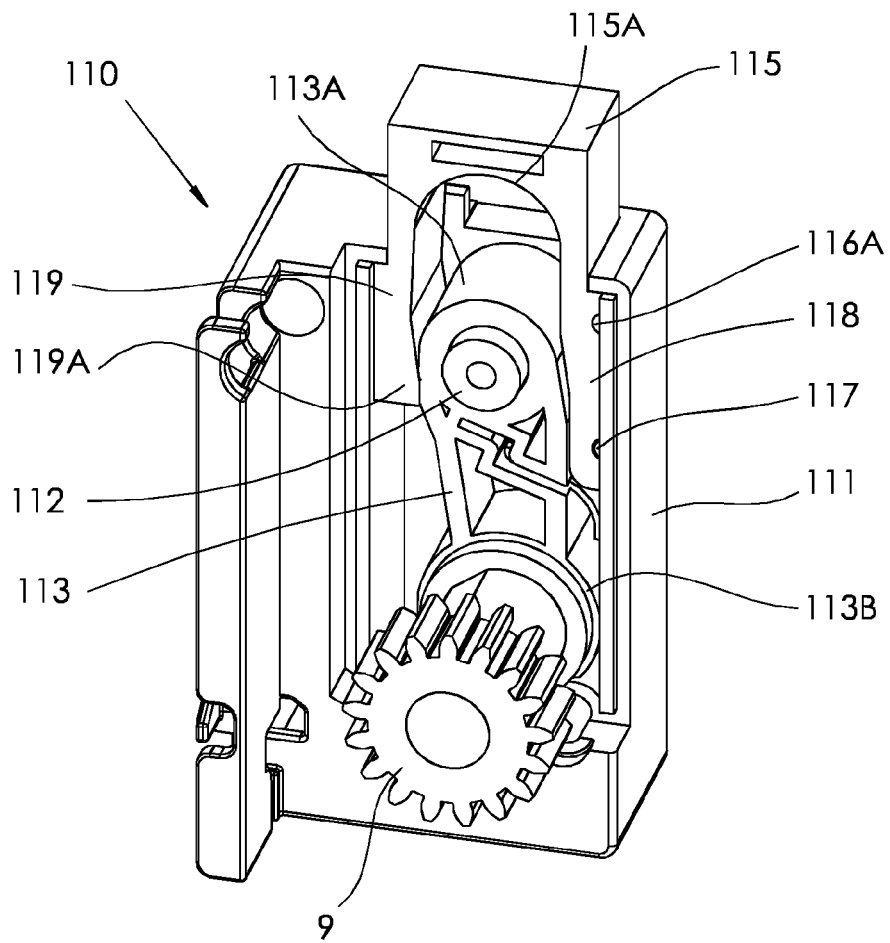


Fig. 4D

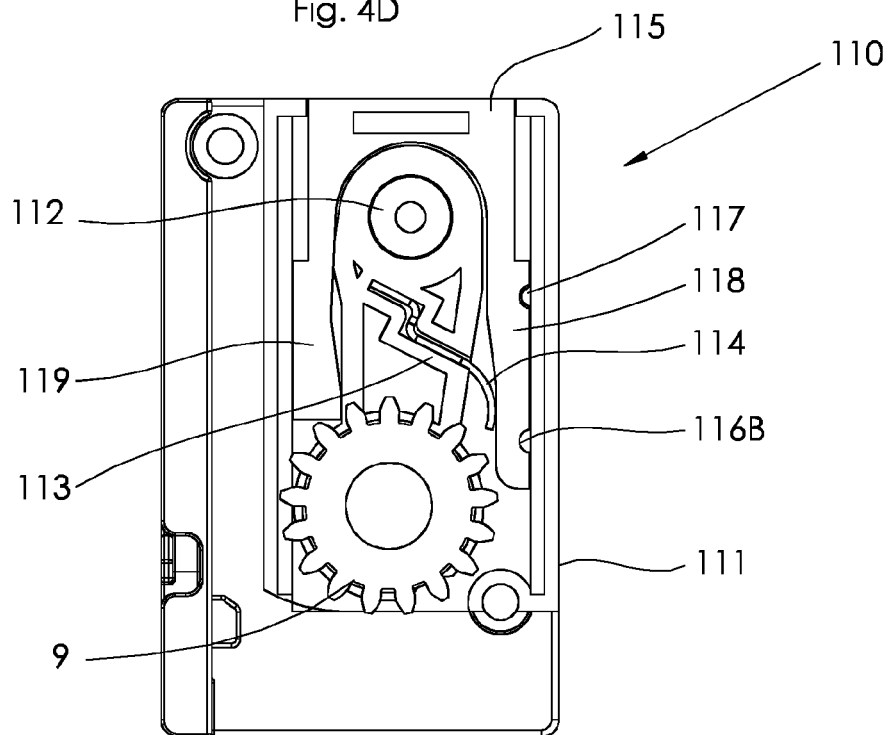


Fig. 4E

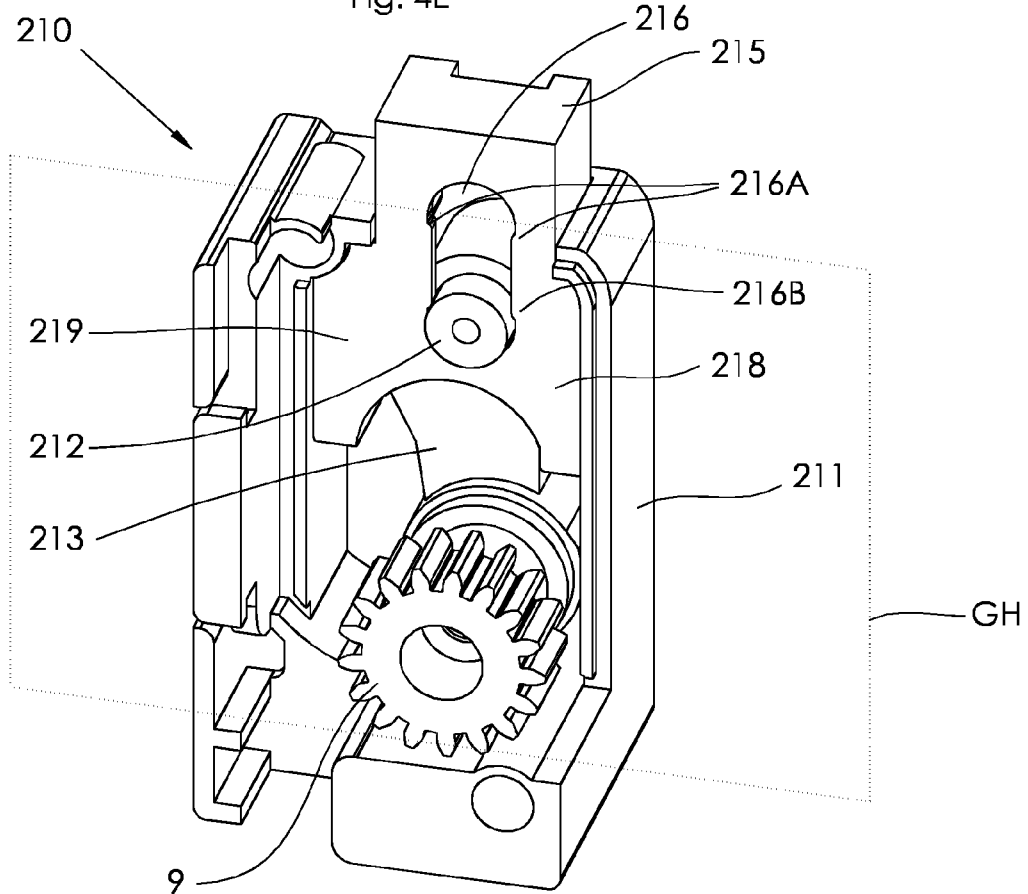


Fig. 4F

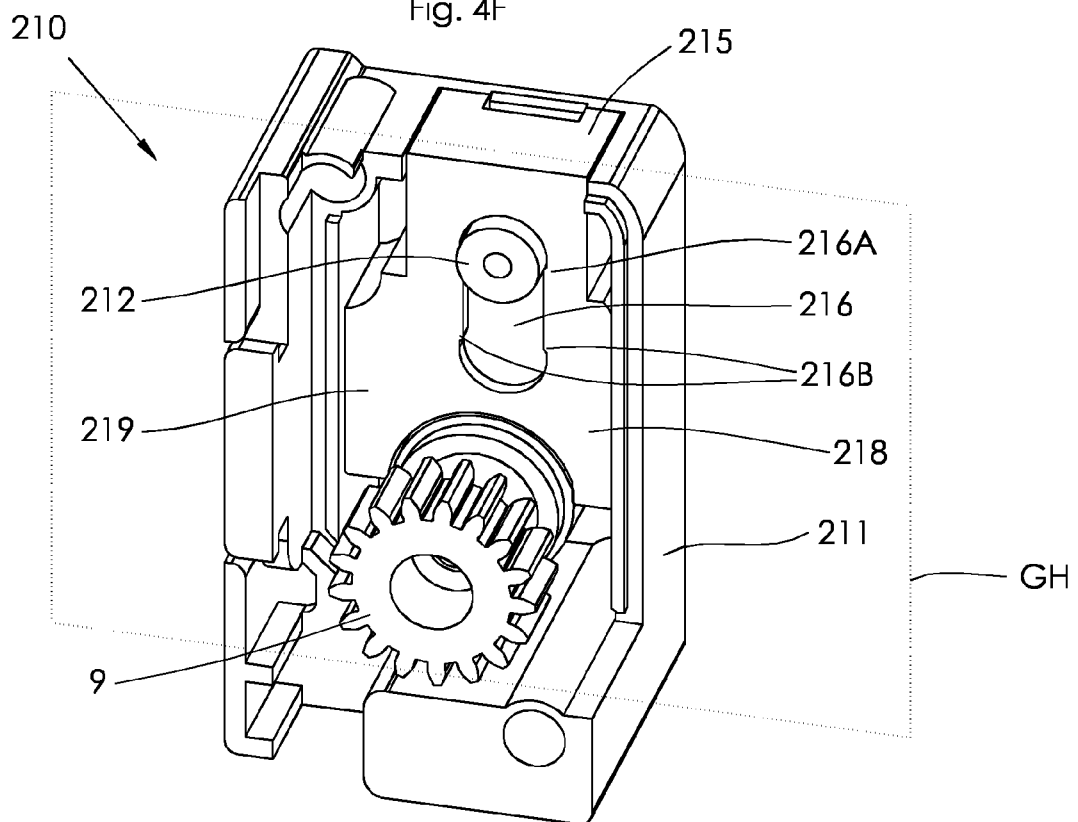


Fig. 4G

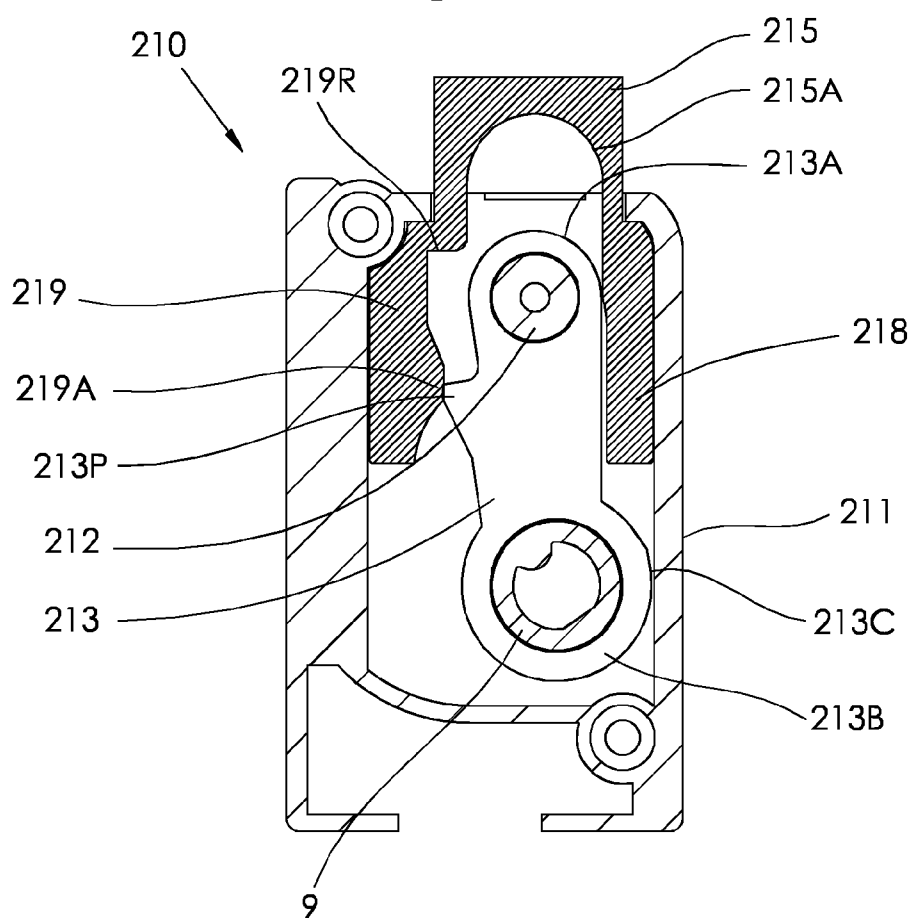


Fig. 4H

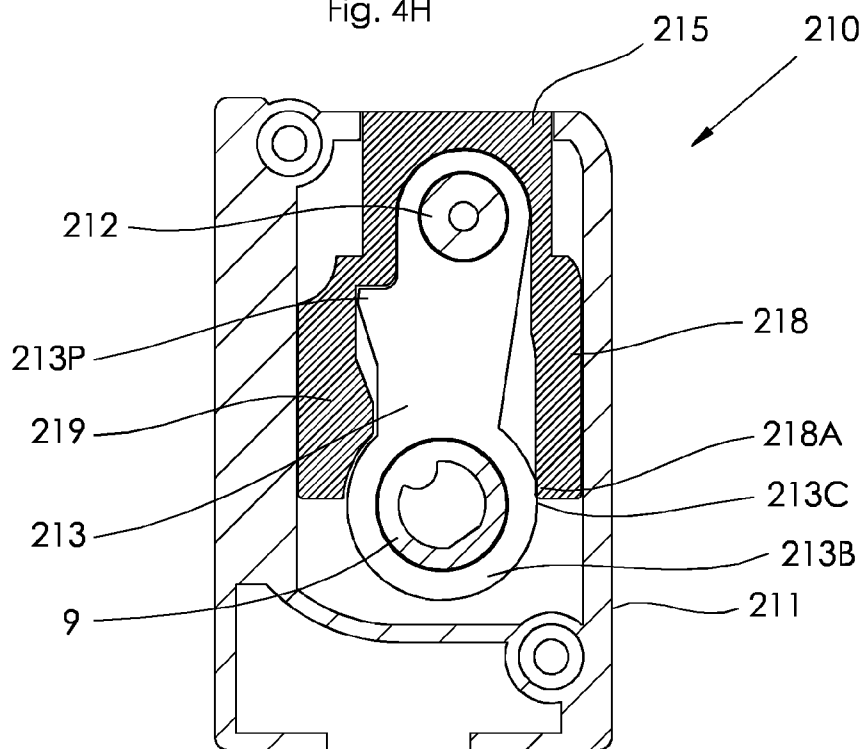


Fig. 5A

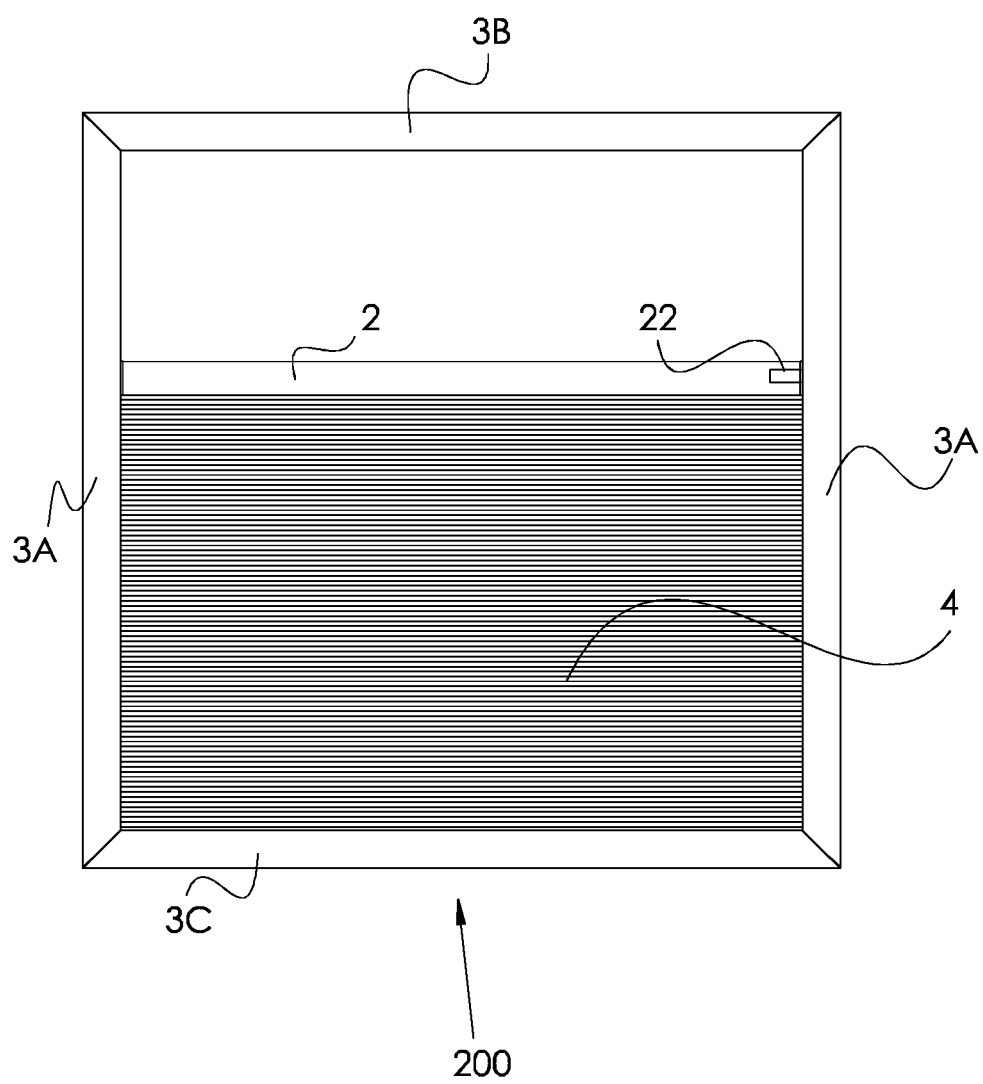


Fig. 5B

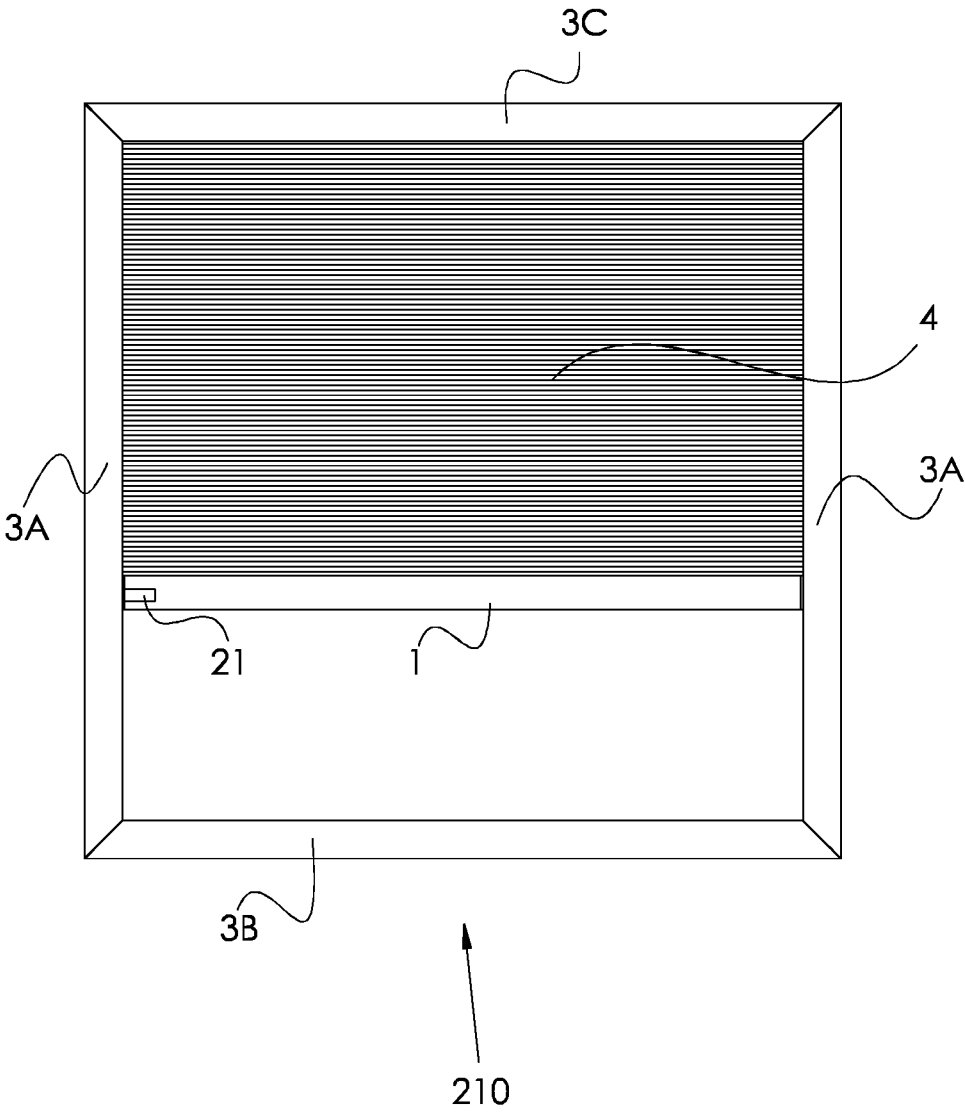


Fig. 6

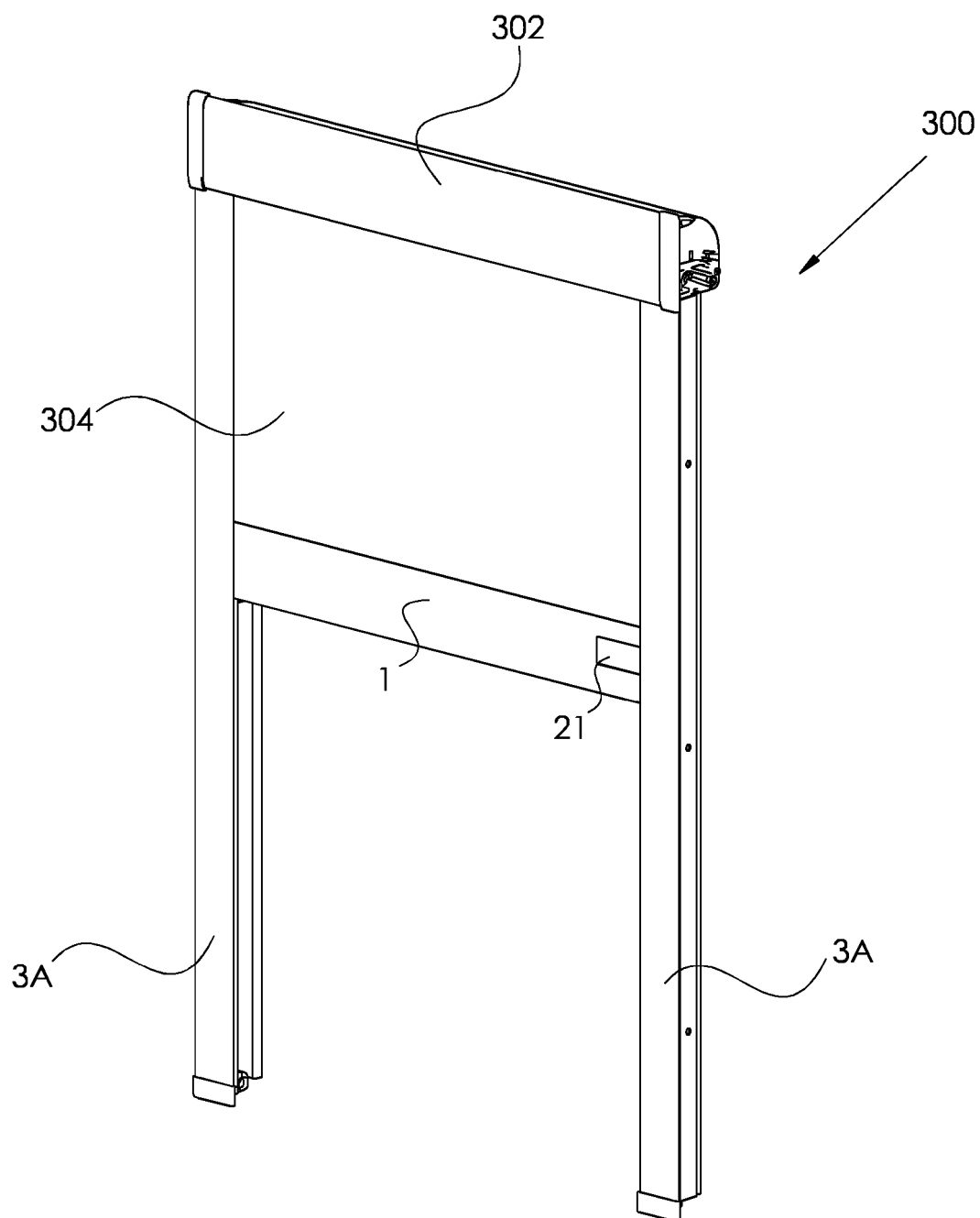


Fig. 7A

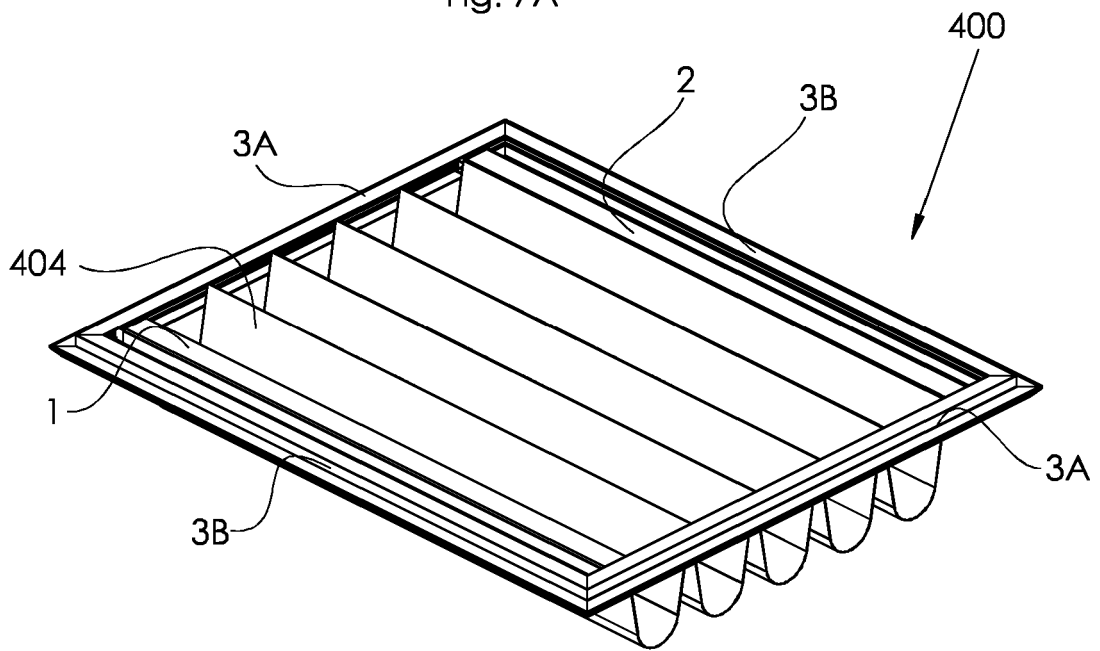
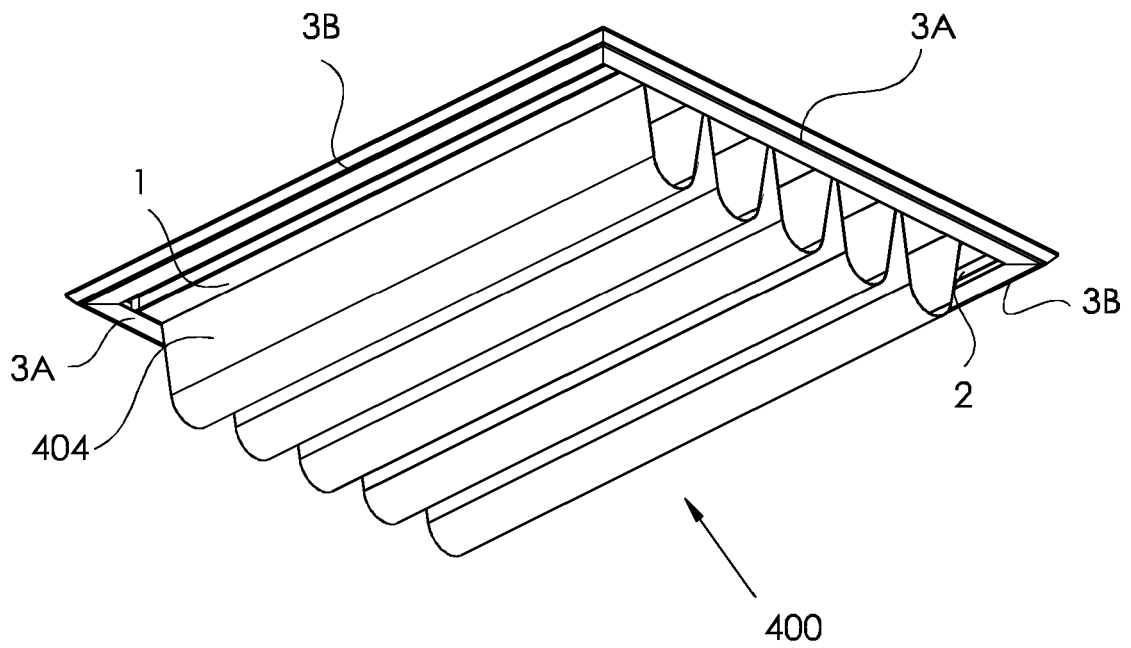


Fig. 7B





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Application Number

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