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(54) **Chassis structure having cover retaining mechanism**

(57) A chassis structure with cover locking function applies on the auto sliding door including a frame body (2) and a cover (3). A receiving space (6) locates on the frame body (2). The inner wall of the receiving space (6) forms an engaging member (61). The cover (3) combined with the frame body (2) for opening and closing the chassis structure. The cover (3) has pivoting member (302) and the support frame (4) assembles on the frame bar. While the cover (3) is opening to a certain position, the hooking member (301) of the cover (3) would go into the receiving space (6) of the frame body (2) and the aforementioned engaging member (61) would fix the hooking member (301) of the cover (3) for locking the cover at the certain position. While the cover at closing position, the hooking member (301) of the cover is away the engaging member (61) of the frame body and the pivoting member (302) catches the fulcrum member (62).

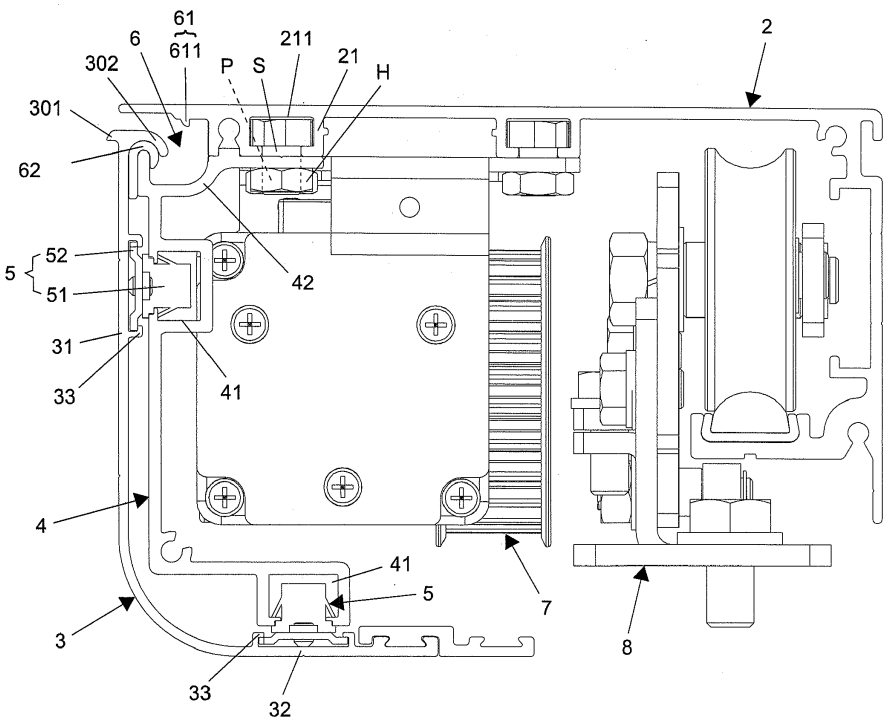

FIG. 4

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Description

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0001] The instant disclosure relates to an automatic door frame, more particularly to a chassis structure of an automatic door having a cover retaining structure.

2. Description of Related Art

[0002] FIG. 1 and FIG.2 illustrate a chassis structure applied on the auto sliding door comprising a frame body 11, a cover 12, a drive motor 13 and a plurality of spreaders 14. The frame body 11 has a receiving space 111. The cover 12 could be opening or closing the frame body 11. One end part 121 of the cover 12 locating in the receiving space 111 is able to move in the receiving space 111 while doing opening and closing process. The drive motor 13 locates in the frame body 11 and the spreaders 14 could install on the frame body 11 as slide moving components. The plurality of spreaders is used to fix the door slides.

[0003] In general, the aforementioned chassis structure is installed on the ceiling or the height on the wall. Thus, when the device inside the chassis structure is damaged or broken, technicians have to work at height position and then to lift the cover for maintaining the device. However, there is no locking mechanism in the inner wall between the receiving space 111 and the end part 121 of the cover 12 to fix the cover 12 at certain location while the cover 12 is opening. Due to the gravity, the cover 12 would fall down to close the frame body 11 and would bring inconvenience and hurt to the technicians as well as damage to the device.

SUMMARY OF THE INVENTION

[0004] In accordance with aspects of the present invention, while the cover of the chassis structure with locking function is opening, the locking mechanism could fix the cover at certain location to prevent the cover falling down to close the frame body.

[0005] In order to achieve the aforementioned objectives, the current invention provides a chassis structure with cover locking function applied on the auto sliding door which comprises a frame body and a cover.

[0006] The frame body having a receiving space which has an engaging member on at least one wall of it and a fulcrum member on a wall of it. The cover combines to the frame body for opening and closing the chassis structure. An end part of the cover forms a hooking member and pivoting member corresponding to the receiving space of the frame body.

[0007] While the cover is opening to a certain position, the hooking member of the cover would go into the receiving space of the frame body and the aforementioned engaging member would fix the hooking member of the cover for locking the cover at the certain position. When the cover is at the closing position, the hooking member of the cover is away from the engaging member of the frame body and the pivoting member of the cover rests on the fulcrum member.

[0008] The current invention has following benefits. The cover could be fixed at a certain opening position since the hooking member of the cover catches the engaging member on the wall of the receiving space. Due to the hooking member of the cover hooking the engaging member on the wall of the receiving space, the cover would not fall down to close the frame body and would not bring inconvenience and hurt to the technicians as well as damage to the device.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] The foregoing aspects and many of the attendant advantages of this invention will become more readily appreciated as the same becomes better understood by reference to the following detailed description, when taken in conjunction with the accompany drawings, wherein like reference numerals refer to like parts throughout the various views unless otherwise specified.

[0010] Fig.1 illustrates the plan diagram of the chassis structure of conventional auto sliding door which shows the cover is in closing status.

[0011] Fig.2 illustrates the plan diagram of the chassis structure of conventional auto sliding door which shows the cover is in opening status.

[0012] Fig.3 illustrates the pictorial drawing of the current invention.

[0013] Fig.4 illustrates the plan diagram of the current invention which shows the cover in closing status.

[0014] Fig.5 illustrates the plan diagram of the current invention which shows the process of cover gradually opening.

[0015] Fig.6 illustrates the plan diagram of the current invention which shows the process of cover gradually opening.

[0016] Fig.7 illustrates the plan diagram which shows the cover shifts at the certain position.

[0017] Fig.8 illustrates a better embodiment which shows the pivoting member working with the engaging member.

[0018] Fig.9 illustrates the pictorial drawing of receiving space design of another better embodiment of current invention.

[0019] Fig.10 illustrates the plan combination diagram of Fig.9.

[0020] Fig.11 illustrates the pictorial drawing of the receiving space created by the support frame and frame body.

[0021] Fig.12 illustrates the plan combination diagram of Fig.11.

[0022] Fig.13 illustrates the pictorial exploded drawing of the piece frame screwed on the frame body.

[0023] Fig.14 illustrates the plan combination diagram of Fig. 13.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0024] As shown in Fig.3 and Fig.4, the current invention provides a chassis structure with cover locking function which is applied on the auto sliding door comprising a frame body 2, a cover 3, a support frame 4 and attraction button 5.

[0025] The frame body 2, cover 3 and support frame 3 are formed by shaped aluminum extraction. The frame body 2 has a receiving space 6 on an end part. In a better embodiment of current invention, the quantity of the receiving space could be one or multiple. The engaging member 61 forms on the at least one wall of the receiving space 6. A fulcrum member 62 is installed on the wall of the receiving space 6. In a better embodiment, as shown in the Figure, the engaging member 61 is a protrusion 611 extending from the wall of the receiving space 6. Besides, the inner wall of the frame body 2 could stretch out to be a fixing rack 21. The fixing rack 21 would form as a setting groove 211. Furthermore, the frame body 2 has a drive motor 7 and spreaders 8 installed inward. The spreaders 8 could slide on the frame body 2. The drive motor 7 is used to drive the spreaders 8 slide on the frame body 2. The motor 7 and the spreaders 8 are connected with a belt and the spreaders 8 assemble to the door slide which is not shown in the figure.

[0026] An end part of the cover 3 forms a hooking member 301 and a pivoting member 302. The cover 3 has a base portion 31 and the extension part of the base portion is bended to form a bent portion 32. The aforementioned hooking member 301 and the pivoting member 302 are formed by the extension of the end part of the base portion 31. In addition, the inner wall of the cover 3 forms at least one slot 33. The slot 33 could be formed by the extension of the inner wall of the base portion 31 and side wall film 32.

[0027] The support frame 4 could be a strip-like shape and length of the support frame 4 is approximate or equal to length of the frame body 2. The number of the support frame 4 could also be two or three above. The current invention takes three as the example. The support frame could form the setting slot 41.

[0028] The quantity of the attraction button 5 corresponds to the quantity of the aforementioned support frame 4. Each attraction button 5 has an attracting component 51 and an attracted component 52. The number of the attracting component 51 and the attracted component 52 are installed according to the requirement.

[0029] The attracting component 51 could be a magnet which has magnetism and the attracted component 52 could be a piece of iron which has permeability. Thus, the attracting component 51 is able to attract the attracted component 52. Moreover, the attracted component 52 could also be a magnetic so that the two components could attract each other while the two of the magnetic pole are opposite. The attracting component 51 and the attracted component 52 of the attraction button 5 are installed at corresponding position on the support frame 4 and the cover 3, in which the attracting component 51 could be installed on the support frame 4, and the attracted component 52 is installed on inside of the cover 3. The positions of the two corresponding components could be switched each other. Moreover, the attracting component 51 or the attracted component 52 could be installed in the slot 33. The attracting component 51 or the attracted component 52 could be correspondingly installed in the setting slot 41.

[0030] In a better embodiment, the support frame 4 is fixed on the frame body 2. Please refer to Fig.11 and Fig. 12, the screw S locates in the setting groove 211 of the fixing track 21 and partially goes through the fixing track 21 as well as goes through the combination end part 42 assembled with the support frame 4 and frame body 2. Then, the nut H screws with the prominent part P of the screw S together to support the combination end part 42. Therefore, the combination of the fixing track 21 and the combination end part 42 of the support frame 4 could be created and further secure the support frame 4 on the frame body 2.

[0031] The cover 3 would be able to combine to the frame body 2 due to opening and closing. The end part of the cover 3 having hooking member 301 and pivoting member 302 is corresponding to the receiving space 6 on the frame body 2. The end part is able to go into and get out from the receiving space 6 while taking opening and closing actions. As shown in Fig.4, while the cover 3 is at the closing position, the hooking member 301 is away from the engaging member 61 of the receiving space 6 of the frame body 2 and the pivoting member 302 catches the fulcrum member 62 to prevent the cover 3 from loosing out the frame body 2. Meanwhile, the attracting component 51 of the attraction 5 would be able to attract the attracted component 52 for locking the cover 3 at the closing position.

[0032] As shown in the Fig.5 to Fig.7, while the cover 3 is gradually lifted, the attracting component 51 and attracted component 52 would be gradually separated. The hooking member 301 would also gradually go into the receiving space 6 at the same time. When the cover 3 reaches certain position, the engaging member 61 in the receiving space 6 would stock the hooking member 301 of the cover 3 for locking the cover 3 at certain position. In current embodiment, since protrusion 611 of the engaging member 61 stocks the hooking member 301 and uses the touching point of the fulcrum member 62 and the base portion 31 of the cover 3 as a fulcrum so that the cover 3 could be locked at certain position.

[0033] In addition, in current embodiment, the receiving space 6 on the frame body 2 is formed by an end part of the frame body and part of the end part 42 of the support frame 4. The aforementioned engaging member 61 is formed by the extension of the frame body. The fulcrum

member 62 locates on the wall of the receiving space 6 formed from the support frame 4 which has advantages of saving the cost of the frame body 2.

[0034] As shown in Fig.8, in another better embodiment, while the cover 3 reaches certain position, the engaging member 61' in the receiving space 6, a projection 611' of the wall of the receiving space 6, would stock the hooking member 301 of the cover 3 for locking the cover 3 at certain position. In current embodiment, since projection 611' of the engaging member 61' stocks the hooking member 301 and uses the contacting point of the fulcrum member 62 and the base portion 31 of the cover 3 as a fulcrum, so that the cover 3 could be locked at certain position.

[0035] The design of the aforementioned receiving space 6, in another better embodiment as shown in the Fig.9 and Fig.10, the receiving space 6' is formed by the extension of an end part of the frame body 2.

[0036] Please refer to Fig.3, Fig.13 and Fig.14, the current invention could further includes multiple supporting piece 9. The number of the supporting pieces is according the requirement such as 2, 3 or 4 more. The supporting piece 9 combines with the frame body 2 and create the receiving space 6 with the frame body 2. The supporting piece is physically screwed by screw S' into the groove 211 of the fixing track 21 and partially goes out the fixing track 21. Then, the nut H' screws with the prominent part P' of the screw S' together to stock an end part of the supporting piece 9. Therefore, one end of the supporting piece 9 could be fixed on the frame body 2 and the other end of the supporting piece 9 would create the receiving space 6 with the frame body 2.

[0037] According to the aforementioned description, in the current invention, the cover could be fixed at a certain opening position since the hooking member of the cover catches the engaging member on the wall of the receiving space. Due to the hooking member of the cover hooking the engaging member on the wall of the receiving space, the cover would not fall down to close the frame body and would not bring inconvenience and hurt to the technicians as well as damage to the device.

[0038] Furthermore, in the conventional chassis structure, the cover would stably fix on the frame body while screw screwing through the cover to fix on the frame body. However, this will not only bring inconvenience to technicians but also has relative unattractive appearance of the chassis structure. Therefore, the current invention with attraction device which provides an attracting component and an attracted component so that the two components could attract each other.

[0039] Some modifications of these examples, as well as other possibilities will, on reading or having read this description, or having comprehended these examples, will occur to those skilled in the art. Such modifications and variations are comprehended within this invention as described here and claimed below. The description above illustrates only a relative few specific embodiments and examples of the invention. The invention, indeed, does include various modifications and variations made to the structures and operations described herein, which still fall within the scope of the invention as defined in the following claims.

Claims

1. A chassis structure with cover locking function applied on the auto sliding door, comprising:

   a frame body having an engaging member arranged and a fulcrum member, wherein the inner surface between the engaging member and the fulcrum member defining a receiving space;
   a cover pivotally coupled to the frame body selectable between an open and a closed configuration, wherein one side of the cover includes a pivoting member pivotable about the fulcrum member of the frame body and a hooking member engage-able with the engaging member of the frame body;
   wherein while in the open configuration, the hooking member of the cover extends into the receiving space of the frame body and the hooking member engages the engaging member of the frame body,
   wherein while in the closed configuration, the hooking member of the cover disengages the engaging member of the frame body and the pivoting member hangs on the fulcrum member.

2. The chassis structure with cover locking function of claim 1, wherein comprises a support frame and an attraction device, the support frame installed on the frame body, the attraction device having attracting component and attracted component, the attracting component and attracted component separately locate at corresponding position on the support frame or the cover, wherein the attracting component and attracted component of the attraction device are away from each other while the cover is at opening position, the attracting component of the attraction device attracts the corresponding attracted component to fix the cover at the closing position.

3. The chassis structure with cover locking function of claim 1 or claim 2, wherein the engaging member is a projection of the wall of the receiving space to stock the pivoting member of the cover while the cover is opening at a certain position.

4. The chassis structure with cover locking function of claim 1 or claim 2, wherein the engaging member is a protrusion of the wall of the receiving space to stock the pivoting member of the cover while the cover is opening at a certain position.

5. The chassis structure with cover locking function of claim 2, wherein the receiving space locating at the frame body is formed by an end part and part of the assembling end part of the support frame and the frame body.

6. The chassis structure with cover locking function of claim 5, wherein the frame body has multiple supporting pieces, the supporting pieces and the frame body create the aforementioned receiving space together.

7. The chassis structure with cover locking function of claim 6, wherein the fixing rack protrudes from the inner wall of the frame body, the fixing rack and an end part of the supporting piece combined together with screw and nut screwing each other.

8. The chassis structure with cover locking function of claim 2, the inner wall of the cover forms a slot, the support frame forms a setting slot, the attracting component or the attracted component could be selectively installed in the slot of the cover, and the attracting component or the attracted component could be correspondingly installed in the setting slot of the support frame.

9. The chassis structure with cover locking function of claim 1 or claim 2, wherein a drive motor and a spreader are in the frame body, the spreader could slide move on the frame body and the drive motor drive the spreader for slide moving on the frame body.

10. The chassis structure with cover locking function of claim 1 or claim 2, wherein the receiving space is formed by one extension end part of the frame body.

11. The chassis structure with cover locking function of claim 2, wherein the fixing rack protrudes from the inner wall of the frame body, the assembling end part of the support frame and the frame body combines to the fixing rack with screw and nut screwing each other.

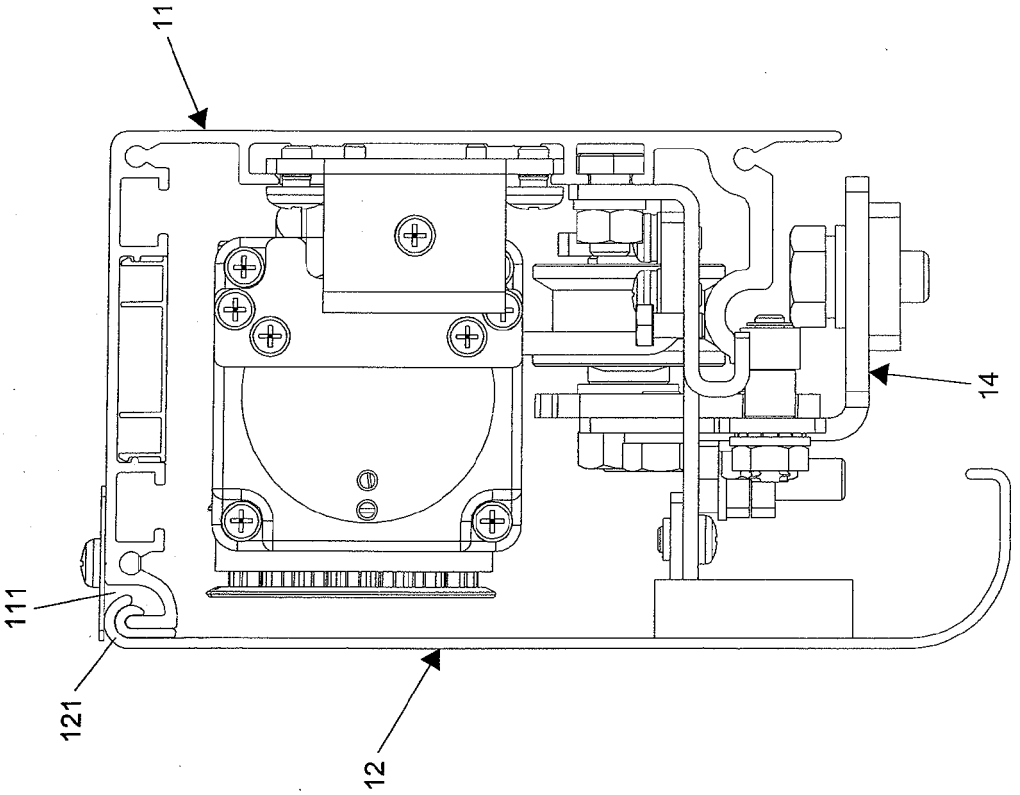

FIG. 1
PRIOR ART

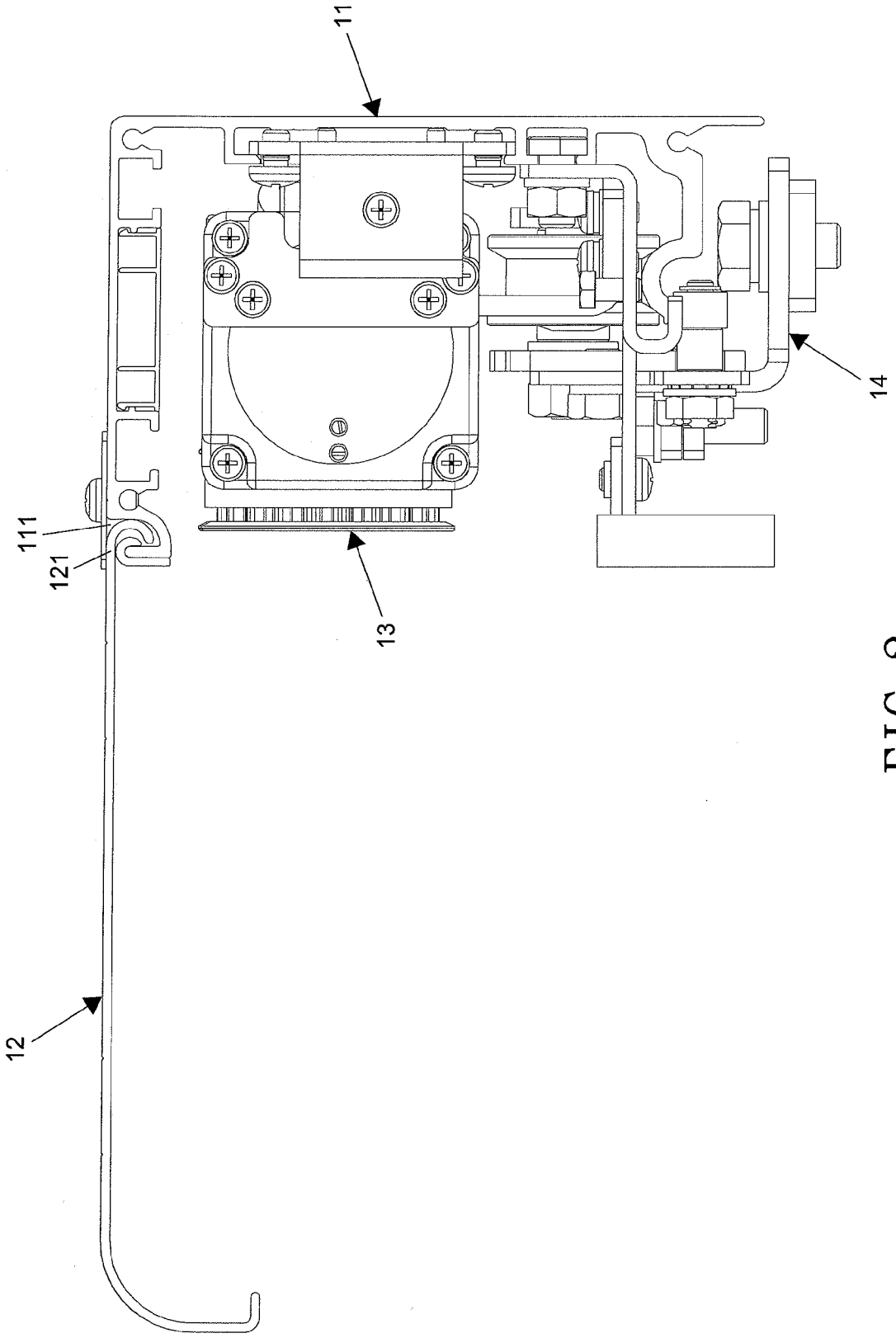

FIG. 2
PRIOR ART

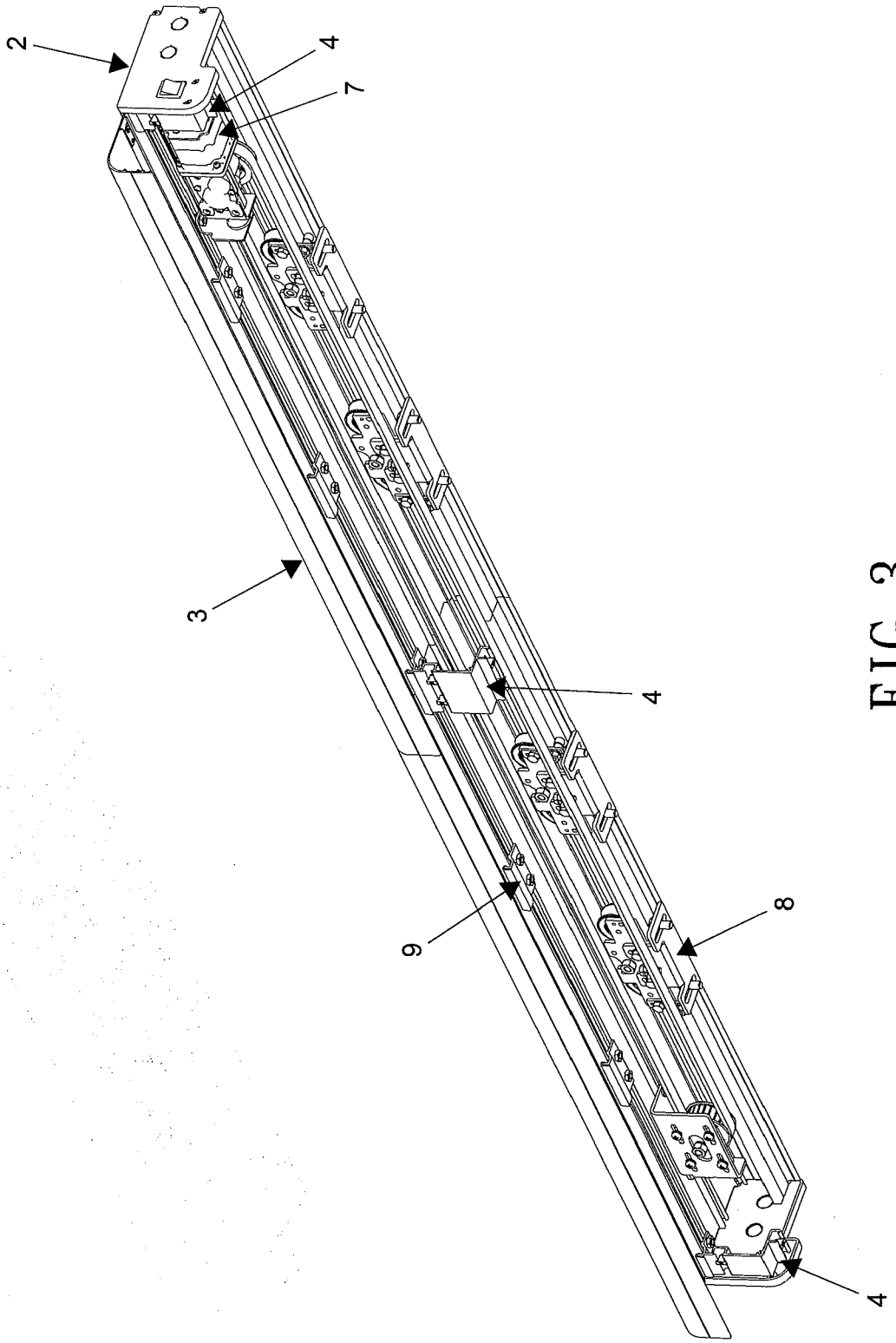

FIG. 3

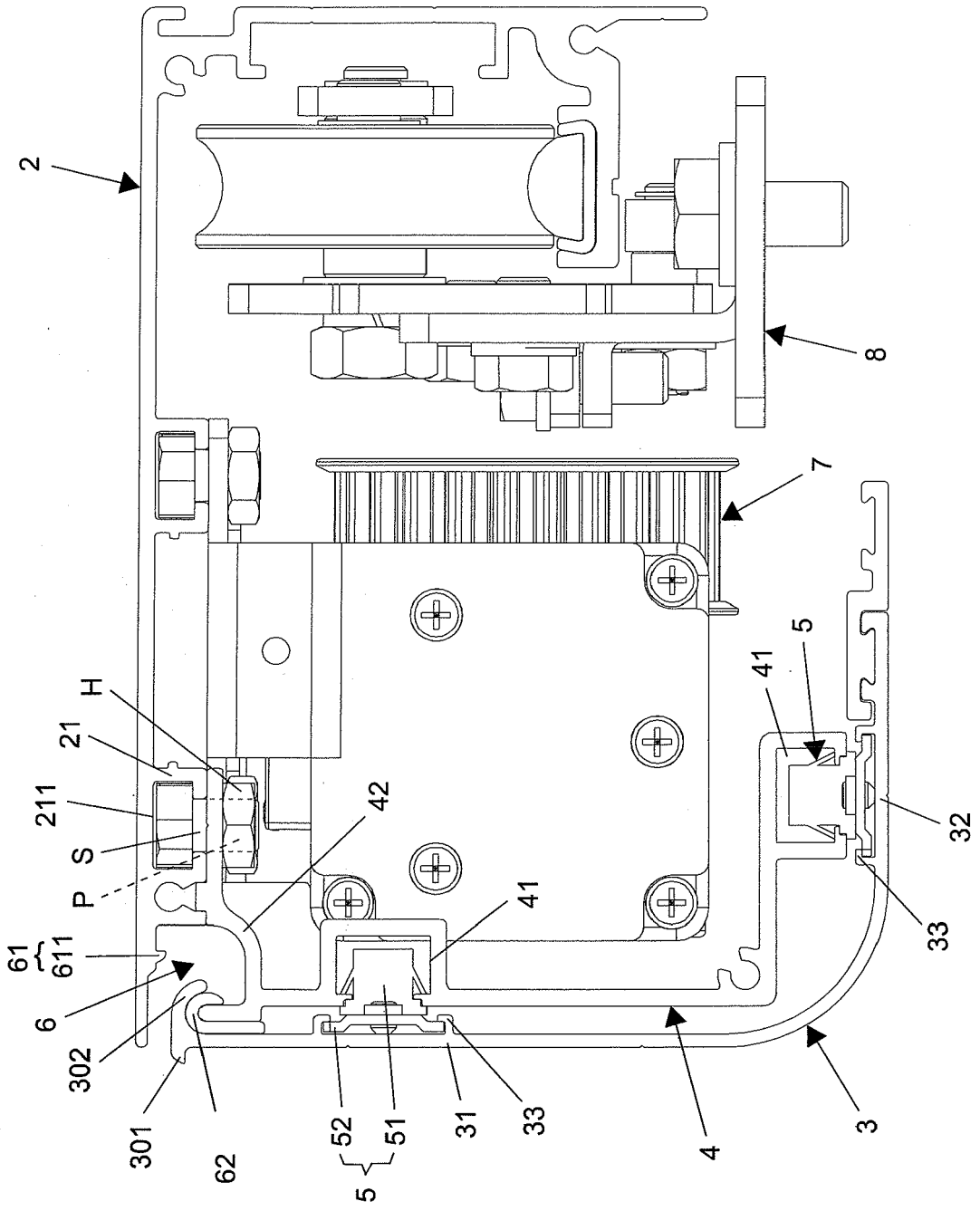

FIG. 4

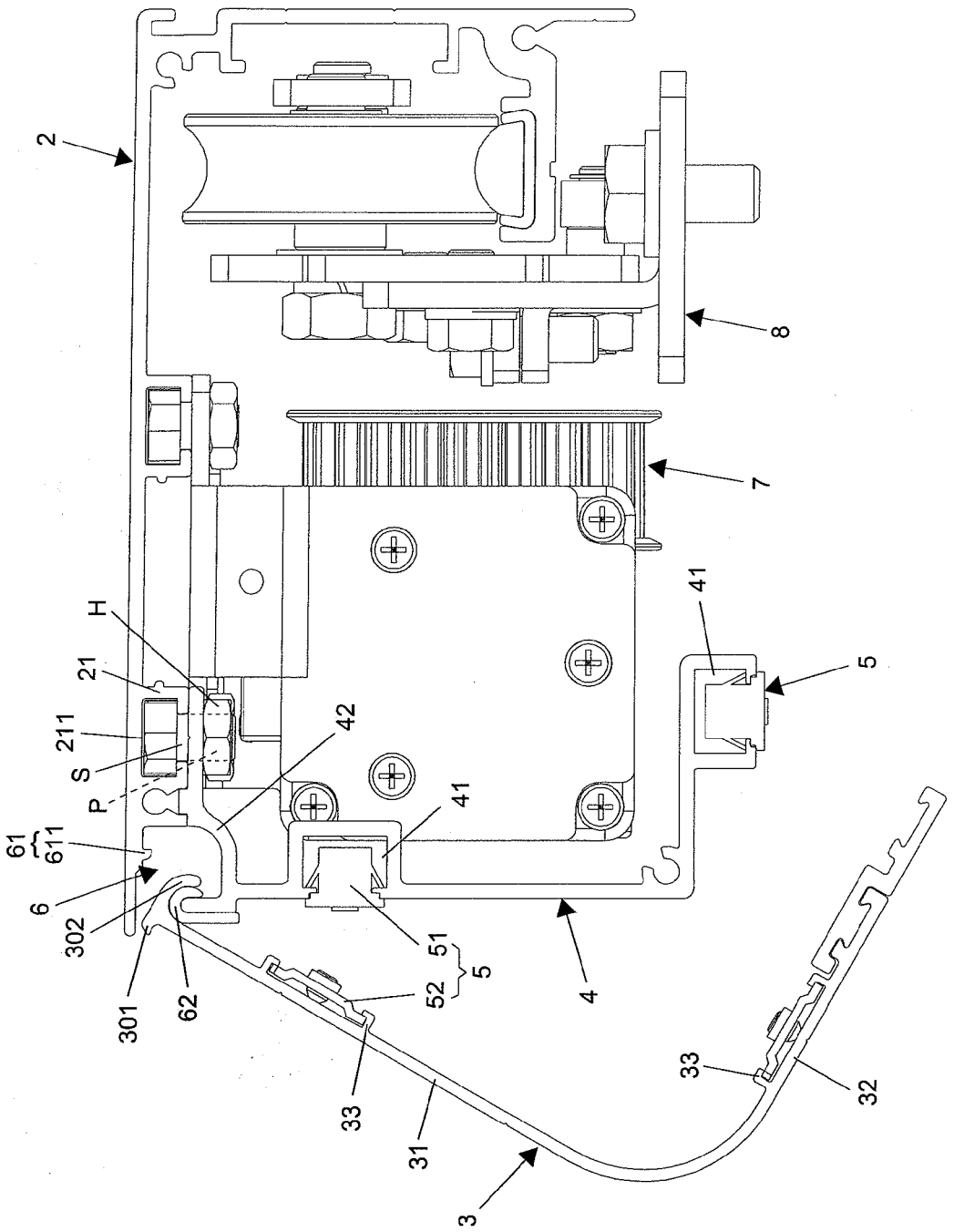

FIG. 5

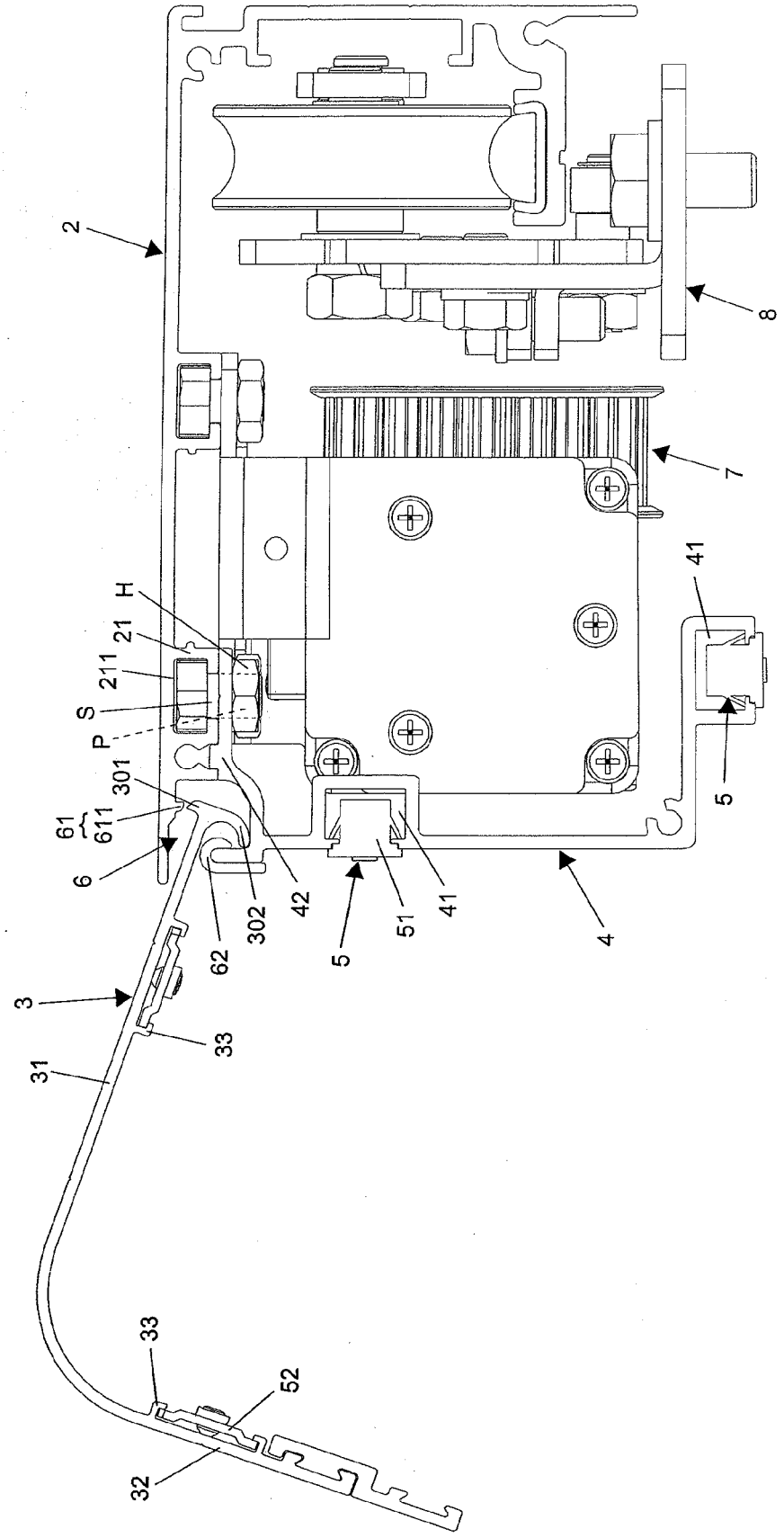

FIG. 6

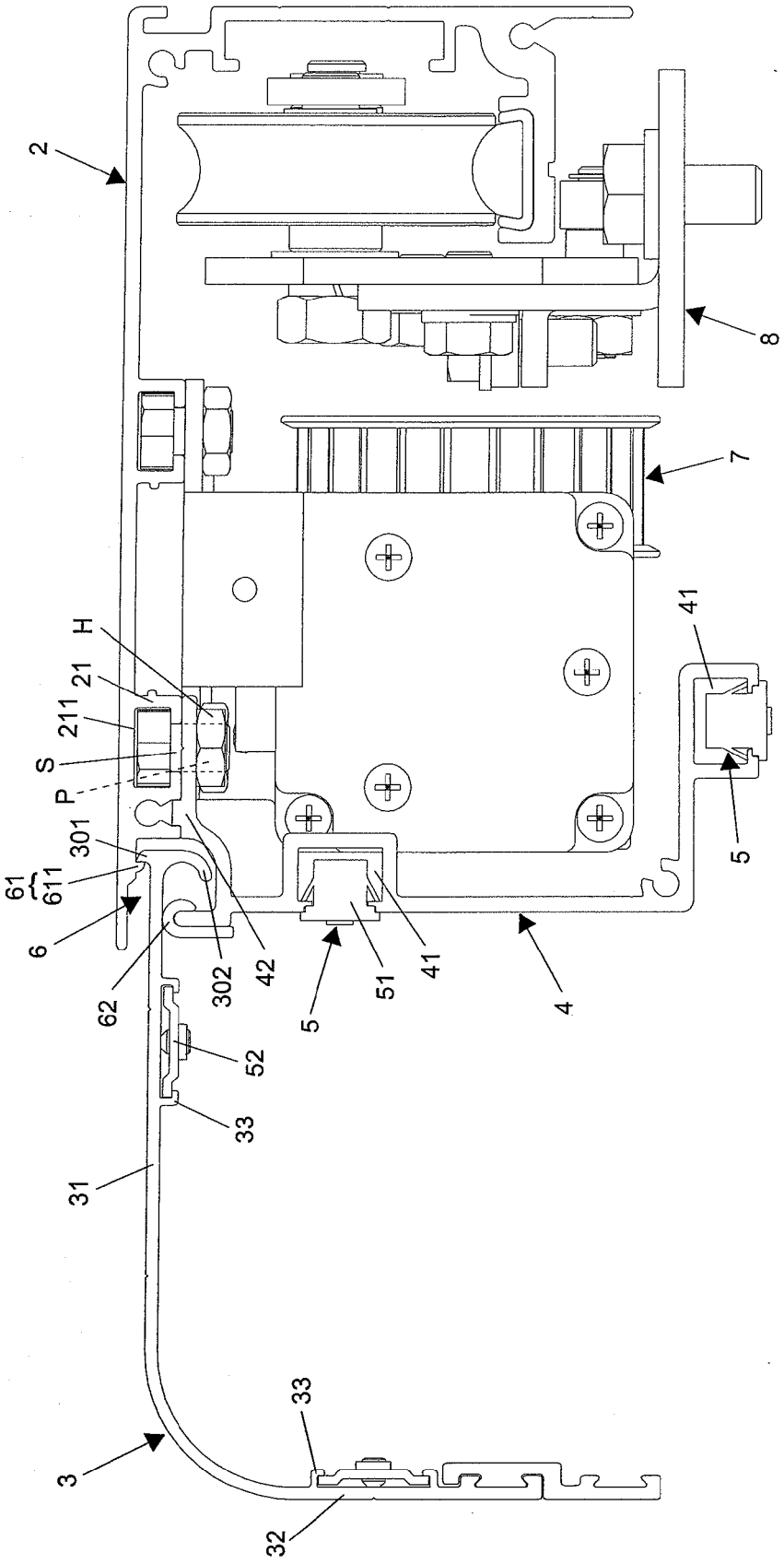

FIG. 7

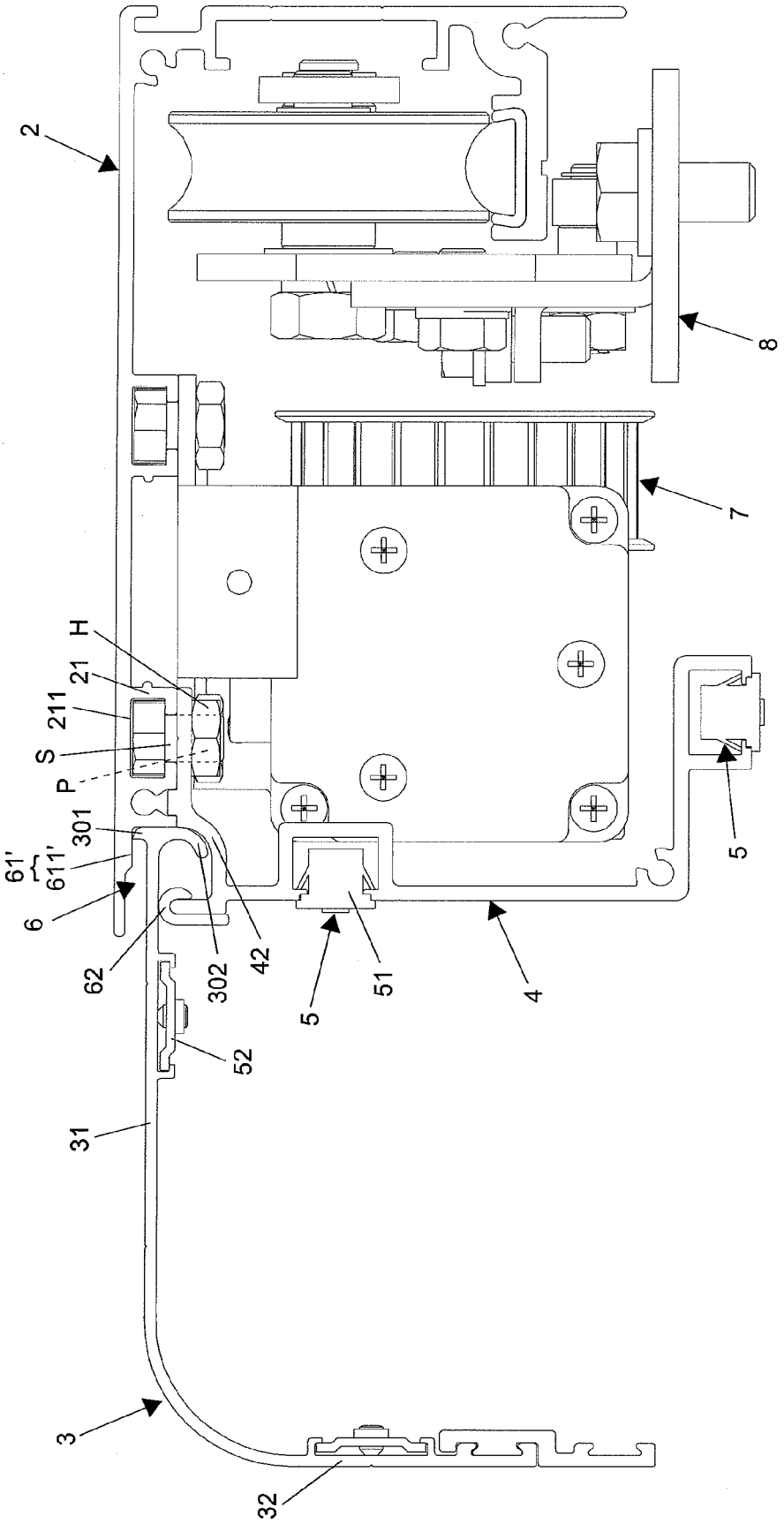

FIG. 8

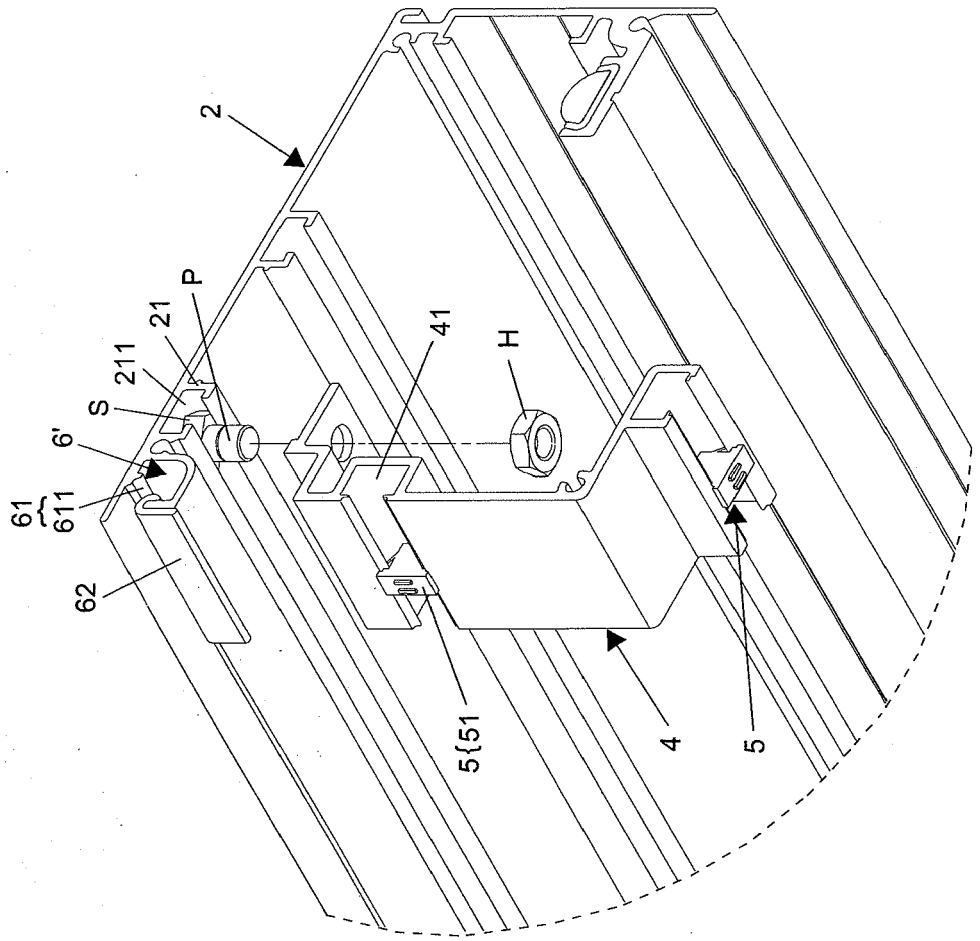

FIG. 9

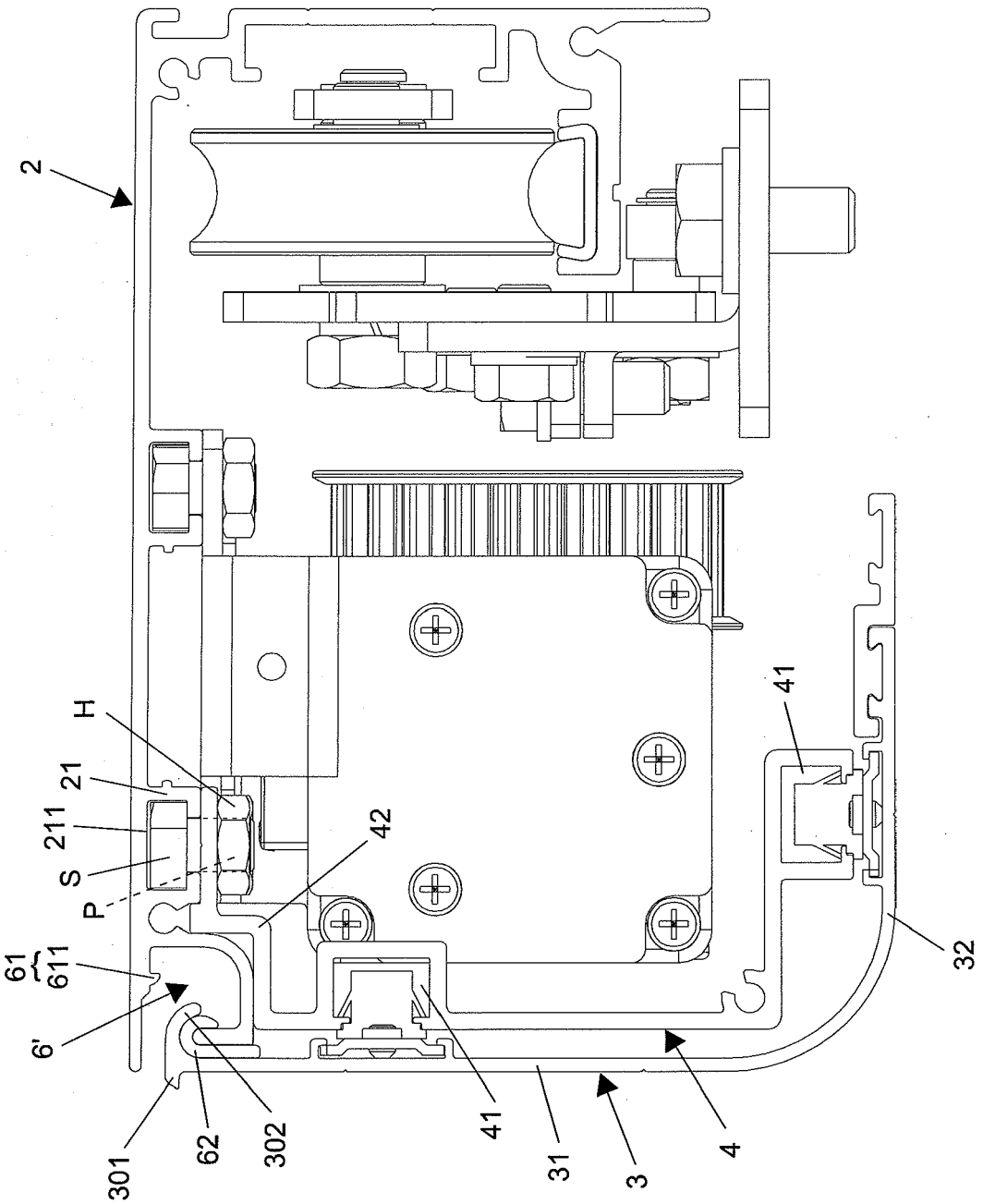

FIG. 10

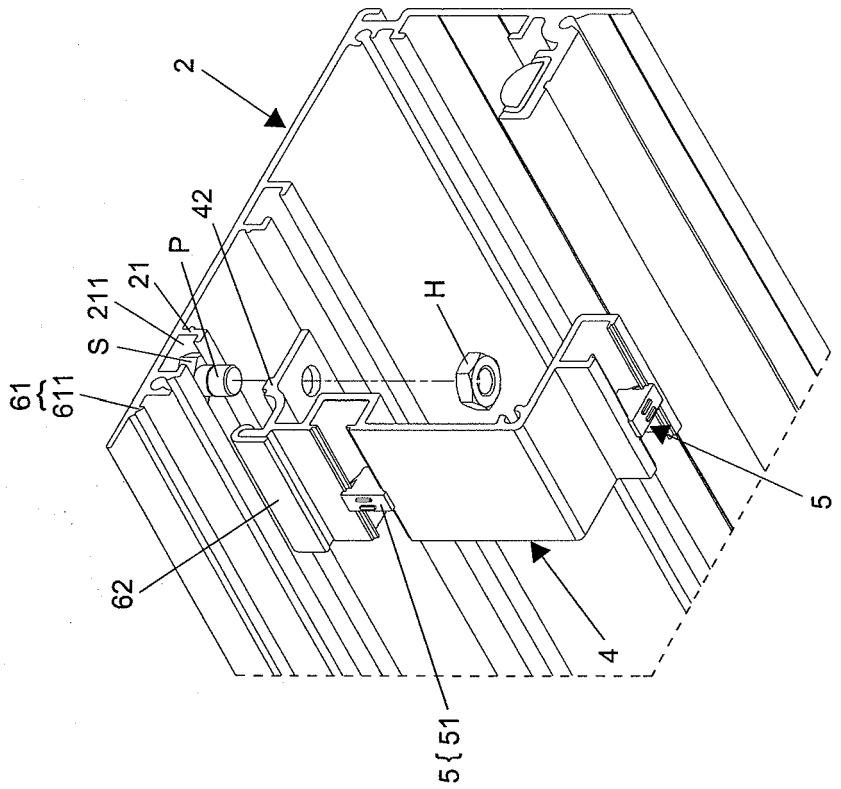

FIG. 11

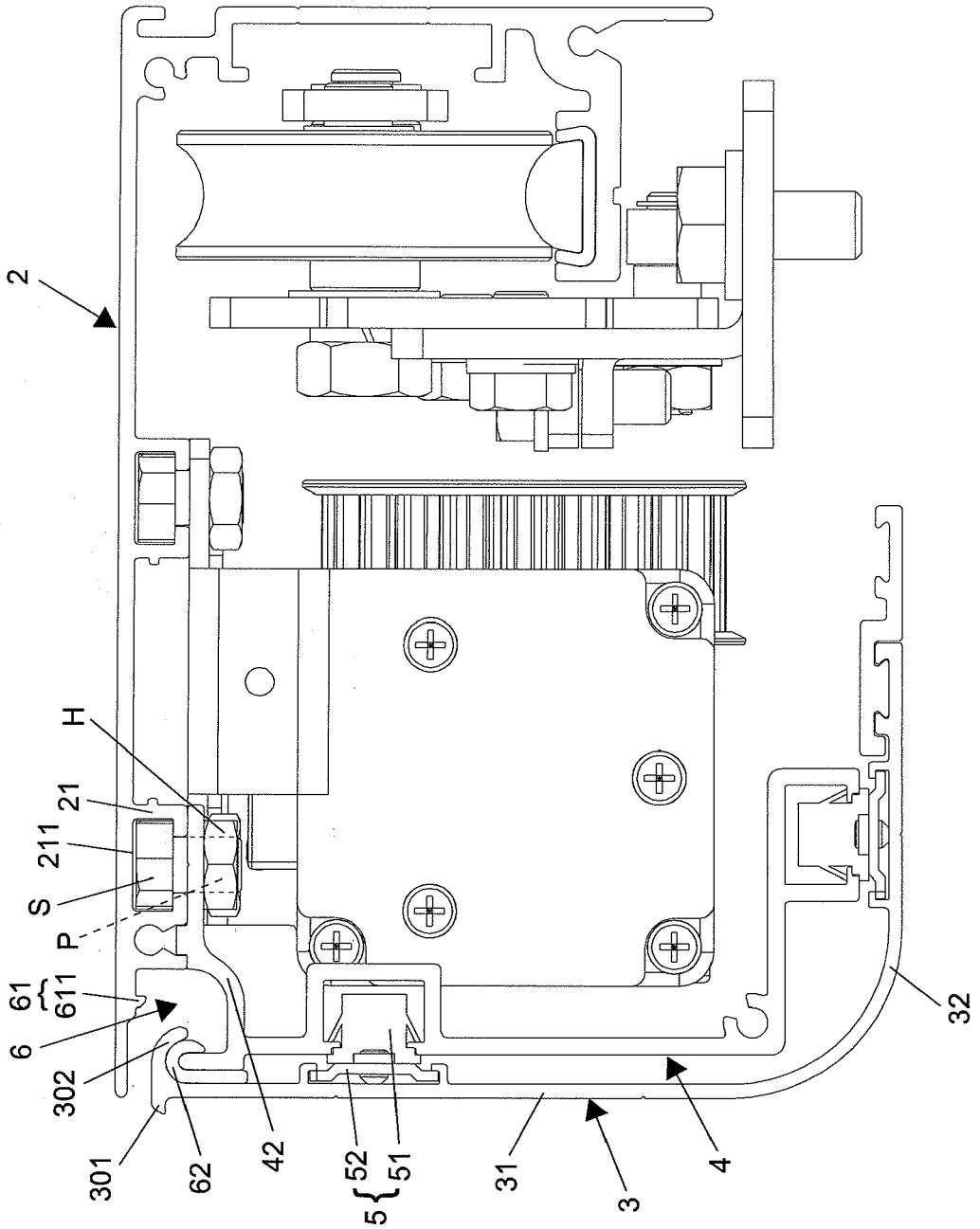

FIG. 12

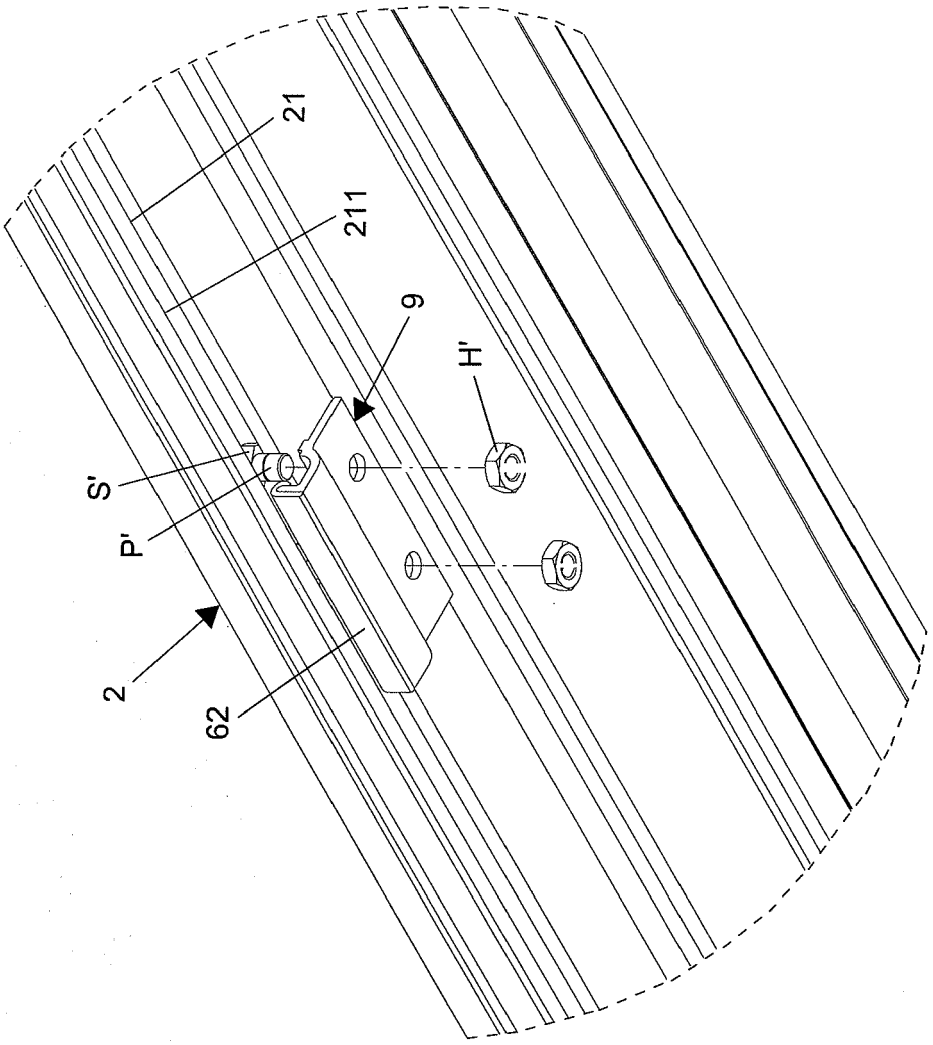

FIG. 13

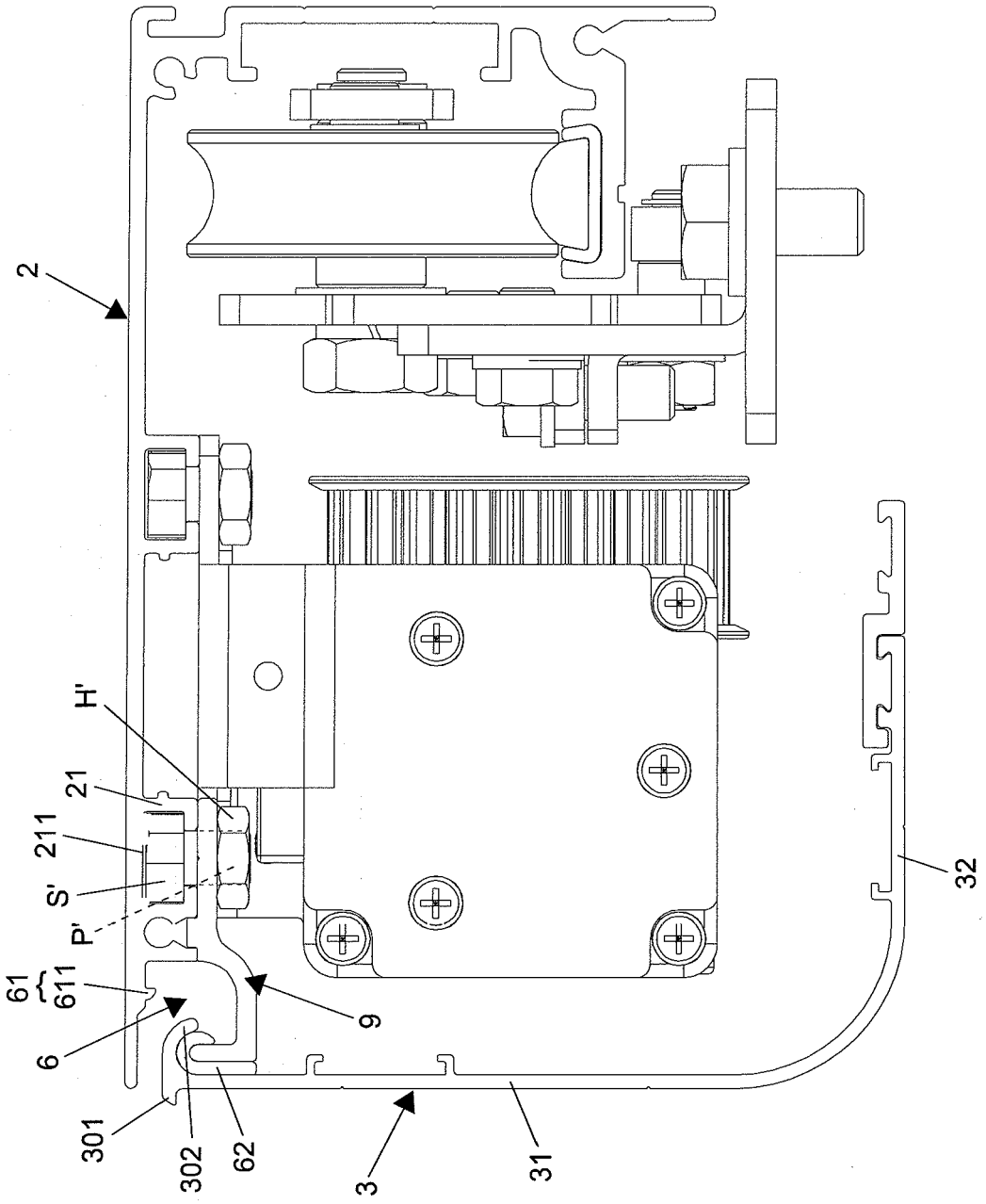

FIG. 14

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EUROPEAN SEARCH REPORT

Application Number
EP 10 19 1309

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2005/150168 A1 (ROMERO FEDERICO [US] ET AL) 14 July 2005 (2005-07-14) * paragraph [0021] - paragraph [0027]; figures 1-5 * -----	1,3,4,9, 10	INV. E05D15/06
A	FR 2 936 005 A1 (FERMOD [FR]) 19 March 2010 (2010-03-19) * page 9, line 1 - line 10; figures 12,13 * -----	2	

TECHNICAL FIELDS SEARCHED (IPC)

E05D
E05F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	19 April 2011	Van Kessel, Jeroen

CATEGORY OF CITED DOCUMENTS

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19-04-2011

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2005150168 A1	14-07-2005	US 2007180774 A1	09-08-2007
FR 2936005 A1	19-03-2010	NONE	

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