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(54) **Slide rail assembly and mounting device thereof**

(57) A slide rail assembly (20) includes a first rail (22), a second rail (24), and a mounting device (28). The second rail (24) is longitudinally displaceable relative to the first rail (22). The second rail (24) includes a releasing opening (38) and a blocking wall (39). The mounting device (28) is mounted to the second rail (24) and includes

an elastic member (48) and an engaging portion (50) connected to the elastic member (48). The engaging portion (50) corresponds to the releasing opening (38) of the second rail (24) and is configured to be blocked by the blocking wall (39).

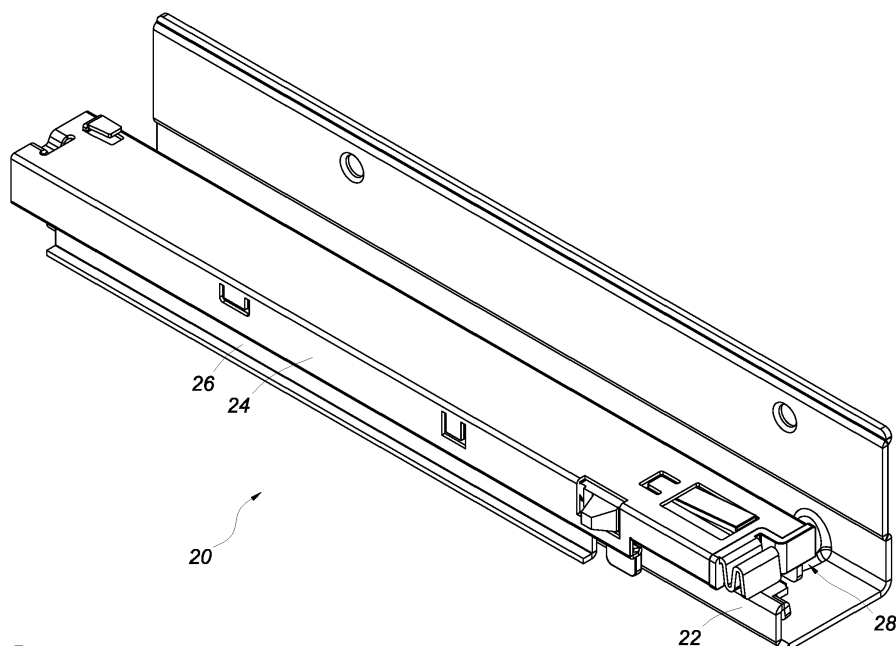


FIG. 1

Description

Field of the Invention

[0001] The present invention relates to a slide rail and, more particularly, to a slide rail assembly whose rails can be applied to a to-be-supported object via a mounting device which can be rapidly detached from the rails.

Background of the Invention

[0002] Generally speaking, a slide rail assembly includes a first rail and a second rail which can be longitudinally displaced relative to the first rail. The second rail can be mounted with and support a to-be-supported object so that the to-be-supported object can be pulled out or retracted with respect to the first rail along with the second rail.

[0003] As the market is supplied with a great variety of slide rail assemblies and mounting devices for use therewith, and given the trend of product diversification, it is an important issue in the slide rail industry to provide a structurally simple product which can be rapidly mounted to the rails of a slide rail assembly and which also allows a to-be-supported object to be rapidly mounted to the rails.

Summary of the Invention

[0004] The present invention relates to a slide rail assembly with a mounting device, wherein the mounting device can be easily mounted to and rapidly detached from a rail of the slide rail assembly.

[0005] According to one aspect of the present invention, a slide rail assembly includes a first rail, a second rail, and a mounting device. The second rail can be longitudinally displaced relative to the first rail. The second rail includes a releasing opening and a blocking wall. The mounting device is mounted to the second rail and includes an elastic member and an engaging portion connected to the elastic member. The engaging portion corresponds to the releasing opening of the second rail and is configured to be blocked by the blocking wall.

[0006] Preferably, the second rail further includes a fastening portion to be secured to an intended object.

[0007] According to another aspect of the present invention, a slide rail assembly is provided for use with a to-be-supported object, wherein the to-be-supported object includes a positioning portion. The slide rail assembly includes a first rail, a second rail, and a mounting device. The second rail can be longitudinally displaced relative to the first rail. The second rail is configured to support the to-be-supported object and includes a releasing opening. The mounting device is mounted to the second rail and includes an elastic member and an engaging portion connected to the elastic member. The engaging portion corresponds to the releasing opening of the second rail and is configured to engage with the positioning

portion of the to-be-supported object.

[0008] Preferably, the second rail further includes a fastening portion and a fastening groove, and the to-be-supported object further includes a contact portion to be mounted to the fastening groove and secured by the fastening portion. The mounting device preferably further includes a cushioning portion so that, when the to-be-supported object is mounted to the second rail, the cushioning portion is elastically pressed against a portion of the to-be-supported object.

[0009] According to still another aspect of the present invention, a mounting device is provided to be mounted to a rail of a slide rail assembly, wherein the rail includes a releasing opening and a blocking wall. The mounting device includes an elastic member and an engaging portion connected to the elastic member. The engaging portion corresponds to the releasing opening of the rail and is configured to be blocked by the blocking wall.

[0010] Preferably, the mounting device further includes an operating portion connected to the elastic member.

[0011] Preferably, the rail further comprises a window, and the mounting device further includes a flexible portion to be mounted in the window. Preferably, the rail further includes a blocking portion adjacent to the window, and the flexible portion of the mounting device further includes a recessed section to be correspondingly engaged with the blocking portion.

[0012] Preferably, the rail further includes at least one supporting portion, and the mounting device further includes at least one pressing portion to be pressed against the at least one supporting portion.

[0013] One of the advantageous features of implementing the present invention is that the rails of the slide rail assembly can be applied to a to-be-supported object by means of the mounting device, and that the mounting device can be rapidly detached from the rails.

Brief Description of the Drawings

[0014] The invention as well as a preferred mode of use and the advantages thereof will be best understood by referring to the following detailed description of some illustrative embodiments in conjunction with the accompanying drawings, in which:

FIG. 1 is a perspective view of the slide rail assembly with a mounting device in an embodiment of the present invention;

FIG. 2 is an exploded view of the slide rail assembly in an embodiment of the present invention;

FIG. 3A is a schematic exploded view of a rail and the mounting device of the slide rail assembly in an embodiment of the present invention;

FIG. 3B is a schematic exploded view, from a differ-

ent angle, of the rail and the mounting device in FIG. 3A;

FIG. 4A schematically shows how a rail and the mounting device of the slide rail assembly in an embodiment of the present invention are assembled together;

FIG. 4B is another schematic drawing of the rail and the mounting device in FIG. 4A, showing in particular how the elastic member of the mounting device is operated and elastically displaced in a predetermined direction;

FIG. 4C is yet another schematic drawing of the rail and the mounting device in FIG. 4A, showing in particular how the mounting device enters the mounting opening of the rail;

FIG. 4D is still another schematic drawing of the rail and the mounting device in FIG. 4A, showing in particular how the engaging portion of the elastic member is correspondingly mounted to the releasing opening of the rail as the mounting device enters the mounting opening of the rail;

FIG. 5A schematically shows, from a different angle, how the rail and the mounting device in FIG. 4A to FIG. 4D are assembled together;

FIG. 5B is another schematic drawing of the rail and the mounting device in FIG. 5A, showing in particular how the flexible portion of the mounting device is slightly pressed and held horizontal by the rail;

FIG. 5C is still another schematic drawing of the rail and the mounting device in FIG. 5A, showing in particular how the mounting device is mounted to the mounting opening of the rail and how the recessed section of the flexible portion is pressed against the blocking portion of the rail;

FIG. 6A is a schematic assembled perspective view of a rail and the mounting device of the slide rail assembly in an embodiment of the present invention;

FIG. 6B schematically shows how the mounting device in an embodiment of the present invention is disengaged from a rail of a slide rail assembly;

FIG. 7 is a schematic perspective view showing how the slide rail assembly in an embodiment of the present invention is used to support a to-be-supported object;

FIG. 8 is a schematic exploded view showing how a to-be-supported object is mounted to the slide rail assembly in an embodiment of the present invention

via the fastening portion and the mounting device of the slide rail assembly;

FIG. 9A schematically shows how a to-be-supported object is assembled to a rail of the slide rail assembly in an embodiment of the present invention;

FIG. 9B is another schematic drawing of the to-be-supported object and the rail in FIG. 9A, showing in particular how a portion of the to-be-supported object is mounted to the fastening portion of the rail; and

FIG. 9C is yet another schematic drawing of the to-be-supported object and the rail in FIG. 9A, showing in particular how the to-be-supported object is mounted to the mounting device of the slide rail assembly and how the cushioning portion of the mounting device is pressed against a portion of the to-be-supported object.

Detailed Description of the Invention

[0015] As shown in FIG. 1 and FIG. 2, a slide rail assembly 20 in an embodiment of the present invention includes a first rail 22, a second rail 24, and a third rail 26 which corresponds to and is movably mounted between the first rail 22 and the second rail 24. The third rail 26 is intended to increase the distance by which the second rail 24 can be longitudinally displaced relative to the first rail 22. A mounting device 28 is mounted to one of the rails of the slide rail assembly 20. Here, the mounting device 28 is mounted to an end portion of the second rail 24 by way of example.

[0016] Referring to FIG. 3A and FIG. 3B, the mounting device 28 in this embodiment of the present invention is releasably assembled to the second rail 24. Preferably, the second rail 24 includes a first wall 30, a second wall 32 located opposite the first wall 30, and a connecting wall 34 extending and connected between the first wall 30 and the second wall 32. The first wall 30, the second wall 32, and the connecting wall 34 jointly define a mounting opening 36. A releasing opening 38 and a window 40 are provided at appropriate parts of the second rail 24 respectively. For instance and without limitation, the releasing opening 38 can be adjacent to the first wall 30, and the window 40 can be located at the connecting wall 34. A blocking portion 42 is provided adjacent to the window 40. At least one supporting portion 44 is connected to one of the first wall 30 and the second wall 32 and is bent toward the mounting opening 36. Here, each of the first wall 30 and the second wall 32 is connected with a supporting portion 44 by way of example. In a preferred embodiment, the mounting device 28 includes a mounting member 46, an elastic member 48, an engaging portion 50, an operating portion 52, a flexible portion 54, at least one pressing portion 58, and a cushioning portion 60. The mounting member 46 can be correspondingly mounted to the mounting opening 36 of the second rail

24. The elastic member 48 is elastically connected to the mounting member 46. The engaging portion 50 is connected to an appropriate part of the elastic member 48. In this embodiment, the engaging portion 50 is connected to a lateral side of the elastic member 48, but the present invention imposes no limitations in this regard. The operating portion 52 is connected to the elastic member 48 and, in this embodiment, is generally perpendicularly connected to the elastic member 48. The flexible portion 54 has one end substantially connected to a central part of the mounting member 46 such that the flexible portion 54 stands slantingly on the mounting member 46. The flexible portion 54 can be correspondingly mounted in the window 40 of the second rail 24. In addition, the flexible portion 54 includes a recessed section 56 to be correspondingly engaged with the blocking portion 42 of the second rail 24. The at least one pressing portion 58 can be pressed against one of the supporting portions 44 of the second rail 24 so that the mounting device 28 is mounted securely to the second rail 24. The cushioning portion 60 is elastically connected to the mounting member 46.

[0017] Referring to FIG. 4A to FIG. 4D, when it is desired to mount the mounting device 28 to the second rail 24, the operator applies a force F to and thereby presses the elastic member 48 such that the elastic member 48 is elastically displaced toward the mounting member 46 and stores an elastic force. Accordingly, the mounting device 28 is moved in a first direction D1 into the mounting opening 36 of the second rail 24. Once the elastic member 48 releases the elastic force, the engaging portion 50 connected to the elastic member 48 correspondingly juts out of the releasing opening 38 and engages with a blocking wall 39 adjacent to the releasing opening 38 of the second rail 24. Consequently, the engaging portion 50 is blocked by the blocking wall 39 and is thus mounted in the releasing opening 38 of the second rail 24.

[0018] The process of mounting the mounting device 28 to the second rail 24 is illustrated again in FIG. 5A to FIG. 5C as viewed from a different angle. In the course in which the mounting device 28 is moved in the first direction D1 into the mounting opening 36 following depression of the elastic member 48 or the operating portion 52 of the mounting device 28, the flexible portion 54 of the mounting device 28 is slightly pressed by a portion of the second rail 24 (see FIG. 5B) and is thereby held horizontal. Once the mounting device 28 enters the mounting opening 36 completely (see FIG. 5C), the flexible portion 54 of the mounting device 28 is correspondingly mounted in the window 40 of the second rail 24. With the recessed section 56 of the flexible portion 54 pressed against the blocking portion 42 of the second rail 24, the flexible portion 54 will not protrude from the window 40 while mounted therein. Thus, the flexible portion 54 and its recessed section 56 allow the mounting device 28 to be mounted securely to the second rail 24.

[0019] FIG. 6A shows the state in which the mounting device 28 is mounted to the second rail 24, and FIG. 6B

shows how to disengage the mounting device 28 from the second rail 24. When it is desired to detach the mounting device 28 from the second rail 24, the operator applies a force F1 to and thereby presses the operating portion 52 of the mounting device 28 such that the engaging portion 50 of the mounting device 28 is disengaged from the blocking wall 39 of the releasing opening 38. On the other hand, the operator applies another force F2 and thereby presses the flexible portion 54 of the mounting device 28 to disengage the flexible portion 54 from the window 40. Accordingly, the mounting device 28 can be moved in a second direction, which is opposite the first direction D1, so as to be detached from the second rail 24.

[0020] Referring to FIG. 7 and FIG. 8, the second rail 24 of the slide rail assembly 20 can be mounted with a to-be-supported object (an intended object) 62 in order to support the to-be-supported object 62. As shown in FIG. 7, a pair of slide rail assemblies 20 jointly support the to-be-supported object 62, and the second rail 24 and the third rail 26 of each slide rail assembly 20 have been longitudinally displaced relative to the corresponding first rail 22 and are therefore in an extended state relative to the corresponding first rail 22. More specifically, as shown in FIG. 8, the second rail 24 of each slide rail assembly 20 further includes a fastening portion 64 and a fastening groove 66, and each lateral side of the to-be-supported object 62 includes a contact portion 68 and a positioning portion 70. The contact portion 68 can be correspondingly mounted to the fastening groove 66 of the corresponding second rail 24 and secured by the corresponding fastening portion 64, while the positioning portion 70 is correspondingly mounted to the engaging portion 50 of the corresponding mounting device 28.

[0021] Referring to FIG. 9A to FIG. 9C, when it is desired to mount the to-be-supported object 62 to the second rail 24, the operator moves the to-be-supported object 62 in a direction D until the to-be-supported object 62 is correspondingly mounted to the fastening portion 64 of the second rail 24. Once the to-be-supported object 62 is mounted to and fixed in position with respect to the second rail 24, the engaging portion 50 of the mounting device 28 is correspondingly engaged with the positioning portion 70 of the to-be-supported object 62. Moreover, once the to-be-supported object 62 is mounted to and fixed in position with respect to the second rail 24, the cushioning portion 60 of the mounting device 28 is elastically pressed against a portion of the to-be-supported object 62 and thus produces a cushioning effect on the to-be-supported object 62. When the overall length of the to-be-supported object 62 is less than the overall length of the second rail 24, the difference in length, if within the allowable dimensional tolerance, can be compensated for by elastic contraction of the elastic cushioning portion 60 so that the to-be-supported object 62 can be mounted to the second rail 24 with success.

[0022] While the present invention has been disclosed herein by way of the foregoing preferred embodiments, the embodiments are not intended to be restrictive of the

present invention. The scope of patent protection sought is defined by the appended claims.

Claims

1. A slide rail assembly (20) comprising:

a first rail (22);
a second rail (24) longitudinally displaceable relative to the first rail (22),
the second rail (24) comprising a releasing opening (38) and a blocking wall (39); and
a mounting device (28) mounted to the second rail (24), the mounting device (28) comprising an elastic member (48) and an engaging portion (50) connected to the elastic member (48), wherein the engaging portion (50) corresponds to the releasing opening (38) of the second rail (24) and is configured to be blocked by the blocking wall (39).

2. The slide rail assembly (20) as claimed in claim 1, wherein the second rail (24) further comprises a fastening portion (64) to be secured to an intended object (62).

3. The slide rail assembly (20) as claimed in claim 1, wherein the slide rail assembly (20) is applicable to a to-be-supported object (62), the to-be-supported object (62) comprising a positioning portion (70); and wherein the second rail (24) is configured to support the to-be-supported object (62) and the engaging portion (50) of the mounting device (28) is configured to engage with the positioning portion (70) of the to-be-supported object (62).

4. The slide rail assembly (20) as claimed in claim 3, wherein the second rail (24) further comprises a fastening portion (64) and a fastening groove (66), and the to-be-supported object (62) further comprises a contact portion (68) to be mounted to the fastening groove (66) and secured by the fastening portion (64).

5. The slide rail assembly (20) as claimed in claim 4, wherein the mounting device (28) further comprises a cushioning portion (60), and the cushioning portion (60) is elastically pressed against a portion of the to-be-supported object (62) when the to-be-supported object (62) is mounted to the second rail (24).

6. The slide rail assembly (20) as claimed in claim 1, wherein the mounting device (28) further comprises an operating portion (52) connected to the elastic member (48).

7. The slide rail assembly (20) as claimed in claim 1,

wherein the second rail (24) further comprises a window (40), and the mounting device (28) further comprises a flexible portion (54) to be mounted in the window (40).

8. The slide rail assembly (20) as claimed in claim 7, wherein the second rail (24) further comprises a blocking portion (42) adjacent to the window (40), and the flexible portion (54) of the mounting device (28) further comprises a recessed section (56) to be correspondingly engaged with the blocking portion (42).

9. The slide rail assembly (20) as claimed in claim 1, wherein the second rail (24) further comprises at least one supporting portion (44), and the mounting device (28) further comprises at least one pressing portion (58) to be pressed against the at least one supporting portion (44).

10. A mounting device (28) to be mounted to a rail (24) of a slide rail assembly (20), the rail (24) comprising a releasing opening (38) and a blocking wall (39), the mounting device (28) comprising:

an elastic member (48); and
an engaging portion (50) connected to the elastic member (48), wherein the engaging portion (50) corresponds to the releasing opening (38) of the rail (24) and is configured to be blocked by the blocking wall (39).

11. The mounting device (28) as claimed in claim 10, further comprising an operating portion (52) connected to the elastic member (48).

12. The mounting device (28) as claimed in claim 10, wherein the rail (24) further comprises a window (40), and the mounting device (28) further comprises a flexible portion (54) to be mounted in the window (40).

13. The mounting device (28) as claimed in claim 12, wherein the rail (24) further comprises a blocking portion (42) adjacent to the window (40), and the flexible portion (54) of the mounting device (28) further comprises a recessed section (56) to be correspondingly engaged with the blocking portion (42).

14. The mounting device (28) as claimed in claim 10, wherein the rail (24) further comprises at least one supporting portion (44), and the mounting device (28) further comprises at least one pressing portion (58) to be pressed against the at least one supporting portion (44).

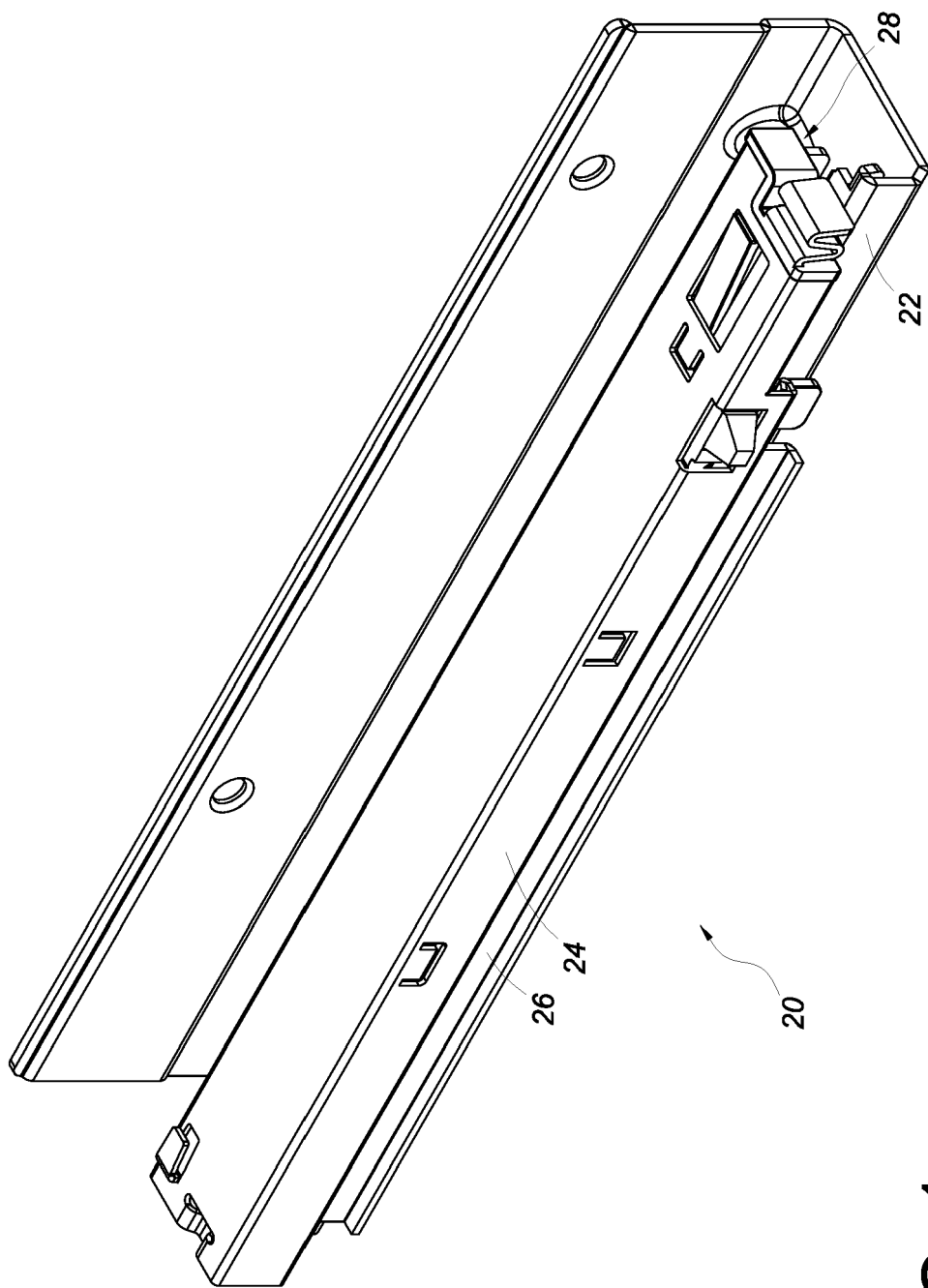


FIG. 1

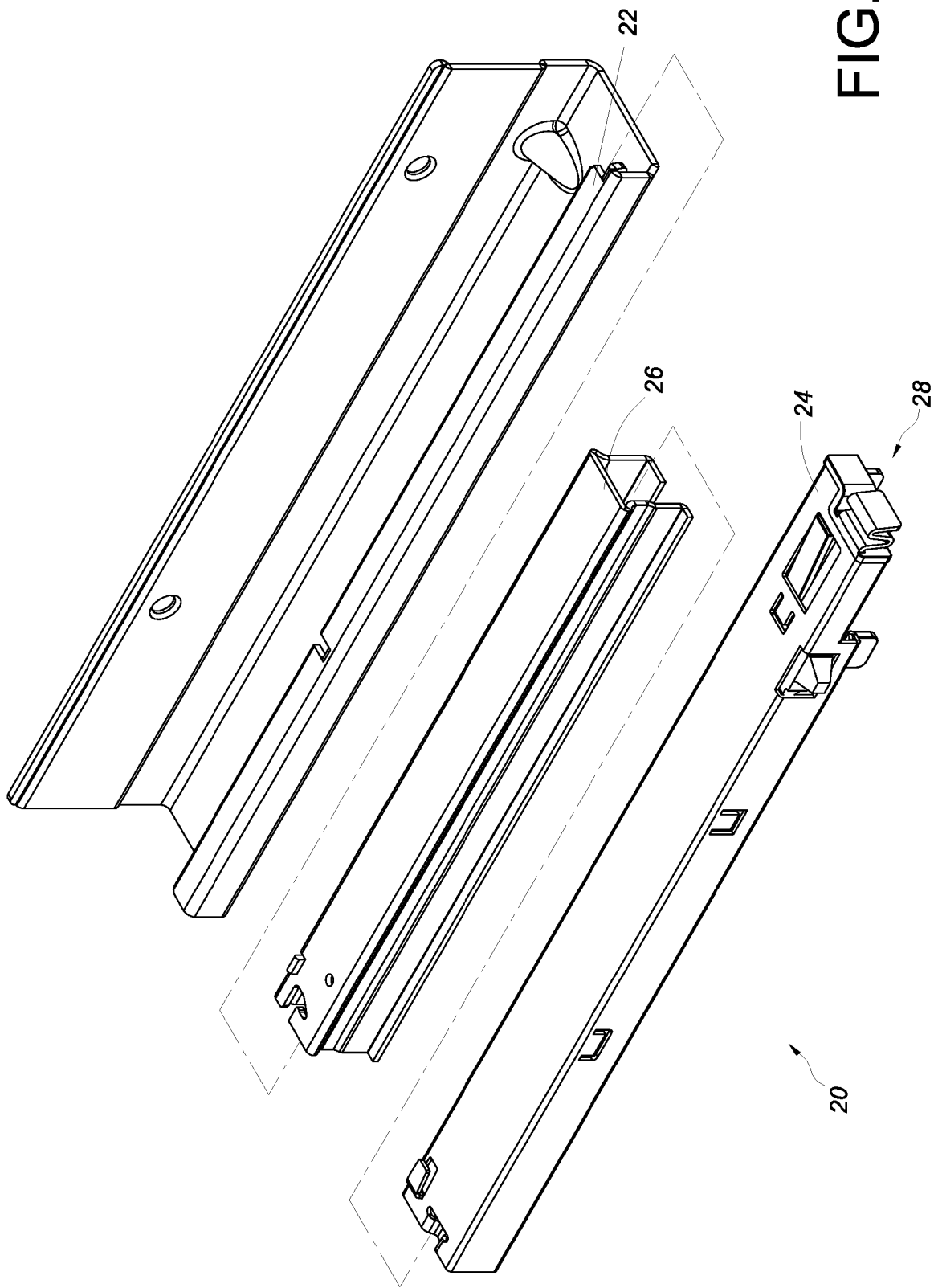


FIG. 2

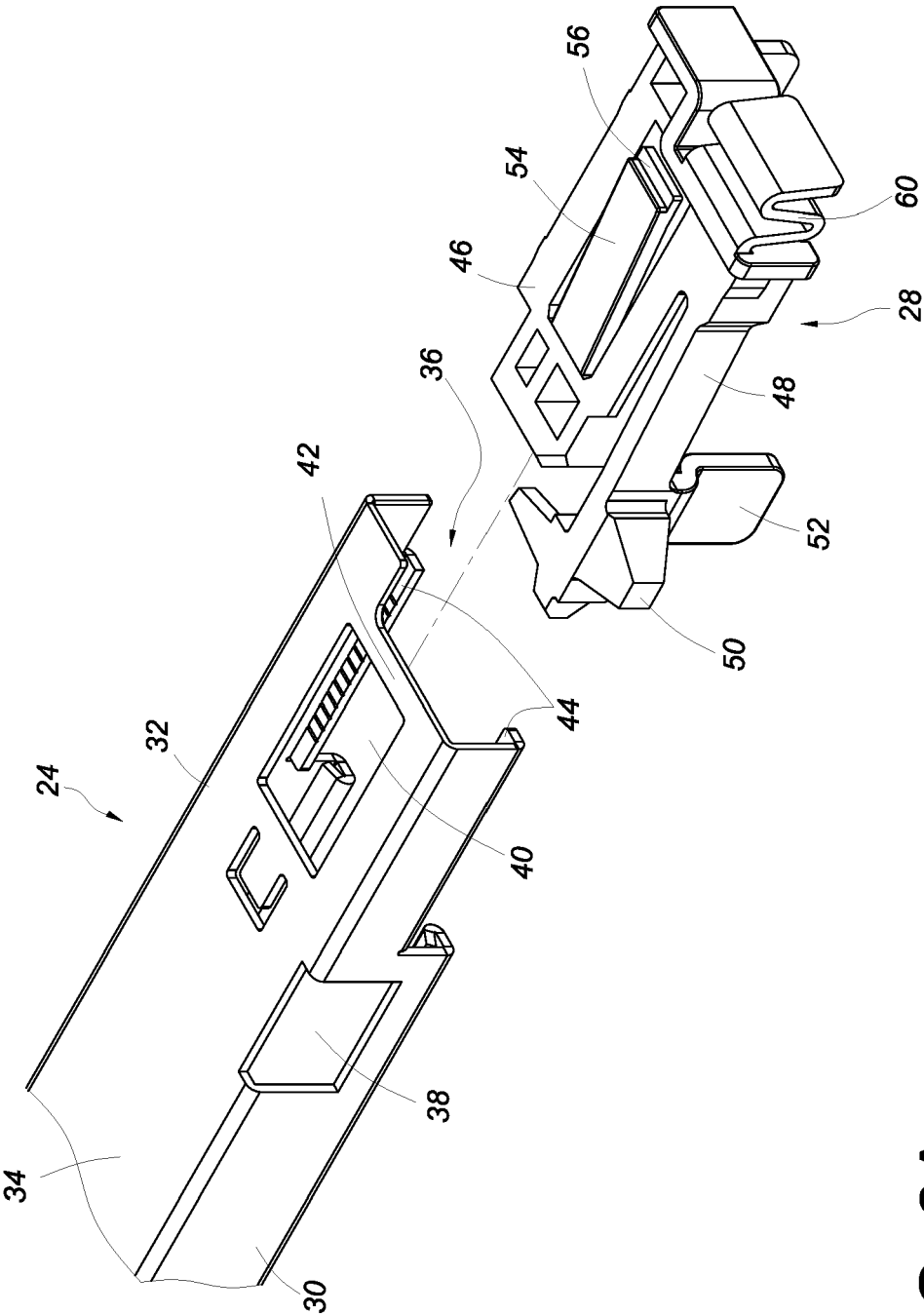


FIG. 3A

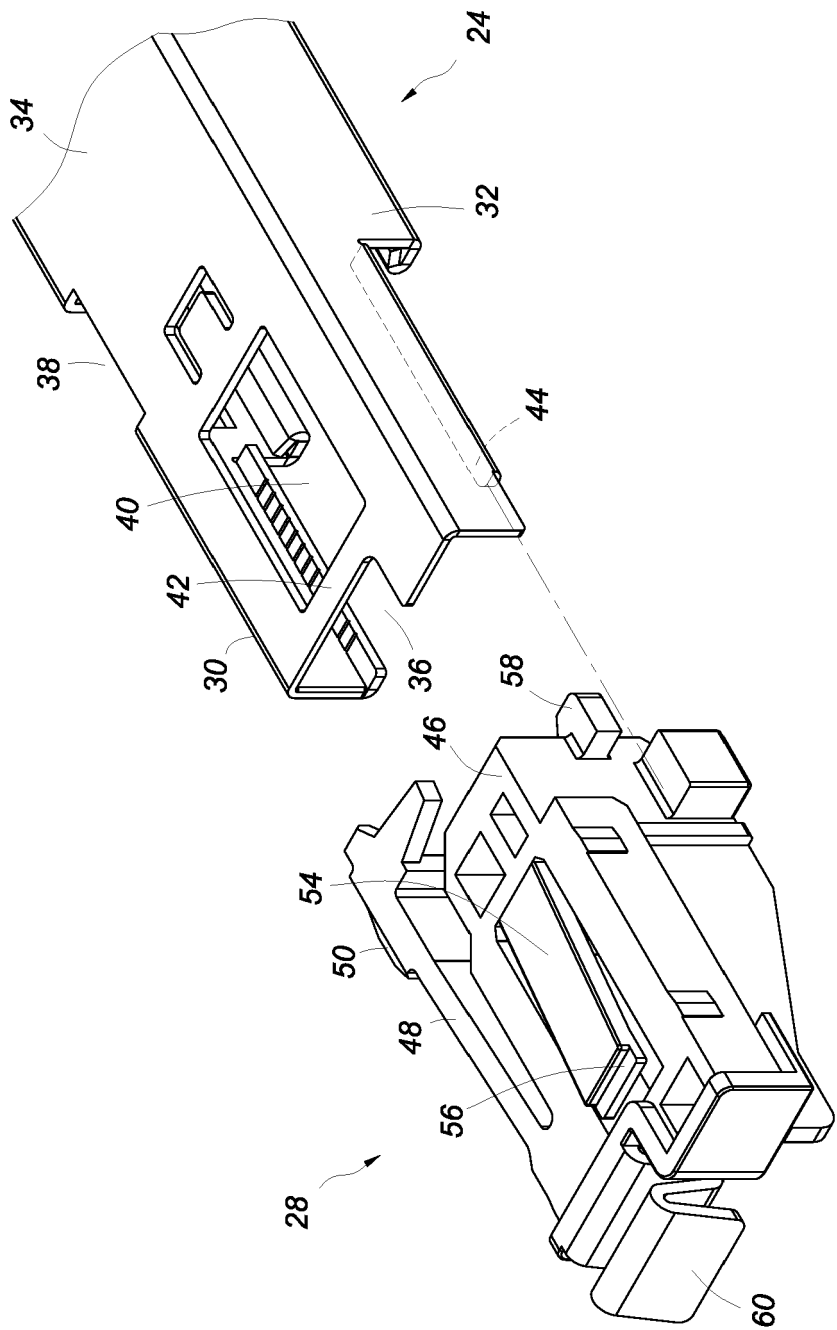


FIG. 3B

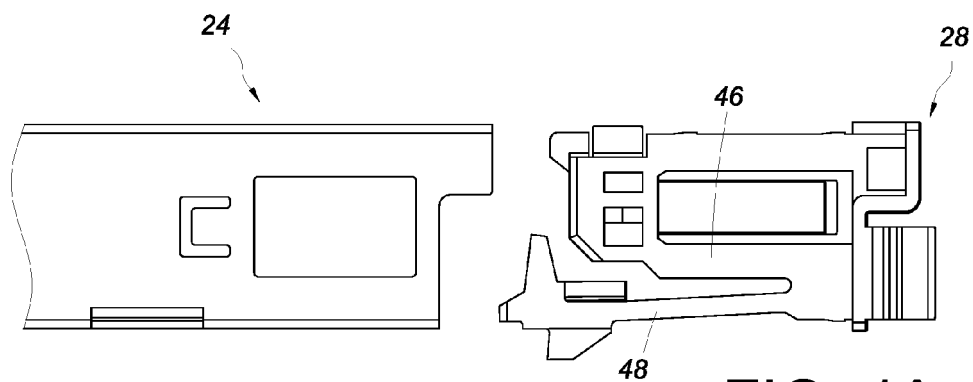


FIG. 4A

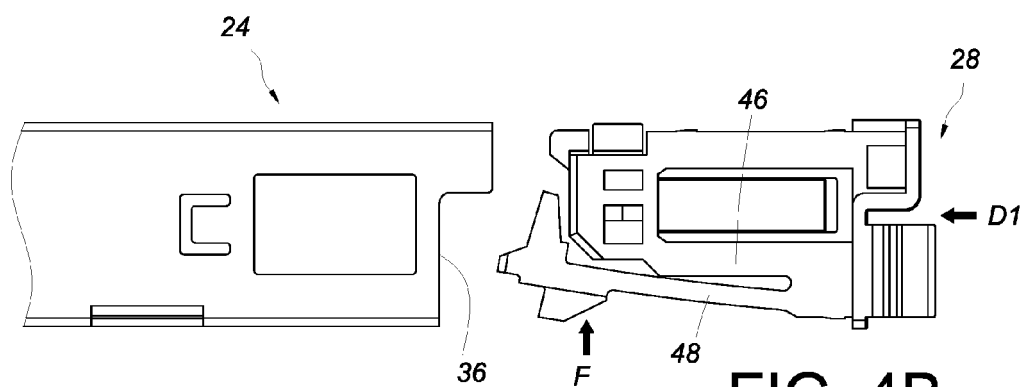


FIG. 4B

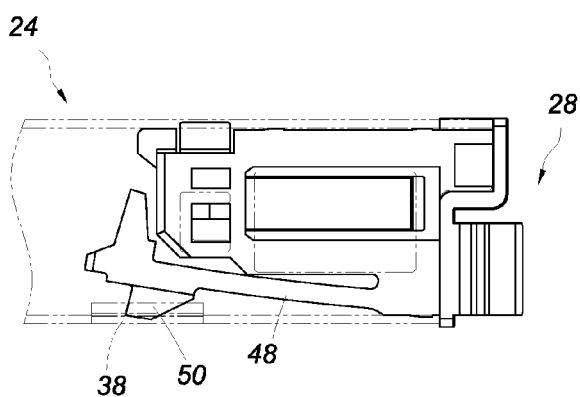


FIG. 4C

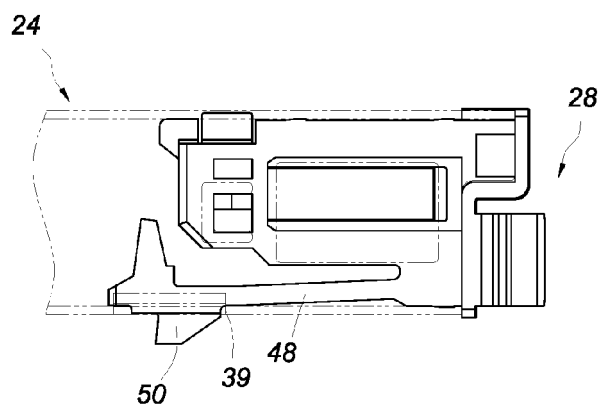


FIG. 4D

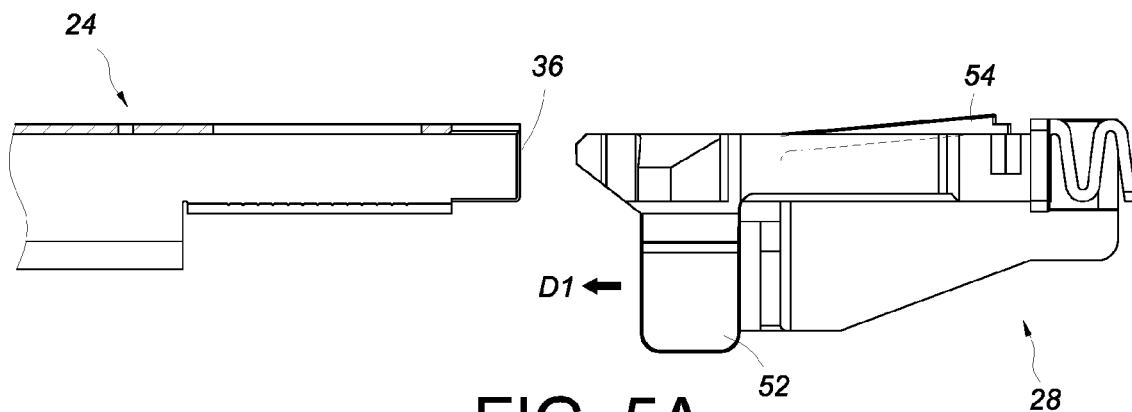


FIG. 5A

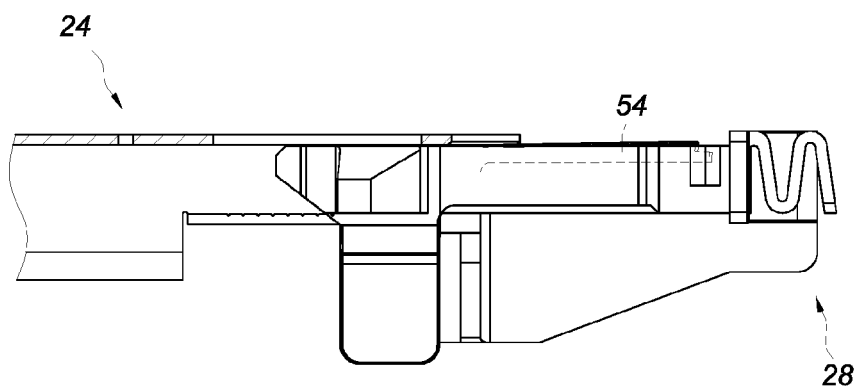


FIG. 5B

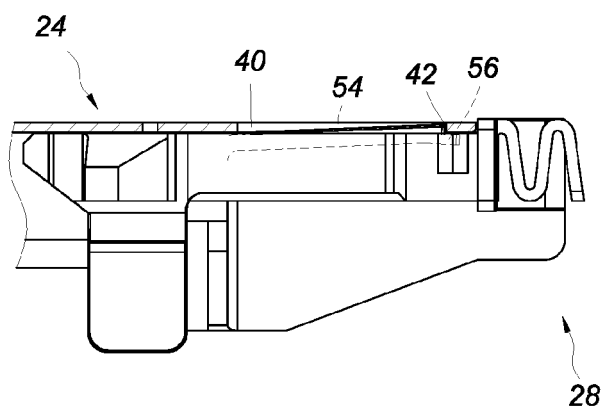


FIG. 5C

FIG. 6A

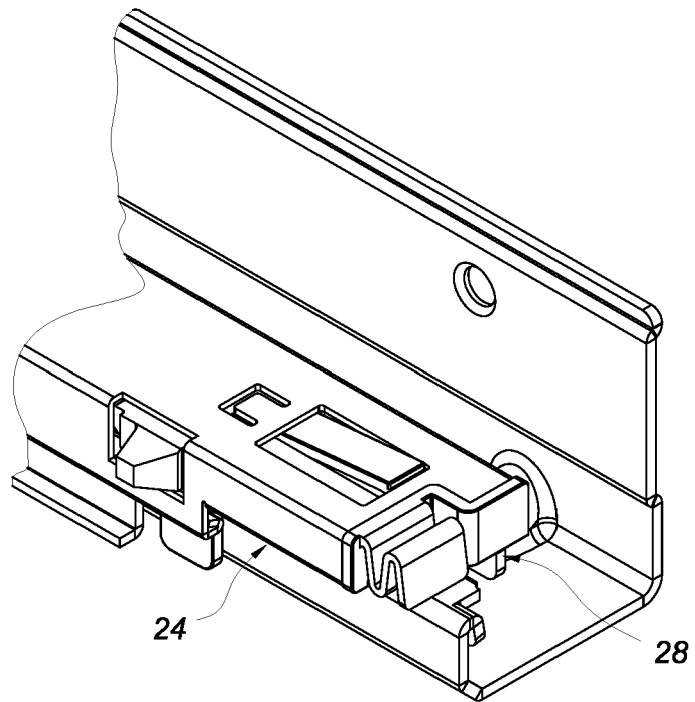
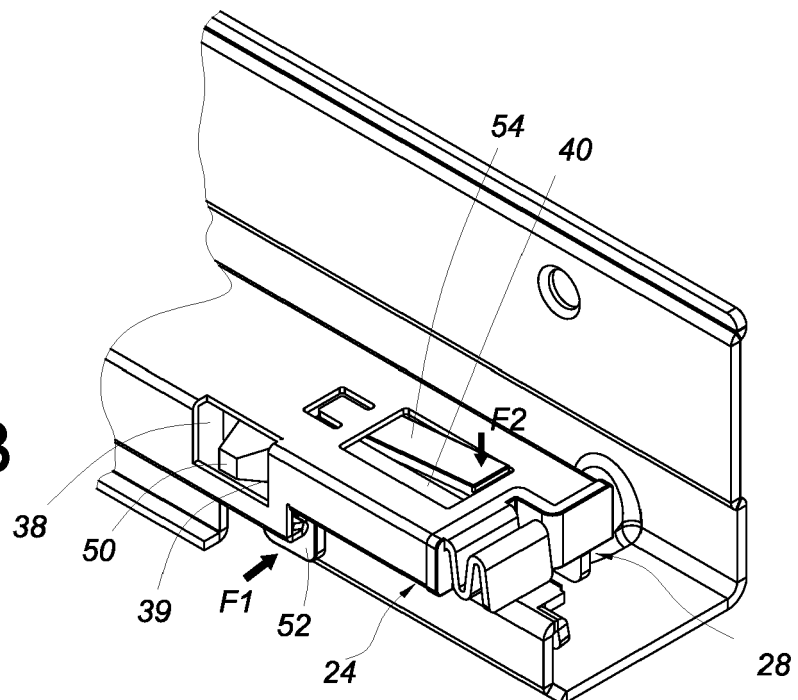


FIG. 6B



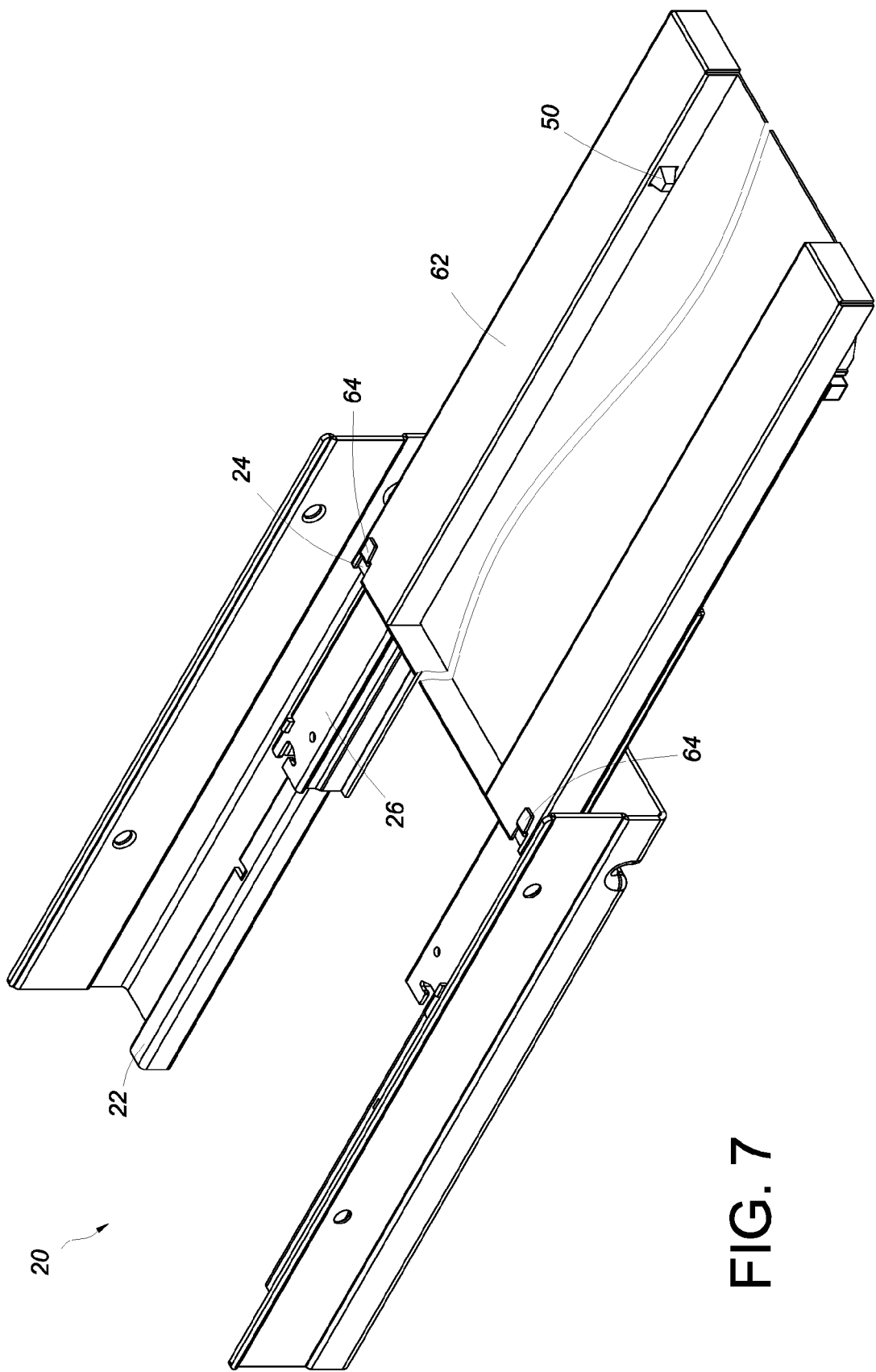
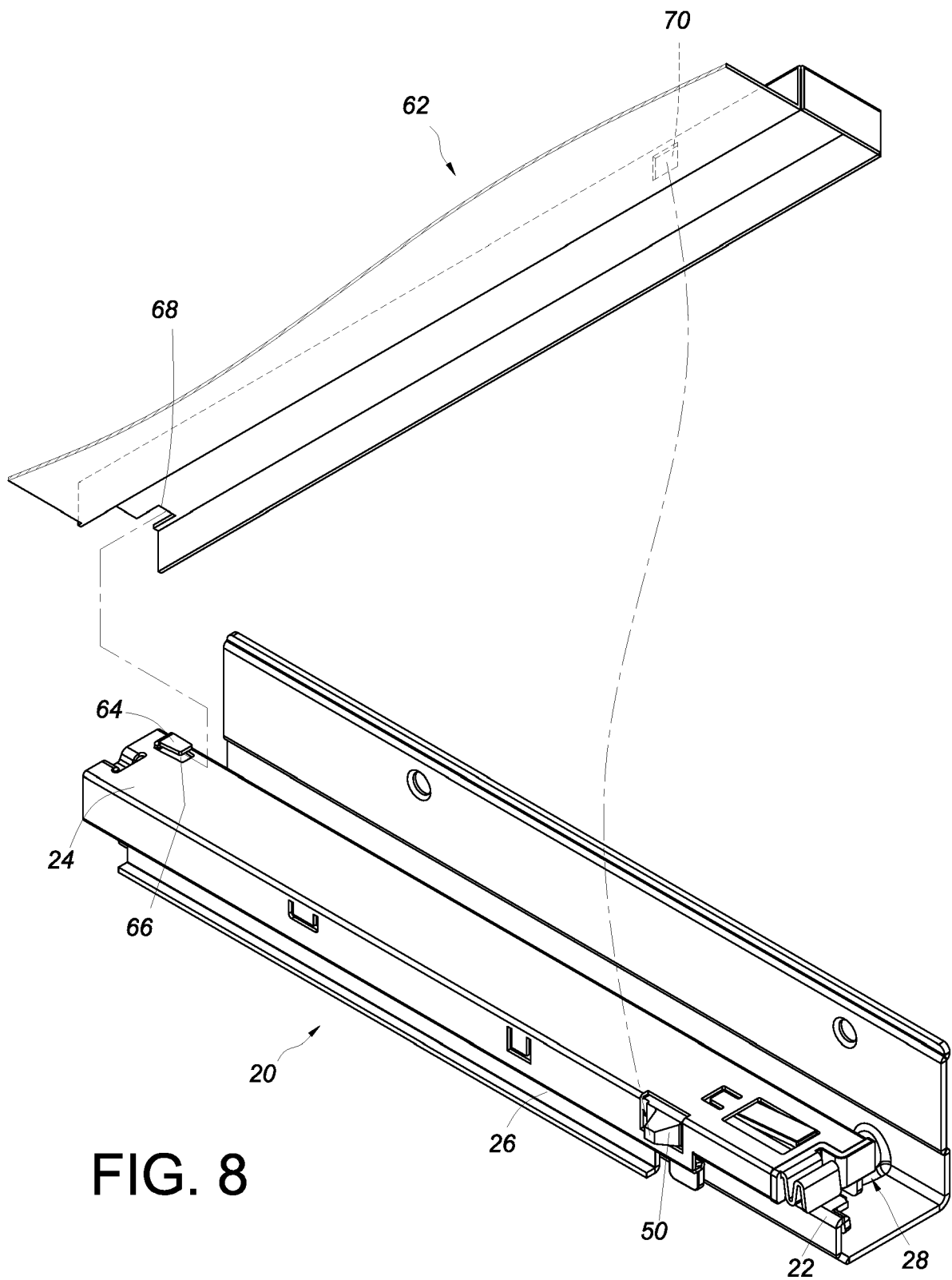


FIG. 7



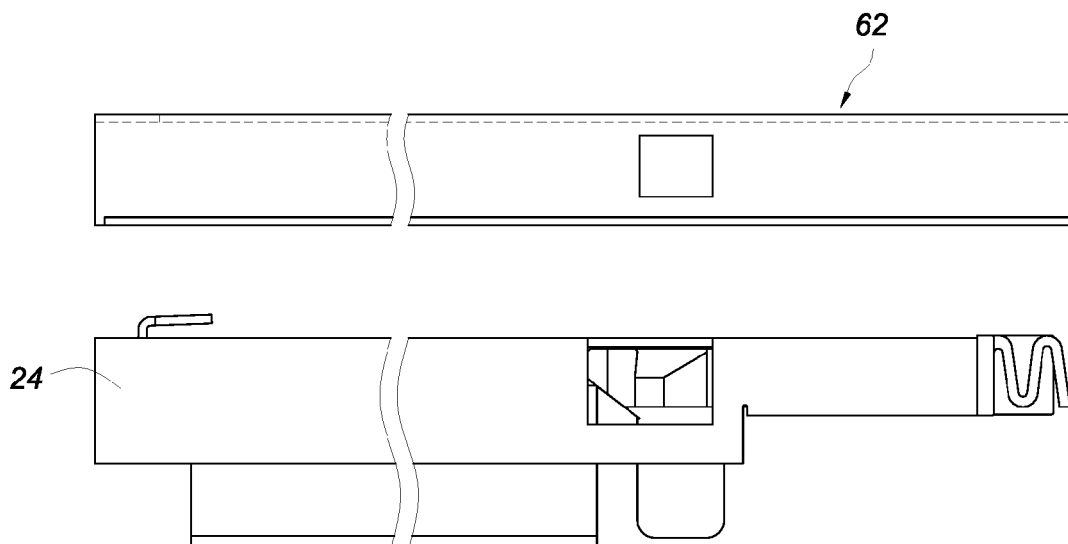


FIG. 9A

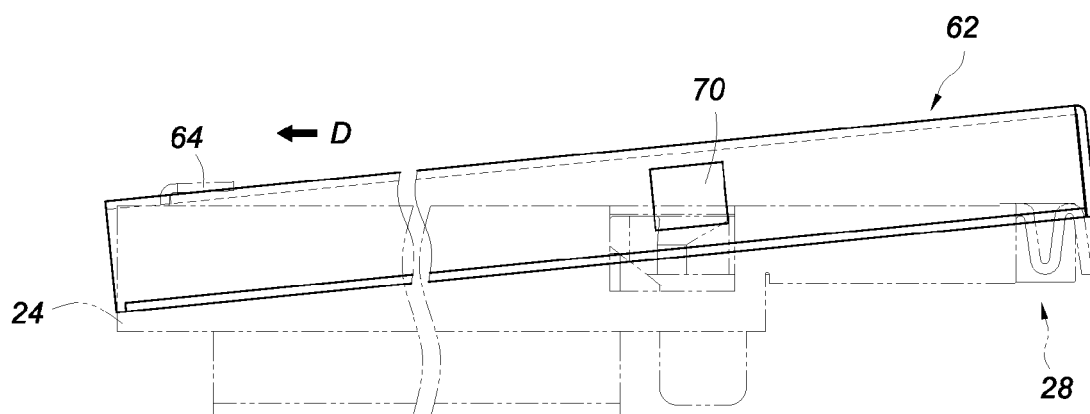


FIG. 9B

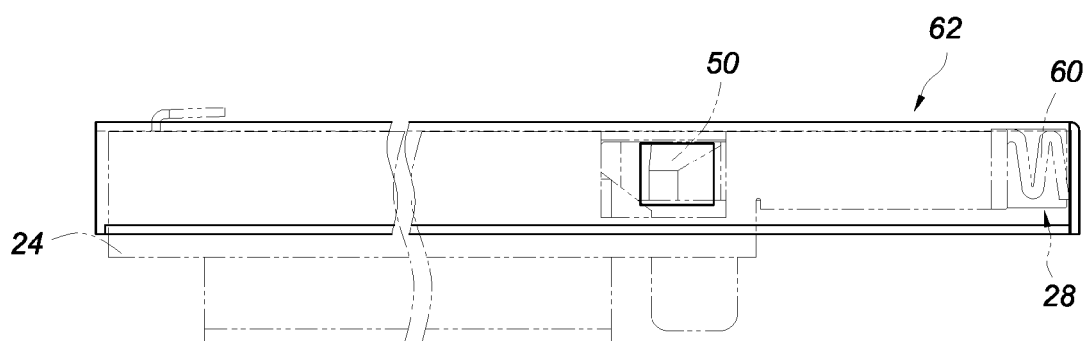


FIG. 9C



EUROPEAN SEARCH REPORT

Application Number
EP 15 15 1064

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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)
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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 6 July 2015	Examiner Jacquemin, Martin
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 03.82 (P04C01)

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

EP 15 15 1064

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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06-07-2015

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