



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
15.07.2020 Bulletin 2020/29

(51) Int Cl.:
E05D 15/06 (2006.01)

(21) Application number: **20151046.8**

(22) Date of filing: **09.01.2020**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
KH MA MD TN

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(30) Priority: **10.01.2019 IT 201900000421**

(54) **STRUCTURE WITH SLIDING DOORS FOR WARDROBES**

(57) A structure with sliding doors for wardrobes, characterised in that it comprises a wardrobe body (2) having an upper part (3) and a lower part (4) which delimit a front opening that can be closed by sliding doors associated with said wardrobe body by means of an upper rail assembly (5) and a lower rail assembly (6); said upper rail assembly comprising a rail (7) which has parallel tracks (8), and on which carriages provided with paired rollers slide; each of said carriages being provided with an anti-derailing system consisting of a fin (14) formed in the lower part of said carriage and fitting directly into one of said tracks of the rail, being blocked by the weight of the door. The structure furthermore comprises a damping system, for carrying out a soft-closing of the door, comprising a damping device (16) mounted within said carriage and operated by activators (20) located at the ends of the rail and fixed to the side. The structure furthermore comprises lower sliding blocks that hold the doors from the bottom; the lower sliding blocks keep the door perfectly perpendicular and do not allow any widthways movement. The lower sliding blocks furthermore comprise an anti-release system for the door.

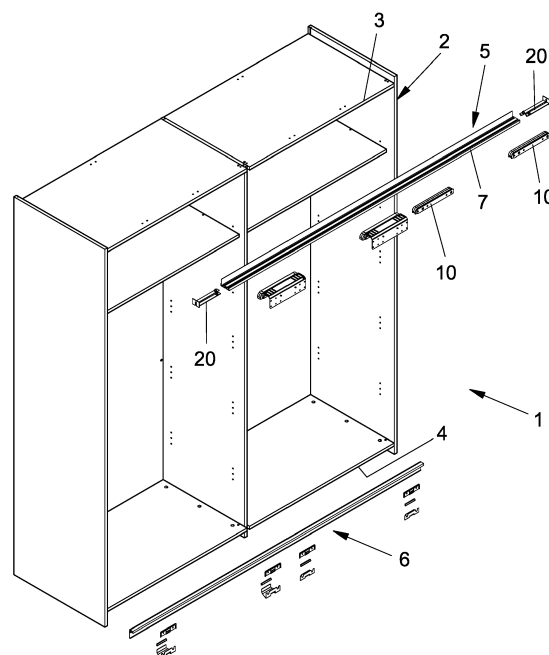


FIG. 1

Description

BACKGROUND OF INVENTION

[0001] The object of the present invention relates to a structure with sliding doors for wardrobes.

[0002] The structure with sliding doors of the present invention is particularly designed to achieve the sliding of the doors with respect to the body structure of wardrobes with two or three doors sliding over one another.

[0003] Prior sliding systems currently available on the market can be divided into three main categories.

[0004] A first system comprises suspended doors supported by carriages which slide on a rail resting and fixed on the upper side of the wardrobe top.

[0005] A second system comprises suspended doors again supported by carriages, which slide in a rail fixed on the wardrobe top, with a frontal sliding.

[0006] A third system comprises suspended doors supported by carriages which slide in a rail fixed on the bottom side of the wardrobe top.

[0007] Other systems exist, but they are not relevant in this specific case.

[0008] The systems of the first type, in which the rail is fixed on the upper part of the top of the wardrobe body, comprise carriages provided with concave or convex rollers, which enable the sliding in the rail, and an automatically or manually triggered anti-derailing mechanism.

[0009] These devices also generally comprise "soft-closing" mechanisms, i.e. damping mechanisms, inserted at the ends of the rails or fixed on the bottom side of the wardrobe top, which are operated by activators fixed on the doors.

SUMMARY OF THE INVENTION

[0010] The aim of the present invention is to provide a new structure with sliding doors that is cleaner from a construction standpoint and allows to achieve a smoother operation compared to prior devices.

[0011] Within the scope of this aim, an object of the present invention is to provide a structure having improved aesthetic features, which is an important characteristic within the furnishing sector.

[0012] Another object of the present invention is to provide a structure with sliding doors which has a reliable anti-derailing system.

[0013] A further object of the present invention is to provide a structure that is easier to assemble than prior systems.

[0014] The present structure, due to its unique constructional characteristics, is capable of ensuring the broadest reliability and safety guarantees during use.

[0015] These and other objects, which will become clearer in the following, are achieved by a structure with sliding doors for wardrobes, characterised in that it comprises a wardrobe body having an upper part and a lower part which delimit a front opening that can be closed by

sliding doors associated with said wardrobe body by means of an upper rail assembly and a lower rail assembly; said upper rail assembly comprising a rail which has parallel tracks, and on which carriages provided with paired rollers slide; each of said carriages being provided with an anti-derailing system consisting of a fin formed in the lower part of said carriage and fitting directly into one of said rail tracks, being blocked by the weight of the door.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016] Further characteristics and advantages of the object of the present invention will become clearer through an examination of the description of a preferred, though not exclusive, embodiment of the present invention, illustrated by way of non-limitative example in the attached drawings, wherein:

Figure 1 is an exploded perspective view of the structure with sliding doors for wardrobes of the present invention;

Figure 2 is a cross-sectional view of the upper rail assembly;

Figure 3 is a perspective view of the upper rail assembly;

Figure 4 is a cross-sectional view of the upper rail assembly, assembled on the upper part of the wardrobe;

Figure 5 is a cross-sectional view of the lower rail assembly;

Figure 6 is a perspective, and partially exploded, view of the lower rail assembly;

Figure 7 is a perspective view of the inner lower sliding block;

Figure 8 is an exploded perspective view of the inner lower sliding block;

Figure 9 is a perspective view of the outer lower sliding block;

Figure 10 is an exploded perspective view of the outer lower sliding block;

Figures 11 and 12 are cross-sectional side views of the carriage and of the damping system, illustrated in two different operating positions;

Figure 13 is an exploded perspective view of the carriage of the inner door;

Figure 14 is a perspective view of the carriage of the inner door once assembled;

Figure 15 is an exploded perspective view of the carriage of the outer door;

Figure 16 is a perspective view of the carriage of the outer door once assembled;

Figure 17 is a perspective view of an end of the profile that forms the lower rail;

Figure 18 is a side view of the profile that forms the lower rail;

Figure 19 is a perspective view of an end of the profile that forms the upper rail;

Figure 20 is a side view of the profile that forms the upper rail.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0017] With particular reference to the numeric symbols of the above-mentioned Figures, the structure with sliding doors for wardrobes according to the present invention, which is indicated as a whole by the reference number 1, comprises a wardrobe body 2 having an upper part 3 and a lower part 4 which delimit a front opening that can be closed by sliding doors, not shown in the Figures, associated with the wardrobe body 2 by means of an upper rail assembly 5 and a lower rail assembly 6.

[0018] According to the present invention, the upper rail assembly 5 comprises a rail 7 which has at least two parallel tracks 8, and on which carriages 10 provided with paired rollers 9 slide.

[0019] The rail 7 is fixed on the upper part 3 of the top of the wardrobe body 2.

[0020] The carriage 10 has a casing formed by two half-shells 11.

[0021] The casing, made of pressed steel, protects the internal elements of the system and is designed so that, during assembly of the mechanism, it is possible to connect it to a further plate 12, which then enables mounting of the outer door of the wardrobe.

[0022] The inner door of the wardrobe is associated with the carriage by means of a plate 13 mounted on the side of the casing.

[0023] The carriage 10 is provided with an anti-derailing system consisting of a fin 14 formed in the lower part of the casing and fitting directly in the track 8 of the rail 7, being blocked by the weight of the door.

[0024] The fin 14 advantageously consists of an insert fixed to two lower appendages 15 integral with respective half-shells 11.

[0025] Advantageously, the structure comprises a damping system, for carrying out a soft-closing and a soft-opening of the door.

[0026] The damping system comprises a damping device 16 mounted within the carriage casing and operated by activators 20 located at the ends of the rail 7 and fixed to the side.

[0027] The damping device 16 comprises a fluid operated piston 17 connected to a return spring 18 and actuated by means of a trigger 19, when said trigger 19 intercepts a tooth of the activator 20, as is schematically illustrated in Figures 11 and 12.

[0028] The damping device is mounted on both end carriages of the door in order to provide a damping system operating during both opening and closing of the doors.

[0029] The wardrobe doors are held, at the bottom, by lower sliding blocks which comprise an inner sliding block 21 and an outer sliding block 22 associated with the respective inner and outer doors and sliding in the lower

rail 23 of the lower rail assembly 6.

[0030] The sliding blocks 21 and 22 have the function of keeping the door perpendicular to the ground and parallel to the sliding system so as to allow the correct operation thereof.

[0031] Advantageously, the lower rail 23 is an extruded profile made of aluminium which is fixed to the lower surface of the wardrobe body 2.

[0032] This element, also, allows the insertion of a front baseboard having the same colour as the wardrobe body or the door, according to the needs, therefore the lower rail 23 also acts as a skirting-board.

[0033] Each sliding block 21 and 22 consists of a metal plate bent in a U-shape having one part fixed to the door and another part fitted inside a respective groove of the rail 23.

[0034] The end of the sliding block 21, 22 fitted inside the rail has a plastic cap 24 which allows it to slide in the rail.

[0035] The cap 24 comprises a tongue 25 that keeps the door perfectly perpendicular and does not allow any widthways movement, which would be perceived by the user as a malfunction.

[0036] Furthermore, the plate forming the sliding block comprises an anti-release system that also acts on the entire door if a clumsy lifting manoeuvre is made in order to lift the door.

[0037] The anti-release system comprises a locking plate 26, to which the door is fixed, and inserted in the U-shaped plate of the sliding block.

[0038] The locking plate 26 comprises an elastic tooth 27 which engages a notch 28 formed in the U-shaped plate and on which it is possible to act to disengage the door from the sliding block and disassemble it.

[0039] Advantageously, all of the moulded components of the structure according to the present invention have been designed to be produced in the cheapest manner possible and therefore can be produced with bivalve moulds.

[0040] In order to simplify the assembling and to optimise the use of the wardrobe itself, improvements have also been made to the elements that are not strictly part of the sliding mechanism.

[0041] For example, the backstops, elements connecting the side or the partition wall of the wardrobe to the back panel made of thin MDF, consist of two elements: a first element which is mounted on the body and on which the back panel of the wardrobe is inserted; and a second element, a fastener which is snapped into the first element, securing the entire system.

[0042] This allows for an improved use of the spaces, allowing to move the shelves along the entire height of the side, unlike the backstops currently available on the market.

[0043] In practice it has been found that the present invention achieves the intended aim and objects.

[0044] In fact, a system has been provided for doors sliding with respect to the body structure of wardrobes

with two or three doors sliding over one another that is a technically cleaner solution and has improved aesthetic features compared to traditional systems.

[0045] The structure of the present invention combines three fundamental elements in a single system: the sliding movement, enabled by the paired rollers; the damping effect, enabled by the soft-closing system consisting of a fluid operated piston connected to a return spring and activated via a trigger; and the anti-derailing mechanism, obtained with the particular shape of the casing which has a fin on the lower part, fitting directly inside the rail and being blocked by the weight of the door.

[0046] The casing, advantageously made of pressed steel, protects the core of the system and is designed so that, during assembly of the mechanism, it is possible to connect it to a further plate that then enables the mounting of the outer door of the wardrobe.

[0047] As for the inner door, the mounting is simplified even further as the structure of the present invention enables the assembly to the door through the plate 13. In this manner a different casing is not required, which would involve further mechanical machining.

[0048] The soft-closing system inserted in the carriage is operated by the activators 20 located at the ends of the rail 7 and fixed to the side.

[0049] Their shape allows to have a perfect positioning of the door with respect to the side without necessarily needing to be mounted by a skilled person, unlike the mechanisms commonly available on the market that must be positioned along the tracks of the rail which do not have precise markings.

[0050] The lower rail 23 and the related sliding blocks 21 and 22 have the function of keeping the door perpendicular to the ground and parallel to the sliding system so as to enable the correct operation thereof.

[0051] In prior systems the lower rail is a profile that is generally mounted on the skirting board of the wardrobe body, a strip that closes the gap between the lower surface and the floor, or directly under the lower surface. This type of construction therefore provides for two fixed elements: the skirting board and the rail.

[0052] In the structure of the present invention, the design of the profile 23 was conceived so as to also act as skirting board. In fact, it is an extruded aluminium element that is fixed to the lower surface of the body. This element allows the insertion of a front baseboard having the same colour as the wardrobe body or the door, according to the needs.

[0053] In prior systems the sliding block generally consists of a metal plate bent in a U-shape which is fixed on one side to the door and the other side being fitted into the rail. This latter end generally has a plastic cap that allows it to slide in the rail.

[0054] In the structure of the present invention, the cap comprises the tongue 25 which keeps the door perfectly perpendicular and does not allow it to move widthways, which would be perceived by the user as a malfunction.

[0055] In addition, according to the present invention,

the sliding block comprises the anti-release system which also acts on the entire door if a clumsy lifting manoeuvre is made to lift the door.

[0056] Naturally, the materials used, as well as the dimensions, can be any according to requirements.

Claims

1. A structure with sliding doors for wardrobes, comprising a wardrobe body (2) having an upper part (3) and a lower part (4) which delimit a front opening that can be closed by sliding doors associated with said wardrobe body (2) by means of an upper rail assembly (5) and a lower rail assembly (6); said upper rail assembly (5) comprising a rail (7) which has parallel tracks (8), and on which carriages (10) provided with paired rollers (9) slide; each of said carriages (10) being provided with an anti-derailing system consisting of a fin (14) formed in the lower part of said carriage and fitting directly into one of said tracks (8) of the rail (7), being blocked by the weight of the door; said structure being **characterised in that** it comprises lower sliding blocks (21, 22) that hold said doors from the bottom; said lower sliding blocks comprising at least one inner sliding block (21) and at least one outer sliding block (22) associated with the respective inner and outer doors and sliding in a lower rail (23) of said lower rail assembly (6); said lower rail (23) being a profile that is fixed to the lower surface of the wardrobe body (2); said profile being configured for insertion of a front baseboard; each sliding block (21, 22) being formed by a metal plate bent in a U-shape having a part fixed to said door and another part inserted in a respective groove in said rail (23); said end inserted in the rail having a cap (24) that enables the sliding in the rail; said cap (24) comprising a tongue (25) that keeps the door perfectly perpendicular and does not allow any widthways movement; said sliding block (21, 22) comprising an anti-release system of said door; said anti-release system comprising a locking plate (26), to which the door is fixed, and inserted in the U-shaped plate of said sliding block (21, 22); said locking plate (26) comprising an elastic tooth (27) which engages a notch (28) formed in the U-shaped plate and via which it is possible to disengage the door from the sliding block and disassemble it.
2. The structure, according to the claim 1, **characterised in that** each of said carriages (10) has a casing formed by two half-shells (11); said fin (14) consisting of an insert fixed to two lower appendages (15) formed integral with said respective half-shells (11).
3. The structure, according to claim 1, **characterised in that** said casing (11) is configured for the connection of a plate (12) for mounting an outer door of the

wardrobe, in an assembly phase of said structure.

4. The structure, according to claim 1, **characterized in that** it comprises a damping system, for a soft-closing or soft-opening of the door, comprising a damping device (16) mounted within said carriage (10) and operated by activators (20) located at the ends of the rail (7) and fixed to the side. 5
5. The structure, according to claim 4, **characterized in that** said damping device (16) comprises a fluid operated piston (17) connected to a return spring (18) and operated by means of a trigger (19), when said trigger (19) intercepts a tooth of the activator (20). 10 15

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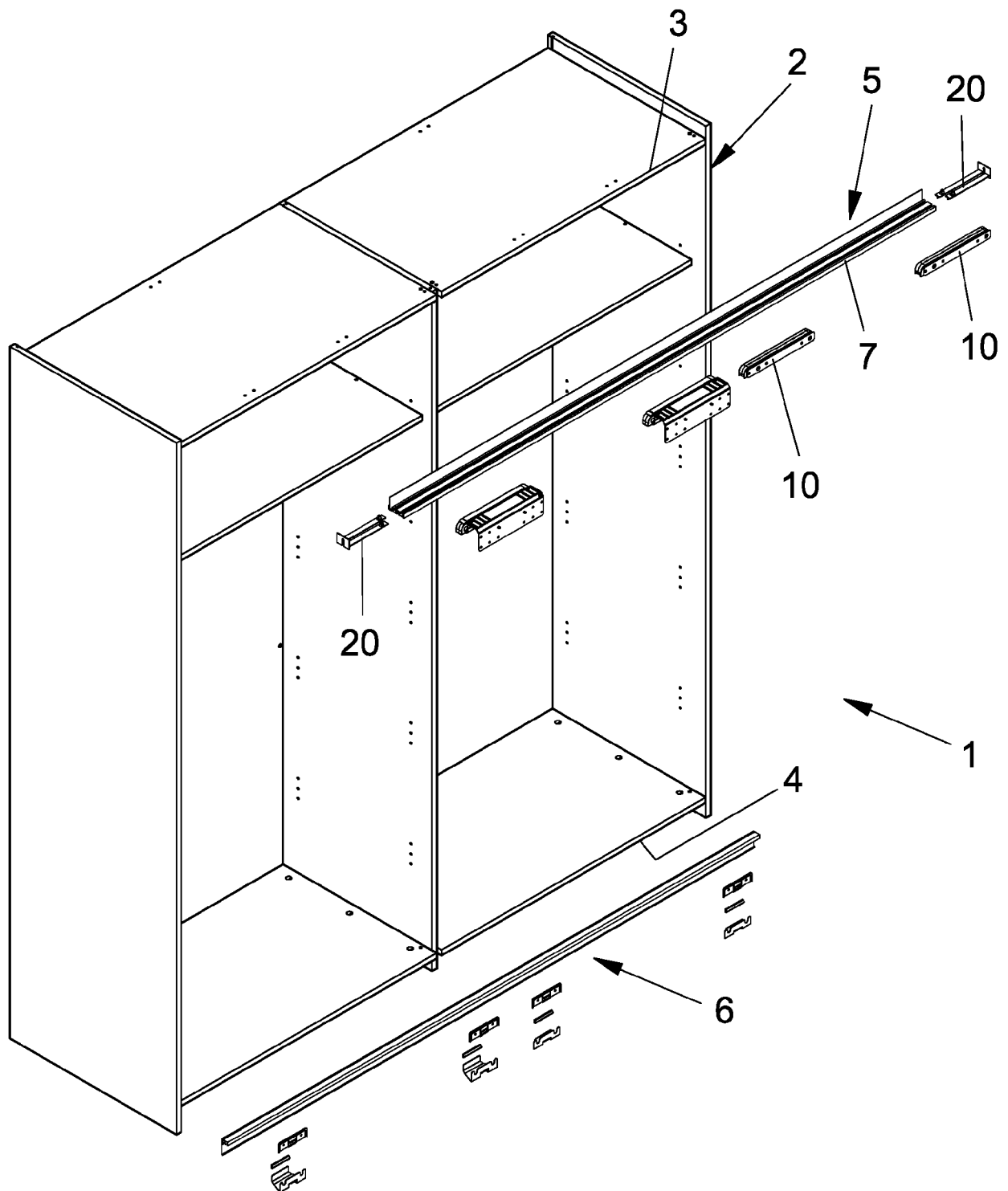


FIG. 1

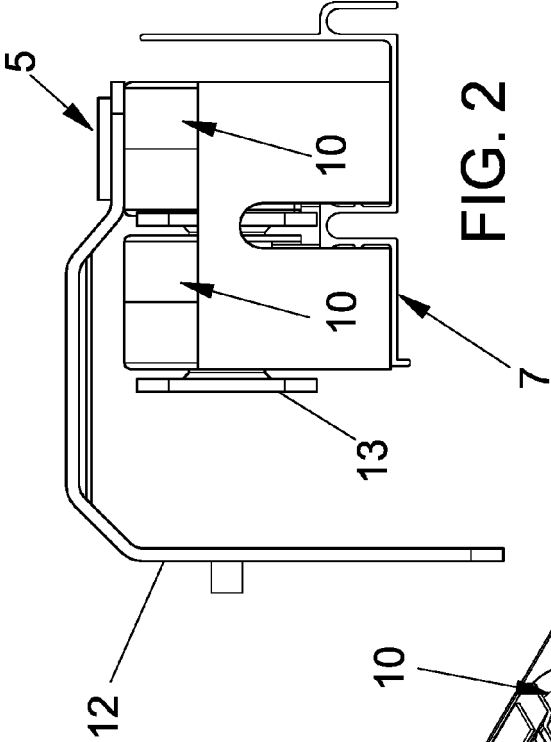


FIG. 2

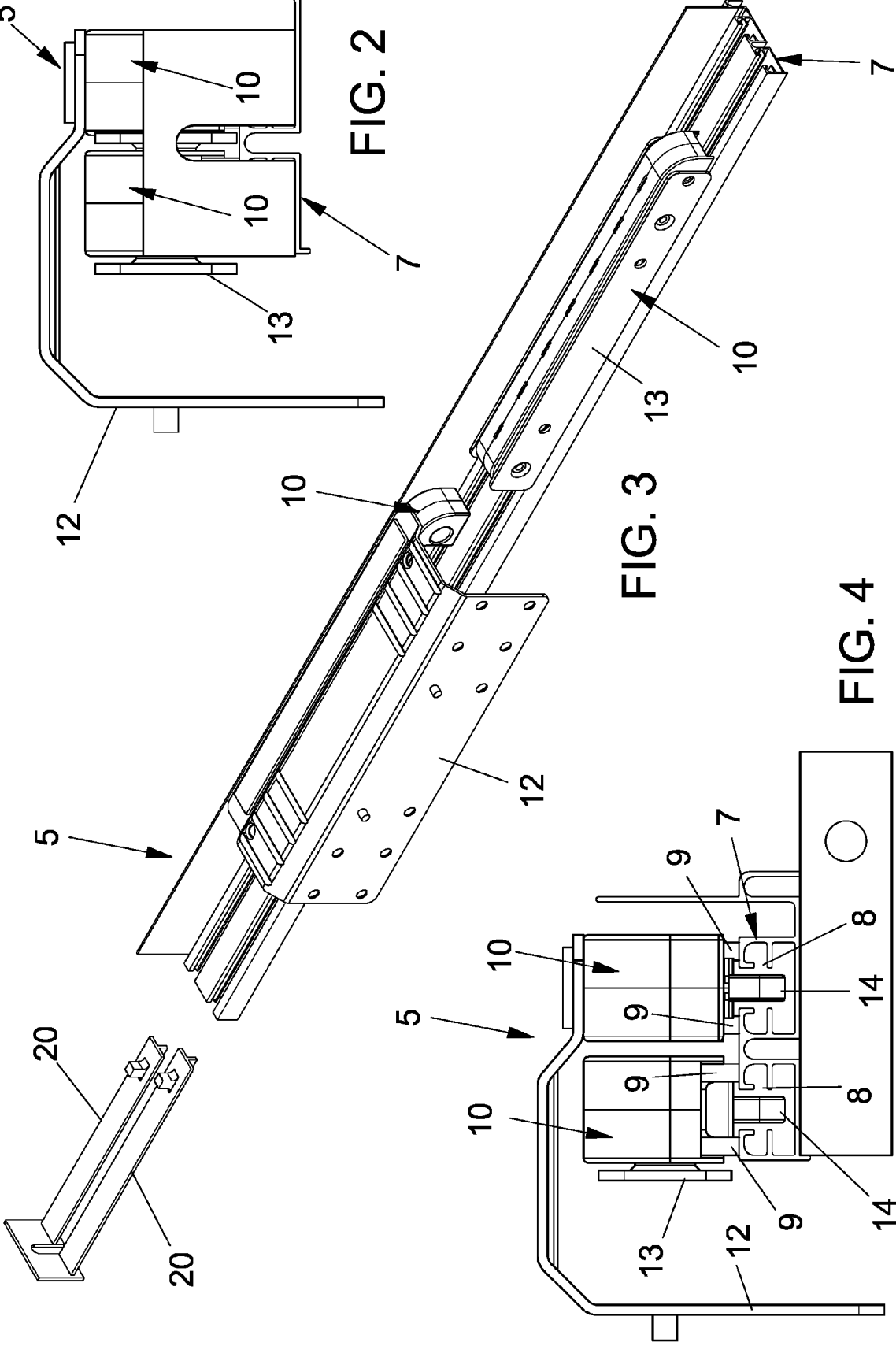


FIG. 3

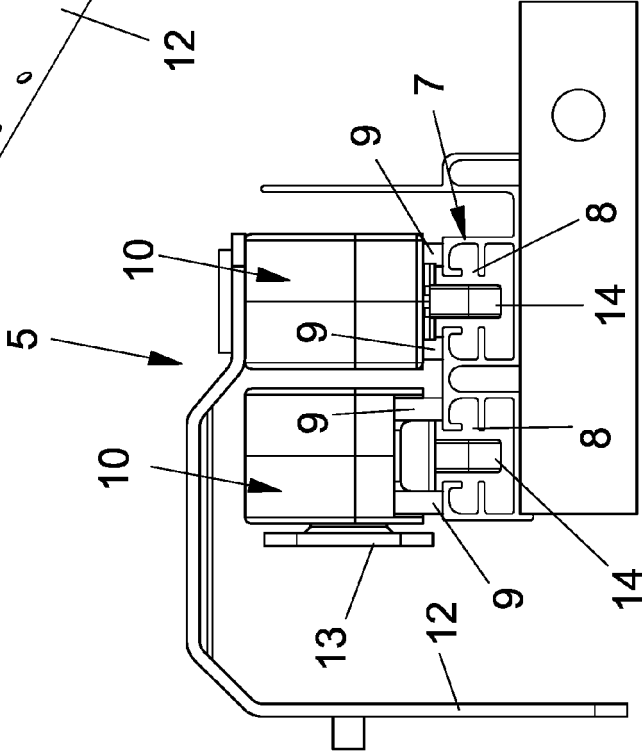
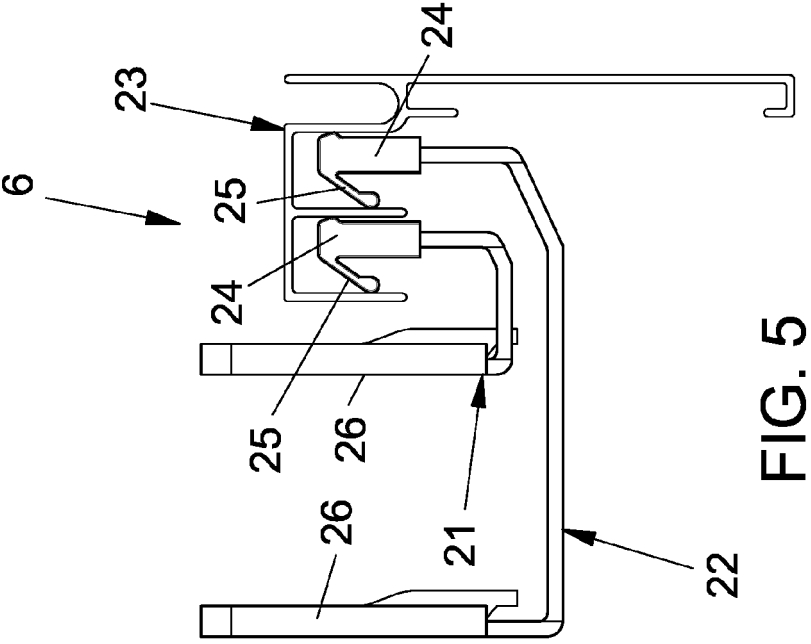
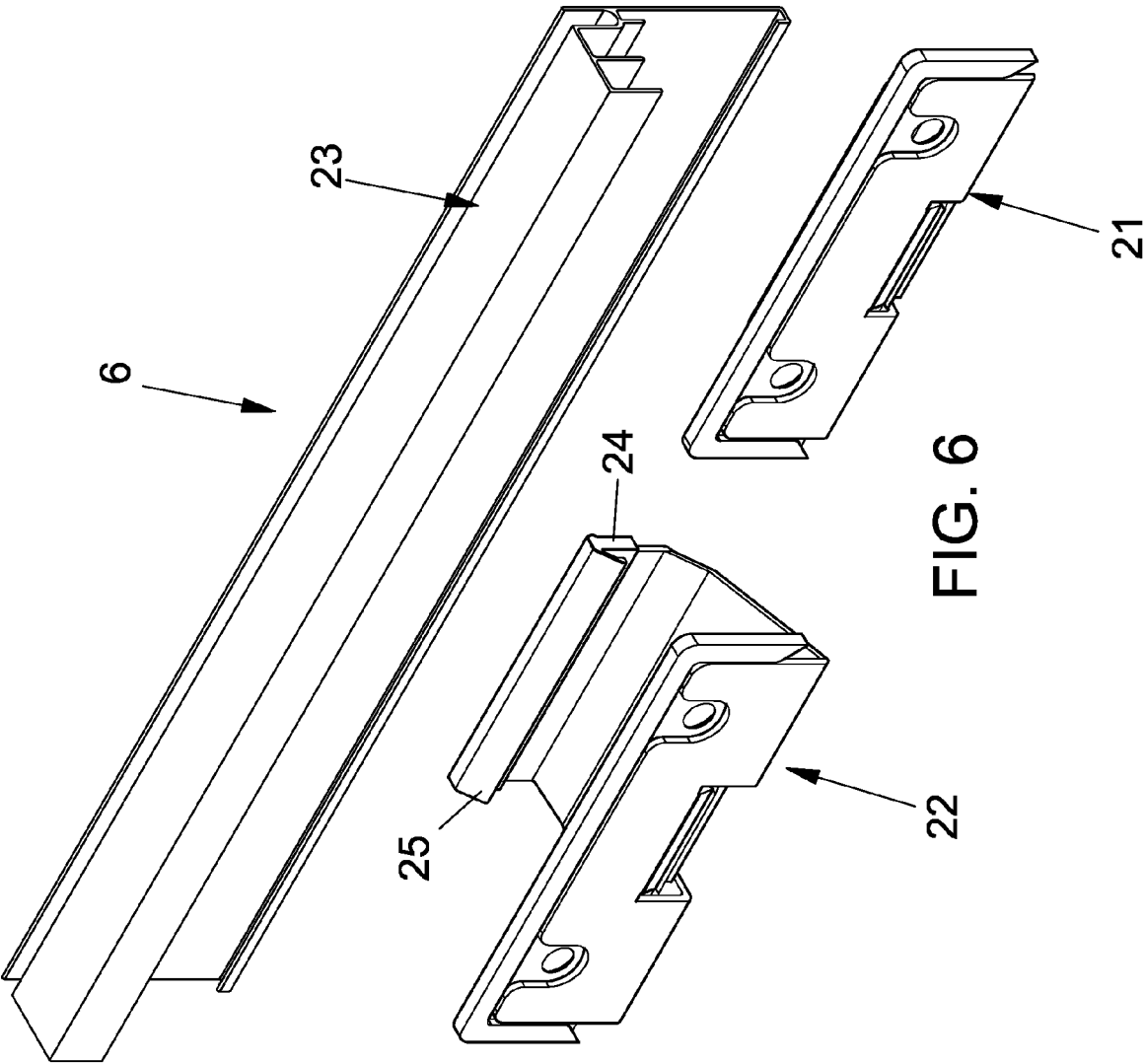
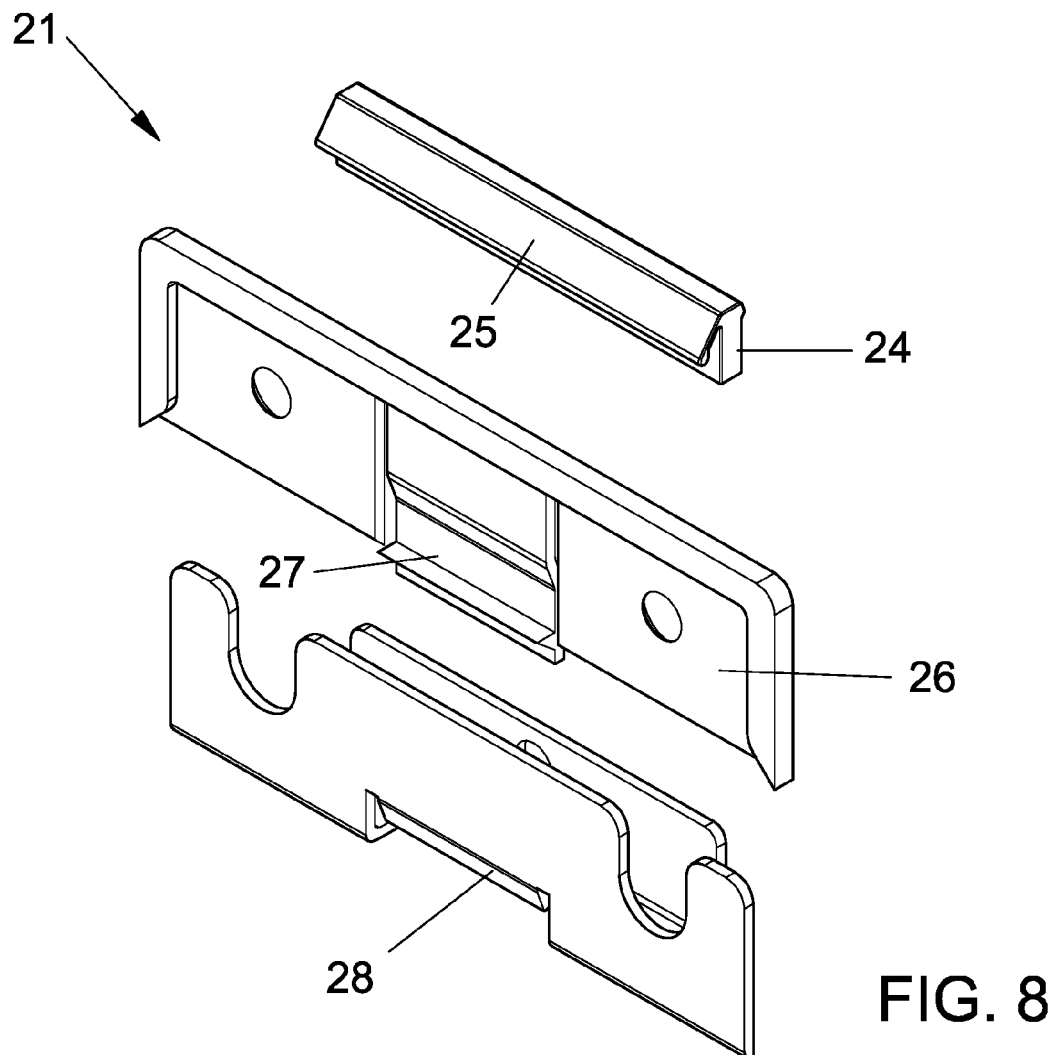
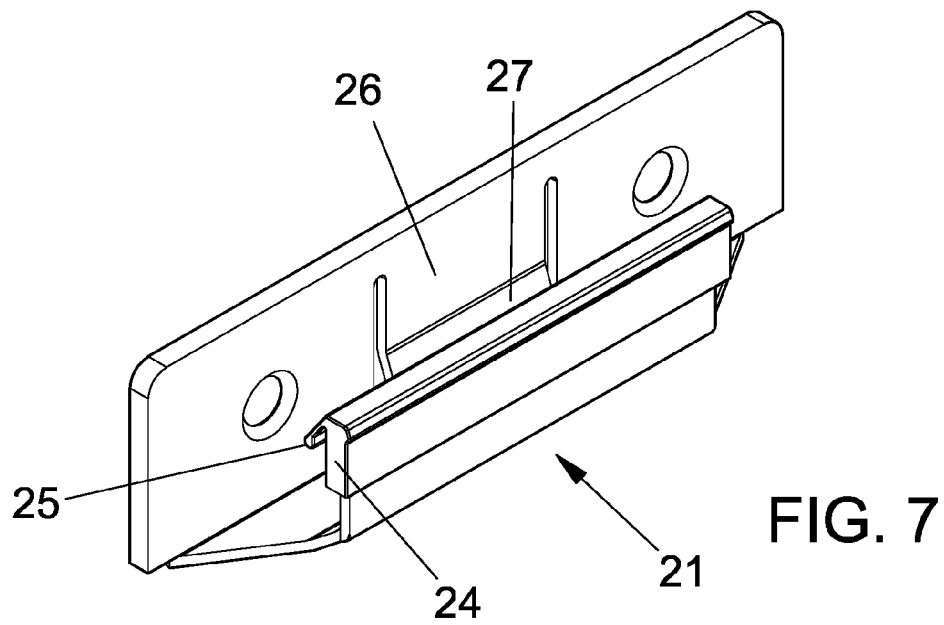


FIG. 4





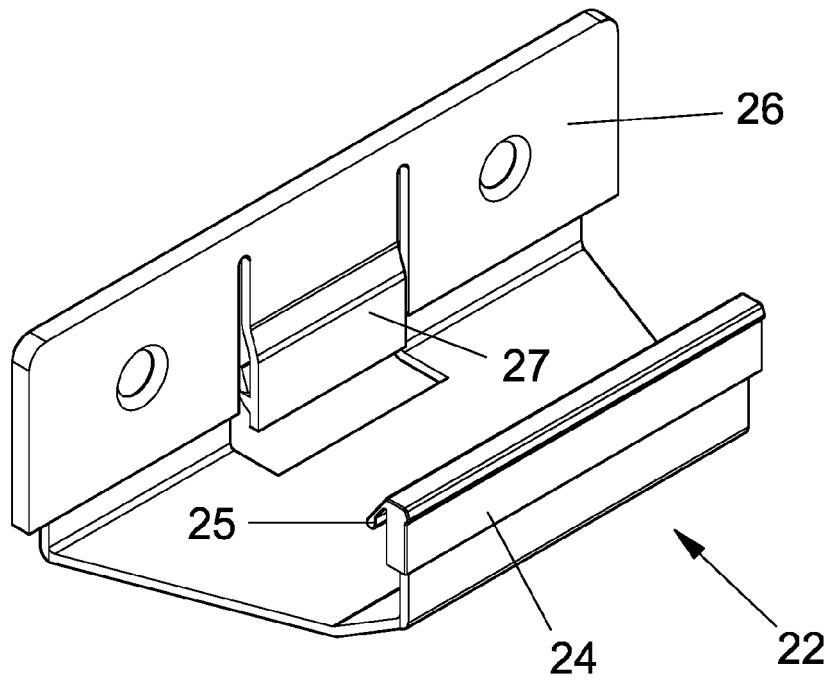


FIG. 9

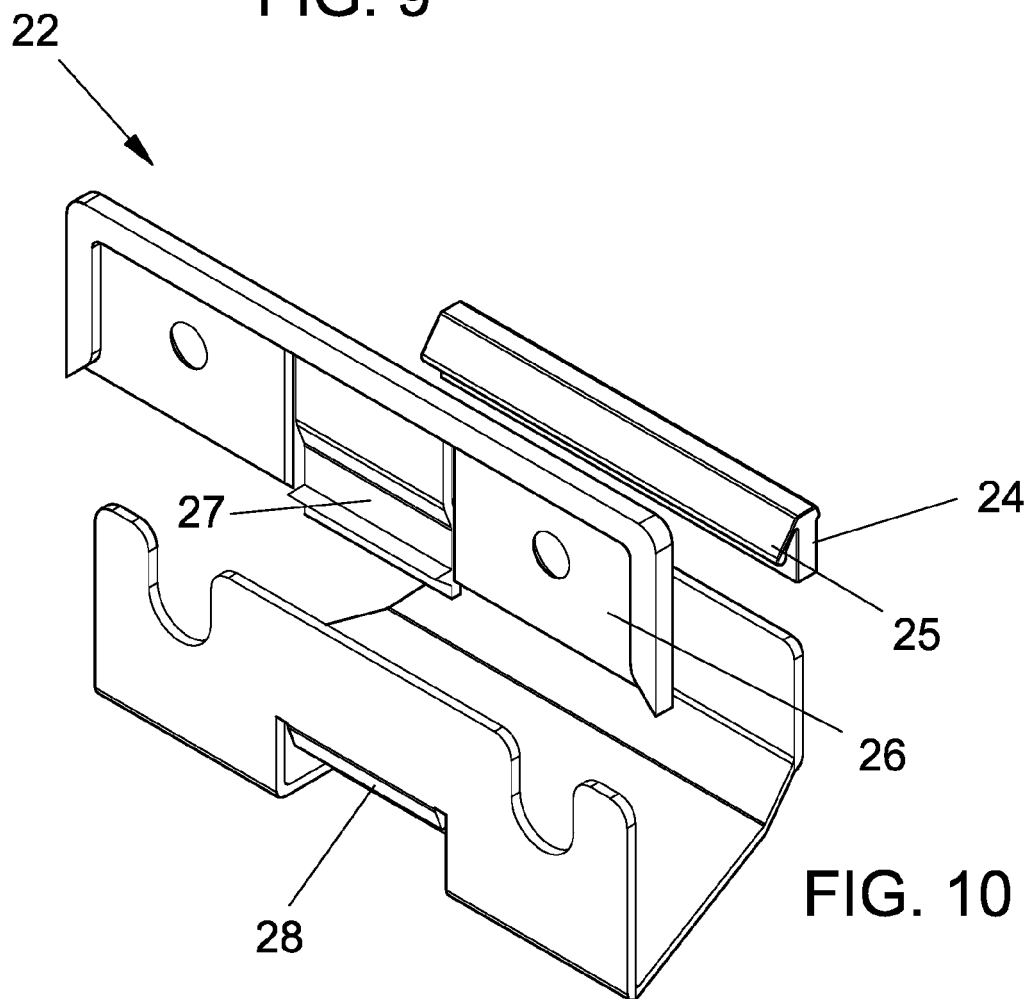
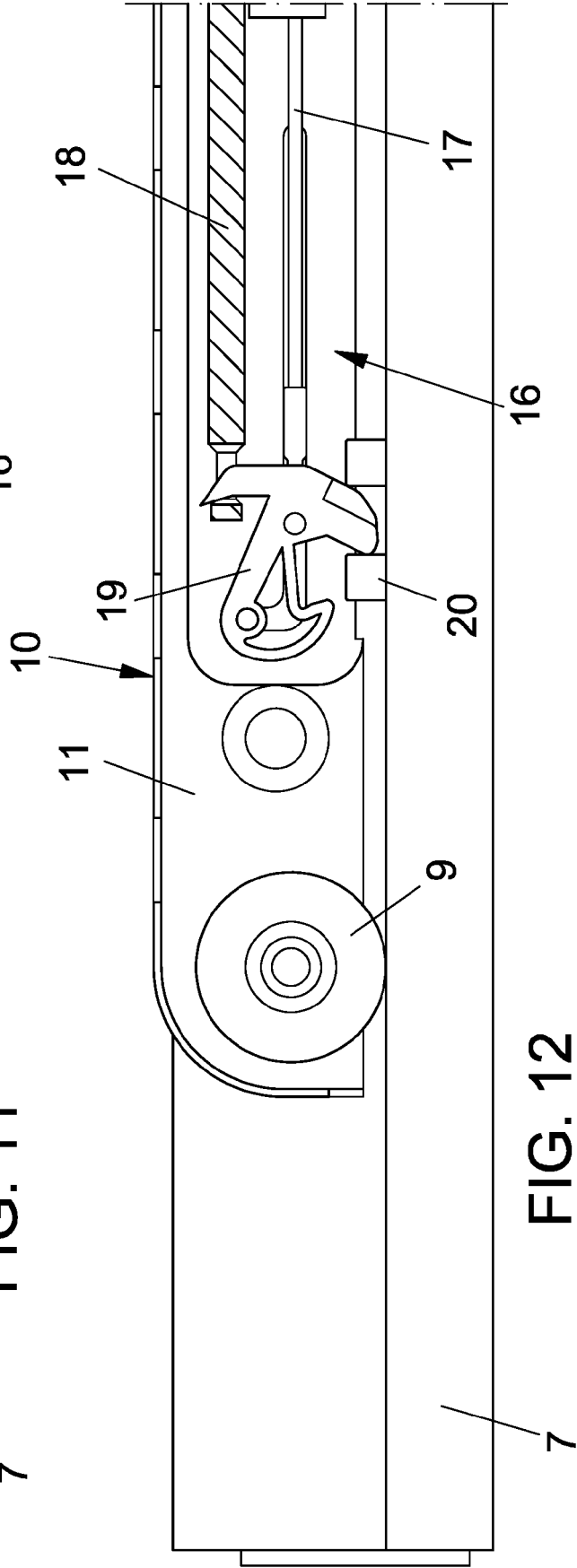
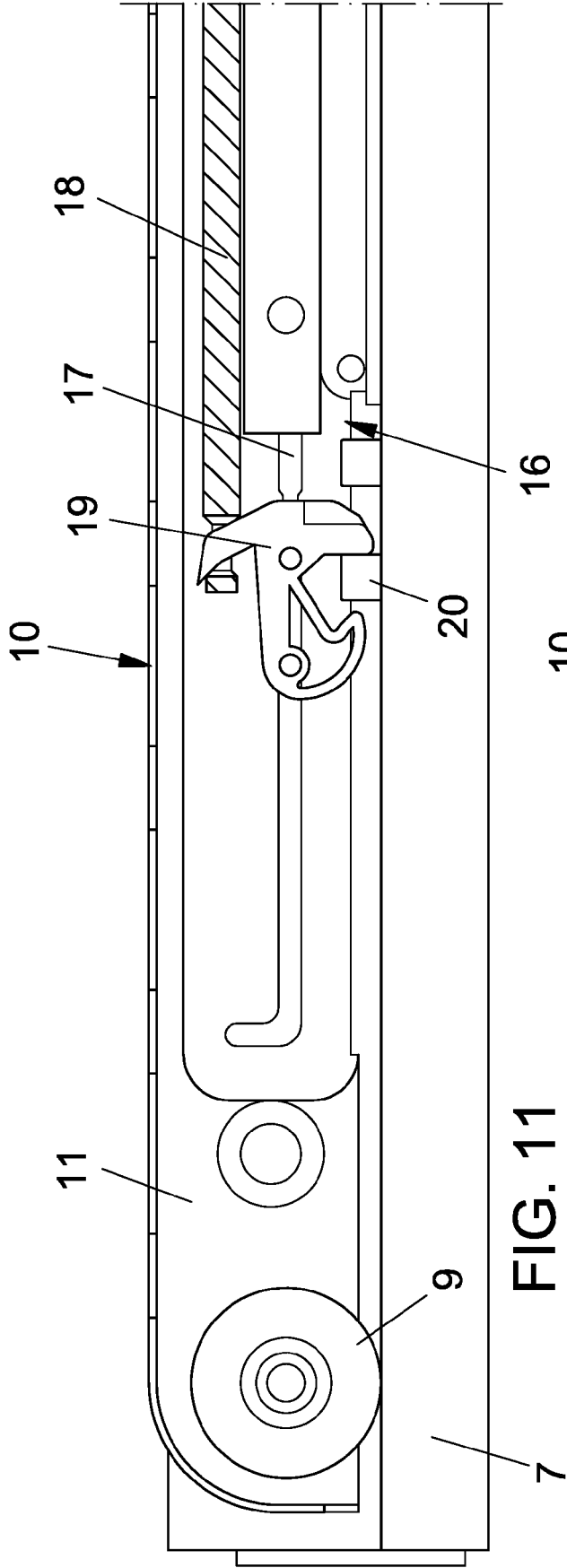


FIG. 10



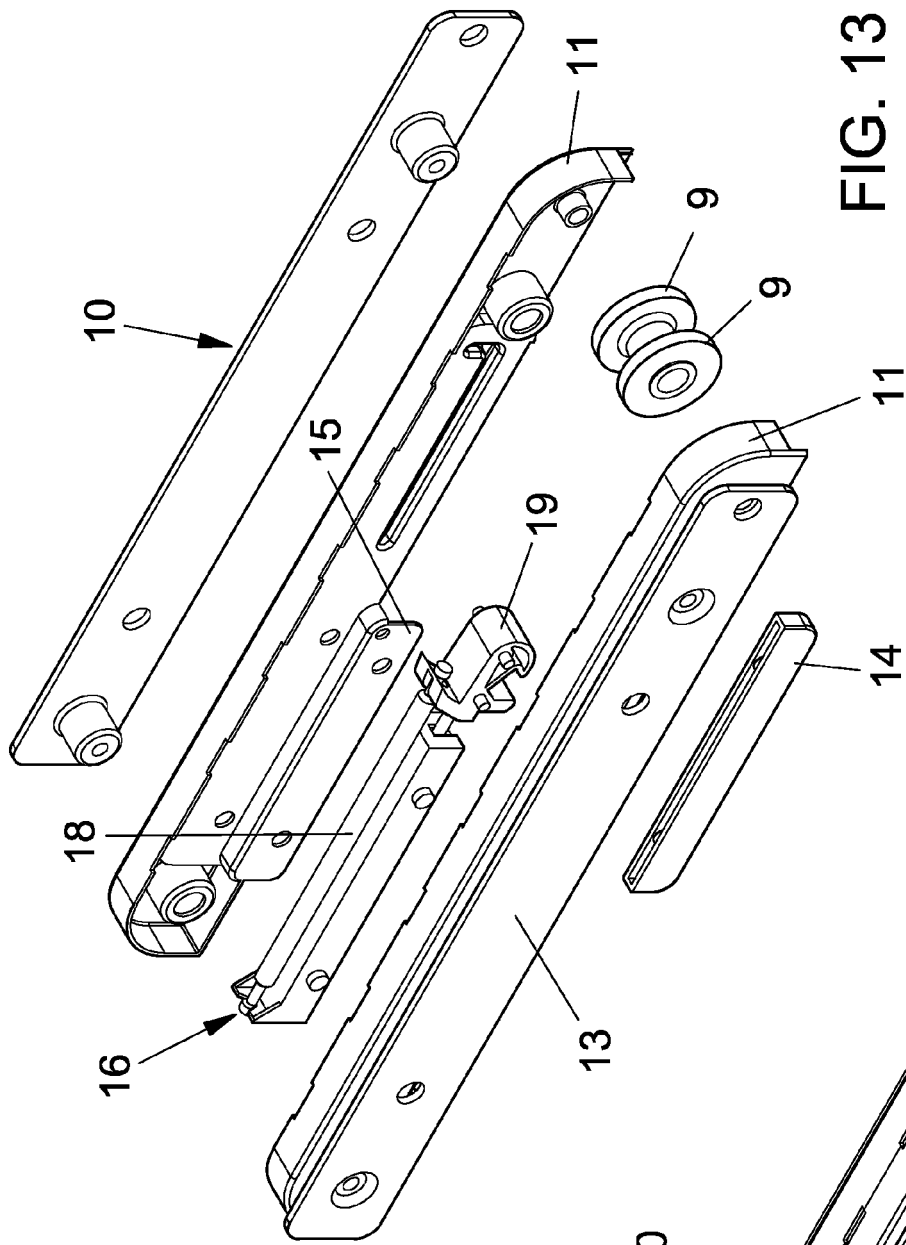


FIG. 13

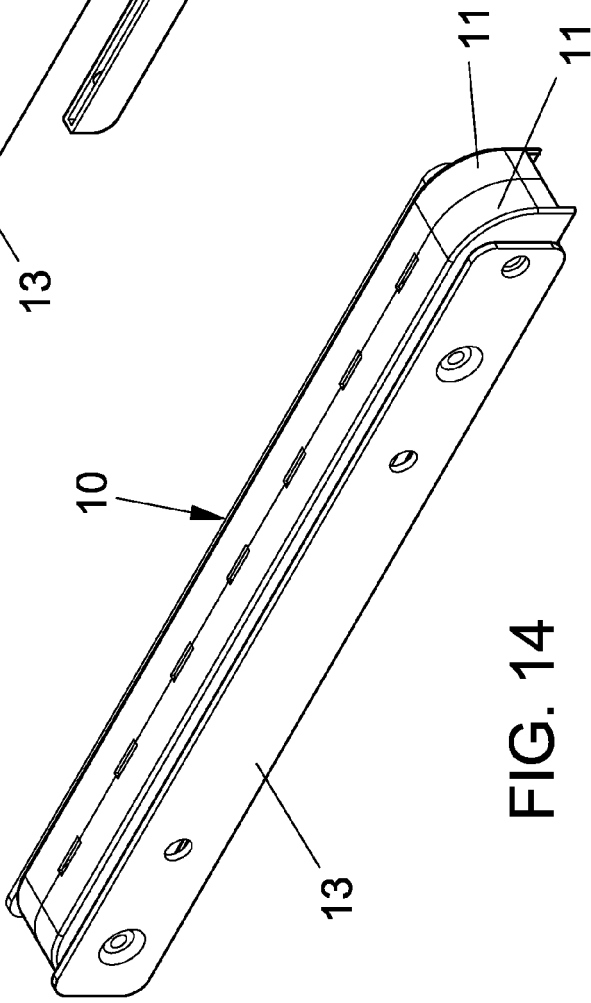


FIG. 14

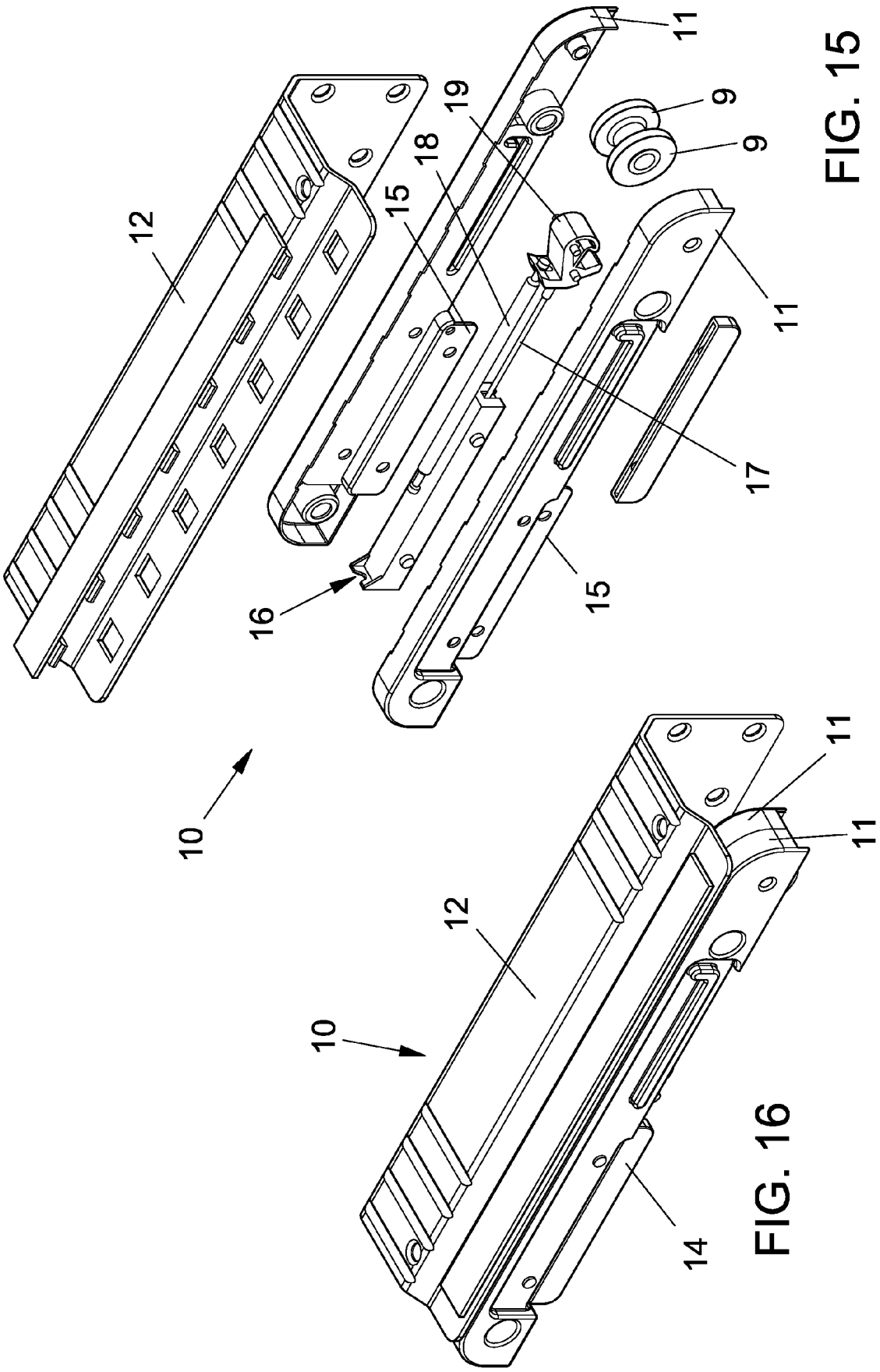


FIG. 15

FIG. 16

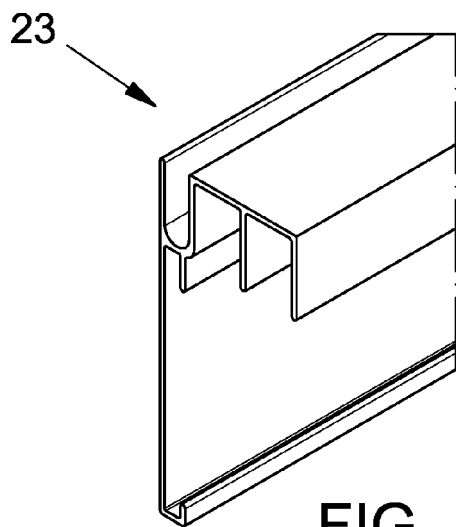


FIG. 17

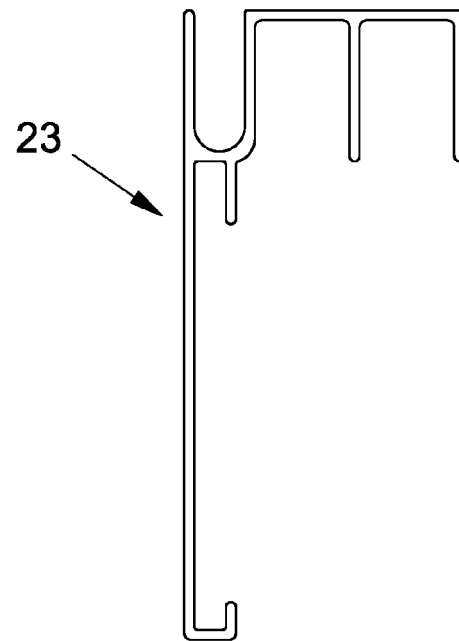


FIG. 18

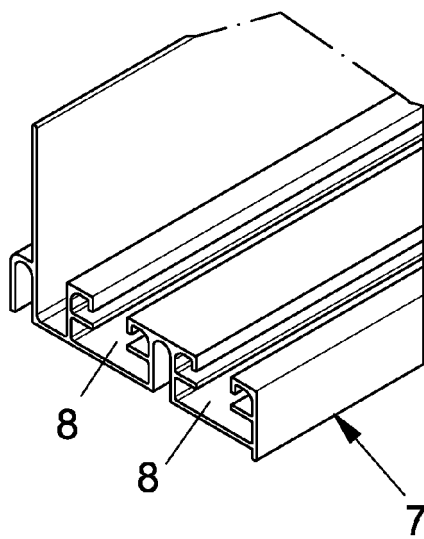


FIG. 19

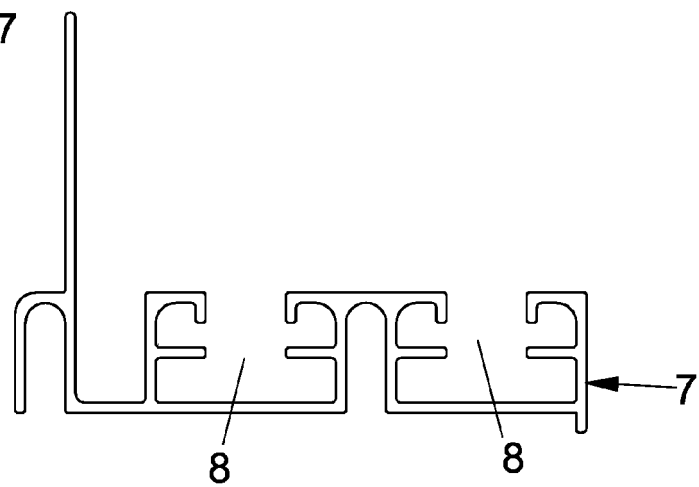


FIG. 20



EUROPEAN SEARCH REPORT

Application Number
EP 20 15 1046

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DOCUMENTS CONSIDERED TO BE RELEVANT			
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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 28 February 2020	Examiner Ibarrondo, Borja
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EPO FORM 1503 03/82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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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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28-02-2020

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