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PIVOT HINGE WITH LOCKING MECHANISM FOR 180° OPENING AND CLOSING FOR DOORS OF CABINETS AND FURNITURE IN GENERAL

(57)

Pivot hinge for doors of cabinets and furniture in general, of the type comprising a base plate (5) fixed to the piece of furniture (2) and an element (7) for coupling to the door (3) of said piece of furniture, hinged to each other by means of an arm (6). The hinge of the invention comprises a thrust system for locking the door (3) in the fully open position at 180° relative to the body of the piece of furniture (2). Thanks to the hinge of the

invention, equipped with a locking system that keeps the door open once it reaches the full opening angle or 180°, rotations exceeding this angle are avoided, thus overcoming the risks of prior art hinges. The hinge of the invention further offers the advantage of also ensuring that the door is kept in its fully closed position against the compartment of the piece of furniture.

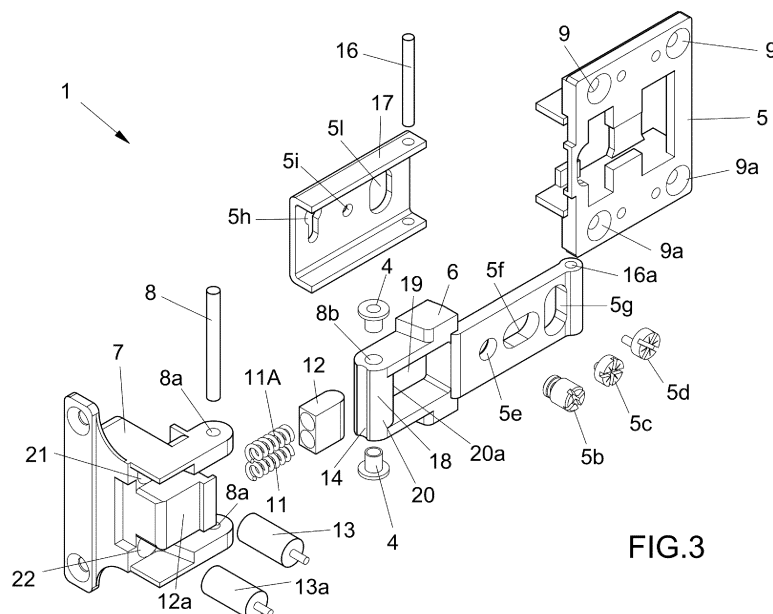


FIG.3

Description**BACKGROUND OF THE INVENTION**

[0001] The present invention concerns a pivot hinge with a locking mechanism for full or 180° opening and for closing, for cabinet doors and furniture in general.

[0002] Pivot hinges are characterized by having the pivot pin positioned outside the thickness of the door. This feature allows the door to open fully or to 180°, as it rotates or pivots on its pin. This represents an advantage in terms of utilizing the cabinet space, as the fully opened door does not obstruct access to the cabinet interior.

[0003] At the same time, the rotation of the door without a stop at the fully open position leaves the door with the freedom to rotate even beyond 180°, exposing it to the risk of hitting another door placed beside it, or other objects located within its rotation path.

[0004] The described hinges of the prior art also have the drawback of lacking a system to lock the door in its fully closed position against the compartment of the cabinet.

[0005] US 4 368 558 A relates to a hinge with a pressure mechanism to close a door.

[0006] EP 3 181 787 A1 describes a single-pin hinge for attaching a door to the wall of a piece of furniture.

[0007] EP 4 023 847 A1 illustrates a single-axis hinge, for connecting panels of a folding door.

SUMMARY OF THE INVENTION

[0008] The main object of the present invention is to provide a hinge of the aforementioned kind that, unlike the hinges of the prior art, allows the door's rotation to be blocked, once a fully open or 180° position is reached.

[0009] A further object of the invention is to provide a hinge suitable for locking the door also in its fully closed position on a piece of furniture.

[0010] These and other objects are achieved with the hinge of claim 1. Some preferred embodiments of the hinge of the invention will result from the remaining claims.

[0011] Thanks to the hinge of the invention, equipped with a locking mechanism that keeps the door open once it reaches the full opening angle or 180°, excessive rotations beyond this angle are avoided, thus overcoming the aforementioned risks of prior art hinges. The hinge of the invention further offers the advantage of also ensuring that the door is kept in its fully closed position against the furniture compartment.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] These and other objects, advantages, and features will result from the following description of a preferred embodiment of the hinge of the invention, illustrated, as a non-limiting example, in the figures of the attached drawings.

[0013] In them:

- Figure 1 illustrates the hinge of the invention in the locked position of the door of a piece of furniture in its fully open position at 180°;
- Figure 2 illustrates the detail of the hinge of the invention, as mounted on the piece of furniture of Figure 1;
- Figures 3 and 4 illustrate an exploded view of the hinge of Figure 2;
- Figures 5 and 6 illustrate the hinge of the invention with the door in a partially open position; and
- Figures 7 and 8 illustrate the hinge of the invention in the fully closed position of the door on the body of the piece of furniture.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

[0014] The hinge of the invention, indicated as a whole with numeral 1 in Figure 1, is mounted to fix in rotation the door 3 of a piece of furniture 2.

[0015] As better represented in Figure 2, the hinge 1 consists of a base plate 5 fixed to the side of the piece of furniture 2 and an element 7 coupling the same hinge to the door 3 of the piece of furniture. There is also provided an arm 6 rotatably attached to the base plate 5 by means of a pin 16, which is housed inside a hole 16a of the same arm 6 (Figure 3).

[0016] The hinge 1 also includes a groove 17 that allows for the adjustment of the door 3 relative to the piece of furniture 2, utilizing the complex of screws 5b, 5c, 5d that engage corresponding slots 5e, 5f, 5g, 5h, 5i, 5l illustrated in Figures 3 and 4.

[0017] The rotational coupling of the element 7 on the arm 6 of the hinge is achieved by means of a pin 8 that fits into the holes 8a provided on the element 7 and into the hole 8b made in the same arm 6. Advantageously, to facilitate rotational movements, respective bushings 4 are housed inside the hole 8b of the arm 6 (Figure 3).

[0018] The same arm 6 also has a front groove 14 and an inclined side wall 18, the latter defining in turn an inclined lateral surface 20 and an inclined rear surface 20a, opposite to the groove 14.

[0019] Inside the body that forms the arm 6, there is also a hollow seat 19 for housing the body 12a of the element 7. In turn, and as better illustrated in Figure 4, the body 12a of the element 7 is equipped with a recess 15 suitable for housing the element 12 for thrust blocking the movement of the arm 6 of the hinge 1, and consequently of the door 3, allowing its sliding movement under the action of springs 11 and 11a.

[0020] The hinge 1 also includes damping pistons 13, 13a housed inside respective hollow seats 21, 22 of the element 7, as better illustrated in Figure 3.

[0021] Finally, holes 9, 9a for the screws fixing the hinge to the piece of furniture are provided on the base plate 5, whereas the holes 10, 10a for attaching the hinge

1 to the door 3 are provided on the element 7.

[0022] In the fully open position of the door at 180°, the hinge of the invention has the thrust element 12 housed inside the front groove 14 of the arm 6, which is achieved thanks to the thrust action exerted by the springs 11, 11a on the same element 12. It is specified from now that the invention is not limited to this exemplary embodiment, as other thrust means can be employed, such as elastic tabs, shape-memory materials, and the like. In the described position of the element 12 inside the front groove 14 of the arm 6, the door 3 is locked in its fully open position at 180° on the piece of furniture 2.

[0023] Continuing the movement of closing the door 3, the thrust element 12 initially slides on the inclined lateral surface 20 of the inclined plane 18 of the arm 6 and, subsequently, on the inclined rear surface 20a of the same inclined plane 18.

[0024] In this position of the hinge 1, the body 12a of the element 7 is housed inside the hollow seat 19 of the arm 6, determining the locking of the latter in the fully closed position of the door 3 against the compartment of the piece of furniture 2.

[0025] Thus, starting from the described fully open position of the door 3 at 180°, with a thrust action on it in the direction of closing the compartment of the piece of furniture, its partial closure is first achieved, as illustrated in Figures 5, 6, and subsequently the fully closed position is reached, as illustrated in Figures 7 and 8.

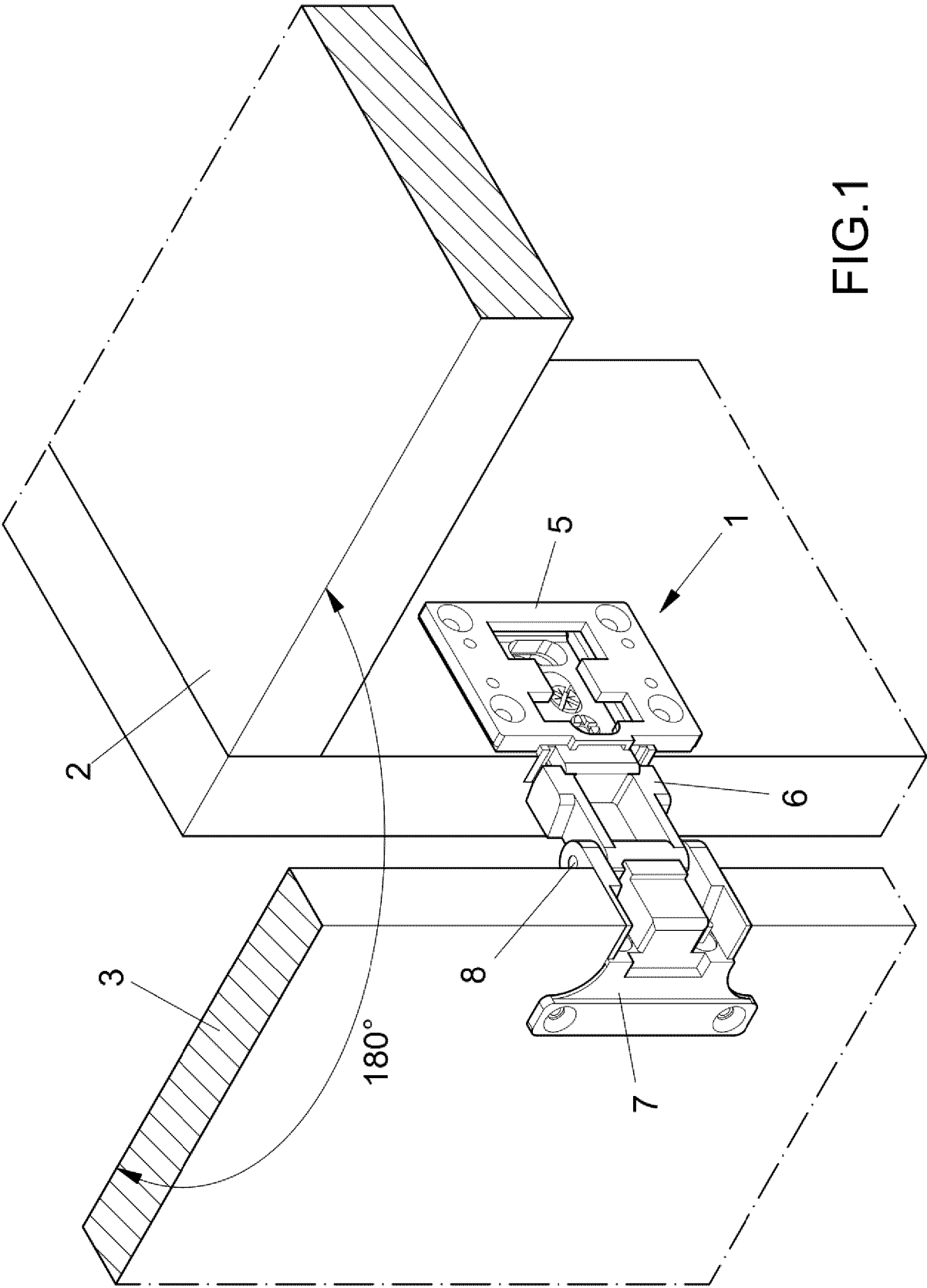
[0026] Conversely, opening the door is achieved with opposite movements.

11a).

4. Hinge according to claim 3, **characterized in that** it further provides a pin (8) for rotational engagement of the coupling element (7) to said arm (6) of the hinge (1).
5. Hinge according to one or more of the preceding claims, **characterized in that** it further comprises pistons (13, 13a) housed inside respective seats (21, 22) of said element (7) to dampen the closing movement of the door (3) relative to the piece of furniture (2).
6. Furniture in general, **characterized in that** it is equipped with at least two hinges according to one or more of the preceding claims.

Claims

1. Pivot hinge for doors of cabinets and furniture in general, of the type comprising a base plate (5) suitable for being fixed to the piece of furniture (2) and an element (7) suitable for coupling to the door (3) of said piece of furniture, hinged to each other by means of an arm (6), **characterized in that** said arm (6) has an inclined side wall (18) having an inclined lateral surface (20) and an inclined rear surface (20a) for sliding the locking element (12) on the same arm (6), in the open at 180° and fully closed hinge positions, respectively, relative to the body of the piece of furniture (2), wherein said arm (6) also has a hollow seat (19) for housing said body (12a) of the coupling element (7).
2. Hinge according to claim 1, **characterized in that** said arm (6) has a front groove (14) for housing a thrust locking element (12), slidably housed inside a seat (15) of the body (12a) of the aforementioned coupling element (7).
3. Hinge according to claim 2, **characterized in that** said thrust system, provided with said locking element (12), is also equipped with thrust devices (11,



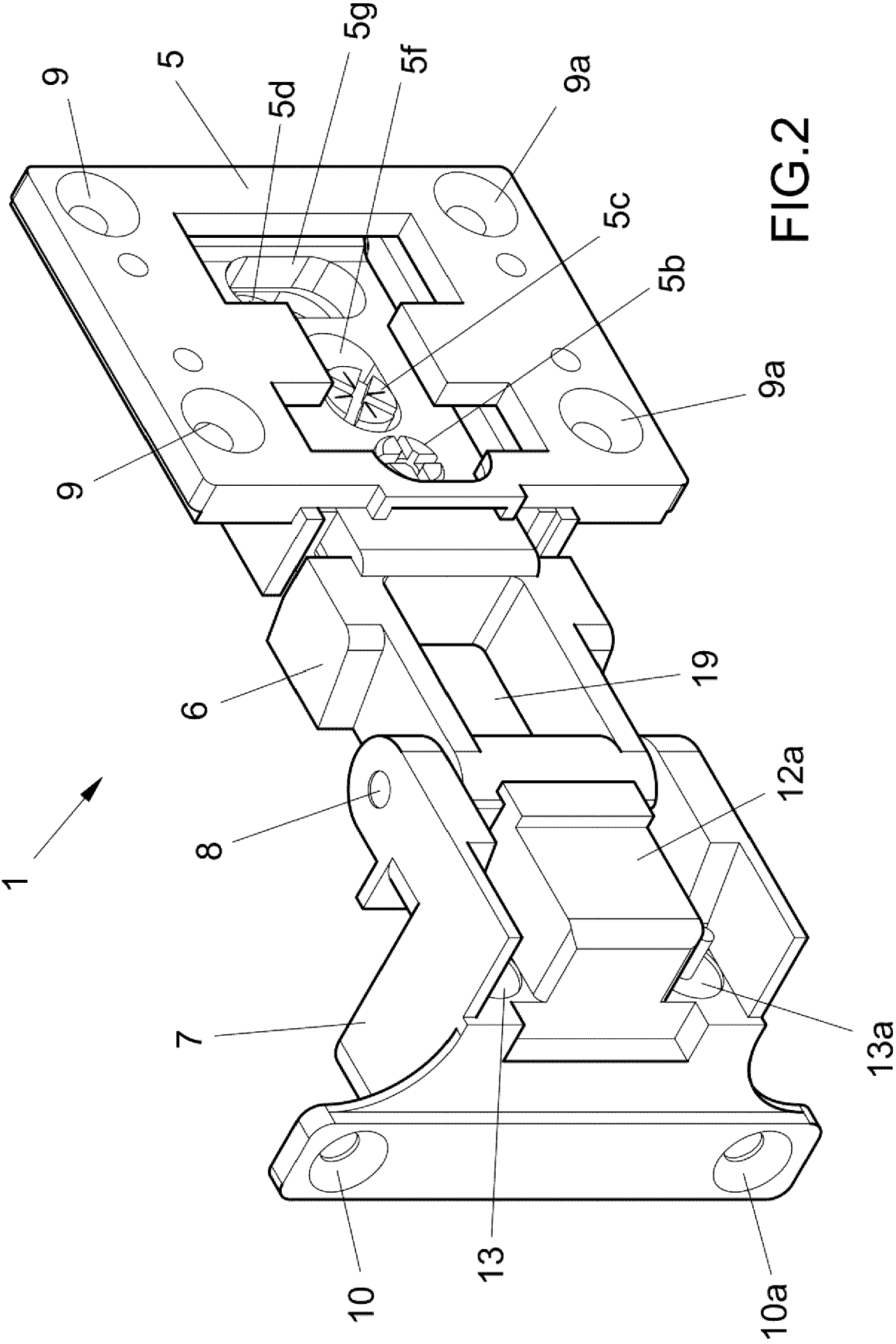


FIG.2

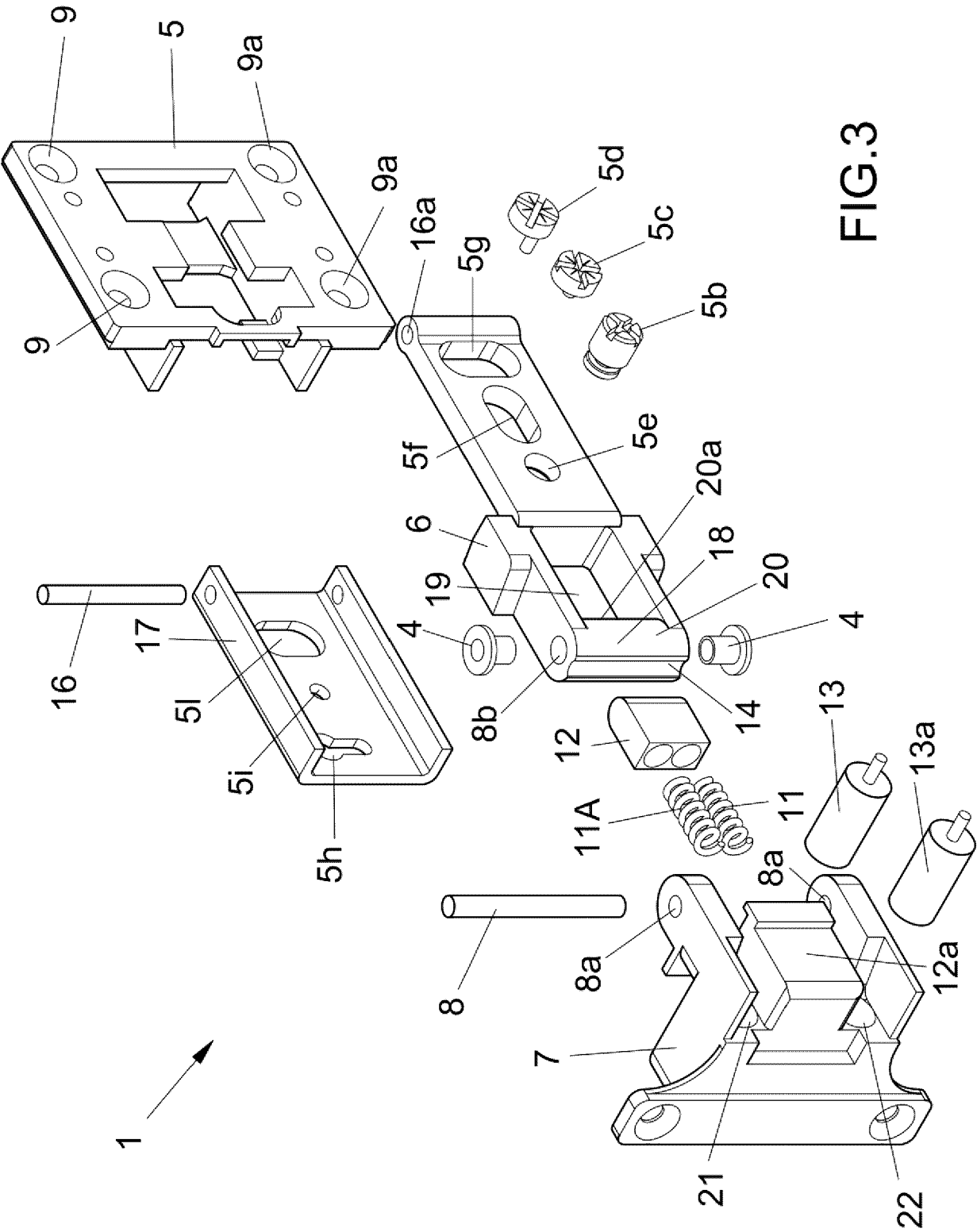


FIG.3

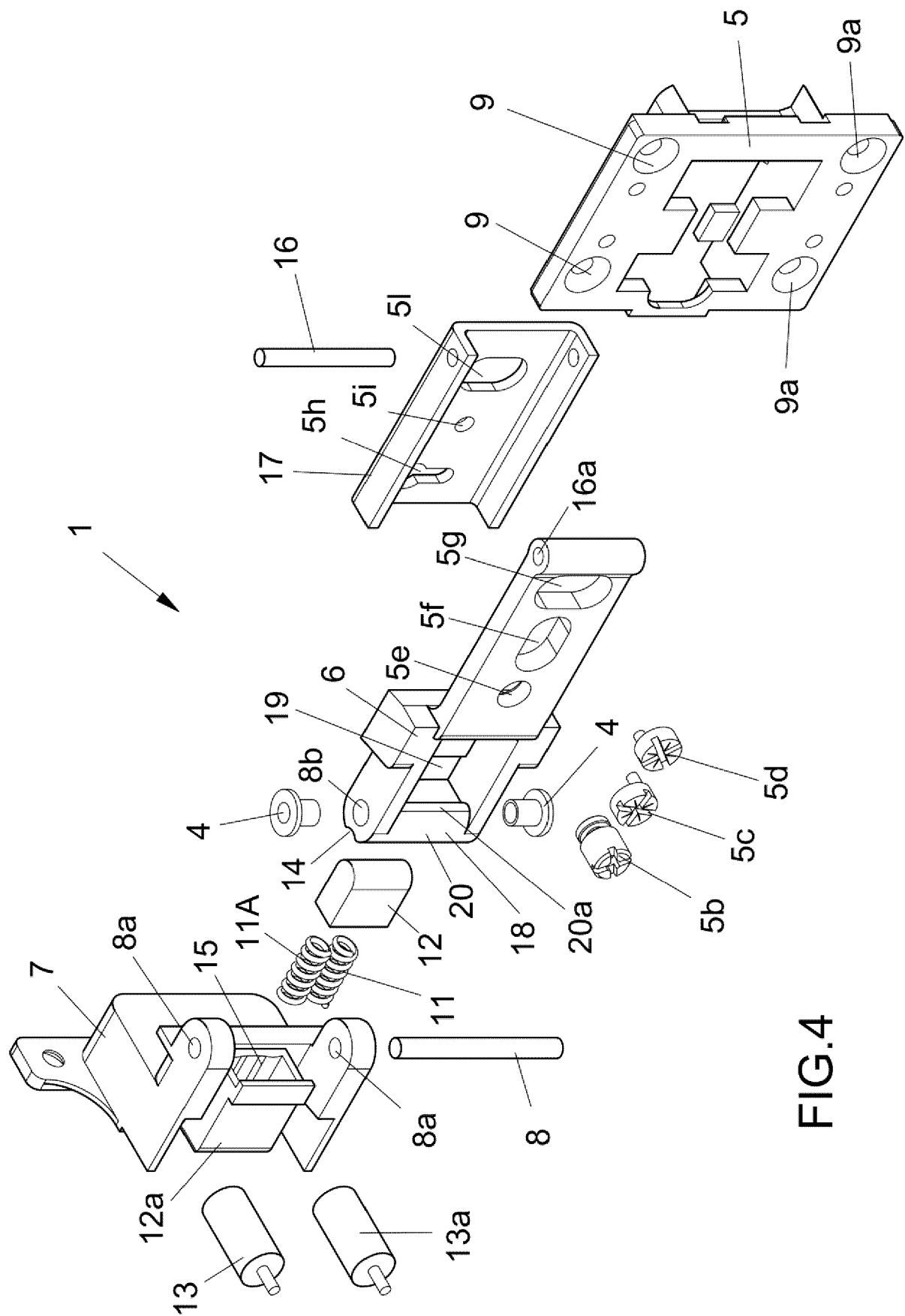
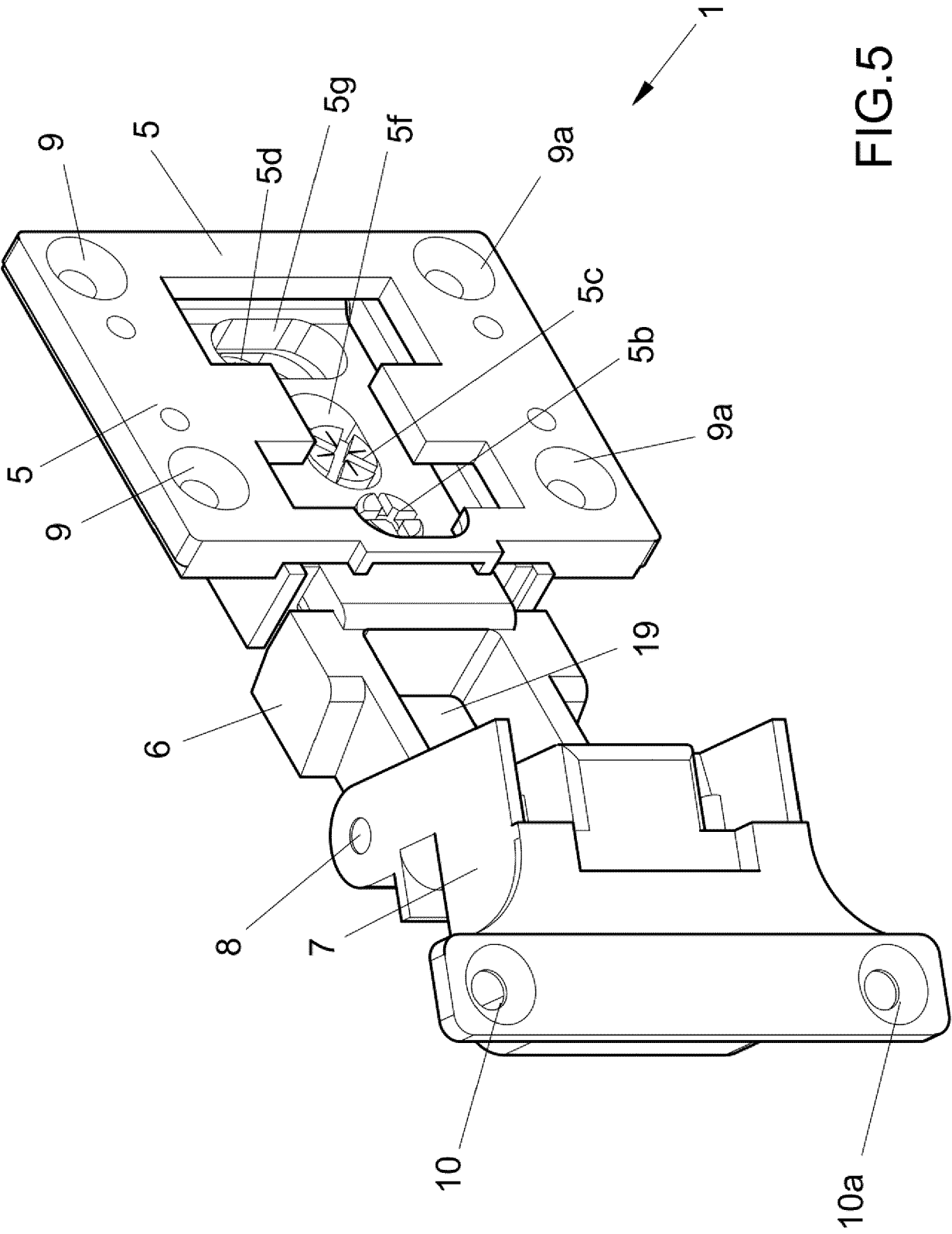
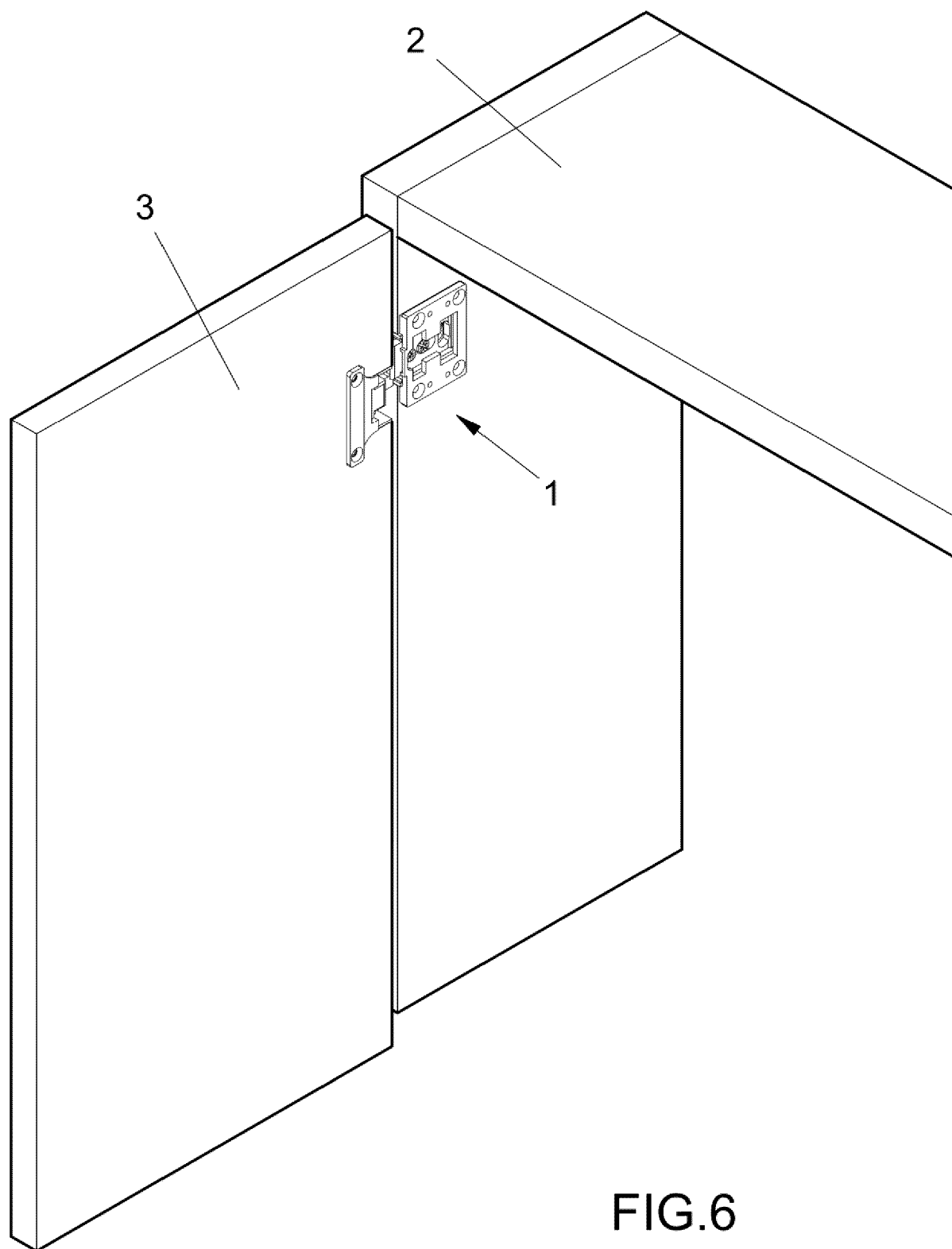


FIG. 4





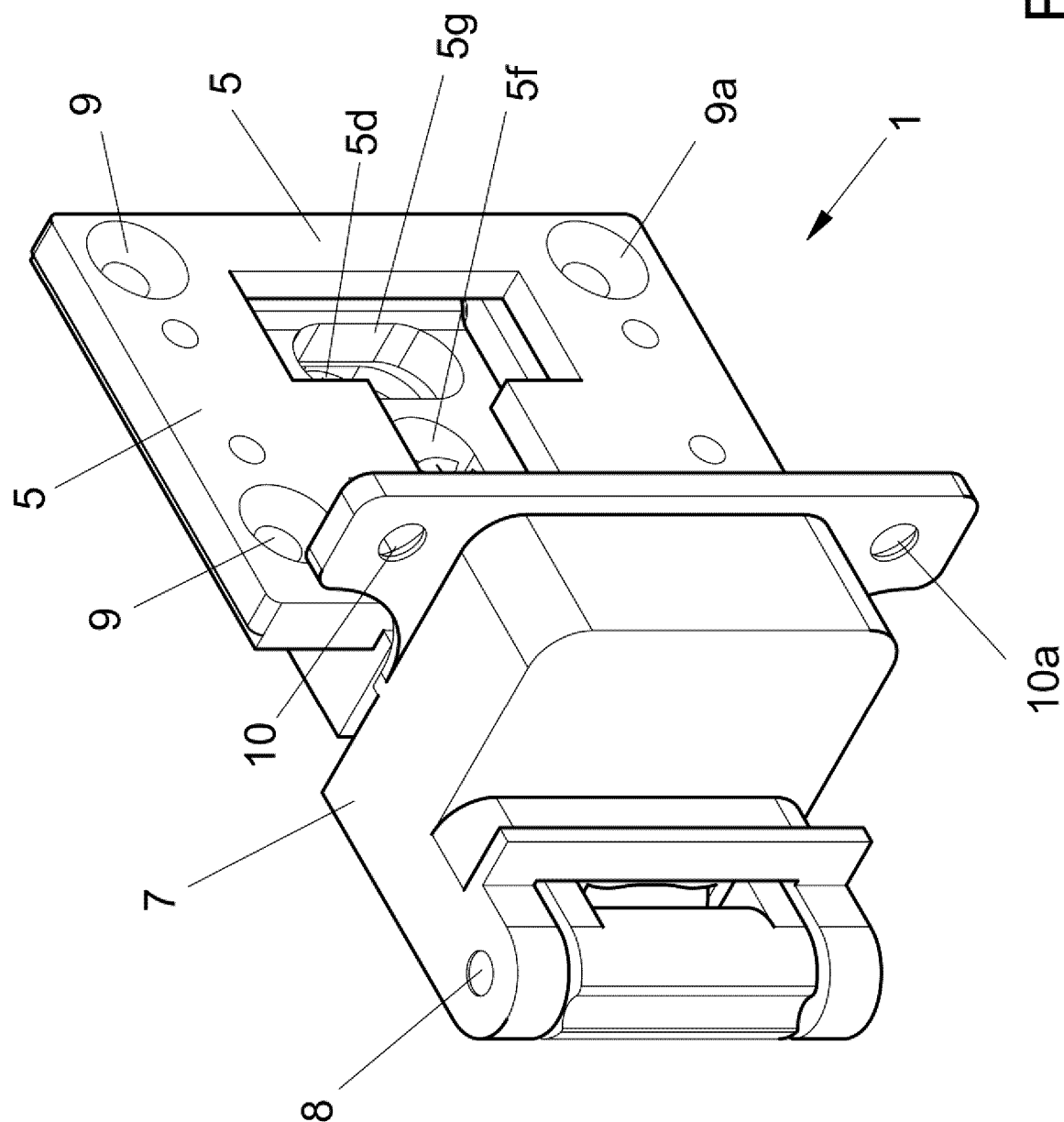


FIG.7

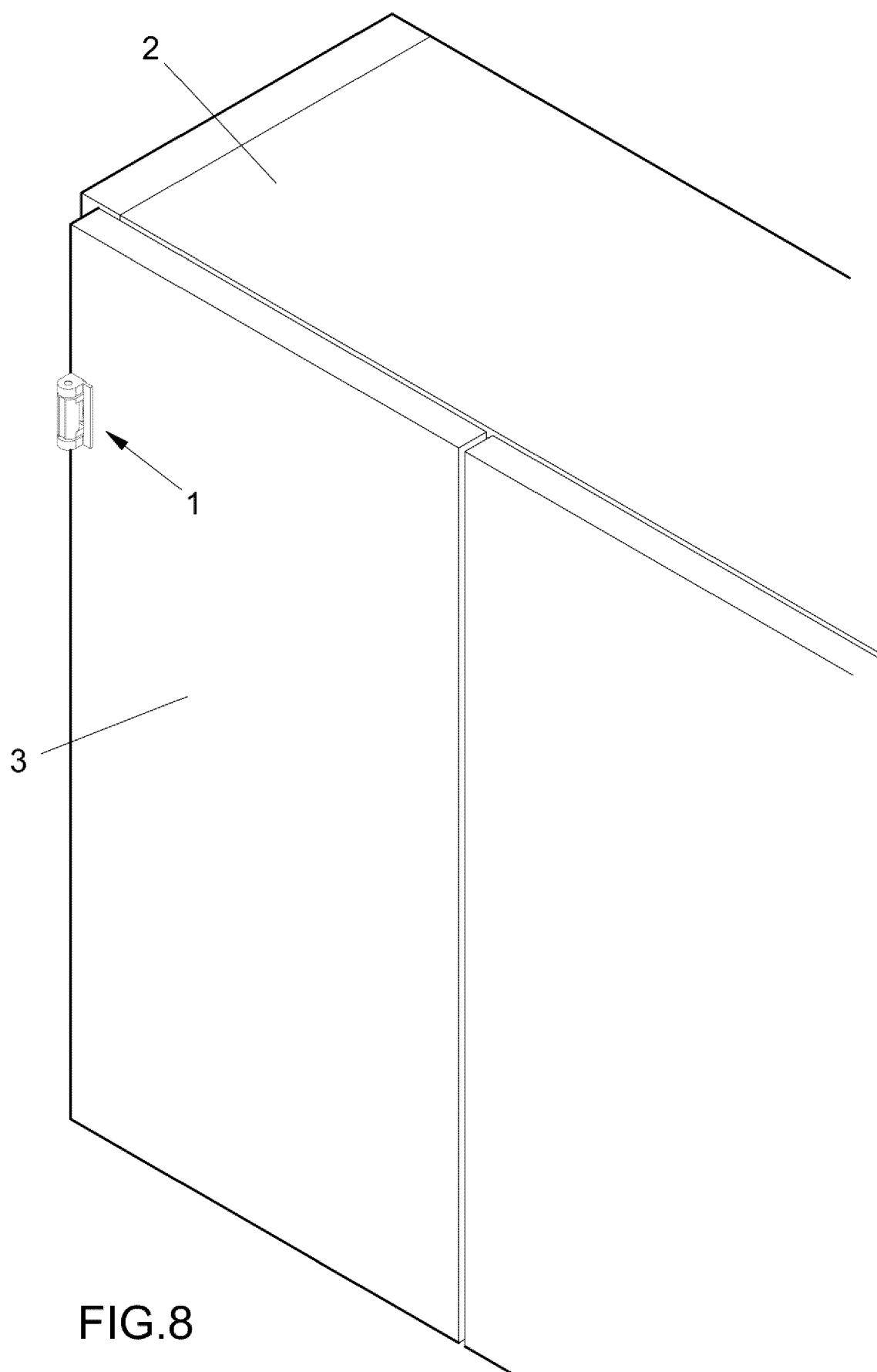


FIG.8



EUROPEAN SEARCH REPORT

Application Number

EP 24 20 2172

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 4 368 558 A (GRASS A [AT]) 18 January 1983 (1983-01-18) * figures * * column 1, lines 5-17 * * column 4, line 25 - column 6, line 38 * * column 7, lines 44-65 * -----	1-6	INV. E05D11/10 E05F5/00 ADD. E05D7/04 E05D5/06
X	EP 3 181 787 A1 (SYSTEM HOLZ S R L [IT]) 21 June 2017 (2017-06-21) * paragraph [0007] * * paragraphs [0016], [0017] * * paragraphs [0051] - [0070] * * figures * -----	1-6	
A	EP 4 023 847 A1 (SUGATSUNE KOGYO [JP]) 6 July 2022 (2022-07-06) * figures 1-5 * * paragraphs [0013] - [0028] * -----	1-6	
			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		5 February 2025	Mund, André
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			

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

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

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