



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
22.08.2018 Bulletin 2018/34

(51) Int Cl.:
A47B 95/00 (2006.01) A47B 88/90 (2017.01)

(21) Application number: **17167654.7**

(22) Date of filing: **21.04.2017**

(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:
MA MD

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(30) Priority: **16.02.2017 CN 201710083052**

(54) **DRAWER ADJUSTING DEVICE**

(57) A drawer adjusting device includes a fixed member (1) having an adjusting hole (11). A movable member (2) includes two limiting blocks (21) spaced from each other by a gap. The movable member (2) includes an upper pushing portion (22) on a top end thereof and a lower pushing portion (23) on a bottom end thereof. An adjusting member (3) includes a first side having a control portion (31) and a second side having a spiral block (32).

A spacing between the spiral block (32) and a central axis of the adjusting member (3) gradually increases from an end of the spiral block (32) toward another end of the spiral block (32). The adjusting member (3) is located between the fixed member (1) and the movable member (2). The control portion (31) is received in the adjusting hole (11). The spiral block (32) extends through the gap between the two limiting blocks (21).

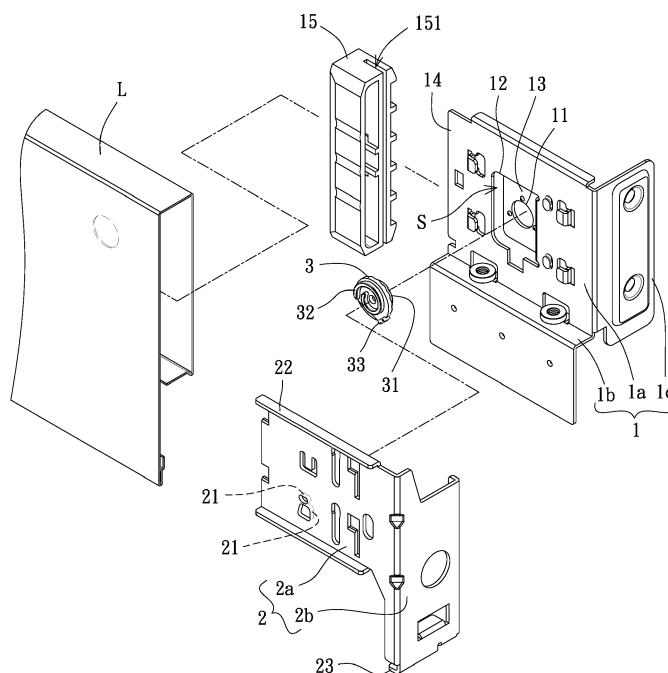


FIG. 2

Description

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0001] The present invention generally relates to a part for a drawer and, more particularly, to a drawer adjusting device mounted to a rear end of a drawer to adjust levels of a sideboard and a tail board of the drawer.

2. Description of the Related Art

[0002] The drawers of early furniture were not provided with sliding tracks and were, thus, difficult to open and close. The drawers could fall off if pulled out completely. Provision of the sliding tracks permit smooth opening and closing of the drawers and can restrict the open extent of the drawers to effectively avoid falling off of the drawers, increasing safety.

[0003] However, it would be difficult to access articles in a drawer that cannot be pulled out completely. Thus, manufacturers continuously improved the sliding rails in recent years and had provided a sliding rail assembly permitting a drawer to be pulled out to an outermost position in which the drawer is completely exposed to allow easy access to the articles in the drawer.

[0004] Although the above sliding track provides more convenient use of drawers, for a drawer that would be completely exposed during use, the level of the tail portion of the drawer (the flushness at the connection between the tail board and the two sideboards of the drawer) in the appearance will directly affect the overall sense of quality of the furniture. This issue has not been noticed, because the tail portion of the drawer is rarely exposed. Thus, mechanisms for adjusting the levels of the tail board and the sideboards are still not available in the market, resulting in trouble to drawer assemblers. Improvement is, thus, necessary.

SUMMARY OF THE INVENTION

[0005] To solve the above problem, the present invention provides a drawer adjusting device to adjust the levels of the sideboard and the tail board, such that the tail board of the drawer, when exposed, can enhance the overall sense of quality of the furniture.

[0006] When the terms "front", "rear", "left", "right", "up", "down", "top", "bottom", "inner", "outer", "side", and similar terms are used herein, it should be understood that these terms have reference only to the structure shown in the drawings as it would appear to a person viewing the drawings and are utilized only to facilitate describing the invention, rather than restricting the invention.

[0007] A drawer adjusting device according to the present invention includes a fixed member having an adjusting hole. A movable member includes two limiting

blocks spaced from each other by a gap. The movable member includes an upper pushing portion on a top end thereof and a lower pushing portion on a bottom end thereof. An adjusting member includes a first side having a control portion and a second side having a spiral block. A spacing between the spiral block and a central axis of the adjusting member gradually increases from an end of the spiral block toward another end of the spiral block. The adjusting member is located between the fixed member and the movable member. The control portion is received in the adjusting hole. The spiral block extends through the gap between the two limiting blocks.

[0008] Thus, the drawer adjusting device according to the present invention provides a simple structure that can easily be operated to adjust the levels of the sideboard and the tail board, such that the tail board of the drawer, when exposed, can enhance the overall sense of quality of the furniture.

[0009] In an example, the fixed member includes a first sideboard insertion plate, a bottom board coupling plate connected to the first sideboard insertion plate, and a first tail board coupling plate connected to the first sideboard insertion plate. The adjusting hole is defined in the first sideboard insertion plate. This structure is simple and is easy to manufacture and assemble, reducing the manufacturing costs and increasing the assembling convenience.

[0010] In an example, the movable member includes a second sideboard insertion plate and a second tail board coupling plate connected to the second sideboard insertion plate. The two limiting blocks and the upper pushing portion are disposed on the second sideboard insertion plate. The lower pushing portion is disposed on the second tail board coupling plate. This structure is simple and is easy to manufacture and assemble, reducing the manufacturing costs and increasing the assembling convenience.

[0011] In an example, the first sideboard insertion plate includes an opening. A shield plate is fixed to an end of the opening and shields the end of the opening, defining a chamber in the first sideboard insertion plate. The adjusting hole extends through the shield plate. This structure is simple and is easy to manufacture and assemble, reducing the manufacturing costs and increasing the assembling convenience.

[0012] In an example, the second sideboard insertion plate of the movable member abuts the first sideboard insertion plate of the fixed member. The two limiting blocks are located in the chamber. This structure saves the space required for assembly.

[0013] In an example, the second tail board coupling plate of the movable member abuts the first tail board coupling plate of the fixed member. The first tail board coupling plate has a lower edge located above the lower pushing portion. This structure saves the space required for assembly.

[0014] In an example, the first tail board coupling plate is connected to an edge of the first sideboard insertion

plate. An extension extends outward from another edge of the first sideboard insertion plate. A cap is coupled to the first sideboard insertion plate and includes a slit. The extension is securely engaged in the slit. When the first sideboard insertion plate is inserted into the sideboard of the drawer, the cap slightly deforms to be securely fixed in the sideboard, increasing the engaging reliability between the fixed member and the sideboard.

[0015] In an example, the adjusting member includes a stopper block. The stopper block is spaced from the spiral block and is located outside of the spiral block. The stopper block limits the rotational extent of the first adjusting member to avoid excessive rotation of the first adjusting member that may lead to disengagement from the two limiting blocks and subsequent reassembly, increasing use convenience.

[0016] The present invention will become clearer in light of the following detailed description of illustrative embodiments of this invention described in connection with the drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017]

FIG. 1 is an exploded, perspective view of a drawer adjusting device of an embodiment according to the present invention, a tail board, a bottom board, and a sideboard of a drawer.

FIG. 2 is an exploded, perspective view of the drawer adjusting device of FIG. 1.

FIG. 3 is another exploded, perspective view of the drawer adjusting device, the tail board, the bottom board, and the sideboard of FIG. 1.

FIG. 4 is another exploded, perspective view of the drawer adjusting device of FIG. 2.

FIG. 5 is a cross sectional view of the drawer adjusting device after assembly.

FIG. 6 is a cross sectional view taken along section line A-A of FIG. 5.

FIG. 7 is a view similar to FIG. 6 with an adjusting member rotated.

DETAILED DESCRIPTION OF THE INVENTION

[0018] With reference to FIGS. 1 and 2, a drawer adjusting device of an embodiment according to the present invention includes a fixed member 1, a movable member 2, and an adjusting member 3. The fixed member 1 can be fixed to a tail board T and a bottom board B of a drawer. A portion of the fixed member 1 and a portion of the movable member 2 extend into a sideboard L of the drawer. The adjusting member 3 is mounted between the fixed member 1 and the movable member 2. When the adjusting member 3 is rotated, the movable member 2 moves upward or downward relative to the fixed member 1 to thereby move the sideboard L upward or downward.

[0019] Specifically, the fixed member 1 includes a first

sideboard insertion plate 1a, a bottom board coupling plate 1b connected to a bottom edge of the first sideboard insertion plate 1a, and a first tail board coupling plate 1c connected to an edge of the first sideboard insertion plate 1a. The first sideboard insertion plate 1a is inserted into the sideboard L of the drawer. The bottom board coupling plate 1b is fixed to the bottom board B of the drawer. The first tail board coupling plate 1c is fixed to the tail board T of the drawer.

[0020] With reference to FIGS. 2 and 3, the fixed member 1 includes an adjusting hole 11 defined in the first sideboard insertion plate 1a for alignment with the adjusting member 3. In this embodiment, the first sideboard insertion plate 1a includes an opening 12. A shield plate 13 is fixed to an end of the opening 12 and shields the end of the opening 12, defining a chamber S in the first sideboard insertion plate 1a for receiving the adjusting member 3. The adjusting hole 11 extends through the shield plate 13. Thus, an end of the adjusting member 3 can extend through the adjusting hole 11 to permit a user to rotate the adjusting member 3 from inside the drawer.

[0021] Furthermore, an extension 14 extends outward from another edge of the first sideboard insertion plate 1a. A cap 15 is coupled to the first sideboard insertion plate 1a and includes a slit 151. The extension 14 is securely engaged in the slit 151. When the first sideboard insertion plate 1a is inserted into the sideboard L of the drawer, the cap 15 slightly deforms to be securely fixed in the sideboard L, increasing the engaging reliability between the fixed member 1 and the sideboard L.

[0022] With reference to FIGS. 2 and 4, the movable member 2 includes a second sideboard insertion plate 2a and a second tail board coupling plate 2b connected to the second sideboard insertion plate 2a. The movable member 2 includes two limiting blocks 21 disposed on the second sideboard insertion plate 2a and spaced from each other by a gap. The movable member 2 further includes an upper pushing portion 22 on a top end of the second sideboard insertion plate 2a. Furthermore, the movable member 2 includes a lower pushing portion 23 disposed on a bottom end of the second tail board coupling plate 2b. With reference to FIG. 1, in assembly, the second sideboard insertion plate 2a of the movable member 2 abuts the first sideboard insertion plate 1a of the fixed member 1. The two limiting blocks 21 are located in the chamber S. The second tail board coupling plate 2b of the movable member 2 abuts the first tail board coupling plate 1c of the fixed member 1. The first tail board coupling plate 1c has a lower edge located above the lower pushing portion 23.

[0023] With reference to FIGS. 4, 5, and 6, the adjusting member 3 includes a first side having a control portion 31. The control portion 31 can be in the form of a minus-shaped groove or a cruciform groove, such that a screwdriver bit with a flat head or a Phillips head can be inserted into the control portion 31 and can drive the adjusting member 3 to rotate. The adjusting member 3 further includes a second side having a spiral block 32. A spacing

between the spiral block 32 and a central axis of the adjusting member 3 gradually increases from an end of the spiral block 32 toward the other end of the spiral block 32. The adjusting member 3 is received in the chamber S and is located between the fixed member 1 and the movable member 2. The control portion 31 is received in the adjusting hole 11. The spiral block 32 extends through the gap between the two limiting blocks 21. The adjusting member 3 further includes a stopper block 33 spaced from and located outside of the spiral block 32. When the adjusting member 3 is rotated to a predetermined position, the stopper block 33 abuts a lower one of the two limiting blocks 21 to avoid excessive rotation of the adjusting member 3 that may lead to disengagement from the two limiting blocks 21 and subsequent reassembly.

[0024] With reference to FIGS. 1, 6, and 7, according to the above structure, after the drawer adjusting device has been assembled with the tail board T, the bottom board B, and the sideboard L, if the top edge of the tail board T is not flush with the top edge of the sideboard L, adjustment of the sideboard L in the height direction is required. In the example shown in FIG. 6, the top edge of the tail board T is higher than the top edge of the sideboard L, the sideboard L should be moved upward. In this case, a user can operate the control portion 31 of the adjusting member 3 from inside of the sideboard L to rotate the adjusting member 3, such that a section of the spiral block 32 located between the two limiting blocks 23 and abutting one of the two limiting blocks 21 changes from a location more distant to the central axis to another location nearer to the central axis. During this procedure, the movable member 2 gradually moves upward relative to the fixed member 1 to actuate the sideboard L upward by the upper pushing portion 32 until the top edge of the sideboard L is flush with the top edge of the tail board T.

[0025] In view of the foregoing, the drawer adjusting device according to the present invention provides a simple structure that can easily be operated to adjust the levels of the sideboard L and the tail board T, such that the tail board T of the drawer, when exposed, can enhance the overall sense of quality of the furniture.

Claims

1. A drawer adjusting device, **characterized in** comprising:

a fixed member (1) including an adjusting hole (11);

a movable member (2) including two limiting blocks (21) spaced from each other by a gap, with the movable member (2) including an upper pushing portion (22) on a top end thereof and a lower pushing portion (23) on a bottom end thereof; and

an adjusting member (3) including a first side having a control portion (31) and a second side

having a spiral block (32), with a spacing between the spiral block (32) and a central axis of the adjusting member (3) gradually increasing from an end of the spiral block (32) toward another end of the spiral block (32), with the adjusting member (3) located between the fixed member (1) and the movable member (2), with the control portion (31) received in the adjusting hole (11), and with the spiral block (32) extending through the gap between the two limiting blocks (21).

2. The drawer adjusting device as claimed in claim 1, **characterized in that** the fixed member (1) includes a first sideboard insertion plate (1a), a bottom board coupling plate (1b) connected to the first sideboard insertion plate (1a), and a first tail board coupling plate (1c) connected to the first sideboard insertion plate (1a), and wherein the adjusting hole (11) is defined in the first sideboard insertion plate (1a).
3. The drawer adjusting device as claimed in claim 2, **characterized in that** the movable member (2) includes a second sideboard insertion plate (2a) and a second tail board coupling plate (2b) connected to the second sideboard insertion plate (2a), wherein the two limiting blocks (21) and the upper pushing portion (22) are disposed on the second sideboard insertion plate (2a), and wherein the lower pushing portion (23) is disposed on the second tail board coupling plate (2b).
4. The drawer adjusting device as claimed in claim 3, **characterized in that** the first sideboard insertion plate (1a) includes an opening (12), wherein a shield plate (13) is fixed to an end of the opening (12) and shields the end of the opening (12), defining a chamber (S) in the first sideboard insertion plate (1a), and wherein the adjusting hole (11) extends through the shield plate (13).
5. The drawer adjusting device as claimed in claim 4, **characterized in that** the second sideboard insertion plate (2a) of the movable member (2) abuts the first sideboard insertion plate (1a) of the fixed member (1), and wherein the two limiting blocks (21) are located in the chamber (S).
6. The drawer adjusting device as claimed in claim 3, **characterized in that** the second tail board coupling plate (2b) of the movable member (2) abuts the first tail board coupling plate (1c) of the fixed member (1), and wherein the first tail board coupling plate (1c) has a lower edge located above the lower pushing portion (23).
7. The drawer adjusting device as claimed in claim 2, **characterized in that** the first tail board coupling

plate (1c) is connected to an edge of the first sideboard insertion plate (1a), wherein an extension (14) extends outward from another edge of the first sideboard insertion plate (1a), wherein a cap (15) is coupled to the first sideboard insertion plate (1a) and includes a slit (151), and wherein the extension (14) is securely engaged in the slit (151). 5

8. The drawer adjusting device as claimed in claim 1, **characterized in that** the adjusting member (3) includes a stopper block (33), and wherein the stopper block (33) is spaced from and located outside of the spiral block (32). 10

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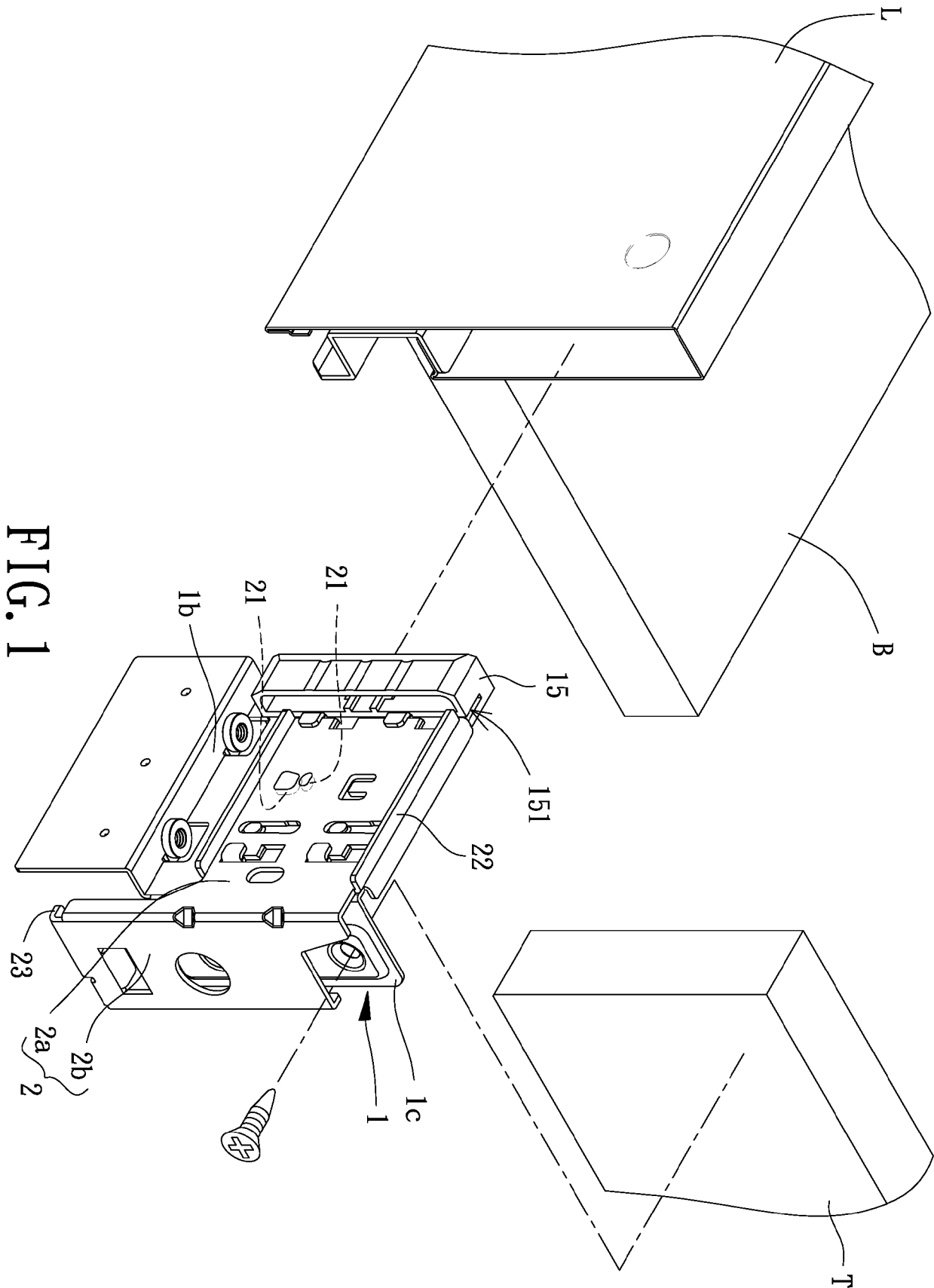


FIG. 1

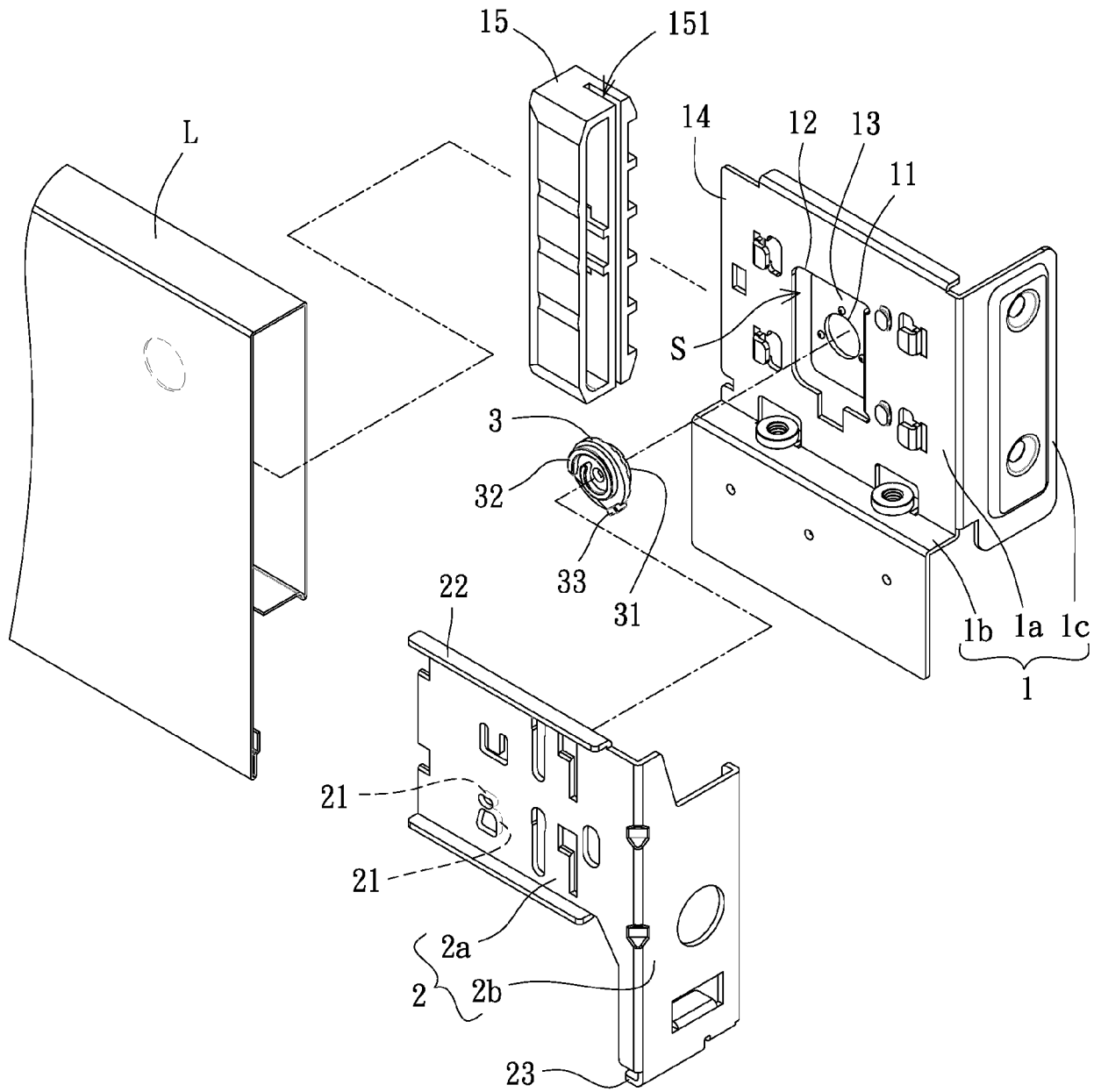


FIG. 2

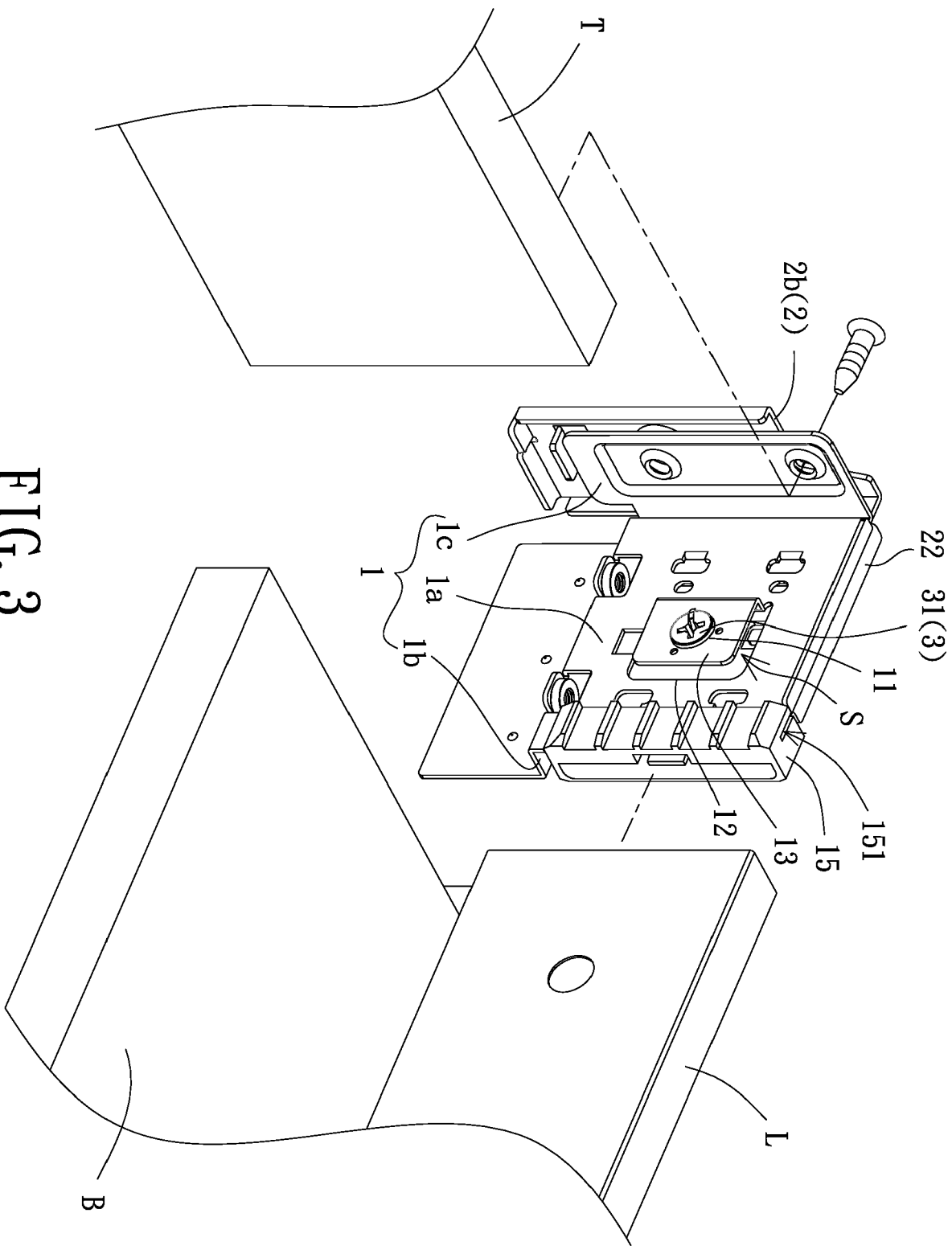


FIG. 3

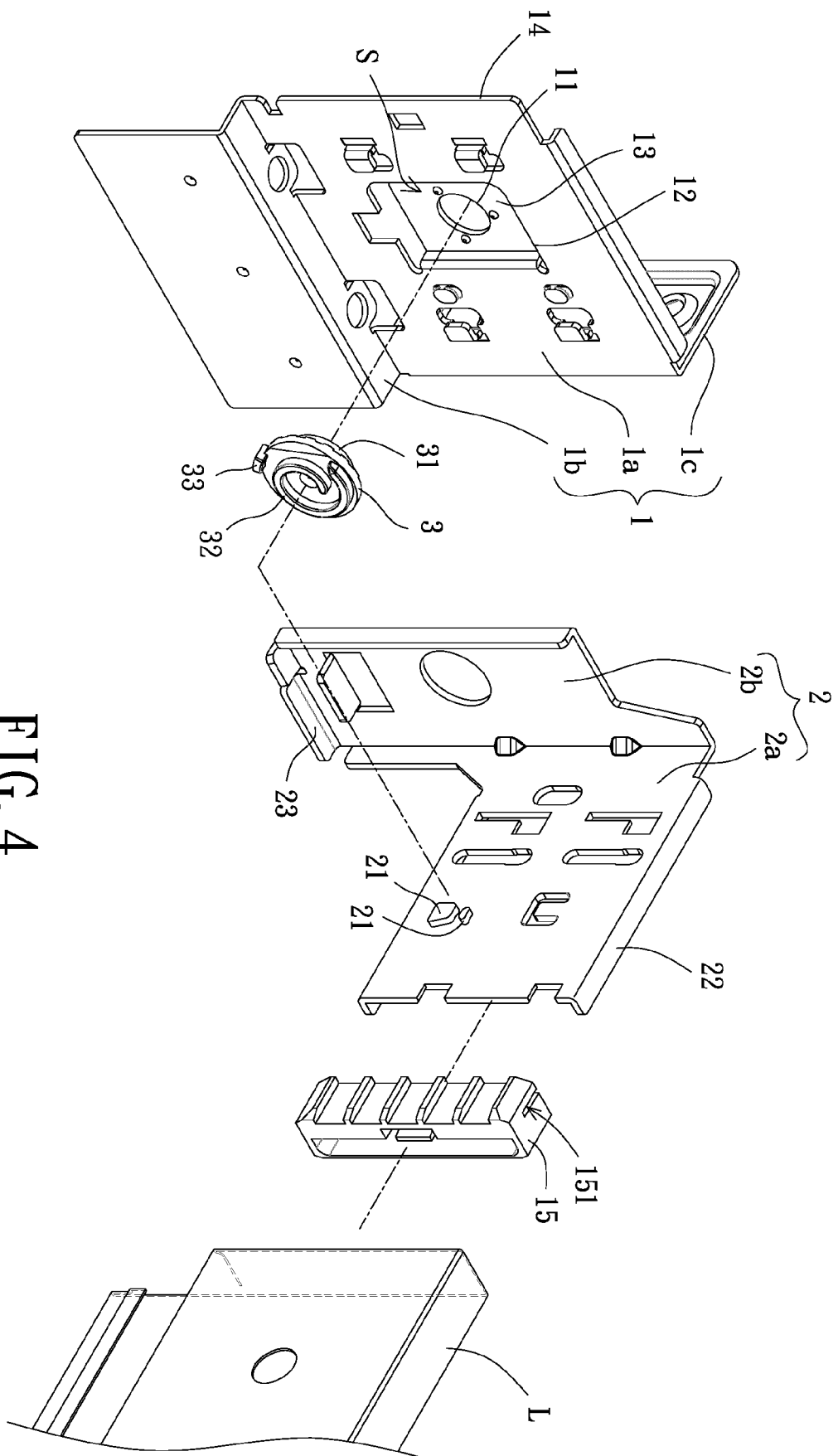


FIG. 4

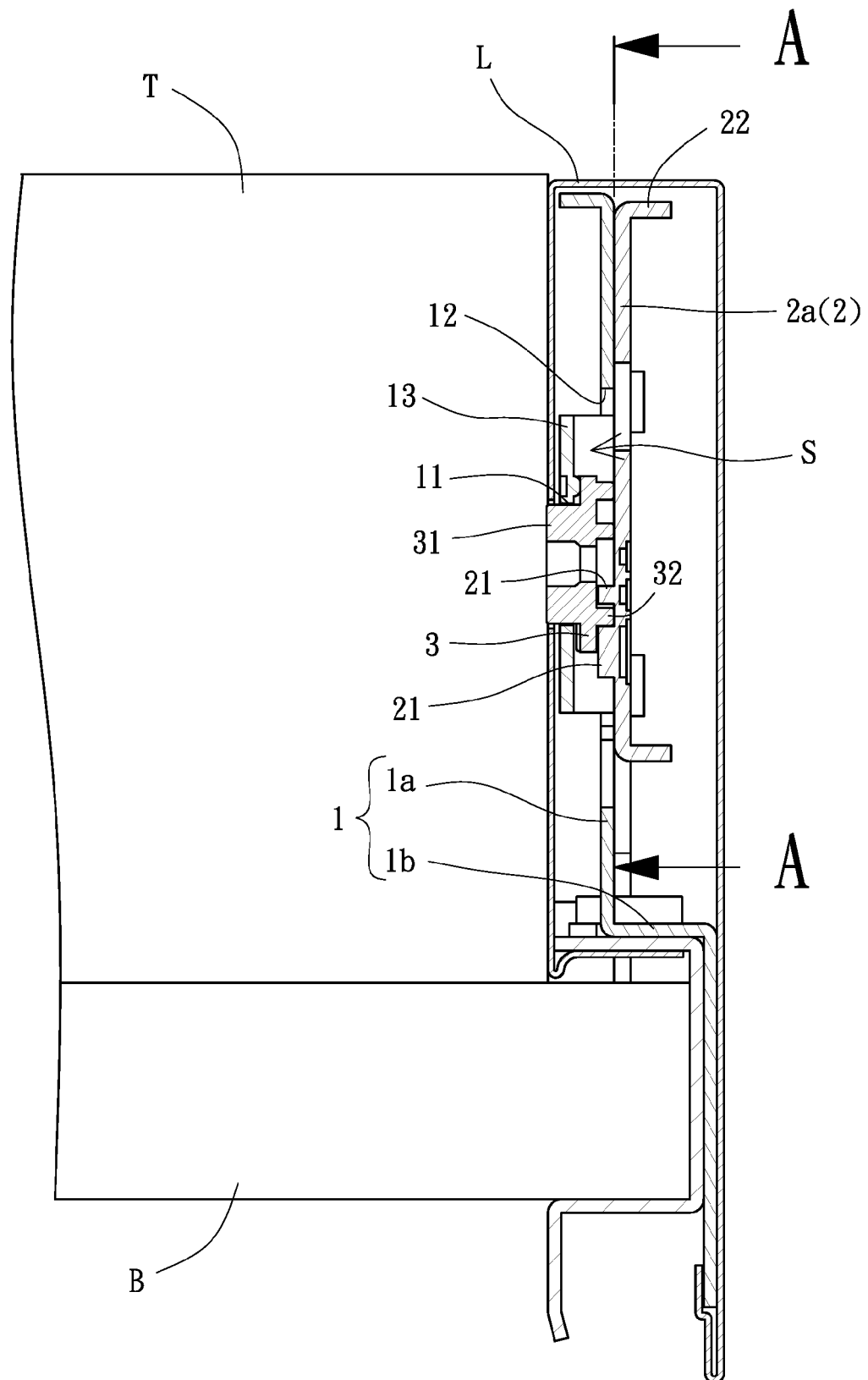


FIG. 5

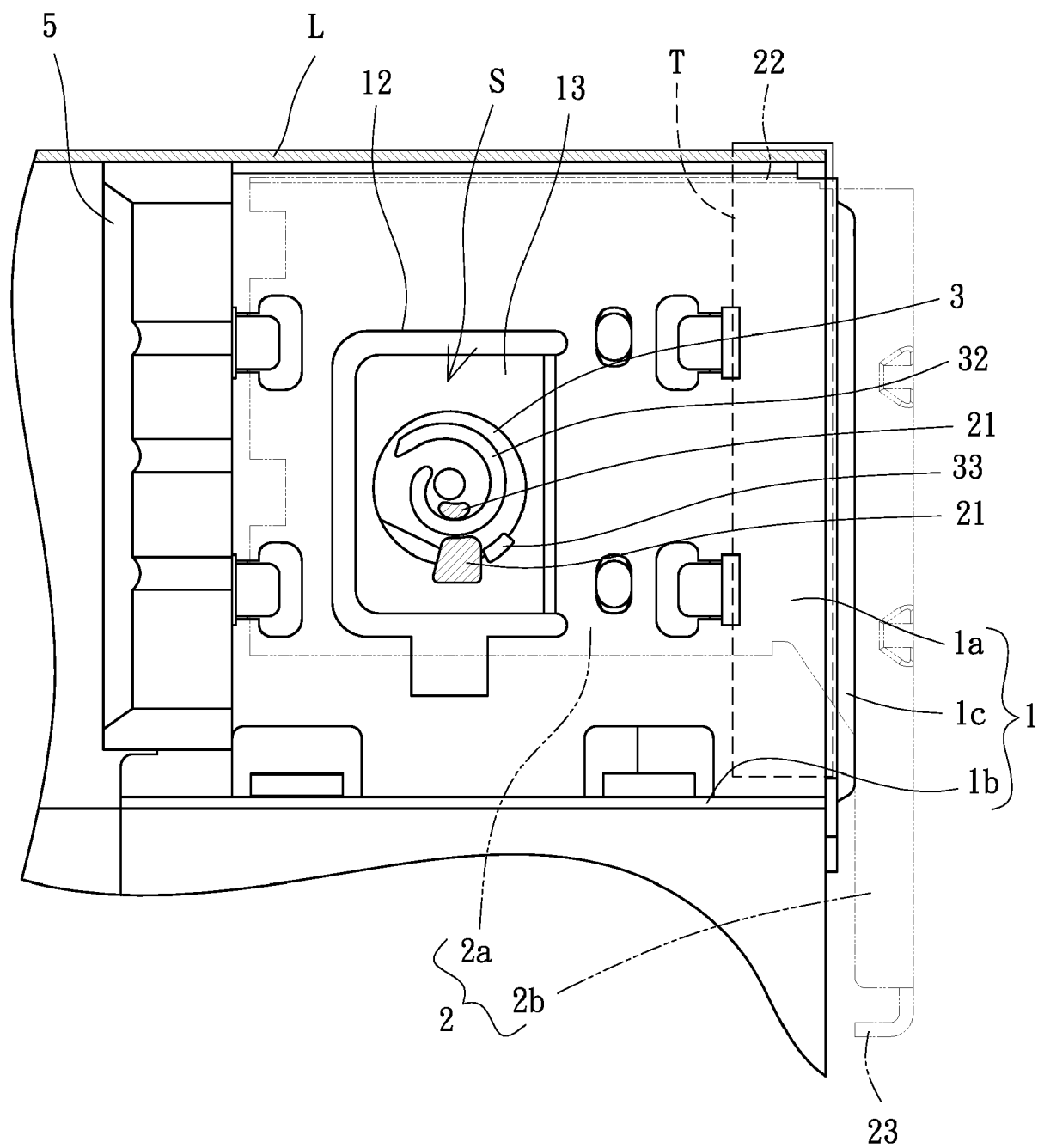


FIG. 6

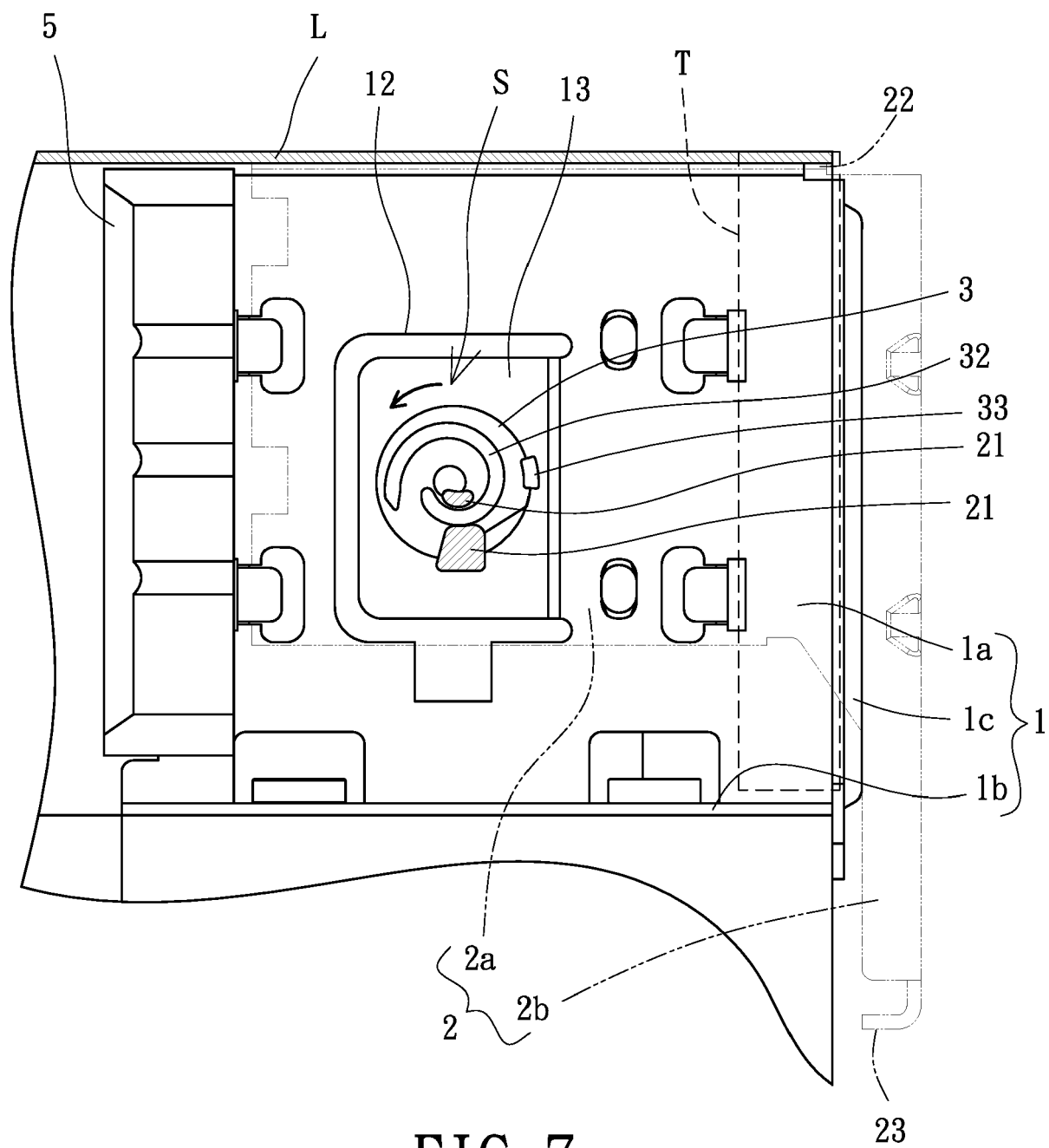


FIG. 7



EUROPEAN SEARCH REPORT

 Application Number
 EP 17 16 7654

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			TECHNICAL FIELDS SEARCHED (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 17 July 2017	Examiner Ibarrondo, Borja
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
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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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