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CA 2605598 C 2013/07/30

(11)(21) 2 605 598

(12) BREVET CANADIEN
CANADIAN PATENT

(13) C

(22) Date de dépôt/Filing Date: 2007/10/04

(41) Mise à la disp. pub./Open to Public Insp.: 2008/04/23

(45) Date de délivrance/Issue Date: 2013/07/30

(30) Priorités/Priorities: 2006/10/23 (EP EP 2006 122 781.5); 2007/04/10 (EP EP 2007 105 872.1)

(51) Cl.Int./Int.Cl. *E06B 3/64* (2006.01), *E05D 15/06* (2006.01), *E06B 3/02* (2006.01), *E06B 3/46* (2006.01)

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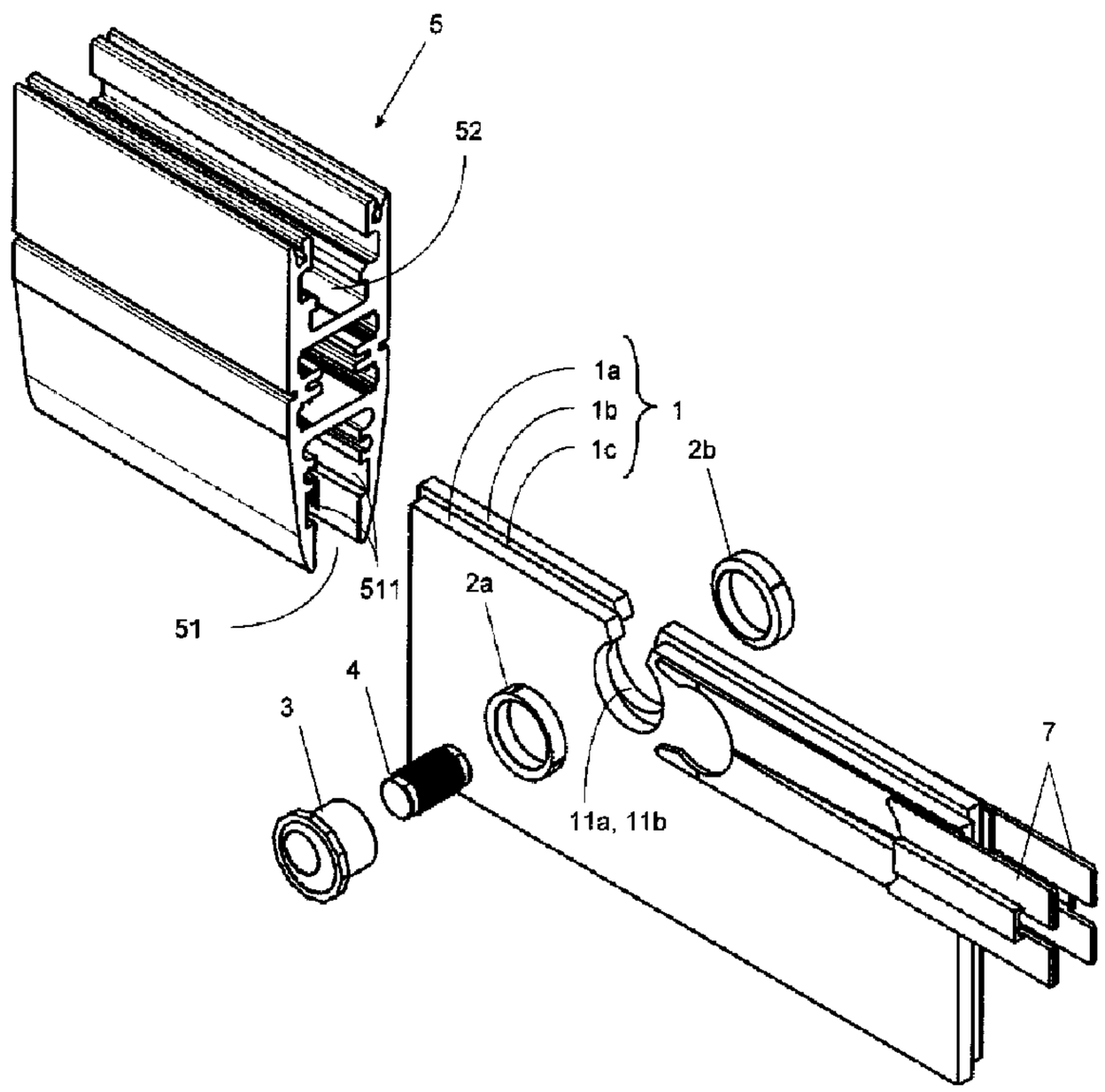
(54) Titre : DISPOSITIF POUR RETENIR DES CLOISONS ET UN ELEMENT DE SEPARATION
(54) Title: DEVICE FOR HOLDING PANELS AND SEPARATION ELEMENT



(57) Abrégé/Abstract:
The device which serves for the adjustable fixing of a panel (1) to a frame element (5) provided with a lower assembly profile (51) comprises an anchoring bolt (4) serving to hold the panel (1) which comprises anchoring pins (42) on both sides which are held in grooves which lie opposite each other within the assembly profile (51). According to the invention the panel consists of two glass panels (1a, 1b) connected to each other which comprise at least two recesses (11a, 11b) corresponding to each other, in which preferably cylindrical, outer eccentric elements (2a, 2b) are held preferably in a clearance-free way, which comprise eccentrically arranged, preferably cylindrical openings (21a, 21b) which are orientated concentrically with each other after assembly and preferably hold the introduced shaft (31) of an inner eccentric element (3) in a clearance-free way, which shaft (31) comprises an eccentrically arranged, preferably cylindrical opening (311), in which the anchoring bolt (4) is held.

Abstract

The device which serves for the adjustable fixing of a panel (1) to a frame element (5) provided with a lower assembly profile (51) comprises an anchoring bolt (4) serving to hold the panel (1) which comprises anchoring pins (42) on both sides which are held in grooves which lie opposite each other within the assembly profile (51). According to the invention the panel consists of two glass panels (1a, 1b) connected to each other which comprise at least two recesses (11a, 11b) corresponding to each other, in which preferably cylindrical, outer eccentric elements (2a, 2b) are held preferably in a clearance-free way, which comprise eccentrically arranged, preferably cylindrical openings (21a, 21b) which are orientated concentrically with each other after assembly and preferably hold the introduced shaft (31) of an inner eccentric element (3) in a clearance-free way, which shaft (31) comprises an eccentrically arranged, preferably cylindrical opening (311), in which the anchoring bolt (4) is held.

Device for holding panels and separation element

The invention relates to a device for holding panels, particularly glass panels, and to a separation element provided with this device and a panel which is guided possibly by means of a carriage in a rail, according to the introductory clause of claims 1 and 10.

In order to separate or form areas or to close room or window openings, walls, sliding elements, doors or roller shutters provided with a glass panel are often used, hereinafter referred to as separation elements, which are fixedly mounted or fixed to carriages which can be displaced along a rail and possibly mounted so as to be rotatable.

A device for holding glass panels is known for example from [1], WO 98/59140 A1, wherein two fixing parts to be introduced into a recess in a glass panel can be connected to each other by means of a connecting part which can be guided through a bore provided in the glass panel and thus holds this in a shape-locking way. The glass panel can thereby be adjusted by means of an eccentric adjusting element which is introduced into the bore. Inaccuracies which have arisen during the machining of the glass panel can thereby be compensated. An adjustable connecting screw is held between the two parts of the device, within said recess of the glass panel, said connecting screw being connected to a carriage guided in a running rail.

A further device for holding a glass panel is known from [2], EP 0 586840 A1. For the adjustable fixing of the glass panel in a receiving groove of an upper frame batten the glass panel comprises circular holes for example in the vicinity of the two ends of the upper edge region, through which circular holes fixing elements are passed. Each fixing element consists of an anchoring part with a shell surface which is

approximately cylindrically symmetrical about an adjusting axis, which shell surface meshes with an inner surface of a holding part placed on the anchoring part. The anchoring part engages with axially projecting anchoring pins into continuous anchoring grooves arranged laterally in the receiving groove. The edge of the hole in the glass panel contacts the holding part on an outer contact surface which is rotationally symmetrical about an eccentric axis parallel to the adjusting axis and spaced apart from it by an eccentricity. The holding part can be drawn away from the anchoring part and, rotated by a multiple of an increment about the adjusting axis, be placed on it again, whereby the vertical position of the contact surface in relation to the anchoring part and hence the position of the glass panel in relation to the frame batten change.

The devices known from [1] and [2] are suitable for the assembly of single-layer glass panels which have considerable disadvantages in comparison with composite safety glass. On the one hand there is a risk of falling and also a risk of glass breakage and, on account of the released glass splinters, a notable risk of injury.

Composite safety glass, with which the above-described disadvantages are avoided, consists of two or more glass panels which are connected to each other by means of an intermediate layer (PVB films) lying between them which is tear-resistant and viscously elastic. Upon overloading of the multi-layer panel through stop and impact, the glass breaks. Resulting fragments remain, however, stuck to the film (a "spider web" cracking forms). The opening remains closed and the view is extensively maintained.

Composite safety glass has further advantages. The integrated films can be graphically formed and used as advertising or information areas. For this, coloured or printed films can be

incorporated between the glass panels which reliably protect the film. In addition, when using clear glass and clear films, transparency is scarcely impaired.

A disadvantage with composite safety glass, however, is that it can hardly be mounted by means of the known fixing devices, for example the devices known from [1] and [2].

It should thereby be taken into consideration that the two glass panels of the composite safety glass are normally pre-manufactured and then connected to each other by means of the film. The holes or recesses in the glass panels do not usually lie, after connection thereof, concentrically over each other on account of the manufacturing tolerances. The arising deviations horizontally and vertically typically lie in the region of maximum 2 mm.

Insofar as the composite safety glass is to be held by means of a cylindrical element, this must be selected to be smaller than the diameter of the holes or recesses, so that an interference-causing clearance arises. Furthermore, in most cases, only one of the two glass panels lies on the cylindrical element, so that a high load upon only one of the glass panels results within only one of the recesses. Furthermore, the adjustment cannot be easily carried out.

It is thus an object of the present invention to indicate a device, by means of which a composite glass panel, possibly a composite safety glass panel, formed by two glass panels connected to each other can be mounted in a frame element which is possibly connected to a carriage guided in a rail while avoiding the above-described disadvantages.

In particular, a device is to be indicated, by means of which the two glass panels of the composite glass panel and thus the composite glass panel itself can be mounted in a clearance-free way.

Furthermore, a device is to be indicated, wherein the forces acting locally on the two glass panels of the composite glass panel are evenly distributed and are as small as possible.

Furthermore, a separation element is to be indicated which comprises a composite glass panel connected to a frame element according to the invention.

This object is achieved with a device and a separation element which have the features indicated in claims 1 and 10. Advantageous embodiments of the invention are indicated in further claims.

The device which serves for the adjustable fixing of a panel to a frame element provided with a lower assembly profile comprises an anchoring bolt serving to hold the panel, which anchoring bolt has anchoring pins on both sides which are held in grooves which lie opposite each other within the assembly profile. According to the invention the panel consists of two glass panels connected to each other which comprise at least two recesses corresponding to each other, in which preferably cylindrical outer eccentric elements are preferably held in a clearance-free way, which comprise eccentrically arranged, preferably cylindrical openings which are orientated concentrically with each other after assembly and preferably hold the introduced shaft of an inner eccentric element in a clearance-free way, which shaft comprises an eccentrically arranged, preferably cylindrical opening, in which the anchoring bolt is held.

After the assembly, the force acting on the anchoring bolt is transferred via the inner eccentric element evenly to the two outer eccentric elements and the two glass panels, so that minimal loads upon the device parts and the glass panels result.

Through rotation of the inner eccentric element, the distance of the anchoring bolt from the frame element and hence the height of the panel can be easily adjusted. In this connection the inner eccentric element preferably comprises a coupling element, for example a polygonal nut provided on one side of the shaft which is detected and turned by means of an adjusting tool. For this process, the panel is preferably slightly raised so that the adjustment can be carried out while avoiding acting forces. Alternatively, the adjustment can be carried out before the panel is hung.

In a further preferred embodiment the central part of the anchoring bolt is provided with grooves or teeth which preferably engage, only when there is a load upon the panel, in grooves or teeth which are provided within the opening in the shaft of the inner eccentric element. The inner eccentric element is thus held under a load by the anchoring bolt which preferably comprises anchoring pins on both sides which are upwardly and / or downwardly defined by two parallel sliding surfaces and thus held in a rotationally secure way in the grooves provided in the frame element.

The device according to the invention has numerous advantages. Multi-layer glass panels can be simply, quickly and precisely mounted and rapidly adjusted. A shape-locking, stable and practically clearance-free connection results between the glass panel and the metal support profile or the frame element which is normally connected to carriages which are guided so as to be displaceable in rails.

The above-described advantages of composite safety glass are integrated into the separation element. The films integrated into the composite safety glasses can be formed as desired.

The invention is explained in greater detail below with the aid of drawings, in which:

Fig. 1 shows a device according to the invention with two outer eccentric elements 2a and 2b which can be introduced into openings 11a, 11b of glass panels 1a, 1b of a composite glass panel 1, which outer eccentric elements 2a and 2b each have an eccentrically arranged opening 21a or 21b, into which the shaft 31 of an inner eccentric element 3 provided with a polygonal nut 32 can be introduced which comprises an eccentrically arranged opening 311, in which an anchoring bolt 4 which can be connected to the frame element 5 is mounted;

Fig. 2 shows the outer eccentric elements 2a and 2b of Fig. 1;

Fig. 3 shows the inner eccentric element 3 of Fig. 1;

Fig. 4 shows a section through the device of Fig. 1 mounted in a frame element 5, which can be manually adjusted by means of a tool 8;

Fig. 5a shows, in a spatial representation, the anchoring bolt 4 of Fig. 1 which comprises a central part 41 provided with longitudinal grooves 411 or teeth which comprises two anchoring pins 42 provided with sliding surfaces 421 which can be introduced into grooves 511 of the frame element 5;

Fig. 5b shows, in a spatial representation, the inner eccentric element 3 of Fig. 1, of which the shaft 31 corresponds to the openings 21a, 21b of the outer eccentric elements 2a, 2b and is provided with an opening 311 with inwardly orientated grooves 3111 or teeth, by means of which the inserted anchoring element 4 is held

in a rotationally secure way as soon as the load of the panel 4 acts on it;

Fig. 5c shows, in a spatial representation, an outer eccentric element 2a; 2b according to Fig. 1;

Fig. 6 shows the device of Fig. 1 with the adjusting tool 8 and two wedges 7 which can be introduced by means of a tool 9, through which the lateral clearance between the composite glass panel 1 and the frame element 5 is compensated; and

Fig. 7 shows a part of the composite glass panel 1 of Fig. 1 with the partially overlapping recesses 11a and 11b of the glass panels 1a, 1b which are connected to each other by means of a film 1c, on which a graphic representation (logo) is provided.

Fig. 1 shows a device according to the invention with two eccentric elements 2a and 2b which can be inserted into openings 11a, 11b of glass panels 1a, 1b of a composite glass panel 1 displaced towards each other and be held there in a preferably clearance-free way. The eccentric elements 2a and 2b each have an eccentrically arranged opening 21a or 21b, into which the shaft 31 of an inner eccentric element 3 provided with a polygonal nut 32 can be introduced. After the insertion of the eccentric elements 2a and 2b these are thus rotated so far towards each other until their openings 21a, 21b are concentrically arranged and are ready to receive the shaft 31 of the inner eccentric element 3 which comprises an eccentrically arranged opening 311, in which an anchoring bolt 4 which can be connected to the frame element 5 is mounted. After the introduction of the described device parts 2a, 2b, 3 and 4, these are thus held in the openings 11a, 11b of the two glass panels 1a, 1b in a shape-locking and preferably clearance-free way.

Fig. 2 shows the cylindrical outer eccentric elements 2a and 2b of Fig. 1.

Fig. 3 shows the inner eccentric element 3 of Fig. 1.

Fig. 4 shows a section through the device of Fig. 1 mounted in a frame element 5 which is manually adjusted by means of a tool 8. It can be seen that the two outer eccentric elements 2a, 2b are held in a practically clearance-free way in the openings 11a, 11b. The shaft 31 of the inner eccentric element 3 on the other hand is held preferably with a clearance in the openings 21a, 21b of the outer eccentric elements 2a, 2b, which allows the adjustment or rotation of the inner eccentric element 3, for example by means of the tool 8, if the load of the panel 1 is compensated.

Fig. 5a shows, in a spatial representation, the anchoring bolt 4 of Fig. 1 which comprises a central part 41 provided with longitudinal grooves 411 or teeth which comprises two anchoring pins 42 provided with sliding surfaces 421 which can be introduced into grooves 511 of the frame element 5.

Fig. 5b shows, in a spatial representation, the inner eccentric element of Fig. 1, of which the shaft 31 corresponds to the openings 21a, 21b of the outer eccentric elements 2a, 2b and is provided with an opening 311 with inwardly orientated grooves 3111 or teeth, by means of which the inserted anchoring element 4 is held in a rotationally secure way as soon as the load of the panel 4 acts on it. The grooves 3111 provided in the opening 311 thereby cooperate with longitudinal grooves 411 or teeth on the central part 41 of the anchoring element 4. The grooves 3111 can thereby be provided in the opening 311 during the production of the eccentric element 3 or only be incorporated after assembly of the anchoring element 4 through its longitudinal grooves 411.

Fig. 5c shows, in a spatial representation, an external eccentric element 2a; 2b according to Fig. 1.

Fig. 6 shows the device of Fig. 1 with the adjusting tool 8 and two wedges 7 which can be introduced by means of a tool 9, through which the lateral clearance between the composite glass panel 1 and the frame element 5 is compensated.

Fig. 7 shows a part of the composite glass panel of Fig. 1, with the partially overlapping recesses 11a and 11b of the glass panels 1, 1b which are connected to each other by means of a film 1c, on which a graphic representation (logo) is provided.

A panel 1 is preferably mounted as follows.

The panel 1 is horizontally mounted on support elements. The outer eccentric elements 2a, 2b are then pressed into the openings 11a, 11b which have at least a little clearance. The openings 21a, 21b provided in the outer eccentric elements 2a, 2b are now orientated. The shaft 31 of the inner eccentric element 3 is then introduced into the openings 21a, 21b. The anchoring bolt is inserted into the inner eccentric element 3, via which the frame profile or the frame element is then pushed so that the anchoring pins 42 are introduced into the grooves 511. Subsequently, the adjustment is undertaken. Furthermore, the wedges 7 are introduced. The same procedure takes place on the other side of the panel.

If wedges have been introduced into both frame elements and the latter have also been centred laterally in relation to the vertical glass edge, the joints between the frame element or the glass support profile and the mounted panel are sealed on both sides with silicone.

Literature

[1] WO 98/59140 A1

[2] EP 0 586 840 A1

List of reference numerals

1	Composite glass panel, in particular composite safety glass
1a, 1b	Glass panels
1c	Preferably provided film between the glass panels 1a, 1b
11a, 11b	Recesses of the glass panels 1a, 1b
2a, 2b	Outer eccentric elements
21a, 21b	Openings or bores in the outer eccentric elements
3	Inner eccentric element
31	Shaft of the inner eccentric element 3
311	Opening or bore in the shaft
3111	Grooves 3111 or teeth on the shaft 31
32	Coupling element or polygonal nut of the inner eccentric element 3
4	Anchoring bolt
41	Central part of the anchoring bolt 4
411	Longitudinal grooves 411 or teeth on the central part 41
42	Anchoring pin 42 of the anchoring bolt 4
421	Sliding surfaces 421 of the anchoring pins 42
5	Frame element
51	Lower assembly profile in the frame element 5 for receiving the panel 1
511	Grooves 511 in the lower assembly profile 51
52	Upper assembly profile in the frame element 5 for receiving an assembly block which can be connected to a carriage guided in a rail
7	Locking wedges
8	Adjusting tool
9	Tool for driving in the wedges 7

Claims

1. Device for adjustable fixing of a panel (1) to a frame element (5) provided with a lower assembly profile (51), with an anchoring bolt (4) serving to hold the panel (1) which comprises anchoring pins (42) on both sides which are held in grooves which lie opposite each other within the assembly profile (51), characterised in that the panel consists of two glass panels (1a, 1b) connected to each other which comprise at least two recesses (11a, 11b), corresponding to each other, in which cylindrical, outer eccentric elements (2a, 2b) are held in a clearance-free way, which outer eccentric elements (2a, 2b) comprise eccentrically arranged, cylindrical openings (21a, 21b) which are orientated concentrically with each other after assembly and hold an introduced shaft (31) of an inner eccentric element (3) in a practically clearance-free way, which shaft (31) comprises an eccentrically arranged, cylindrical opening (311), in which the anchoring bolt (4) is held.

2. Device according to claim 1, characterised in that the inner eccentric element (3) comprises, on at least one side of the shaft (31), a coupling element (32) like a polygonal nut which corresponds to an adjusting tool.

3. Device according to claim 1 or 2, characterised in that a central part (41) of the anchoring bolt (4) is provided with grooves or teeth (411) which engage in grooves or teeth (3111) which are provided within the opening (31) in the shaft (31) of the inner eccentric element (3).

4. Device according to claim 3, characterised in that there is clearance between a shell surface of the central part (41) of the anchoring bolt (4) and an inner surface

(3111) of an opening (311) in the shaft (31) of the inner eccentric element (3), which clearance allows the inner eccentric element (3) to rotate in relation to the anchoring bolt (4) held in the frame element (5).

5. Device according to one of the claims 1-4, characterised in that the shaft (31) of the inner eccentric element (3) is held in a practically clearance-free way within the openings (21a, 21b) of the outer eccentric elements (2a, 2b).

6. Device according to one of the claims 1-5, characterised in that the inner and the outer eccentric elements and also the anchoring element (4) are produced from plastic or metal.

7. Device according to one of the claims 1-6, characterised in that at least one of the anchoring pins (42) is upwardly and downwardly defined by two parallel sliding surfaces (42).

8. Device according to one of the claims 1-7, characterised in that the glass panel (1) is a composite safety glass panel with a film (1c) held between the glass panels (1a, 1b).

9. Device according to one of the claims 1-8, characterised in that wedges (7) are introduced between the outer sides of the separation elements (1a and 1b) and the adjacent side of the assembly profile (51), which wedges (7) hold the panel (1) stable and centred within the assembly profile (51).

10. Separation element with a metal frame element (5) which is connected by means of at least one device according to

one of the claims 1 to 9 to a panel (1), a composite safety glass panel.

11. Separation element according to claim 10, characterised in that the frame element (5) comprises a lower assembly profile (51) serving to hold the panel (1) and an upper assembly profile (52), by means of which the separation element is connected to at least one carriage guided in a running rail.

FIG. 1

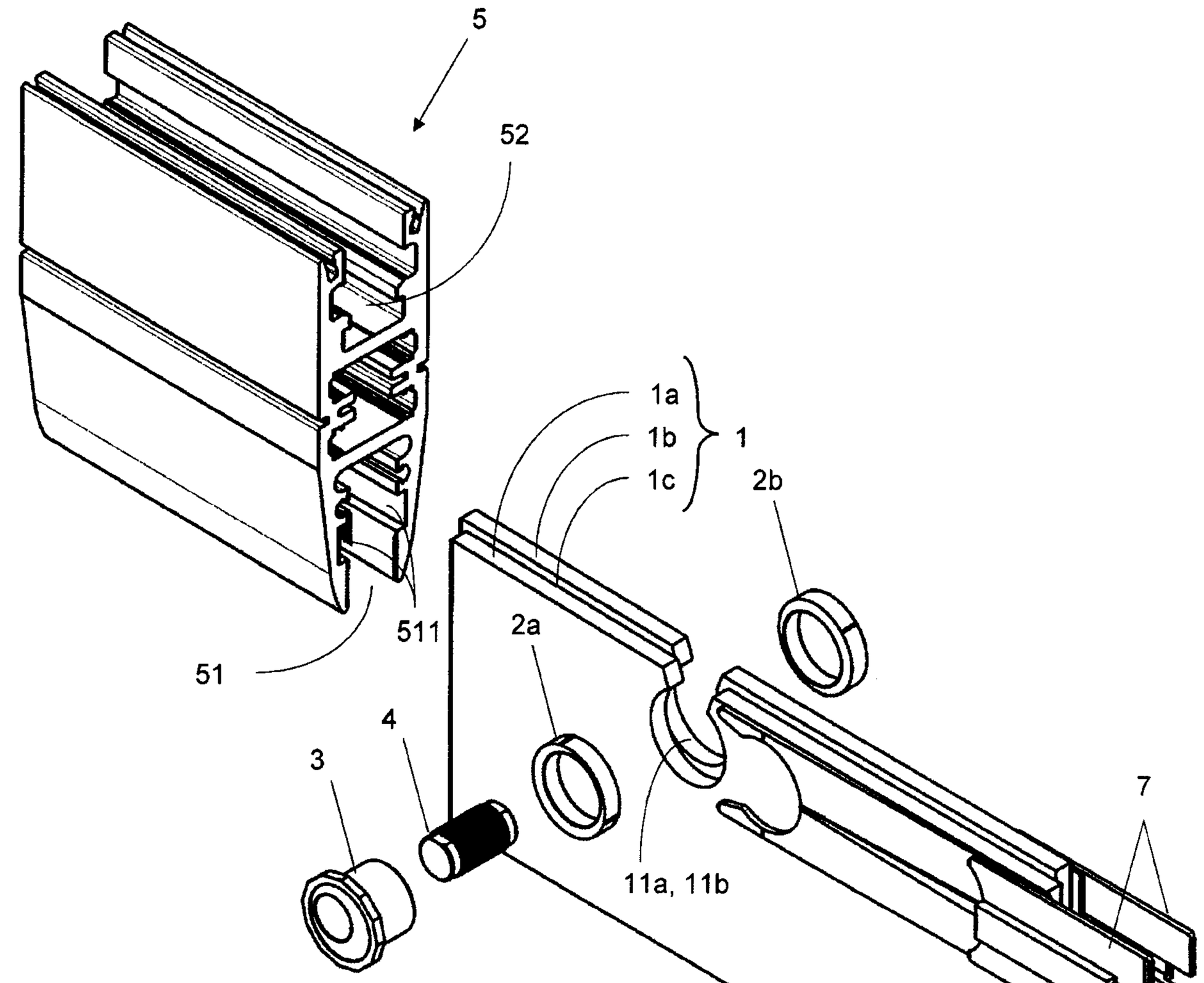


FIG. 2

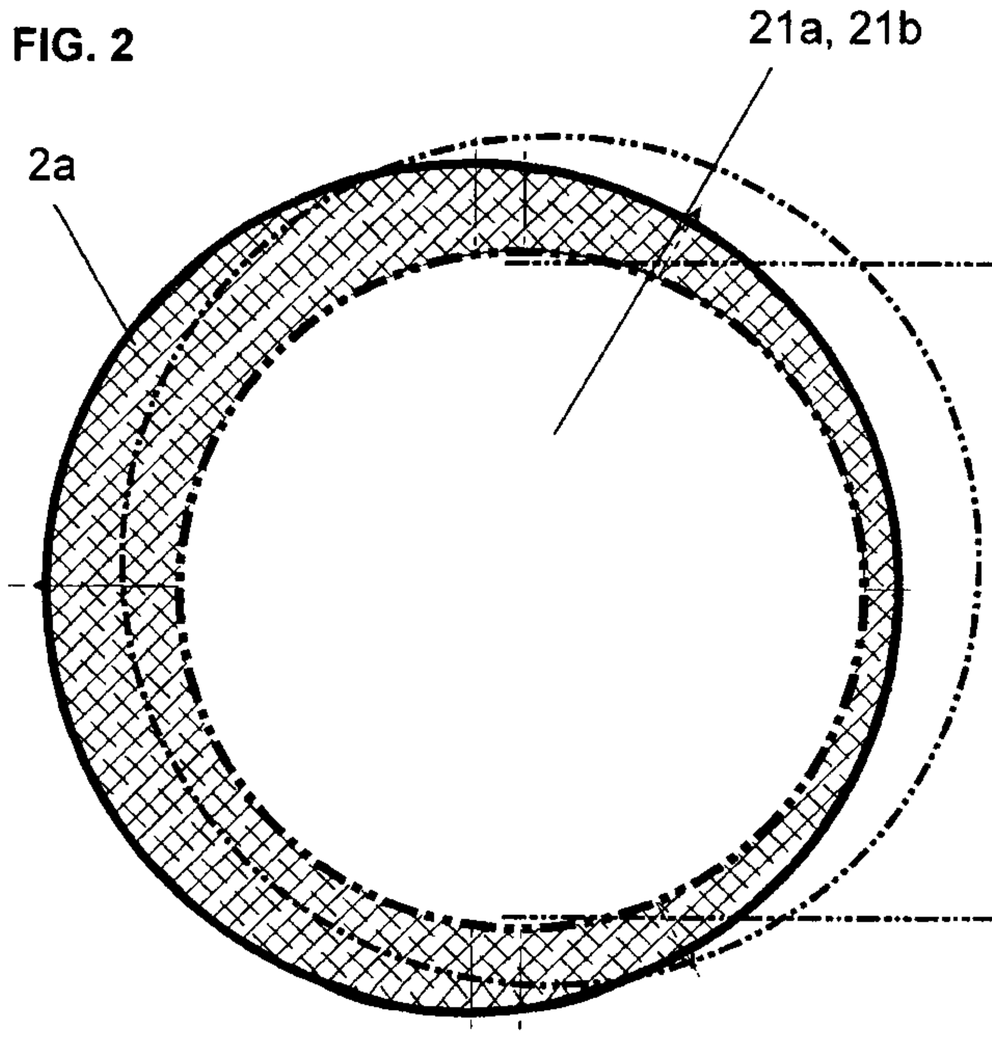


FIG. 3

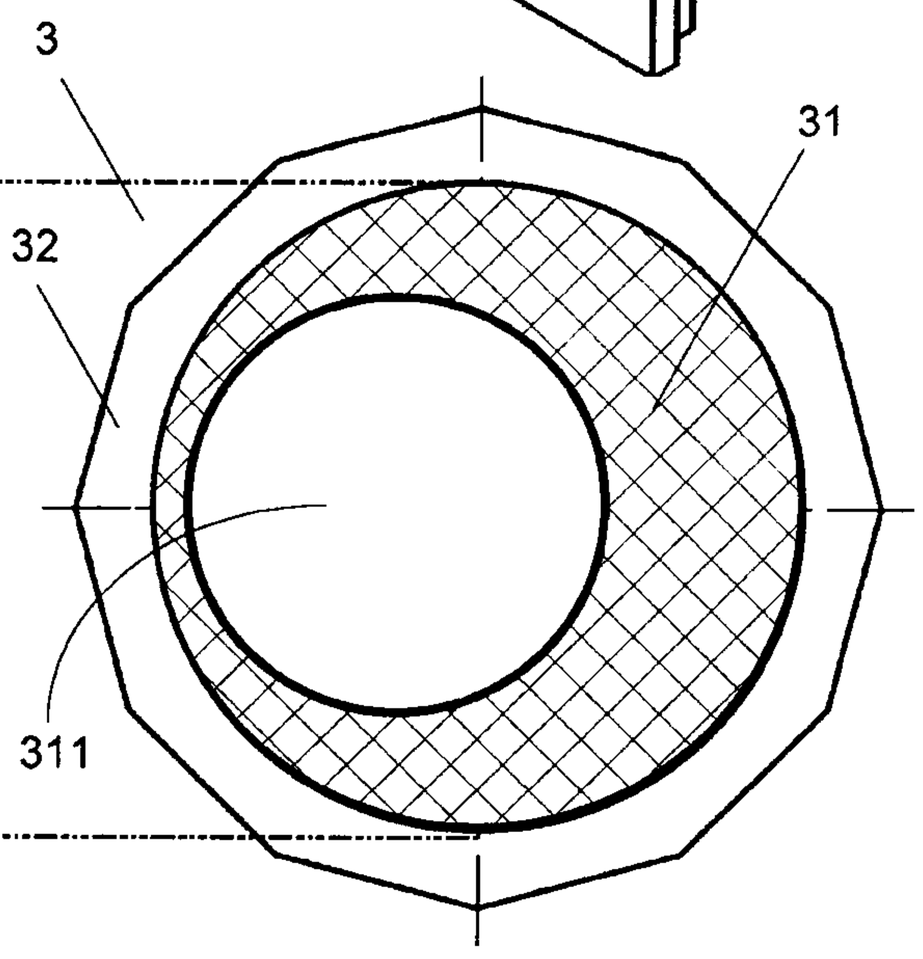


FIG. 4

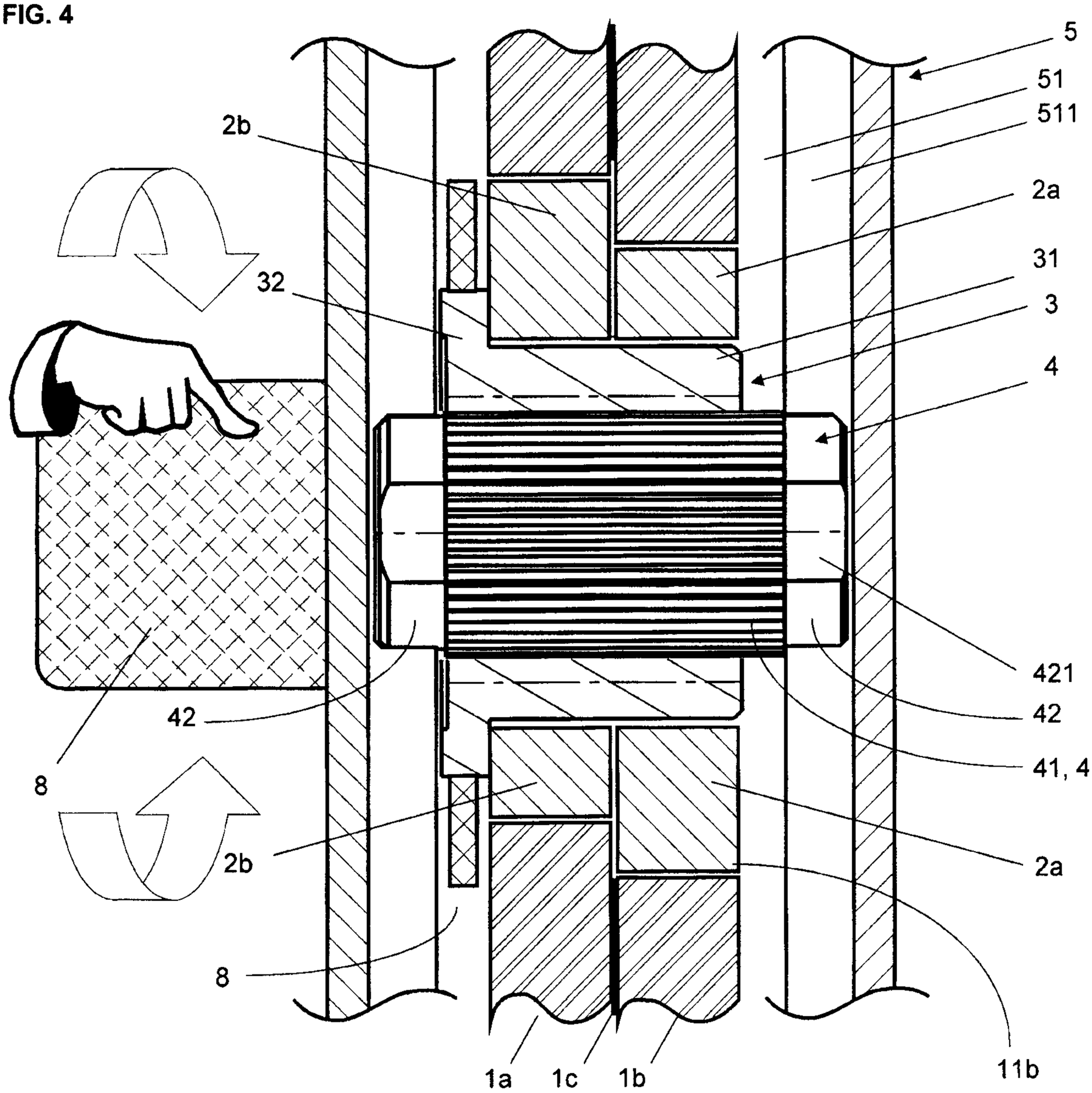


FIG. 5a

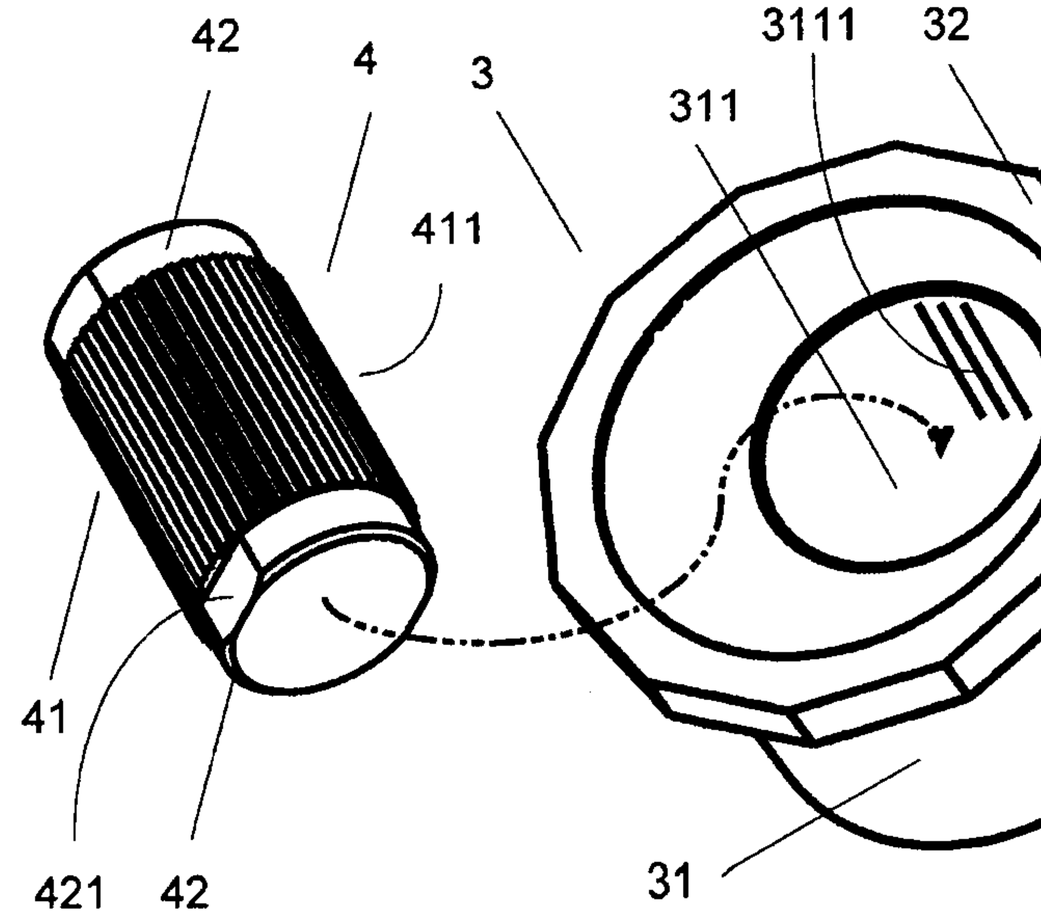


FIG. 5b

FIG. 5c

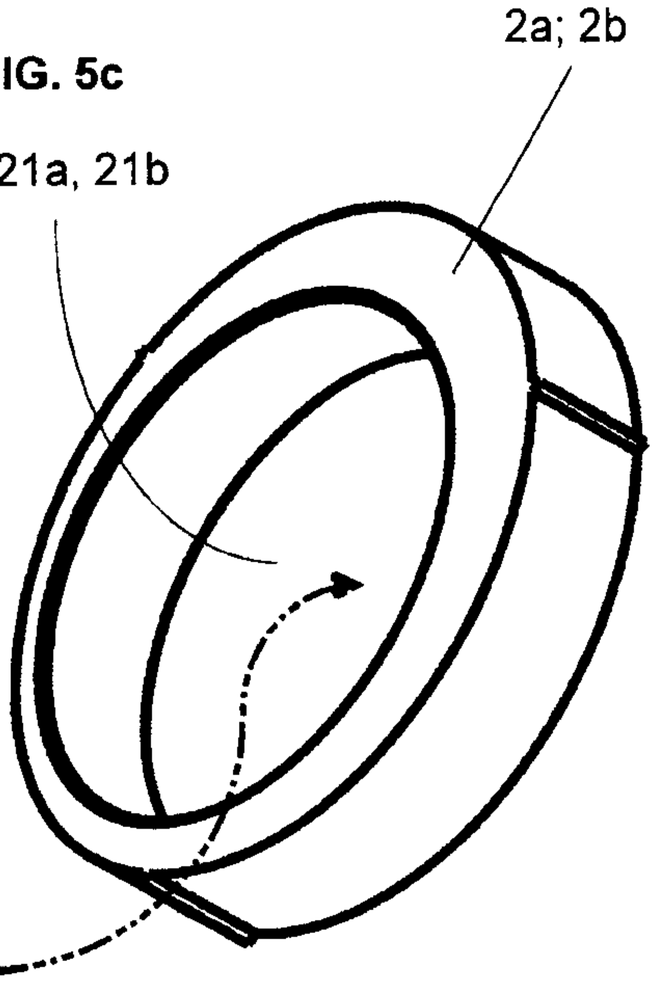


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FIG. 6

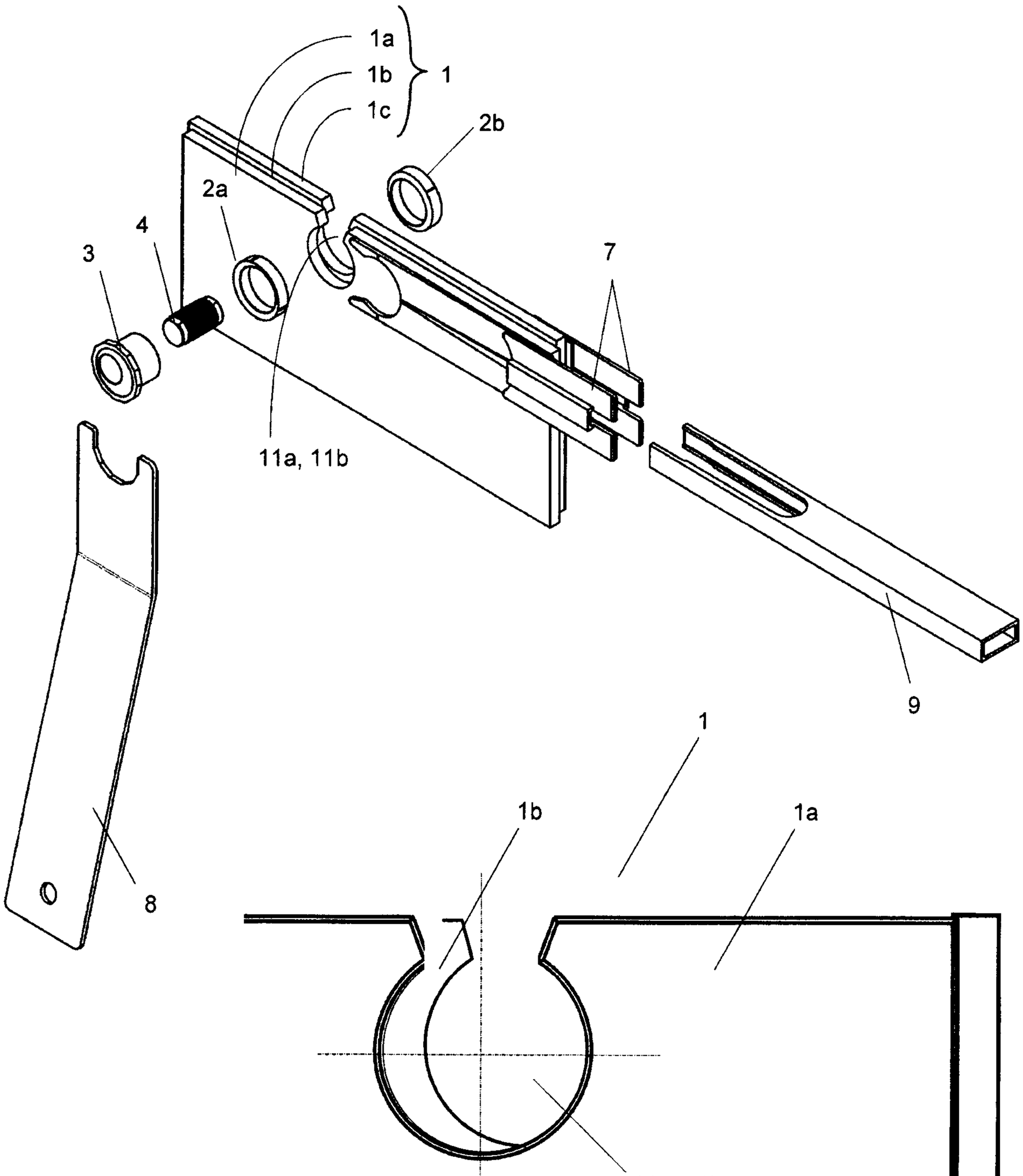

FIG. 7

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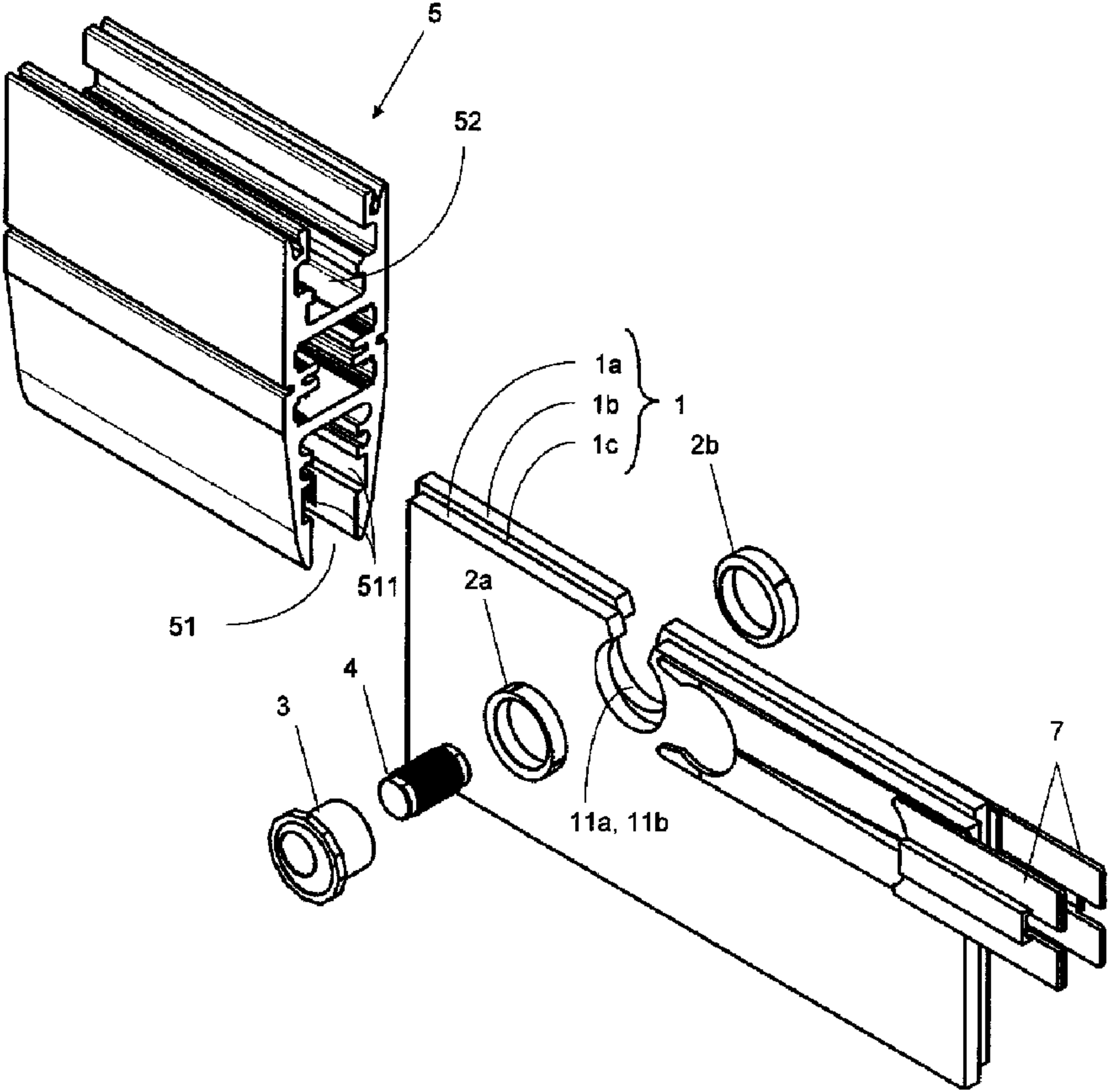
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52
1a
1b
1c
1
2b
511
51
2a
4
3
11a, 11b
7