

(19) **DANMARK**



Patent- og
Varemærkestyrelsen

(10) **DK/EP 3119960 T3**

(12) **Oversættelse af
europæisk patentskrift**

-
- (51) Int.Cl.: **E 04 F 15/02 (2006.01)** **E 04 F 13/08 (2006.01)**
- (45) Oversættelsen bekendtgjort den: **2020-08-31**
- (80) Dato for Den Europæiske Patentmyndigheds bekendtgørelse om meddelelse af patentet: **2020-05-27**
- (86) Europæisk ansøgning nr.: **15725700.7**
- (86) Europæisk indleveringsdag: **2015-03-19**
- (87) Den europæiske ansøgnings publiceringsdag: **2017-01-25**
- (86) International ansøgning nr.: **FR2015050685**
- (87) Internationalt publikationsnr.: **WO2015140475**
- (30) Prioritet: **2014-03-21 FR 1452398**
- (84) Designerede stater: **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**
- (73) Patenthaver: **BURGER ET CIE, Zone Industrielle de Bois l'Abbesse, 68660 Liepvre, Frankrig**
- (72) Opfinder: **Jung, Eric, 2a rue Principale, 67490 Printzheim, Frankrig**
Andres, Wilfried, 17 rue des Jardins, 67350 Niedermodern, Frankrig
- (74) Fuldmægtig i Danmark: **ACCURA ADVOKATPARTNERSELSKAB, Tuborg Boulevard 1, 2900 Hellerup, Danmark**
- (54) Benævnelse: **FASTGØRELSESSYSTEM TIL PLANKER MED HENBLIK PÅ AT ETABLERE EN GULVBELÆGNING ELLER HÆVEDE GULVE**
- (56) Fremdragne publikationer:
EP-A1- 2 369 094
WO-A1-2006/011173
WO-A1-2007/051934
DE-A1-102011 101 567
DE-U1-202007 002 282
DE-U1-202009 007 507
DE-U1-202010 004 268
DE-U1-202013 010 349
FR-A1- 2 843 414
US-A1- 2002 056 238

Description

The present invention relates to a system for fixing planks or juxtaposed planks in order to form a floor surface or raised flooring, for example of a terrace, or more generally decking, said planks then being fixed on a support structure that can be based on parallel elements such as joists or beam supports oriented perpendicular to the axis of said planks. Such systems are for example known from DE 20 2007 002282 U1 or WO 2006/011173 A1 and describe the features of the preamble of claim 1.

Fasteners are arranged in rows on said supports, in order to fix the juxtaposed planks there according to a parallel sequence. These fasteners are designed to replace the traditional fixing by screws, which is restrictive inasmuch as it requires *inter alia* taking precise measurements, performing a predrilling, additional drilling to embed the screw heads, etc. Producing decking by screwing is also time-consuming and tedious, the screwing operations having to be done individually. Lastly, another drawback of this type of assembly is esthetic, since the screws remain visible on the surface of the decking.

This is why it has been proposed to use fasteners that are much easier to implement, and which are for example pre-placed on the beam supports, these fasteners being configured such that they can be fixed in recesses provided to that end in the lower face of the planks. Thus, more specifically, certain fasteners, made from a resilient material, include a first part forming a base and intended to be fixed on the upper surface of joists or beam supports, and a second part perpendicular to the preceding one forming a sort of tenon intended to be clipped resiliently under recesses or mortises formed in the planks.

These fasteners, regularly screwed on the surface of the supports, do not, however, eliminate all of the problems that arise during the production of such decking. Thus, the location of their fixing must be calculated, requiring either very precise measurements or the positioning of these fasteners on a medium that provides their relative positioning in advance and is next fixed on the beam supports. Even when these preliminary operations are done correctly, it is difficult to guarantee an assembly without obstacles, since the support beams, which are generally made from wood, can deform under the effect of weather conditions, and in particular inclement weather, and their usual

corollaries: the wood can become worked and change shape due to temperature changes, swelling caused by humidity, which can in turn promote the appearance of fungus, etc. The upper surfaces of these would supports, which are meant to keep their shape and must in principle be flat initially—which incidentally is an additional constraint that must be
5 guaranteed—in practice do not always satisfy the initial specifications. And this is without mentioning the sustainability of the structure, which suffers from insufficient protection against weather damage and may deteriorate over time.

In the disassembly phase, each of these fasteners—which are often made from plastic—must next in practice be unscrewed individually, for example for maintenance
10 operations or for recycling. This is a restrictive approach that can prove dissuasive.

The system for fixing juxtaposed planks according to the present invention addresses these various shortcomings, by proposing a design that provides effective protection for the support structure in particular against rot and fungus and thus improves the durability of the wood. It thus greatly facilitates the fixing and disassembly of the planks
15 and fasteners, allows functional play in case of deformations of the planks and lastly guarantees the consistency of important geometric parameters such as flatness, etc.

Thus, the invention, as defined in claim 1, is essentially characterized in that the fixing system includes a plurality of impermeable channels that are positioned parallel for a level floor, or at a rate of one impermeable channel for each joist or beam support and
20 then covering the upper surface of said support, removable securing means and positioning means being provided on the channel and on the fasteners made from a resilient flexible material, said positioning means allowing play in the direction of the axis of the channel.

This channel, which is for example made from aluminum, is therefore rigid and tight
25 against precipitation, and forms a protective cover for the wood of the supports, in particular in its upper part subject to the first type of bad weather. In light of the manufacturing methods for this type of channel, for example by extrusion, straightness and flatness are guaranteed. The means for securing the fasteners to said channel being removable, they are easy to disassemble. This structure also resolves the issue of the
30 distribution of the planks, since the positioning means are provided in advance, and are also adapted to the specific technical context of wooden slats that can deform, an axial

adjustment of the fasteners being possible. These features give the assembly an unparalleled ease and flexibility of use.

In the case of the fastening of the channels to a support of the concrete floor or tiled floor type, spacers provide the interface with said floor, for example hard rubber
5 shims.

More specifically, each channel can include two lateral guideways configured to cooperate with at least two tabs forming hooks protruding from the soleplate of each fastener near its longitudinal ends, which clip resiliently in said guideways when said soleplate rests on the upper surface of the channel.

10 The fasteners in practice fix transversely to the channel, the securing means then being close to the two ends of each fastener. The removability in particular results from the resilient nature of the component material of the fasteners, which allows flexion of the main body of the fastener as well as, more locally, of the fastening tabs.

More specifically, said tabs extend from crosspieces connecting the edges of
15 rectangular openings formed in the soleplate, said crosspieces being oriented along the axis of the channel. Due to the flexible material of the fasteners, the crosspieces can experience a certain torsion, which, combined with the flexion of the tabs, is used during the assembly and disassembly phases.

Thus, the tabs include, on their face opposite that provided at the free end of a
20 protruding channel making up the hook, a fin whereof the lower channel protrudes from the soleplate and comprises a rectangular cutout. This cutout is used to insert a disassembly tool intended to pivot the attachment tab in order to unclip it, as will be explained in more detail hereinafter.

According to the invention, the positioning means include at least two studs
25 protruding from the soleplate, provided to be inserted into positioning holes provided in the upper surface of the channel, said studs being located on either side of two respective longitudinal and transverse median planes of the fastener. The fasteners indeed have, by and large, a symmetry of central axis passing perpendicularly through the soleplate and passing through its geometric center, and defined by the two planes above.

30 More specifically, there can be two studs, each connected by a tongue to a first edge of an opening of the soleplate that is on the one hand parallel to the axis of the

channel and on the other hand proximal with respect to a median transverse plane of the fastener, each stud being placed near a second edge of the opening perpendicular to the first edge. This tongue, which is flexible, since it is made from the material of the fastener, allows axial play in case of transverse expansion or contraction of the decking planks. The play is, however, limited by the proximity of the second edge, which in fact constitutes a stop.

According to the invention, the upper surface of the channel includes a planar central rail on which the fasteners rest, topping two lateral planar portions placed at a distance from the upper surface of the rail at least equal to the protrusion of the tabs and fins from the lower surface of the soleplate.

Said channel can also be provided, in a transverse direction, with returns able to cover part of the vertical faces of supports of the beam support type, the protection of the wood then being improved, since the coverage is increased. The runoff water can then flow without risk of stagnation on the horizontal parts of the wood.

According to one preferred configuration, a central axial groove with a substantially rectangular section is formed in the upper surface of the central rail of the channel, said groove being provided on its facing vertical walls with a linear thread oriented parallel to the surface of the channel.

The fasteners in turn comprise a through orifice that is centered, in a transverse direction of the channel, relative to said groove. It is then possible to fix the fasteners to the channel more lastingly, by using a screw passing through the through orifice and the threads of which engage with the linear thread of the central groove. The fixing is then no longer provided solely by the clipping, which nevertheless performs the initial positioning.

The central rail of the channel also includes, on either side of the central groove, two side grooves with a rectangular section having a width at least equal to the diameter of the studs, the upper opening of which is partially closed by recessed rims separated by a slot, in which positioning orifices of the studs are formed.

The invention will now be described in more detail, in reference to the appended figures, for which:

- figure 1 is a perspective view of the fixing system according to the invention applied to several planks and to a support of the support beam type;
- figure 2 shows a perspective top view of the fastener;
- figure 3 shows a perspective bottom view of the fasteners;
- 5 - figures 4a and 4b illustrate the fixing of a fastener on a channel, in cross-section;
- figure 5 shows a perspective view of the channel provided with fasteners, including a portion devoid thereof showing their positioning orifices;
- figure 6 illustrates the implementation of the axial functional play;
- figures 7 and 8 show how to disassemble planks of a decking.

10

In reference to the figures, and first to figure 1, the plank fixing system (1) of the invention is made up of a channel (2) topping a beam support (20) on which fasteners (3) are transversely arranged that are in principle regularly spaced apart.

15 These fasteners, which are in particular shown in figures 2 and 3, are made up of two main parts, a soleplate (4) intended to bear against the upper part of the channel (2), protruding from which a fastening portion (5) is deployed substantially perpendicularly, the upper part of which includes oblique lateral flaps (6, 6'), in arrow form in cross-section, said portion (5) being configured to clip into recesses with corresponding shapes (7) provided in the lower surface of the planks (1) in a manner known in itself.

20 On either side of the portion (5), the soleplate (4) includes rectangular openings (8) crossed by crosspieces (9) to which tabs (10) are fixed, the end of which is provided in the form of a hook (11) (see in particular figure 3). These tabs (10) protrude from the lower surface of the soleplate (4), which further includes an orifice (12) making it possible, if applicable, to screw the fastener (3) to the channel (2).

25 Studs (13) appear in two windows (8) located diagonally in the soleplate (4). These studs are connected via a tongue (14) to the small sides of the proximal openings (8) of the transverse median plane of the fasteners (3), but in immediate proximity to a large side.

30 The tabs (10) include, on their face opposite that which has the end portion forming a hook (11), a fin (15) whose lower channel has a rectangular cutout (16).

As appears in figures 4a and 4b, the studs (13) as well as the fins (15) and the cutouts (16) protrude from the lower surface of the soleplate (4). The channel (2) includes a central rail (17) provided with three parallel grooves, a central groove (18) and two lateral grooves (19, 21). These grooves have a rectangular section, and the central groove (18) has a linear thread on its two faces that are also vertical. This central rail is framed, in cross-section, by two planar portions in which the tabs (10)/fins (15) are deployed.

The thread of the central groove (18) makes it possible, if applicable, to fix the tab (3) using a screw inserted into the orifice (12) and which can then be fixed in the linear thread when the tab (3) is in the inserted position, as shown in figure 4b, that is to say with the lower surface of the soleplate (4) in contact with the upper surface of the rail (17).

Figure 4a shows the fastener (3) before it is inserted, the arrows showing the direction and sense of the force to be applied on the fastener (3) in order to clip it on the channel (2). The passage from one to the other implies the clipping of the tabs (10) and their hooks (11) in lateral guideways (22, 23) of the central rail (17).

The hook portions (11), as well as the upper part of the lateral guideways (22, 23), include a beveled or oblique surface allowing, like a cam, the sliding, then the flexion of the tabs (10) for the clipping thereof inside the guideways (21, 22).

Simultaneously with this clipping, the studs (13) are inserted into predrilled orifices (24), at regular intervals, in the grooves (19, 20), as appears in figure 5.

The positioning of the fasteners (3) in the channel (2) is therefore particularly precise. This being the case, in the scenario of a deformation of the planks (1), involving either a swelling or a contraction of the wood, that is to say a transverse deformation of each plank in the direction of an expansion resulting in an increase of its width or a withdrawal that results in a reduction of its width, the fasteners (3) have the possibility of lateral play, as shown in figure 6.

The arrows appearing in this figure 6 show the direction of the contraction or the expansion of the planks, allowing a flexion of the tongues (14) until abutting against the edge of the openings (8) near which the studs (13) are located. These edges limit the flexion and form a stop against the movement and therefore the possible play.

The tongues (14) can therefore deform so as to allow the fasteners (3) to slide slightly along the channel, thereby preventing a deterioration of said fasteners (3) when

the wood deforms. The additional advantage of the limitation of the travel due to the proximity of the studs (13) with the edge of the openings (8) lies in the fact that the wood is kept, despite its expansion or retraction, close to its predefined position, which is important in the more general context of the configuration and management of the decking.

Figure 7 shows the shape that a disassembly tool (25) may assume provided with an upper part for manipulation by the user and a lower segment (26) provided to engage with the cutouts (16) of the fins (15). The segment (26) is inserted into a gap separating two adjacent planks (1), then the tool is pivoted by 90° before placing it in the cutout (16) that protrudes below the soleplate (4) as clearly shown in figure 4b. This movement is possible due to the existence of the shift between the upper surface of the central rail (17) of the channel (2) and the planar portions in which the tabs (10) and the fins (15) are deployed. All that remains is then to exert upward traction as shown by the arrow in figure 8 in order to unlock the hook (11) from the guideway (22) by deformation (flexion) of the tab (10), if applicable involving a combined torsion of the crosspiece (9). The fastener (3) disassembled from the channel (2) stays in the plank (1), from which it can, however, subsequently be removed. The operation can be repeated for the other fasteners, until complete disassembly of the plank (1) from its various supports (20).

The channel (2), for example made from extruded aluminum, is therefore rigid, while the fasteners (3) must of course be made from a flexible and resilient material so that all of the described manipulations are possible.

FASTGØRELSESSYSTEM TIL PLANKER MED HENBLIK PÅ AT ETABLERE EN GULVBELÆGNING ELLER HÆVEDE GULVE

Krav

1. Et system til demonterbar fastgørelse af lameller (1) placeret side om side med henblik på at etablere et gulv, fx til en terrasse, inklusive fastgørelseselementer (3) placeret i rækker på en jævn understøtning af gulve eller strøer eller bjælker (20) placeret vinkelret på akserne af lamellerne (1), hvor fastgørelseselementerne (3) omfatter en bundplade (4) med elementer til fastgørelse af lamellerne (1), hvor systemet omfatter et stort antal tætte profiler (2) placeret parallelt for at få et jævnt gulv eller i et omfang bestående af én tæt profil (2) for hver understøtning af strøer eller bjælker (20) og derefter dækker den øverste overflade af understøtningen (20), **kendetegnet ved at** bundpladen (4), som skal ligge an mod en øvre del af profilen (2), omfatter demonterbare elementer til fastgørelse til profilen (2) med mindst to tapper (10), som danner en krog (11), som stikker ud af bundpladen (4) og skyder ind i tværgående styreskiner (22, 23) i hver profil (2), og elementer til placering i profilen (2) bestående af mindst to tapbolte (13), som stikker ud af bundpladen (4) og indføres i styrehuller (24) i den øverste overflade af profilen (2), hvor fastgørelseselementerne (3) er lavet af et elastisk, fleksibelt materiale, således at tapboltene (13), der er forbundet med bundpladen (4), giver mulighed for spillerum i retning af akserne af profilen (2).
2. Systemet til fastgørelse af lameller (1) placeret side om side i henhold til foregående krav, **kendetegnet ved at** hver profil (2) omfatter to tværgående styreskiner (22, 23) støbt til at samarbejde med to krogformede tapper (10), som stikker ud af undersiden af bundpladen (4) af hvert fastgørelseselement (3) i nærheden af dens ender på langs, som på elastisk vis skyder ind i styreskinerne (22, 23), når bundpladen (4) hviler på den øverste overflade af profilen (2).
3. Systemet til fastgørelse af lameller (1) placeret side om side i henhold til foregående krav, **kendetegnet ved at** lamellerne (1) strækker sig fra tværstykker (9), som forbinder kanterne på rektangulære åbninger (8), der er dannet i bundpladen (4), hvor tværstykkerne (9) er placeret langs akserne af profilen (2).
4. Systemet til fastgørelse af lameller (1) placeret side om side i henhold til foregående krav, **kendetegnet ved at** tapperne (10) på deres flade modsat den på den frie ende med en fremskydende profil, som udgør krogen (11), omfatter en vinge (15), hvoraf den nedre profil stikker ud af bundpladen (4) og omfatter en rektangulær udskæring (16).
5. Systemet til fastgørelse af lameller (1) placeret side om side i henhold til ét af de foregående krav, **kendetegnet ved at** placeringselementerne omfatter to tapbolte (13), som stikker ud af undersiden af bundpladen (4), som skal indsættes i styrehullerne (24) i den øverste overflade af profilen (2), hvor tapboltene (13) er placeret på hver sin side af to midterbaner på fastgørelseselementet (3), henholdsvis på langs og på tværs.
6. Systemet til fastgørelse af lameller (1) placeret side om side i henhold til ét af krav 3 til 5, **kendetegnet ved at** der er to tapbolte (13), som hver er forbundet med en tunge (14) på en første kant af en åbning (8) i bundpladen, som på den ene side er parallel med akserne af profilen (2) og på den anden side er proksimal i forhold til en tværgående midterbane på fastgørelseselementet (3), hvor hver tapbolt (13) er placeret tæt ved en anden kant af åbningen (8), som er placeret vinkelret på den første kant.
7. Systemet til fastgørelse af lameller (1) placeret side om side i henhold til ét af krav 4 til 6, **kendetegnet ved at** den øverste overflade af profilen (2) omfatter en flad central skinne (17), som fastgørelseselementerne (3) hviler på, og som ligger øverst på to flade tværgående dele placeret på afstand af den øverste overflade af skinnen (2), der som minimum svarer til tapperne (10) og vingernes (15) udhæng fra undersiden af bundpladen (4).

8. Systemet til fastgørelse af lameller (1) placeret side om side i henhold til ét af de foregående krav, **kendetegnet ved at** profilen (2) i tværgående retning har returnmekanismer, som kan dække dele af understøtningernes (20) lodrette flader.
9. Systemet til fastgørelse af lameller placeret side om side i henhold til ét af krav 7 og 8, **kendetegnet ved at** en central aksial fure (18) i en i væsentlig grad rektangulær sektion dannes i den centrale skinnes (17) øverste overflade, hvor furen (18) på sin flade med vandrette vægge har en lineær tråd placeret parallelt i forhold til profilens (2) overflade.
10. Systemet til fastgørelse af lameller (1) placeret side om side i henhold til ét af krav 7 til 9, **kendetegnet ved at** den centrale skinne (17) på profilen (2) på hver sin side af den centrale fure (18) omfatter to tværgående furer (19, 21) i en rektangulær sektion med en bredde, der som minimum svarer til tapboltenes (13) diameter, hvor den øverste åbning er delvist lukket med forsænkede rande adskilt af en spalte, hvori der dannes placeringshuller (24) til tapboltene (13).
11. Systemet til fastgørelse af lameller (1) placeret side om side i henhold til ét af de foregående krav, **kendetegnet ved at** fastgørelseselementerne (3) omfatter en gennemgående munding (12), som er centreret i forhold til furen i tværgående retning af profilen (2).

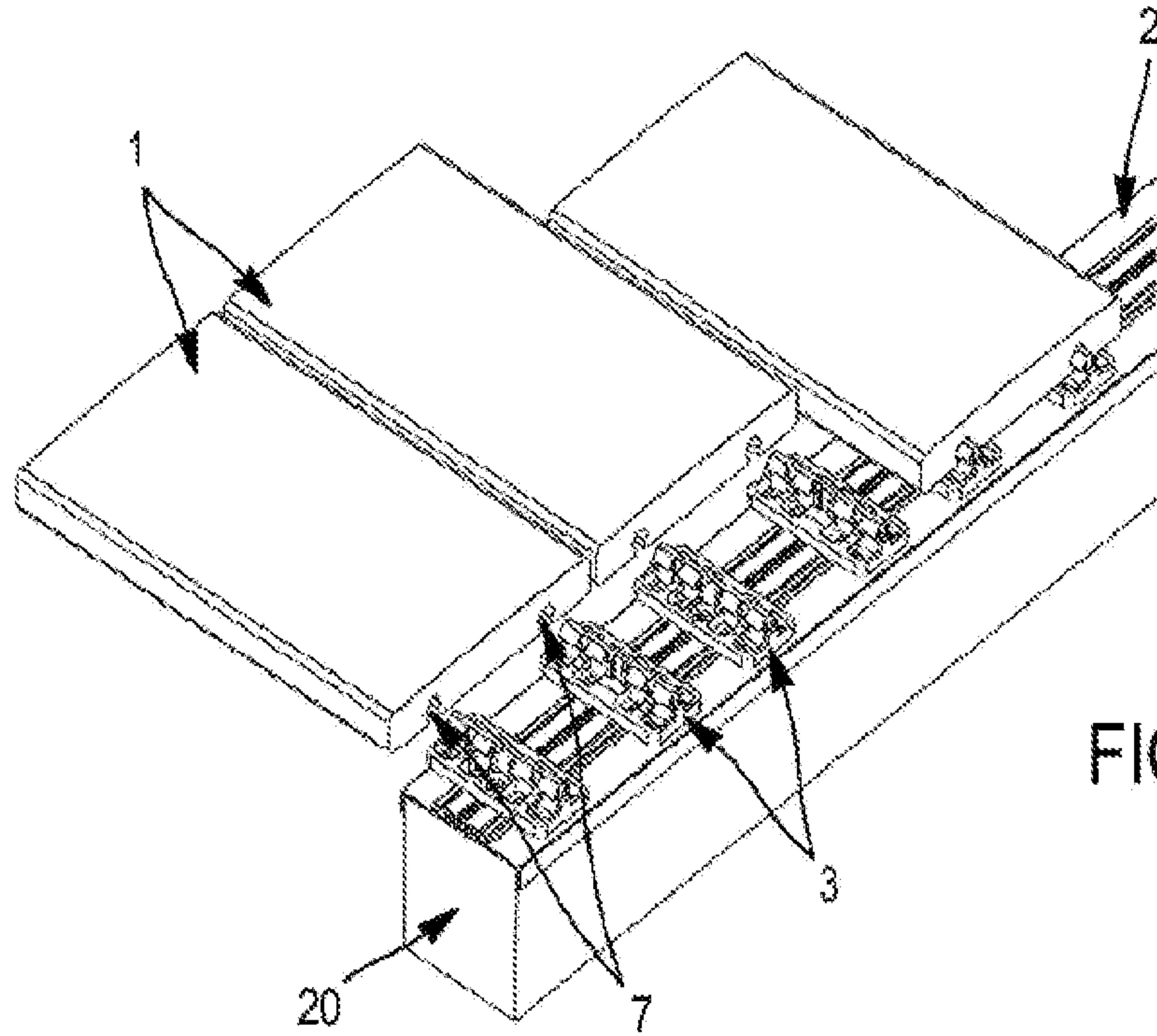
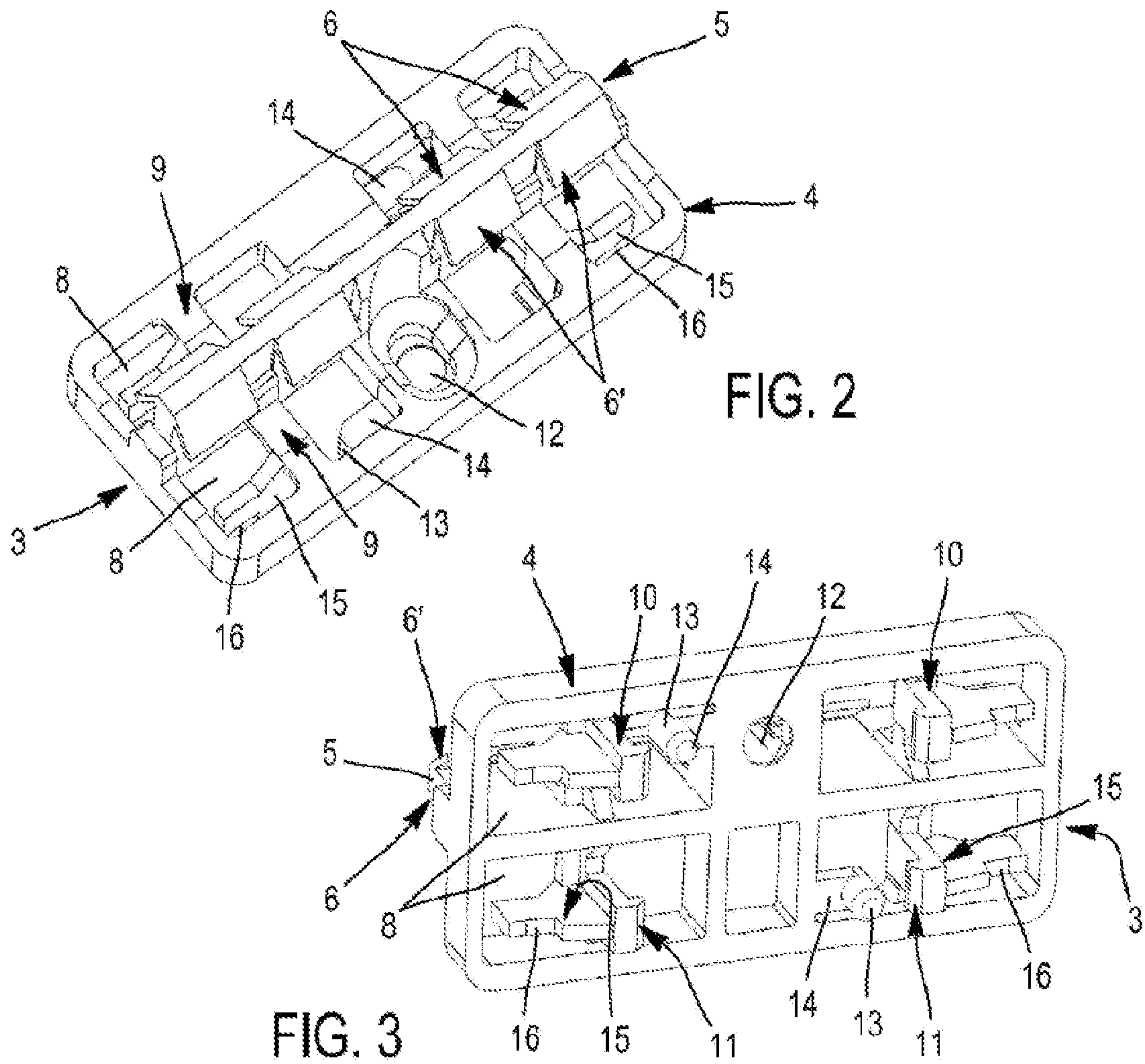


FIG. 1



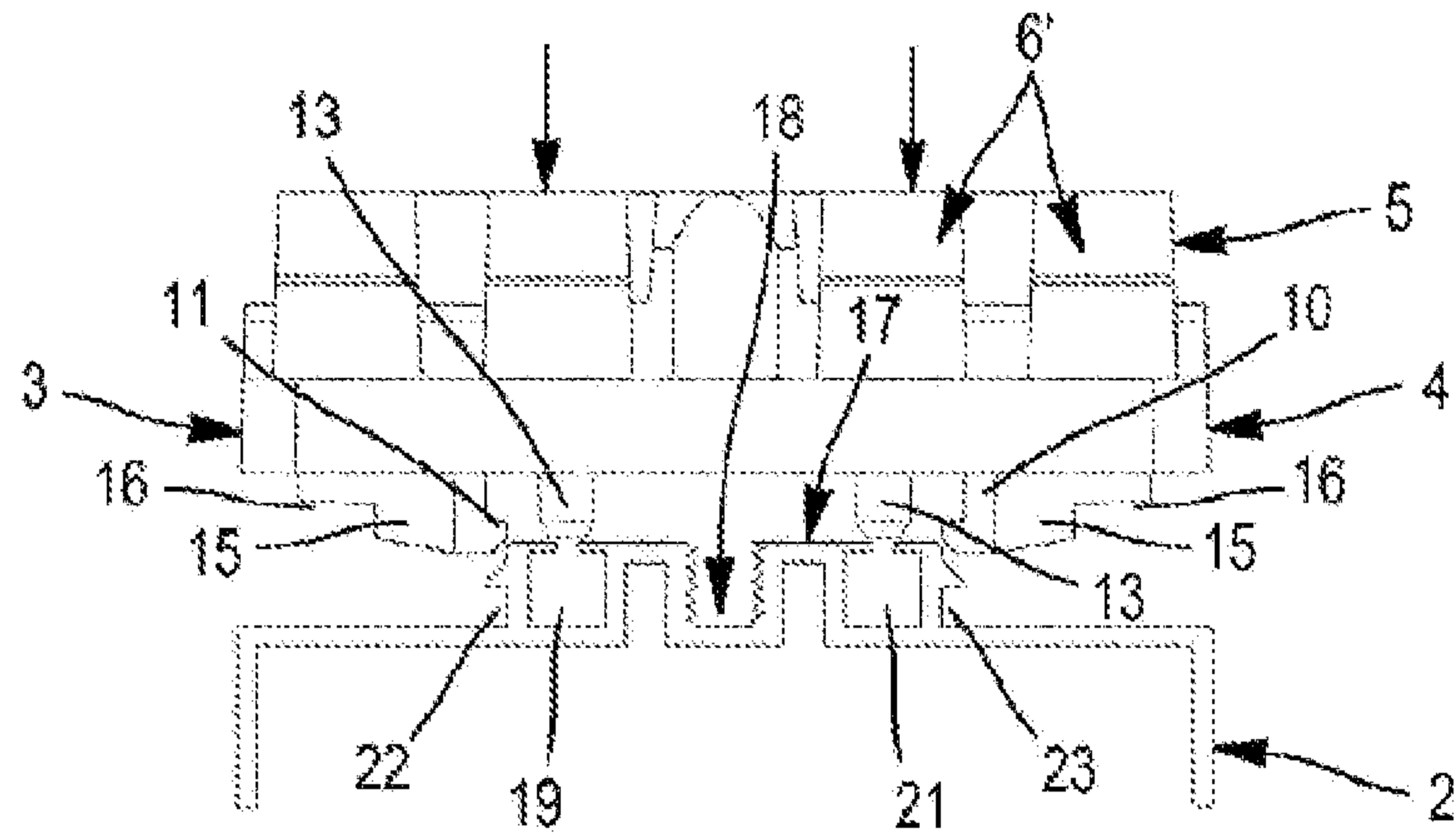


FIG. 4a

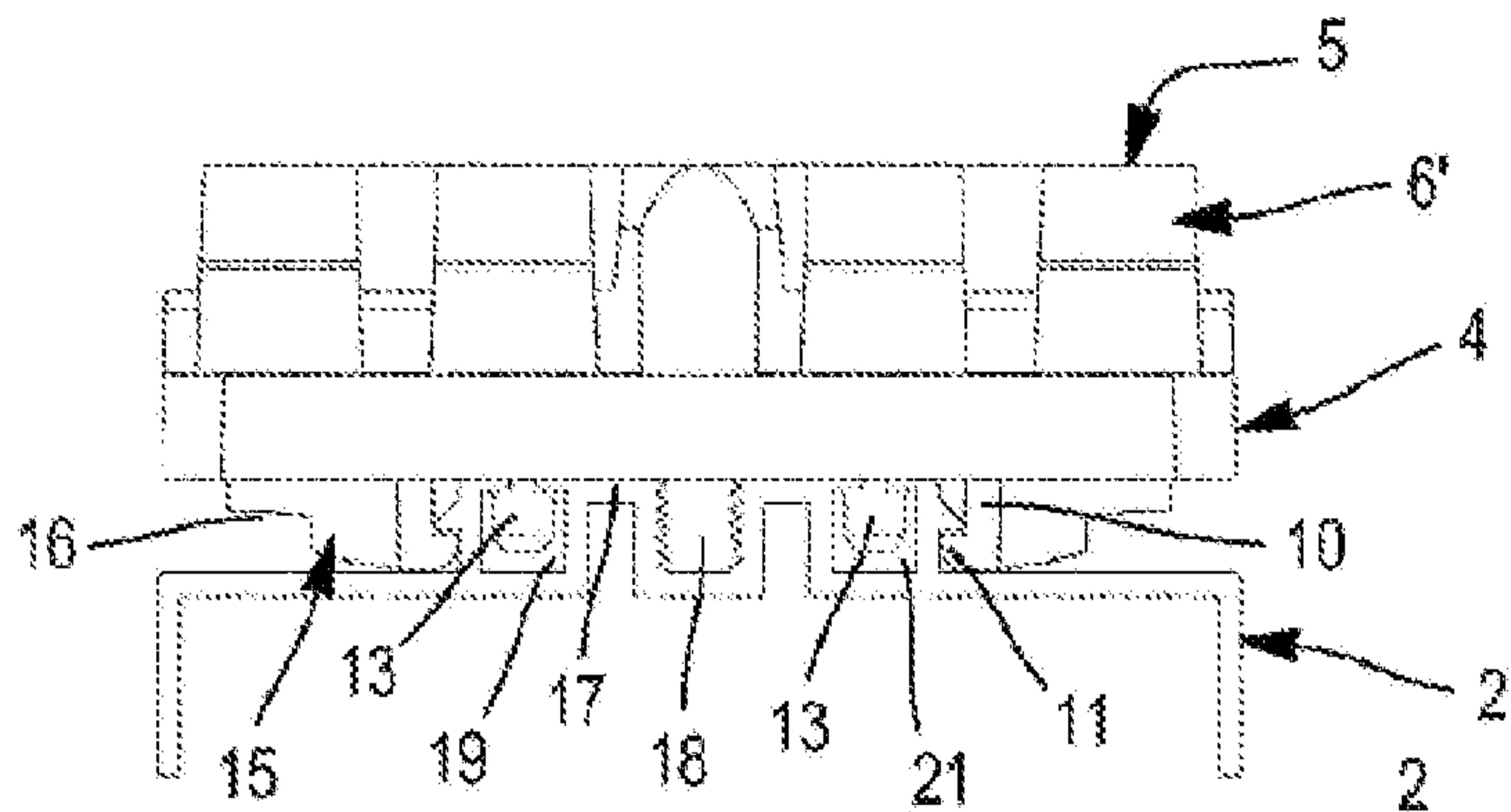


FIG. 4b

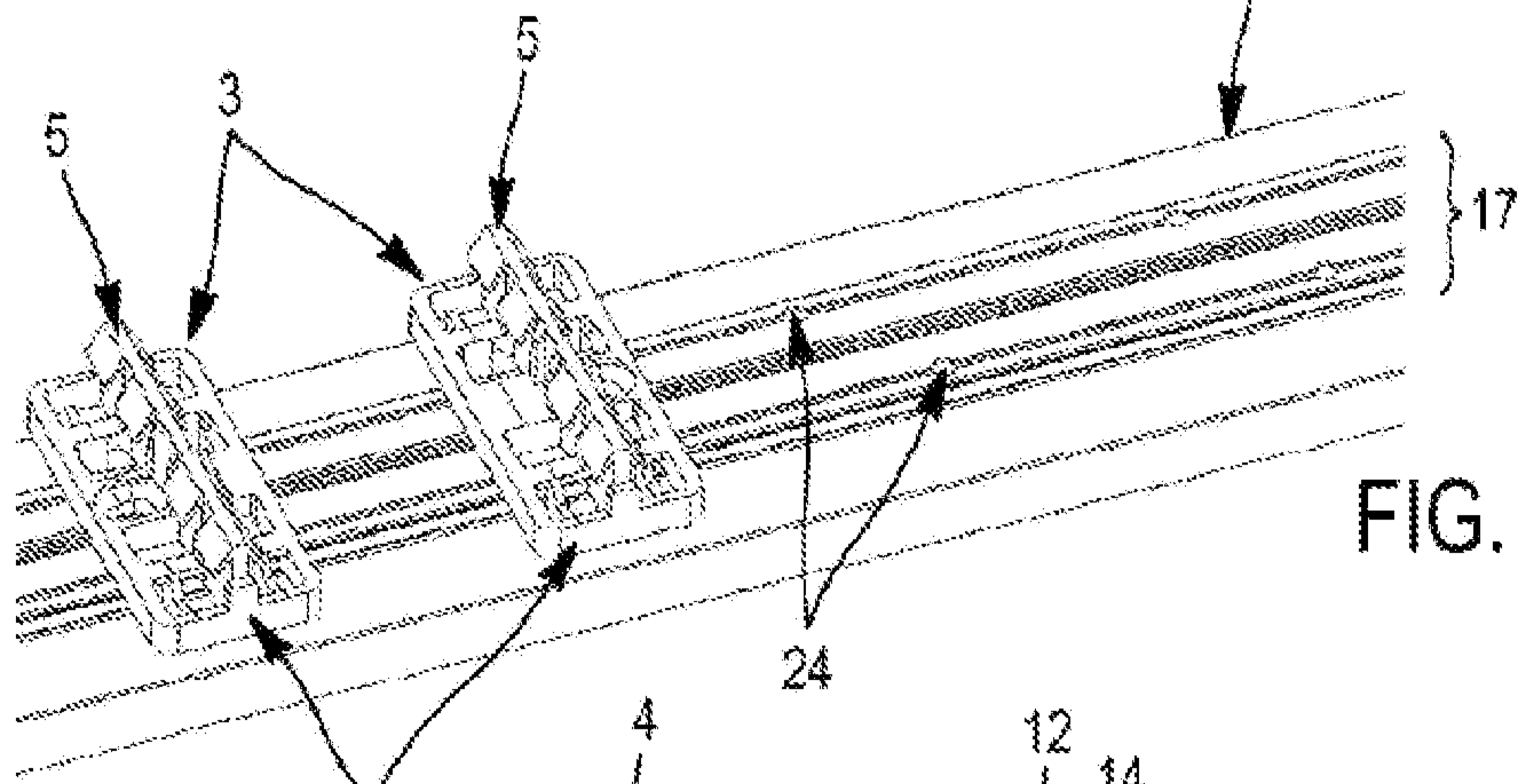


FIG. 5

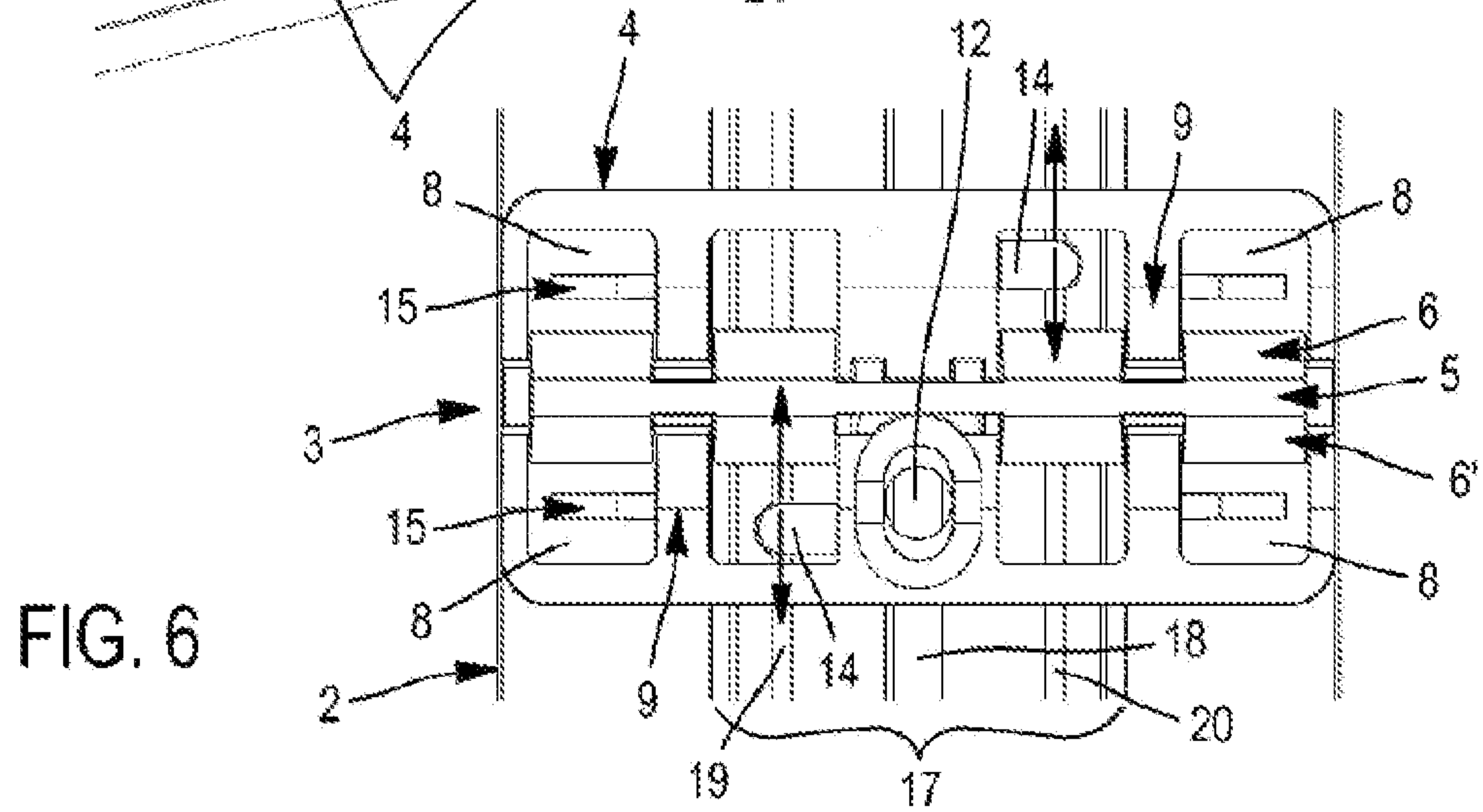


FIG. 6

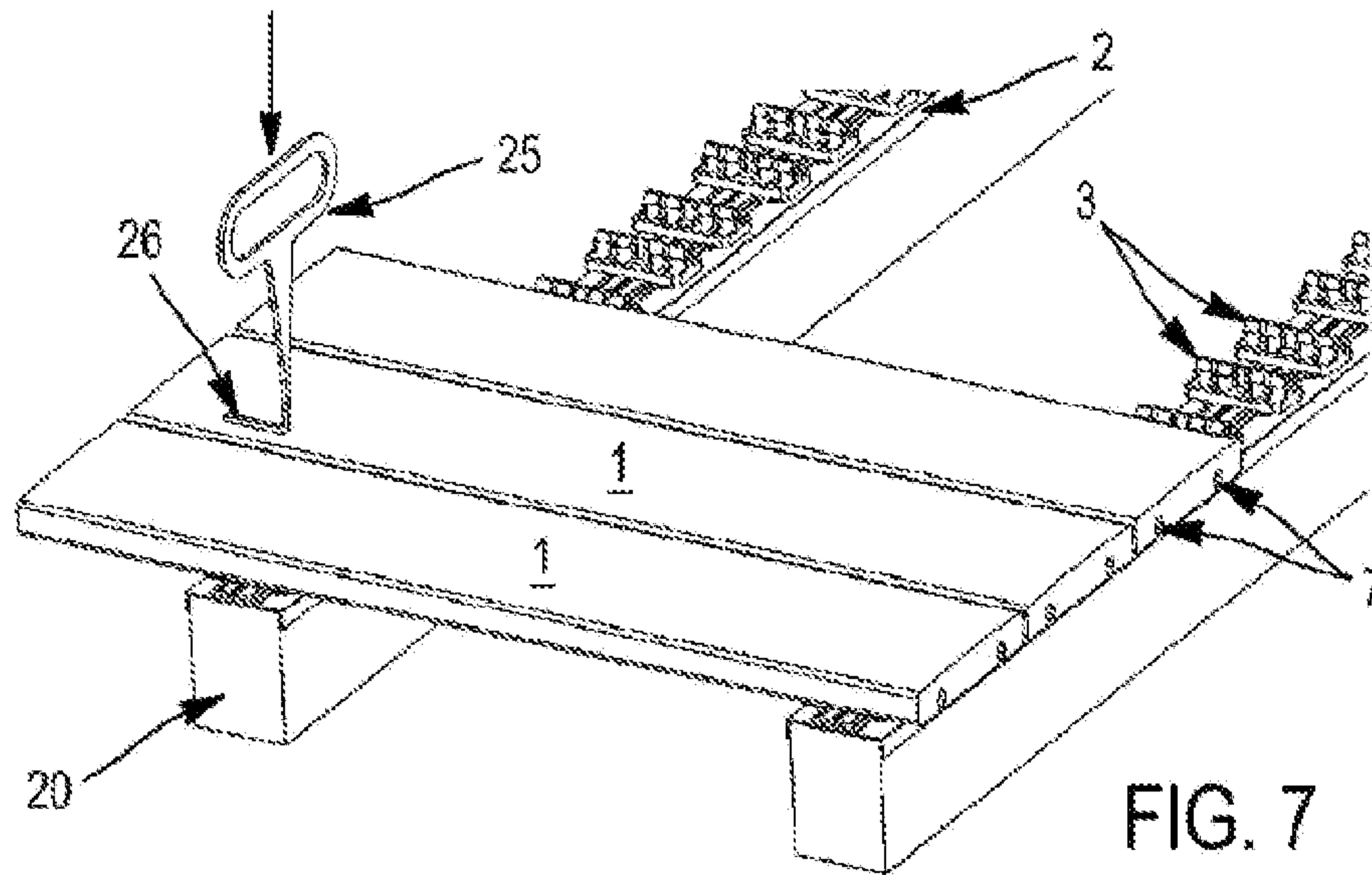


FIG. 7

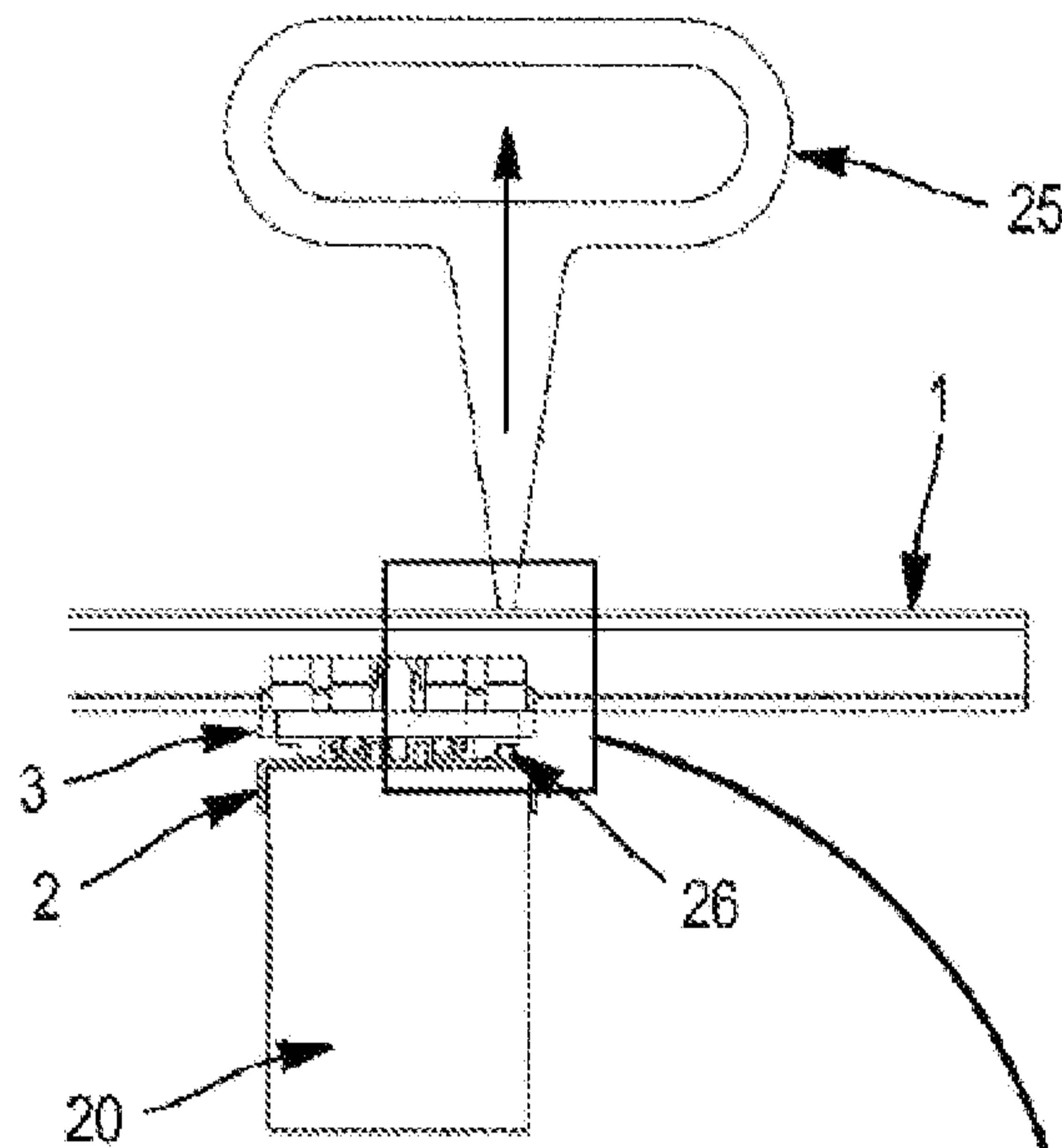


FIG. 8

