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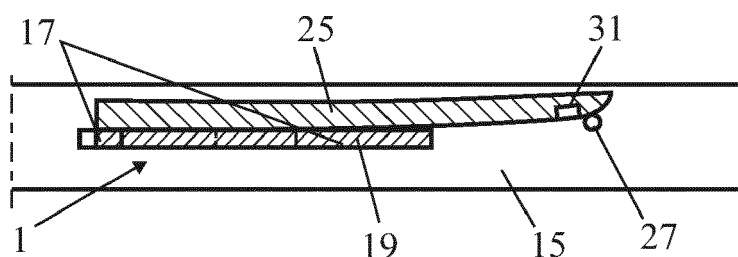
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(54) **ASSEMBLY OF TWO SEATS CONNECTED VIA A COUPLING PIECE**

(57) A coupling unit 1 for coupling chair frame tubes 15 has a bridge element 19 with at least two protruding lips 21 attached thereto. The frame tubes 15 are provided with slots 17 into which the lips 21 are inserted. Each lip is provided with a further slot 23 so that the lips can be slid over the tube wall. These further slots have a width that is substantially equal to the thickness of the tube wall. As a result, the tube walls are tightly fitting or

clamped in the further slots, so that the coupling unit cannot be rotated around a vertical axis with respect to the tubes. In this way, chairs which are coupled to each other are secured relative to each other and cannot, or can hardly rotate relative to each other. The coupling unit is furthermore provided with a locking which prevents a relative shift of the lips and thwarts the shifting of the frame tubes relative to each other.

FIG. 5



Description

Field of the invention

[0001] The invention relates to an assembly of two adjacent chairs, as well as a coupling unit that secures the two chairs relative to each other, which chairs comprise each:

- a frame which is provided with a frame member connected to the coupling unit, as well as
- a seat attached to the frame,

where:

- the coupling unit extends between the facing frame members of the two chairs and comprises two coupling units which are connected each to one of the frame members of the two chairs, and
- of each frame member and coupling unit coupled together, one part comprises a plate section which is provided with a slot and the other part comprises a protrusion which is accommodated in the slot.

[0002] A plate section in this respect is to be understood to mean not only a flat plate but also a curved plate, for example the wall of a tube.

State of the art

[0003] Such an assembly is known from JPS54-77213U. Chairs are interconnected, among other things, if they are placed in rows in front of a stage. It is then desired and often also required to couple the chairs in a row sideways to each other. These couplings must be sturdy to prevent the chairs from rotating relative to each other, so that they are no longer present in a straight line next to each other.

Summary of the invention

[0004] An object of the invention is to provide an assembly of the type described in the preamble in which the coupling unit can be coupled easily and quickly to the chairs present next to each other, and the chairs are nevertheless sufficiently firmly coupled to each other so as not to be able to rotate relative to each other. To this end, the assembly according to the invention is characterized in that the assembly is provided with a locking which thwarts a relative shift of the protrusion and the plate section provided with the slot relative to each other. Because of this locking, the coupling unit cannot inadvertently become detached from the chairs.

[0005] The frame members may for example be hollow tubes in which slots are present and the coupling unit can for example be provided with lips in which further slots are present. The coupling unit may simply be in-

serted with the lips into the slots present in the frames and then simply shifted relative to the frames, so that wall sections of the frames present in the extension of the slots are locked in the further slots. Due to the play-free coupling of the parts and since the parts cooperate with each other over a distance, the parts cannot rotate relative to each other. This allows the coupling to meet the requirements laid down in the NEN-EN 14703 standard.

[0006] The construction is such that the protrusion cannot leave the slot in a direction perpendicular to the longitudinal direction of the slot. This may be effected, for example, by providing the protrusion at the end with a bulge that does not fit through the slot or by having the coupling unit be present on two opposite sides of the frame member so that the coupling unit and frame member cannot be moved relative to each other in a direction perpendicular to these sides, where it must then be ensured that this direction is perpendicular to the longitudinal direction of the slot.

[0007] An embodiment of the assembly according to the invention is characterized in that the slot comprises a part extending in longitudinal direction of the frame member, where the protrusion tightly fits between the boundary walls of the slot which extends in longitudinal direction of the frame member, where the locking prevents a shift in longitudinal direction of the frame member of the protrusion and the plate section provided with the slot relative to each other.

[0008] The slot preferably comprises a part which extends in longitudinal direction of the frame member, where the protrusion tightly fits between the boundary walls of the slot extending in longitudinal direction of the frame member, wherein the locking prevents displacement in longitudinal direction of the frame member of the protrusion and the slotted plate section with respect to each other. In the known assembly, the protrusion is locked in longitudinal direction of the slot between the boundary walls of the slot and the protrusion may be moved in the slot in a crosswise fashion. As a result, the protrusion may be moved in the slot over a smaller distance than is the case with the assembly according to the invention, which may have an adverse effect for certain situations and applications.

[0009] In an advantageous embodiment of the assembly according to the invention, the locking comprises:

- a locking pin which is attached to or forms part of one of the elements formed by the frame member and the coupling unit, and
- a wall section which is attached to or forms part of the other element of the two said parts, which wall section is caught by the locking pin, such that the coupling unit and the frame member are locked against shifting relative to each other in longitudinal direction of the frame member.

[0010] A further embodiment of the assembly according to the invention is characterized in that the coupling

unit is provided with a carrier to which the locking pin is attached or which the wall section forms part of, which carrier can be resiliently displaced relative to the coupling parts so that during the coupling of the chairs the carrier moves or bends away and the locking pin catches on the wall section.

[0011] For moving the coupling unit relative to the frames, where the chairs are detached from each other, the locking must be canceled. This may be effected by bending the locking pin with respect to the coupling parts, so that the locking pin comes away from behind the wall section. This bending of the locking pin is effected if the locking pin is pulled firmly and the shape of the protrusion and the wall section allow this.

[0012] An embodiment of the assembly according to the invention in which the locking can easily be released is characterized in that the coupling unit comprises a release mechanism by which the coupling unit can be separated from the frame members. As a result, the parts need not be detached from each other with force.

[0013] Preferably, the release mechanism comprises a slide which is movable in longitudinal direction of the slot and is provided with a release element, and in that the release mechanism includes a further uncoupling element connected to the coupling parts, which release element and further release element cooperate with each other such that when the two elements are moved relative to each other the locking pin is moved away from behind the wall section. In this embodiment, the carrier is preferably attached to the slide. The release element and further release element are preferably formed by the locking pin and the cooperating wall section, the wall section being inclined with respect to the slot and / or the release direction. The wall section is preferably formed by the boundary wall of a recess in which the locking pin in locked condition is located. In the case of a shift of the release elements relative to each other, the carrier is bent or turned away and the locking pin leaves the recess or comes out from behind the wall section, so that the locking is canceled and the coupling unit can move relative to the frame members.

[0014] The chair preferably has a back rest and a seat which is provided with a rear edge which is present near the back rest, a front edge opposite the rear edge and two side edges, and in that the frame has two frame members which said frame member forms part of, wherein the frame members support the seat and extend along the side edges of the seat.

Brief description of the drawings

[0015] The invention will be explained in more detail below based on examples of embodiment of the assembly according to the invention while reference is made to the appended drawings, in which:

Fig. 1 shows a first embodiment of the assembly according to the invention of two chairs fixed relative

to each other by a coupling unit;

Fig. 2 shows a detail of the assembly shown in Fig. 1; Fig. 3 shows a sectional view of the detail of the assembly shown in Fig. 2 during the coupling operation;

Fig. 4 shows a sectional view of the detail of the assembly shown in Fig. 2 in coupled state;

Fig. 5 shows a detail of a second embodiment of the assembly according to the invention;

Fig. 6 shows a sectional view of the detail of the assembly shown in Fig. 5 during the coupling operation;

Fig. 7 shows a sectional view of the detail of the assembly shown in Fig. 5 in coupled state;

Fig. 8 shows a detail of a third embodiment of the assembly according to the invention;

Fig. 9 shows a detail of a fourth embodiment of the assembly according to the invention;

Fig. 10 shows a sectional view of the detail of the assembly shown in Fig. 9;

Fig. 11 shows a detail of a fifth embodiment of the assembly according to the invention;

Fig. 12 shows a side view of the detail of the assembly shown in Fig. 11; Fig. 13 shows the coupling unit of a sixth embodiment of the assembly according to the invention;

Fig. 14 shows a side view of the coupling unit shown in Fig. 13 in coupled state and during the coupling operation;

Fig. 15 shows a top view of a detail of a seventh embodiment of the assembly according to the invention;

Fig. 16 shows a bottom view of the detail of the assembly shown in Fig. 15;

Fig. 17 shows a sectional view of the detail of the assembly shown in Fig. 15;

Fig. 18 shows the coupling unit of the assembly shown in Fig. 15;

Fig. 19 shows the coupling unit during the coupling of two chairs;

Fig. 20 shows a front view of the coupling unit of an eighth embodiment of the assembly according to the invention for coupling to frame members of the rear legs of a chair;

Fig. 21 shows a side view of the coupling unit shown in Fig. 20;

Fig. 22 shows a front view of the rear legs of the chairs to which the coupling unit shown in Figs. 20 and 21 can be coupled;

Fig. 22A shows a side view of a detail of one of the rear legs shown in Fig. 22;

Fig. 23 shows a rear view of the rear legs shown in Fig. 22;

Fig. 24 shows a cross-sectional view of a ninth embodiment of the assembly according to the invention;

Fig. 25 shows a side view of the coupling part of the coupling unit of the assembly shown in Fig. 24;

Fig. 26 shows a longitudinal section of the coupling

unit of the assembly shown in Fig. 24;

Fig. 27 shows the coupling unit shown in Fig. 26 during separation; Fig. 28 shows a cross-sectional view of a tenth embodiment of the assembly according to the invention;

Fig. 29 shows the top and bottom plate of the coupling unit of the assembly shown in Fig. 28;

Fig. 30 shows a cross-sectional view of the eleventh embodiment of the assembly according to the invention;

Fig. 31 shows a perspective view of a part of the eleventh embodiment of the assembly according to the invention;

Fig. 32 shows a side view of a frame member of a chair of a twelfth embodiment of the assembly according to the invention;

Fig. 33 shows a bottom view of a part of the twelfth embodiment of the assembly;

Fig. 34 shows a side view of the part of the thirteenth embodiment of the assembly;

Fig. 34A shows a detail of the assembly shown in Fig. 34; Fig. 35 shows a bottom view of a part of a thirteenth embodiment of the assembly according to the invention;

Fig. 36 shows a side view of the part of the assembly shown in Fig. 35; Fig. 37 shows a cross-sectional view of the part of the assembly shown in Fig. 35;

Fig. 38 shows a bottom view of a part of the fourteenth embodiment of the assembly;

Fig. 39 shows a sectional view of the assembly along line I-I in Fig. 38; Fig. 40 shows a side view of the assembly shown in Fig. 38 before the coupling unit is coupled to the frame members;

Fig. 41 shows the side view shown in Fig. 40 during the coupling of the coupling unit to the frame members; and

Fig. 42 shows the side view shown in Fig. 40 in coupled state of the coupling unit and the frame members.

Detailed description of the drawings

[0016] Fig. 1 shows a first embodiment of the assembly according to the invention of two chairs 3 secured relative to each other by means of a coupling unit 1. Each chair has a seat 7 with a seat section 9 and a plurality of legs 11 attached to the seat. The legs form part of a frame 5 which frame members 15 also form part of. These frame members are formed by hollow tubes in which straight slots 17 are present.

[0017] In Fig. 2 the frame members 15 and the coupling unit 1 are shown separated from each other, the frame members 15 with the slotted side being shown facing upwards. In reality, the tubes with the slotted side face the coupling unit. The coupling unit 1 has a bridge element 19 which is formed by a metal plate of which the edges which are in contact with the frame members 15 form coupling parts 13 which are provided with four

protrusions formed by projecting lips 21. There are further slots 23 between the lips and the bridge element. The coupling unit further has a flexible carrier 25 which is formed by a plastic strip to which two protruding locking pins 27 are attached. The frame members 15 are furthermore provided with elongated recesses 29 which show a bend, wherein the locking pins can catch on a wall section of the boundary wall of the recesses.

[0018] The further slots 23 have a width that is substantially equal to the thickness of the tube wall. As a result, the tube walls show interference fit or are tightly confined in the further slots so that the coupling unit cannot be rotated about a vertical axis with respect to the tubes.

[0019] During the coupling operation the lips 21 are inserted into the slots 17 and the locking pins 27 into the recesses 29. The coupling unit is then shifted, whereby the lips 21 slide over the tube walls of the frame members 15 and the locking pins 27 move through the recesses 29 until they snap into the bent part 29b of the recess. For clarity, Figs. 3 and 4 show a sectional view of the detail along line III-III in Fig. 2 during the coupling operation and in coupled state.

[0020] Fig. 5 shows a detail of a second embodiment of the assembly according to the invention, wherein the tubes are shown in a sectional view. Figs. 6 and 7 show for clarity the detail in section along line VI-VI in Fig. 5 during the coupling operation and in coupled state. Here, all parts similar to or having the same function as those shown with reference to the first embodiment are designated by like reference numerals. In this embodiment the pins 27 are attached to the frame members 15 and the flexible locking pin 25 is provided with a recess 31. This recess 31 is formed by a groove in which the pins 21 are located.

[0021] During the coupling operation the lips 21 are again inserted into the slots 17 and then shifted relative to the frame members 15, where the lips 21 with the further slots 23 slide over the tube walls. During the sliding, the locking pin 25 with the beveled or rounded front edge bumps against the round pins 27 and pushes them upwards as it slides forward until the locking pin with the recess 31 snaps over the pins 27 and secures the coupling unit 1 against further sliding. Only by forcing the coupling unit backwards can the locking be released because the strip bends away and the pins leave the groove.

[0022] Fig. 8 shows a detail of a third embodiment of the assembly according to the invention, wherein the frame members are shown in section. Here too, all parts similar to or having the same function as those shown with reference to the earlier embodiments are designated by like reference numerals. The difference with the second embodiment described above is that only one protruding lip 21 is present on each side of the bridge element 19 of the coupling unit 1. The further slot 23 here has a larger length than in the second embodiment, in order to obtain a firm coupling even with the use of one instead of two lips, whereby the frame members 15 and therefore

also the chairs cannot be rotated relative to each other about an axis perpendicular to the plane of the drawing.

[0023] In the embodiments described above, see more particularly Fig. 8, wall sections 15b of the frame members 15 which are present in line with the slots 17 fit free of play in the further slots 23 and the further wall sections 21b of the bridge element 19 which are in line with the further slots 23 fit free of play in the slots 17 in the frame members 15.

[0024] In the detail of a fourth embodiment of the assembly according to the invention shown in Fig. 9, the frame members 15 are formed by tubes to which protrusions 33 are attached. These protrusions are present without play in the further slots 23 in the lips 21. By way of illustration, Fig. 10 shows the detail in a sectional view along line X-X in Fig. 9.

[0025] In the detail of a fifth embodiment of the assembly according to the invention shown in Fig. 11, strips 35 are attached to the frame members 15 in which the slots 17 are present. The lips 21 of the bridge element 19 again project through the slots 17 in the same manner as in the first three embodiments. By way of illustration the detail is shown in side view in Fig. 12.

[0026] Figs. 13 and 14 show an alternative for the coupling unit shown in Fig. 2. This coupling unit 1 does not have a flexible but a rigid locking pin 25 and has two bridge elements 19 which are connected to the locking pin via springs 37 so that the locking pin can rotate relative to the bridge elements despite being sturdy. Solid lines indicate the position of the bridge elements and the locking pin in coupled state and broken lines indicate the position of the bridge elements and the locking pin during the coupling operation.

[0027] Figs. 15 and 16 show a detail of a seventh embodiment of the assembly according to the invention in top view and bottom view, respectively. In this embodiment the lips 21 are bent at right angles to the bridge element 19 and protrusions 39 are formed on the solid frame members 15 as plates which are present in the further slots 23 in the lips 21. The frame members 15 are not present underneath the seats 9 but beside them. By way of illustration, the assembly is shown in a sectional view in Fig. 17.

[0028] Fig. 18 shows a side view of the coupling unit 1 of this assembly. The coupling unit also has a flexible locking pin 25 which is attached to the bottom of the bridge element 19. Fig. 19 shows the coupling unit during the coupling operation.

[0029] Figs. 20-23 show the coupling unit 121 and the frame members 127 of the frames 125 of the mutually coupled chairs 123 of an eighth embodiment of the assembly according to the invention. The frame members 127 form part of the rear chair legs and are provided with slots 129 (see Fig. 31) at the rear for cooperation with the protrusions 131 of the coupling unit 121 (see Figs. 28 and 29). At the front, the frame members 127 are provided with oblique recesses 133, whose boundary walls (of which one is shown in detail in side view) interact

with locking pins 135 (pins) on a flexible carrier 137 of the coupling unit 121 (see Figs. 28 and 29). By pulling the coupling unit 121 upwards, the locking pin 135 slides out of the recess 133 which extends obliquely with respect to the direction of pulling and the locking is canceled. Coupling parts 122 of the coupling unit 121 are in contact with the frame members 127 over their entire length, so that the coupling unit cannot rotate relative to the frame members and the two chairs are immovably connected to each other.

[0030] Figs. 24-27 show a ninth embodiment of the assembly according to the invention in various sections and views. The coupling unit 141 here has two plates 143 and 145 provided with slots. The frame members 147 are provided with protrusions 149 which project at the bottom and at the top. In coupling parts 151 of the coupling unit there are sloping recesses 153 which form guides into which pins 155 are inserted fixed to a flexible carrier 157. This carrier is attached to a slide which can be shifted relative to the upper and lower plates 143 and 145. By shifting the slide and thus the carrier 157 relative to the coupling parts 151, the pins 155 are forced downwards and the carrier 157 pushes the lower plate 145 downwards. In this lower plate there are locking holes into which locking pins attached to the frame members are inserted (identical to the construction as shown in Figs. 32-34). By bending the lower plate 145, the locking pins leave the locking holes which then cancels the locking.

[0031] Two variants of the previous embodiment are shown in Figs. 28-31. The plates 163, 173 and 165, 175 of the coupling units 161 and 171 are present against each other at a side edge and the coupling units can be rotatably arranged around a frame member 167, 177. For this purpose the slots 169 have a different shape. With the coupling unit 171 shown in Fig. 30, the plates 173 and 175 form a whole. For clarity, only these plates 173, 175 are shown around the frame member 177 in Fig. 31.

[0032] Figs. 32-34 show various views of a part of a twelfth embodiment of the assembly according to the invention. Here too, the coupling unit 181 has two plates 183 and 185, with two slots 187 in each plate. The frame members 191 are provided with protrusions 193 which extend in the slots 187. The frame members 191 further accommodate locking pins 195 which project into locking holes 189 present in the lower plate 185 for securing the coupling unit. This lower plate 185 is elastically flexible and is provided with a beveled edge (see detail in Fig. 34A) so that it can be led over the locking pin 195. To cancel the locking, also in this embodiment a slide 188 is present in the coupling unit 181, which slide 188 is comparable to the slide in the embodiment shown in Figs. 24-27.

[0033] A thirteenth embodiment of the assembly according to the invention is shown in Figs. 35-37. The coupling unit 201 here only has one plate 203 at the top and the coupling parts 205 have a U-shaped cross section

so that the coupling unit 201 can be installed over the frame members 221. In the side walls of the coupling parts 205 there are slots 207 which cooperate with protrusions 223 on the frame members 221. The frame members are furthermore provided with recesses 225 which cooperate with locking pins 209 which are attached to a flexible carrier 211 of the coupling unit 201. Here, the carrier 211 is attached to the coupling parts 205 and it bends when the coupling unit is moved since the locking pins 209 are thereby pulled out of the slightly oblique recesses.

[0034] Figs. 38 and 39 show a fourteenth and final embodiment of the assembly according to the invention. The coupling unit 231 here has an upper plate 233 and a lower plate 235, an end 237 of which is bent downwards. The two plates are provided with slots 239 through which protrusions 243 project which are attached to the frame members 241. The frame members are provided with locking pins 245 projecting in recesses 238 in the bottom plate 235.

[0035] Figs. 40-42 show the coupling unit 231 and one of the frame members 241 in side view during the coupling operation, the coupling unit 231 being secured with respect to the frame members 241 in that the bottom plate 235 is bent when moved in the direction of the arrow 247 shown in Figs. 40 and 41 and slides over the locking pins 245 until the locking pins 245 snap into the recesses 238.

[0036] Although the present invention is elucidated above on the basis of the given drawings, it should be noted that this invention is not limited whatsoever to the embodiments shown in the drawings. The invention also extends to all embodiments deviating from the embodiments shown in the drawings within the scope of the invention defined by the appended claims.

Claims

1. Assembly of two adjacent chairs (3), as well as a coupling unit (1) that secures the two chairs relative to each other, which chairs comprise each:

- a frame (5) which is provided with a frame member (15) connected to the coupling unit, as well as
- a seat (7) attached to the frame,

where:

- the coupling unit (17) extends between the facing frame members (15) of the two chairs and comprises two coupling parts (13) which are connected each to one of the frame members of the two chairs, and
- of each frame member (15) and coupling part (13) coupled together, one part comprises a plate section which is provided with a slot (17)

and the other part comprises a protrusion (21) which is accommodated in the slot,

characterized in that the assembly is provided with a locking which thwarts a relative shift of the protrusion (21) and the plate section provided with the slot (17) relative to each other.

2. Assembly as claimed in claim 1, **characterized in that** the slot (17) comprises a part extending in longitudinal direction of the frame member (15), where the protrusion tightly fits between the boundary walls of the slot which extends in longitudinal direction of the frame member (17), where the locking prevents a shift in longitudinal direction of the frame member of the protrusion (21) and the plate section provided with the slot relative to each other.

3. Assembly as claimed in claim 1 or 2, **characterized in that** the locking comprises:

- a locking pin (27) which is attached to or forms part of one of the elements formed by the frame member (15) and the coupling unit (13), and
- a wall section (29; 31) which is attached to or forms part of the other element of the two said parts, which wall section is caught on by the locking pin, such that the coupling unit and the frame member are locked against shifting relative to each other in longitudinal direction of the frame member (15).

4. Assembly as claimed in claim 1, 2 or 3, **characterized in that** the coupling unit (1) is provided with a carrier (25) to which the locking pin is attached or which the wall section forms part of, which carrier is resiliently displaced relative to the coupling parts (13) so that during the coupling of the chairs the carrier moves or bends away and the locking pin (27) catches on the wall section (29; 31).

5. Assembly as claimed in claim 1, 2, 3 or 4, **characterized in that** the coupling unit (141) comprises a release mechanism by which the locking can be canceled and the coupling unit can be separated from the frame members (147).

6. Assembly as claimed in claim 5, **characterized in that** the release mechanism comprises a slide (157; 188) which is movable in longitudinal direction of the slot (187) and is provided with a release element, and **in that** the release mechanism includes a further release element connected to the coupling parts (151), which release element and further release element cooperate with each other such that when the two elements are moved relative to each other the locking pin (195) is moved away from behind the wall section.

7. Assembly as claimed in any one of the preceding claims, **characterized in that** the chair (7) has a back rest, as well as a seat (9) which is provided with a rear edge which is present near the back rest, a front edge opposite the rear edge and two side edges, and **in that** the frame has two frame members (15) which said frame member forms part of, wherein frame members (15) support the seat (9) and extend along the side edges of the seat.

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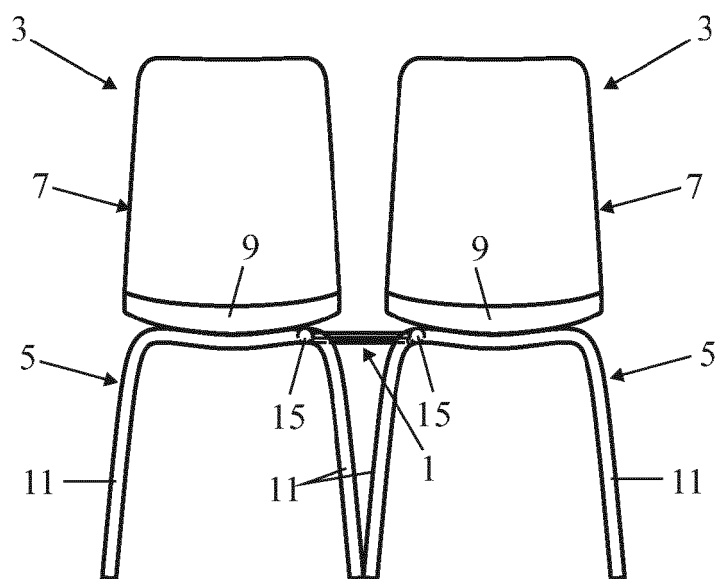


FIG. 1

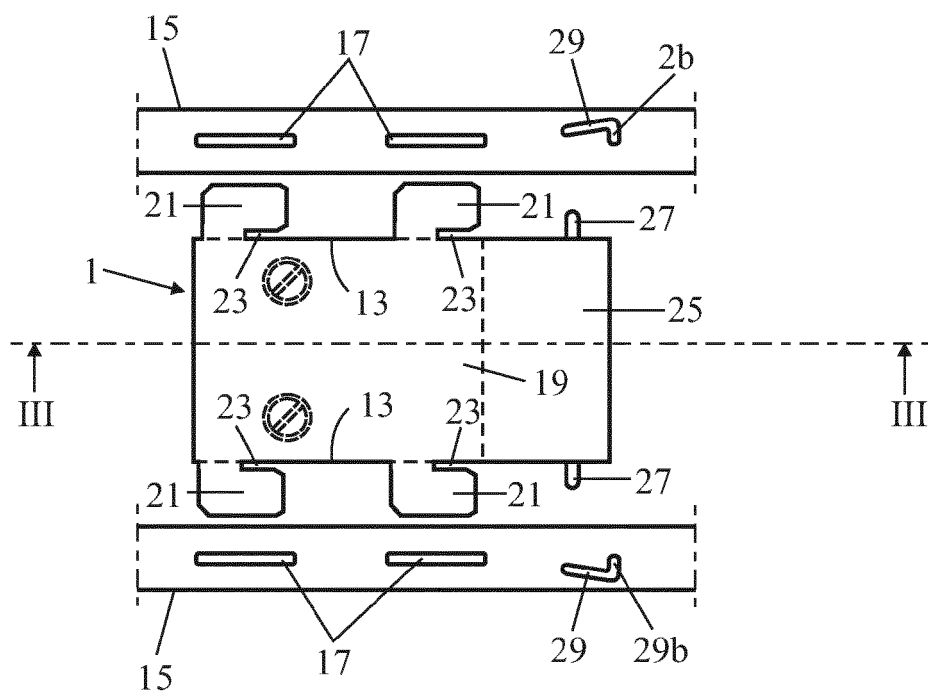


FIG. 2

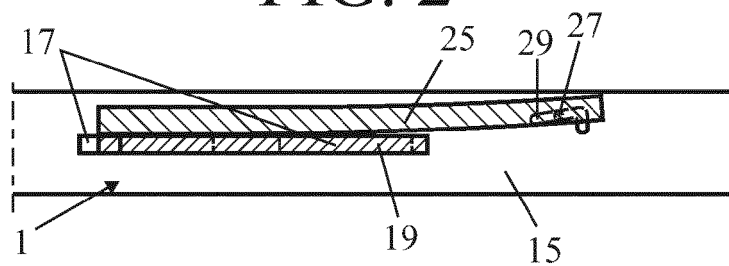


FIG. 3

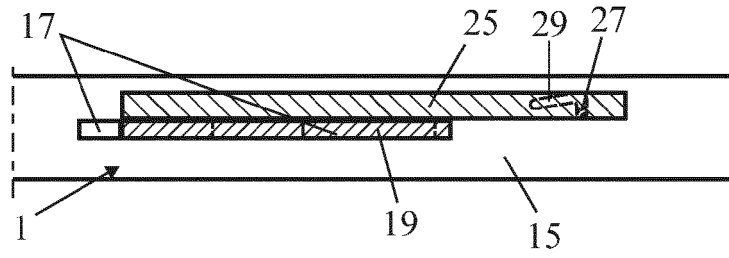


FIG. 4

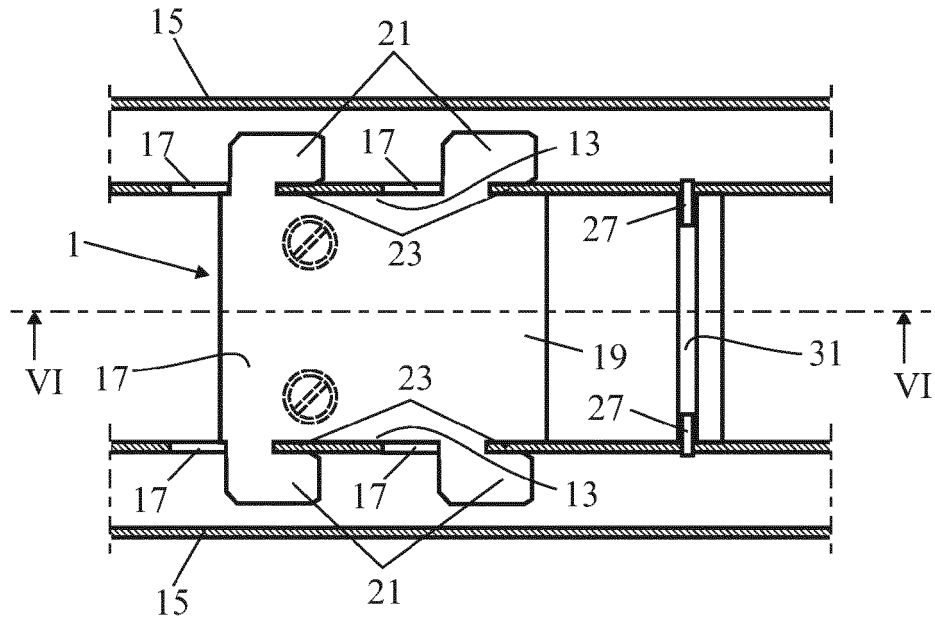


FIG. 5

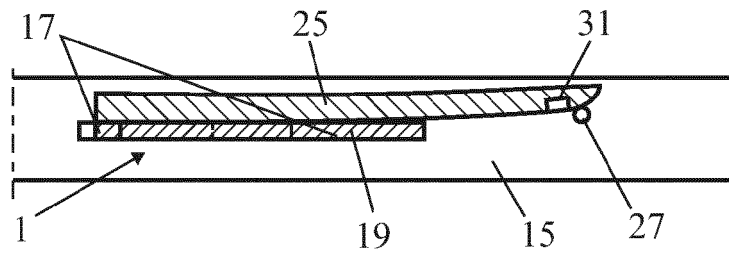


FIG. 6

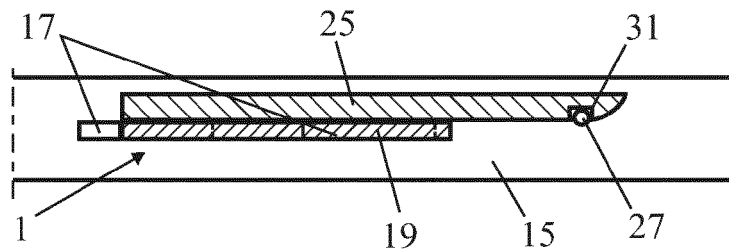


FIG. 7

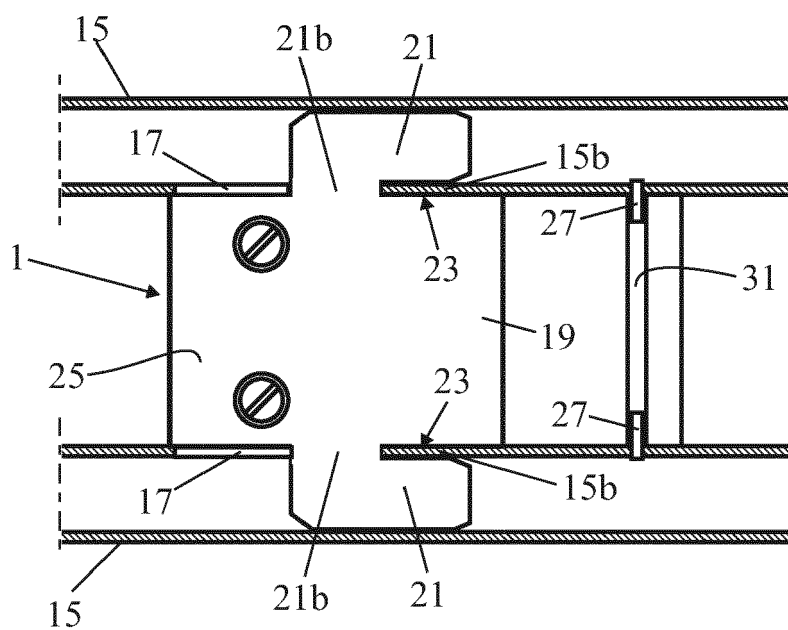


FIG. 8

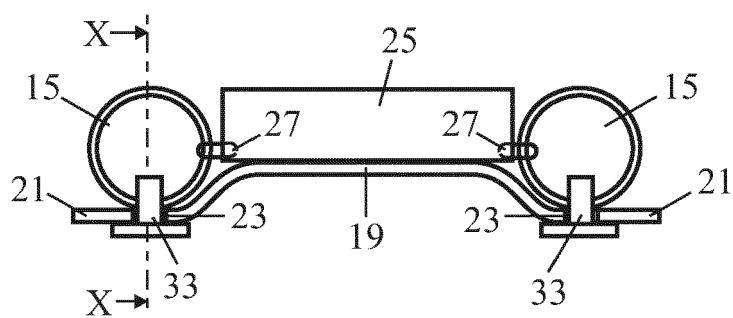


FIG. 9

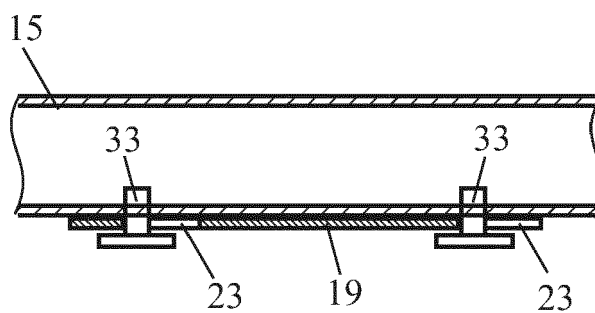


FIG. 10

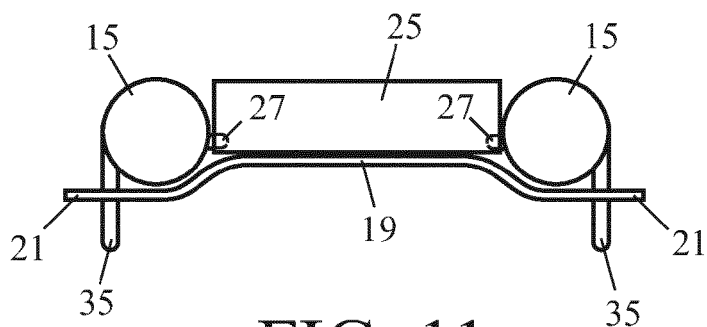


FIG. 11

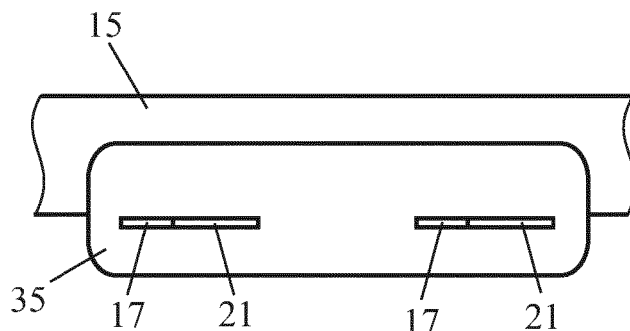


FIG. 12

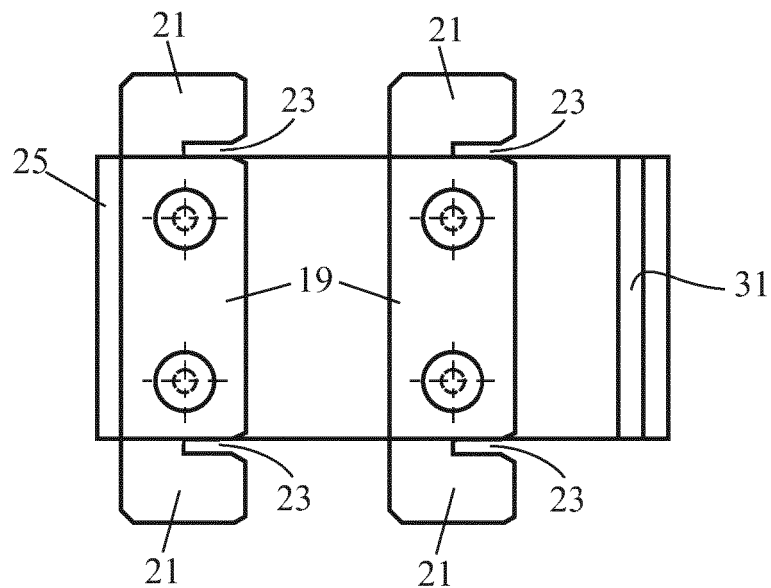


FIG. 13

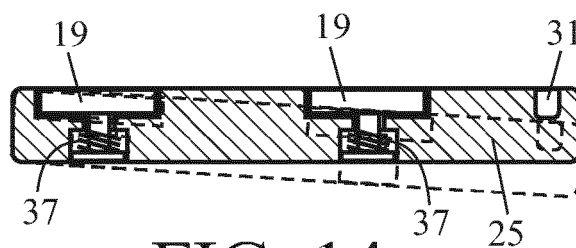


FIG. 14

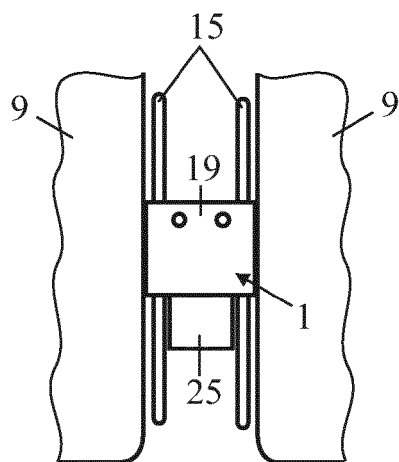


FIG. 15

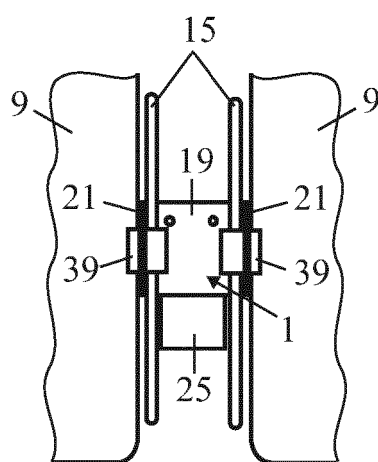


FIG. 16

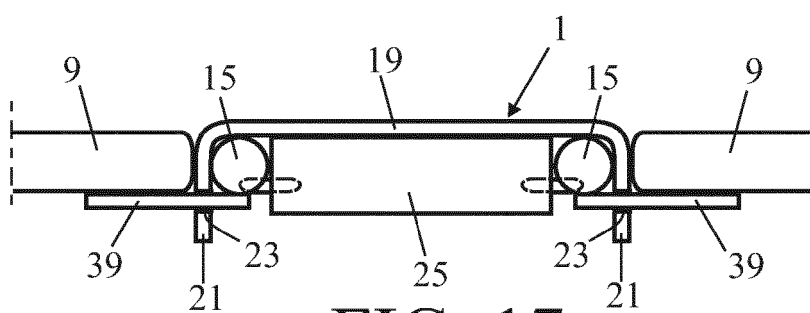


FIG. 17

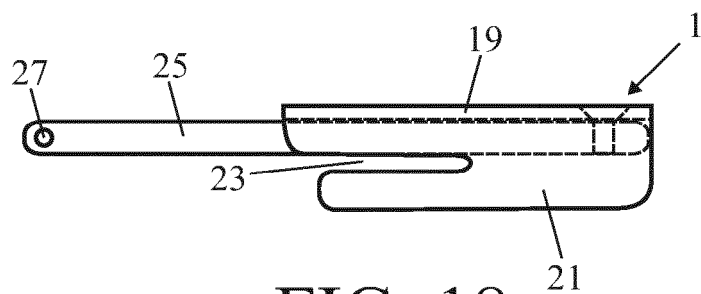


FIG. 18

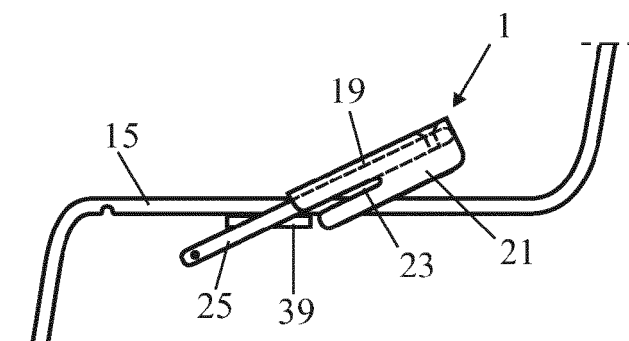


FIG. 19

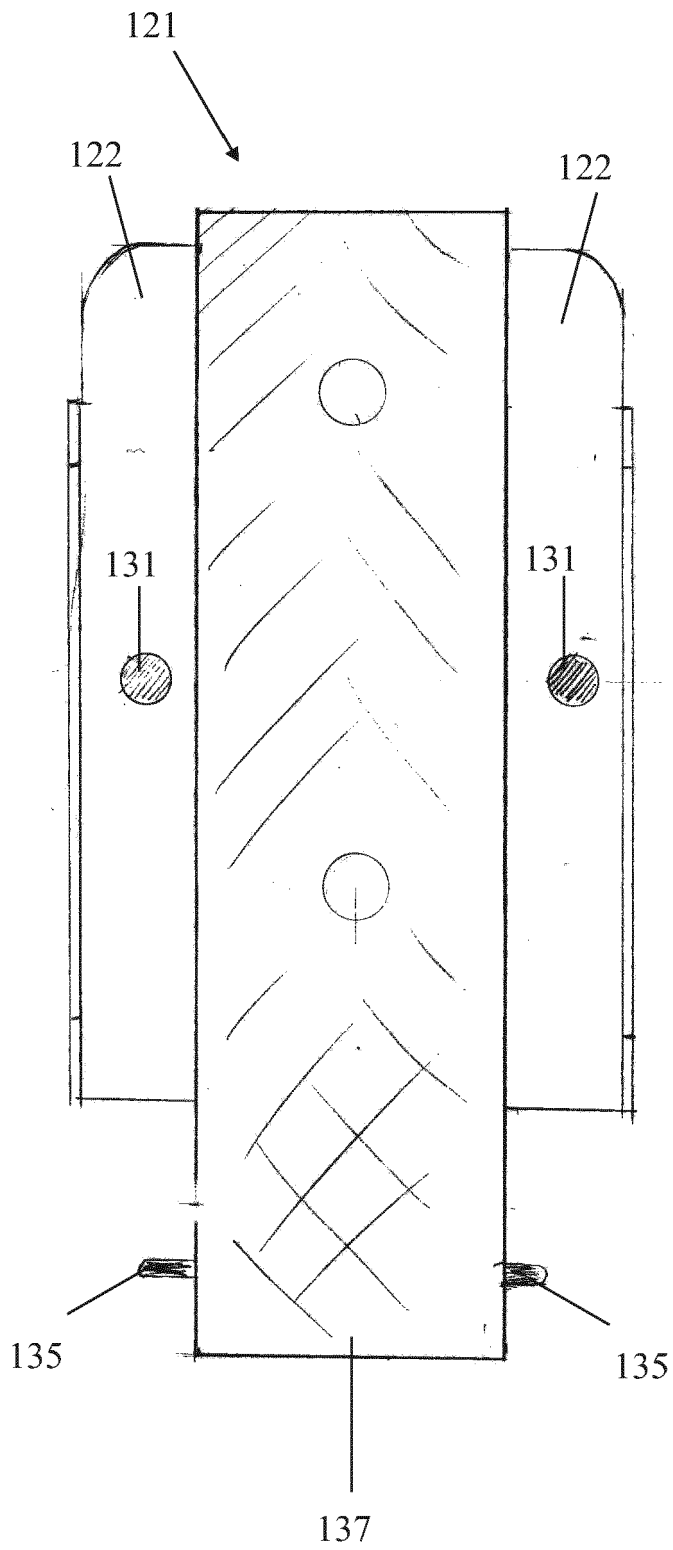


FIG. 20

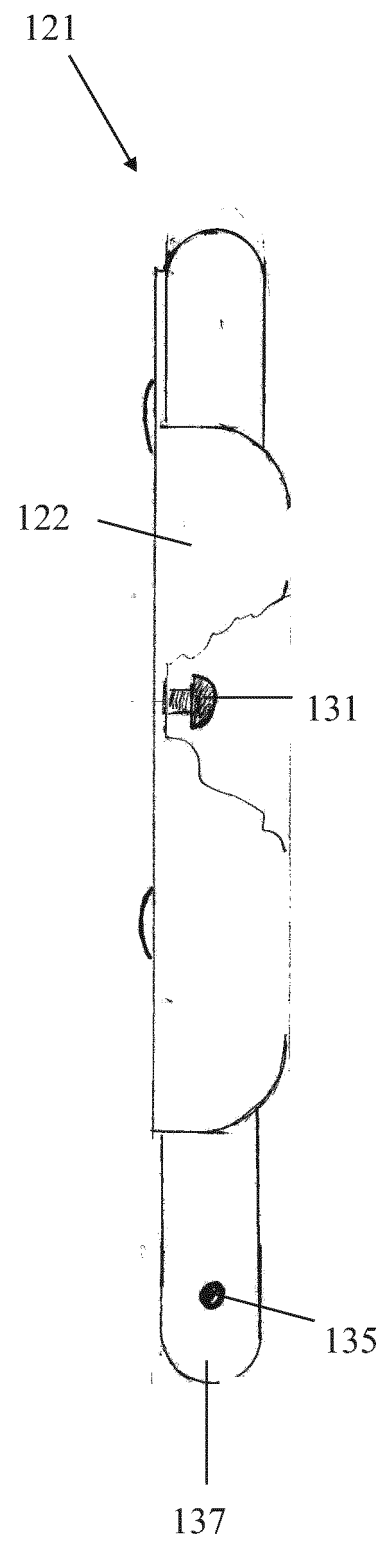


FIG. 21

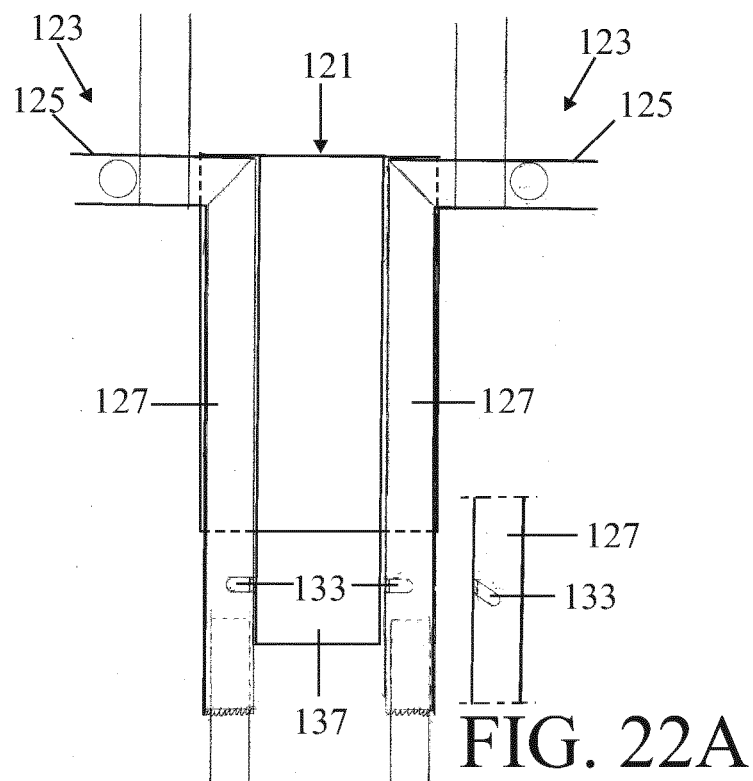
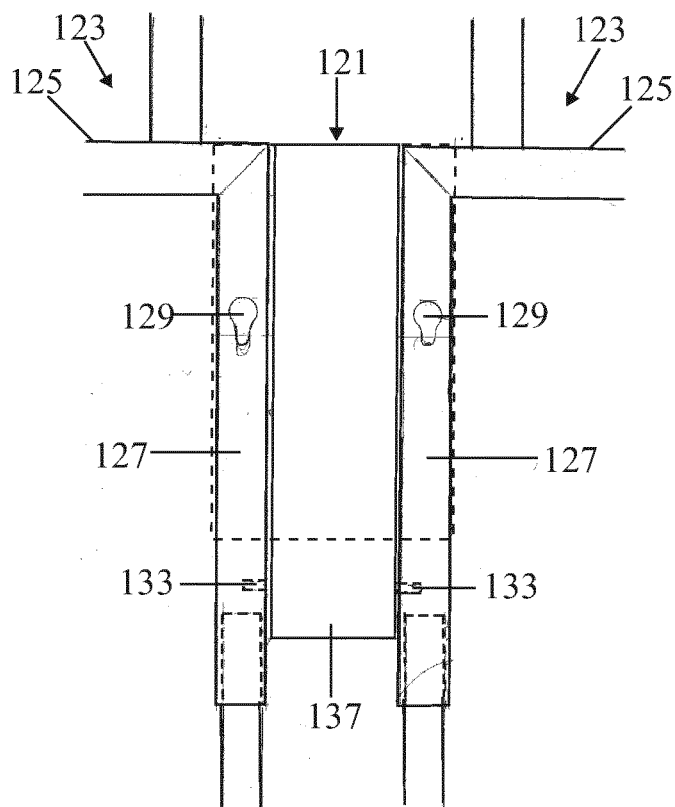


FIG. 22



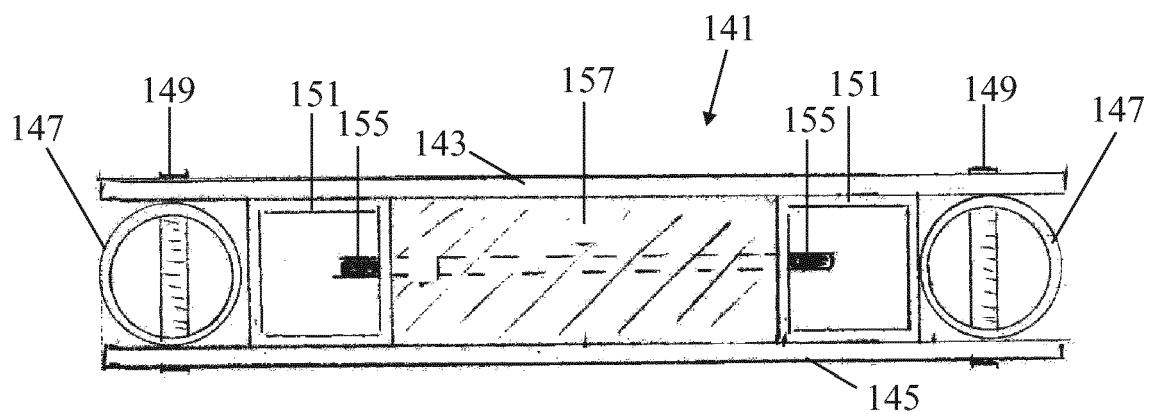


FIG. 24

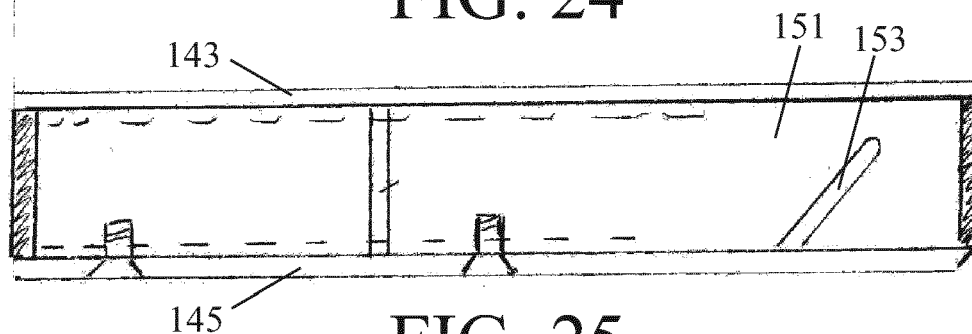


FIG. 25

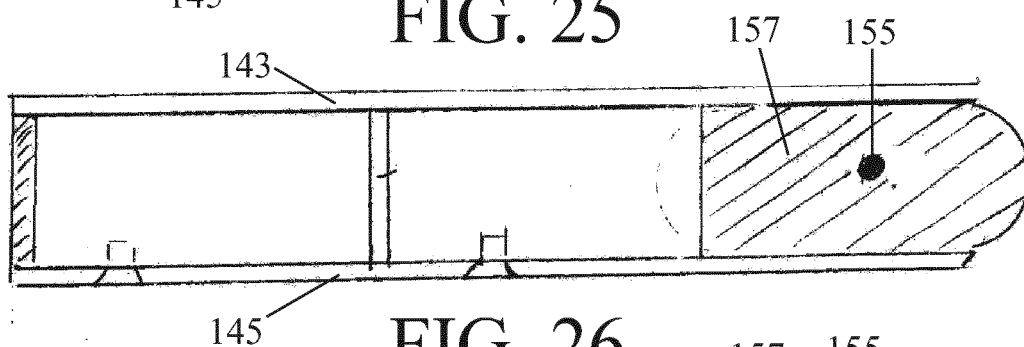


FIG. 26

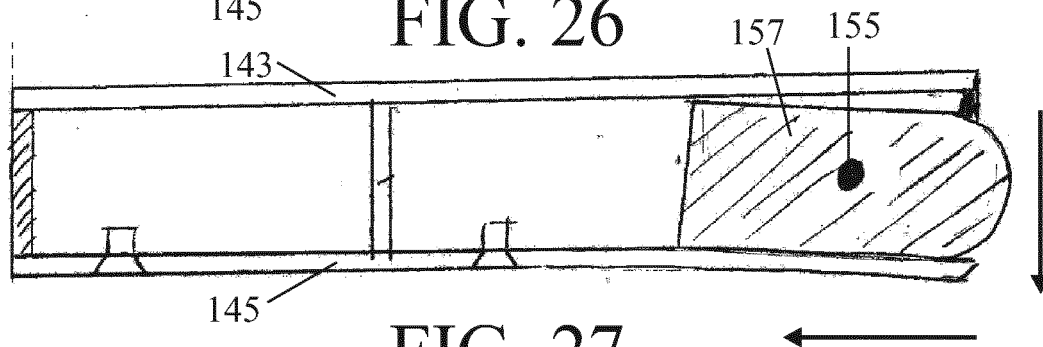


FIG. 27

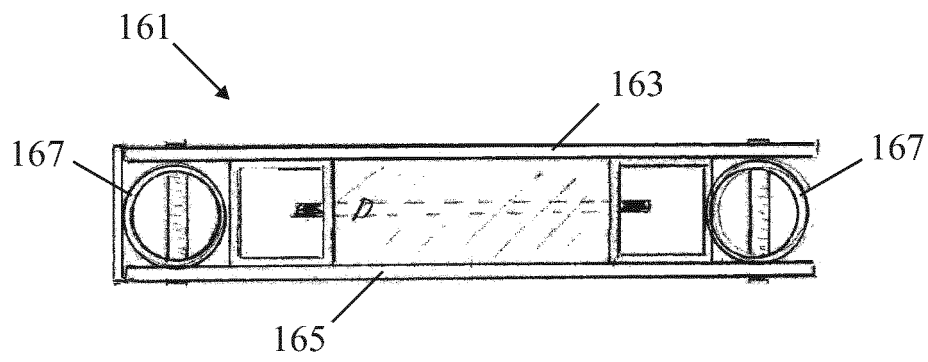


FIG. 28

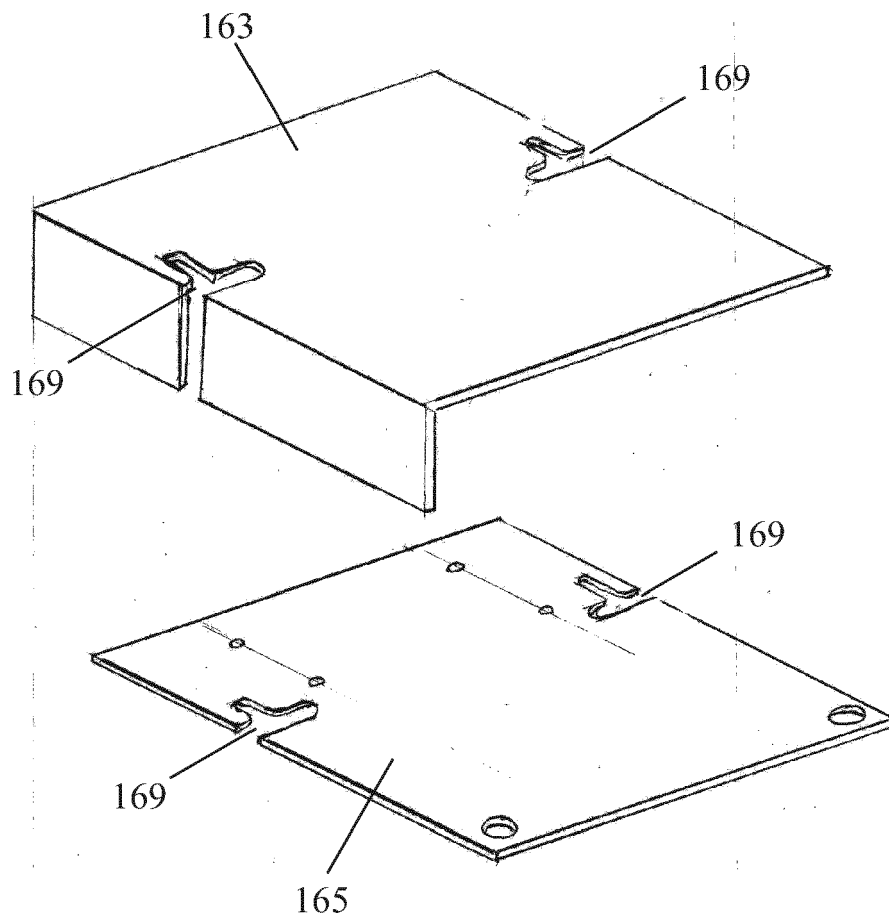


FIG. 29

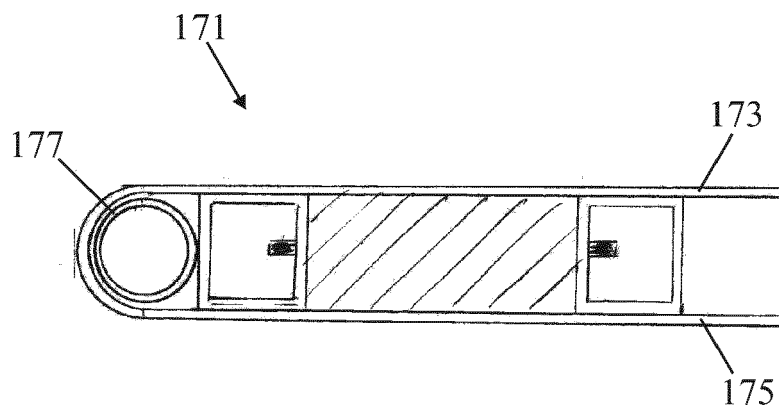


FIG. 30

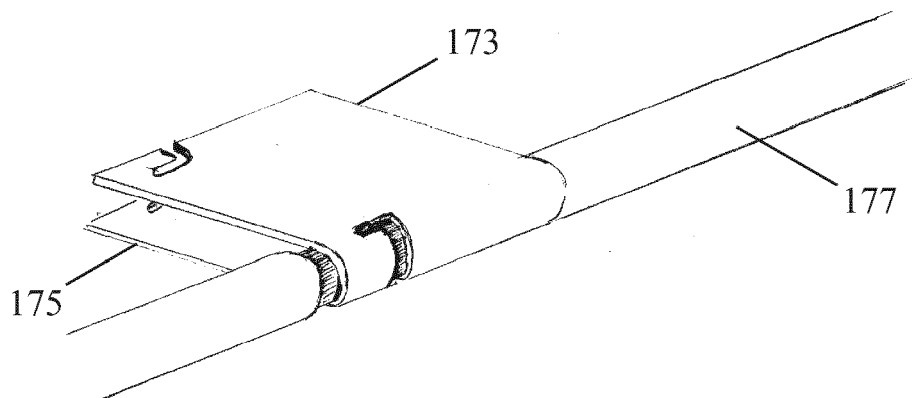


FIG. 31

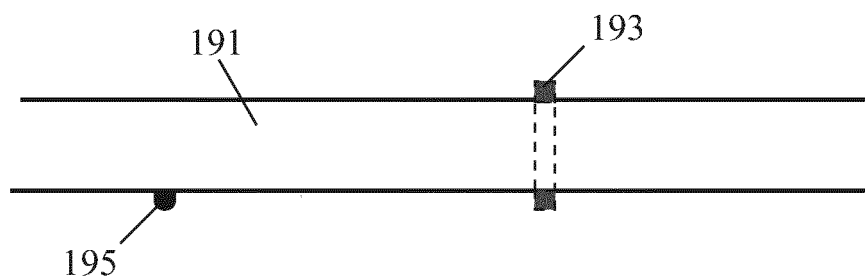


FIG. 32

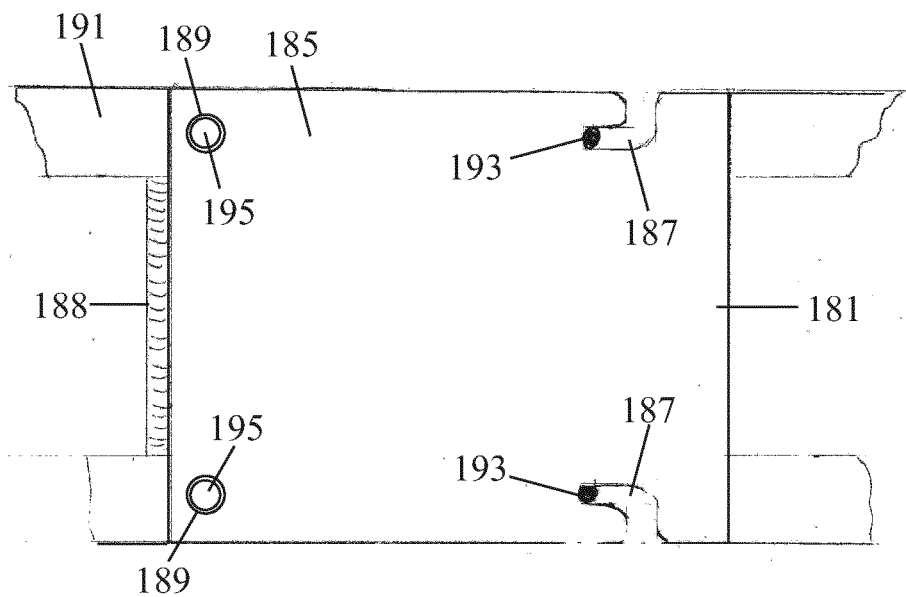


FIG. 33

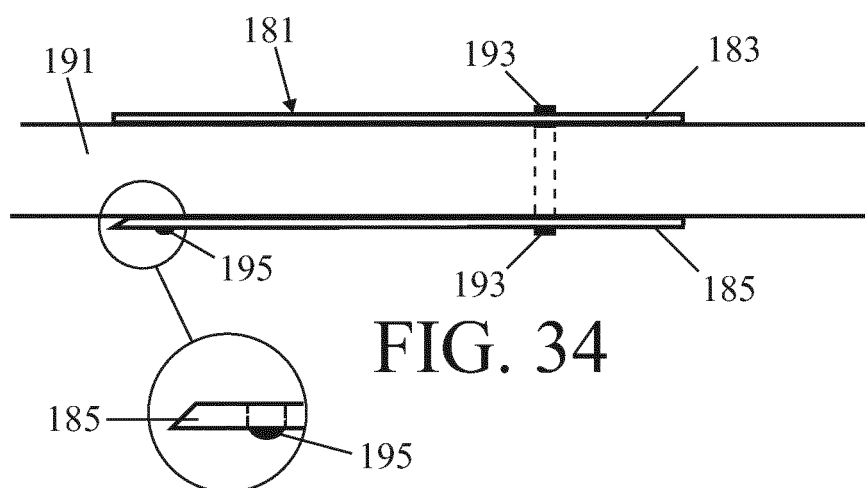


FIG. 34

FIG. 34A

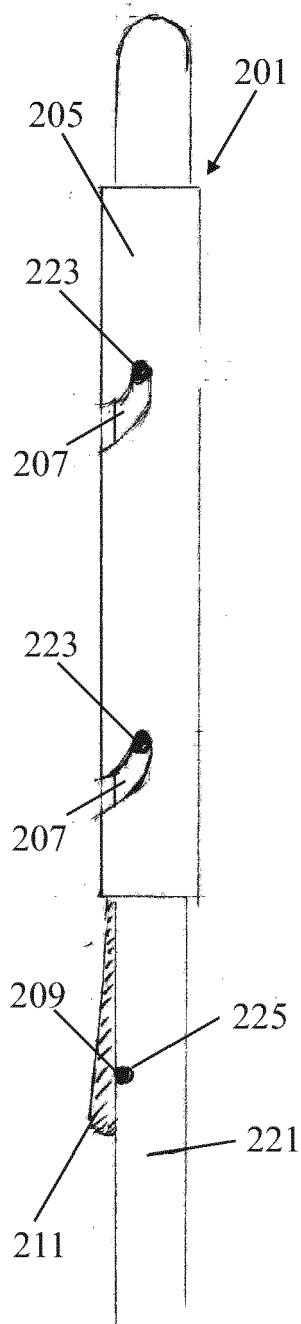


FIG. 36

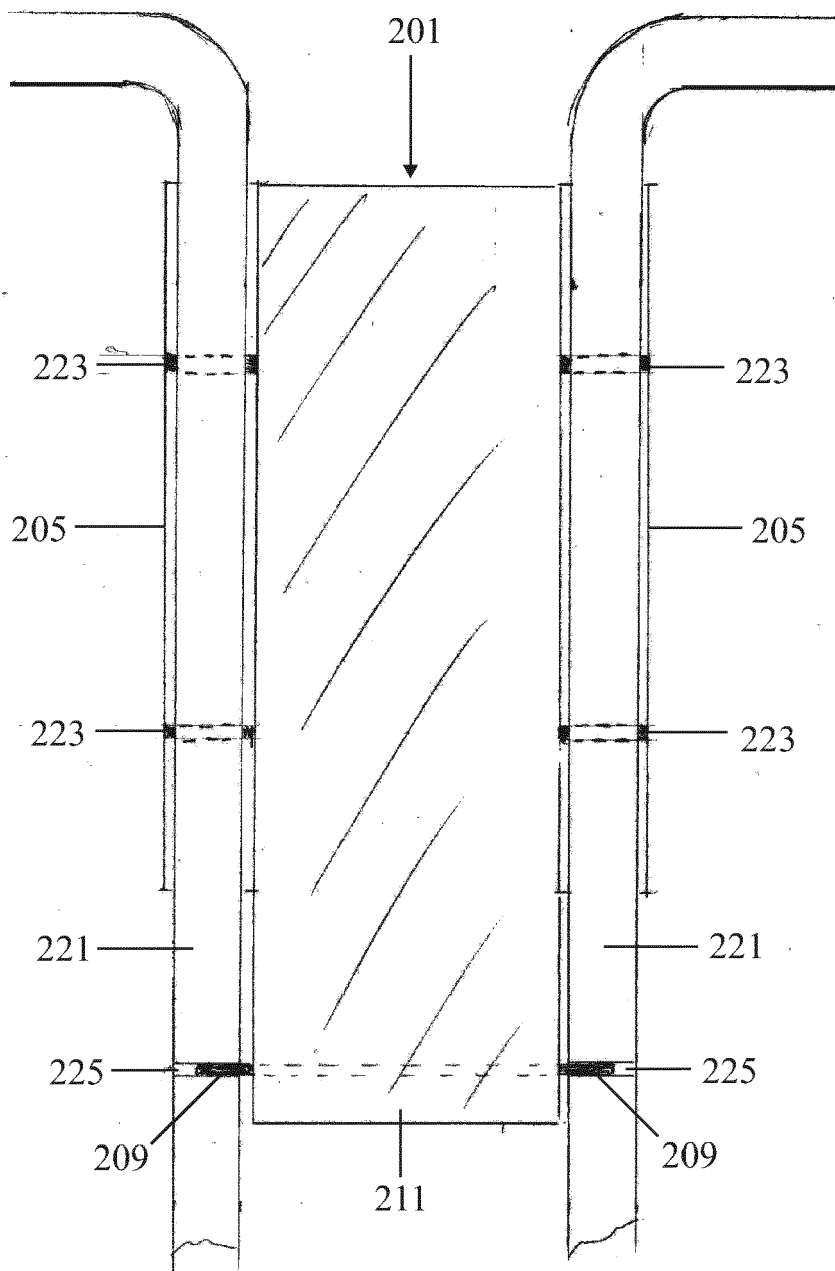


FIG. 35

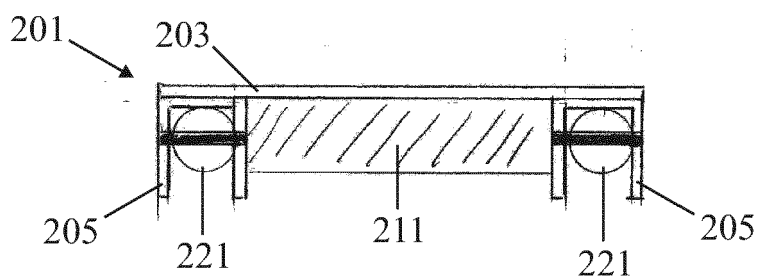


FIG. 37

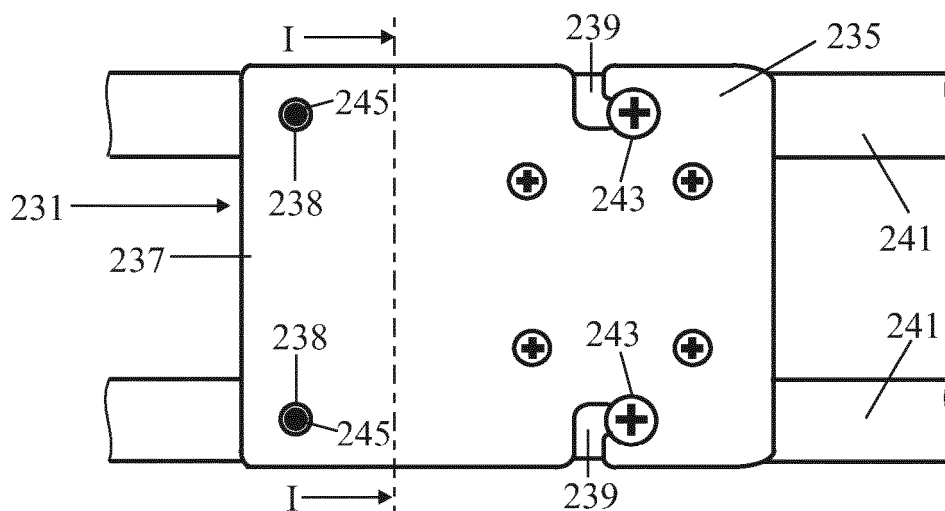


FIG. 38

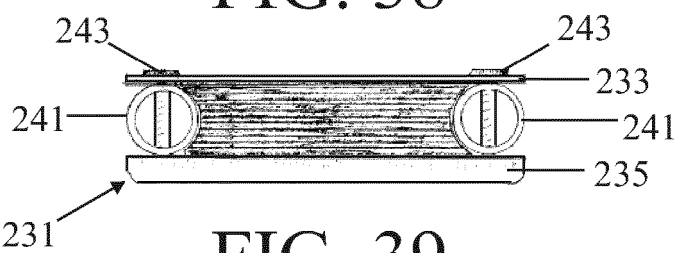


FIG. 39

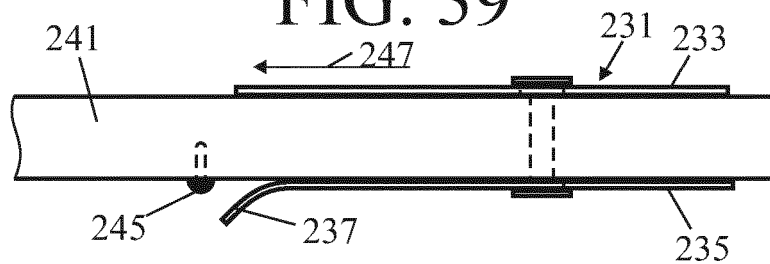


FIG. 40

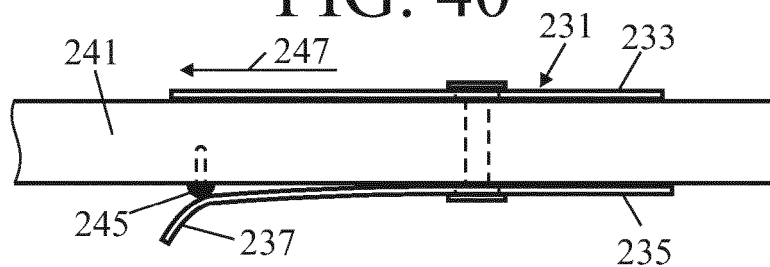


FIG. 41

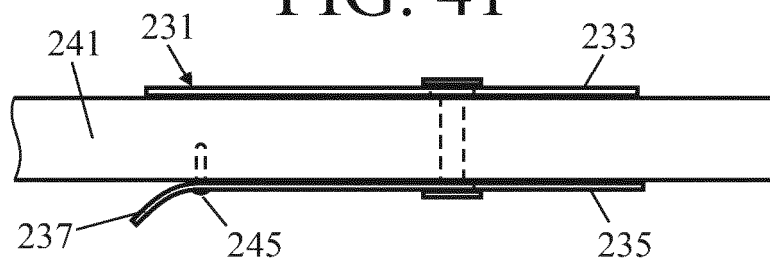


FIG. 42



EUROPEAN SEARCH REPORT

Application Number
EP 19 18 1696

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	JP H05 53548 U (UNKNOWN) 20 July 1993 (1993-07-20) * paragraphs [0014], [0016]; figures * -----	1-7	INV. A47C1/124
X	US 2004/095000 A1 (DURLING WALTER E [US]) 20 May 2004 (2004-05-20) * figures * -----	1,2	
			TECHNICAL FIELDS SEARCHED (IPC)
			A47C
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 29 August 2019	Examiner Kis, Pál
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The members are as contained in the European Patent Office EDP file on
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29-08-2019

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