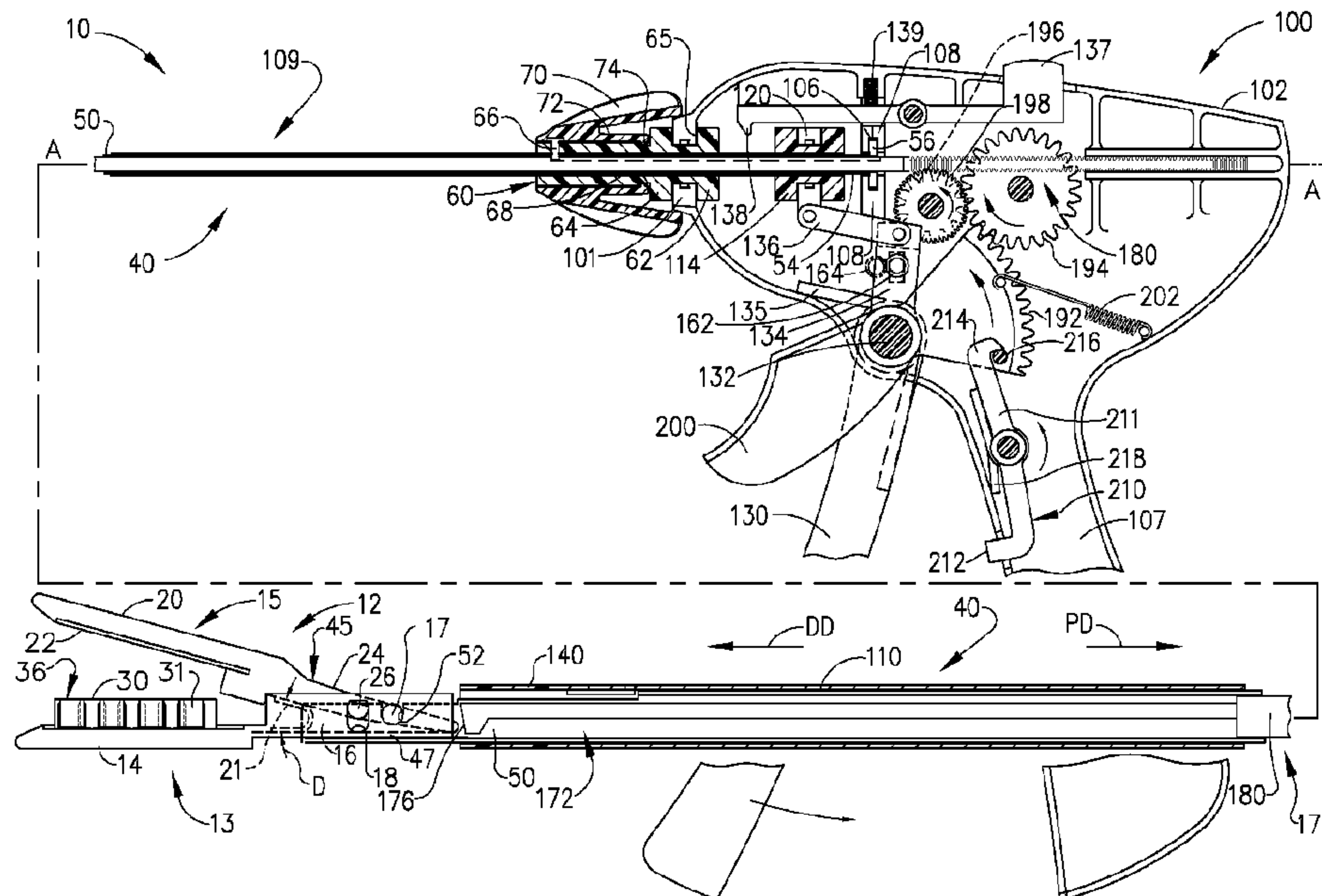




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LLP/S.E.N.C.R.L., S.R.L.

(54) Titre : COMPENSATEUR D'ÉPAISSEUR DE TISSU POUR AGRAFEUSE CHIRURGICALE  
(54) Title: TISSUE THICKNESS COMPENSATOR FOR A SURGICAL STAPLER



(57) Abrégé/Abstract:

A fastener cartridge can comprise a support portion, a tissue thickness compensator positioned relative to the support portion, and a plurality of fasteners positioned within the support portion and/or the tissue thickness compensator which can be utilized to fasten tissue. In use, the fastener cartridge can be positioned in a first jaw of a surgical fastening device, wherein a second jaw, or anvil, can be positioned opposite the first jaw. To deploy the fasteners, a staple-deploying member is advanced through the fastener cartridge to move the fasteners toward the anvil. As the fasteners are deployed, the fasteners can capture at least a portion of the tissue thickness compensator therein along with at least a portion of the tissue being fastened.



WHAT IS CLAIMED IS:

1. A staple cartridge, comprising:
  - an annular cartridge body, comprising:
    - a deck; and
    - a plurality of staple cavities defined within said deck, wherein each said staple cavity comprises an opening in said deck;
  - a plurality of staples, wherein at least a portion of each said staple is removably stored within said staple cavity, and wherein each said staple is movable between an unfired position and a fired position; and
  - an annular compressible portion, wherein said compressible portion is captured within said staples and assume different compressed heights within different said staples, and wherein said compressible portion comprises:
    - an annular support ring; and
    - a plurality of tags extending from said annular support ring, wherein each said tag is positioned over said staple cavity.
2. The staple cartridge of Claim 1, wherein each said tag comprises a head positioned over said staple cavity and a neck connecting said head to said annular support ring.
3. The staple cartridge of Claim 2, wherein said head is circular.
4. The staple cartridge of Claim 2, wherein said annular support ring comprises an outer diameter and an inner diameter, and wherein said tags extend from said inner diameter.

5. The staple cartridge of Claim 2, wherein said annular support ring comprises an outer diameter and an inner diameter, and wherein said tags extend from said outer diameter.
6. The staple cartridge of Claim 1, wherein said annular support ring comprises a first portion having a first arc length and a second portion having a second arc length, and wherein said first portion is detachably connected to said second portion.
7. The staple cartridge of Claim 6, wherein at least a portion of said staples extend above said deck and into said compressible portion when said staples are in said unfired position, whereby said compressible portion is releasably held to said cartridge body by said staples.
8. The staple cartridge of Claim 6, wherein said compressible portion comprises at least one perforation between said first portion and said second portion.
9. The staple cartridge of Claim 1, wherein said annular support ring comprises a first portion having a first arc length and a second portion having a second arc length, and wherein said annular support ring further comprises a flexible section positioned intermediate said first portion and said second portion, whereby said first section can move relative to said second section.
10. A staple cartridge, comprising:  
a cartridge body, comprising:

a deck; and

an annular array of staple cavities defined within said deck, wherein each said staple cavity comprises an opening in said deck;

a plurality of staples, wherein at least a portion of each said staple is removably stored within said staple cavity, and wherein each said staple is movable between an unfired position and a fired position; and

an expandable tissue thickness compensator, wherein said tissue thickness compensator is captured within said staples and assume different compressed heights within different said staples, and wherein said tissue thickness compensator comprises:

an annular support ring; and

a plurality of tags extending from said annular support ring, wherein each said tag is positioned over said staple cavity.

11. The staple cartridge of Claim 10, wherein each said tag comprises a head positioned over said staple cavity and a neck connecting said head to said annular support ring.

12. The staple cartridge of Claim 11, wherein said head is circular.

13. The staple cartridge of Claim 11, wherein said annular support ring comprises an outer diameter and an inner diameter, and wherein said tags extend from said inner diameter.

14. The staple cartridge of Claim 11, wherein said annular support ring comprises an outer diameter and an inner diameter, and wherein said tags extend from said outer diameter.

15. The staple cartridge of Claim 10, wherein said annular support ring comprises a first portion having a first arc length and a second portion having a second arc length, and wherein said first portion is detachably connected to said second portion.

16. The staple cartridge of Claim 15, wherein at least a portion of said staples extend above said deck and into said tissue thickness compensator when said staples are in said unfired position, whereby said tissue thickness compensator is releasably held to said cartridge body by said staples.

17. The staple cartridge of Claim 15, wherein said tissue thickness compensator comprises at least one perforation between said first portion and said second portion.

18. The staple cartridge of Claim 10, wherein said annular support ring comprises a first portion having a first arc length and a second portion having a second arc length, and wherein said annular support ring further comprises a flexible section positioned intermediate said first portion and said second portion, whereby said first section can move relative to said second section.

19. A staple cartridge, comprising:  
a cartridge body, comprising:  
a deck; and

a plurality of staple cavities defined within said deck, wherein each said staple cavity comprises an opening in said deck;

a plurality of staples, wherein at least a portion of each said staple is removably stored within said staple cavity, and wherein each said staple is movable between an unfired position and a fired position; and

an expandable tissue thickness compensator, wherein said tissue thickness compensator is captured within said staples and assume different compressed heights within different said staples, and wherein said tissue thickness compensator comprises:

a first arcuate portion for receiving a first group of staples; and

a second arcuate portion for receiving a second group of staples, wherein said first arcuate portion is movable relative to said second arcuate portion after said expandable tissue thickness compensator has been implanted against the tissue.

20. The staple cartridge of Claim 19, further comprising a plurality of perforations defined between said first arcuate portion and said second arcuate portion, wherein said perforations permit said first arcuate portion to detach from said second arcuate portion.

21. A fastener cartridge, comprising:

an annular cartridge body, comprising:

a deck; and

a plurality of fastener cavities defined within said deck, wherein each said fastener cavity comprises an opening in said deck;

a plurality of fasteners, wherein at least a portion of each said fastener is removably stored within said fastener cavity, and wherein each said fastener is movable between an unfired position and a fired position; and

an annular compressible portion, wherein said compressible portion is captured within said fasteners and assume different compressed heights within different said fasteners, and wherein said compressible portion comprises:

a support ring; and

a plurality of tags extending from said support ring, wherein each said tag is positioned over said fastener cavity.

22. A fastener cartridge, comprising:

an arcuate cartridge body, comprising:

a deck; and

a plurality of fastener cavities defined within said deck, wherein each said fastener cavity comprises an opening in said deck;

a plurality of fasteners, wherein at least a portion of each said fastener is removably stored within said fastener cavity, and wherein each said fastener is movable between an unfired position and a fired position; and

an arcuate tissue thickness compensator, wherein said tissue thickness compensator is captured within said fasteners and assume different compressed heights within different said fasteners, and wherein said tissue thickness compensator comprises:

an arcuate support; and

a plurality of pads extending from said arcuate support, wherein each said pad is positioned relative to said fastener cavity.

23. A fastener cartridge, comprising:

a cartridge body, comprising:

a deck; and

an arcuate array of fastener cavities defined within said deck, wherein each said fastener cavity comprises an opening in said deck;

a plurality of fasteners, wherein at least a portion of each said fastener is removably stored within said fastener cavity, and wherein each said fastener is movable between an unfired position and a fired position; and

a tissue thickness compensator, wherein said tissue thickness compensator is captured within said fasteners and assume different compressed heights within different said fasteners, and wherein said tissue thickness compensator comprises:

an arcuate support; and

a plurality of tags extending from said arcuate support, wherein each said tag is positioned over said fastener cavity.

24. A fastener cartridge, comprising:

a cartridge body, comprising:

a deck; and

a curved array of fastener cavities defined within said deck, wherein each said fastener cavity comprises an opening in said deck;

a plurality of fasteners, wherein at least a portion of each said fastener is removably stored within said fastener cavity, and wherein each said fastener is movable between an unfired position and a fired position; and

a layer, wherein said layer is captured within said fasteners and assume different compressed heights within different said fasteners, and wherein said layer comprises:

a curved support; and

a plurality of pads extending from said curved support, wherein each said pad is positioned over said fastener cavity.

25. A fastener cartridge, comprising:

a cartridge body, comprising:

a deck; and

a plurality of fastener cavities defined within said deck, wherein each said fastener cavity comprises an opening in said deck;

a plurality of fasteners, wherein at least a portion of each said fastener is removably stored within said fastener cavity, and wherein each said fastener is movable between an unfired position and a fired position; and

a tissue thickness compensator, wherein said tissue thickness compensator is captured within said fasteners and assume different compressed heights within different said fasteners, and wherein said tissue thickness compensator comprises:

a first curved portion for receiving a first group of fasteners; and

second curved portion for receiving a second group of fasteners, wherein said first curved portion is movable relative to said second curved portion after said tissue thickness compensator has been implanted against the tissue.

26. A fastener cartridge, comprising:

a cartridge body, comprising:

a deck; and

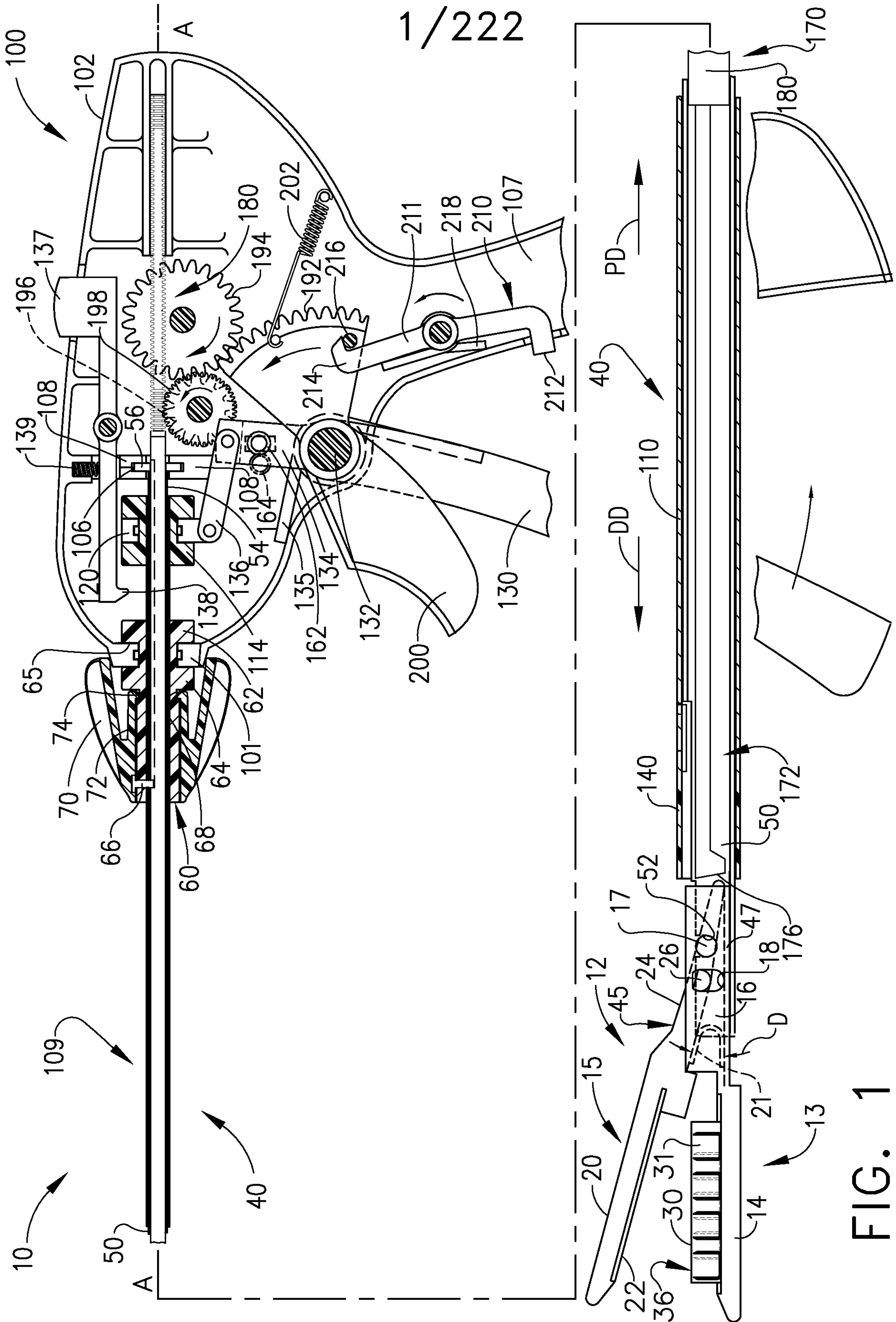
a plurality of fastener cavities defined within said deck;

a plurality of fasteners, wherein at least a portion of each said fastener is removably stored within said fastener cavity, and wherein each said fastener is movable between an unfired position and a fired position; and

a layer, wherein said layer is captured within said fasteners and assume different compressed heights within different said fasteners, and wherein said layer comprises:

a first curved portion for receiving a first group of fasteners; and

a second curved portion for receiving a second group of fasteners, wherein said first curved portion is movable relative to said second curved portion after said tissue thickness compensator has been implanted against the tissue.



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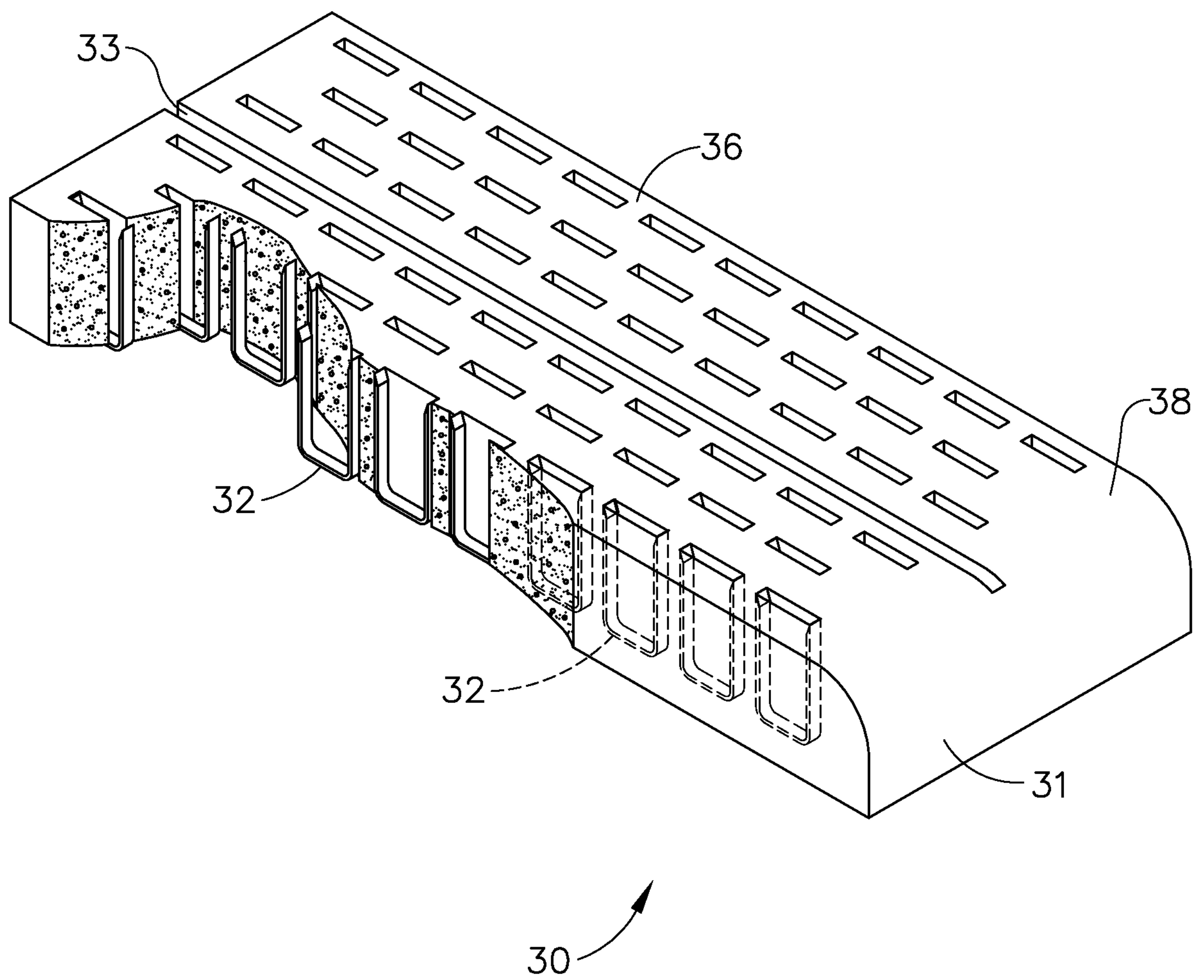


FIG. 1A

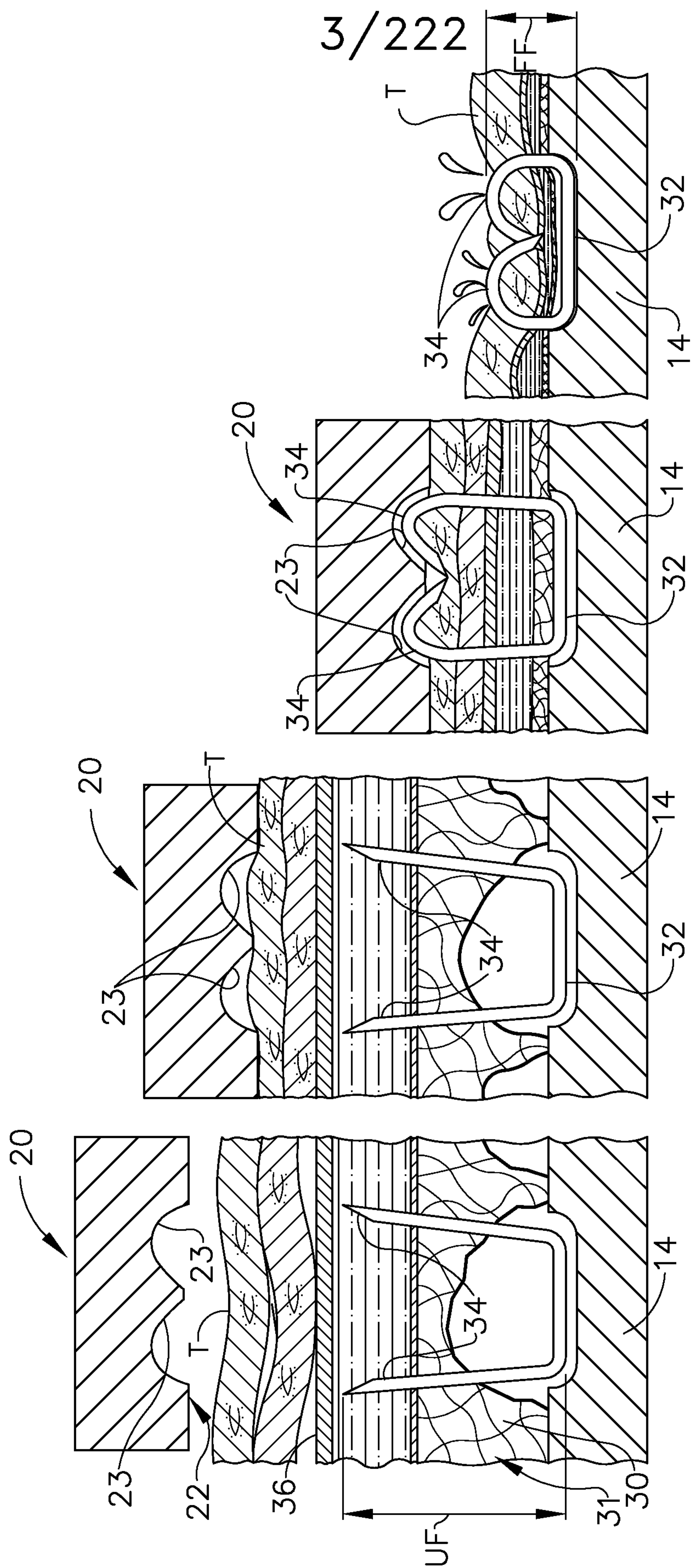


FIG. 1B      FIG. 1C      FIG. 1D      FIG. 1E

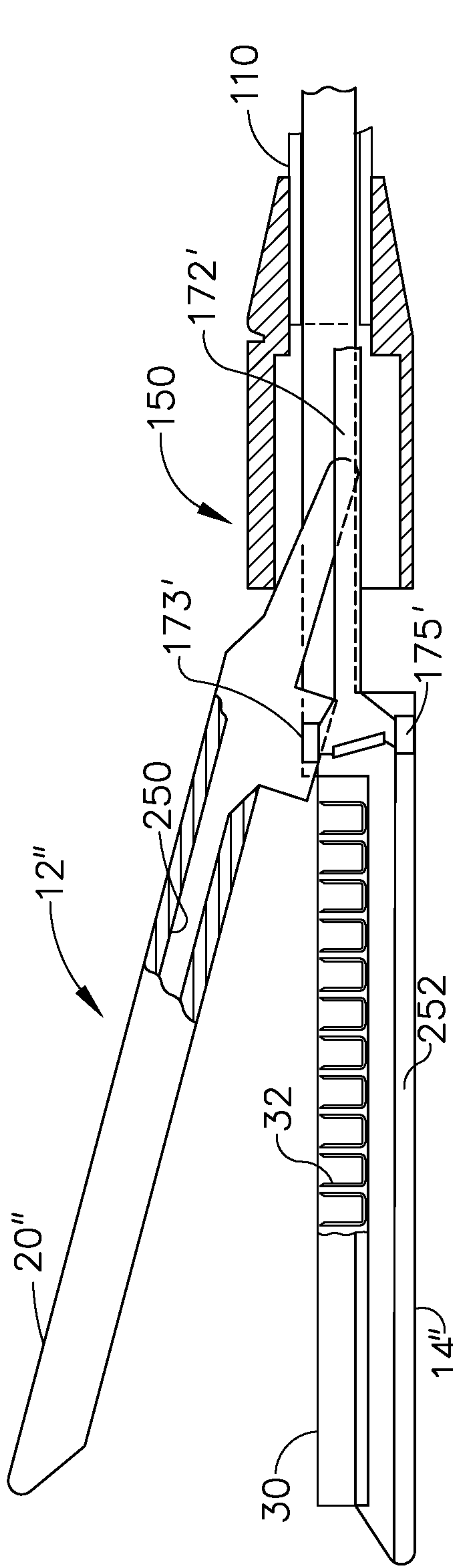


FIG. 2

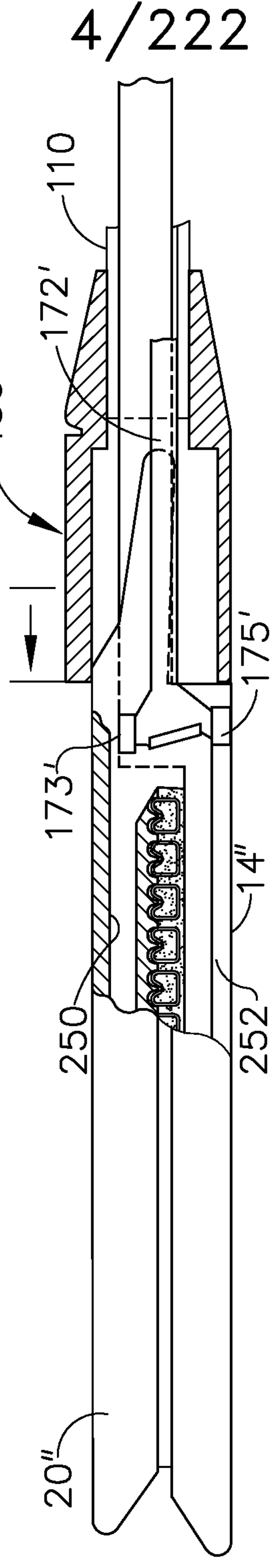


FIG. 3

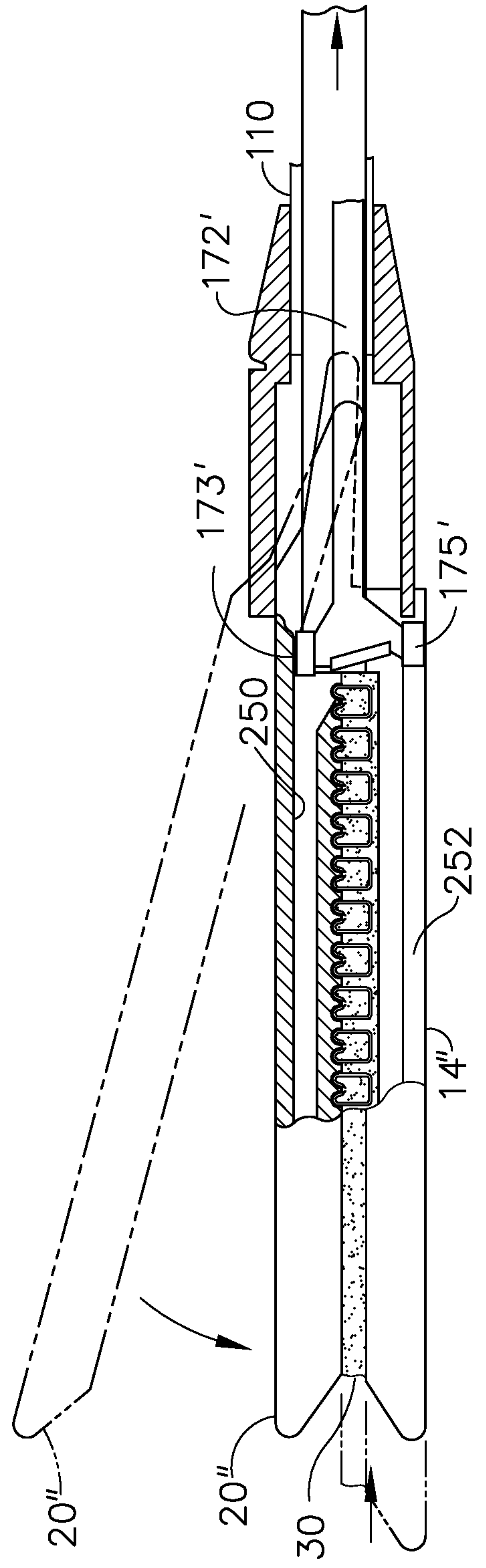


FIG. 4

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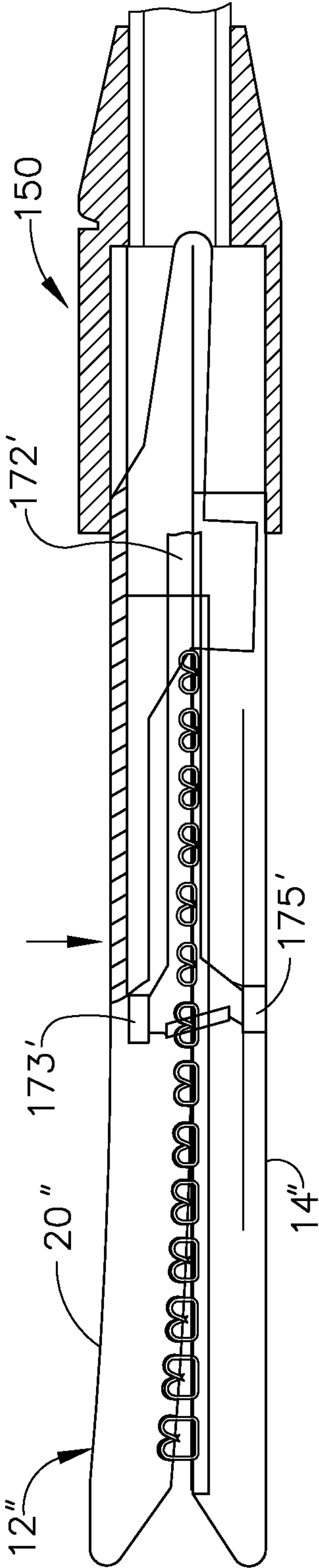


FIG. 5

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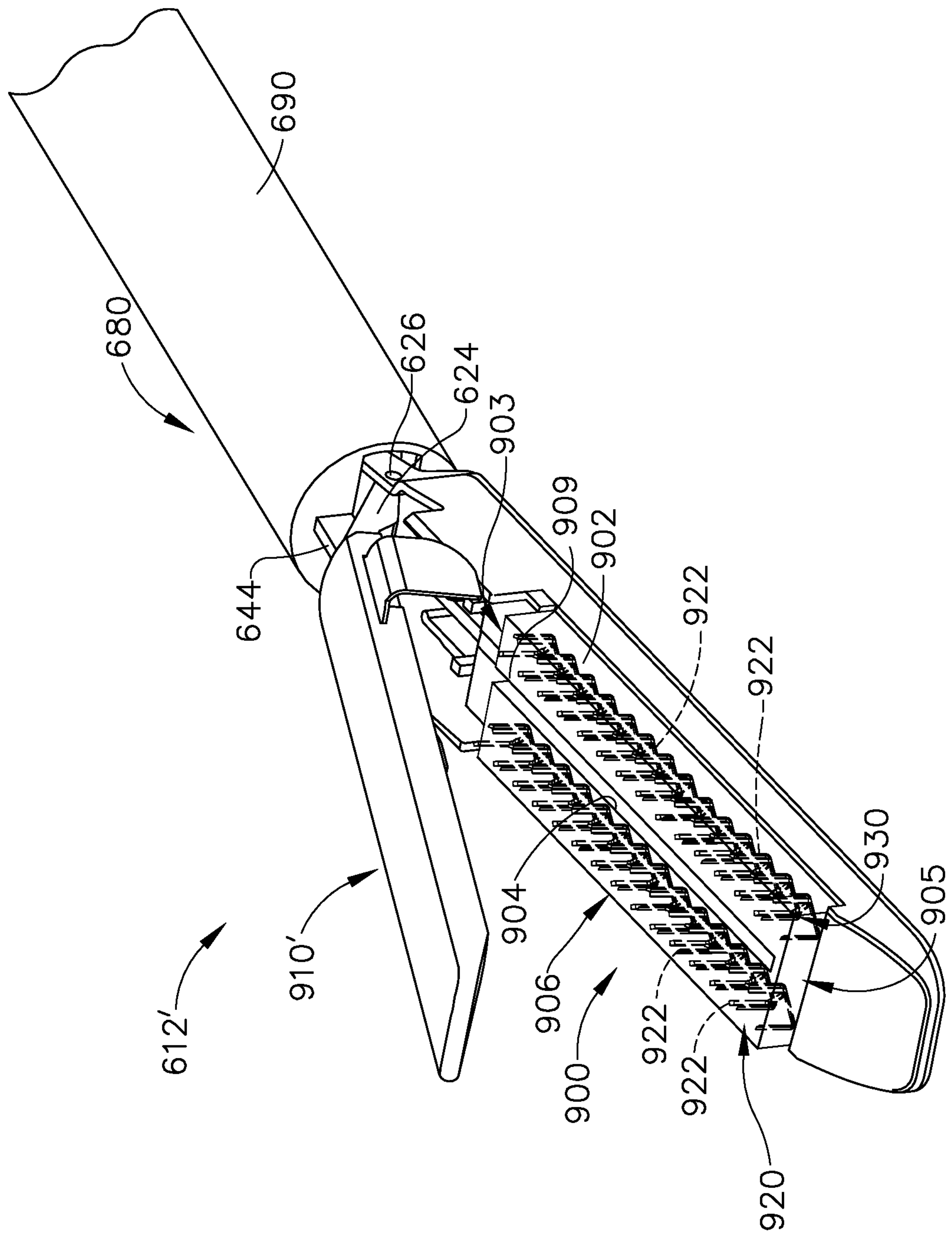


FIG. 6

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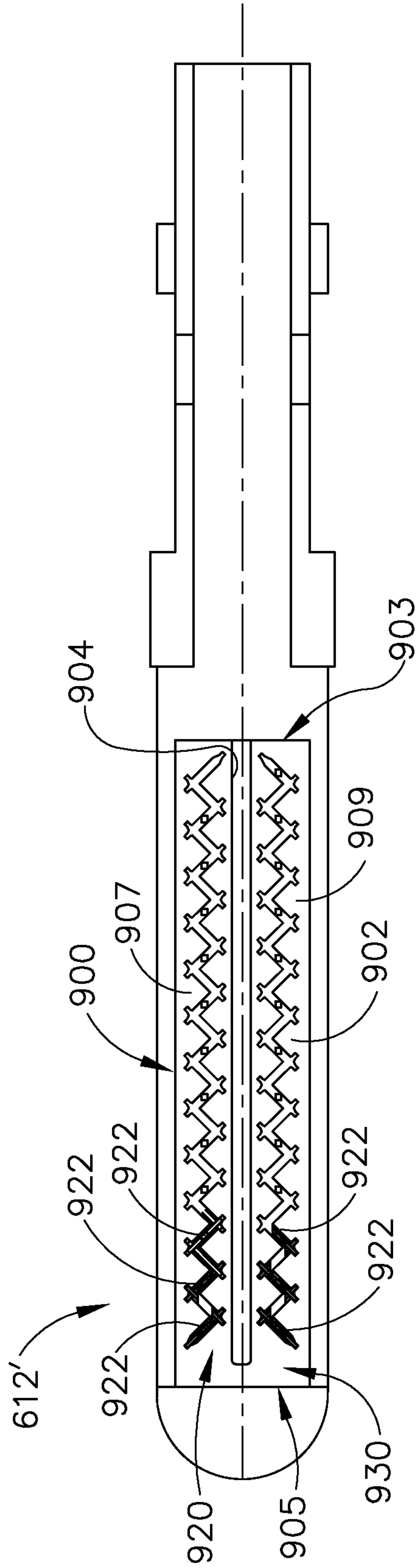


FIG. 7

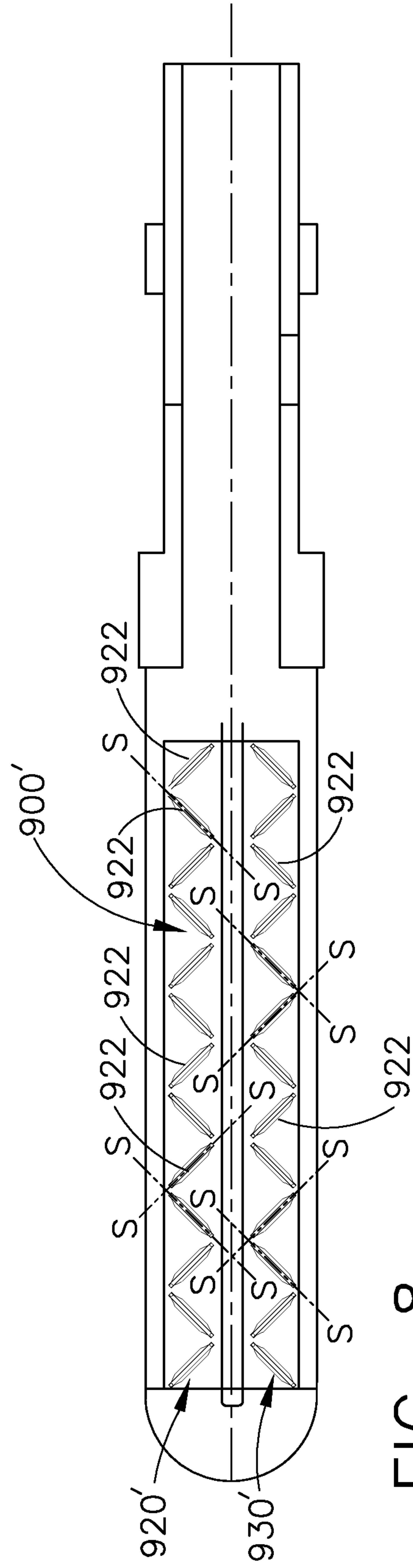


FIG. 8

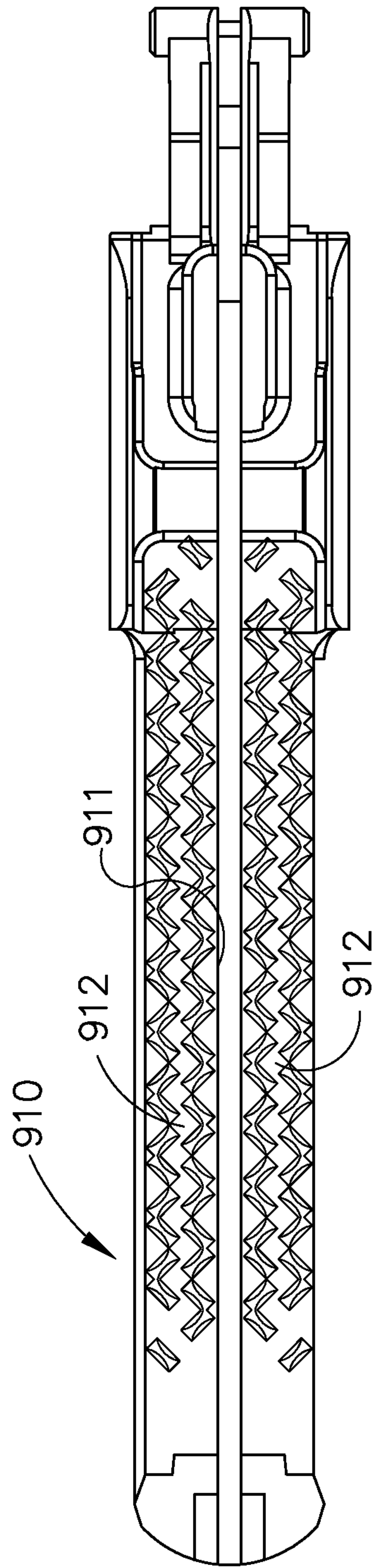


FIG. 9

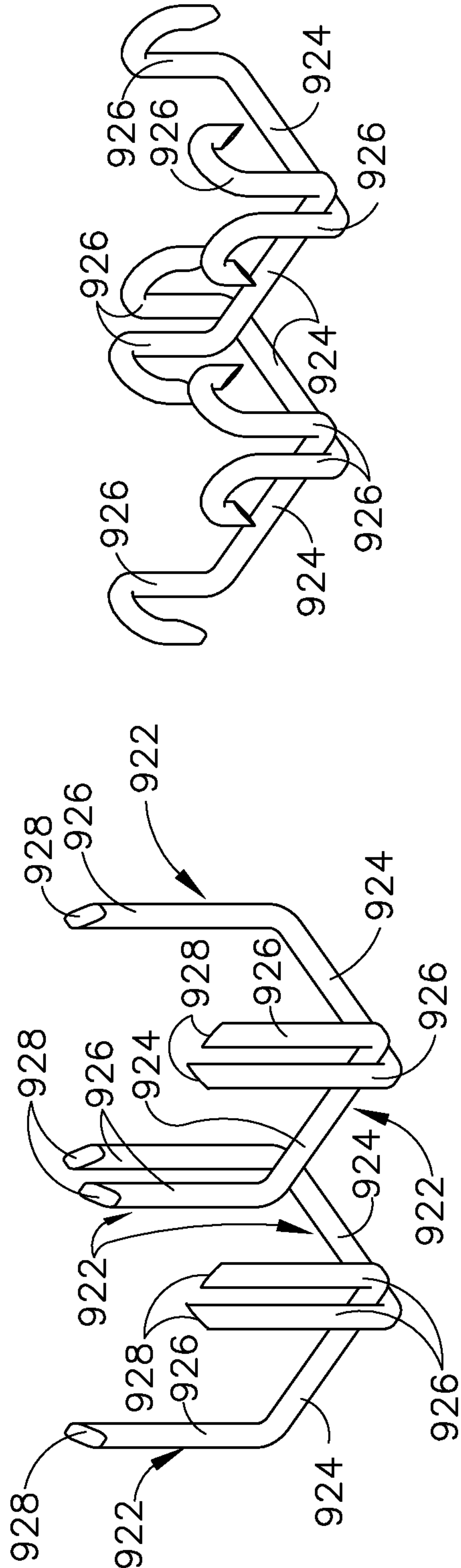


FIG. 10

FIG. 11

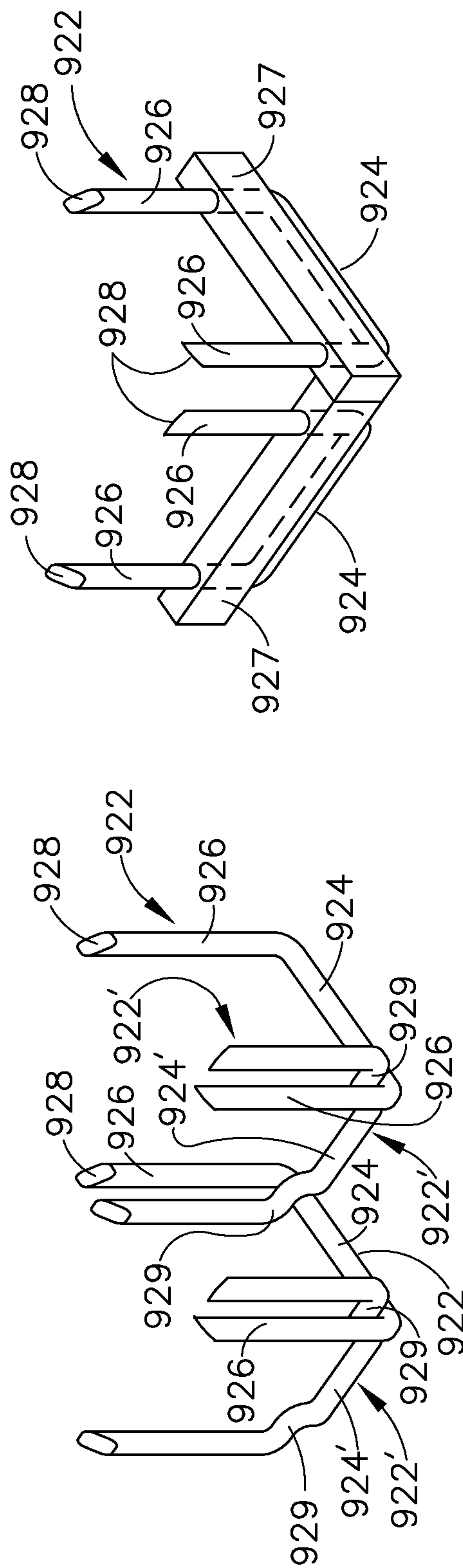


FIG. 13

FIG. 12

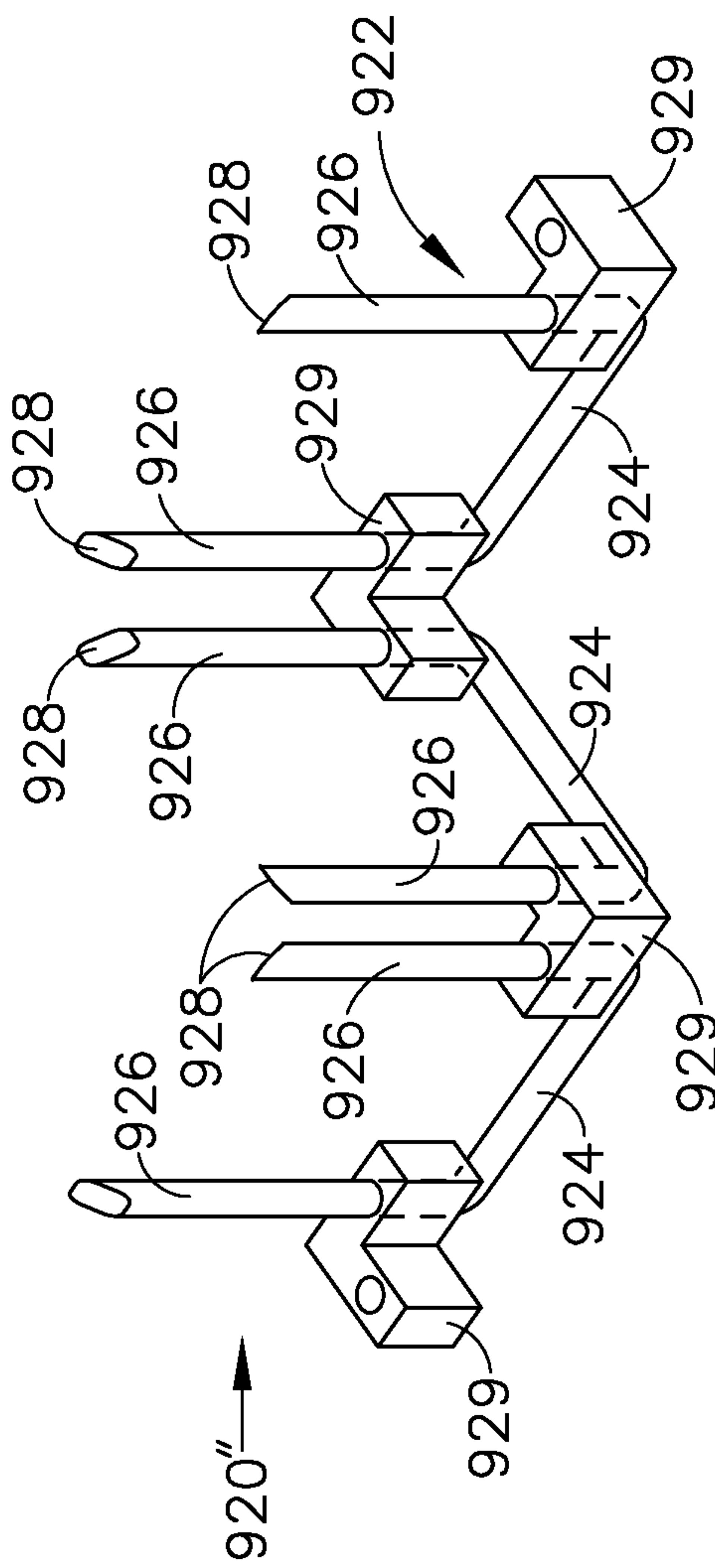


FIG. 14

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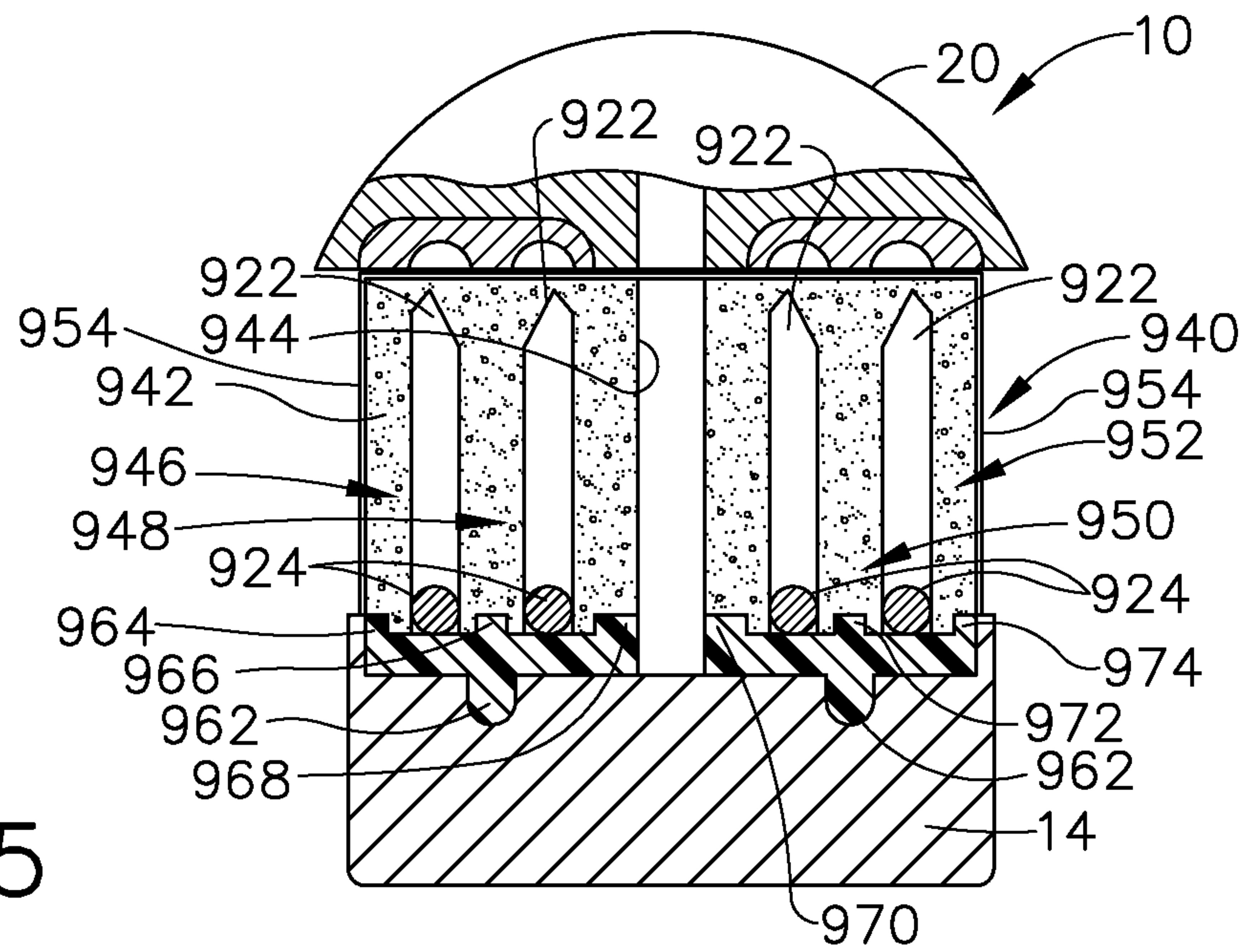


FIG. 15

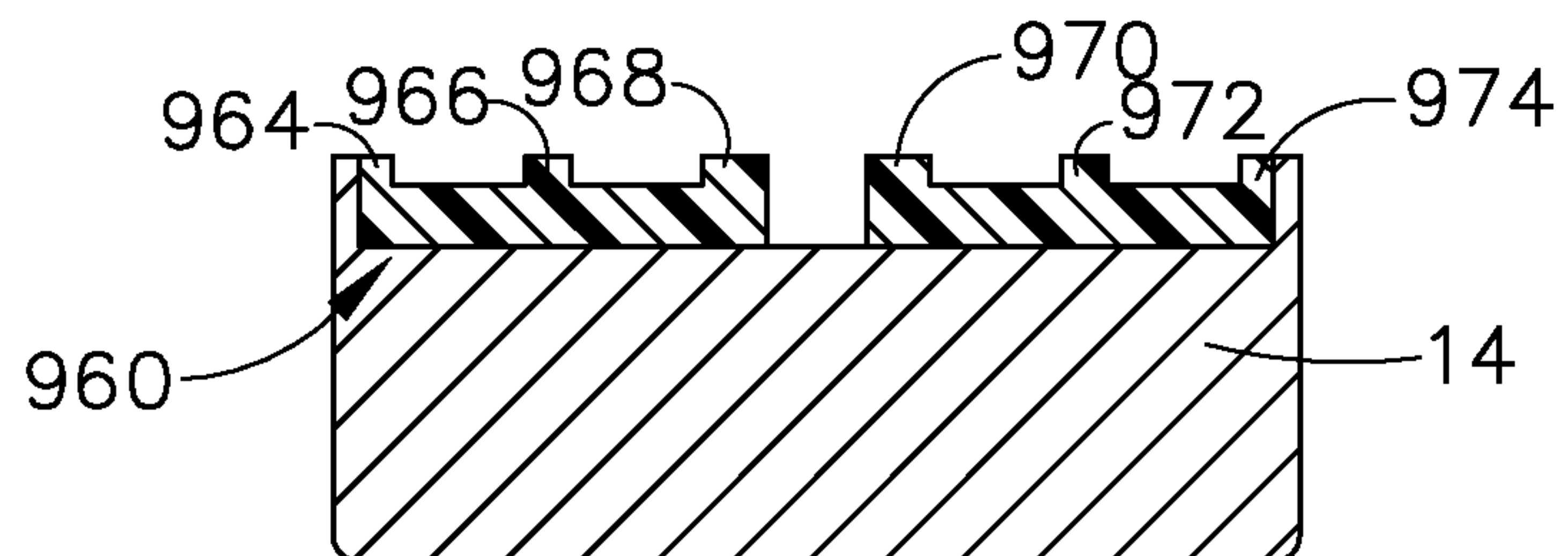


FIG. 16

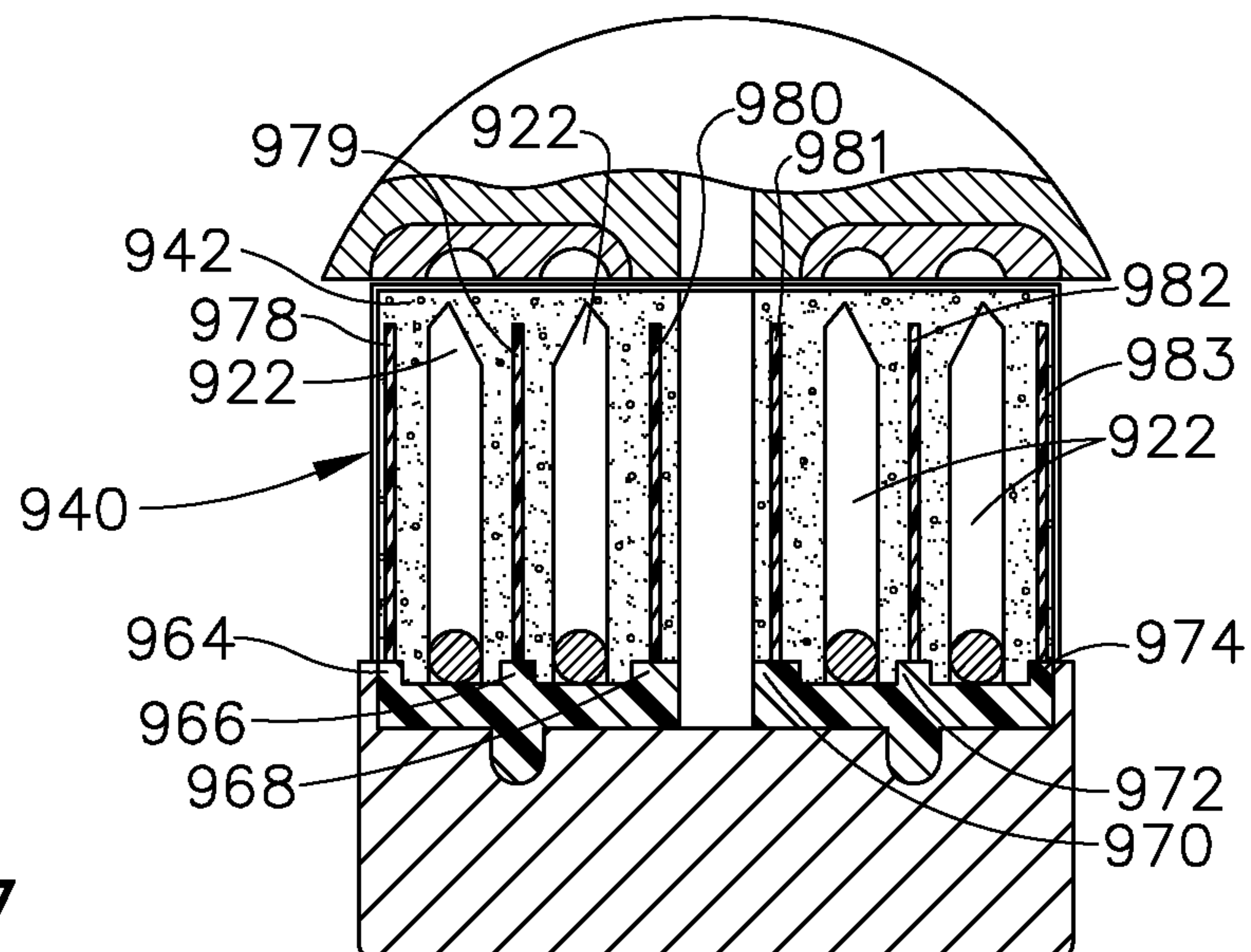
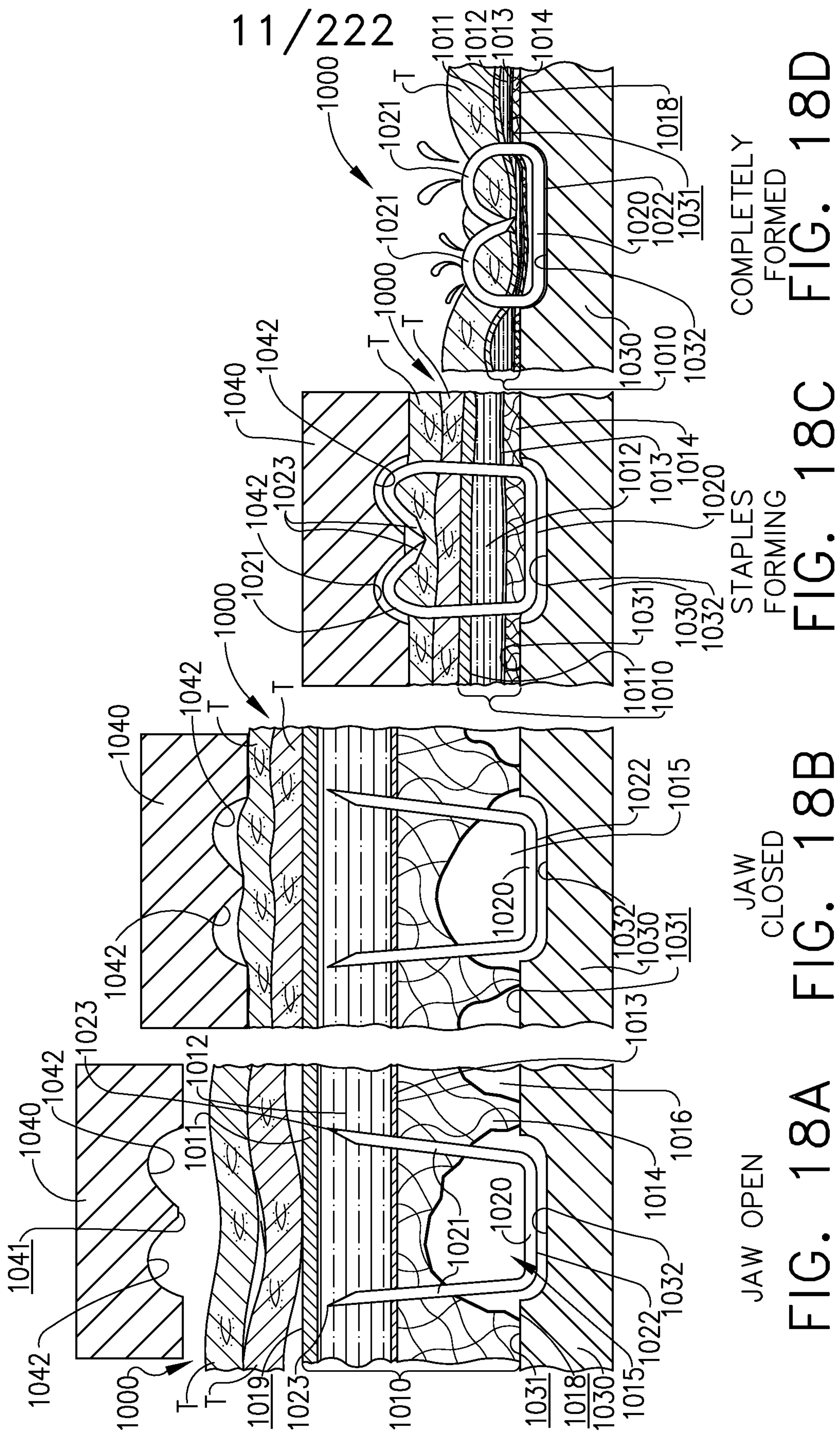


FIG. 17



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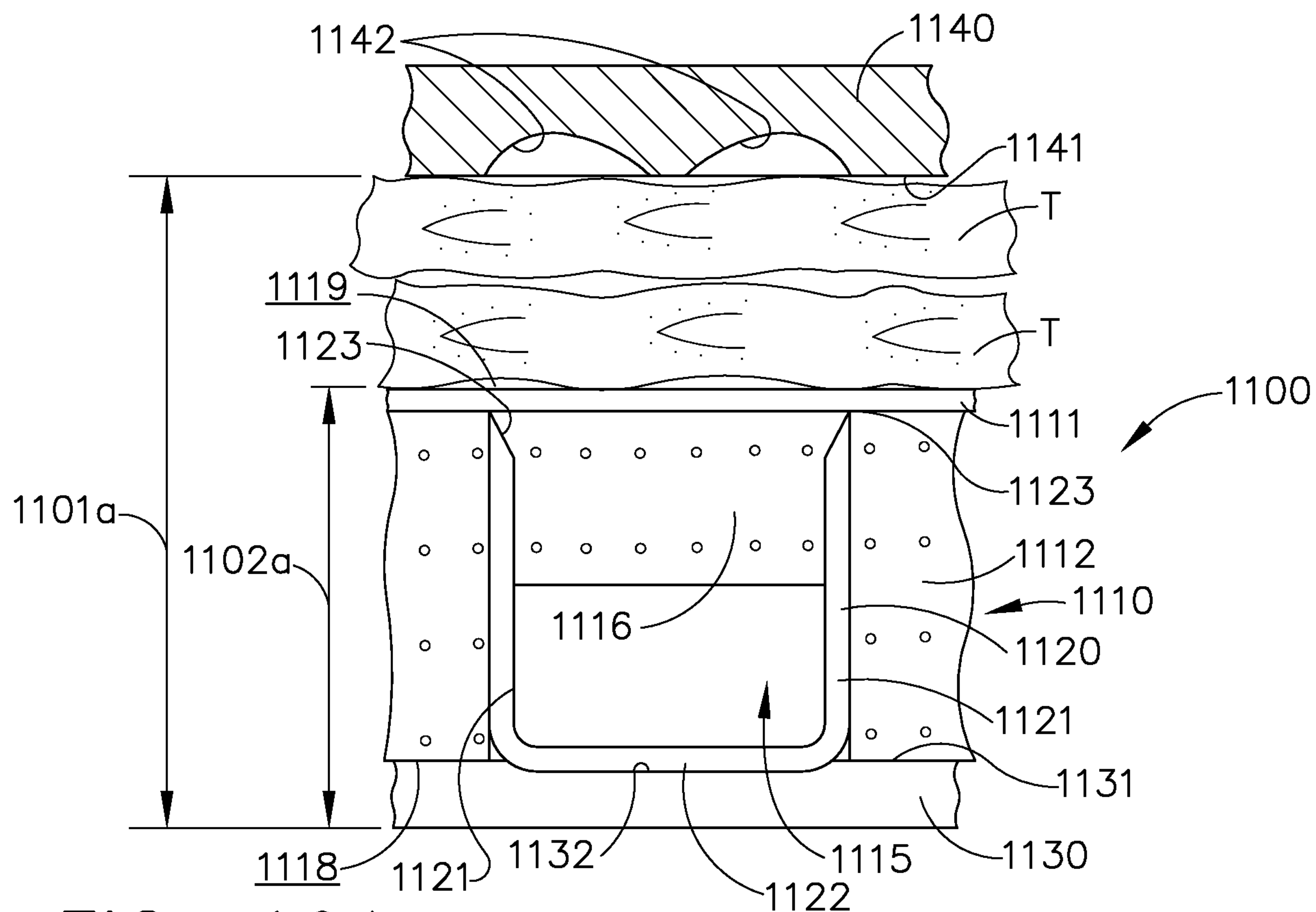


FIG. 19A

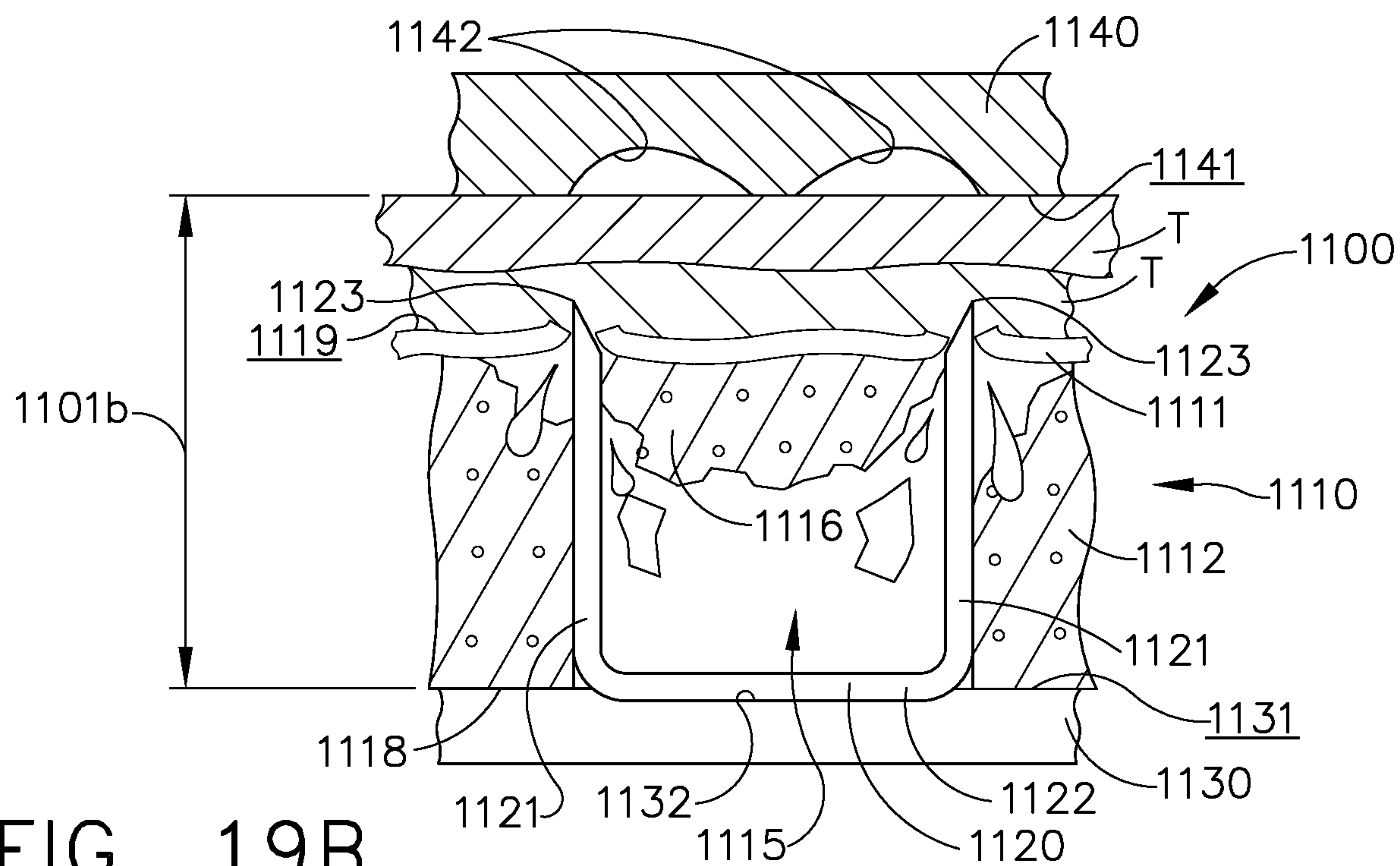


FIG. 19B

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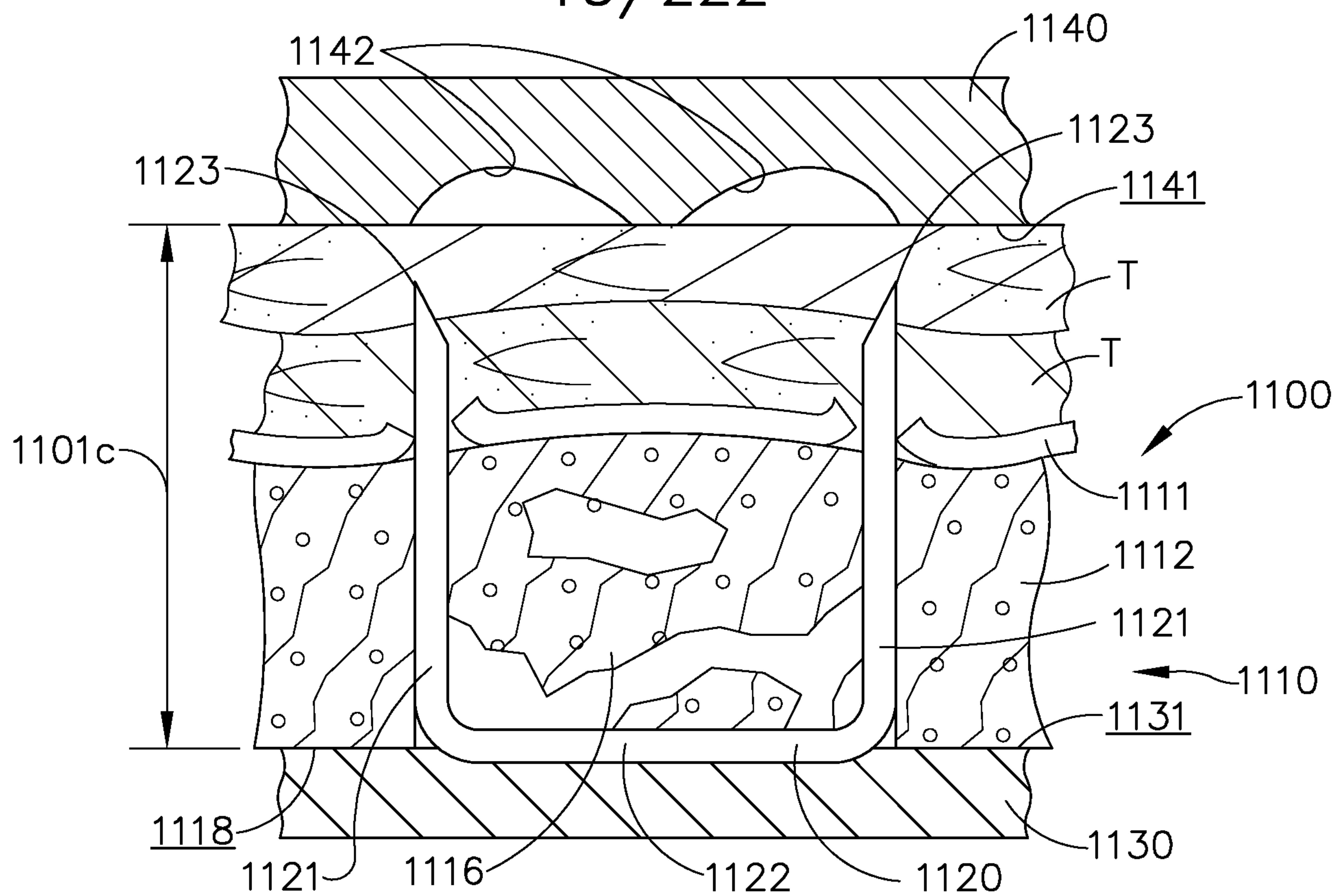


FIG. 19C

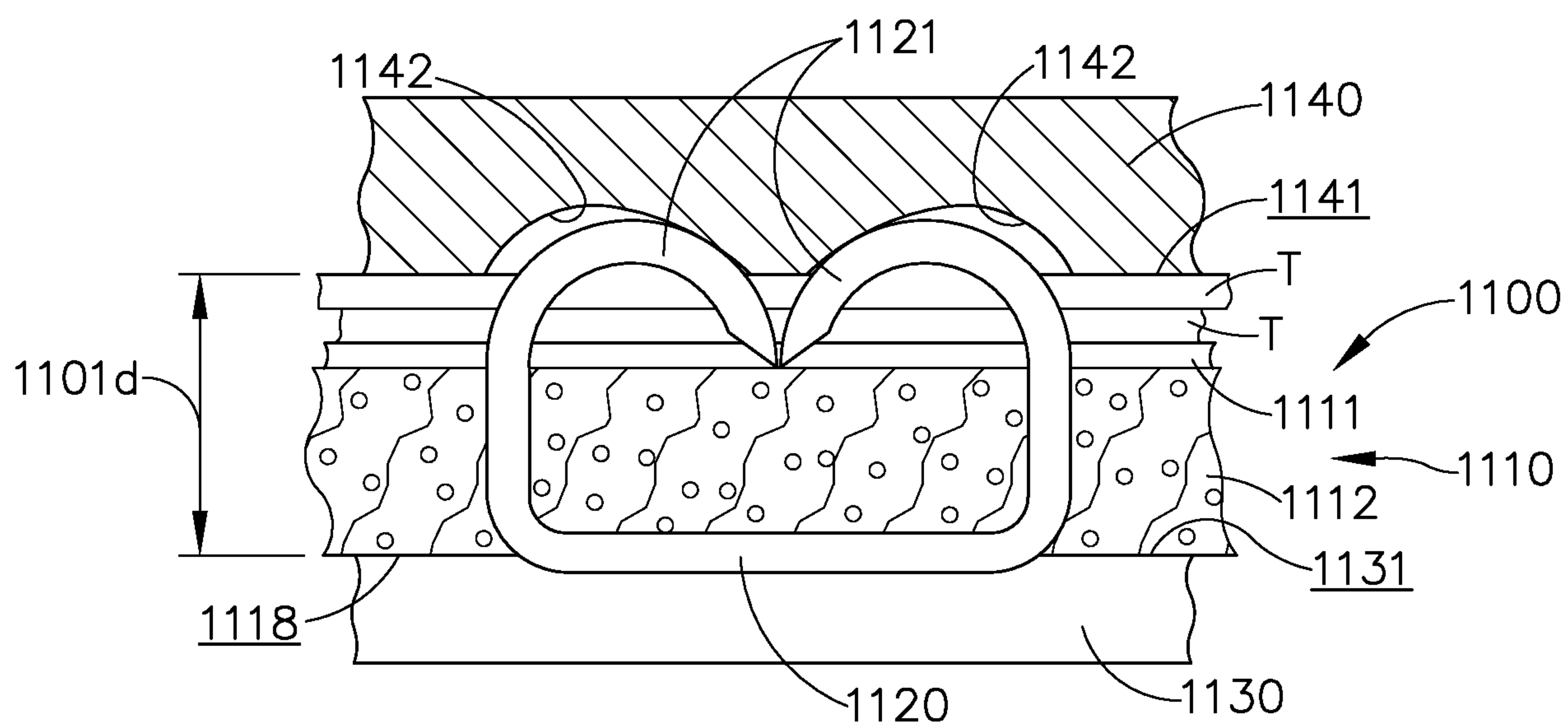


FIG. 19D

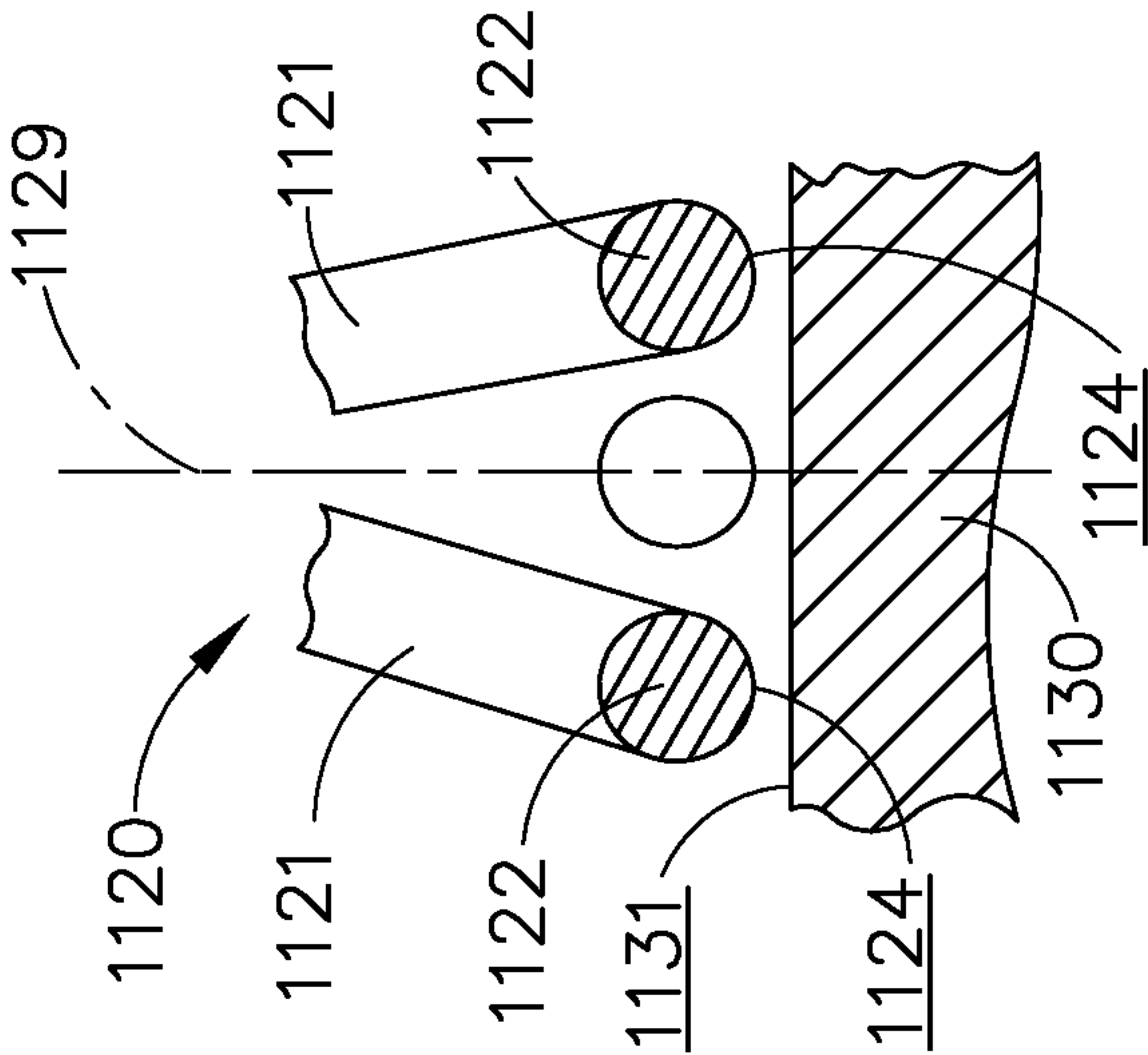


FIG. 20

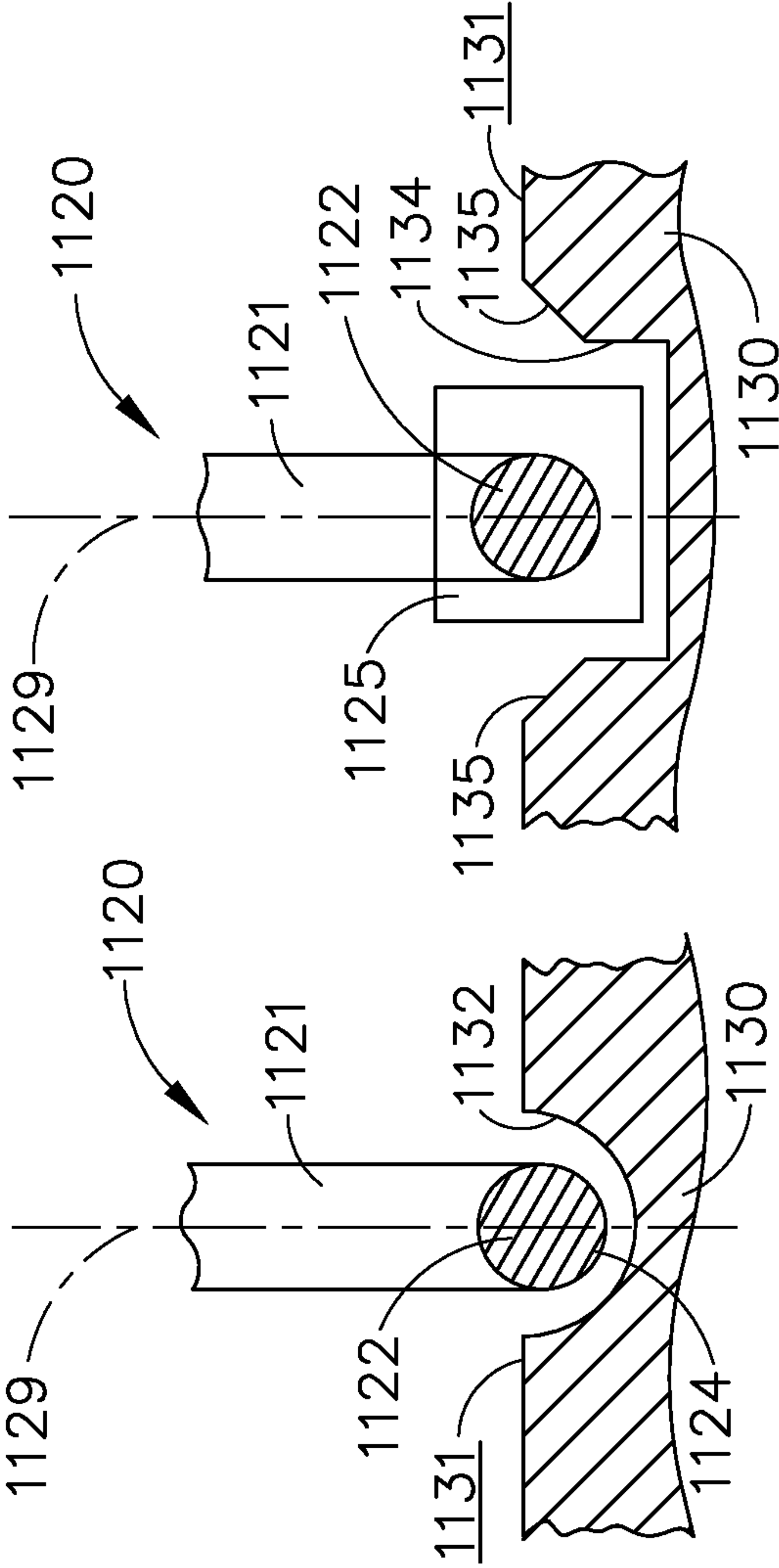


FIG. 21

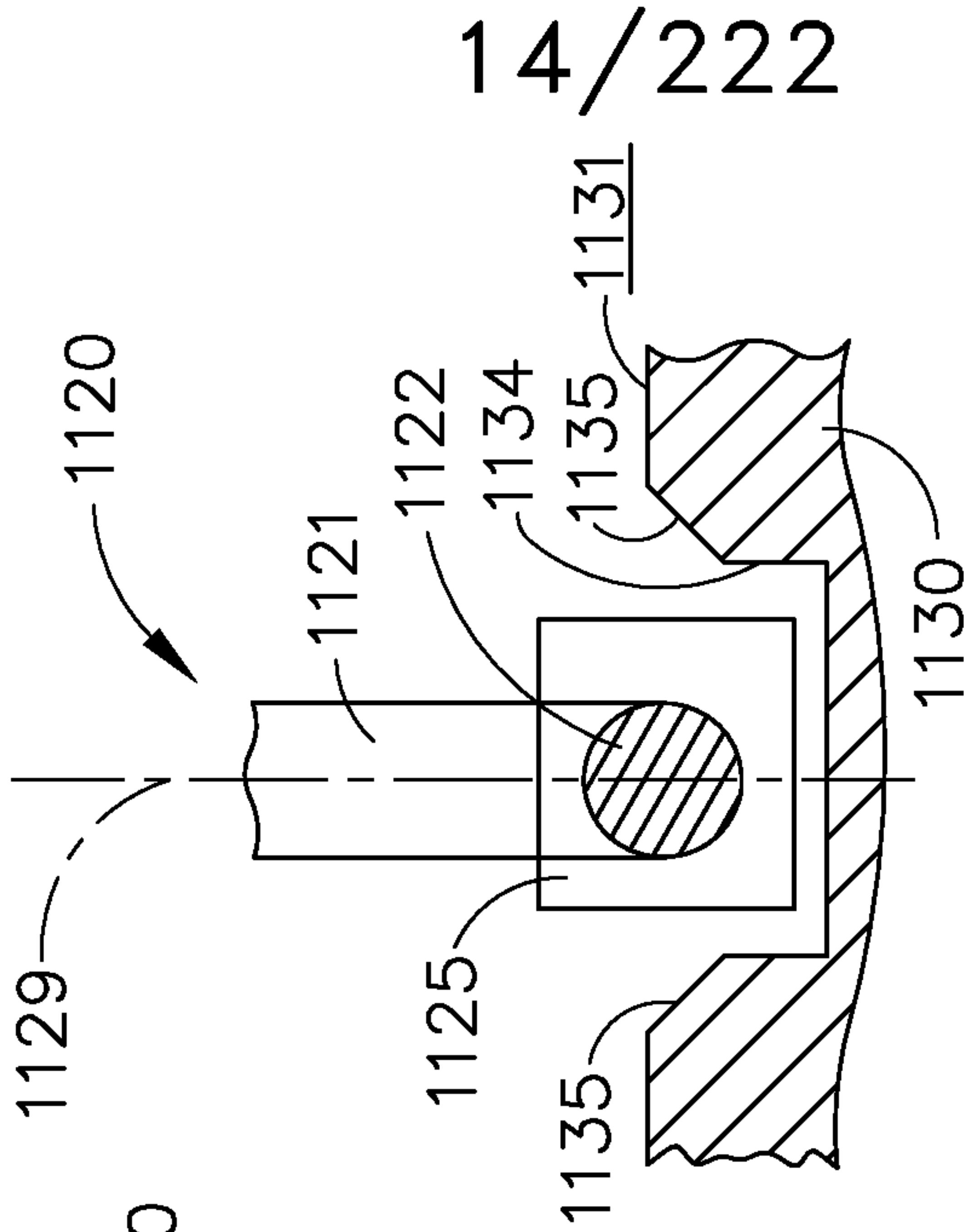


FIG. 22

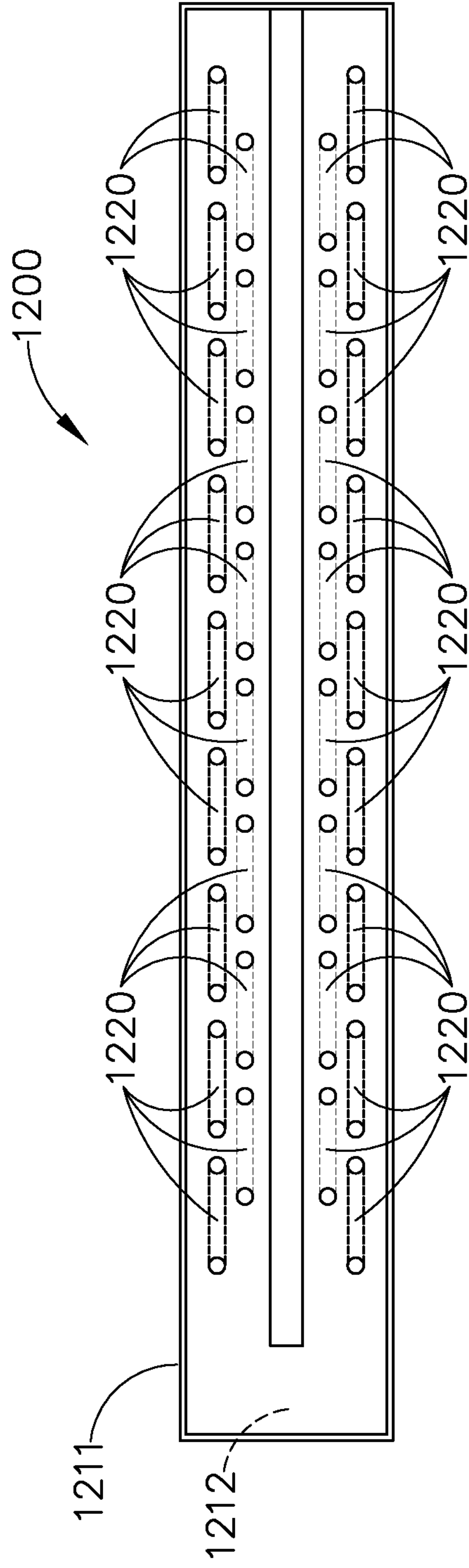


FIG. 23

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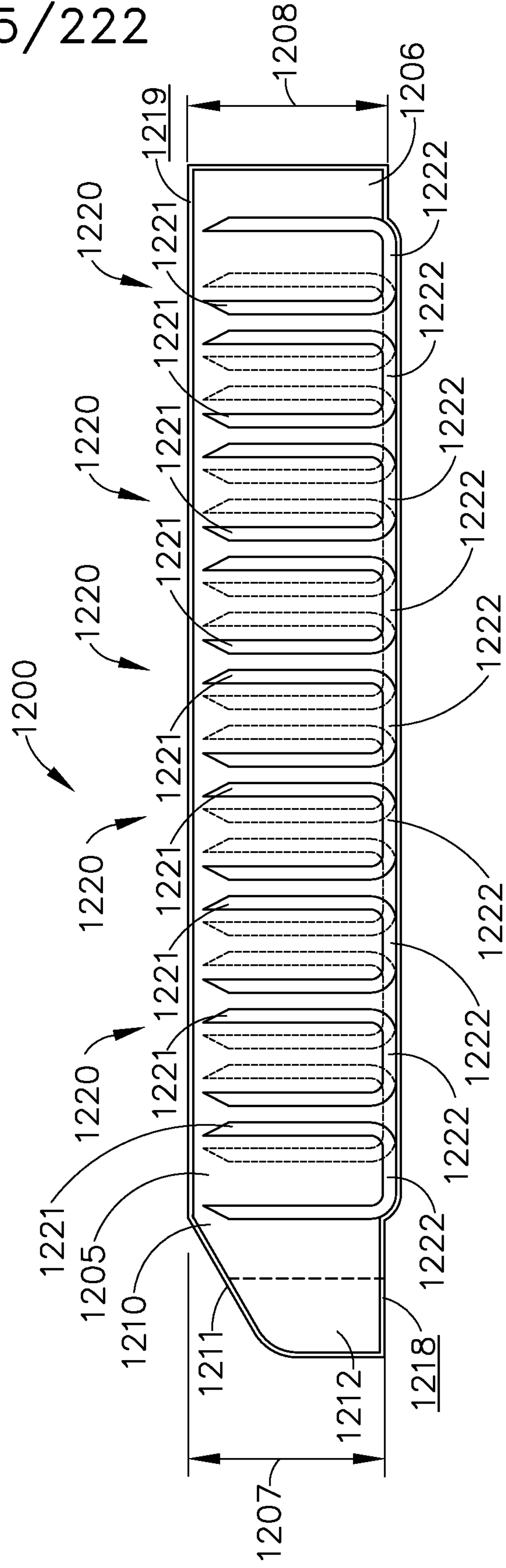
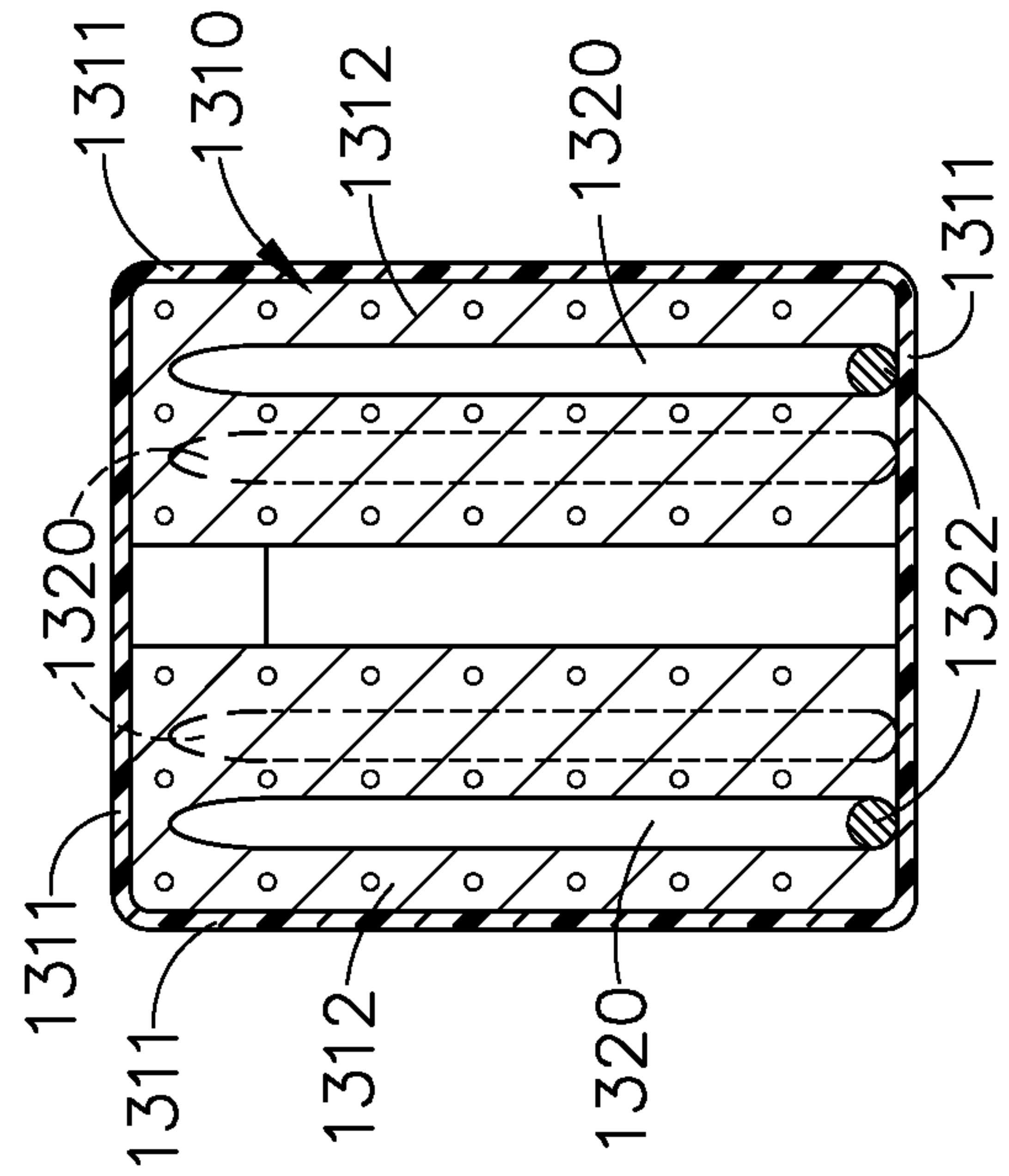
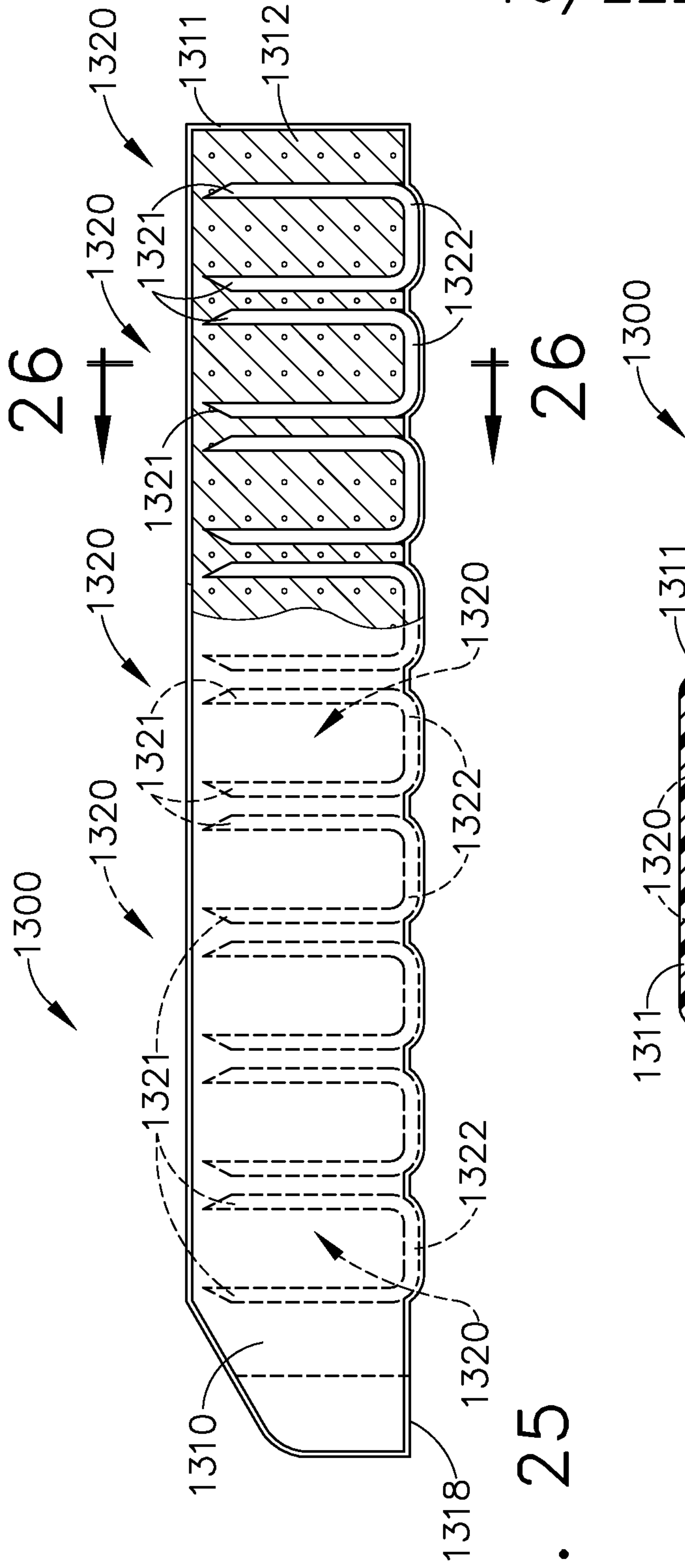


FIG. 24

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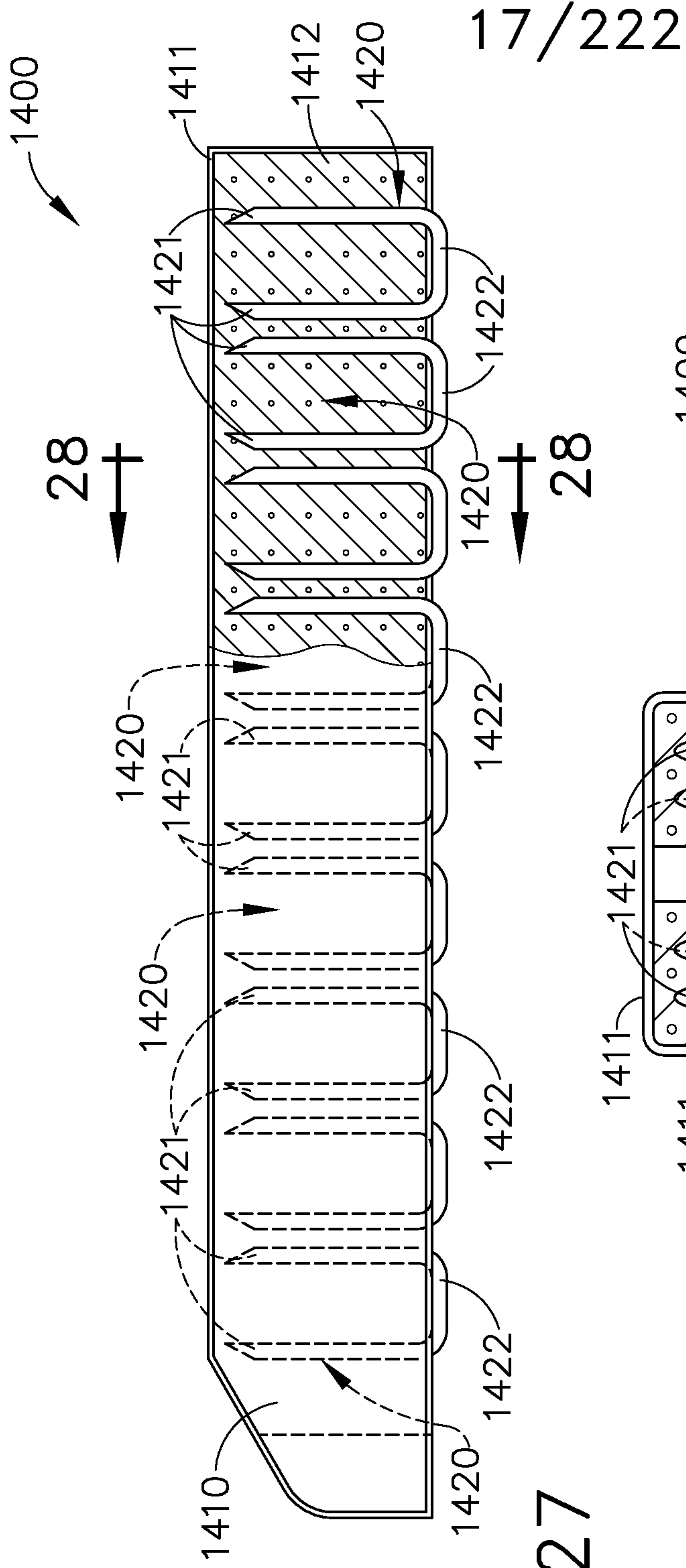


FIG. 27

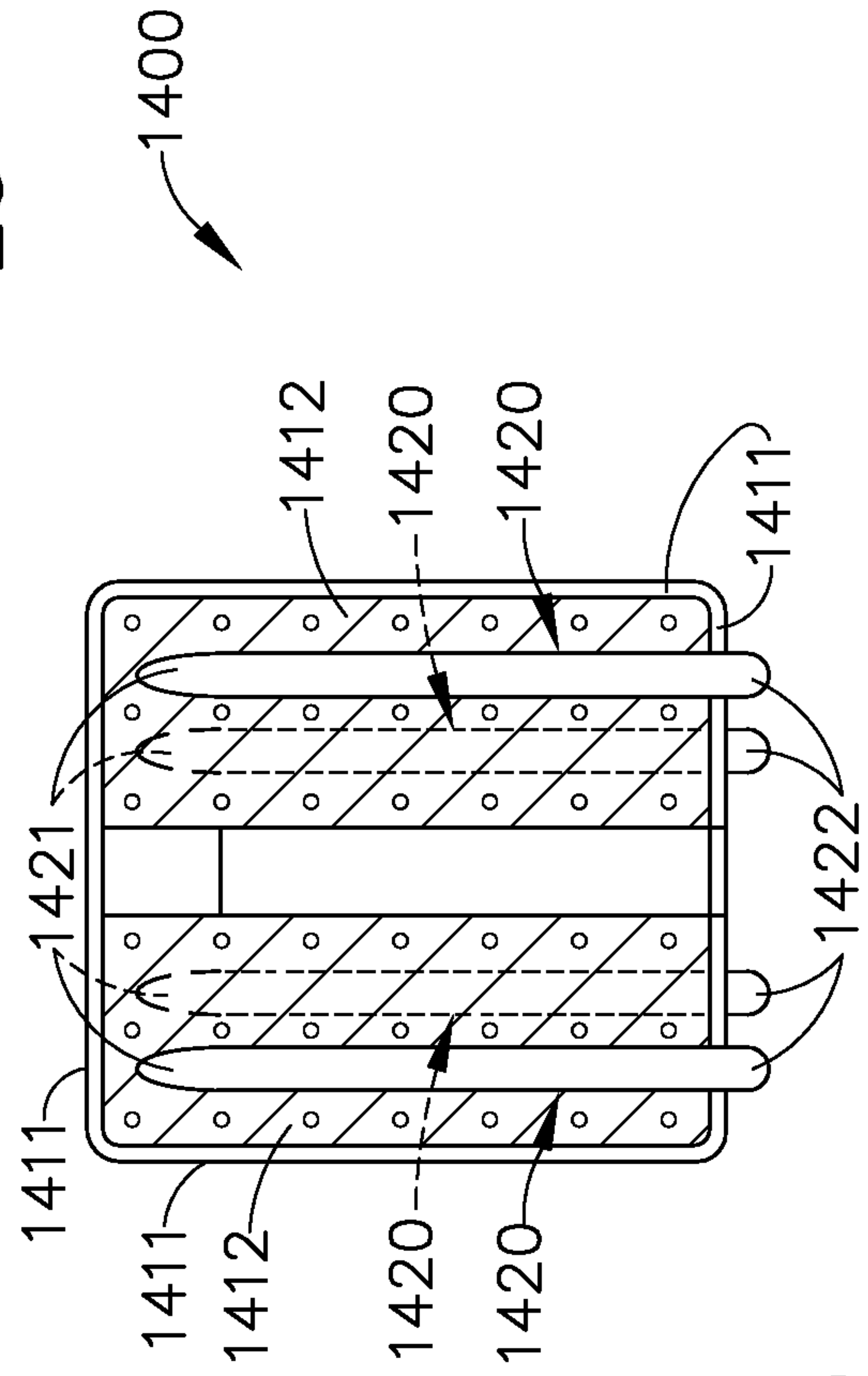


FIG. 28

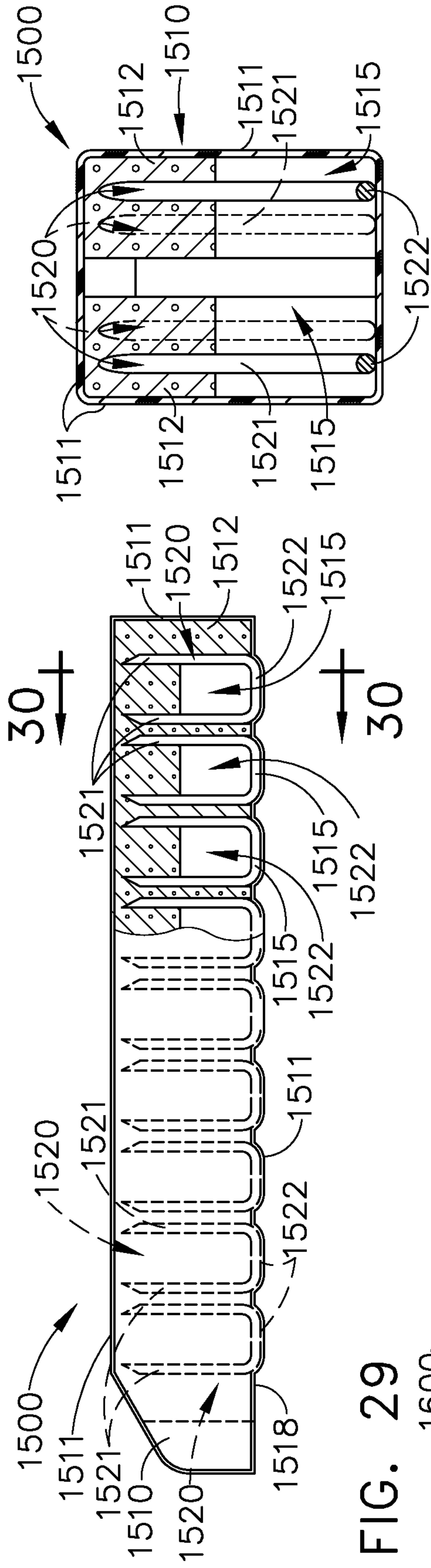


FIG. 30

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FIG. 31

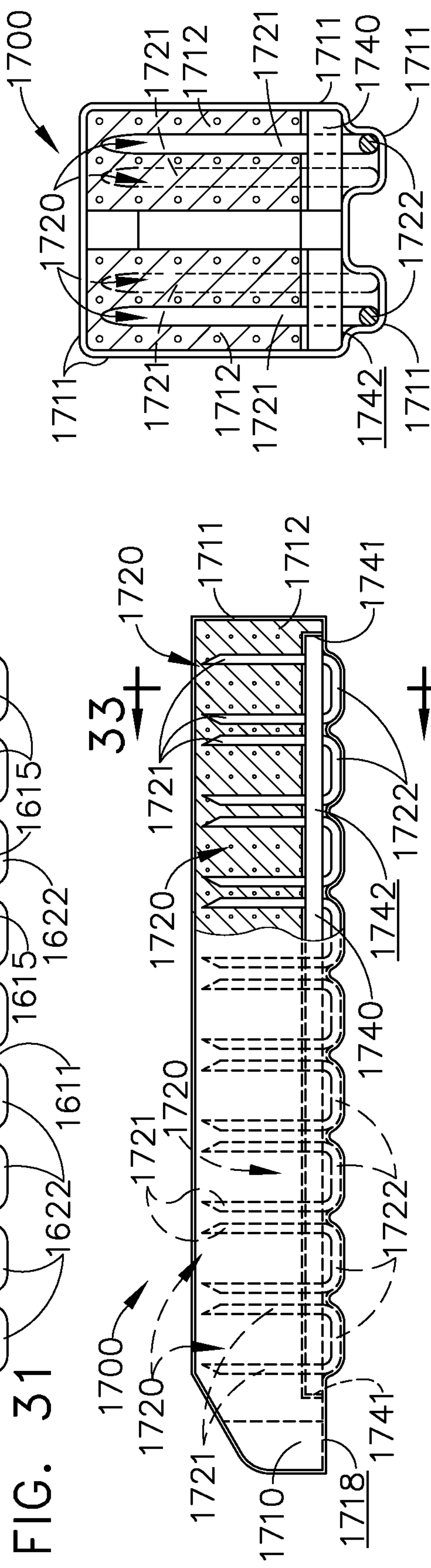
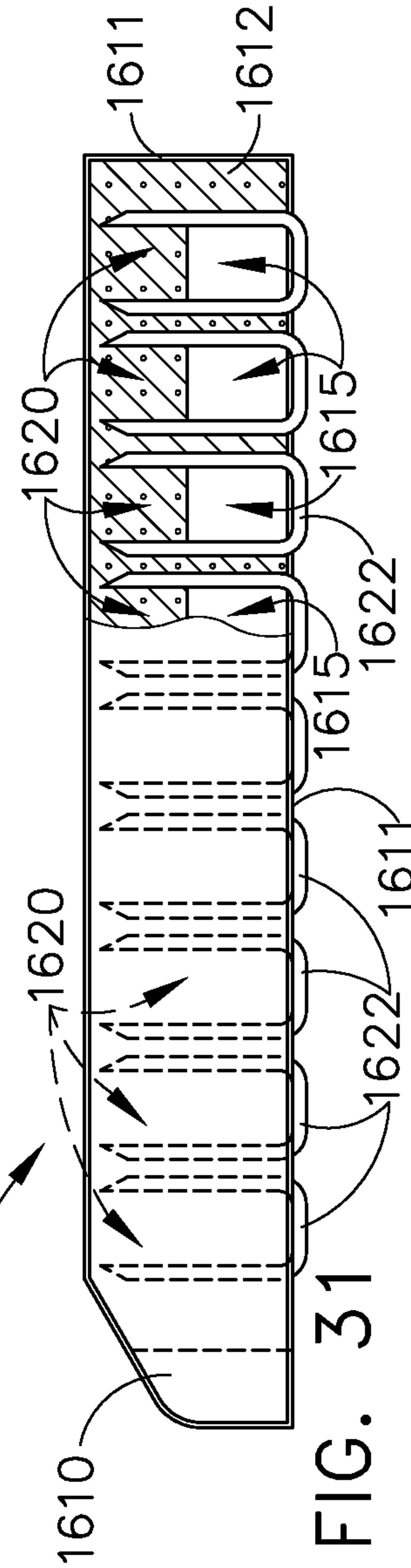


FIG. 33

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FIG. 34

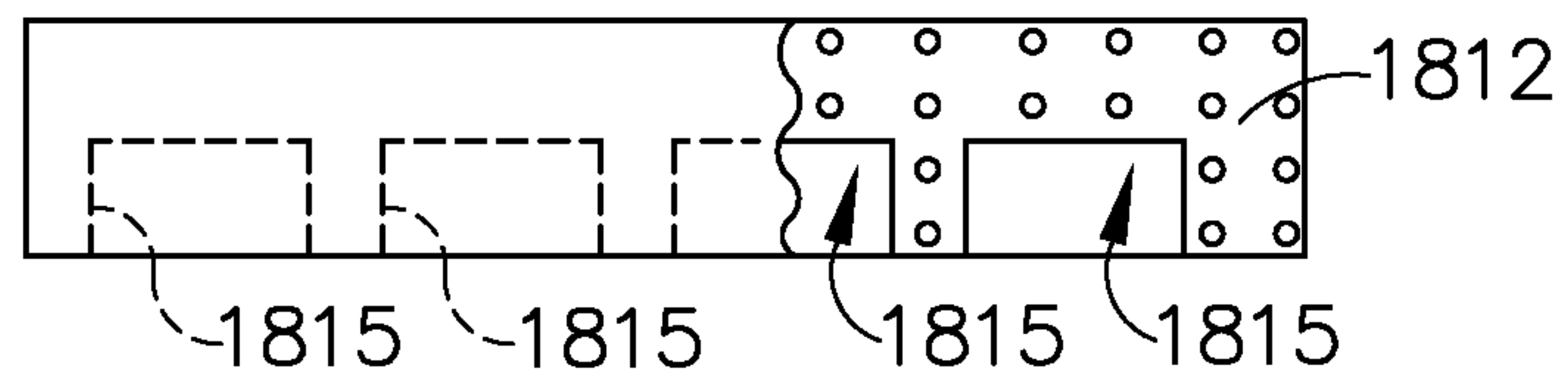


FIG. 35

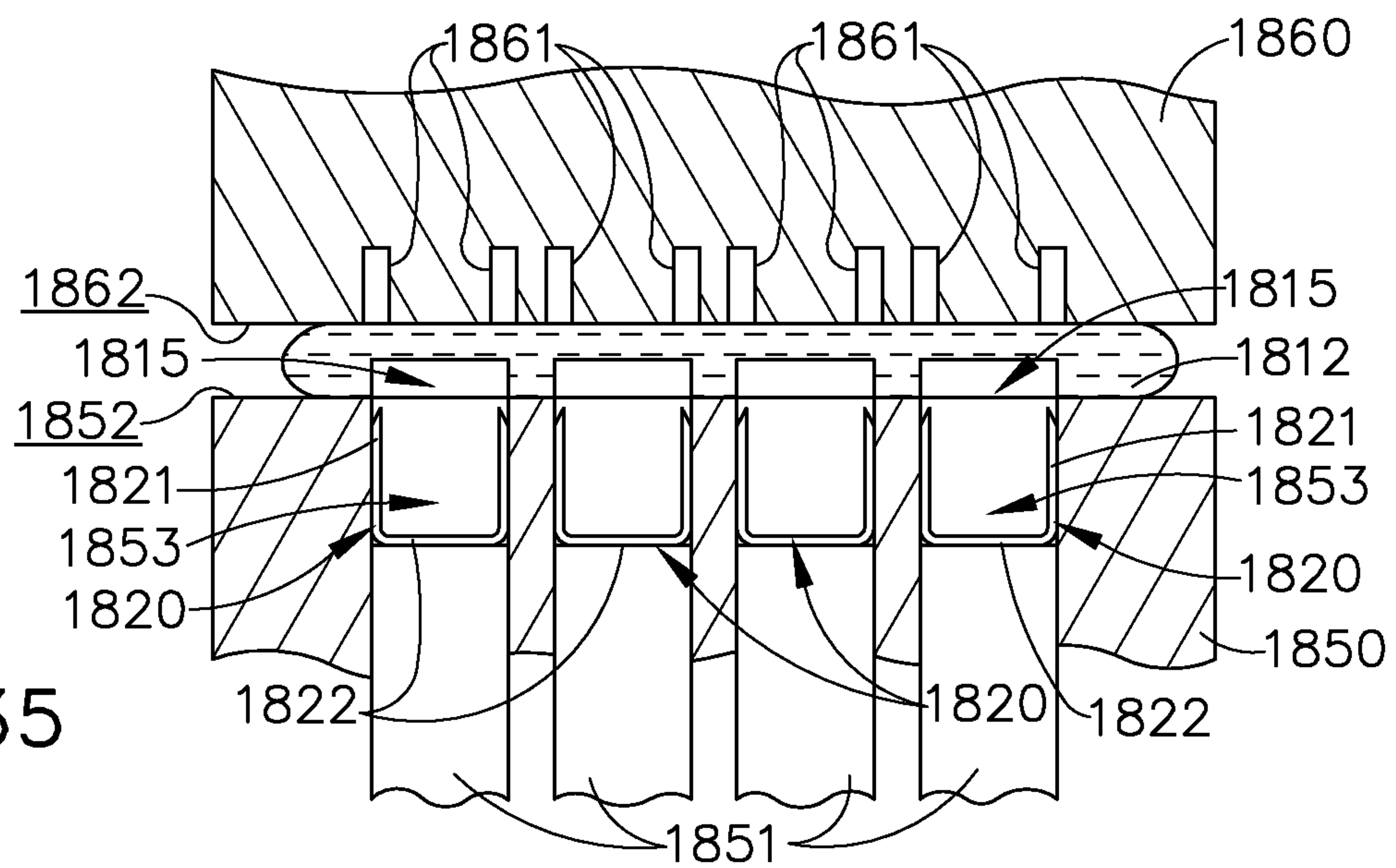
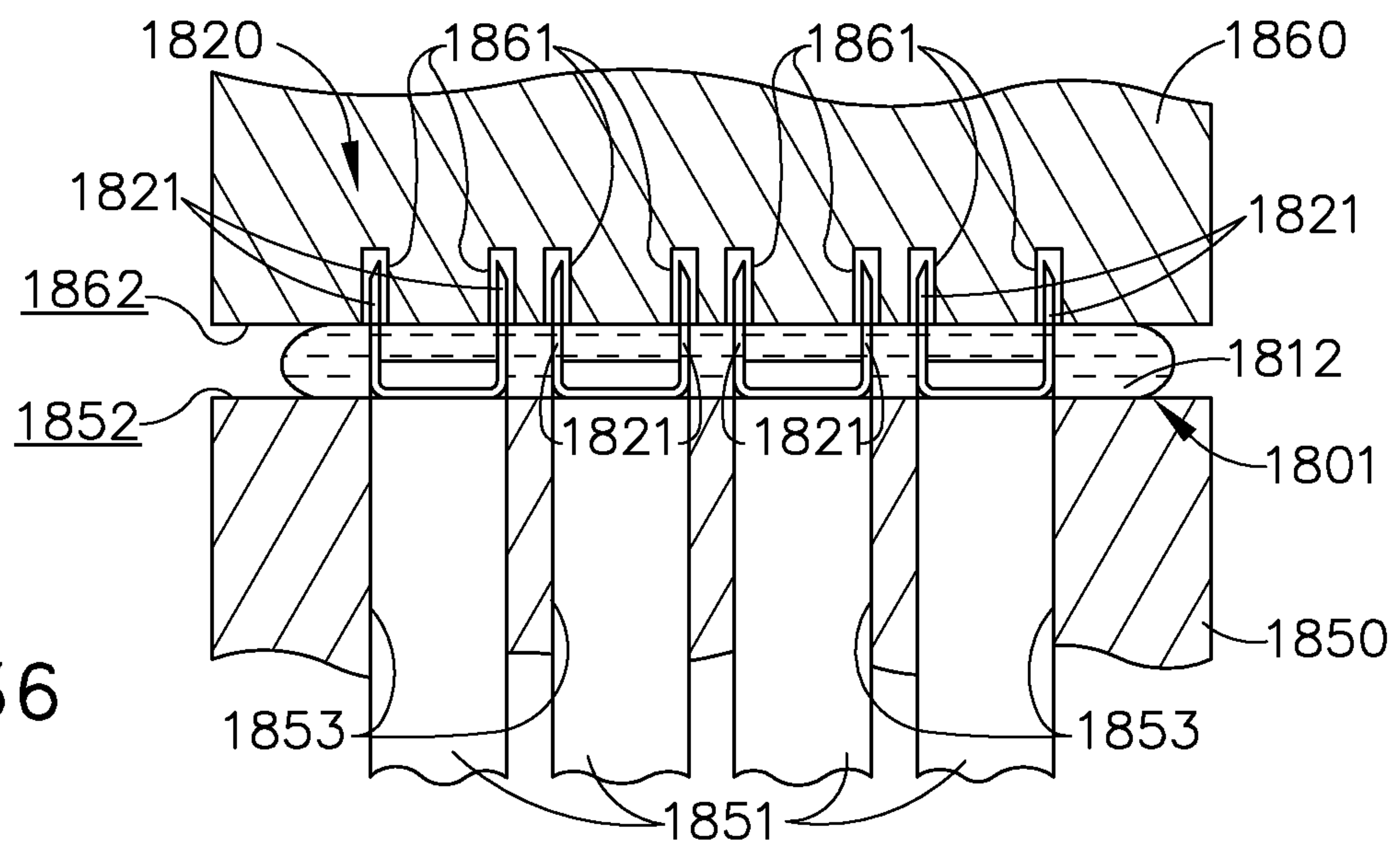


FIG. 36



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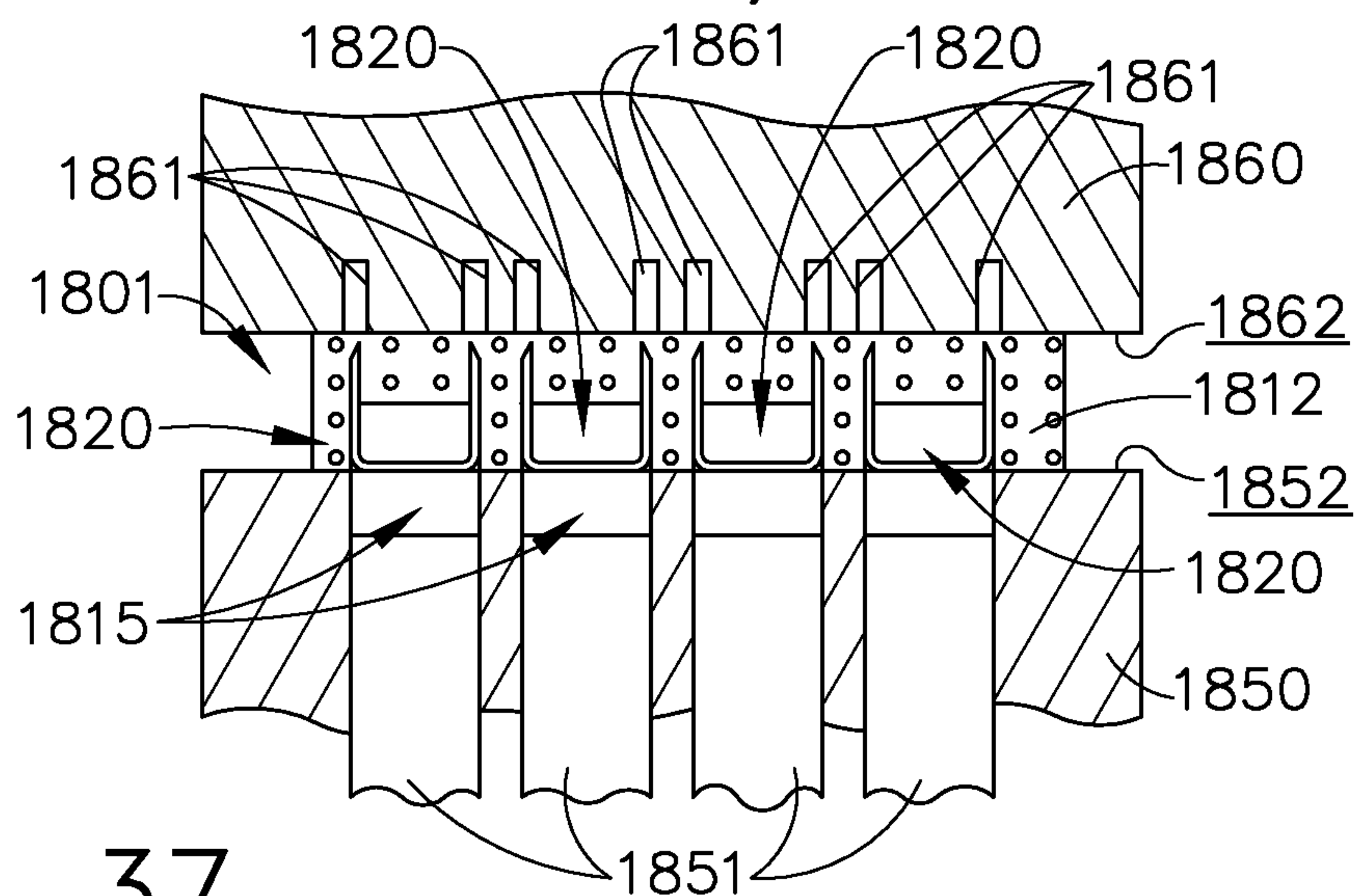


FIG. 37

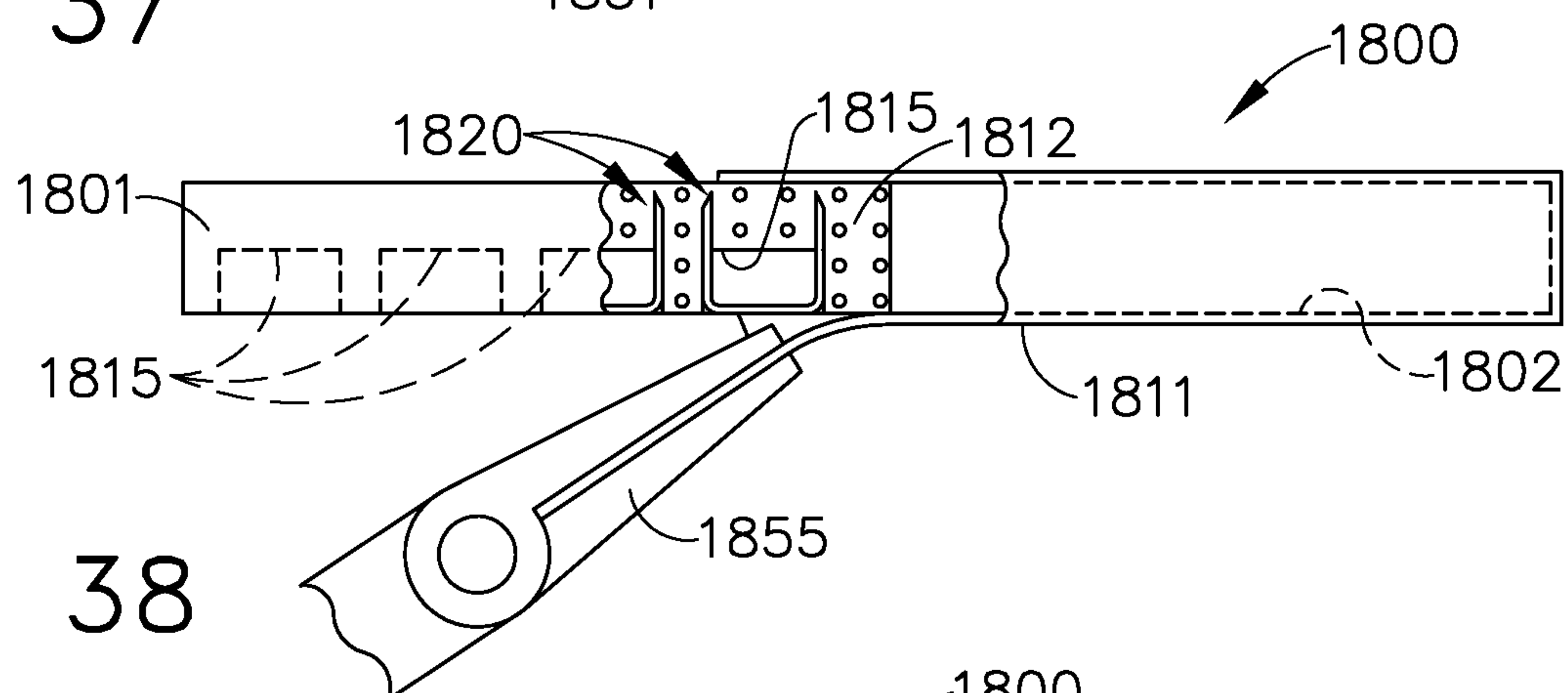


FIG. 38

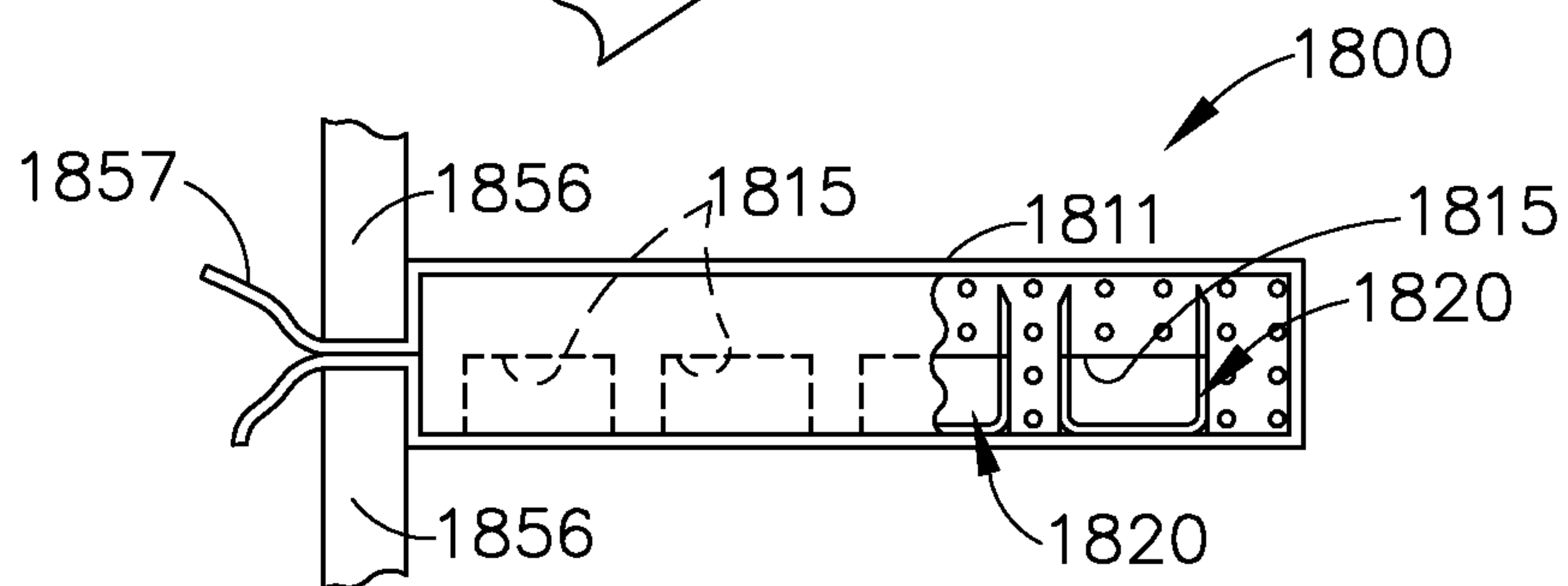


FIG. 39

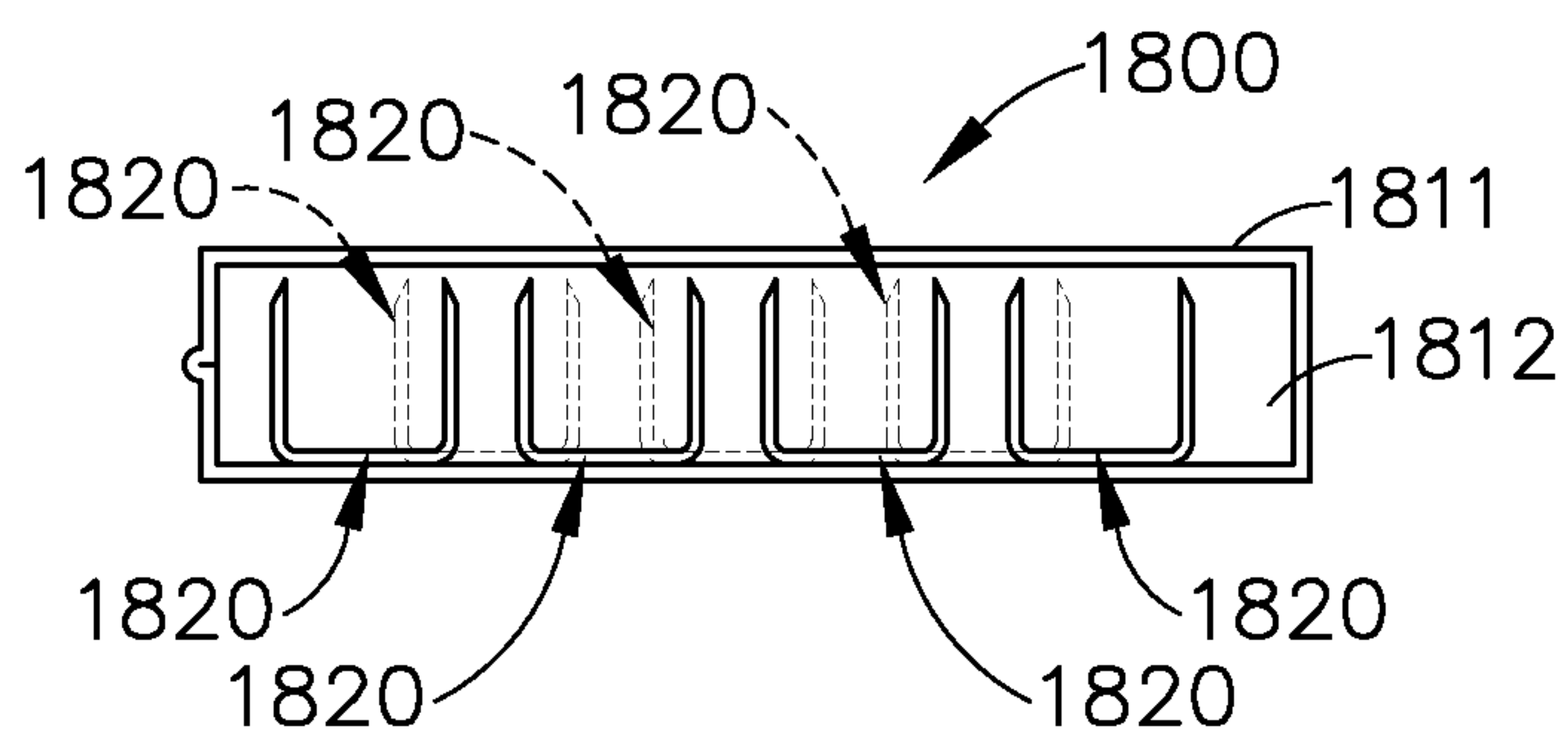


FIG. 40

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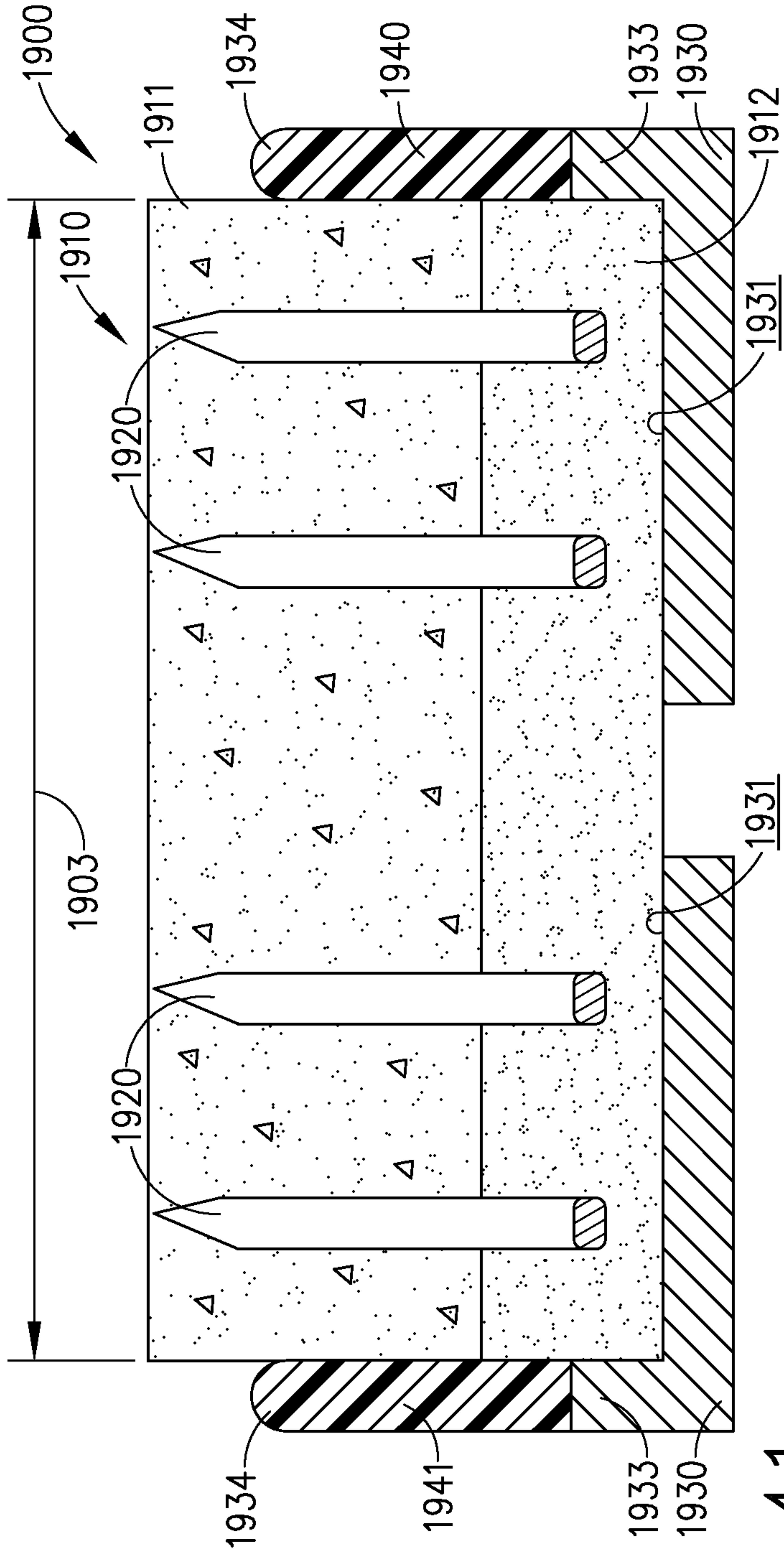


FIG. 41

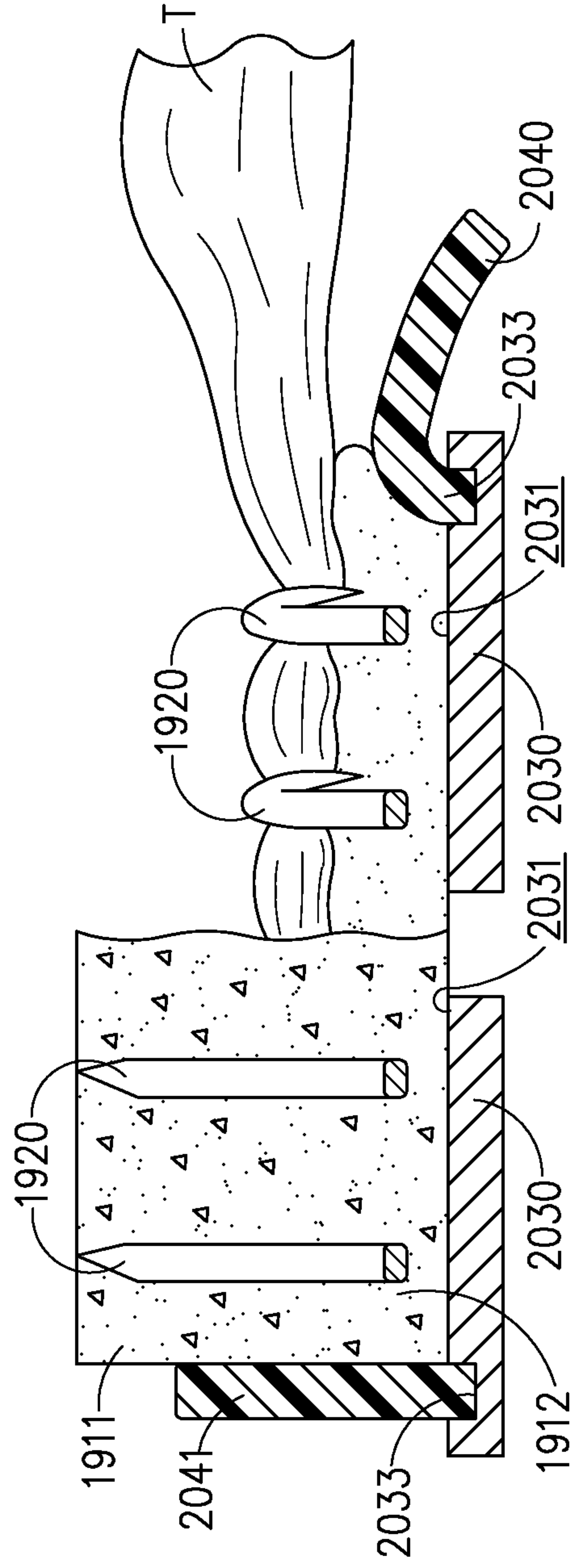


FIG. 42

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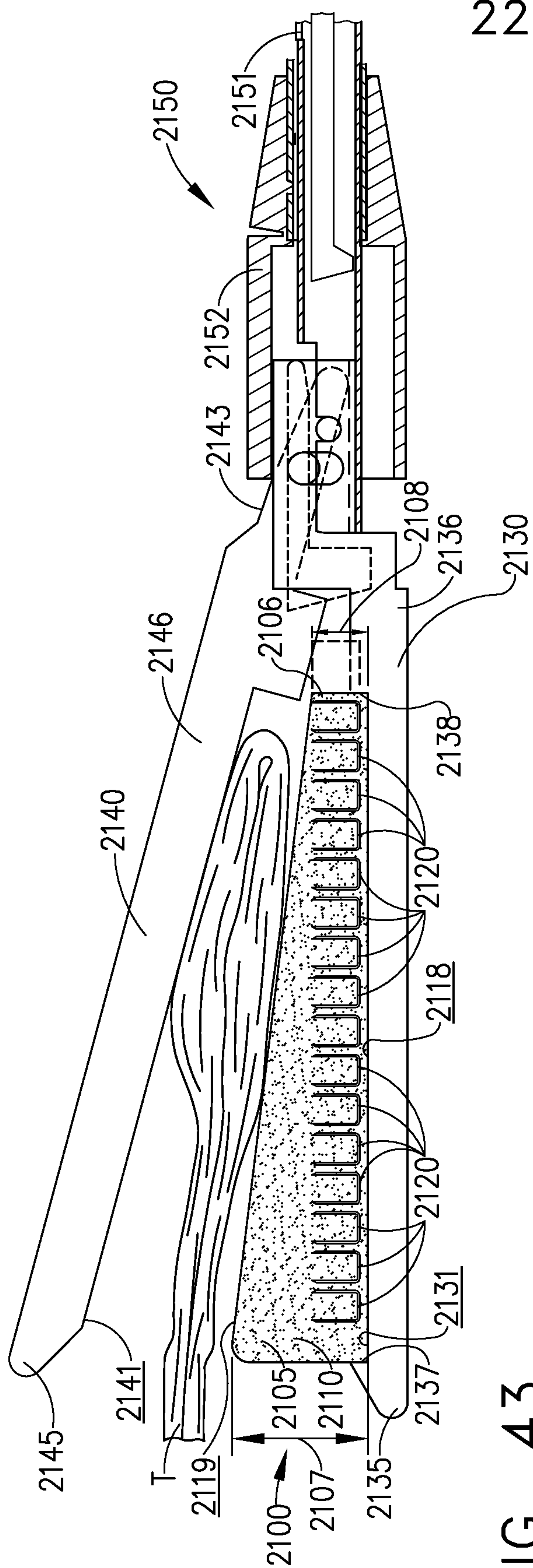


FIG. 43

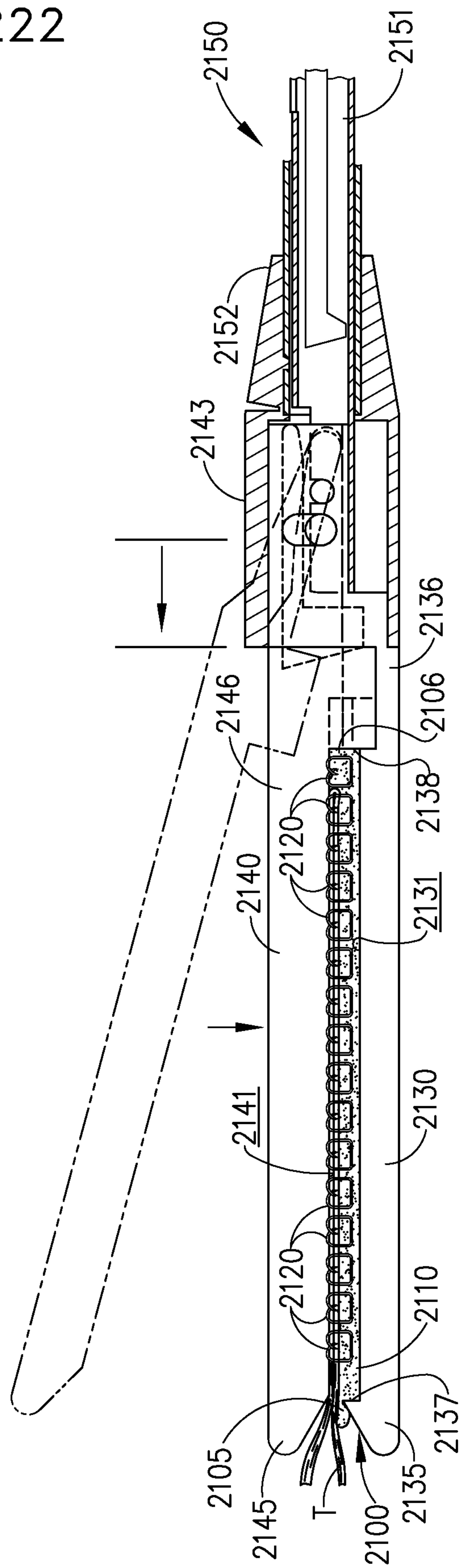


FIG. 44







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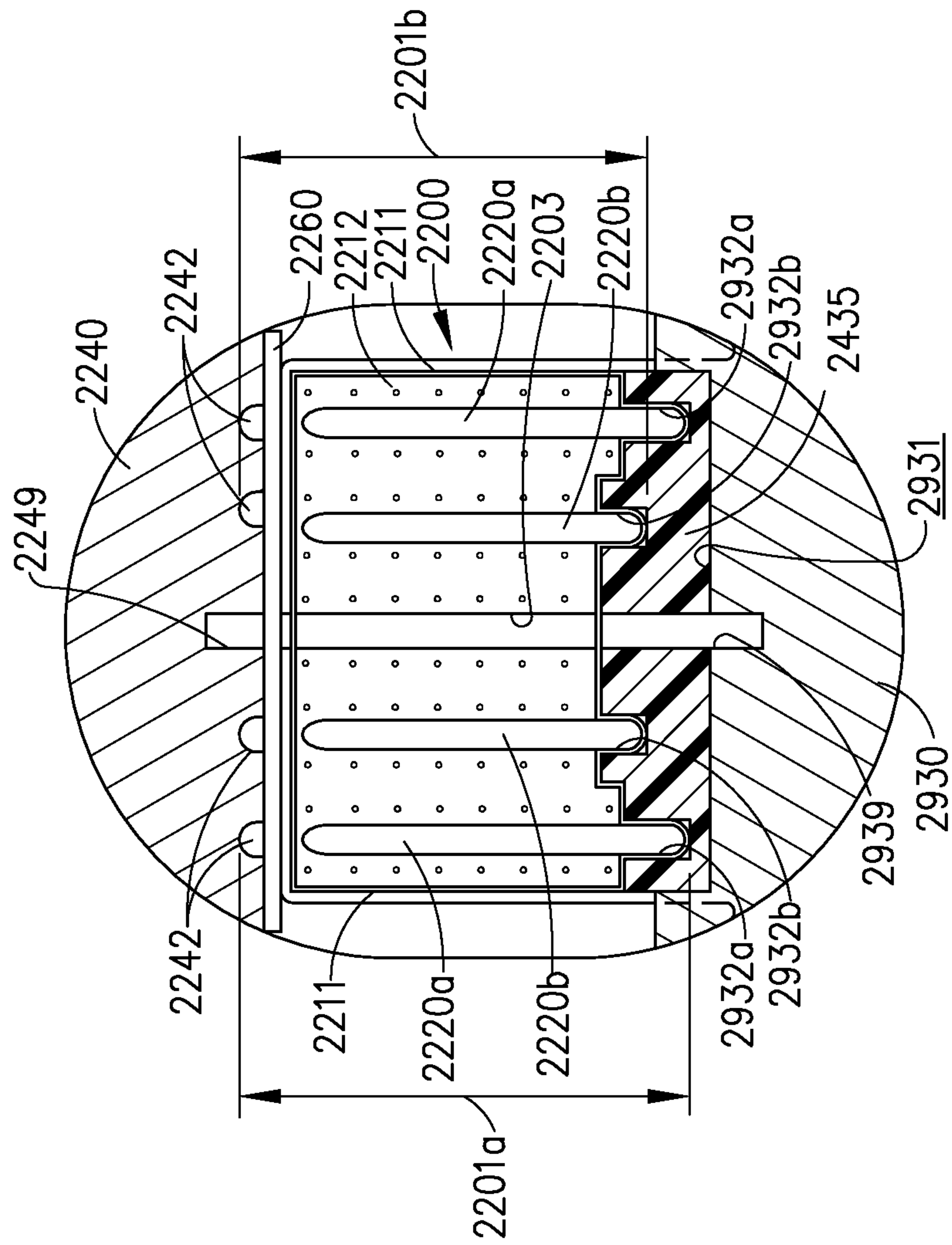


FIG. 54

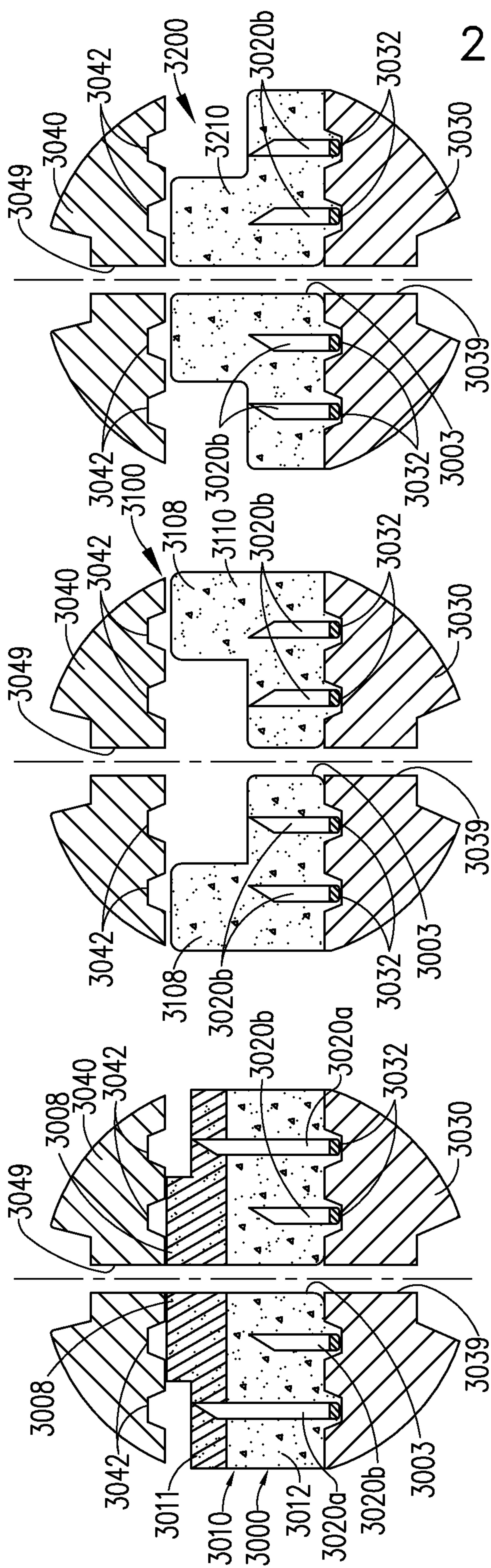


FIG. 55

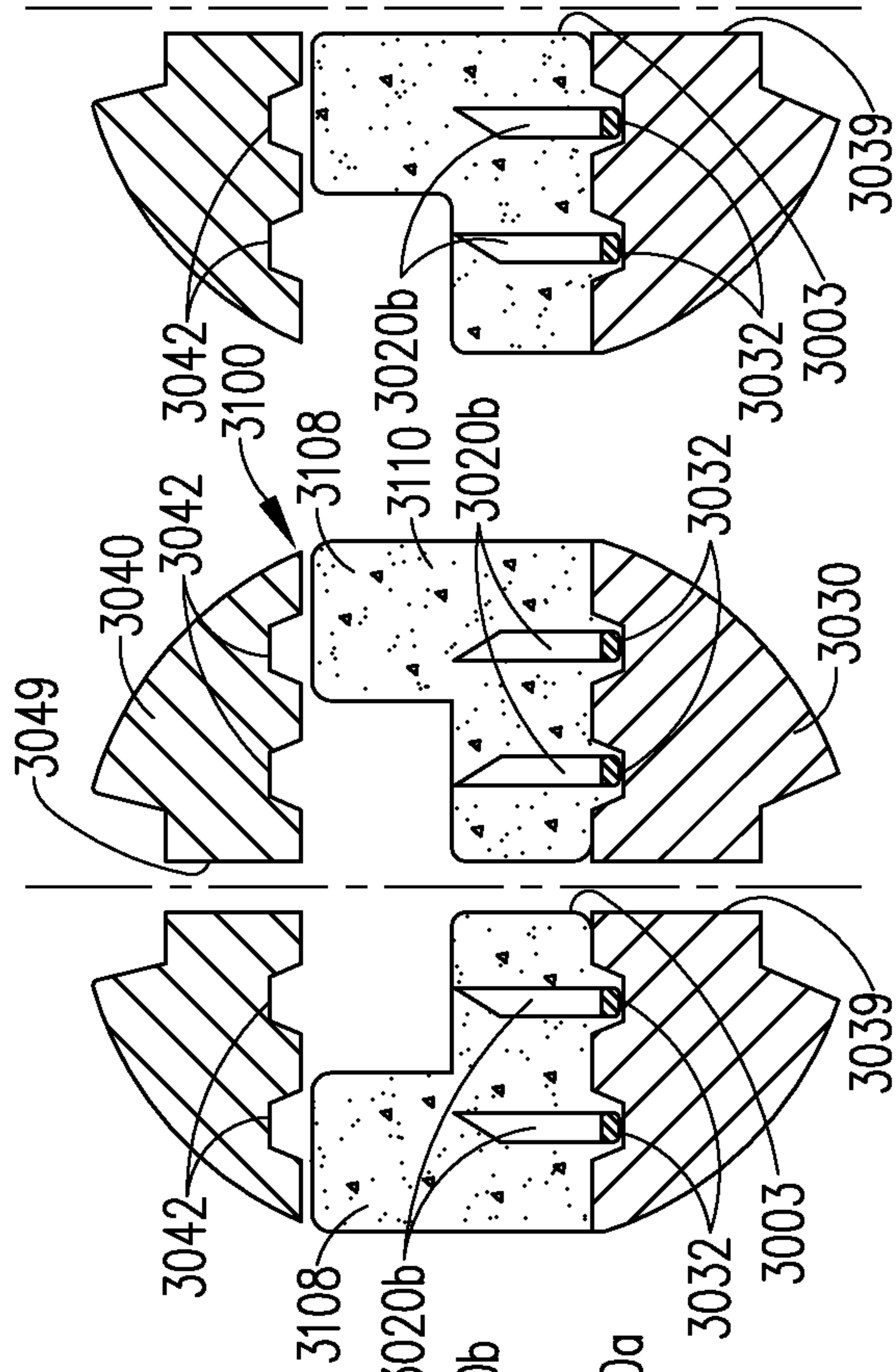


FIG. 56

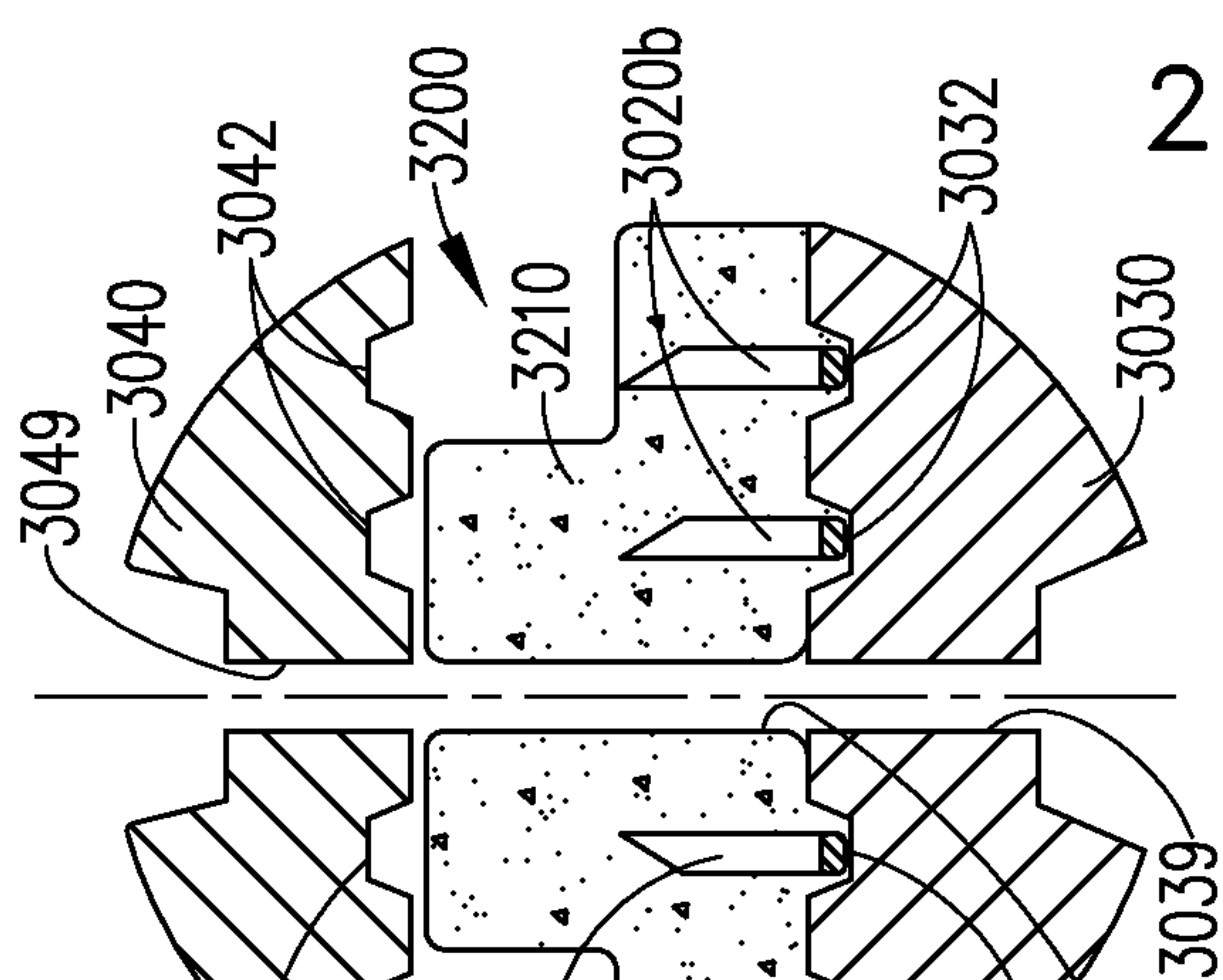


FIG. 57

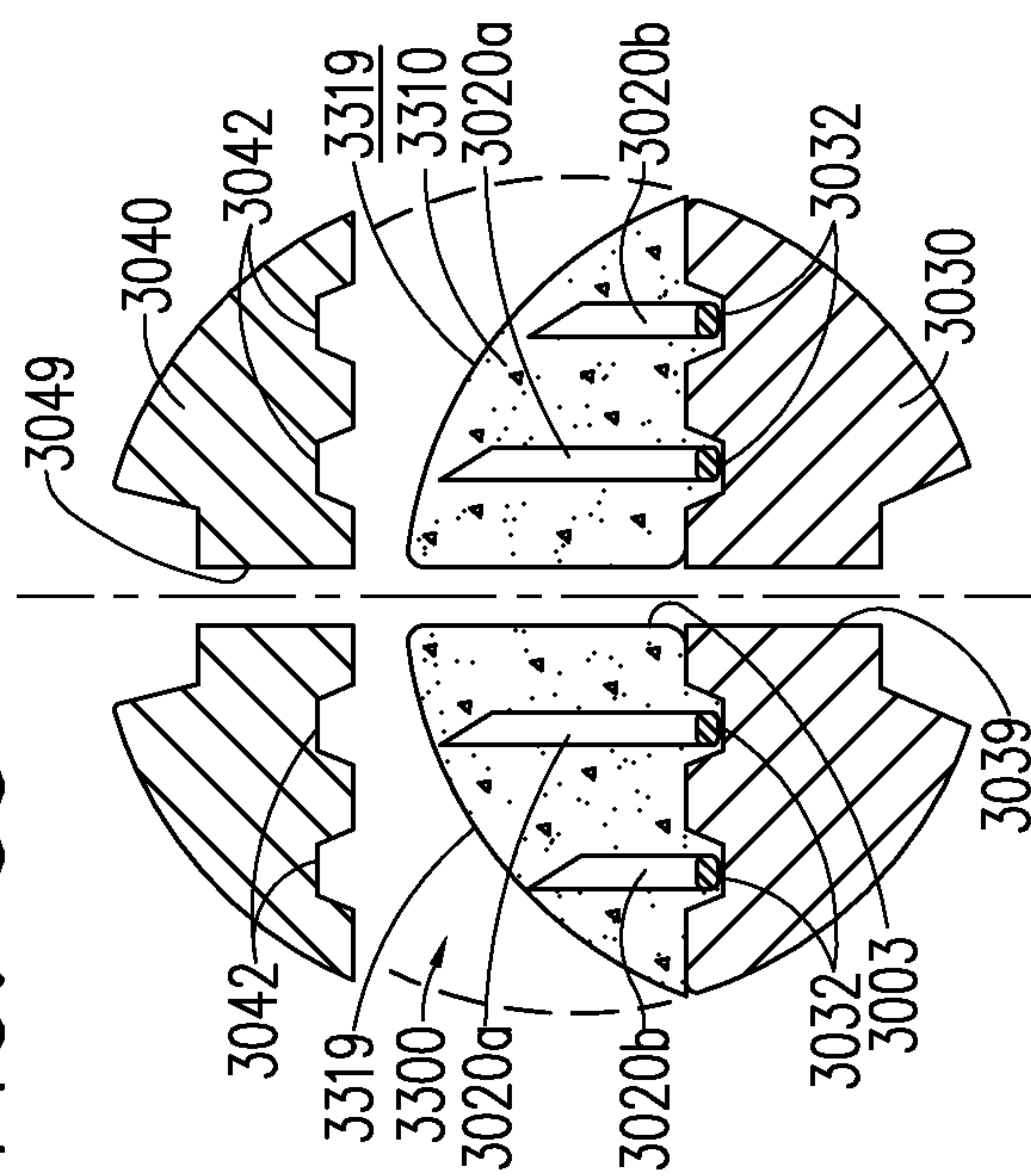


FIG. 58

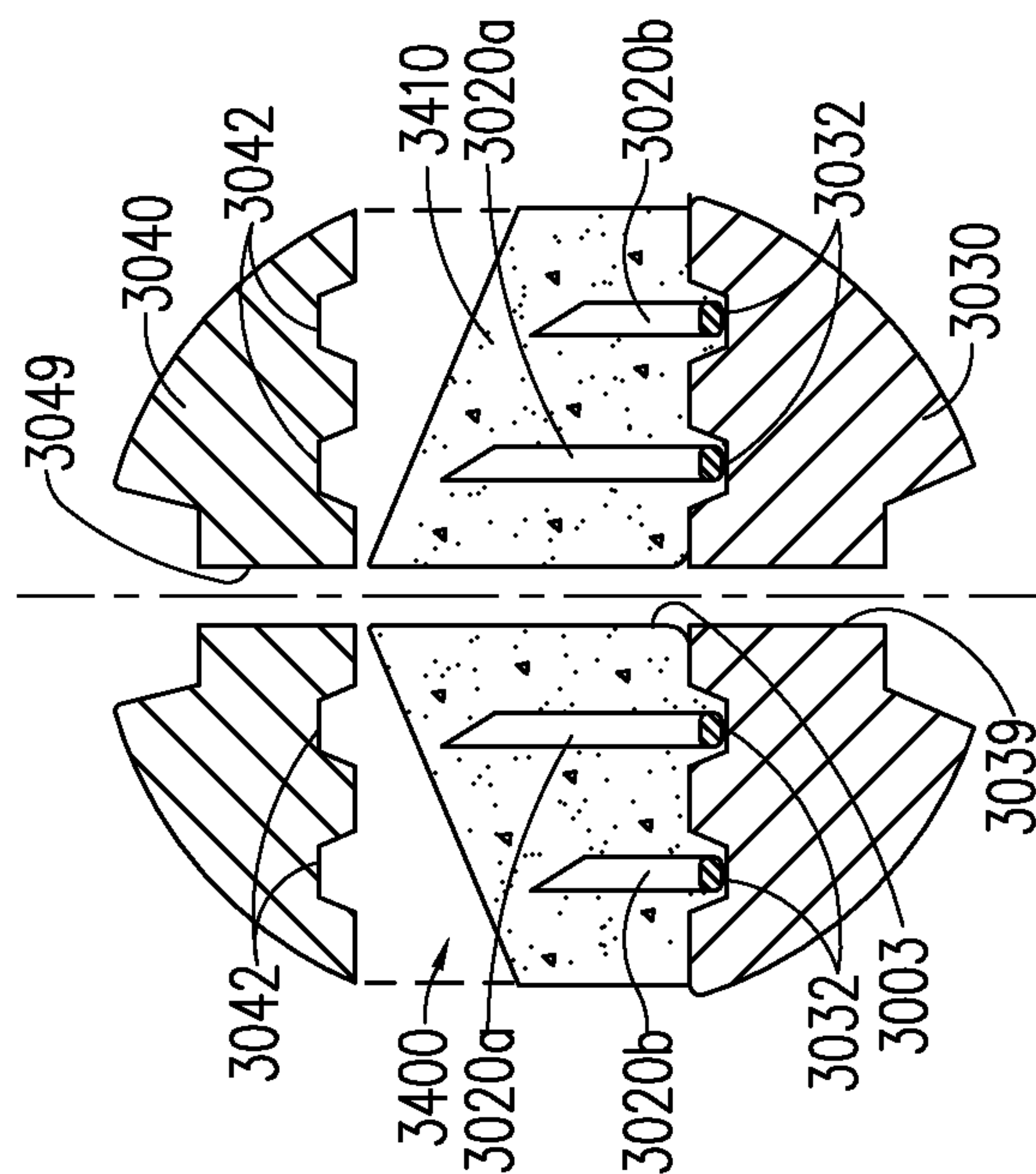
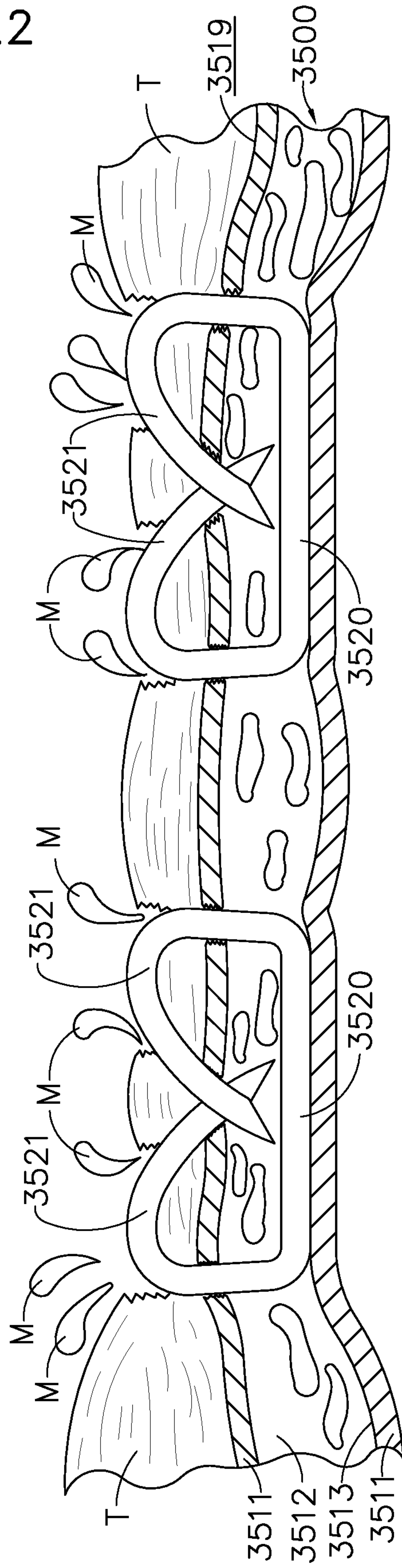
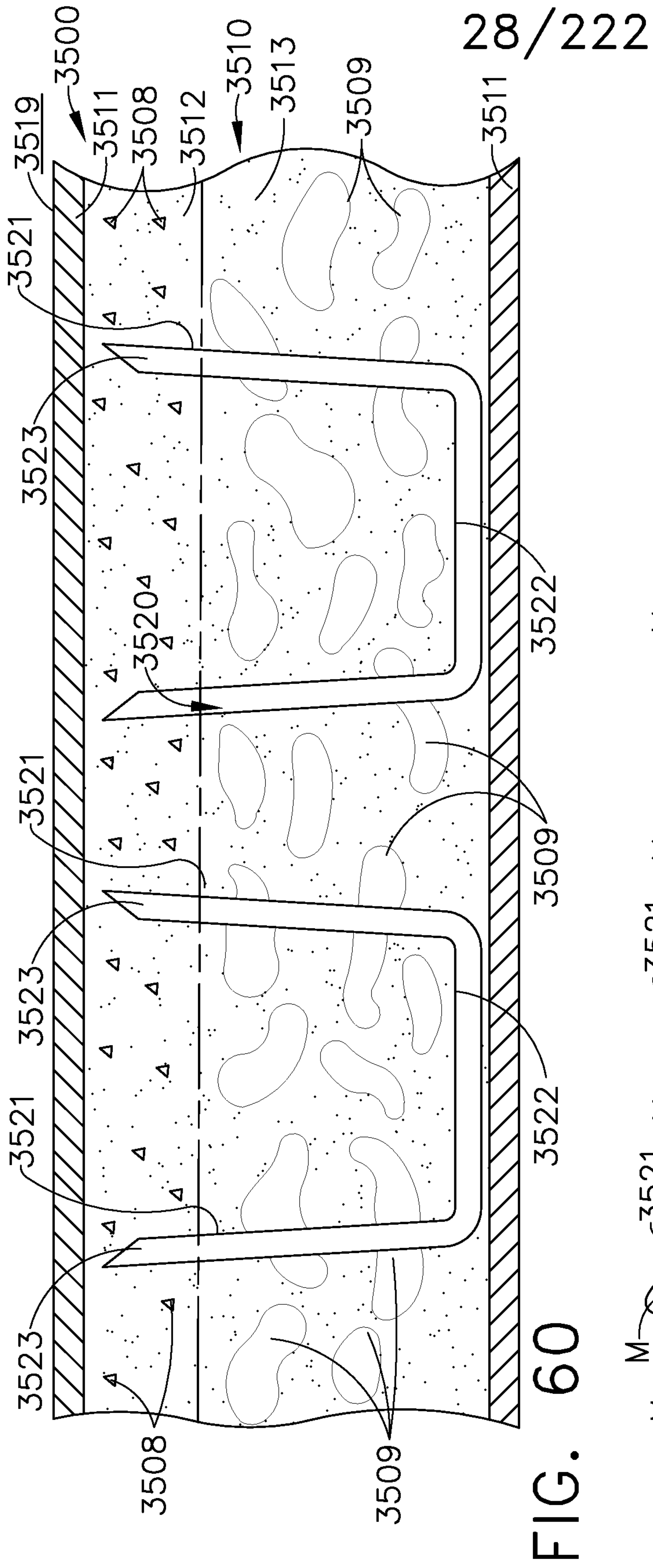
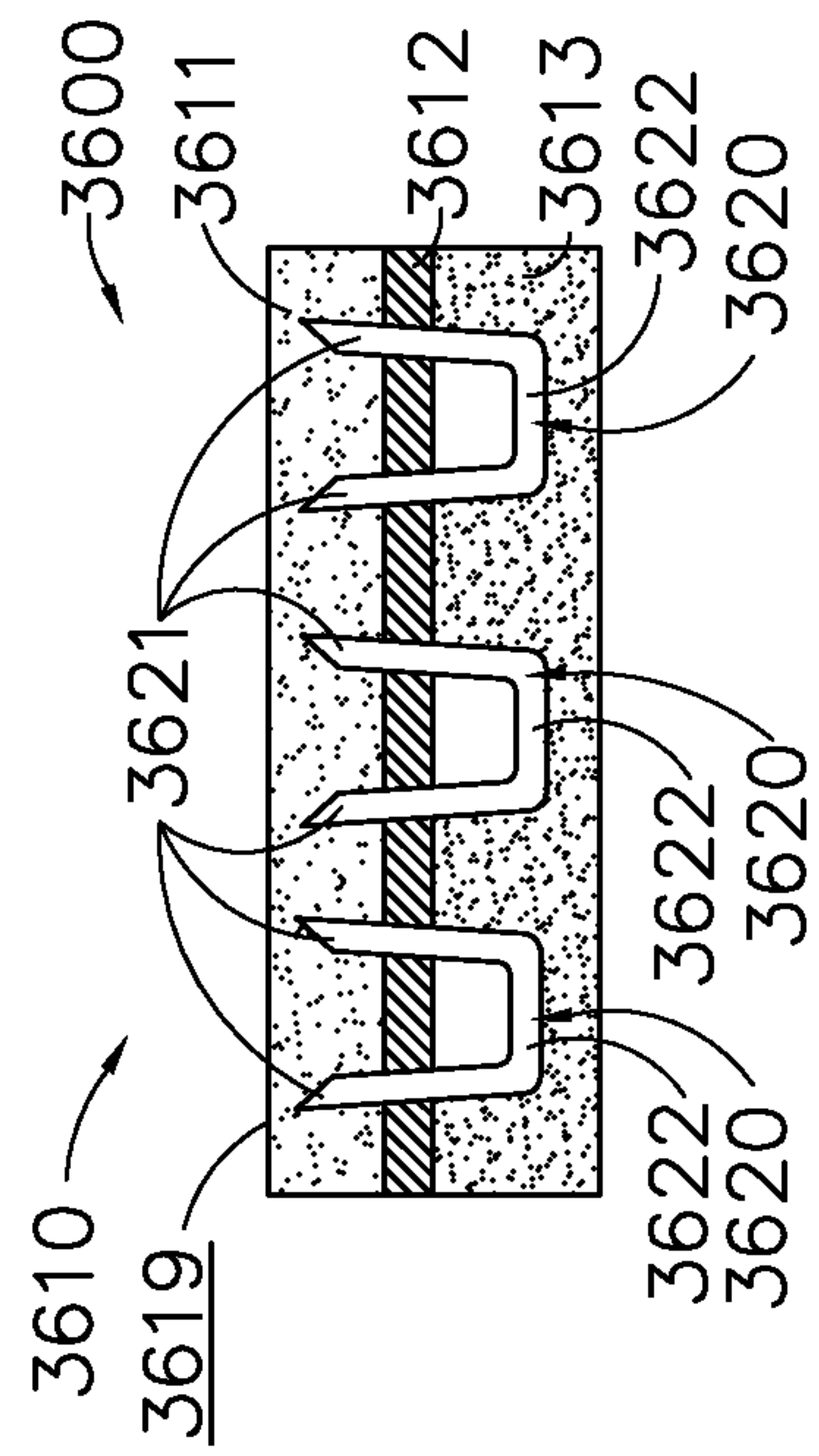
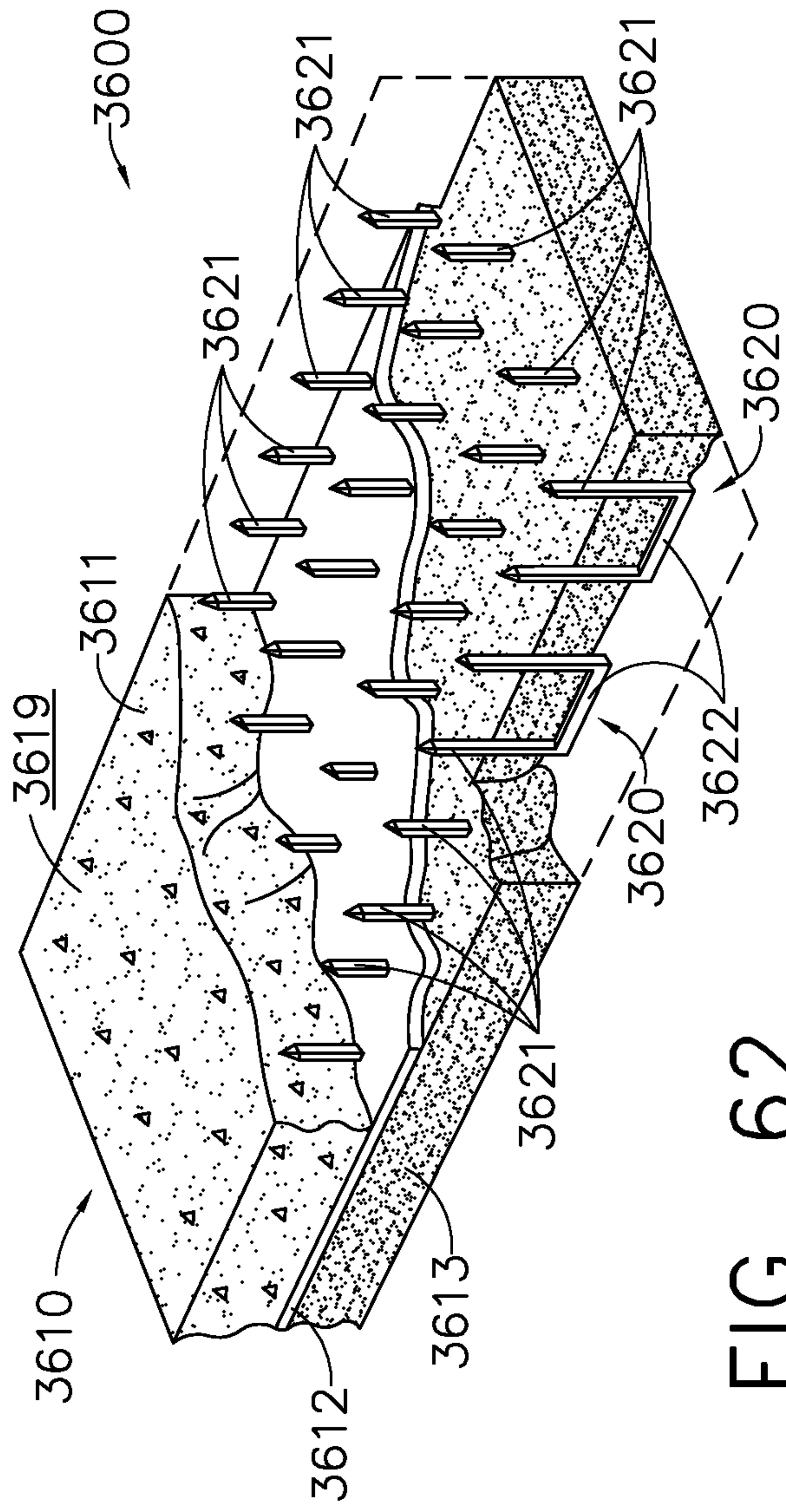
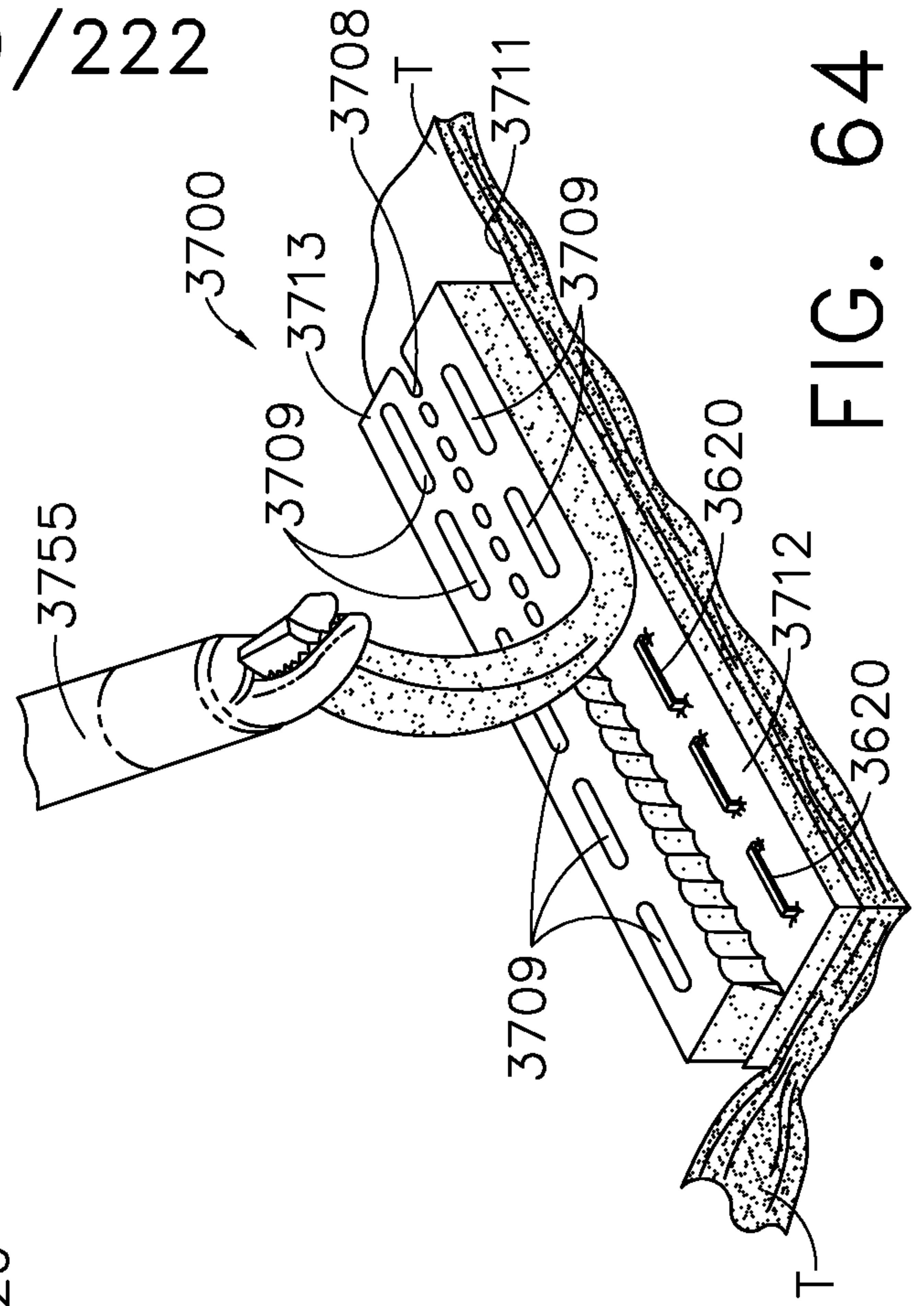


FIG. 59





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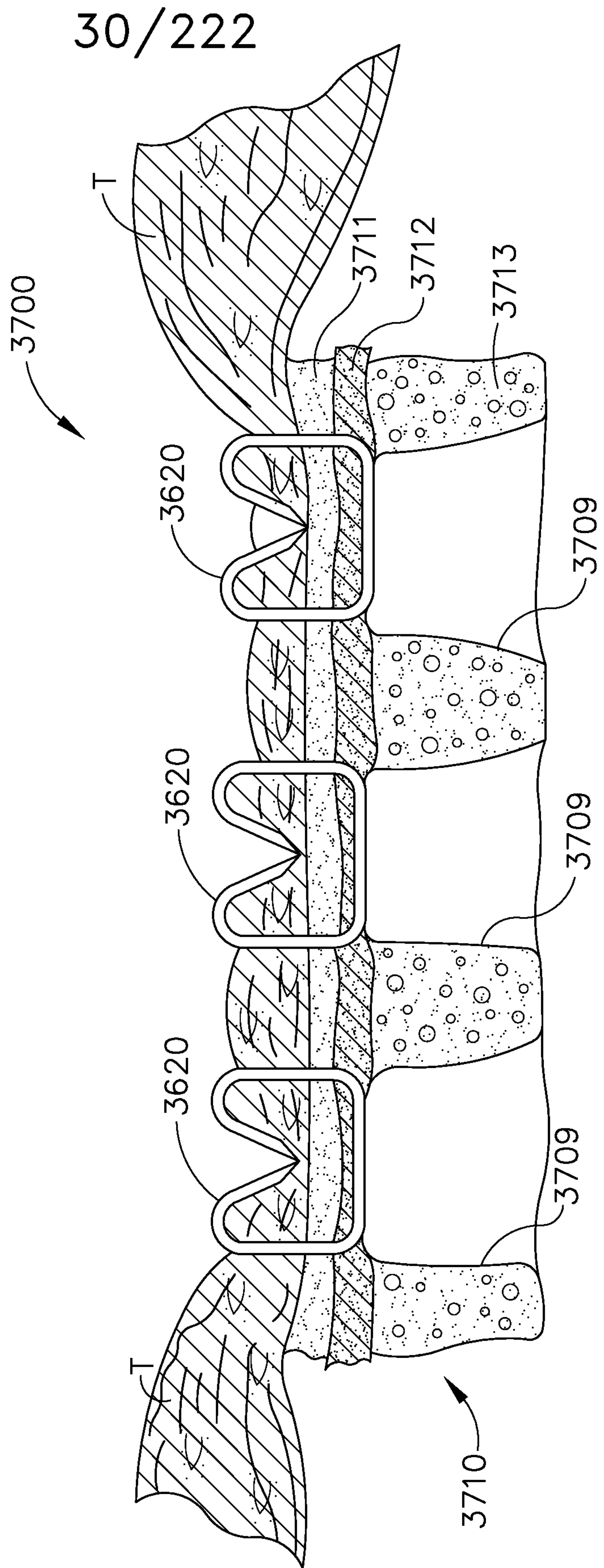


FIG. 65

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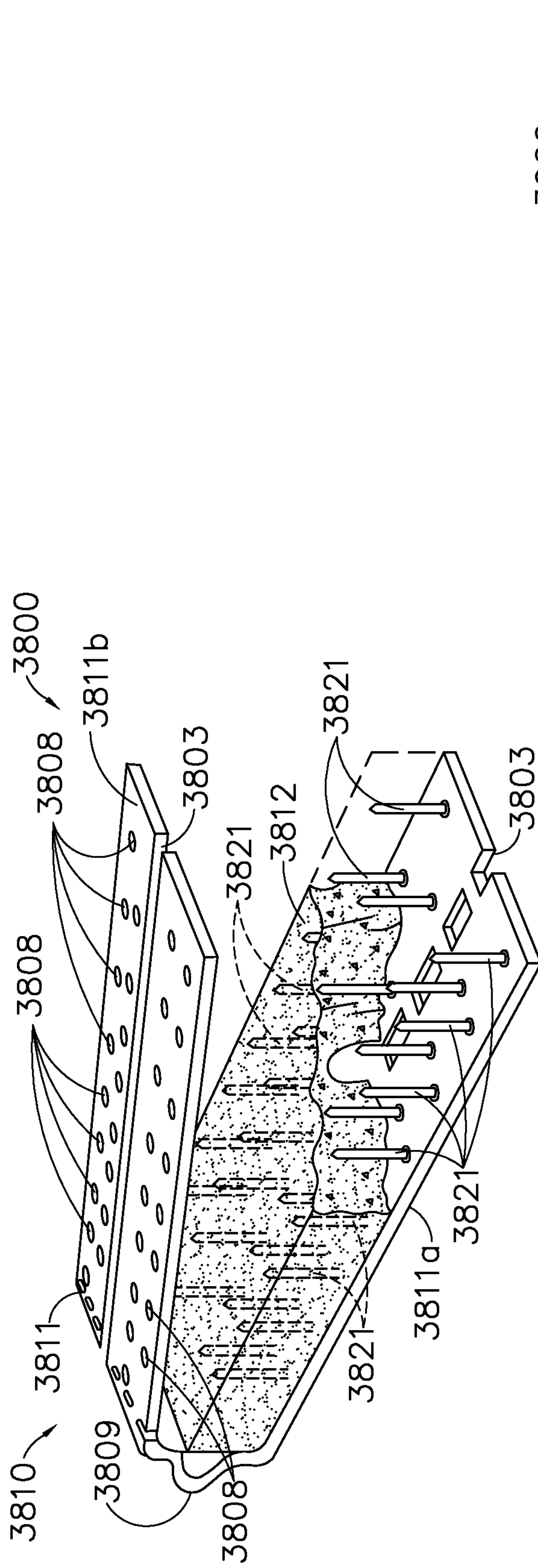


FIG. 66

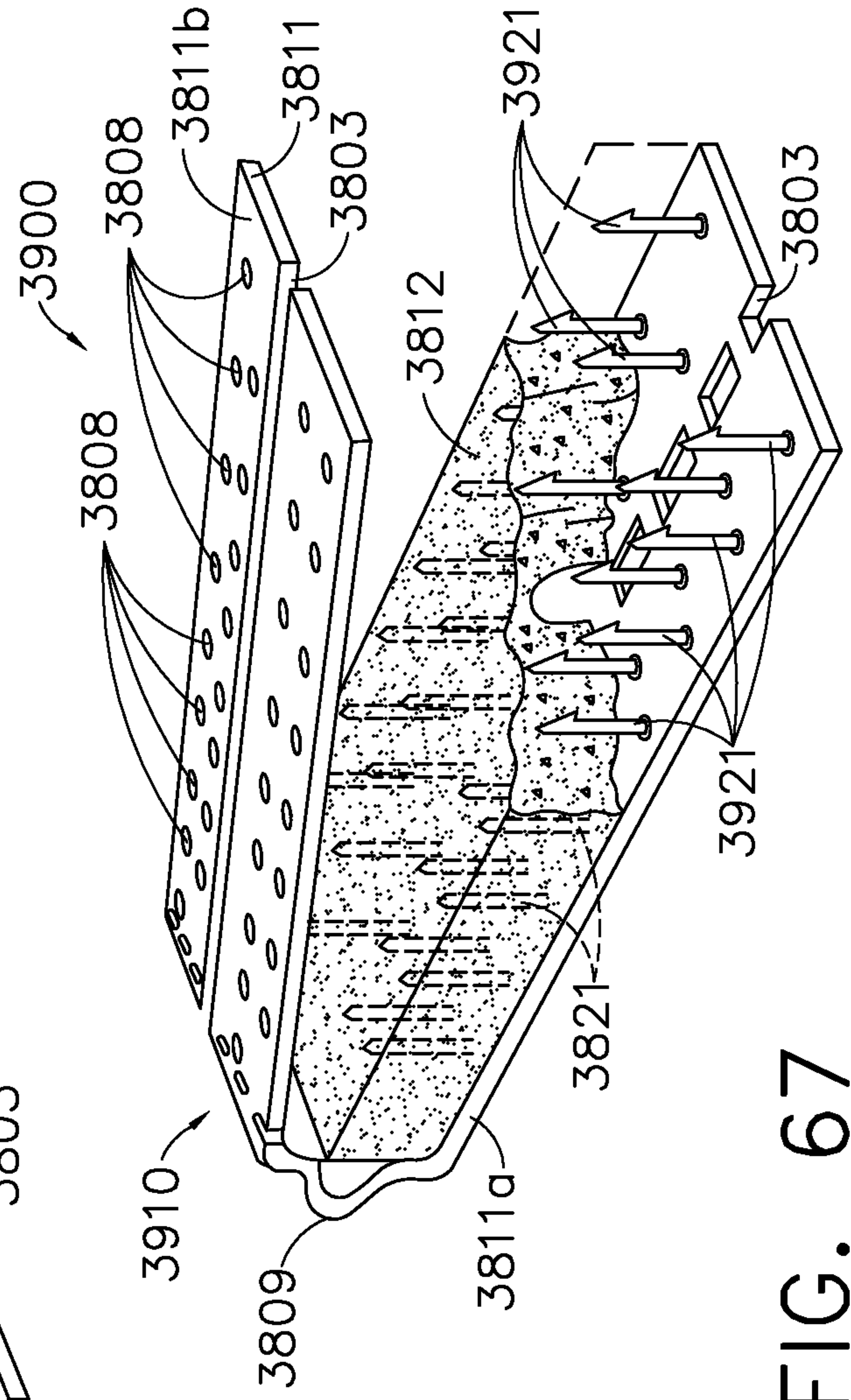


FIG. 67

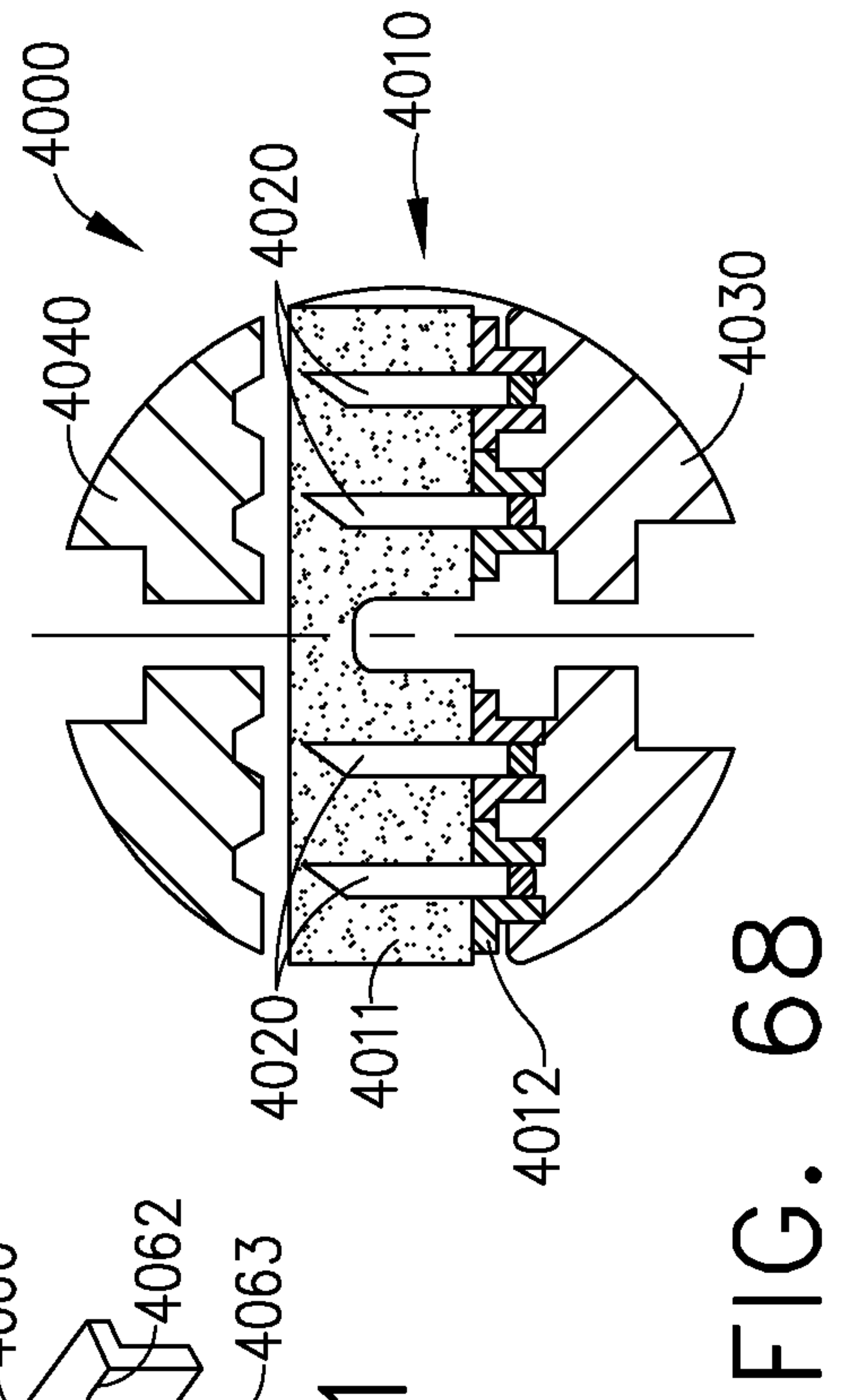
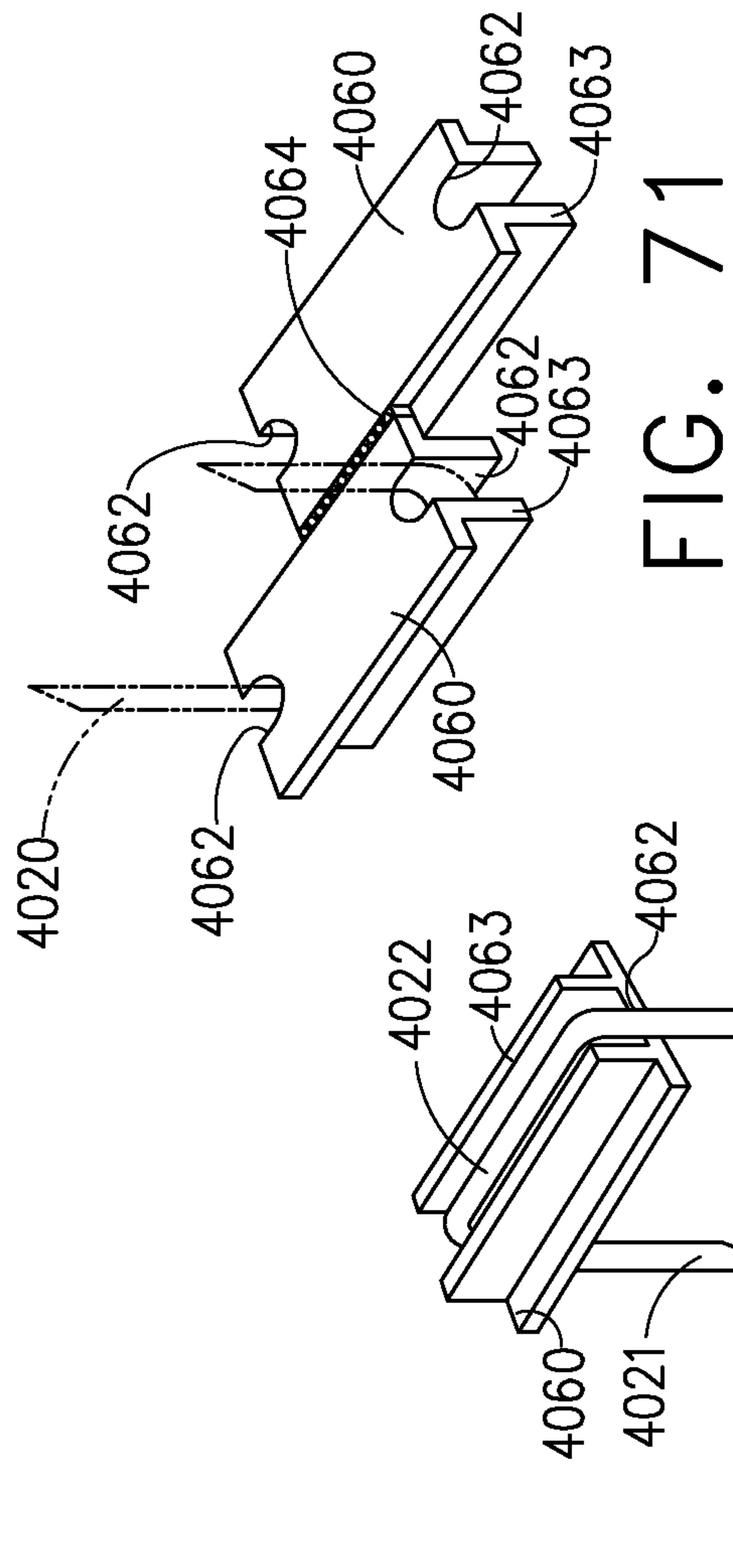
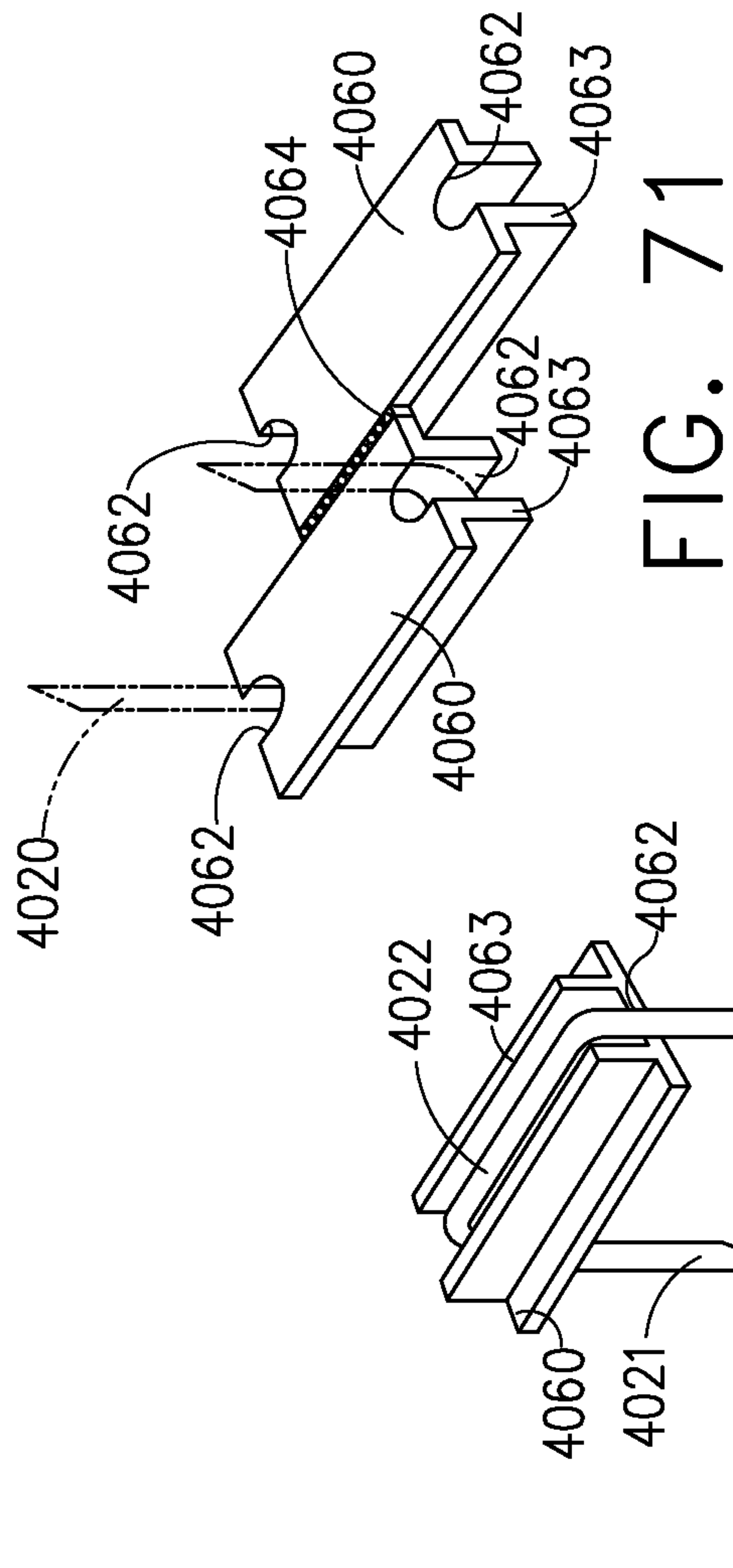
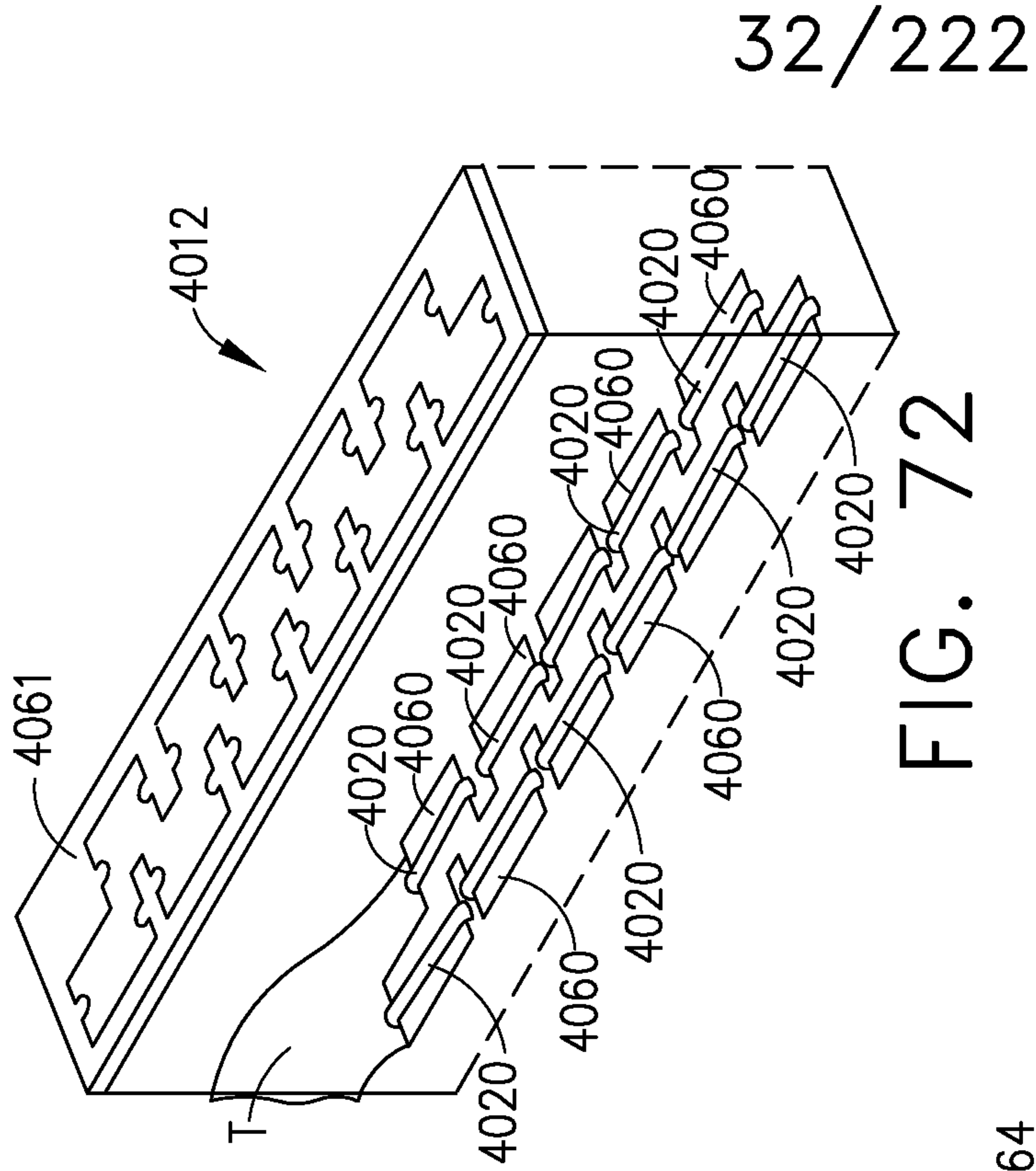
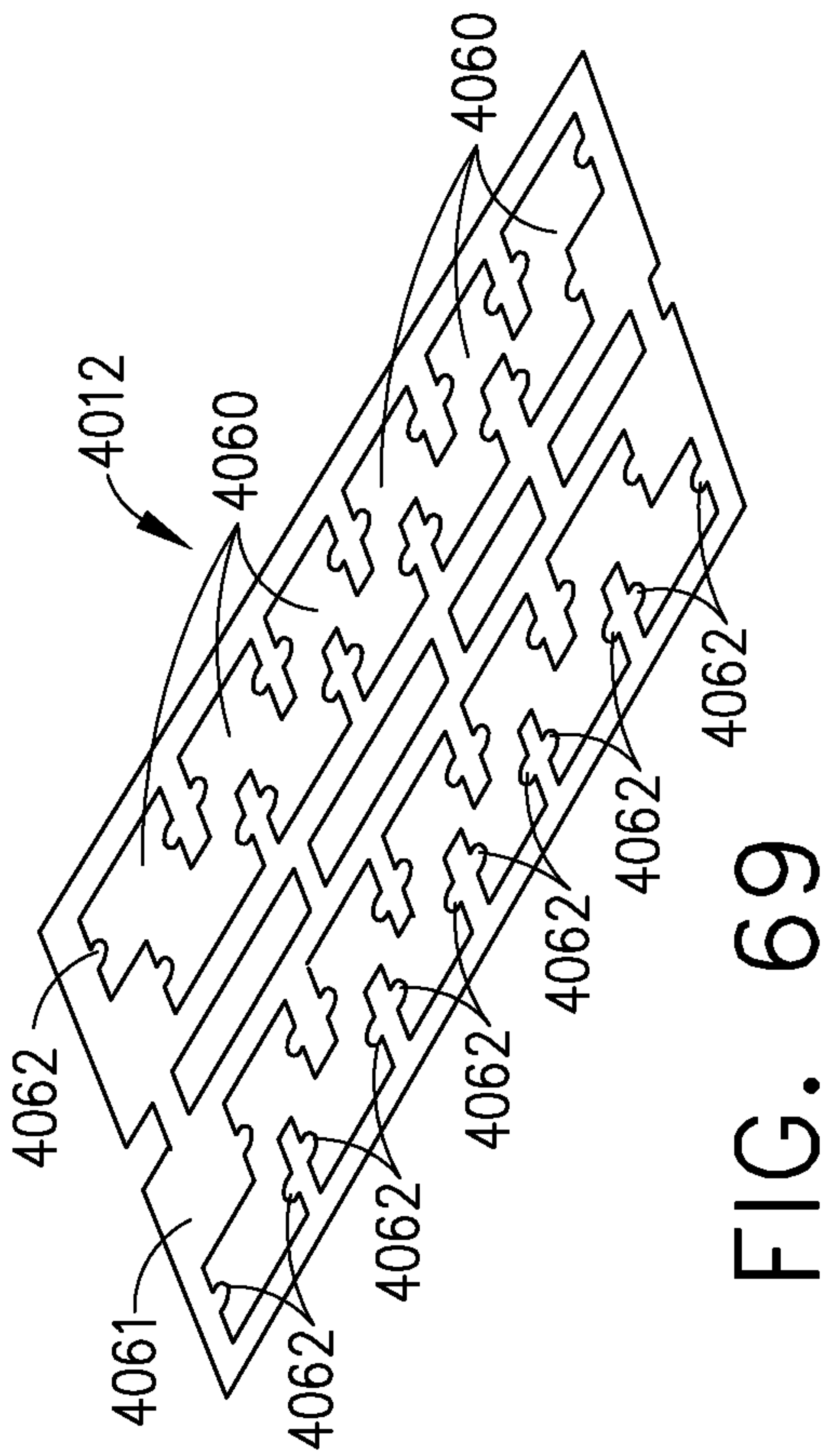


FIG. 70

FIG. 71

FIG. 72

FIG. 68

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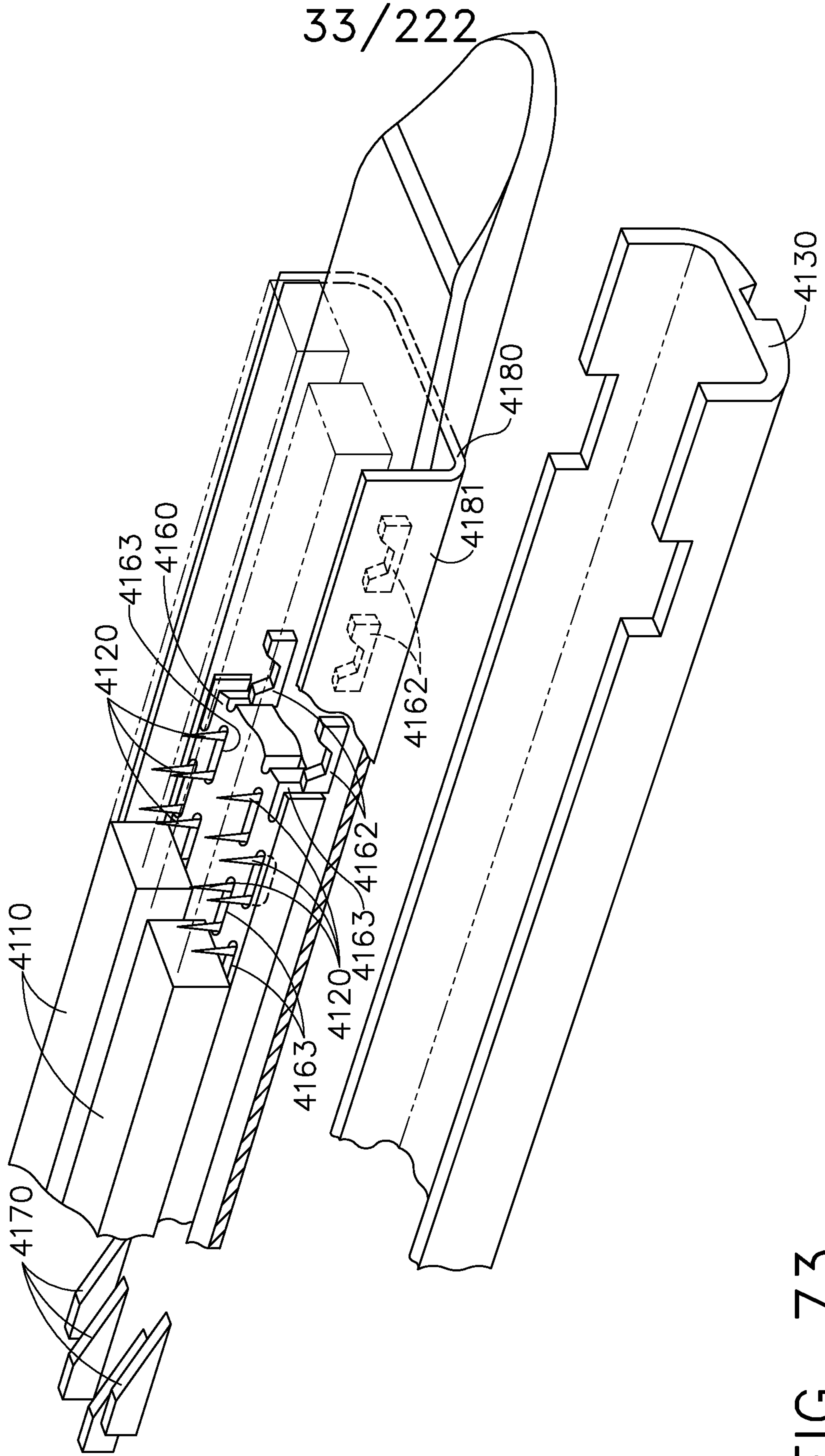


FIG. 73

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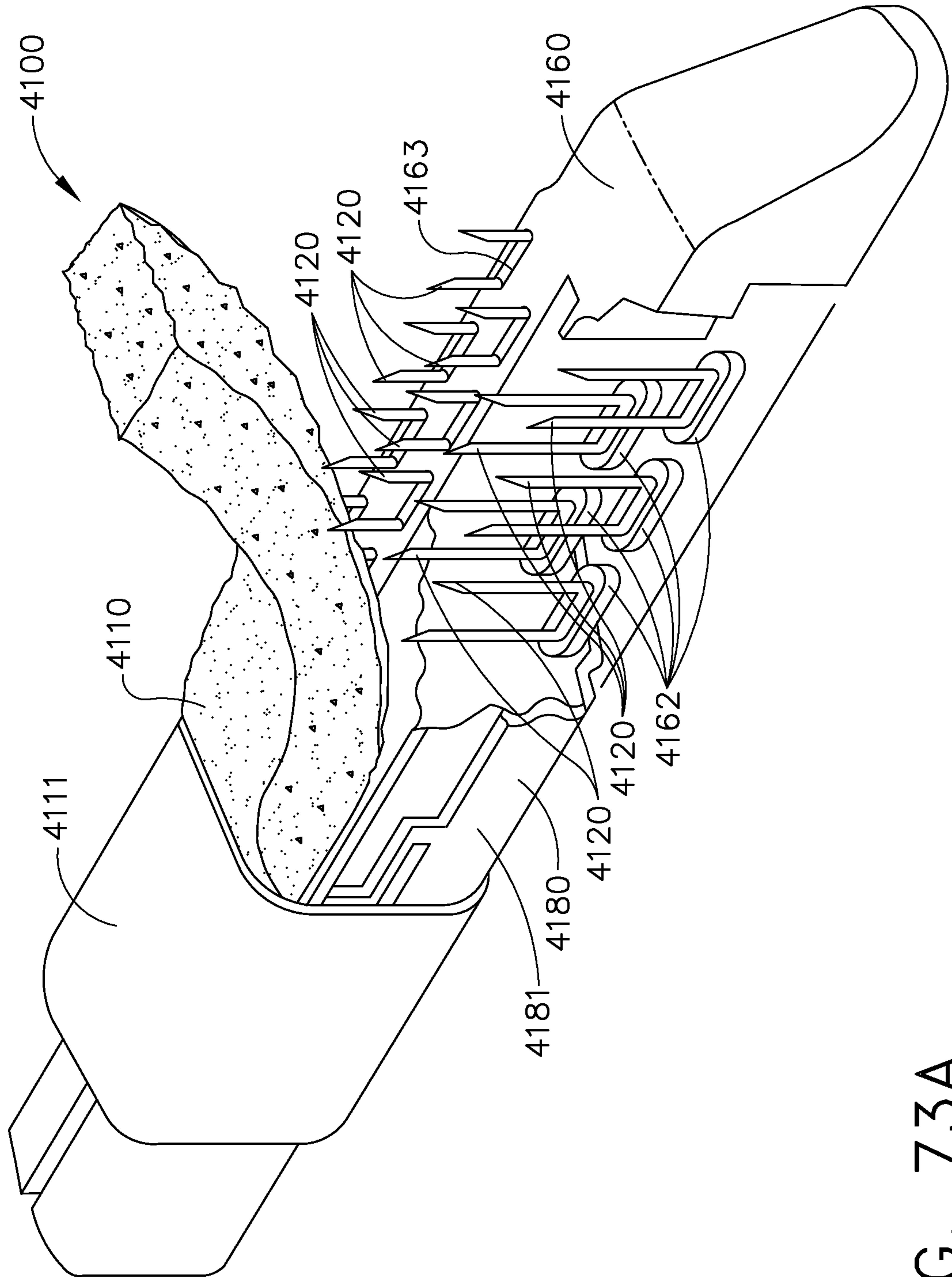
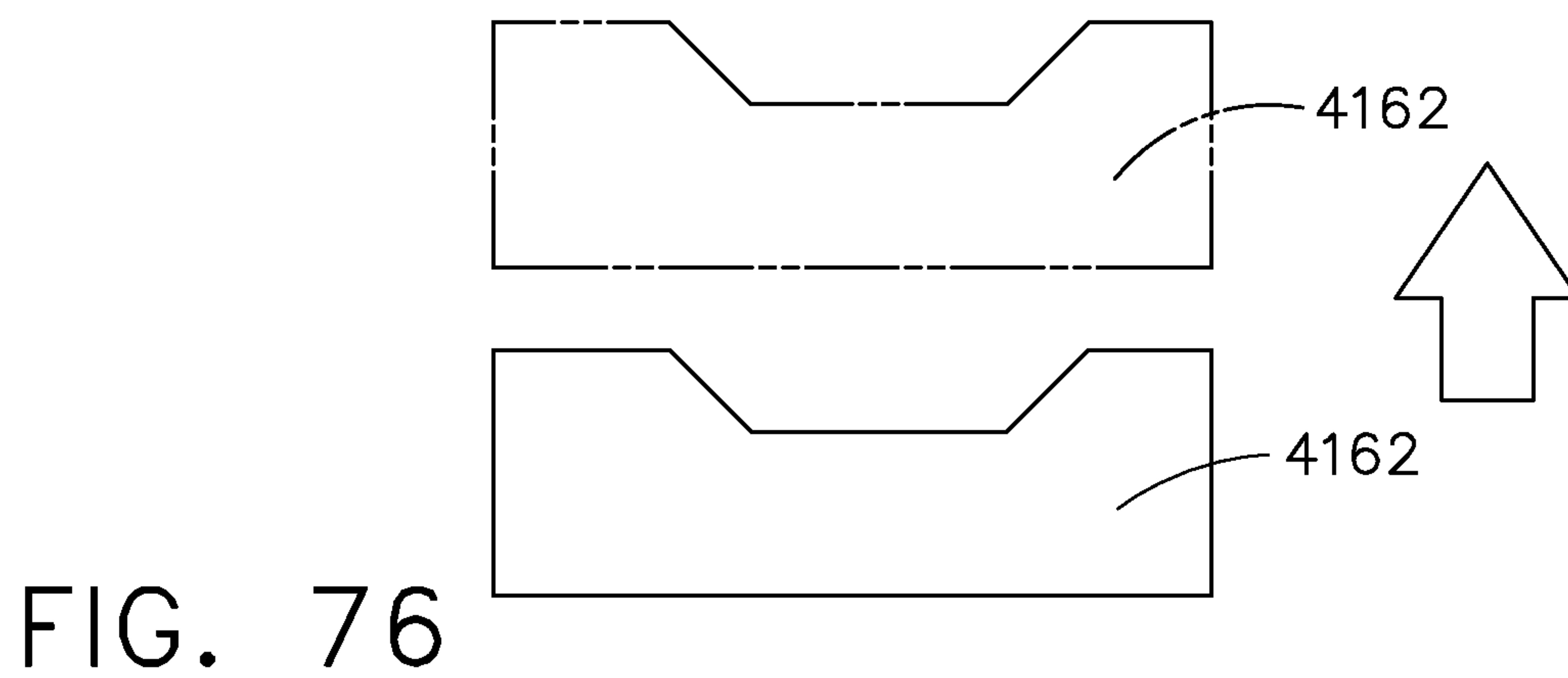
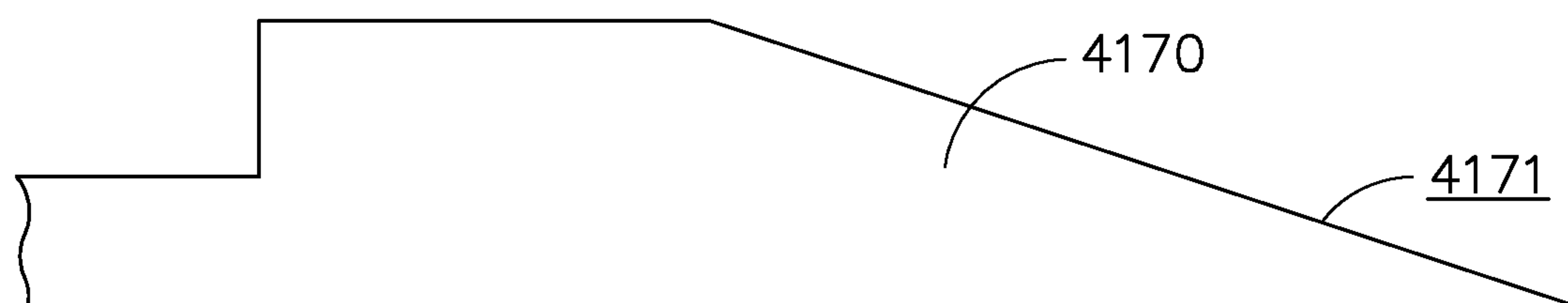
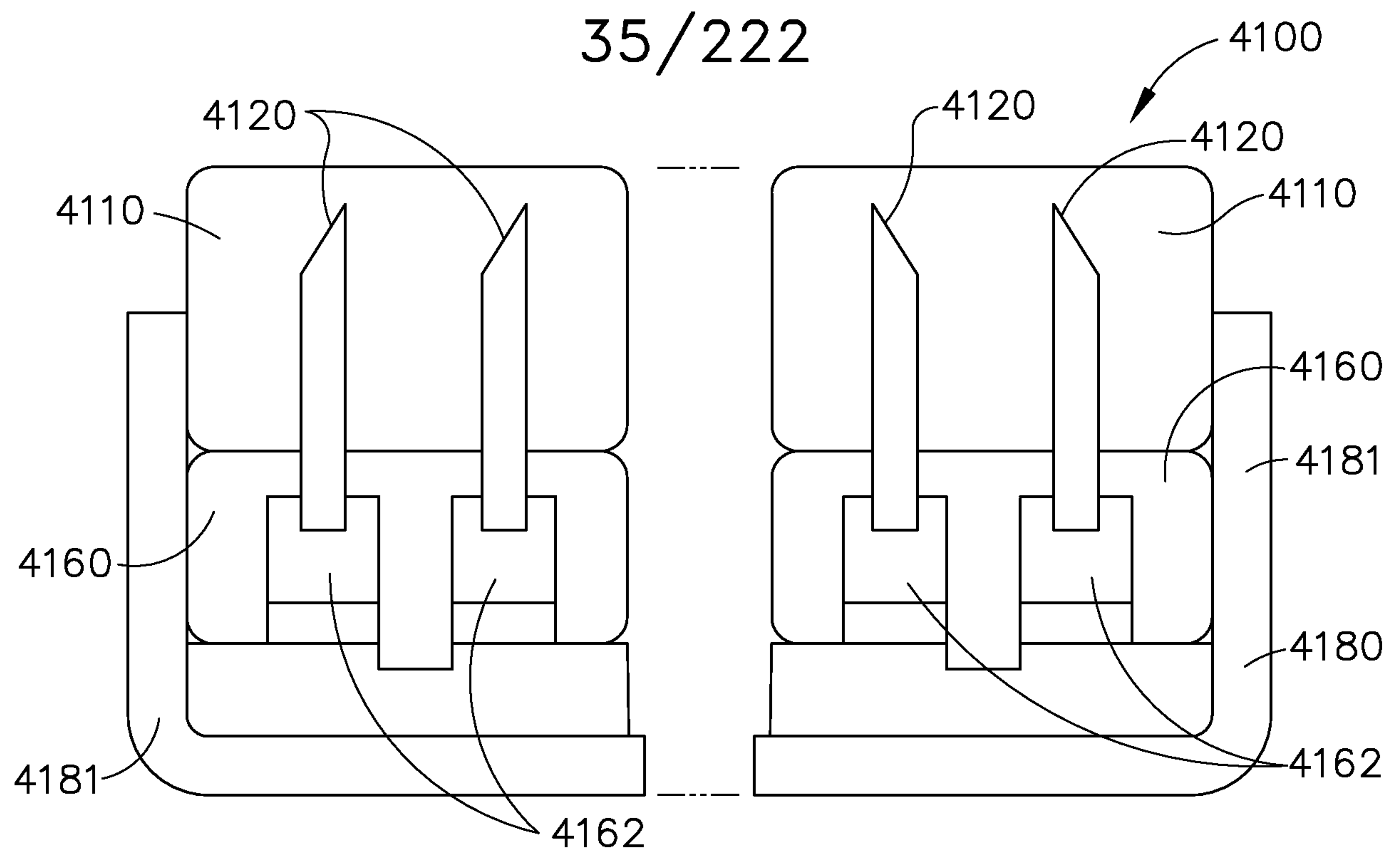


FIG. 73A



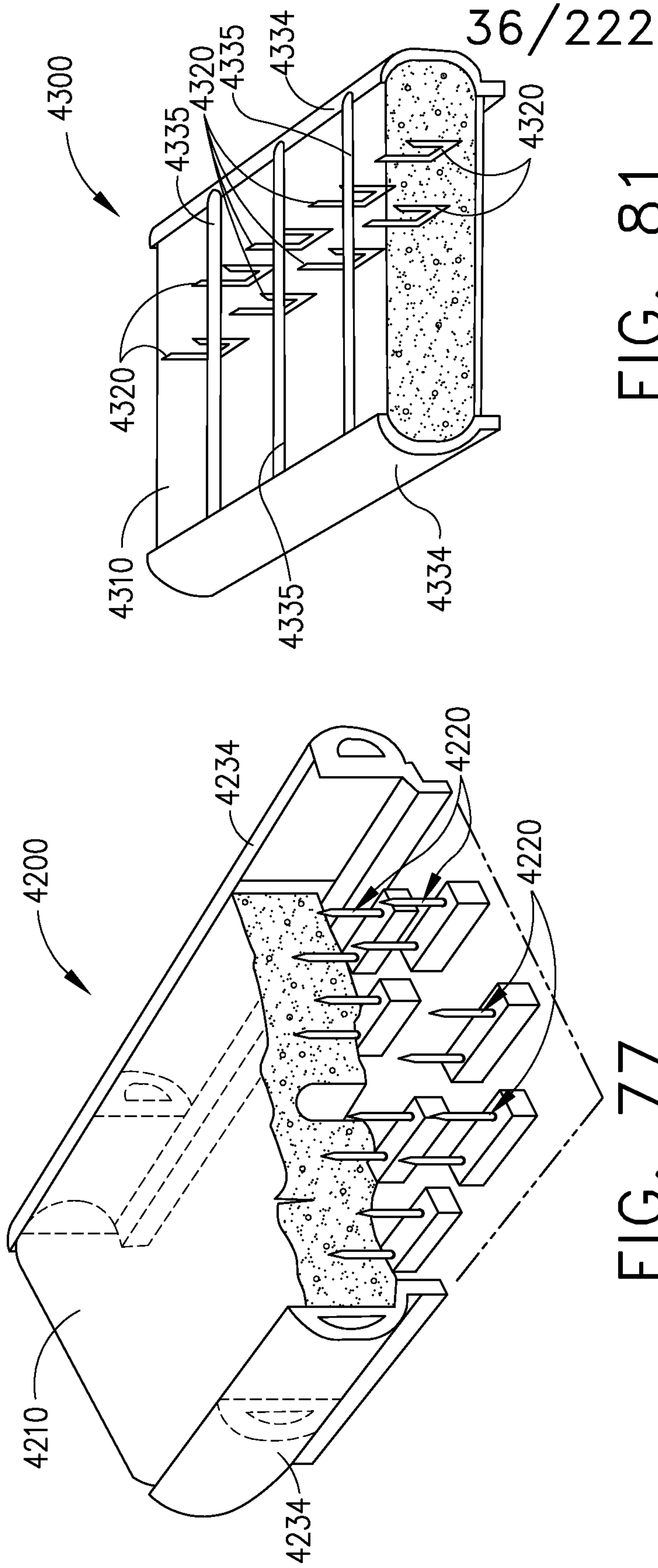


FIG. 77

FIG. 81

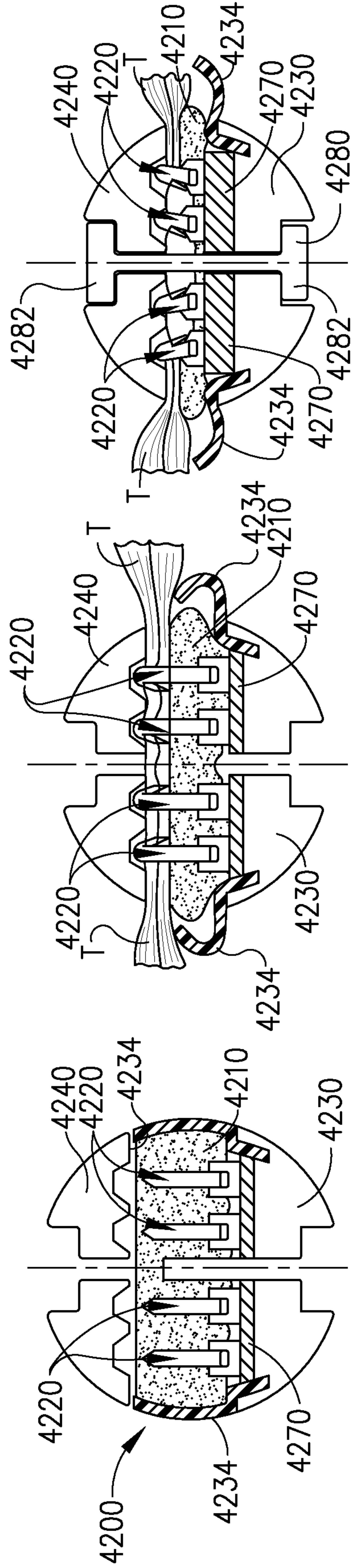


FIG. 78

FIG. 79

FIG. 80

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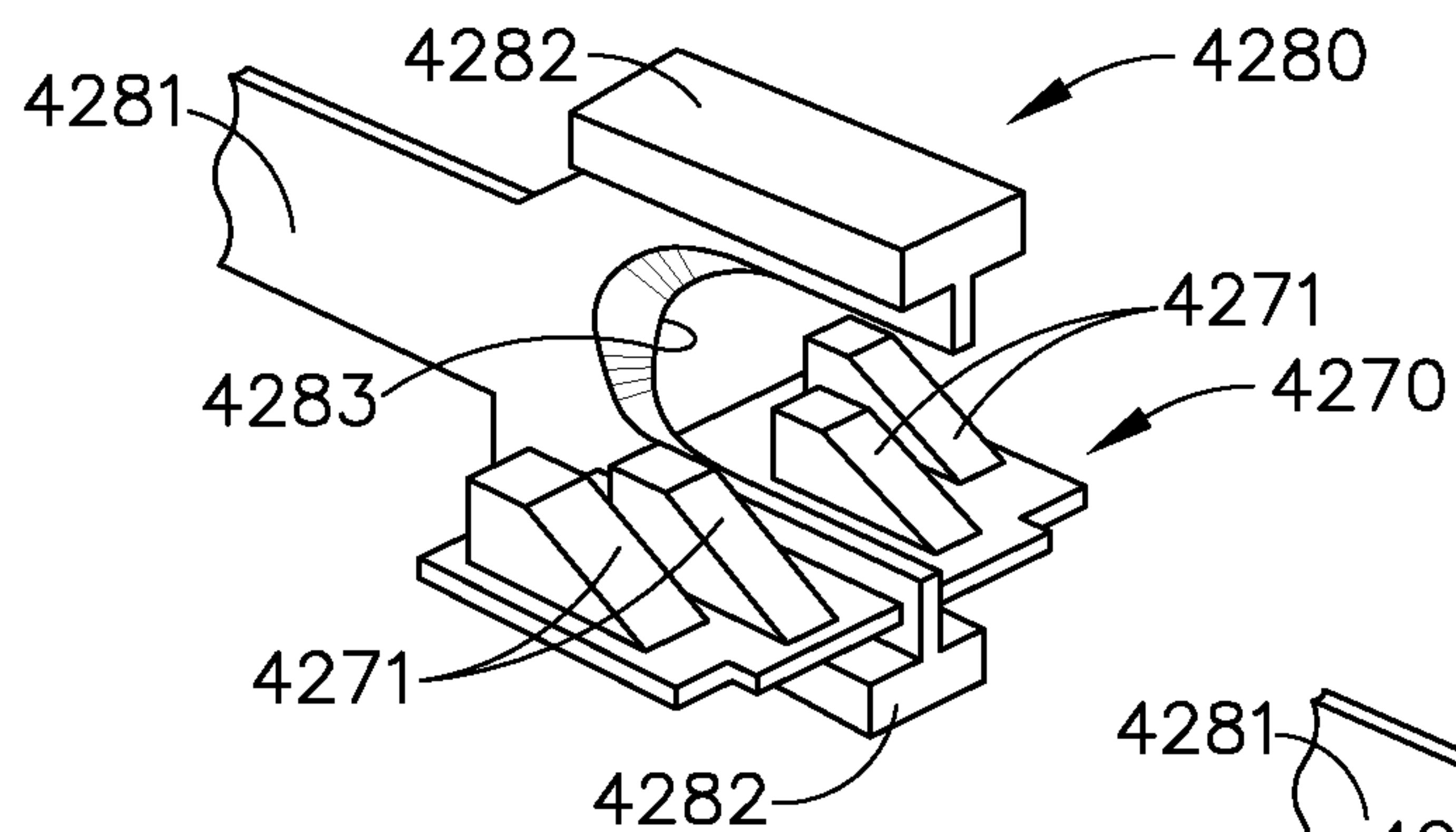


FIG. 82

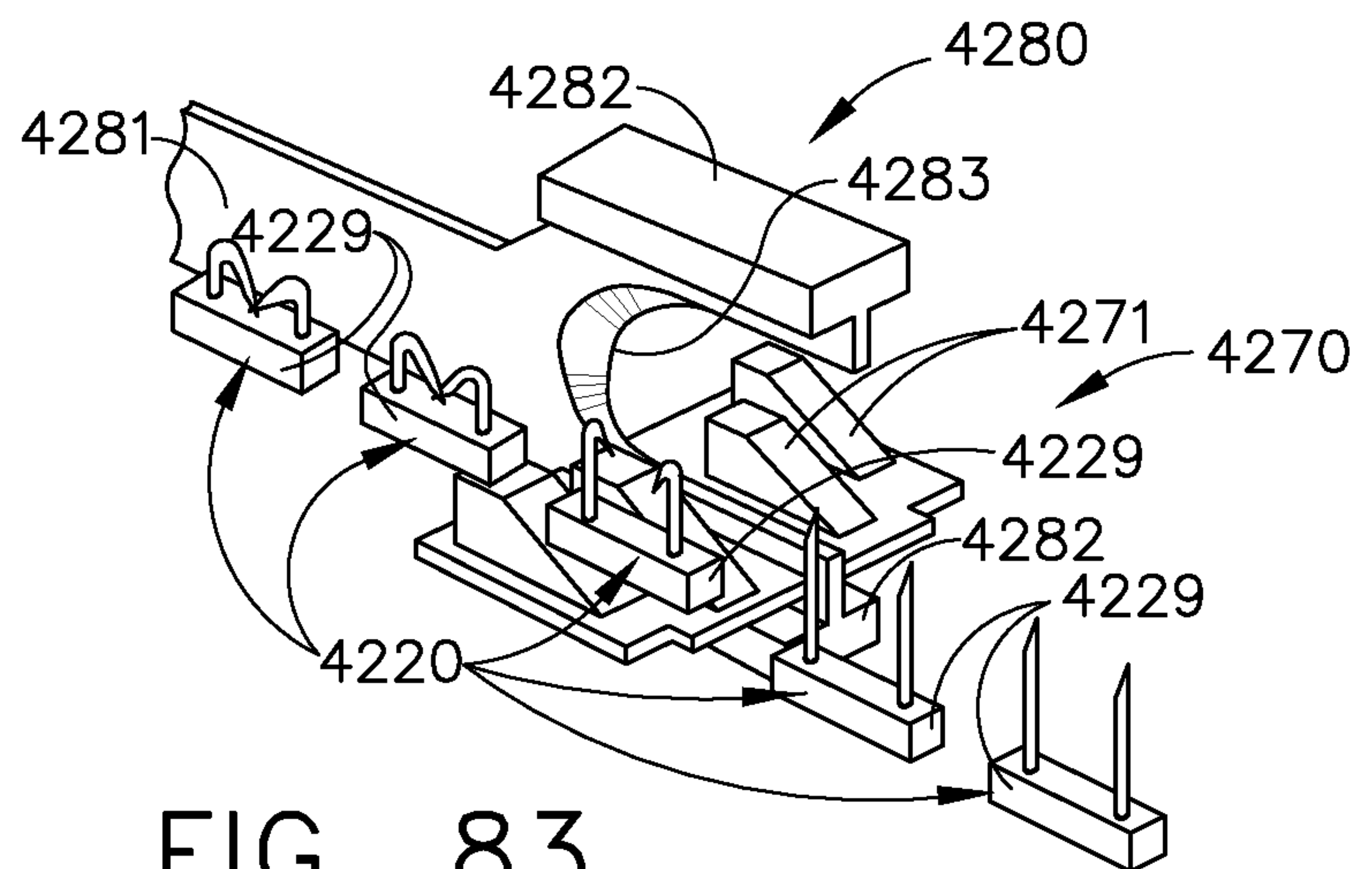


FIG. 83

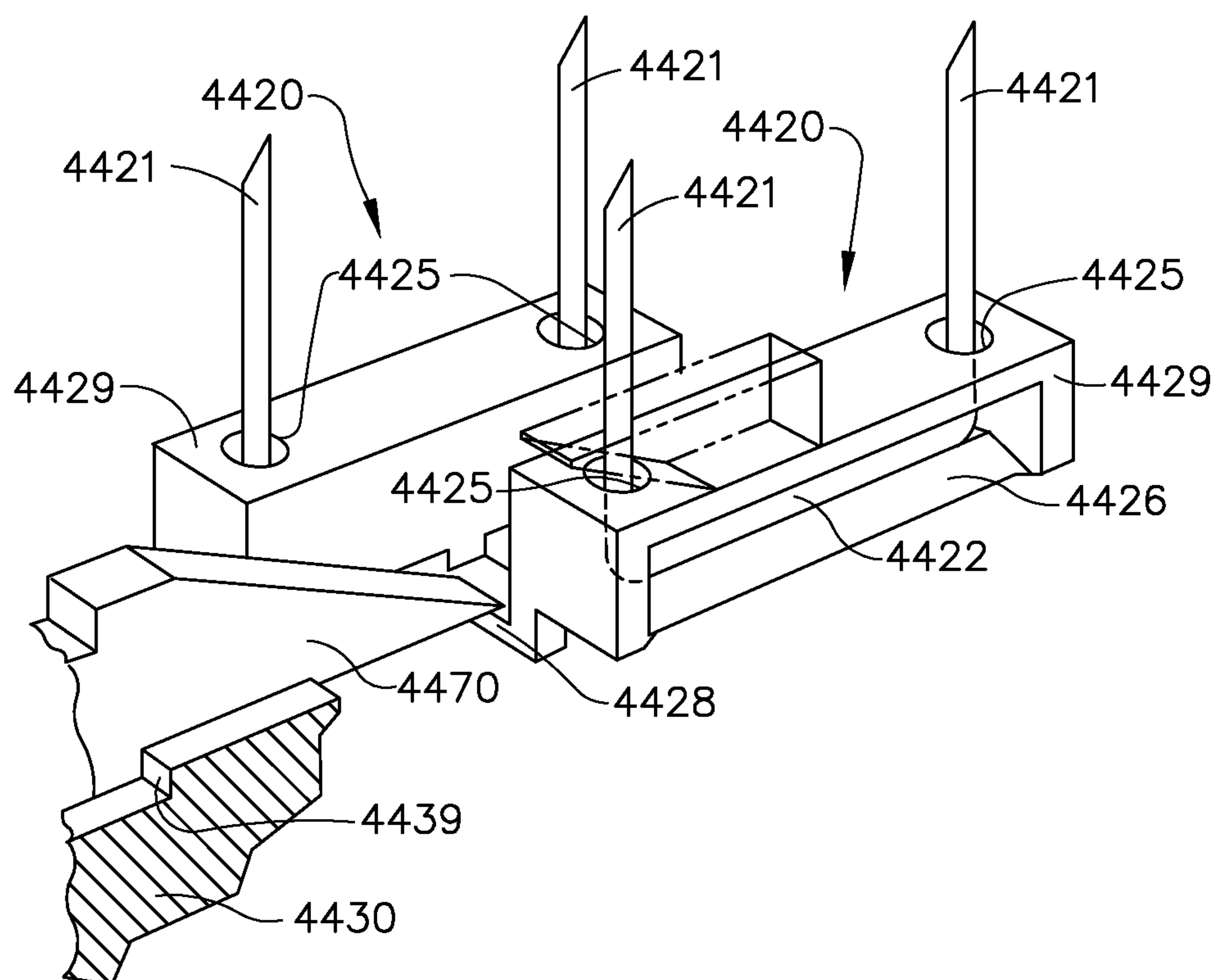


FIG. 84

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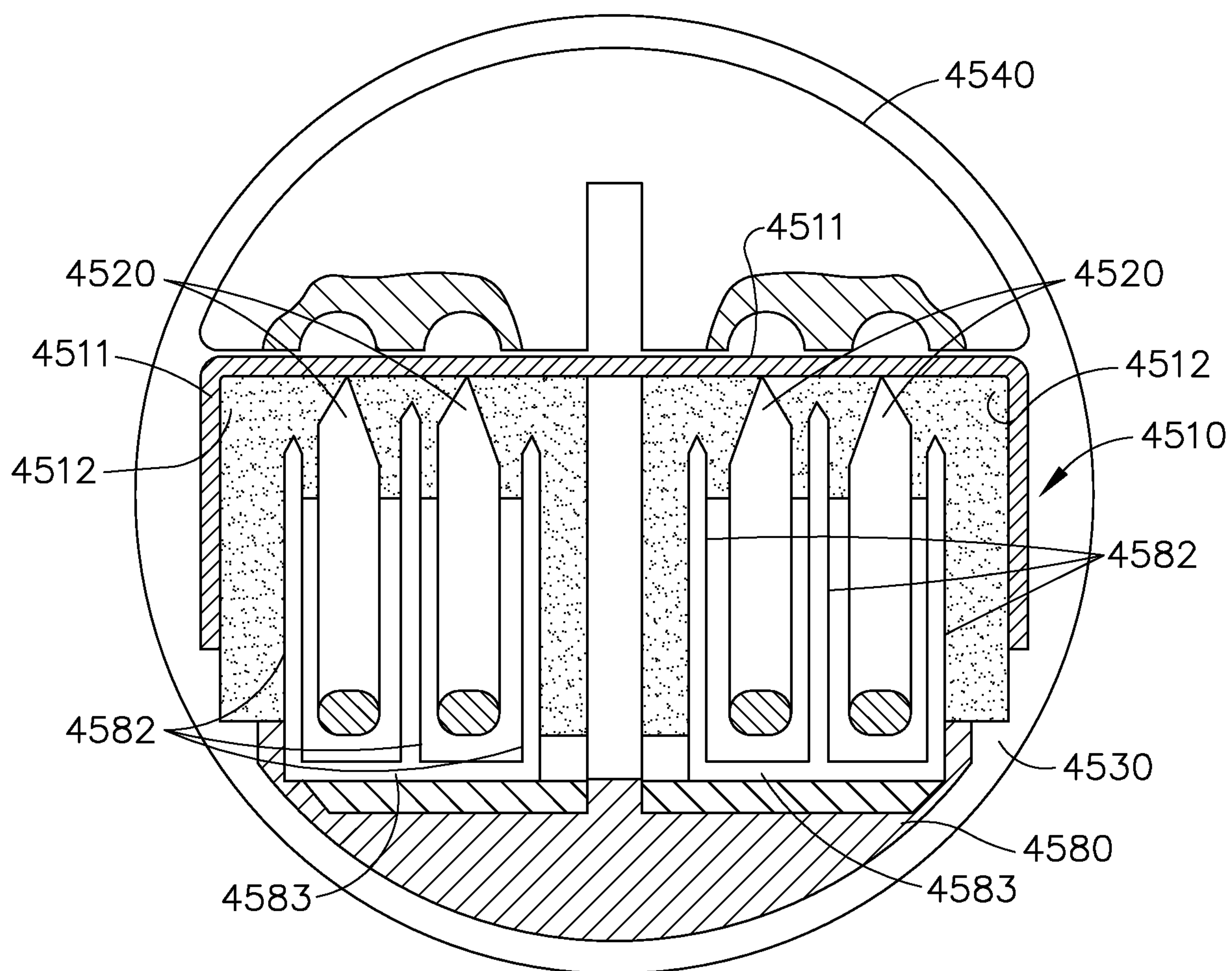
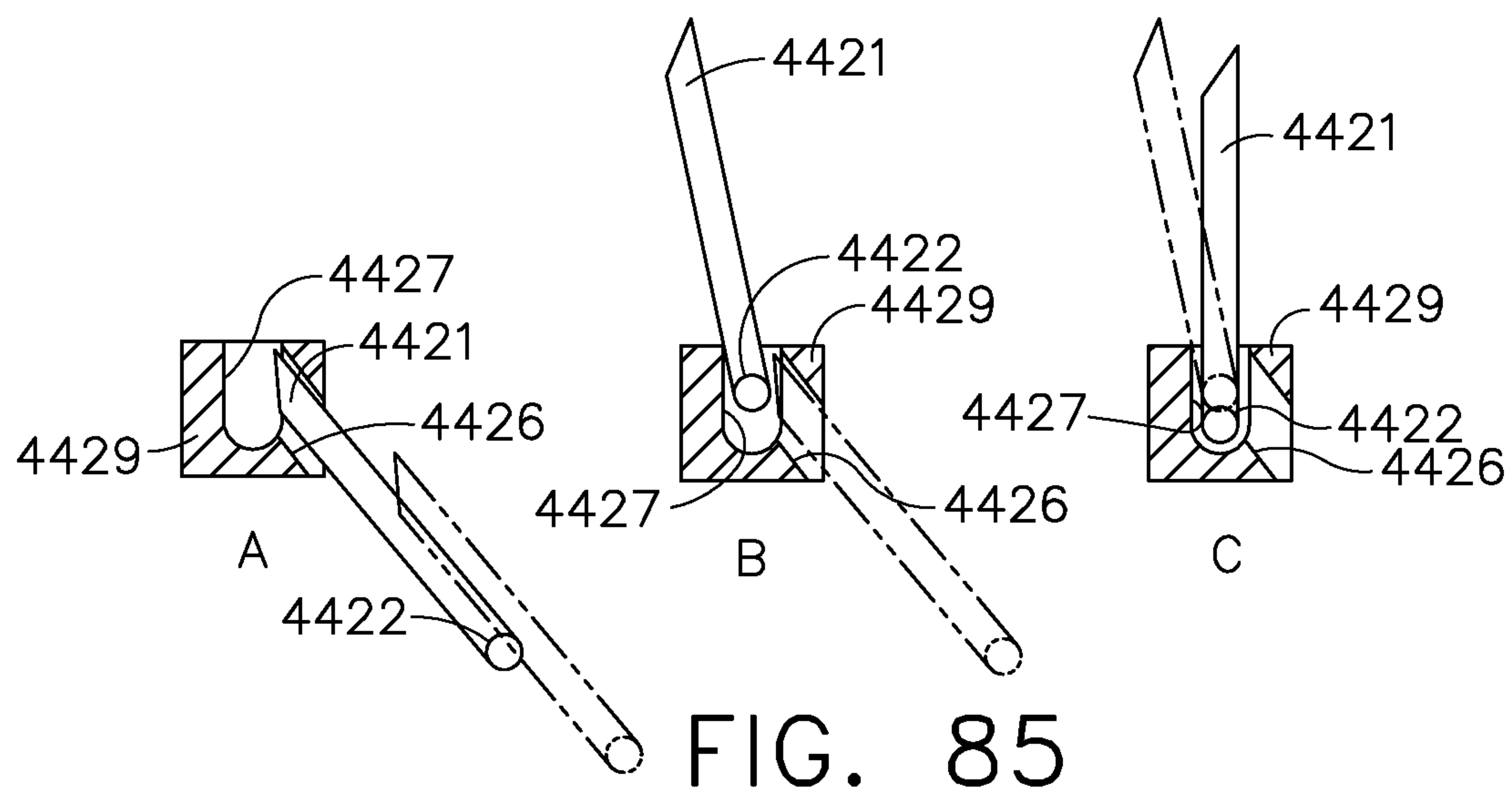


FIG. 86

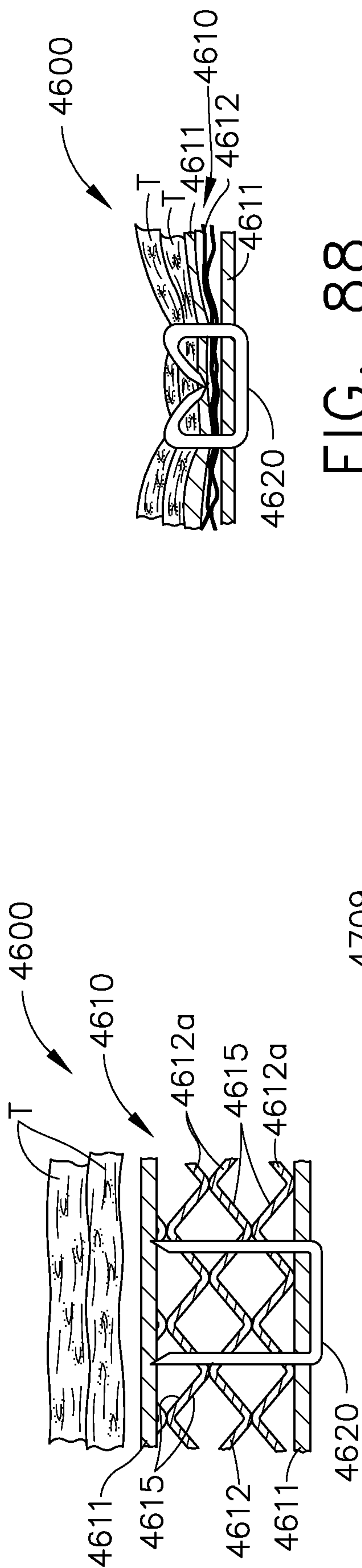


Fig. 8.

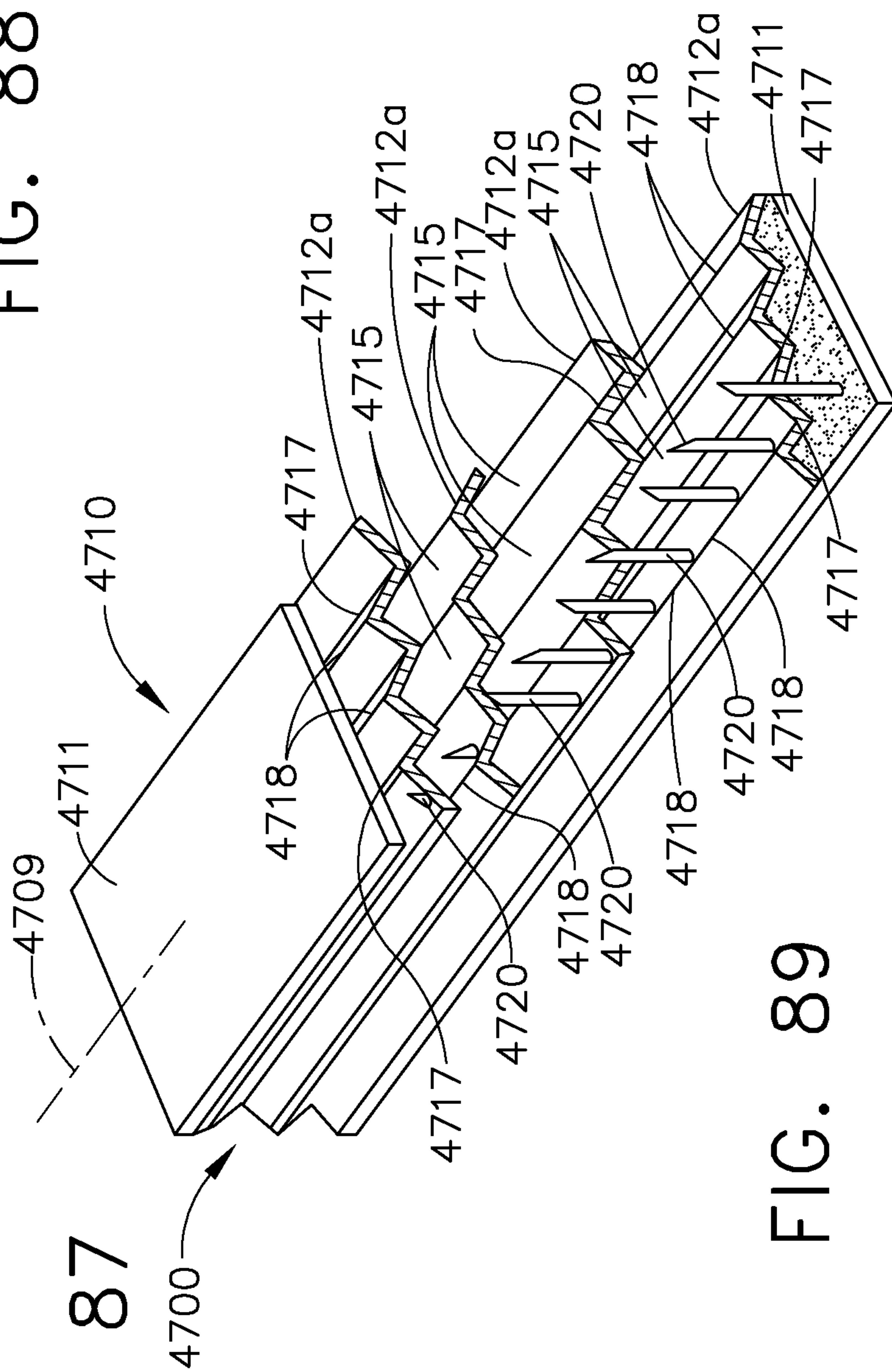
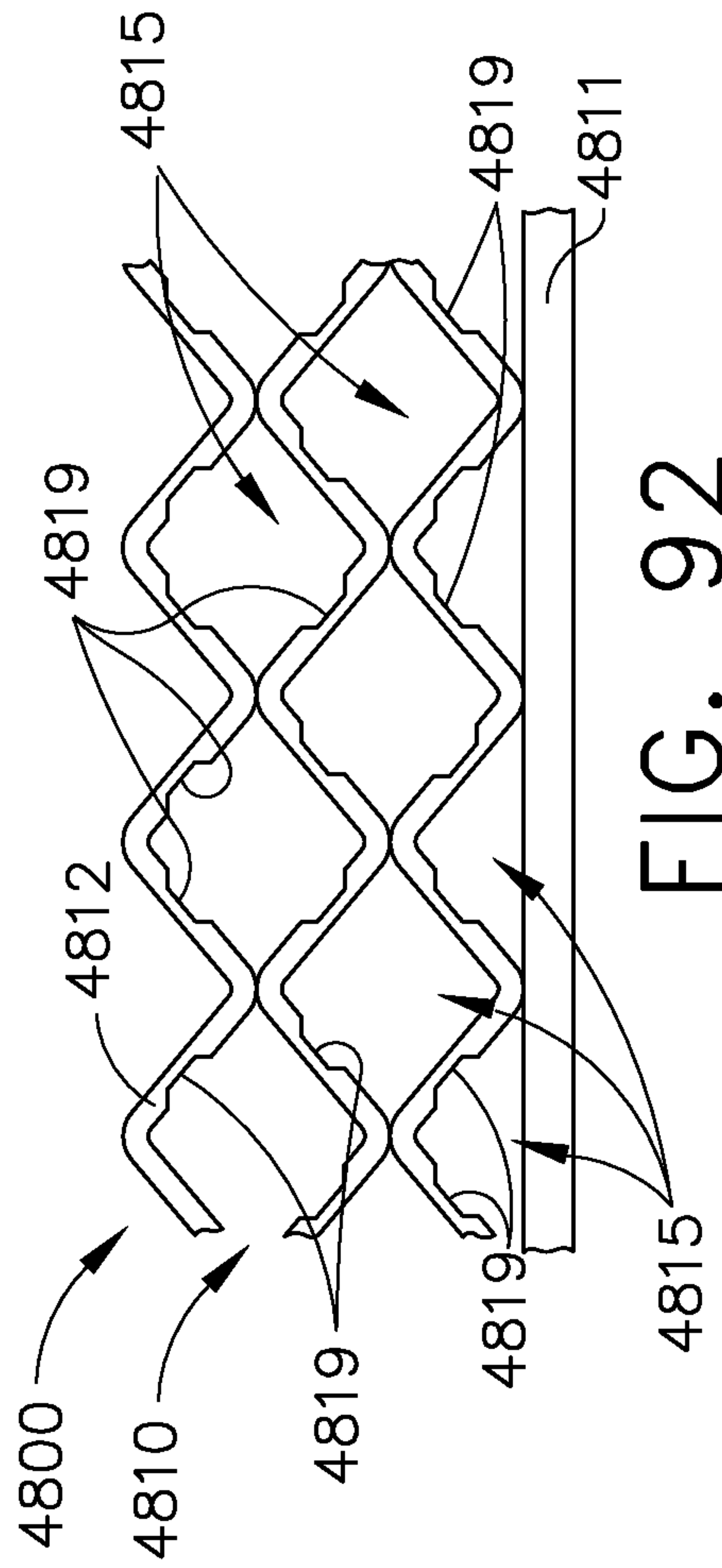
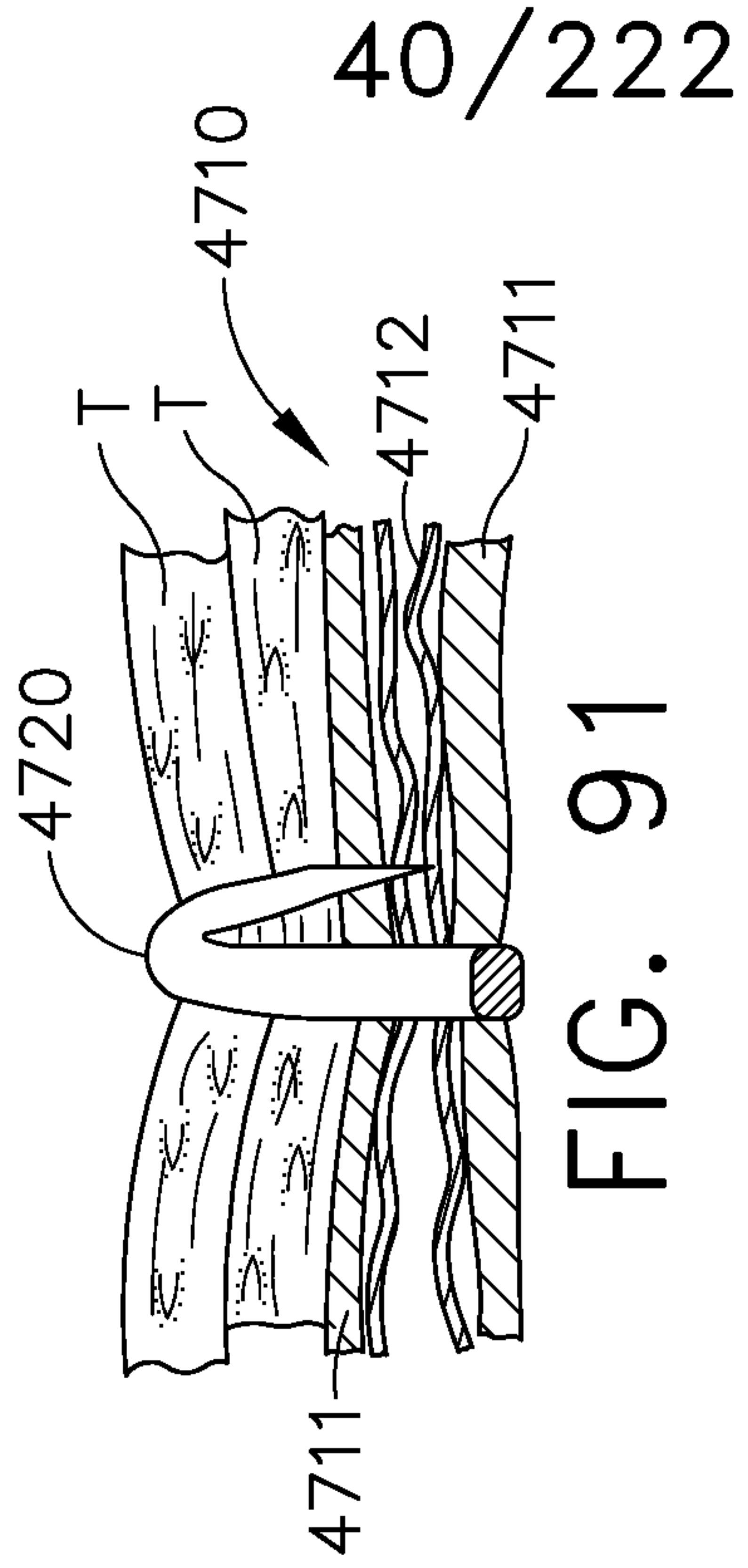
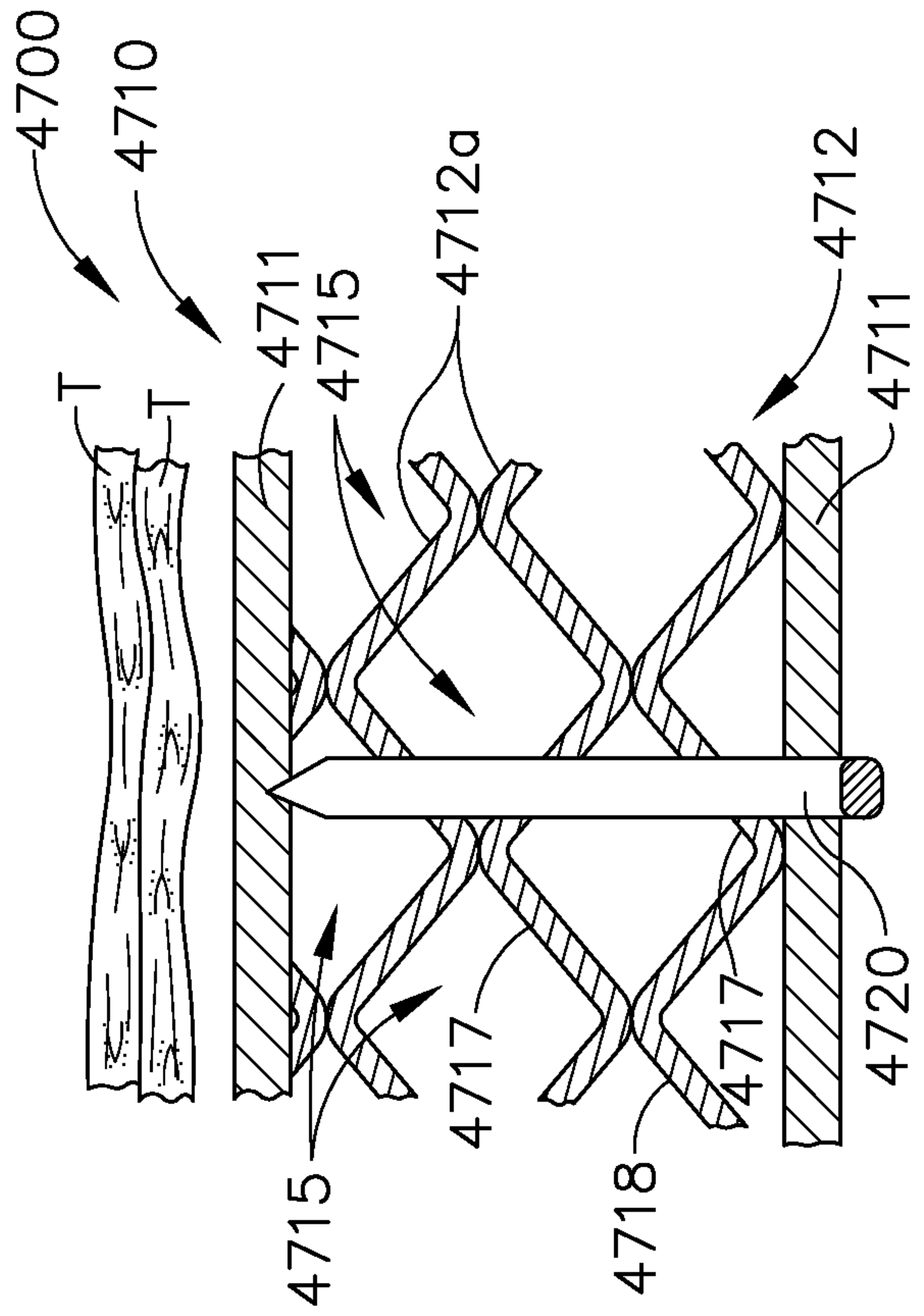


FIG. 8.



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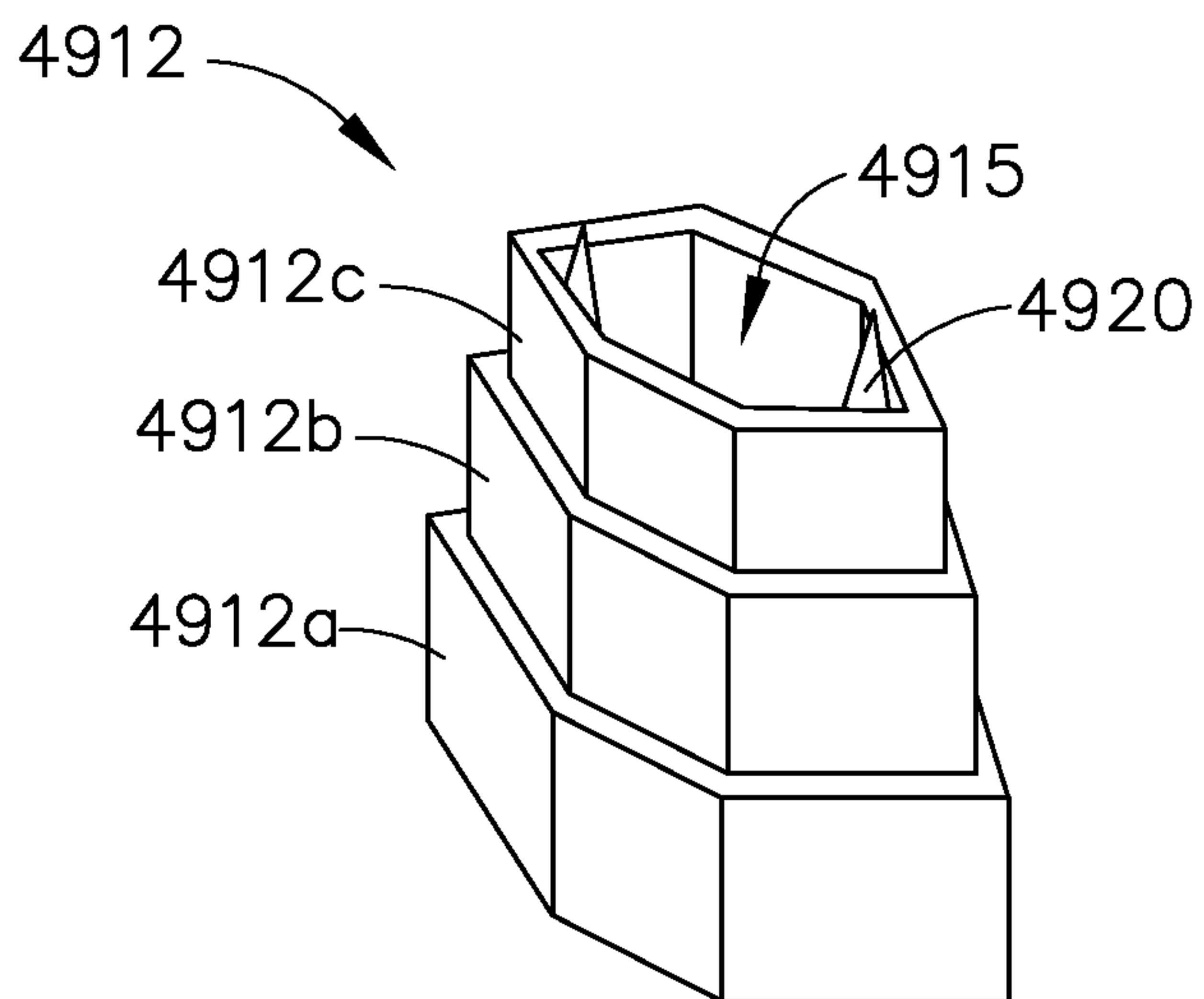


FIG. 94

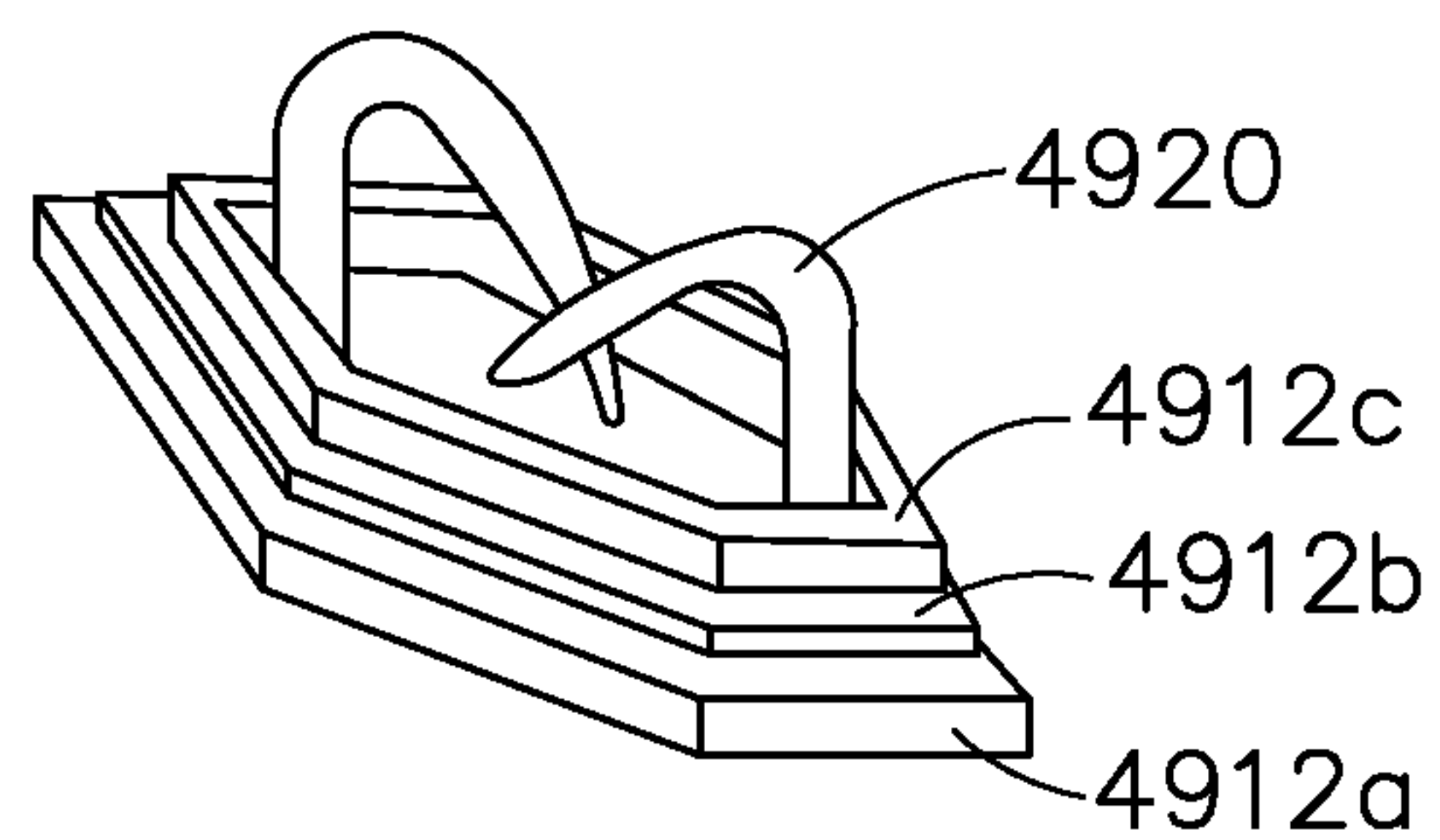


FIG. 95

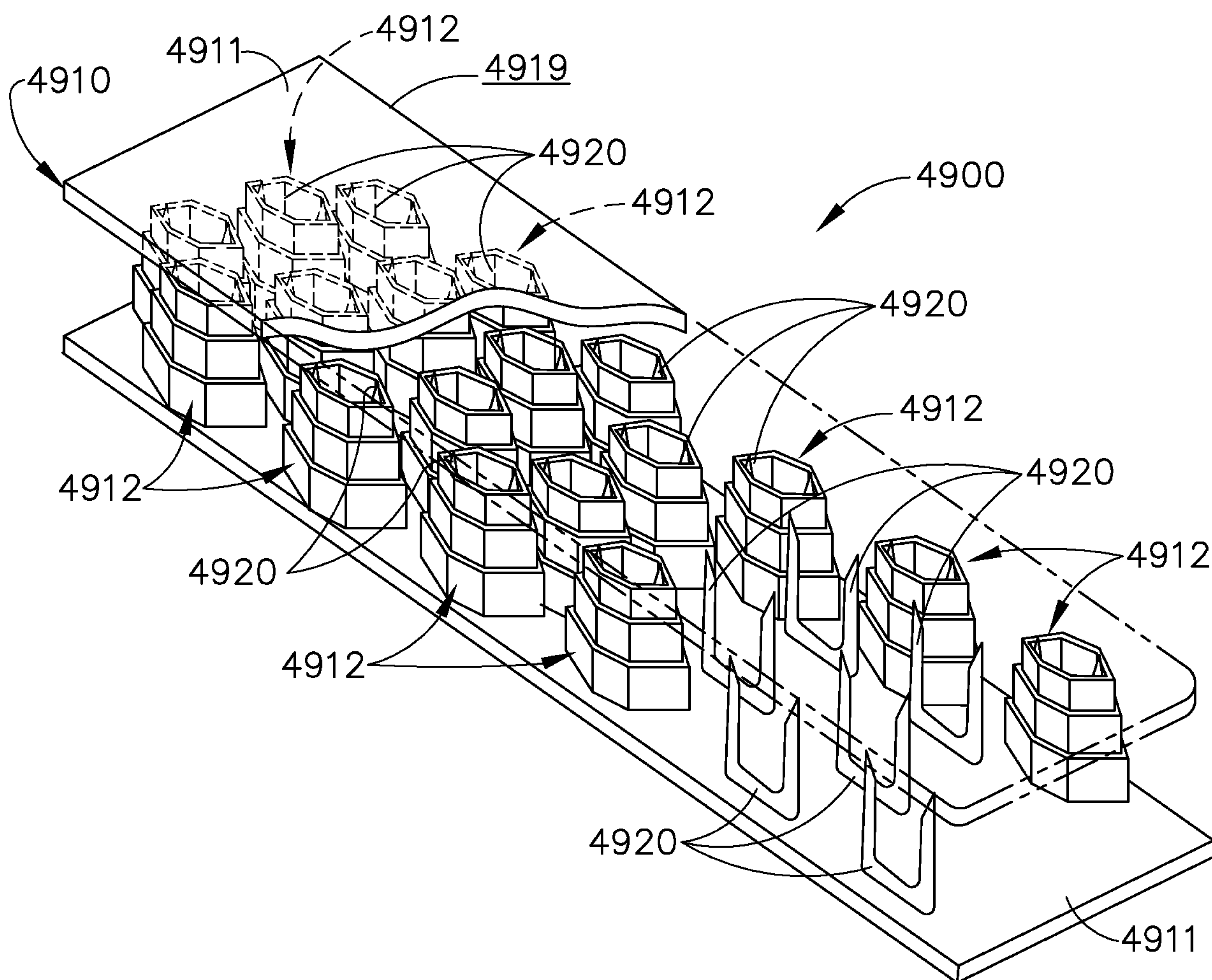


FIG. 93

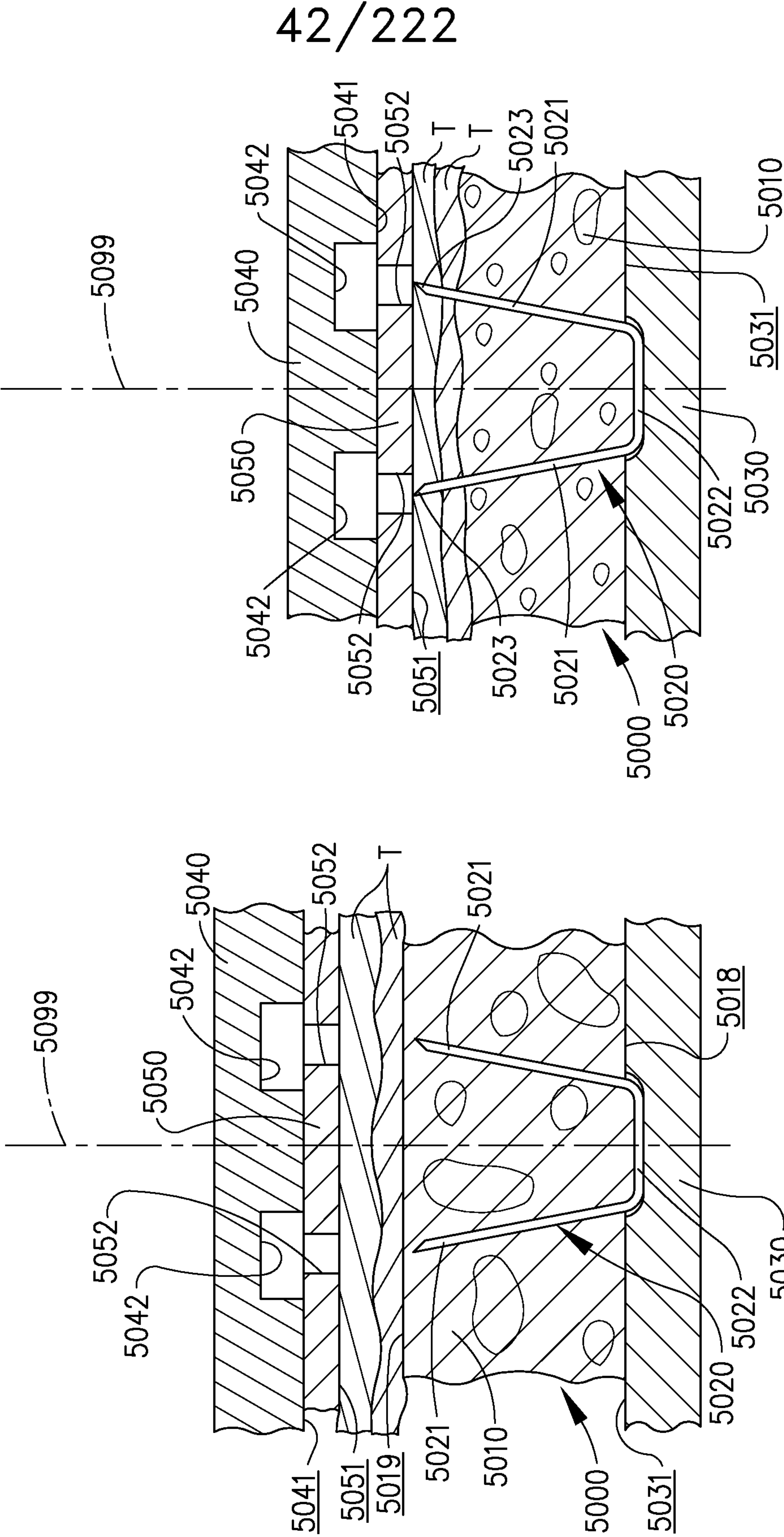


FIG. 96B

FIG. 96A

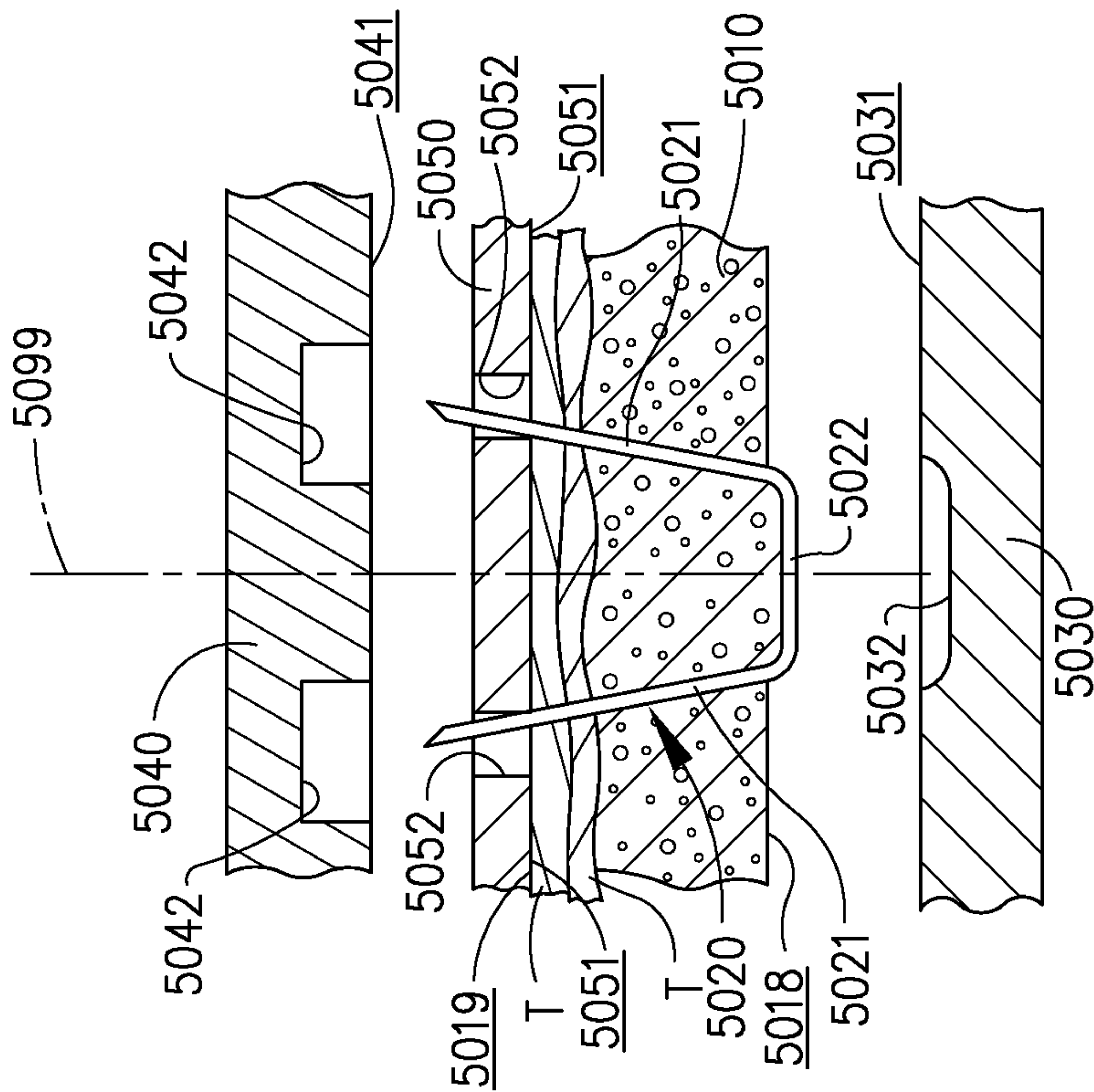


FIG. 96D

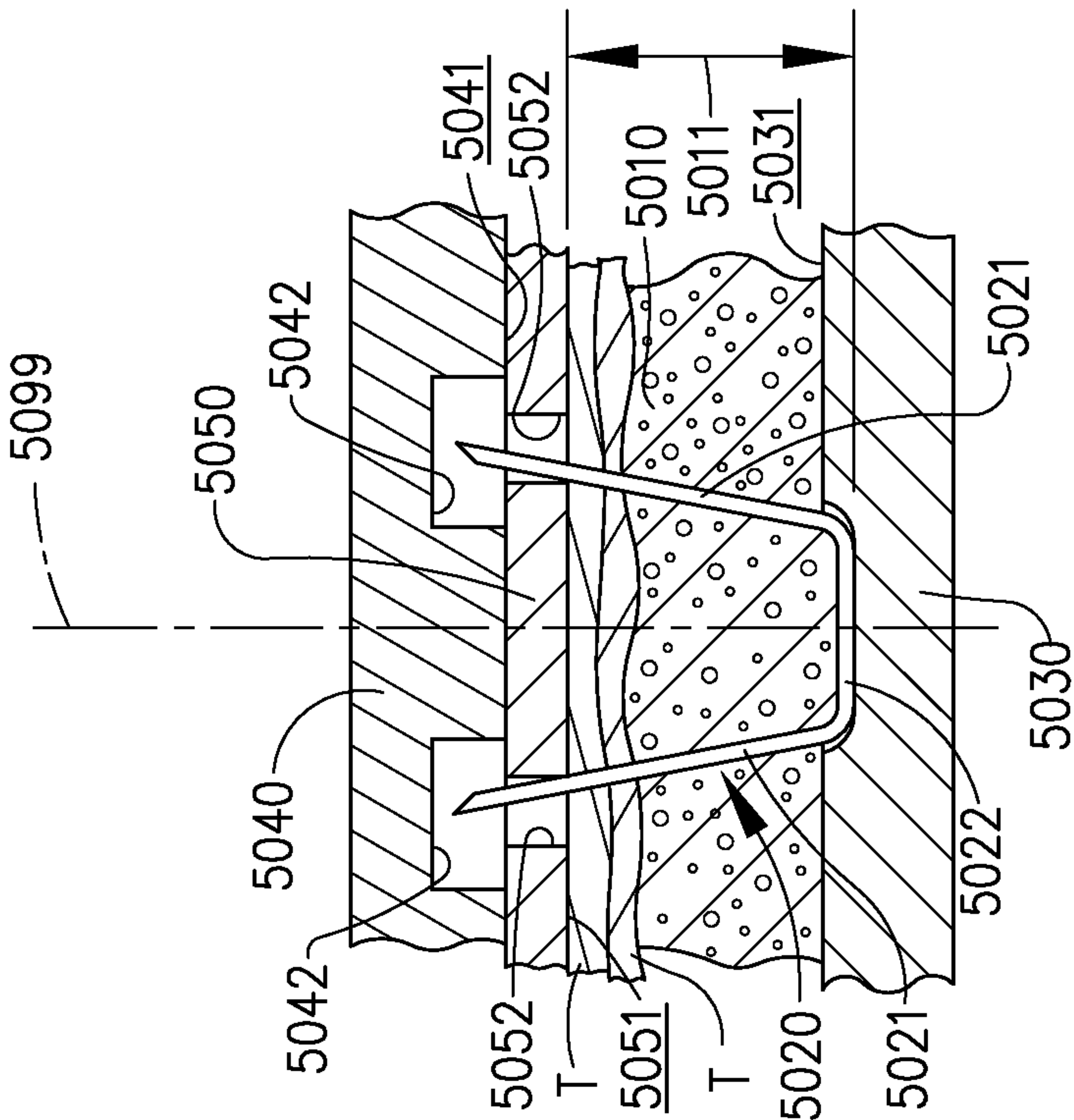
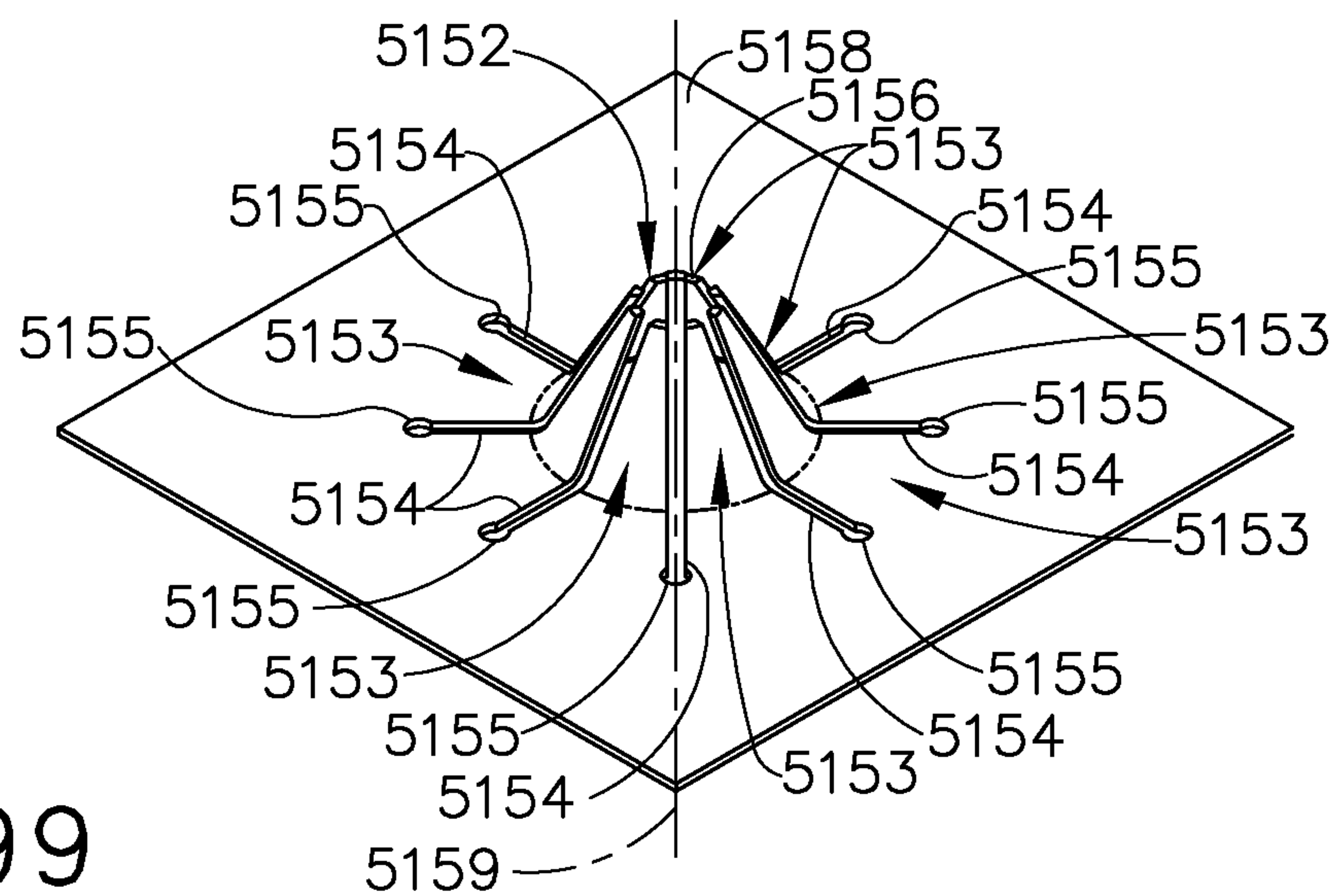
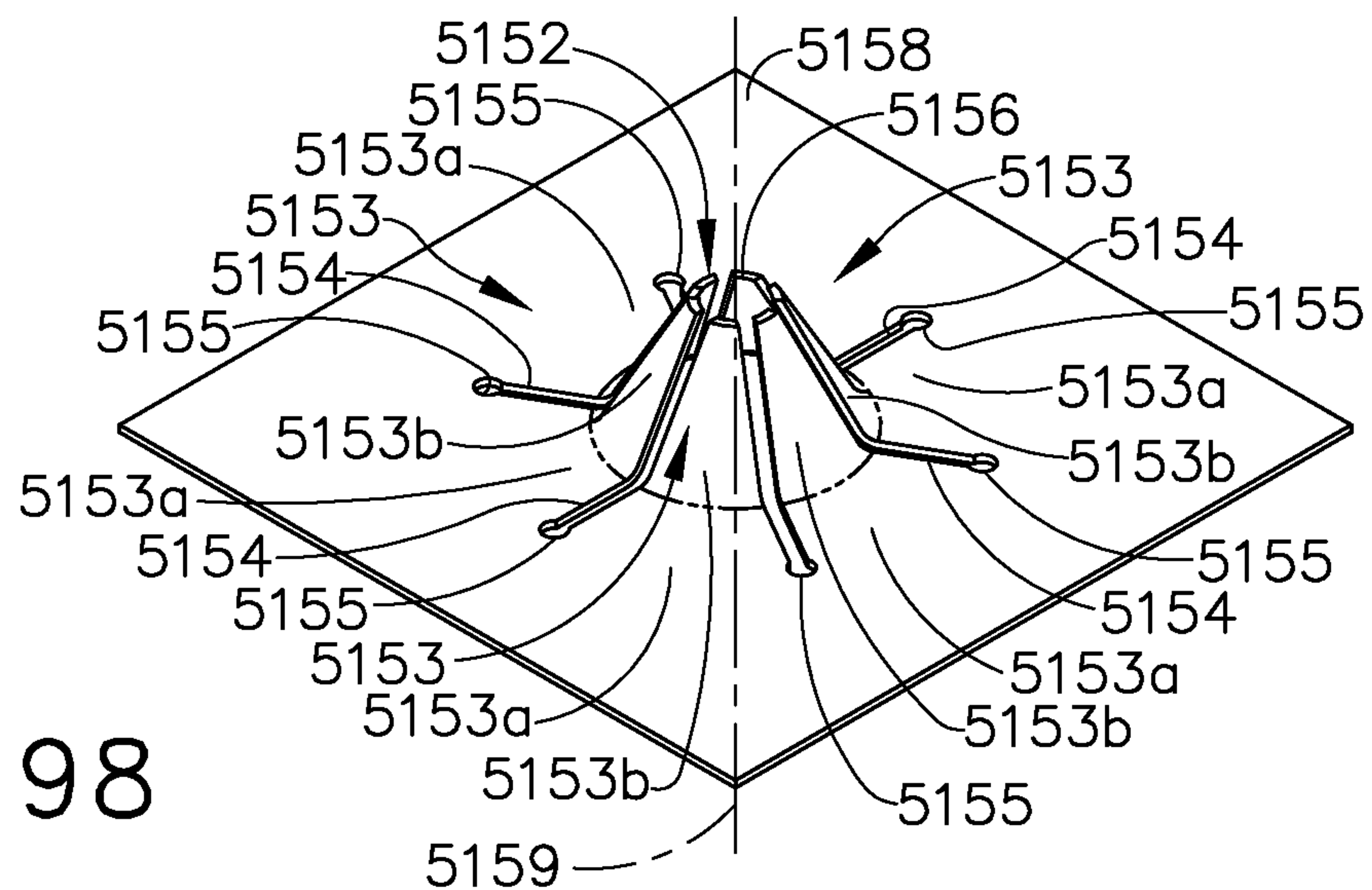
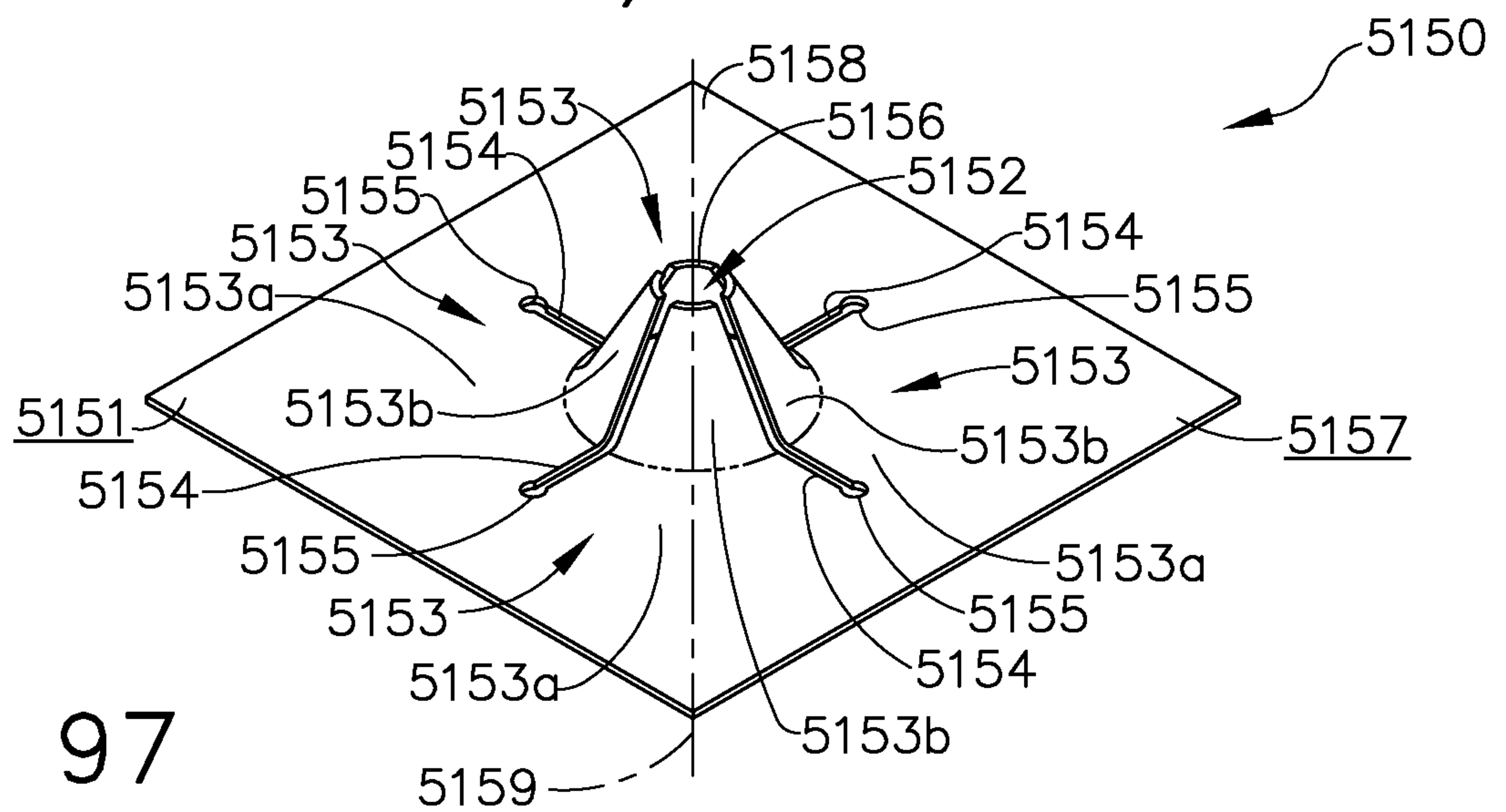
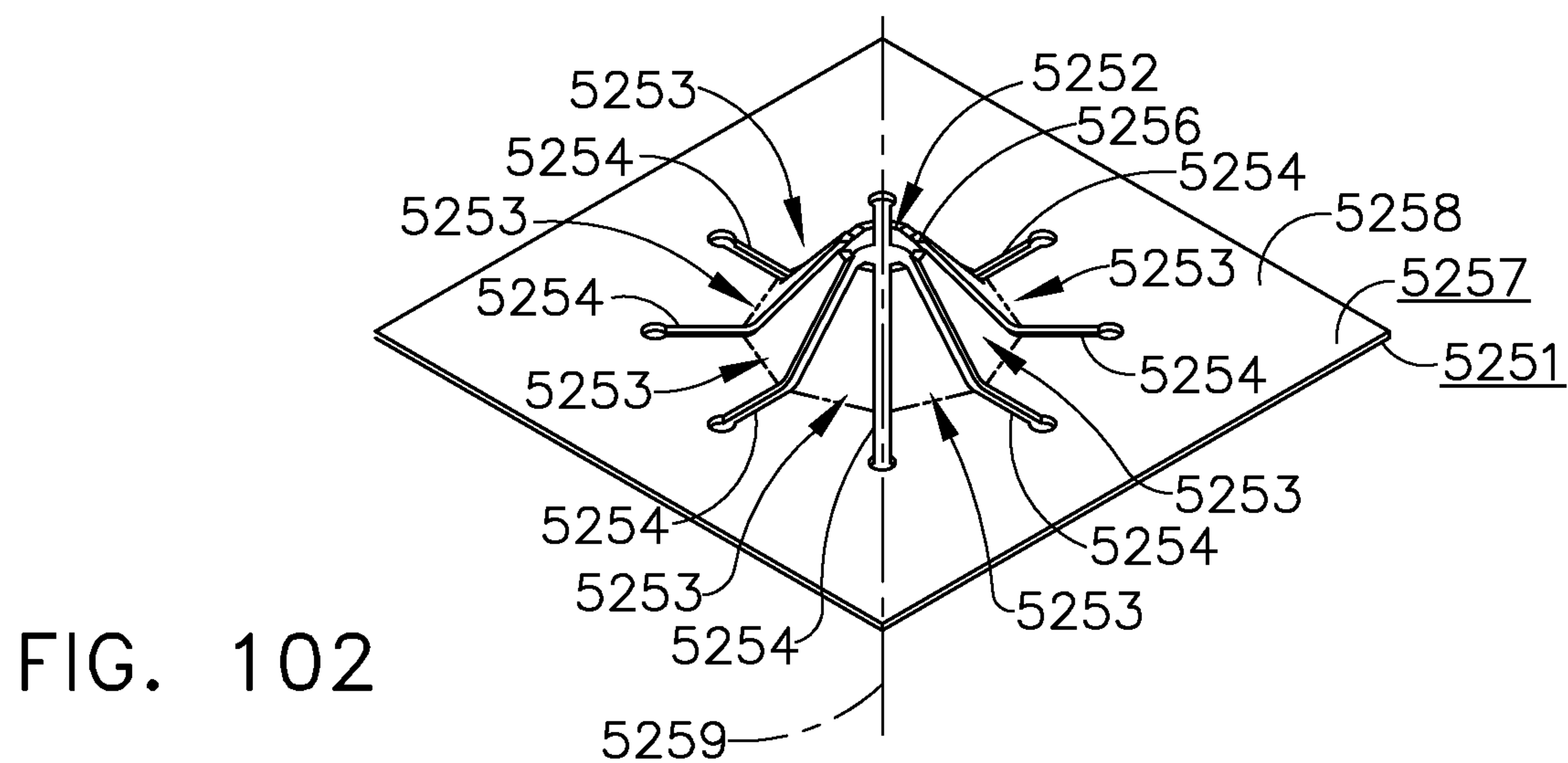
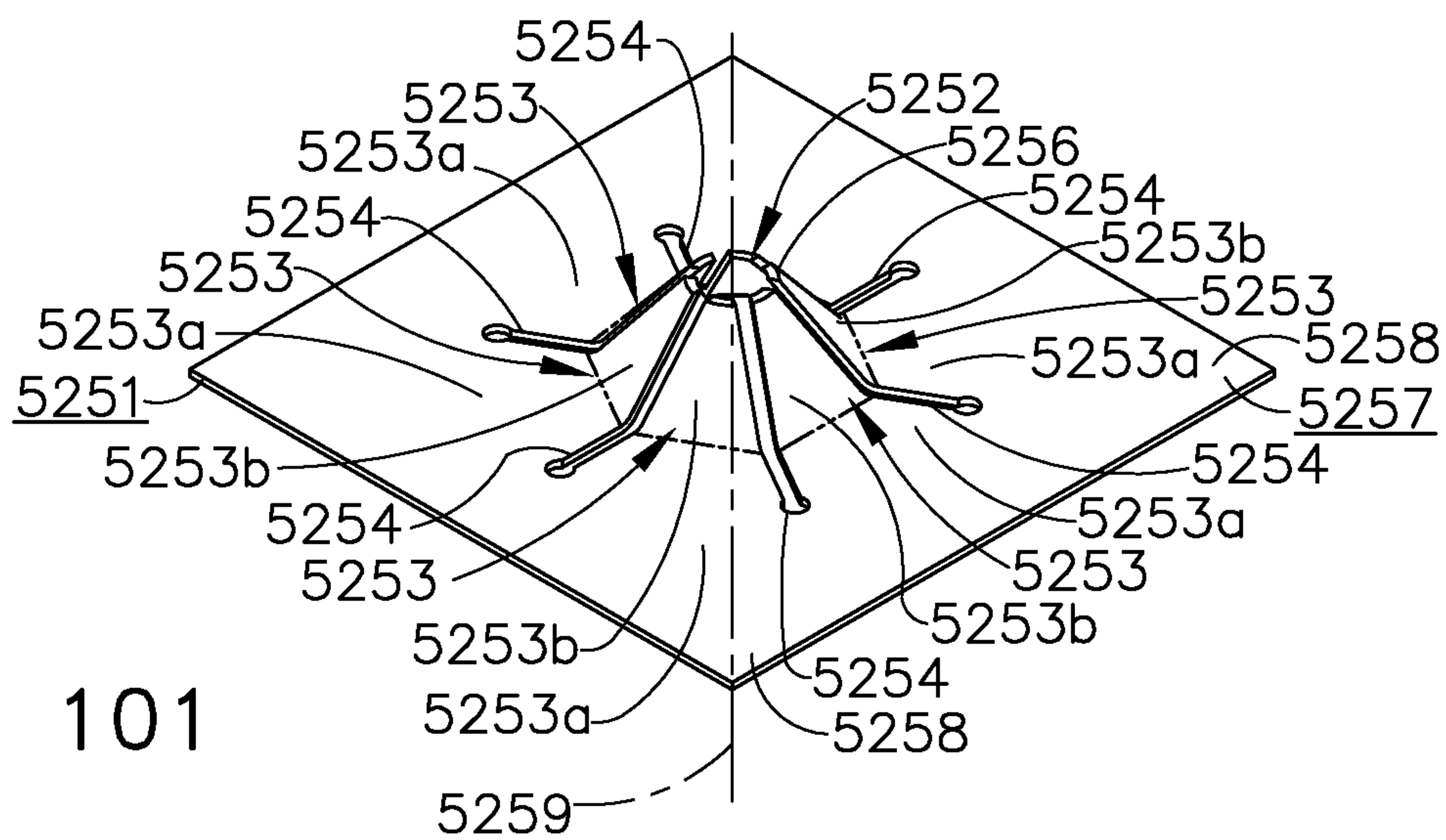
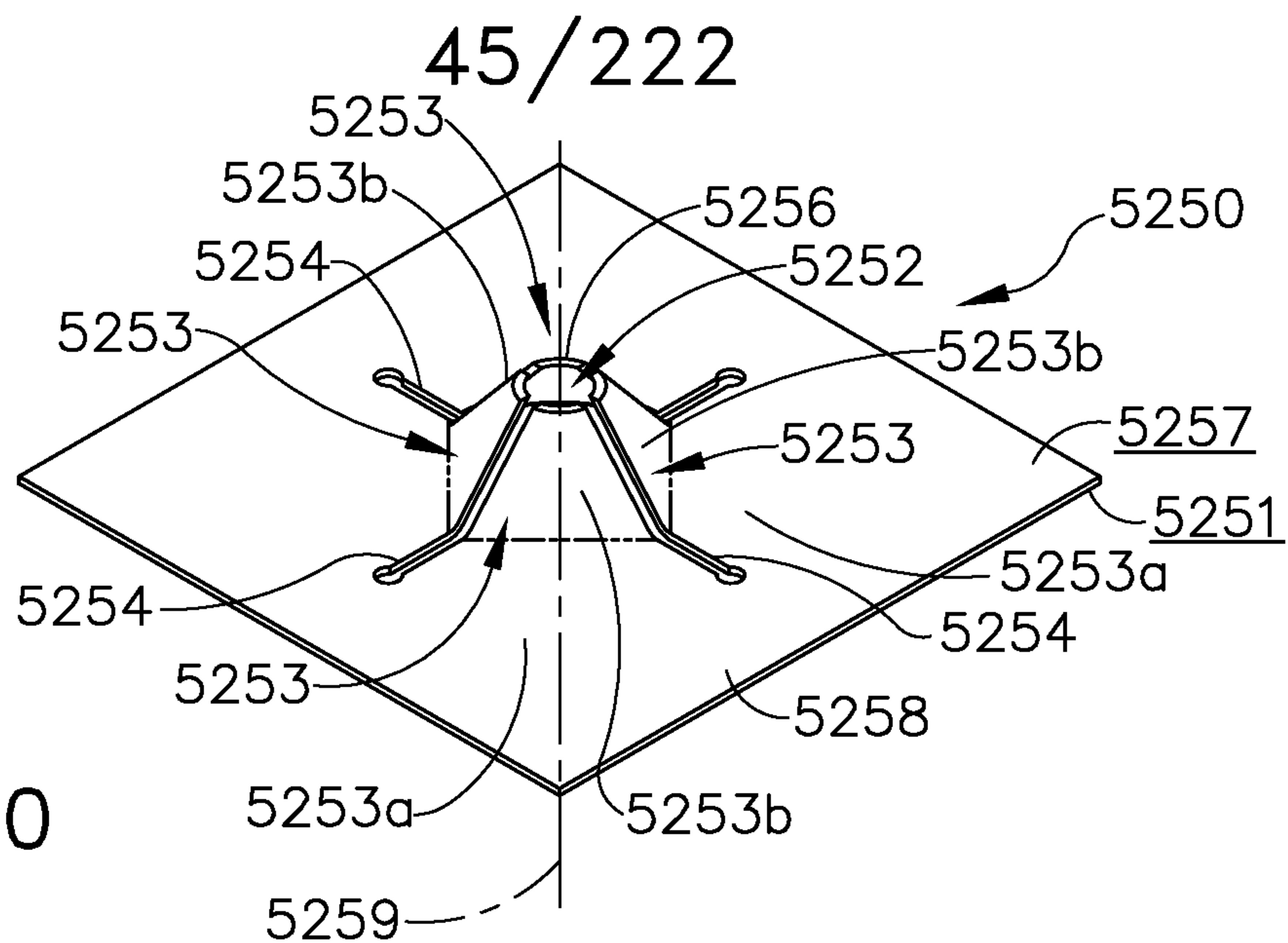


FIG. 96C

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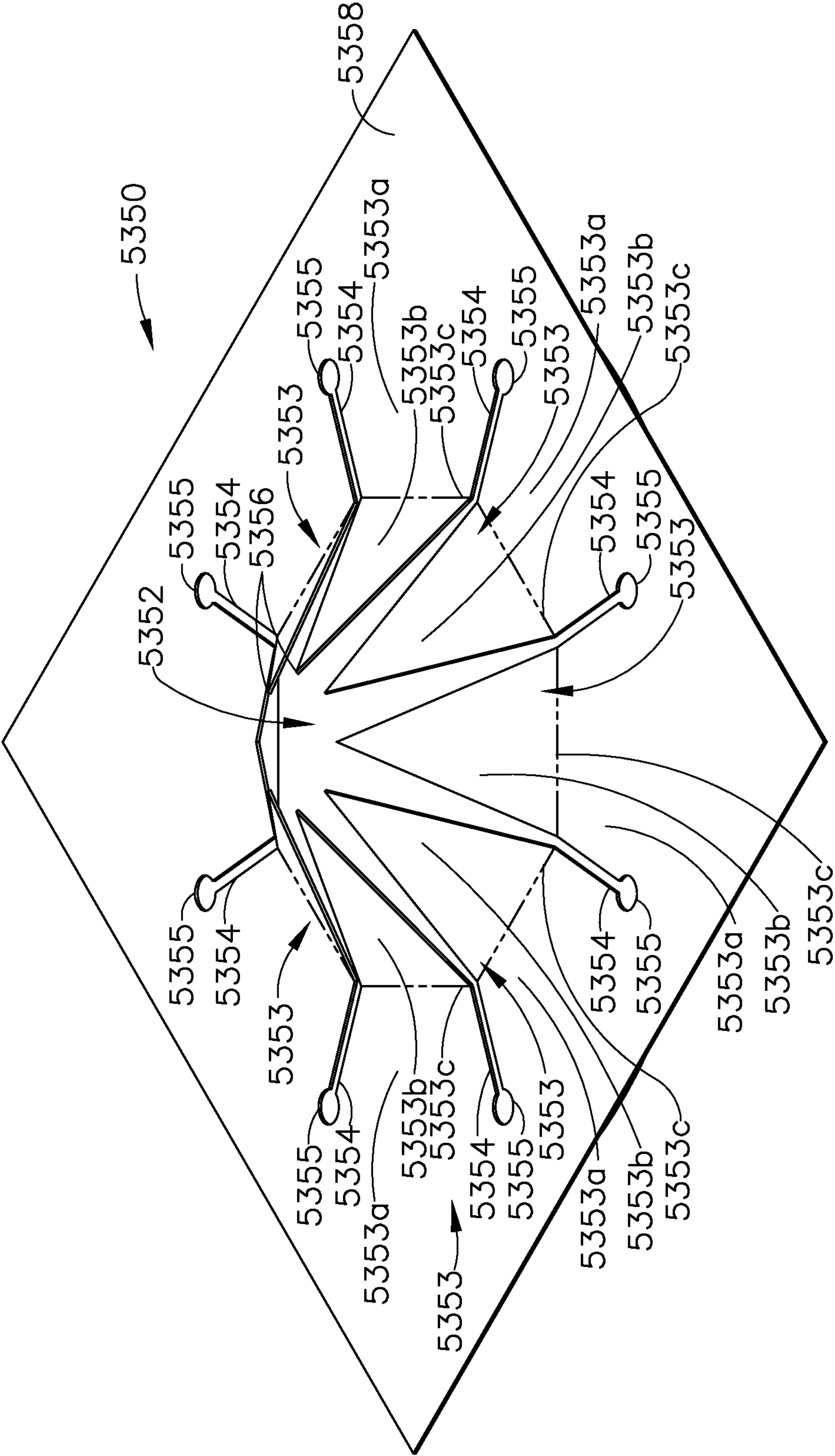


FIG. 103

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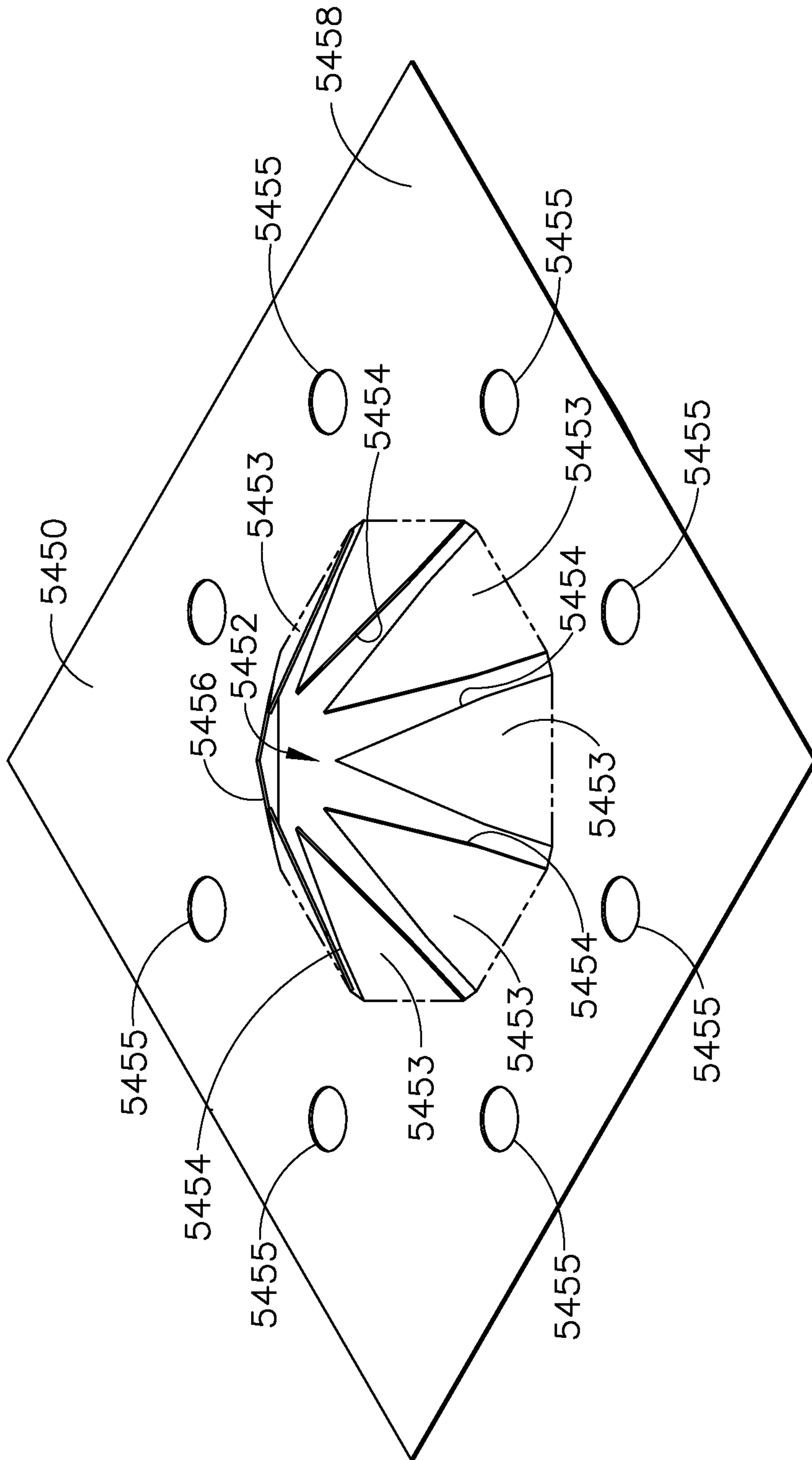


FIG. 104

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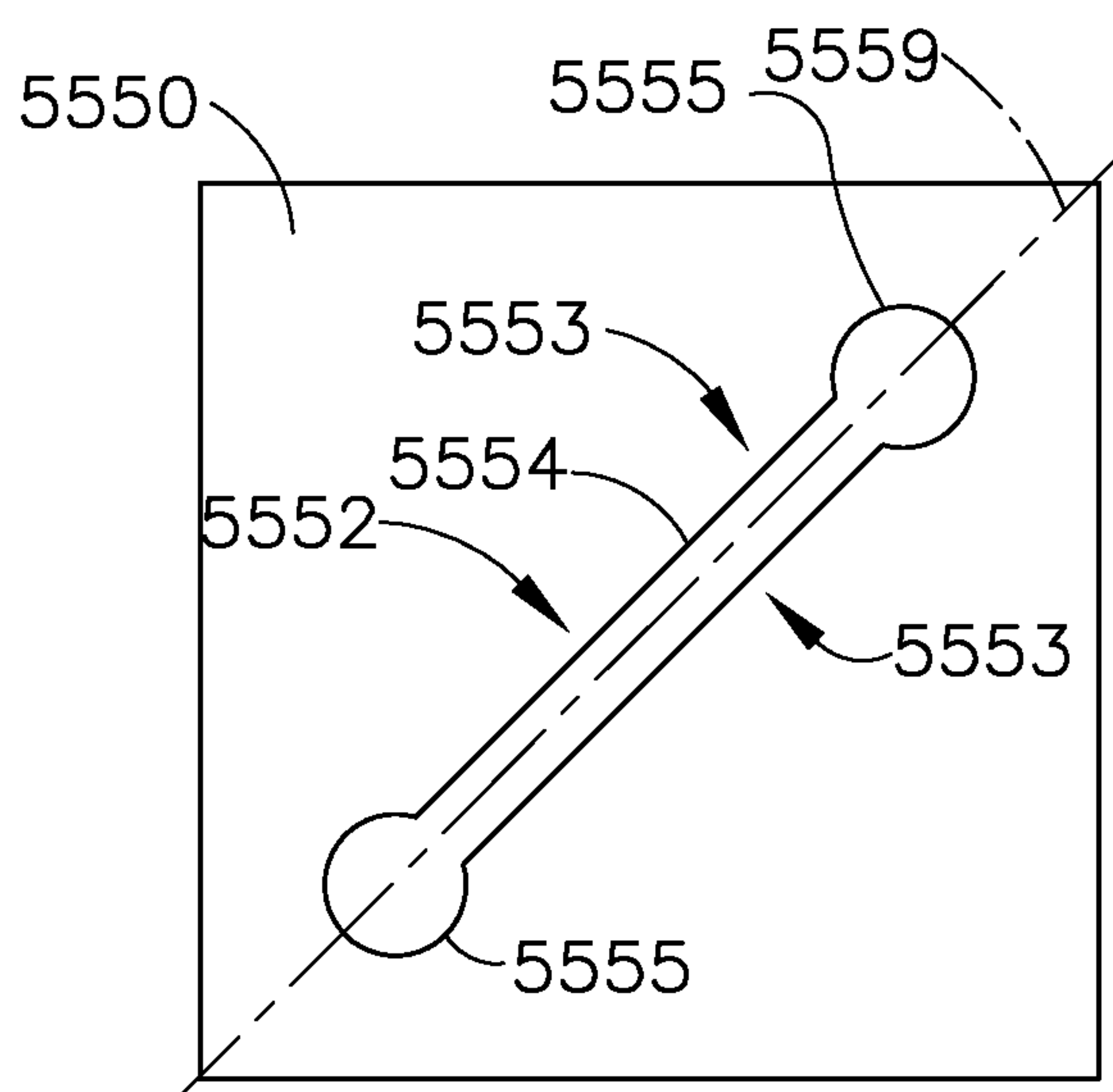


FIG. 105

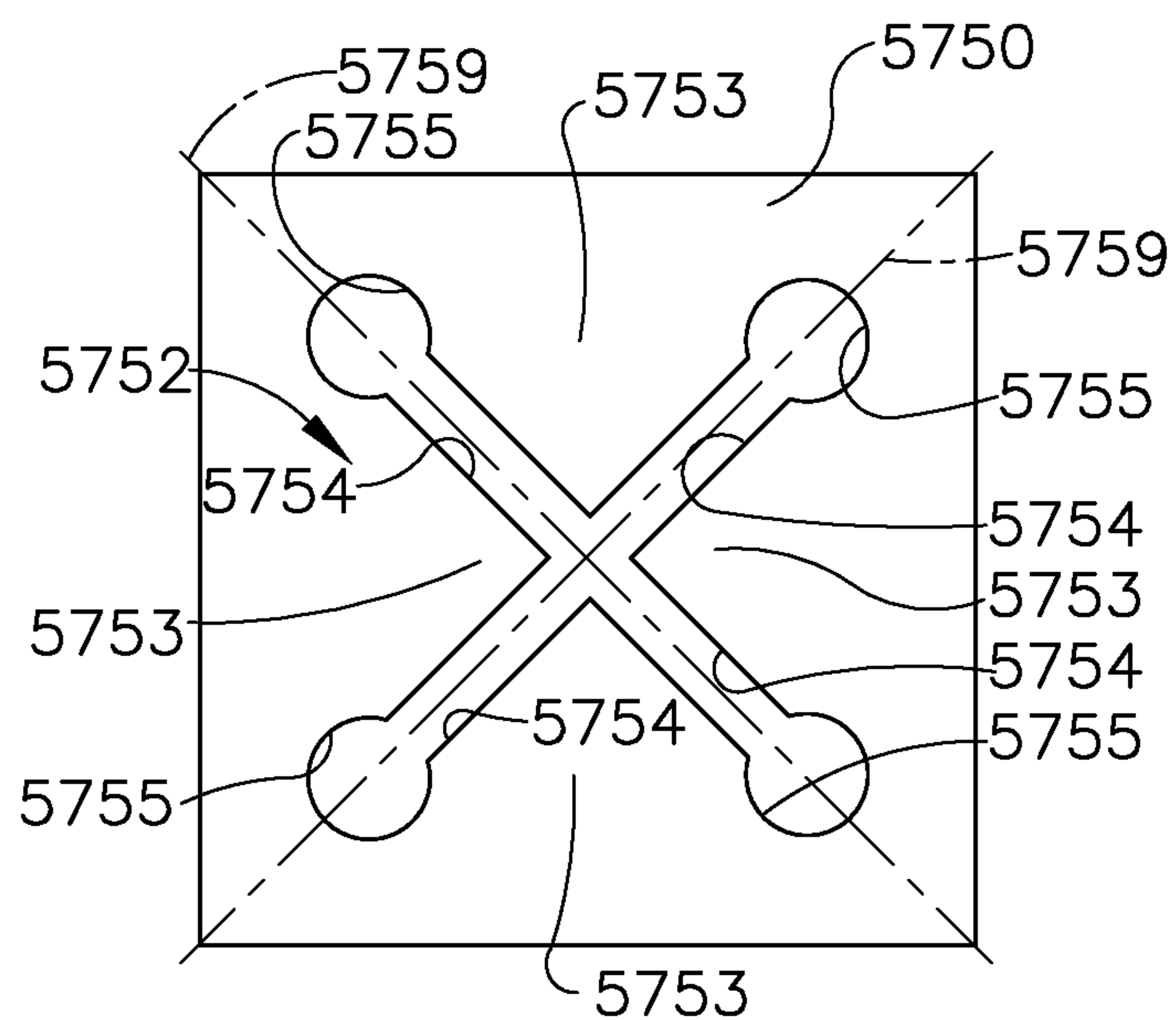


FIG. 107

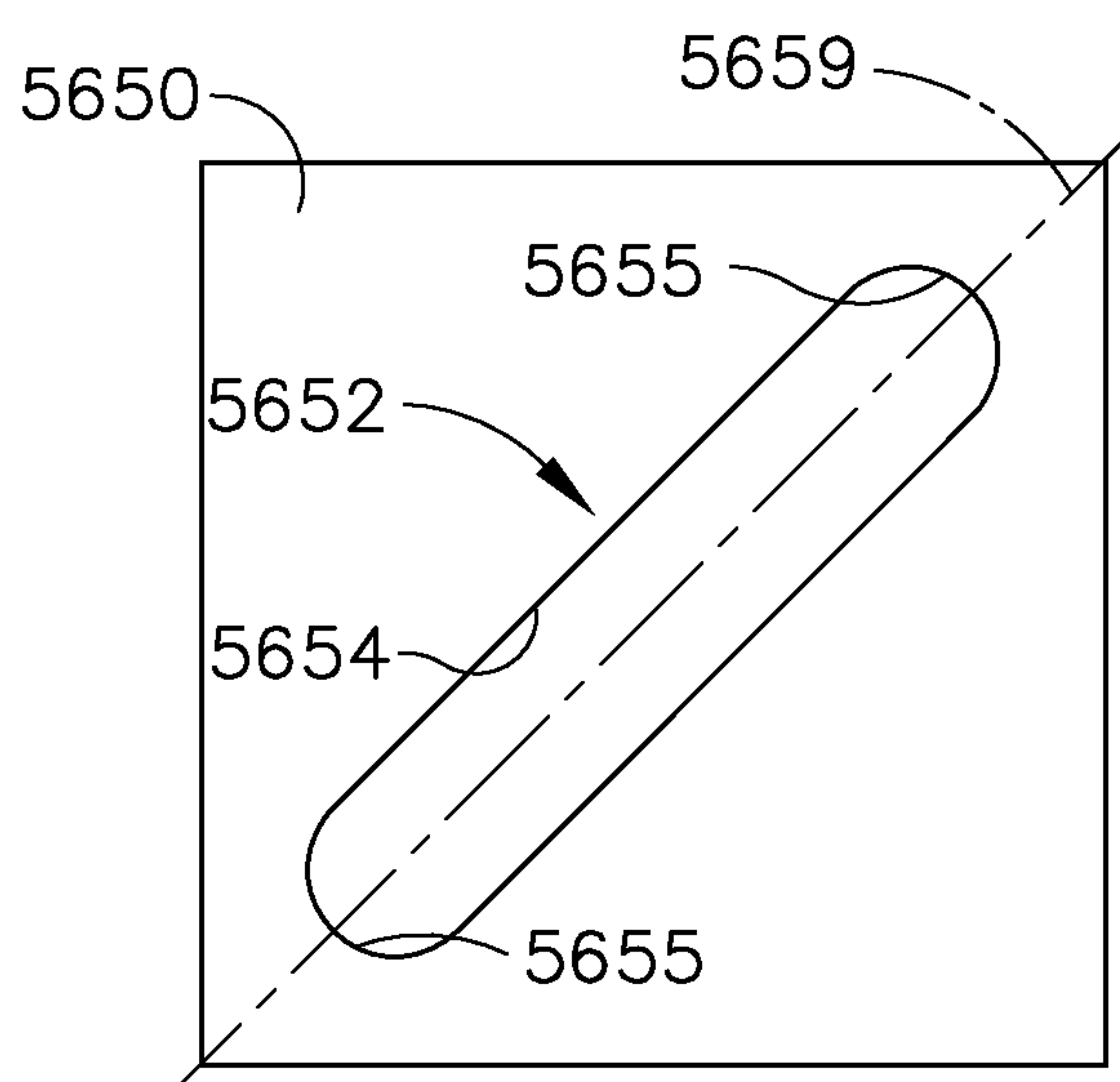


FIG. 106

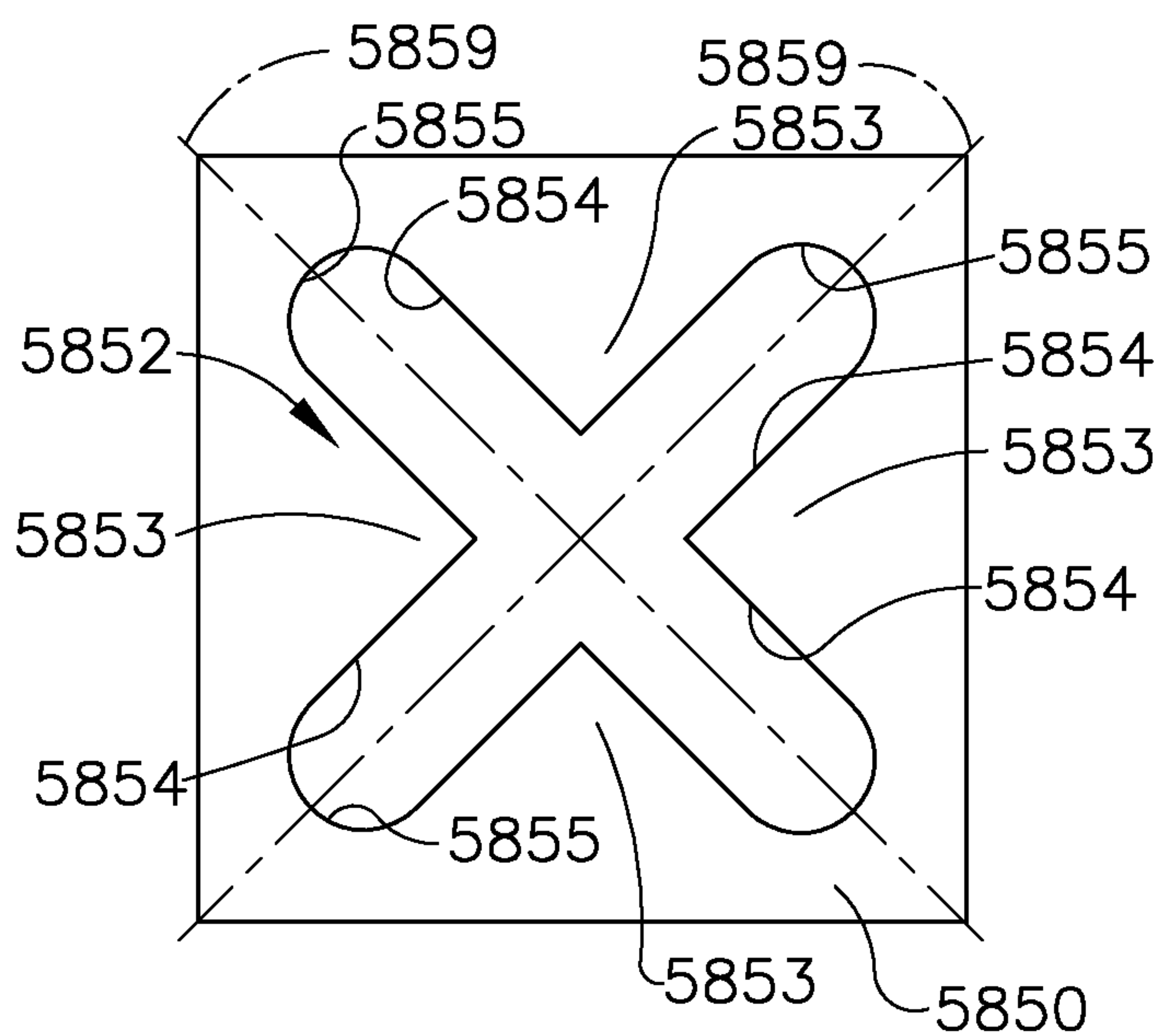


FIG. 108

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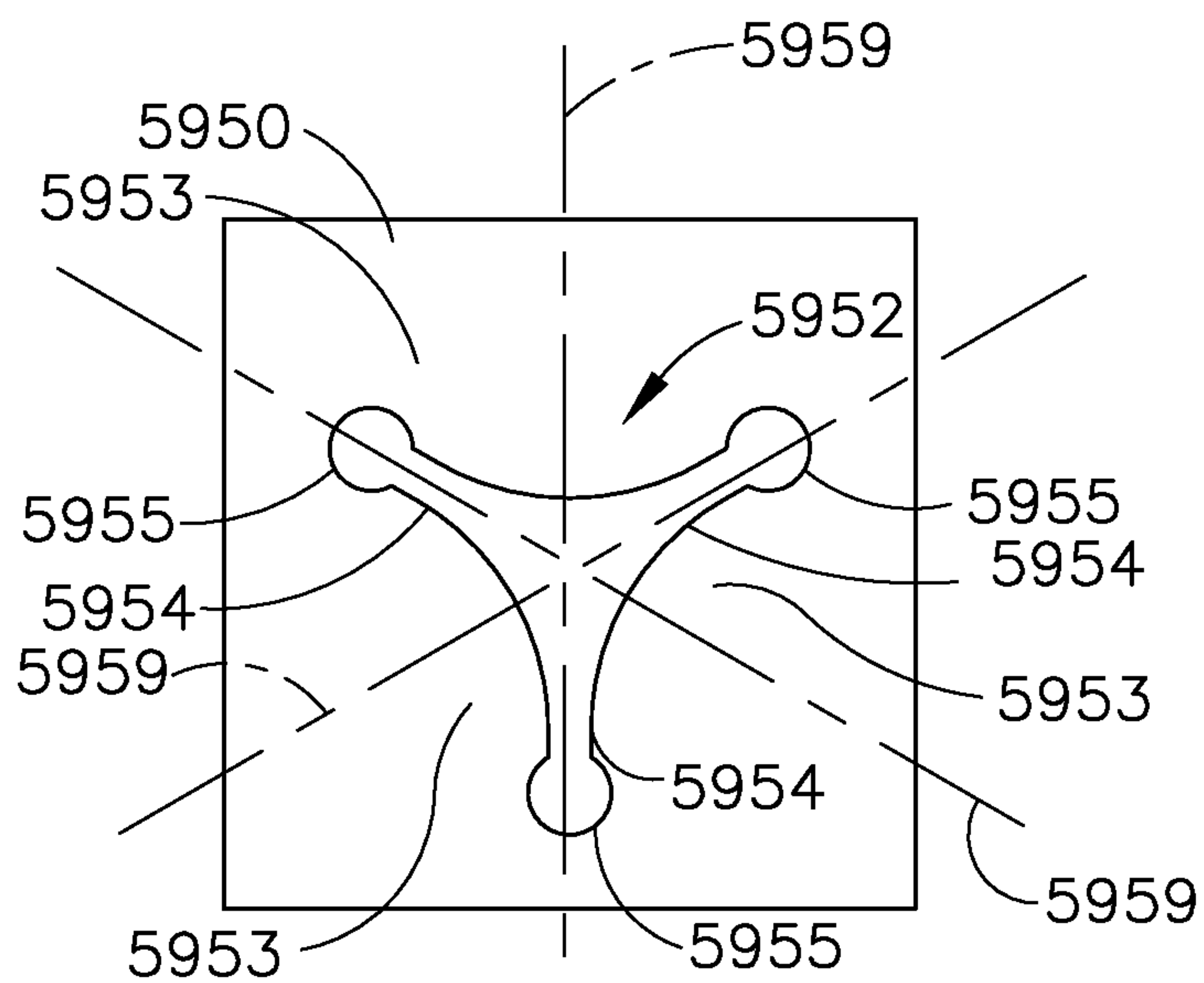


FIG. 109

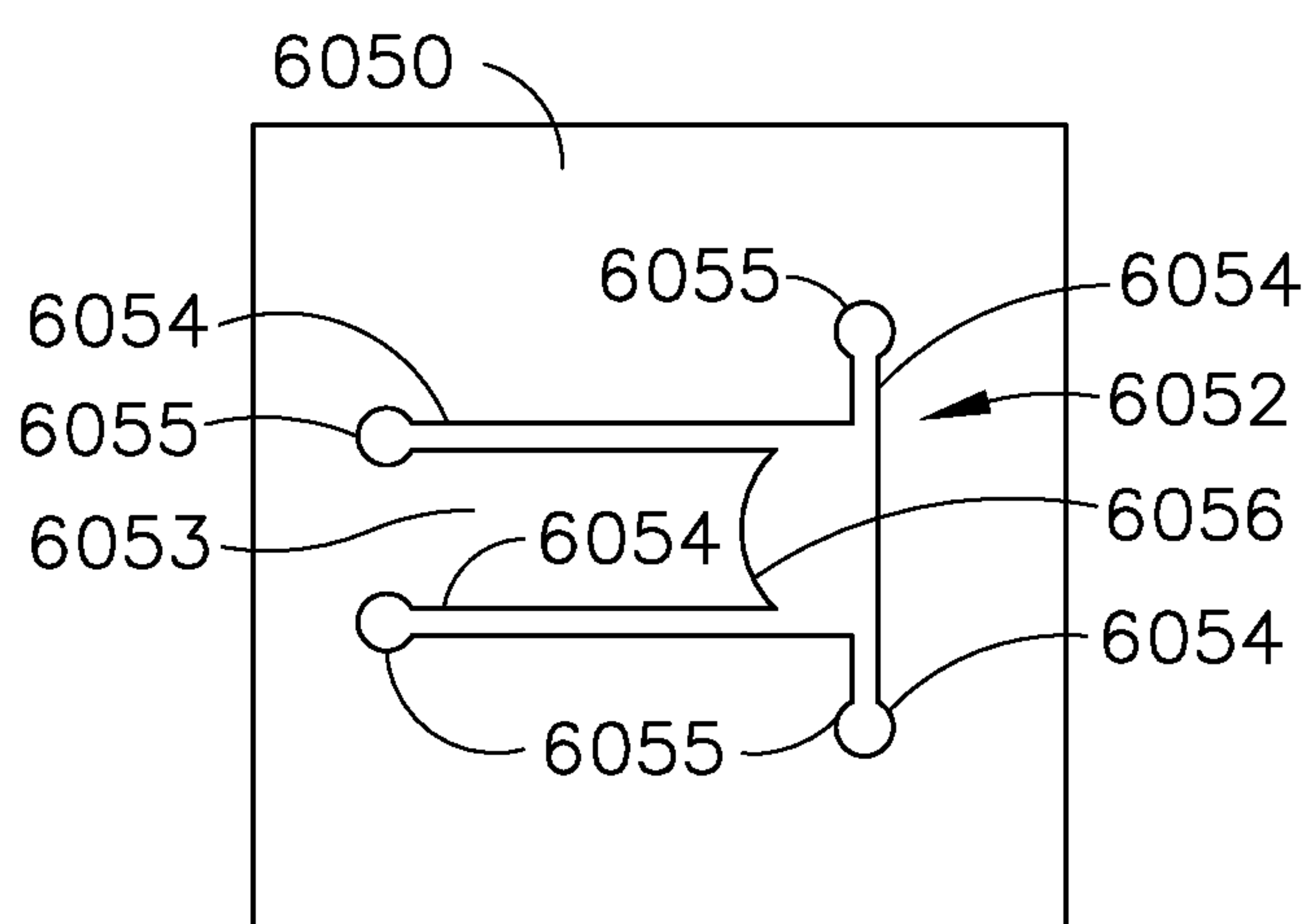


FIG. 110

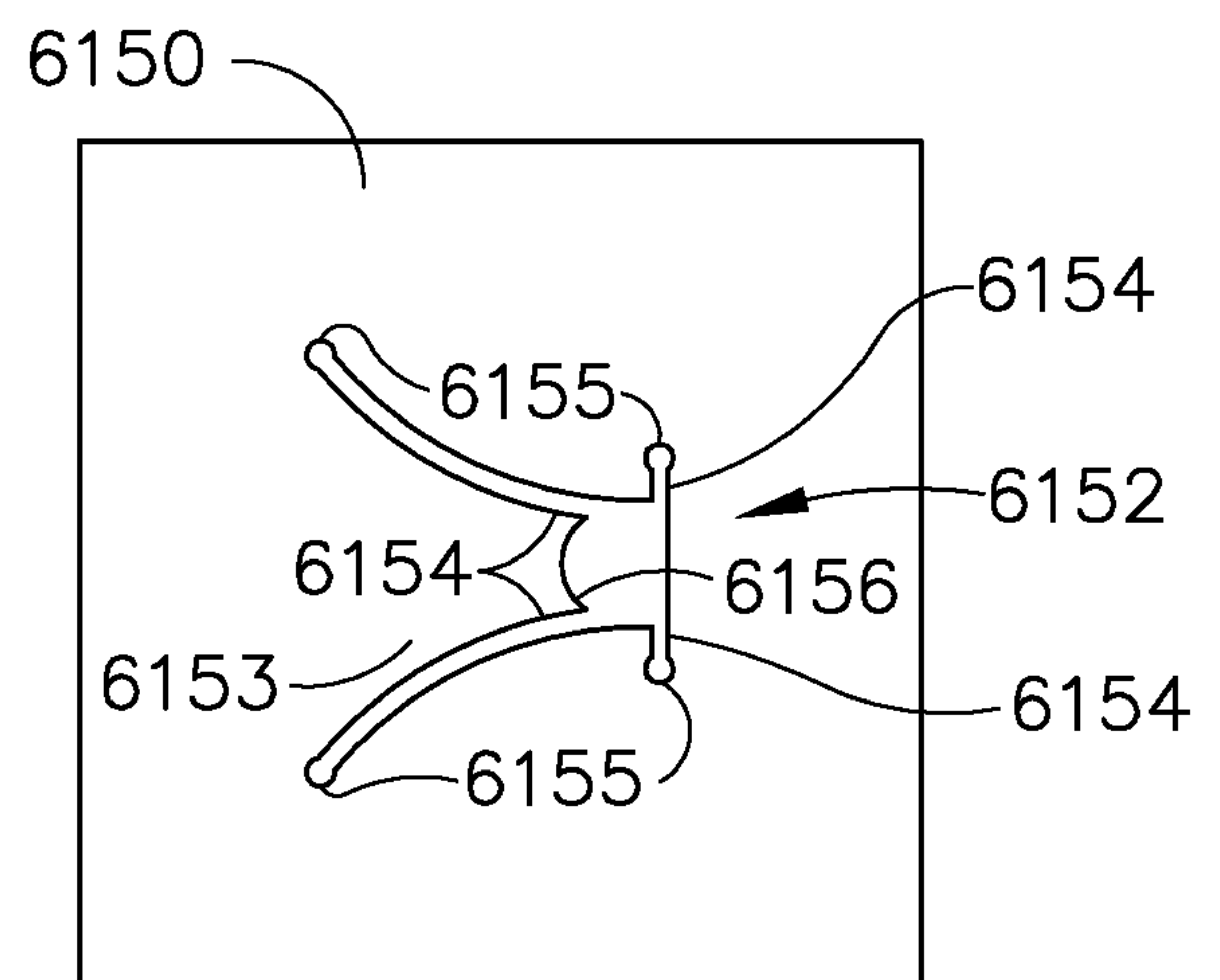
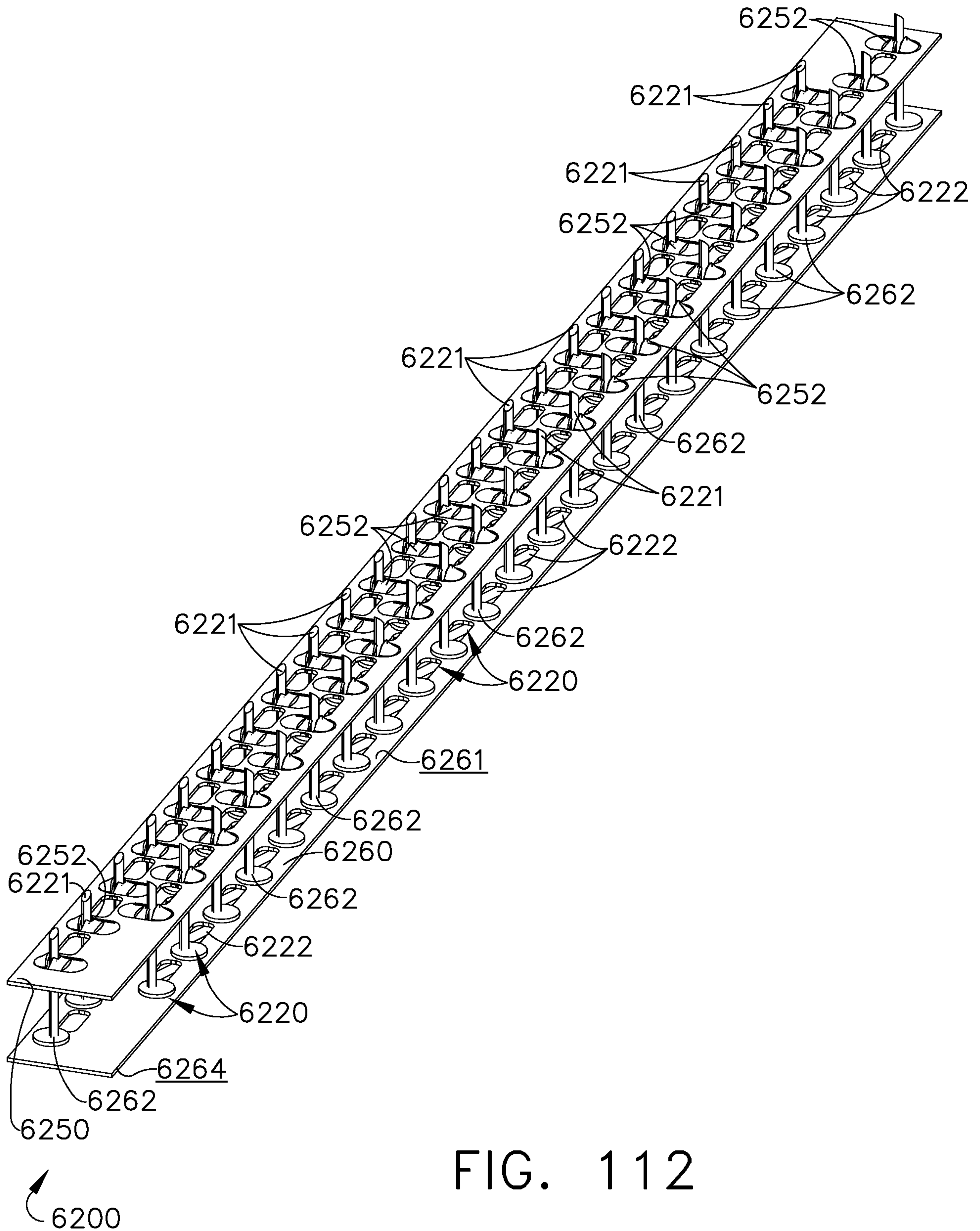


FIG. 111

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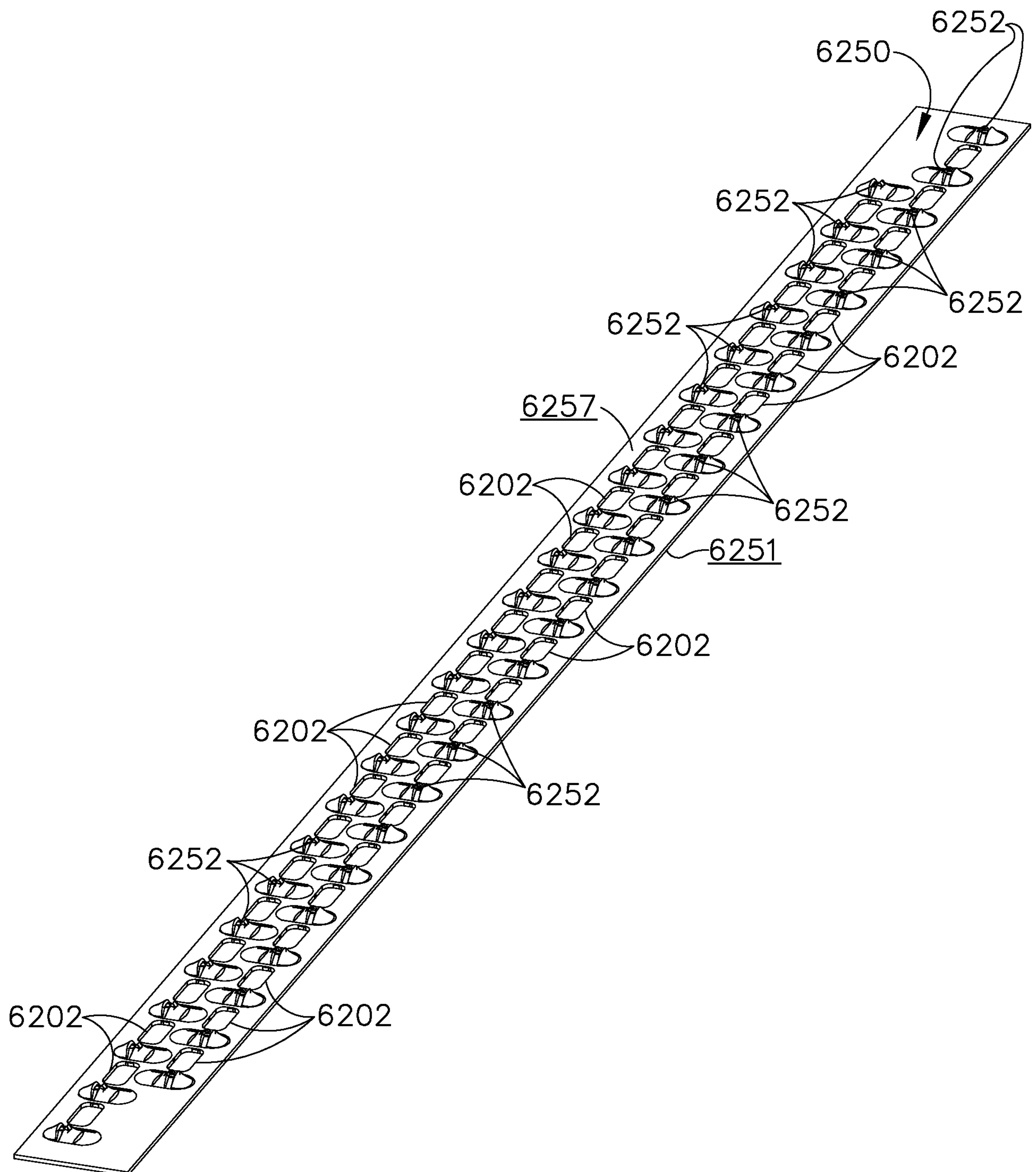


FIG. 113

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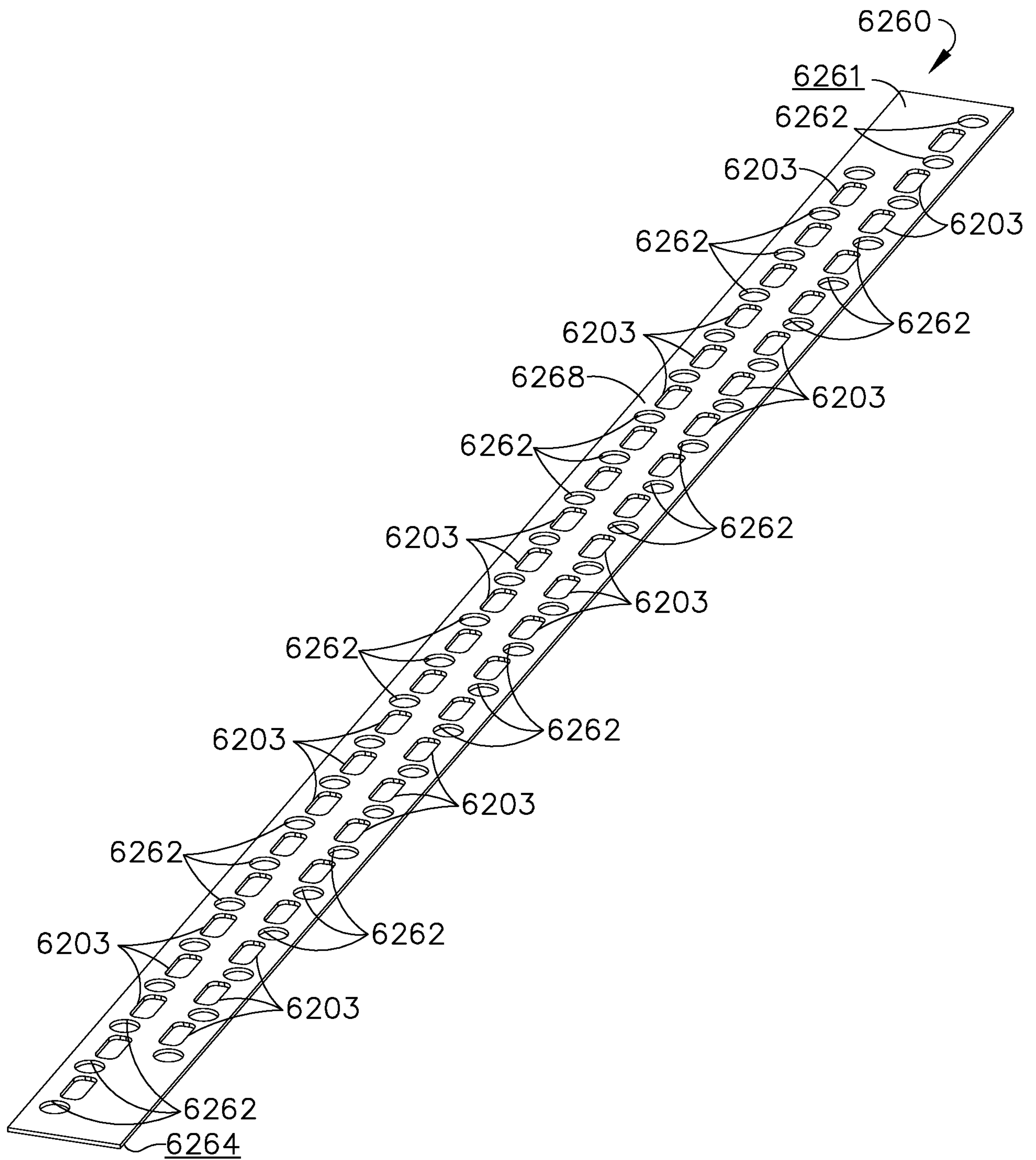


FIG. 114

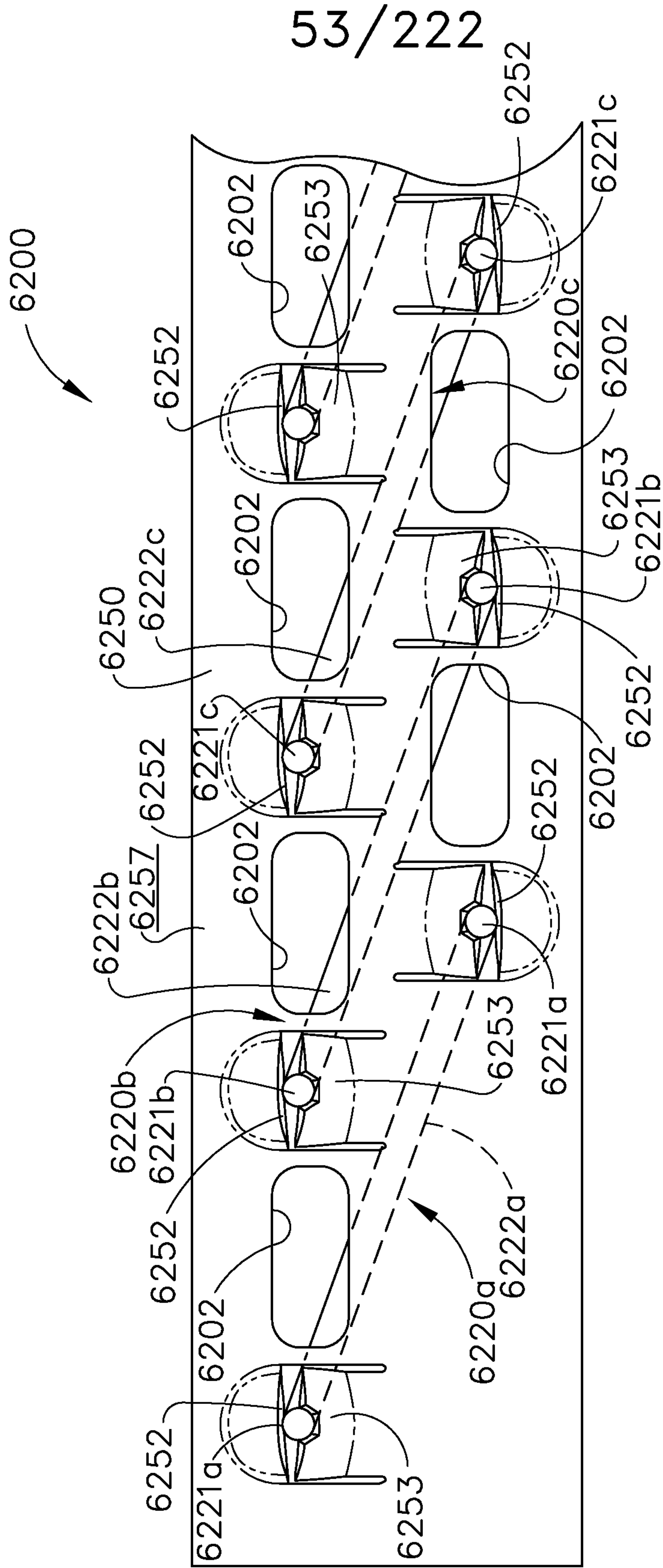


FIG. 115

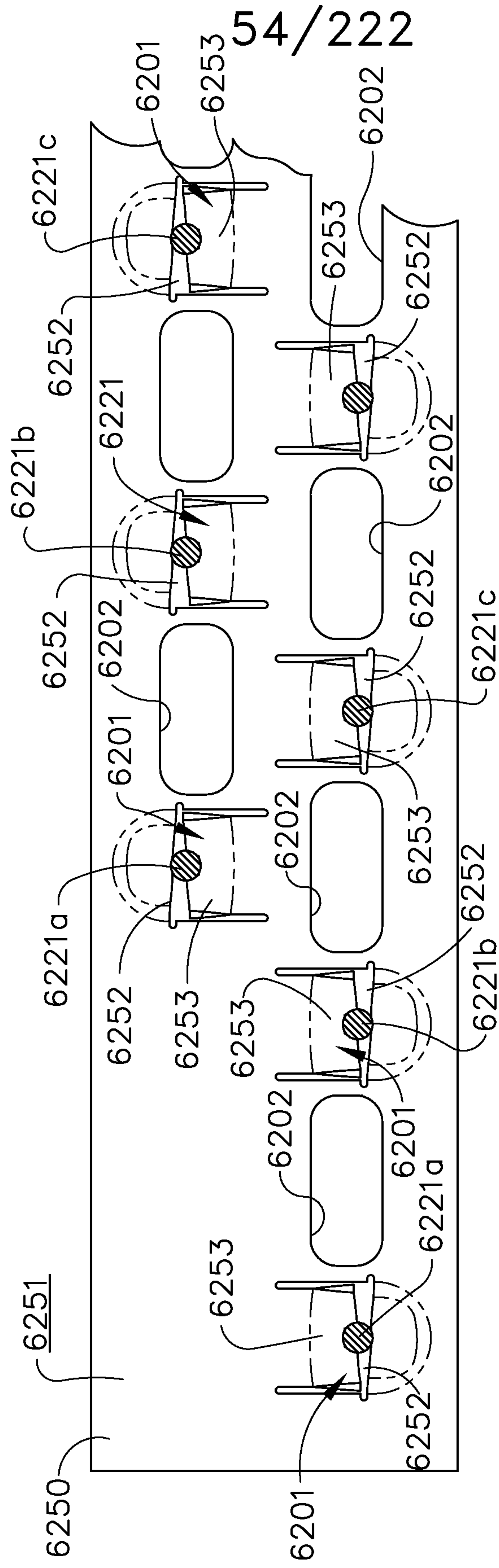


FIG. 116

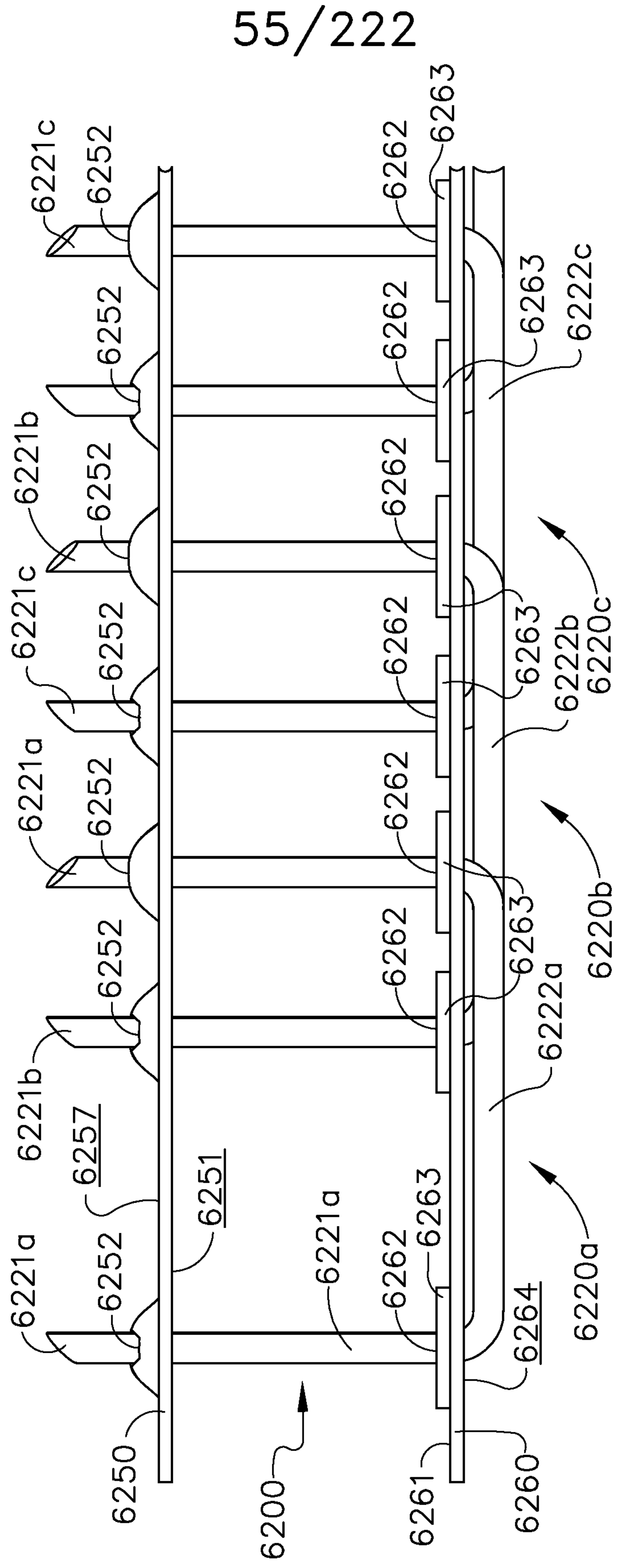


FIG. 117

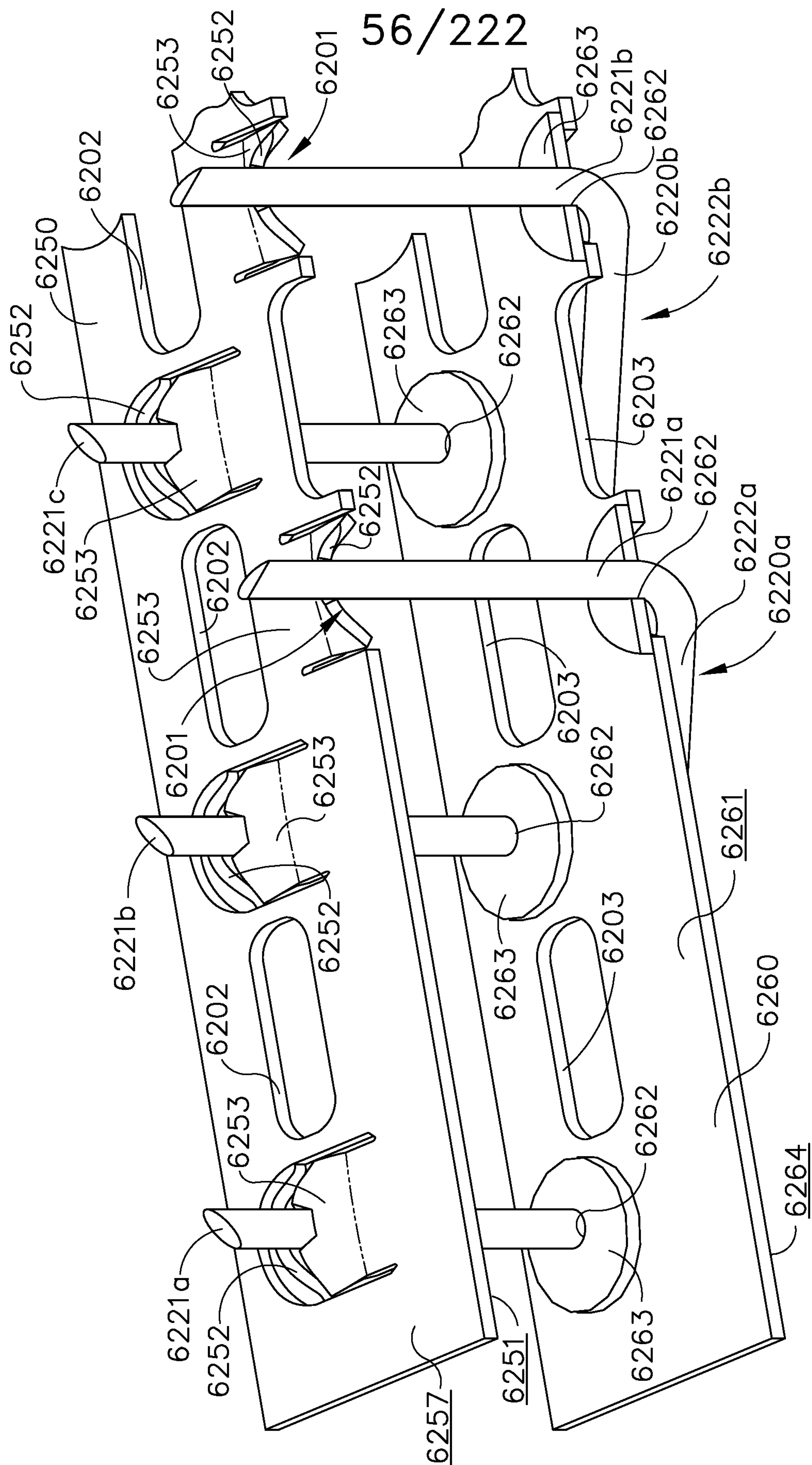


FIG. 118

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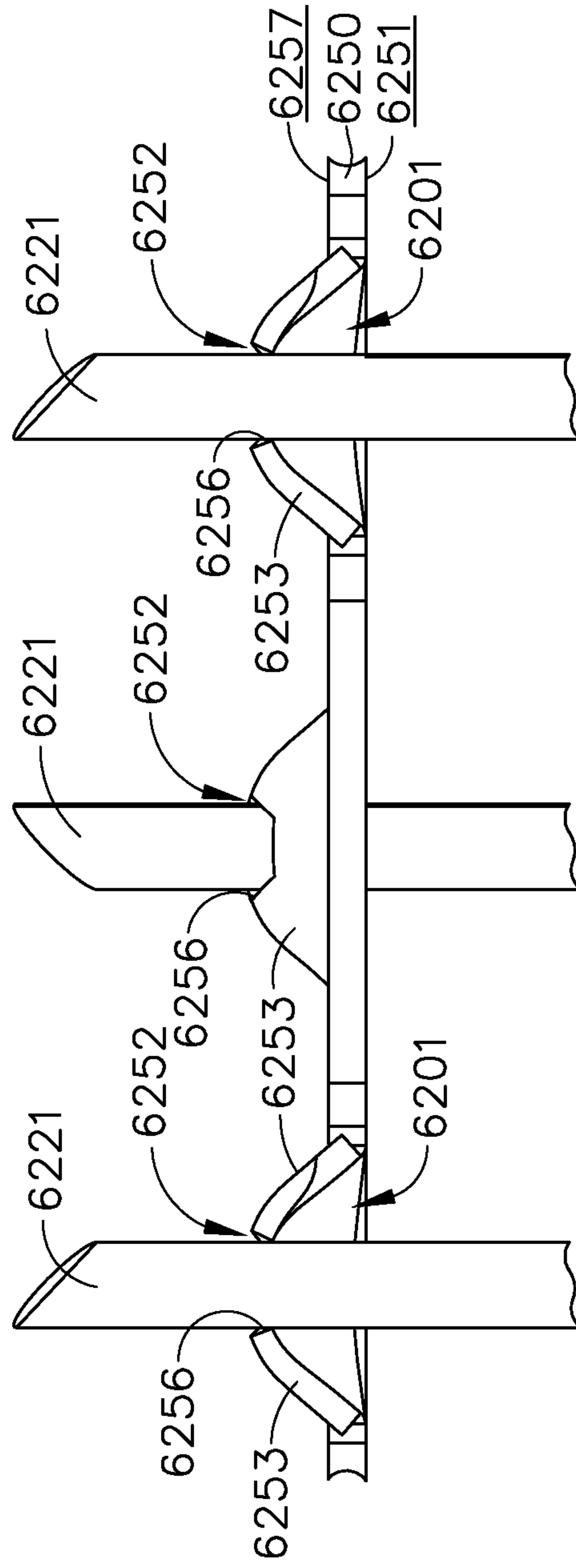


FIG. 119

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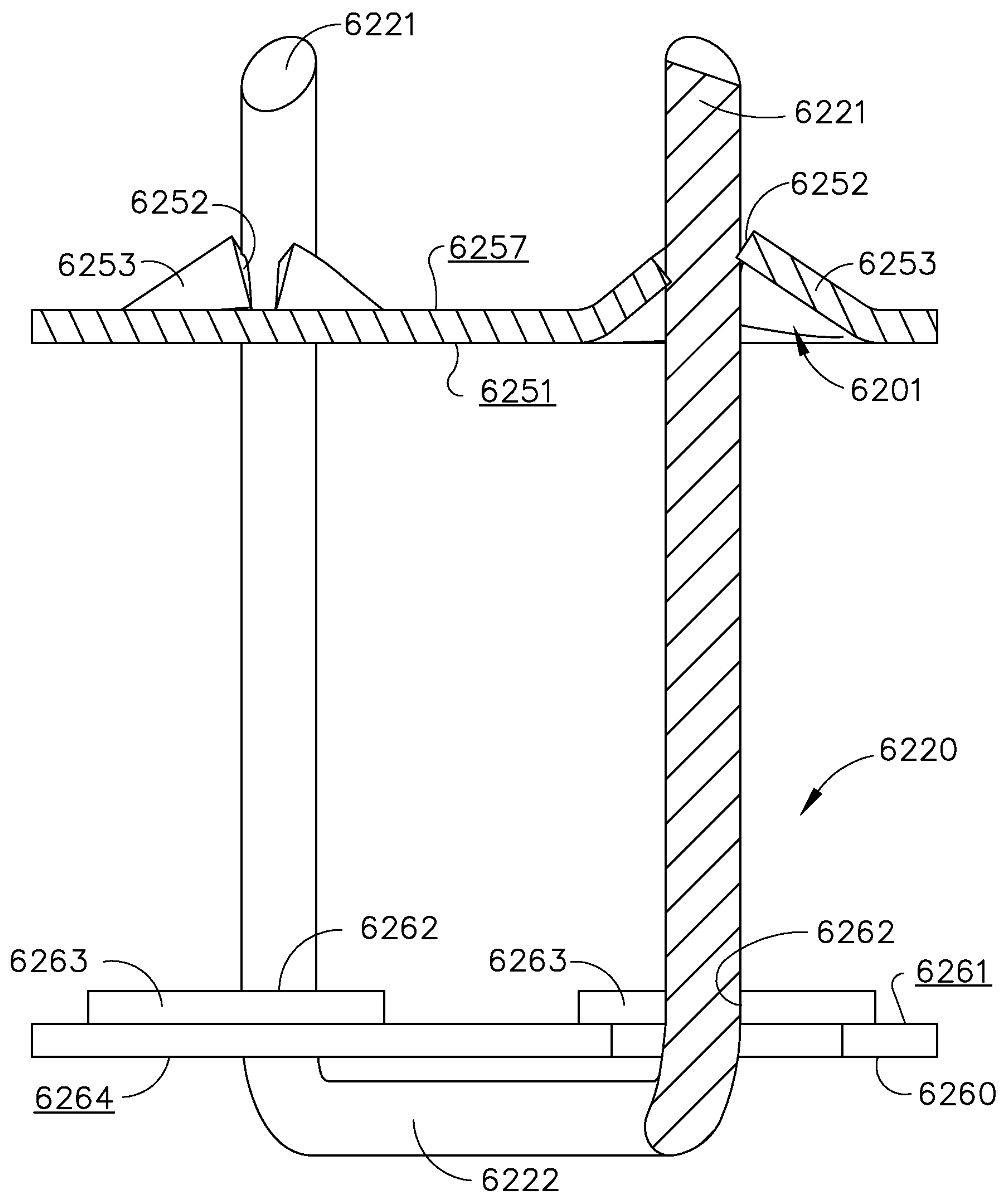


FIG. 120

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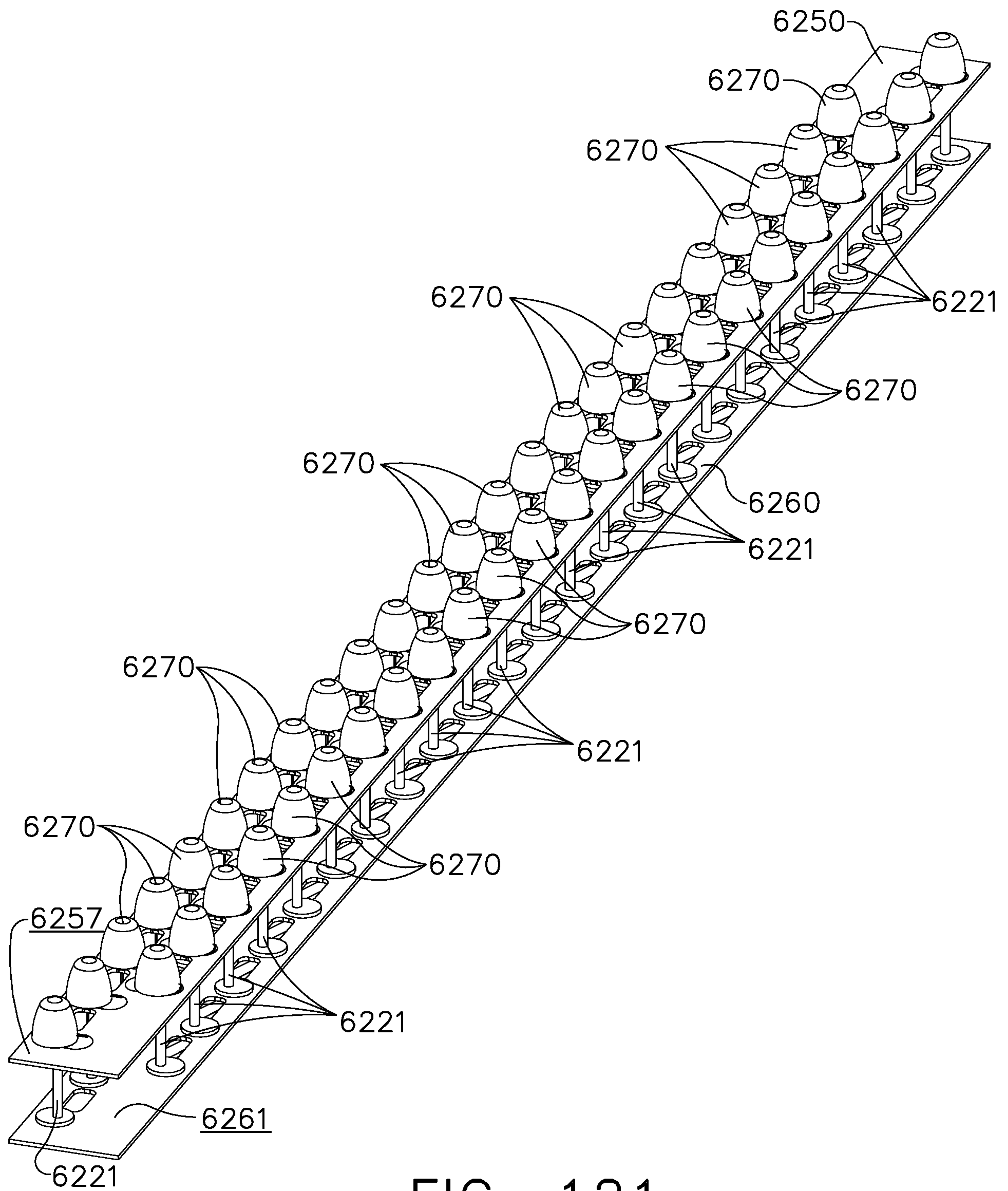


FIG. 121

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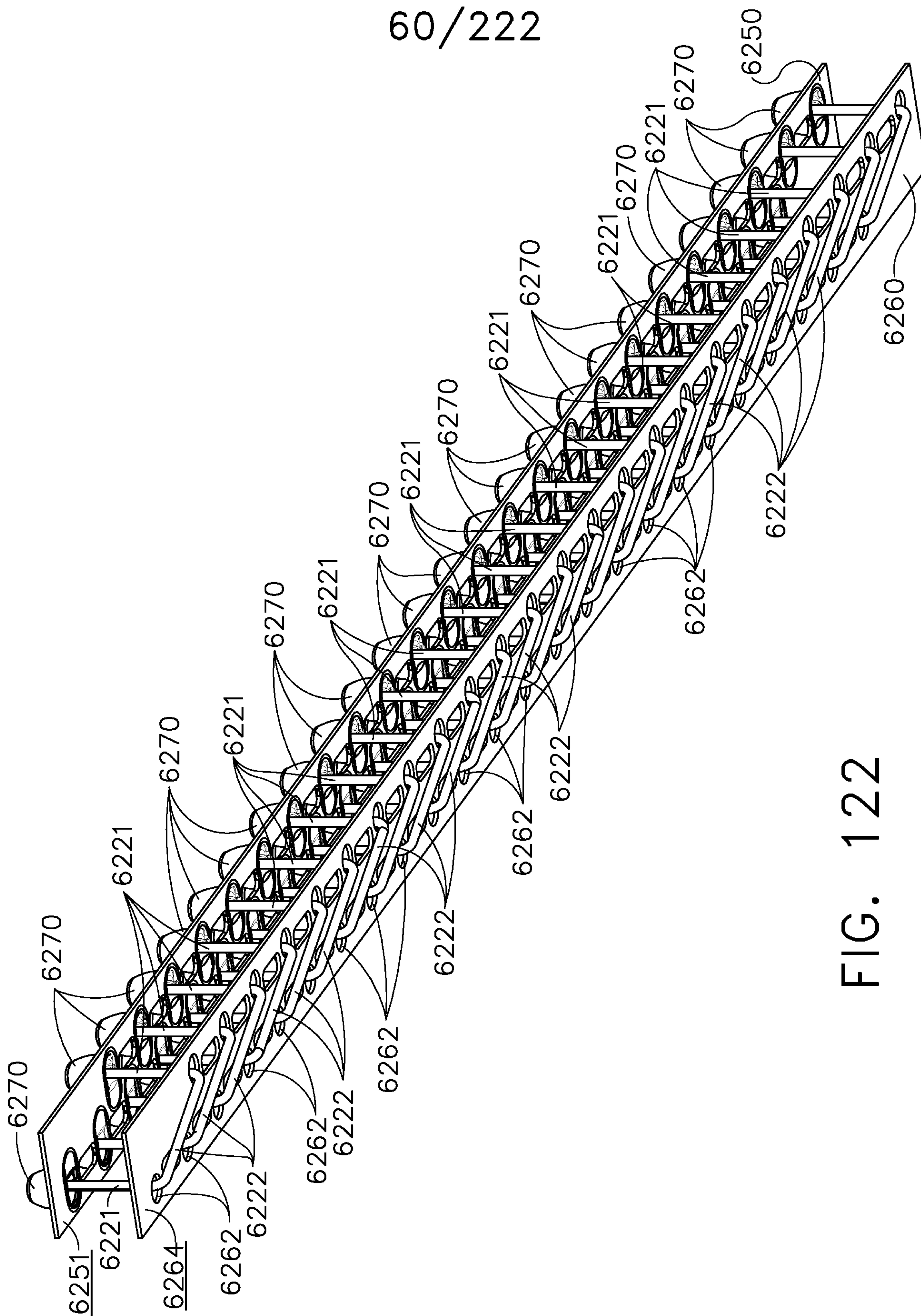


FIG. 122

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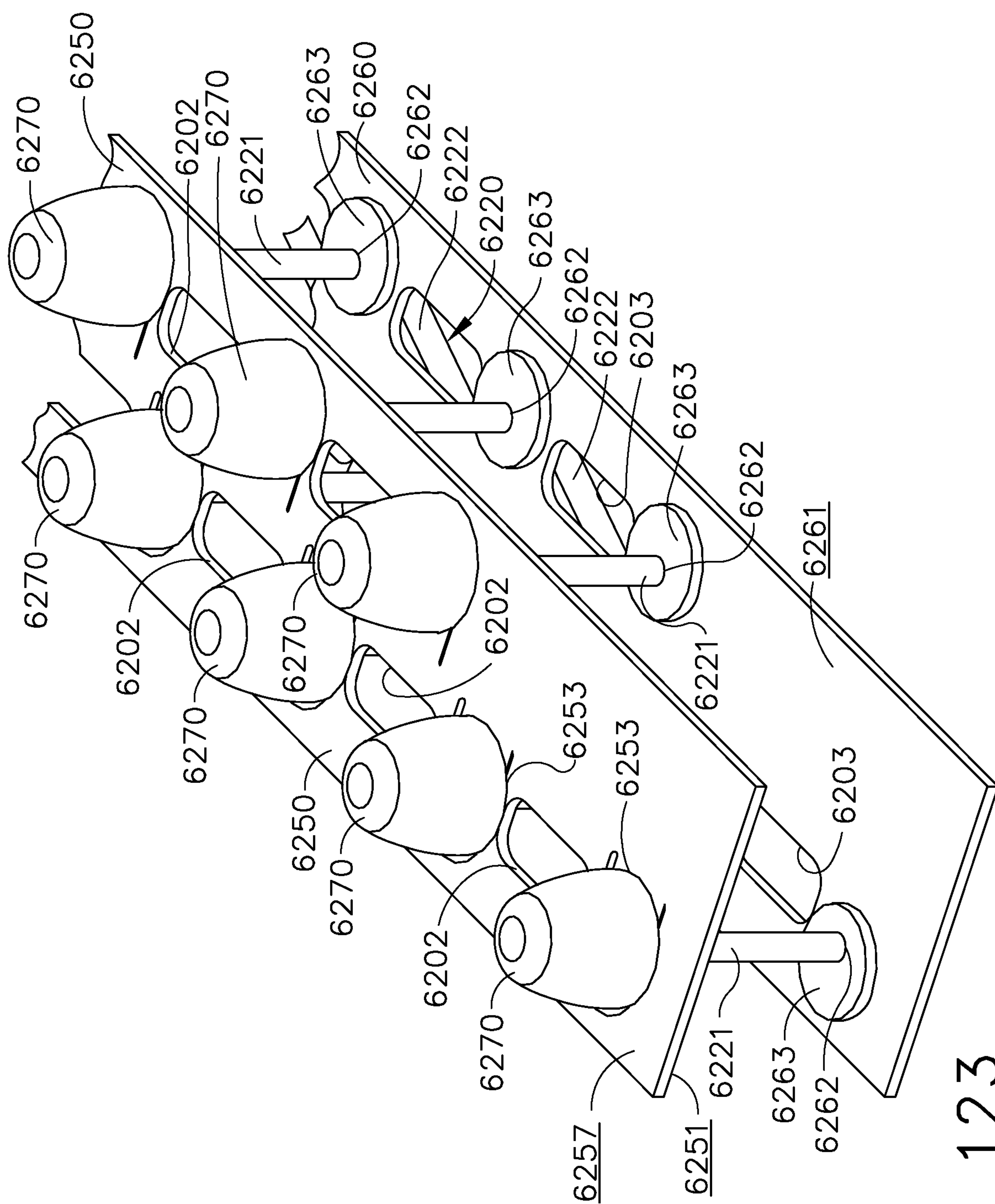


FIG. 123

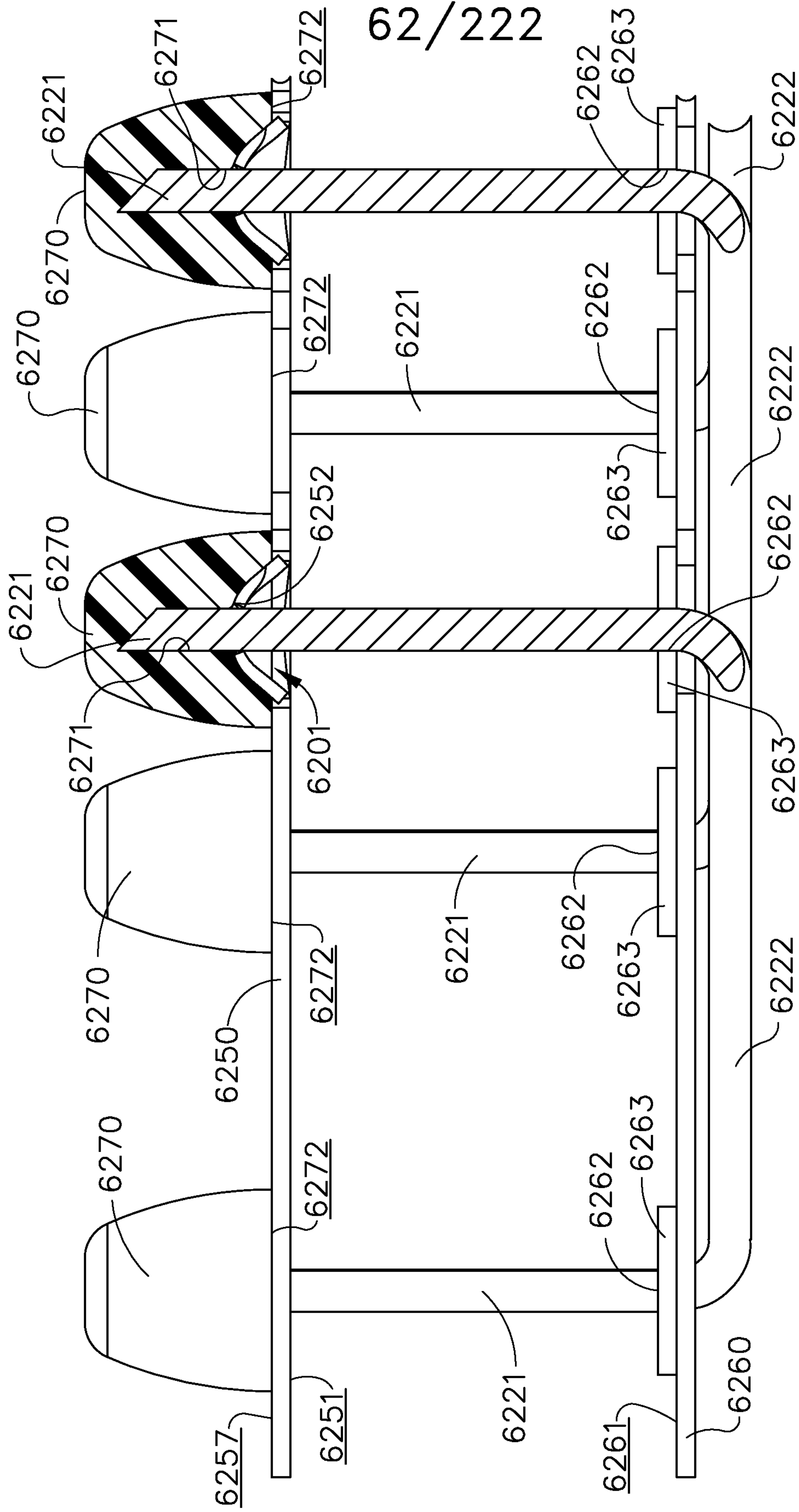
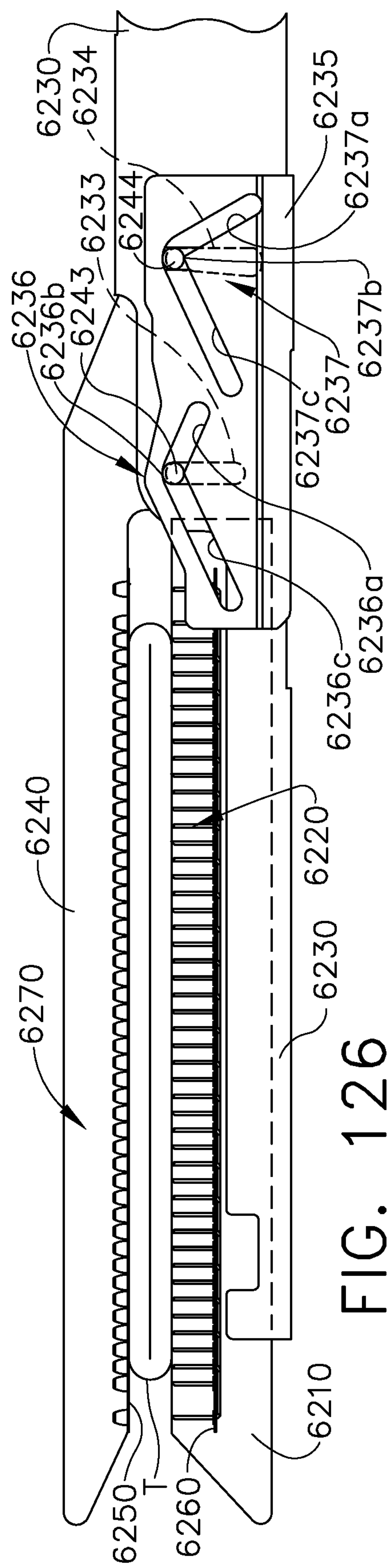
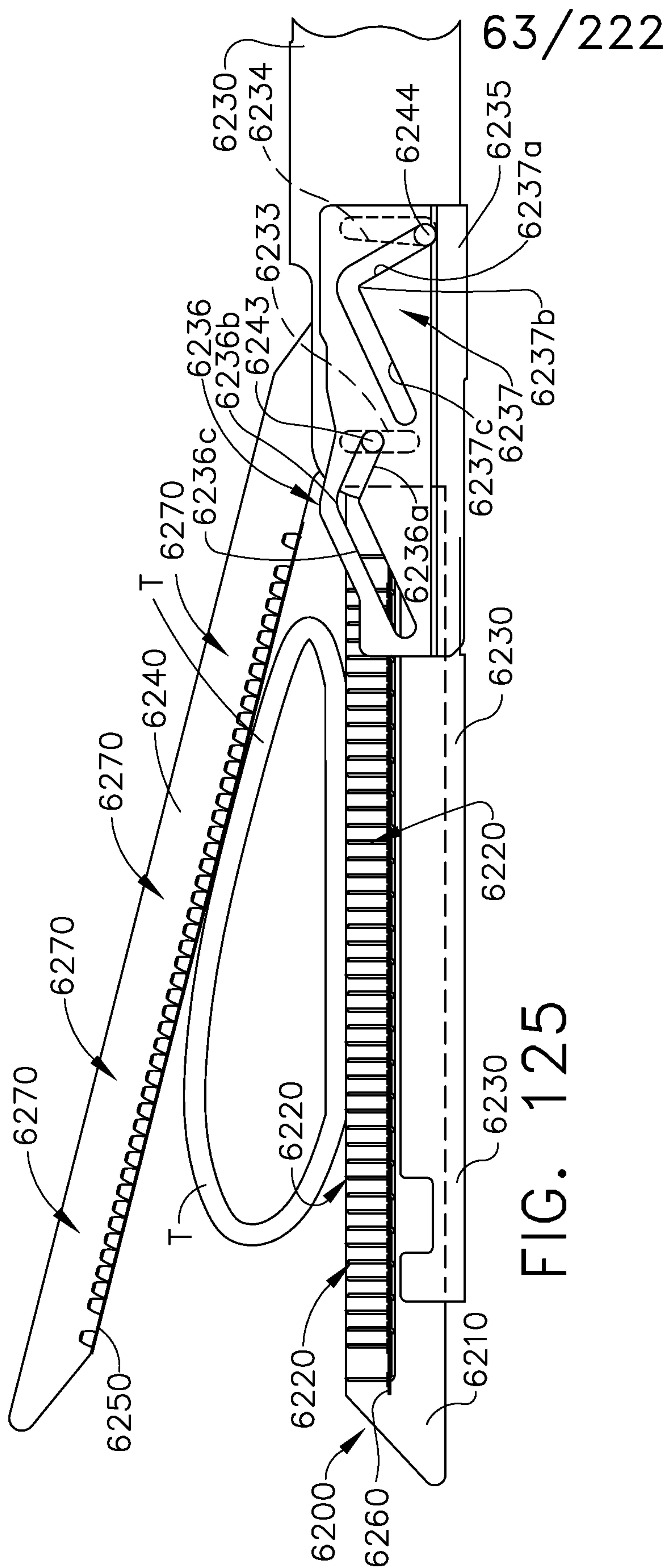


FIG. 124



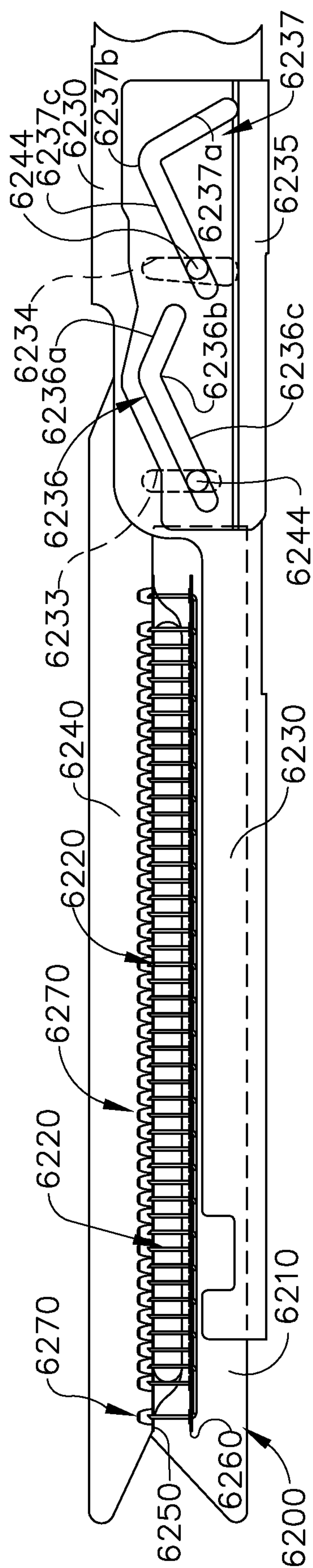


FIG. 127

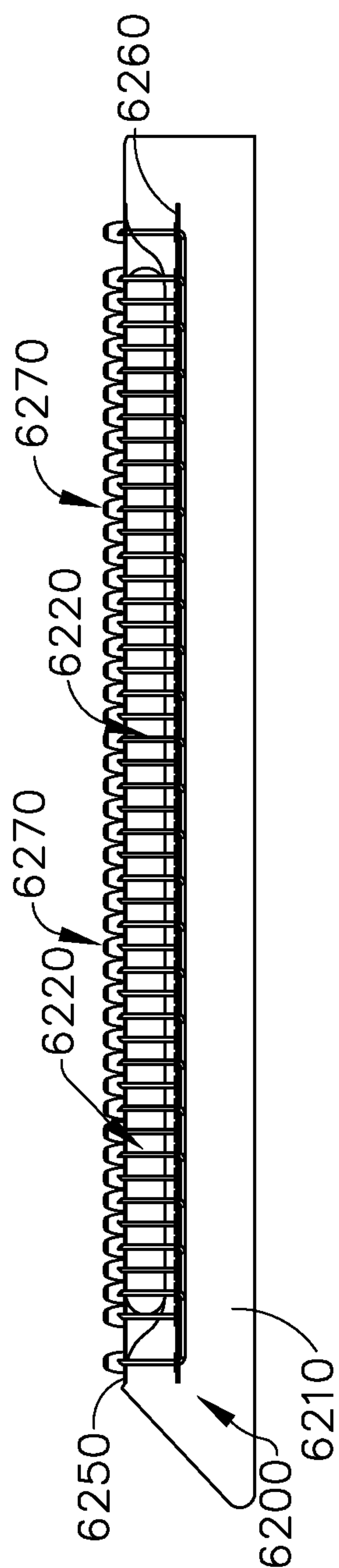


FIG. 128

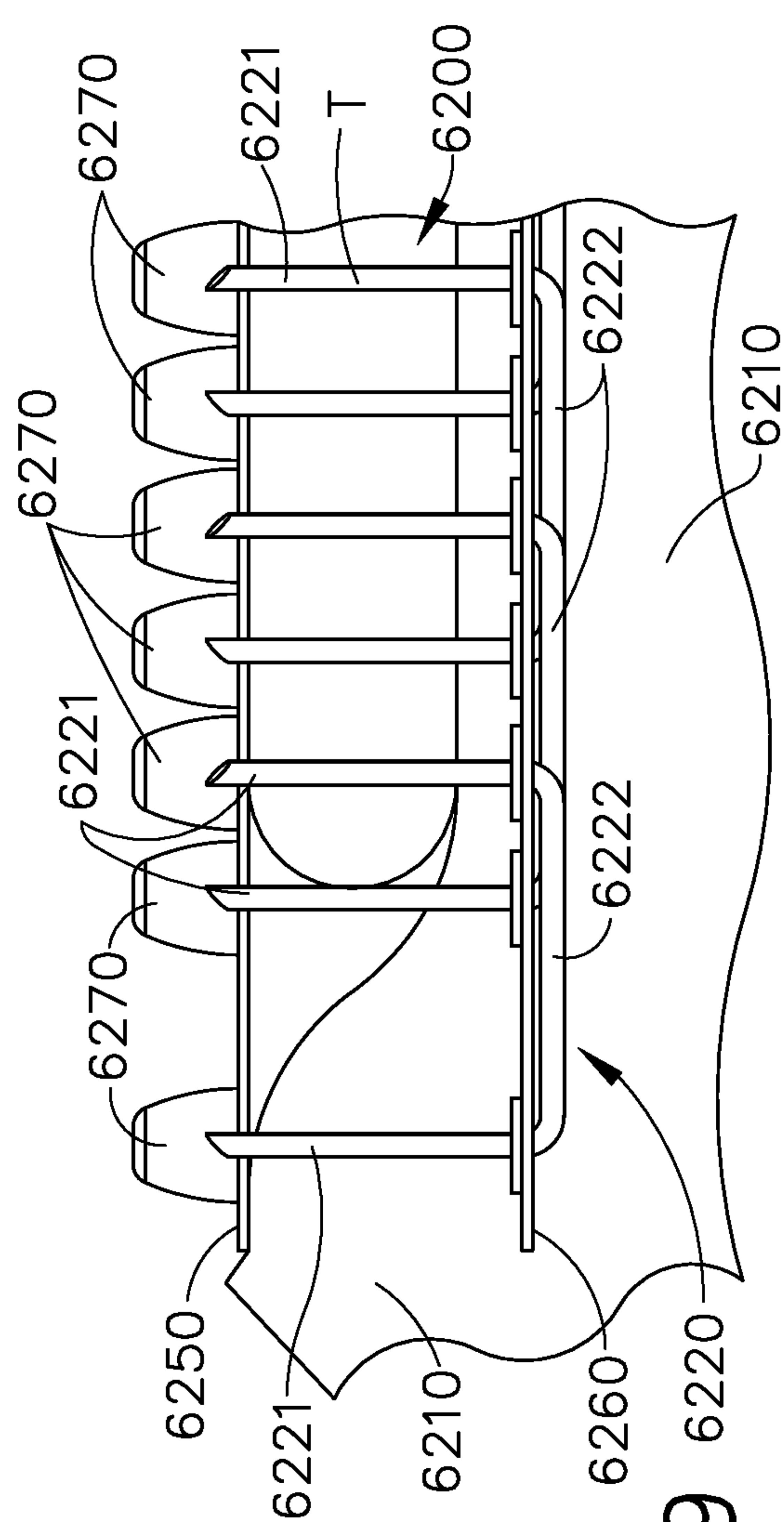
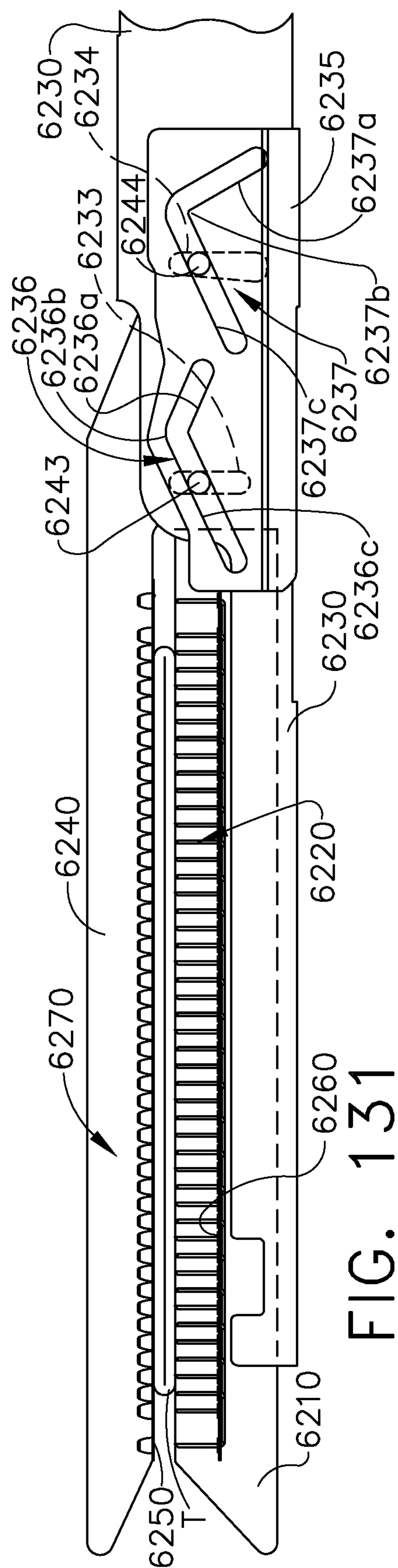
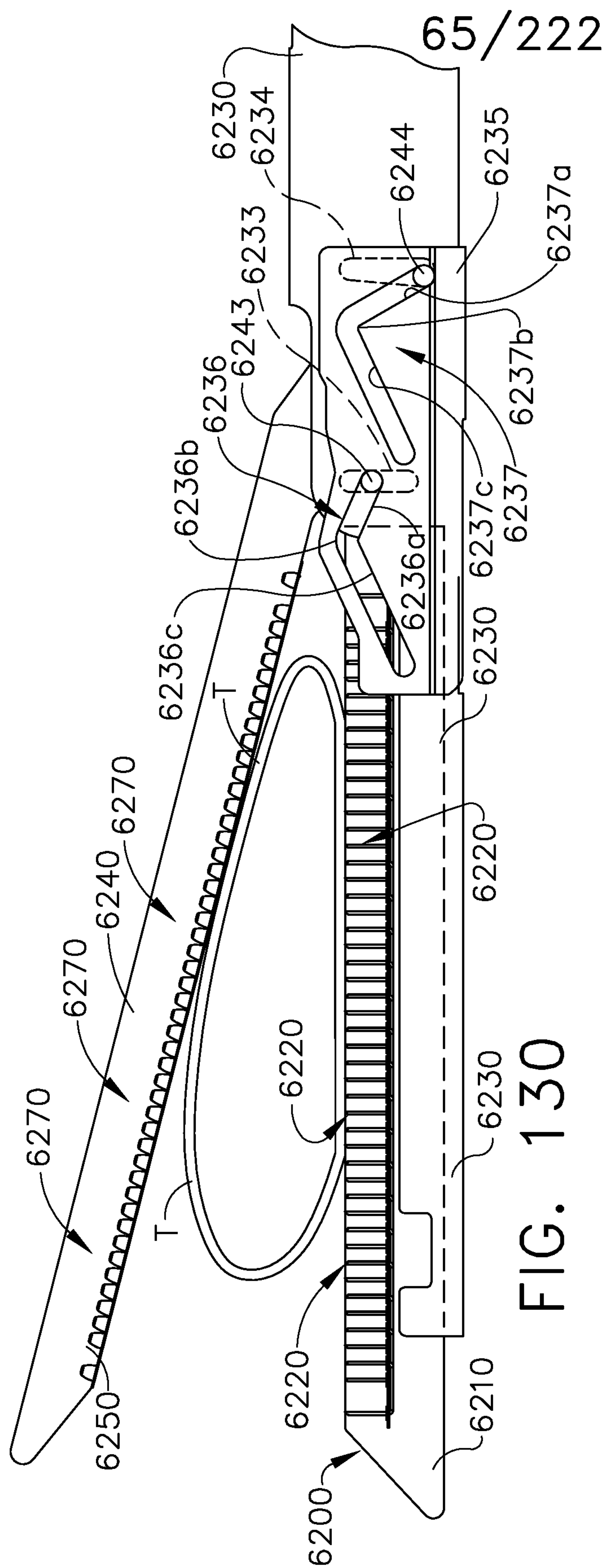


FIG. 129.



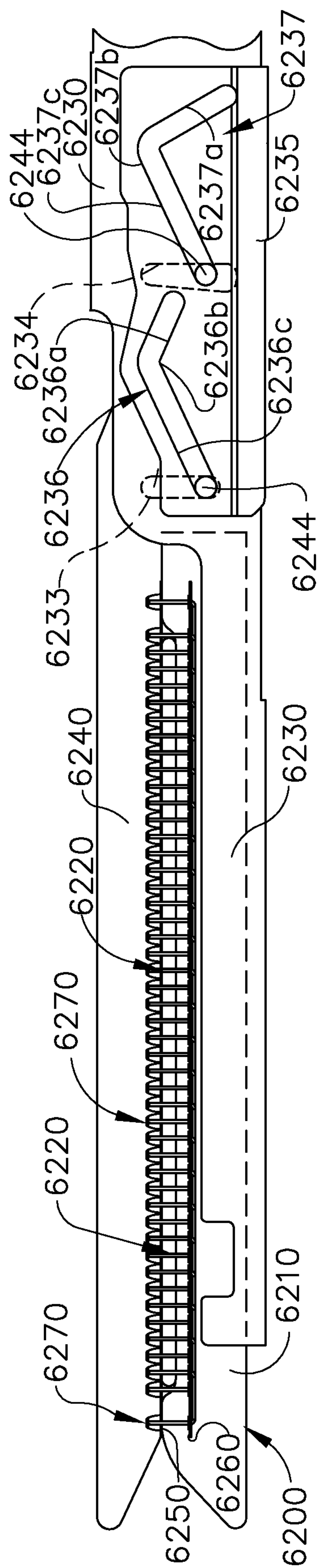


FIG. 132

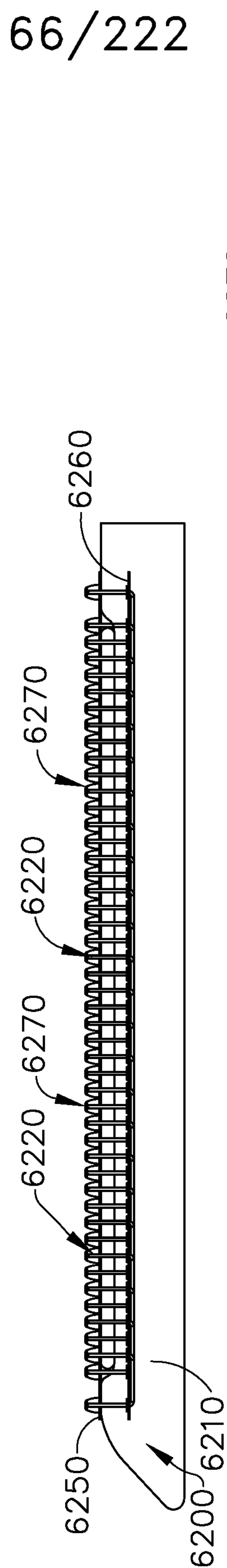


FIG. 133

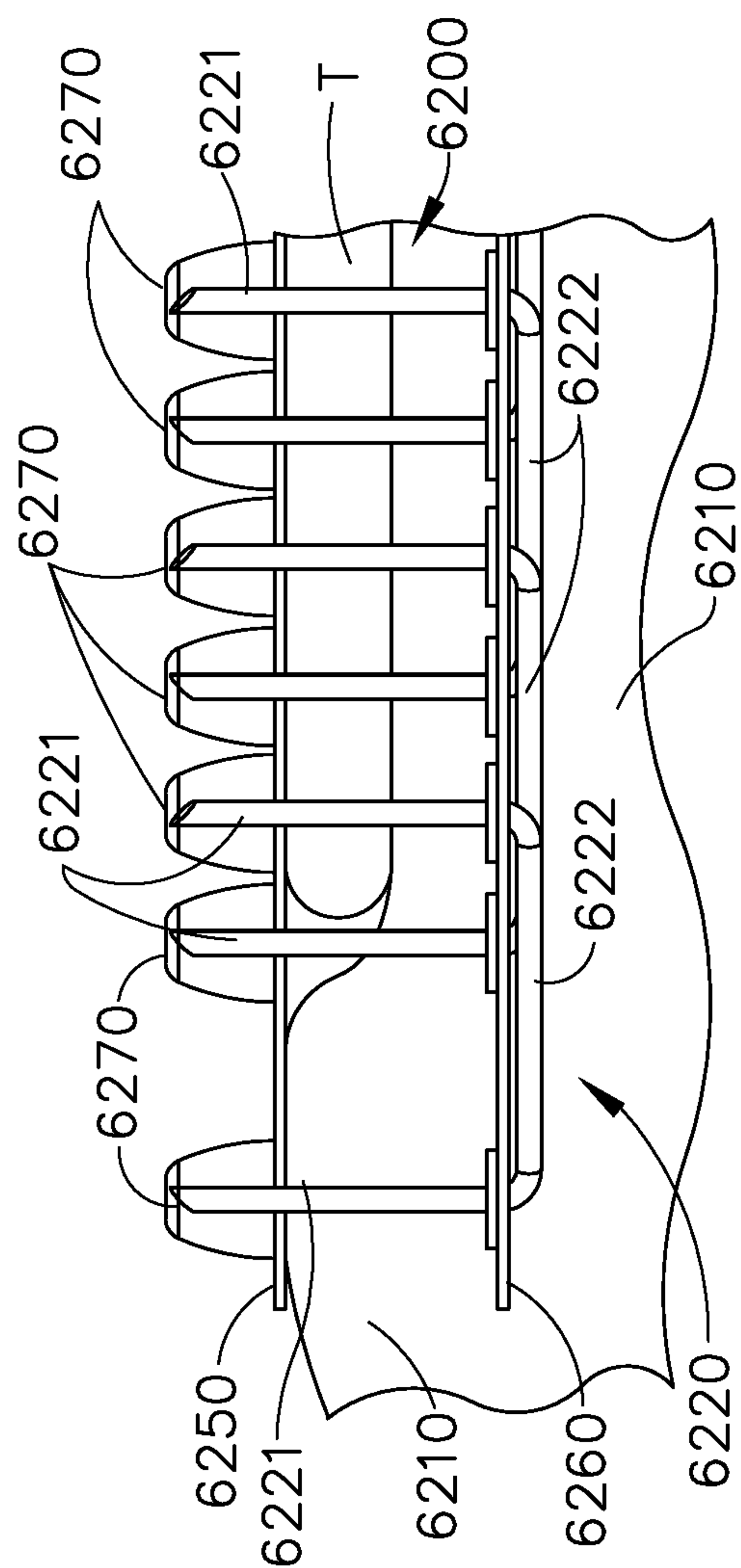


FIG. 134

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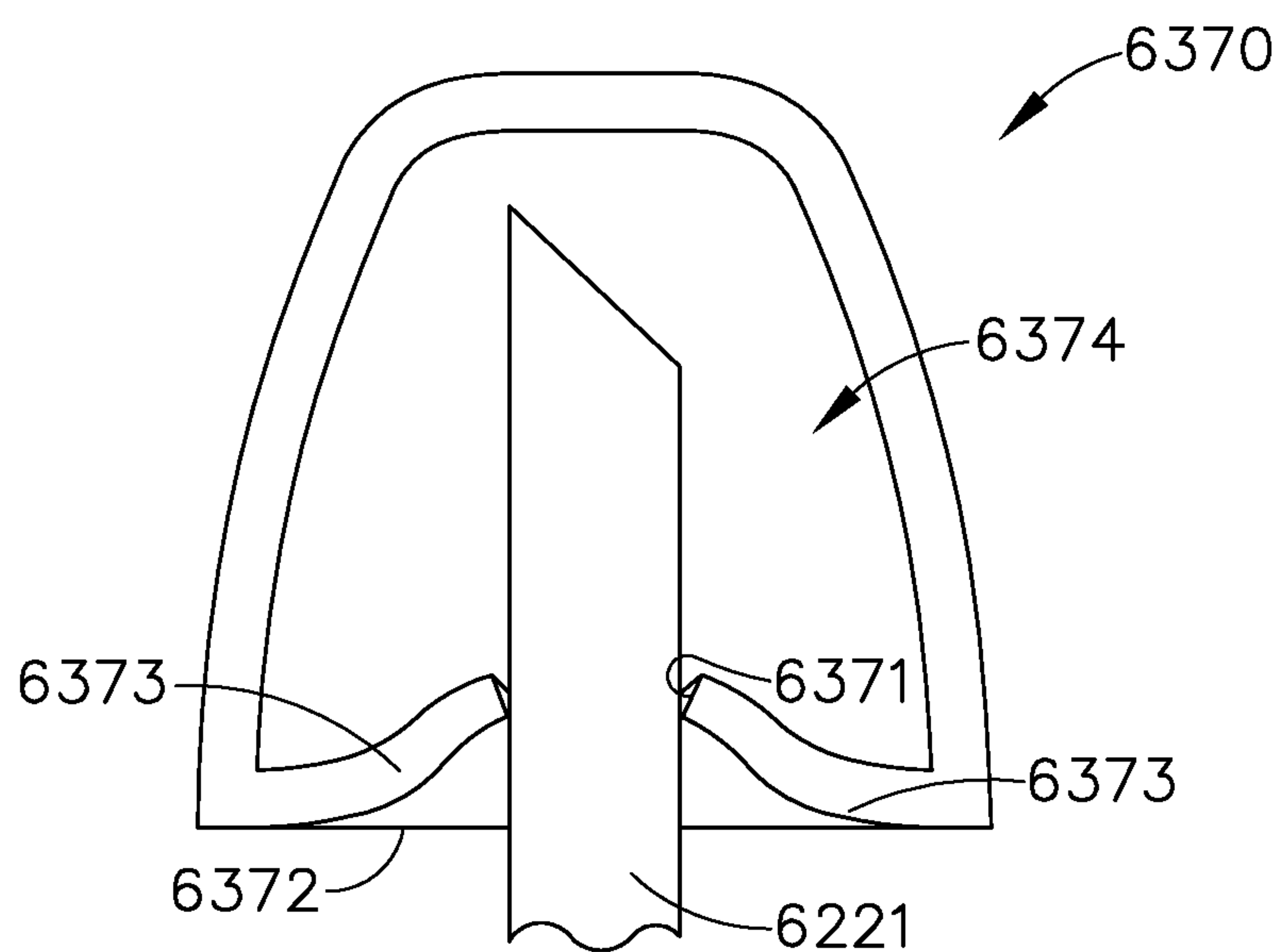


FIG. 135

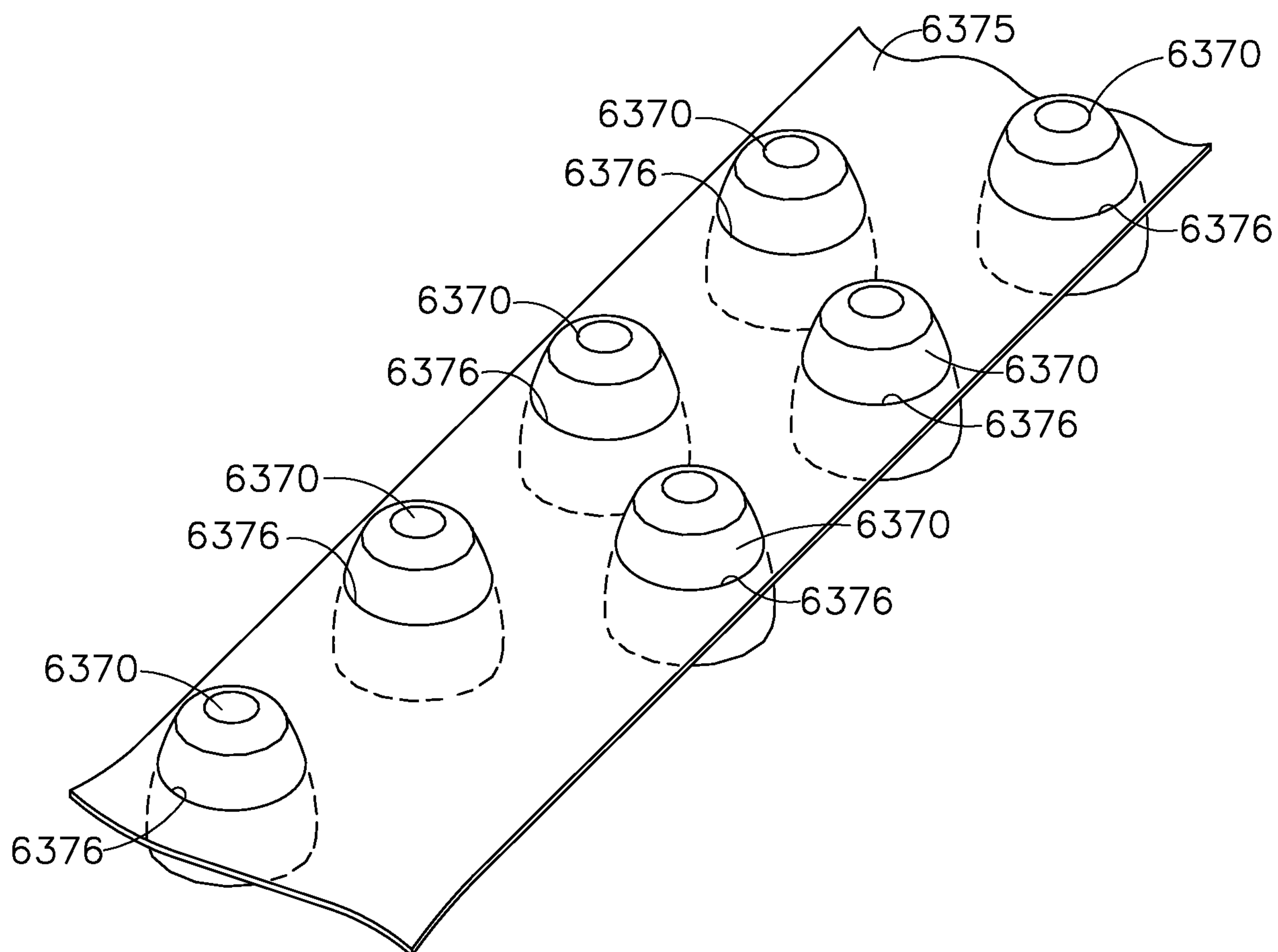
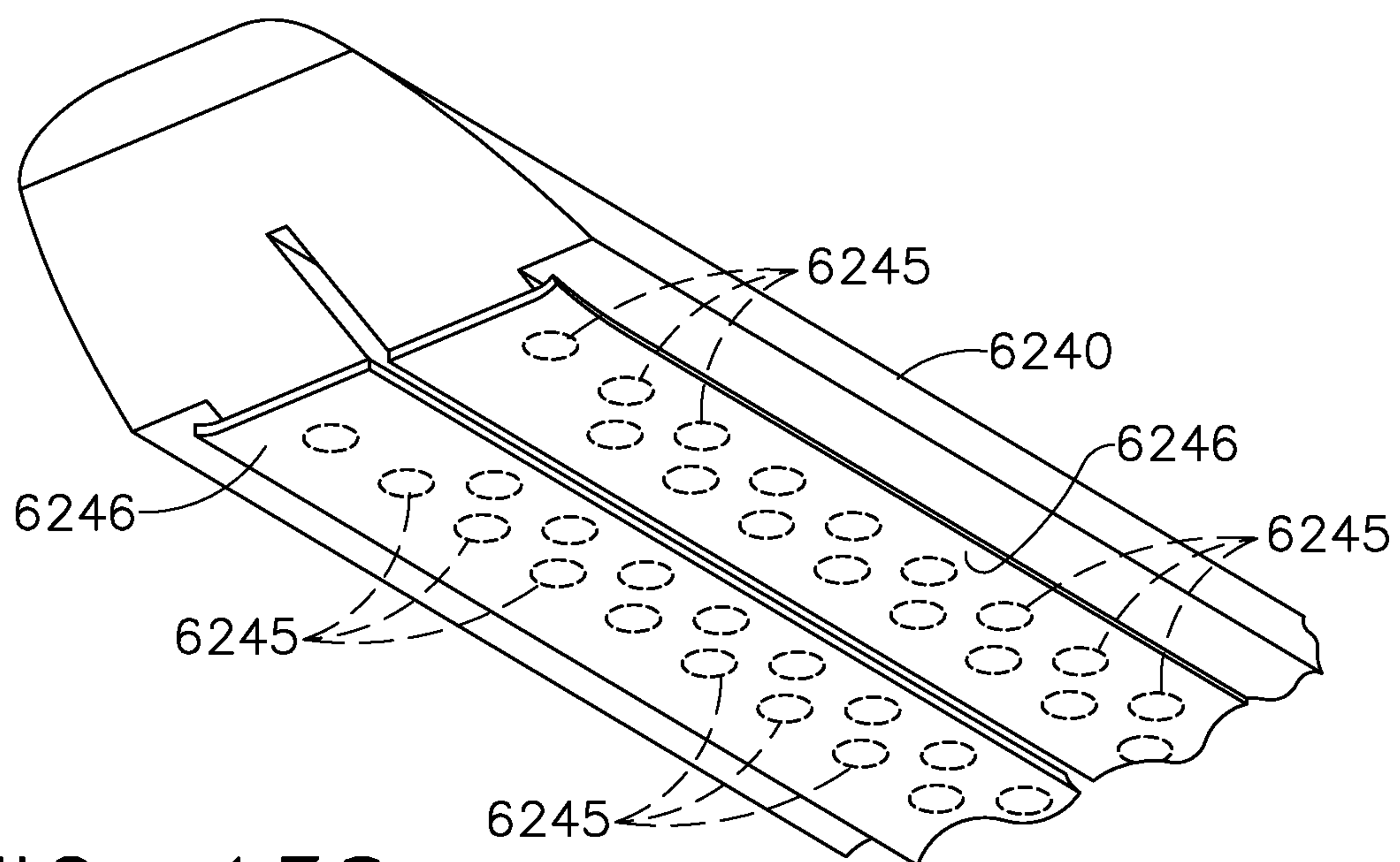
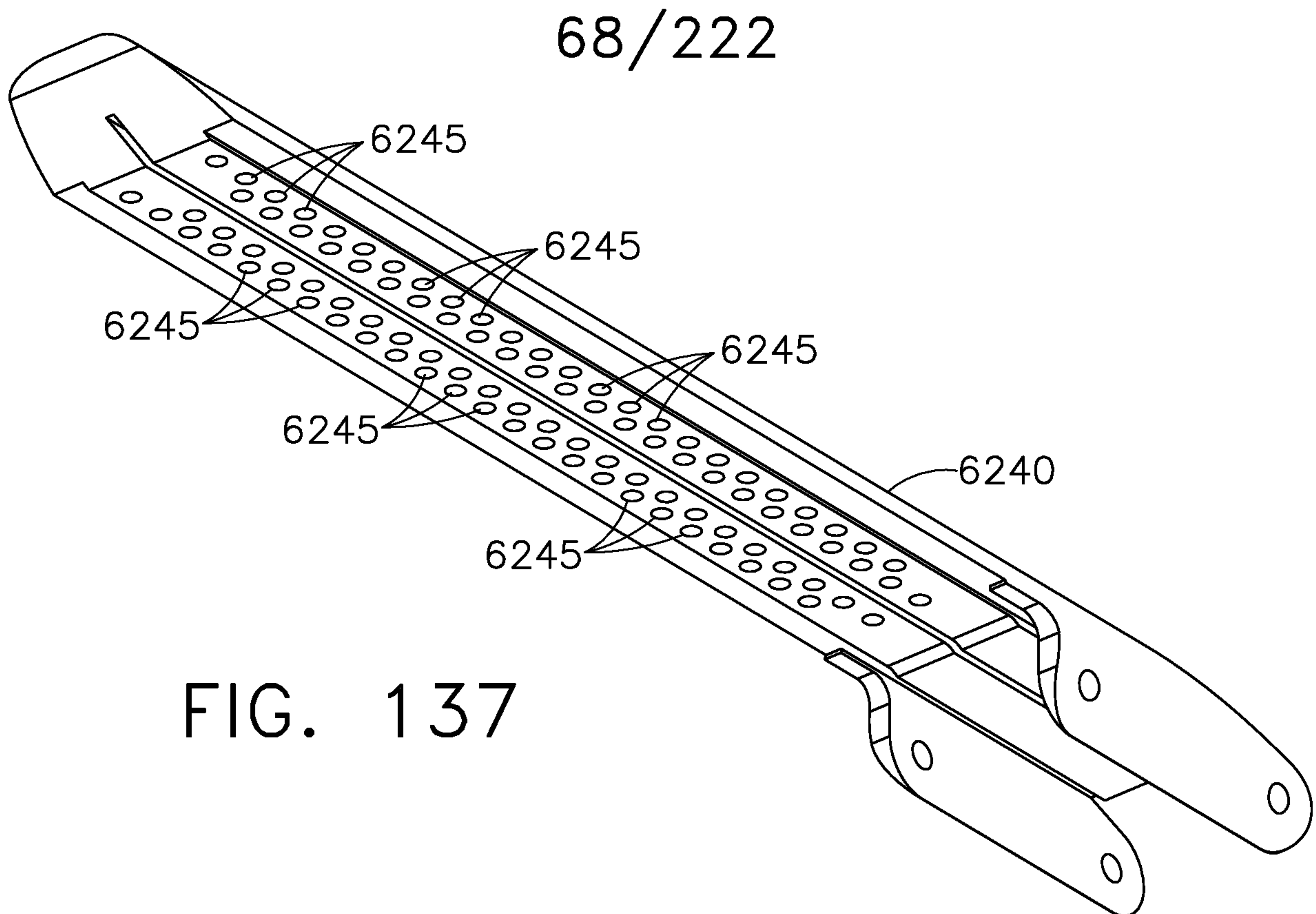


FIG. 136



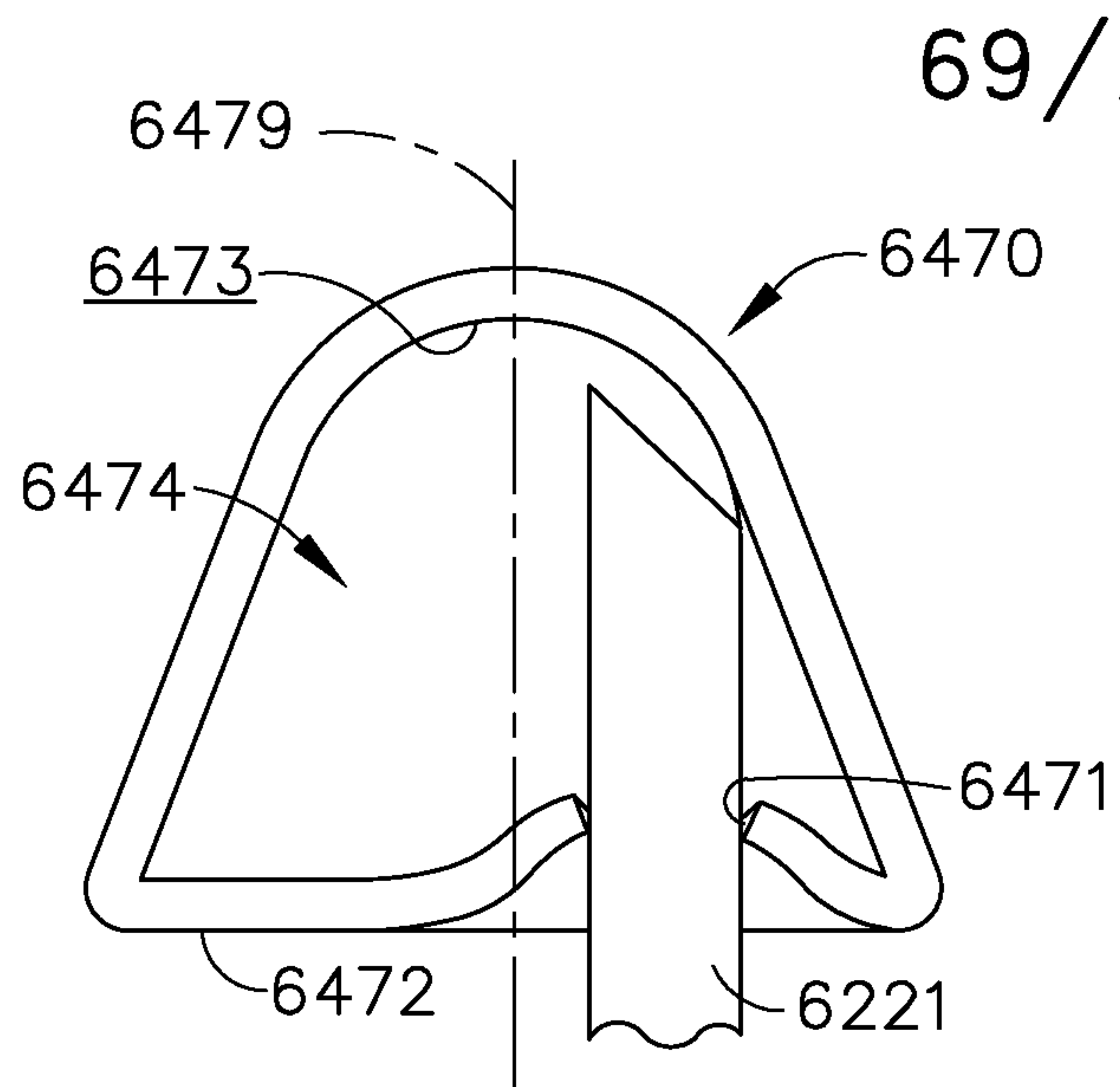


FIG. 139

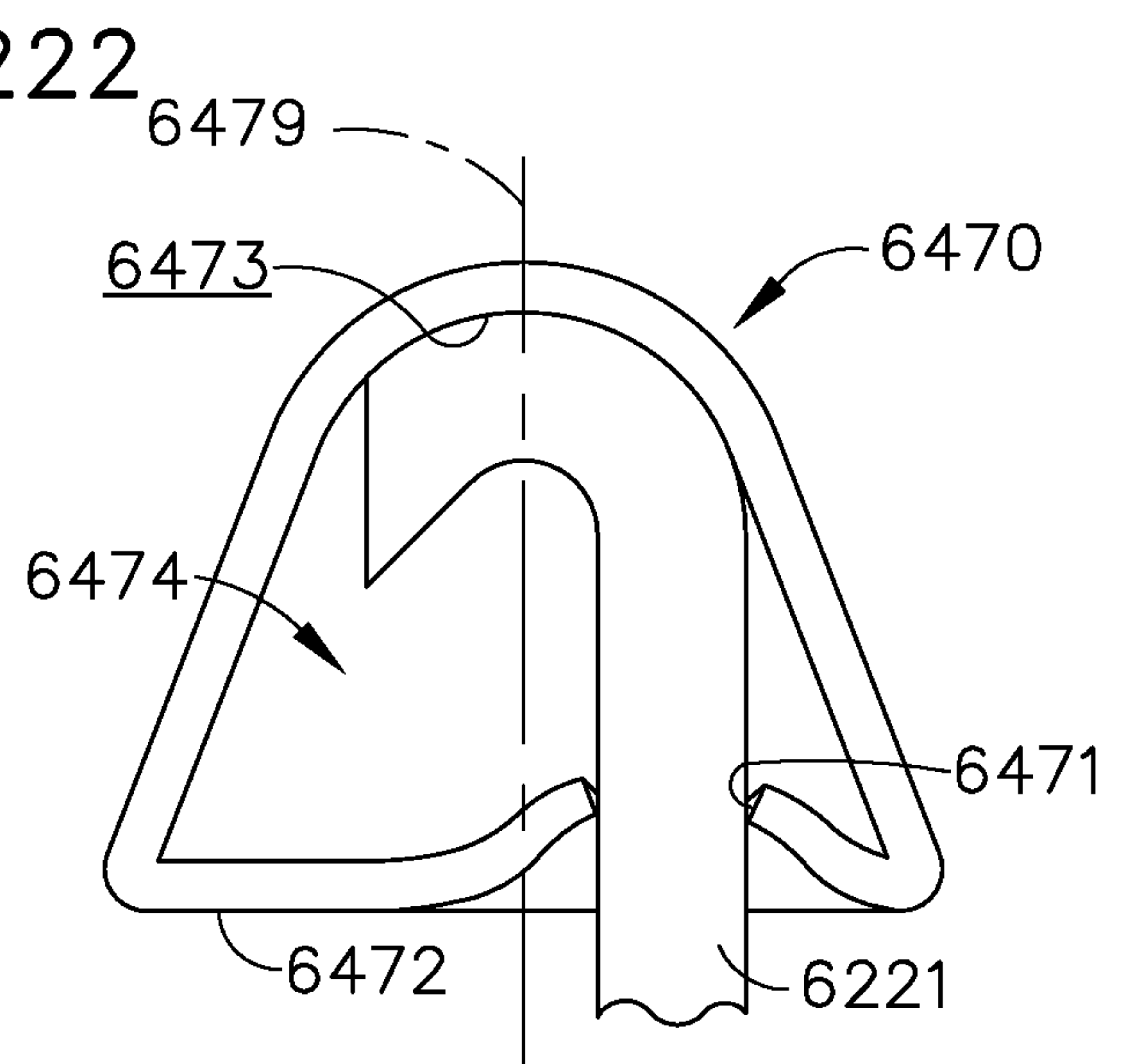


FIG. 140

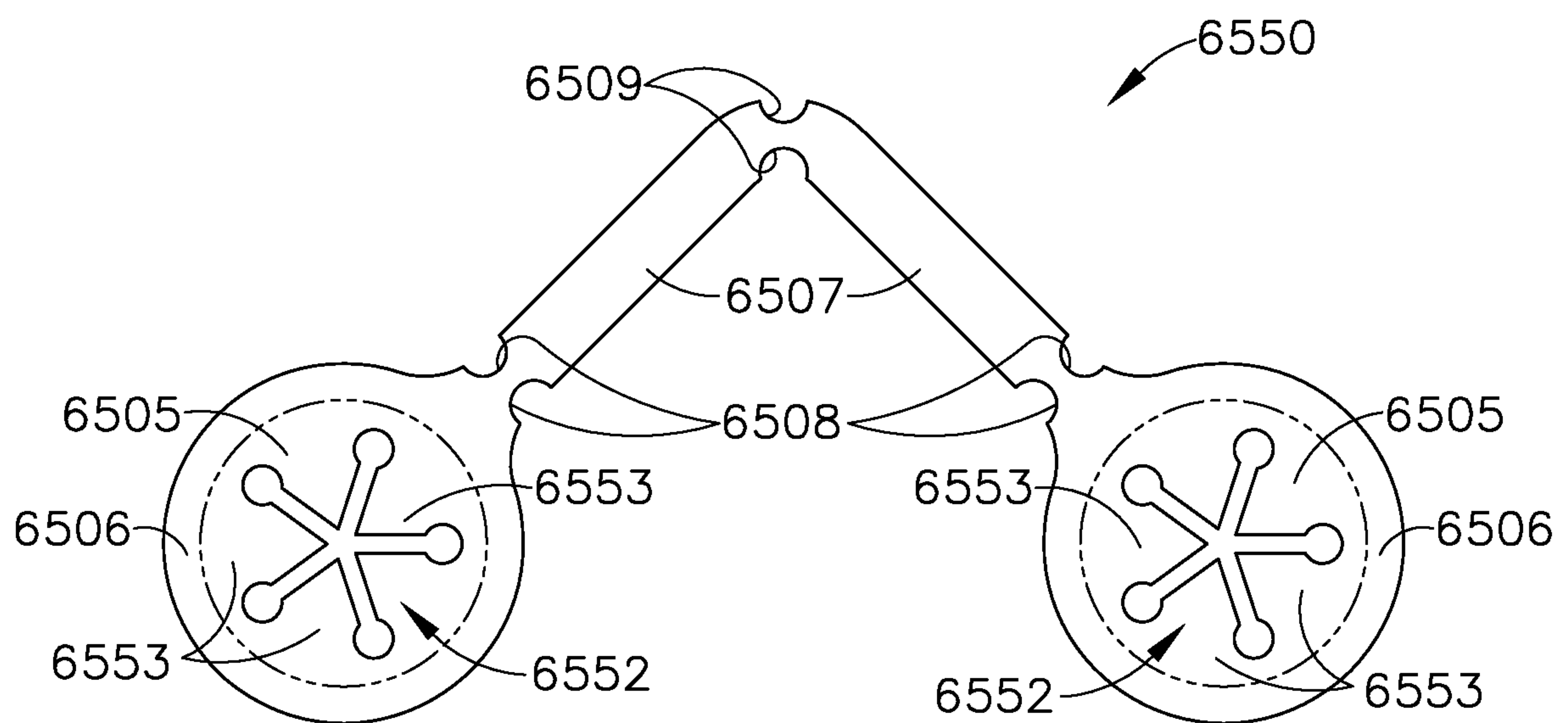


FIG. 141

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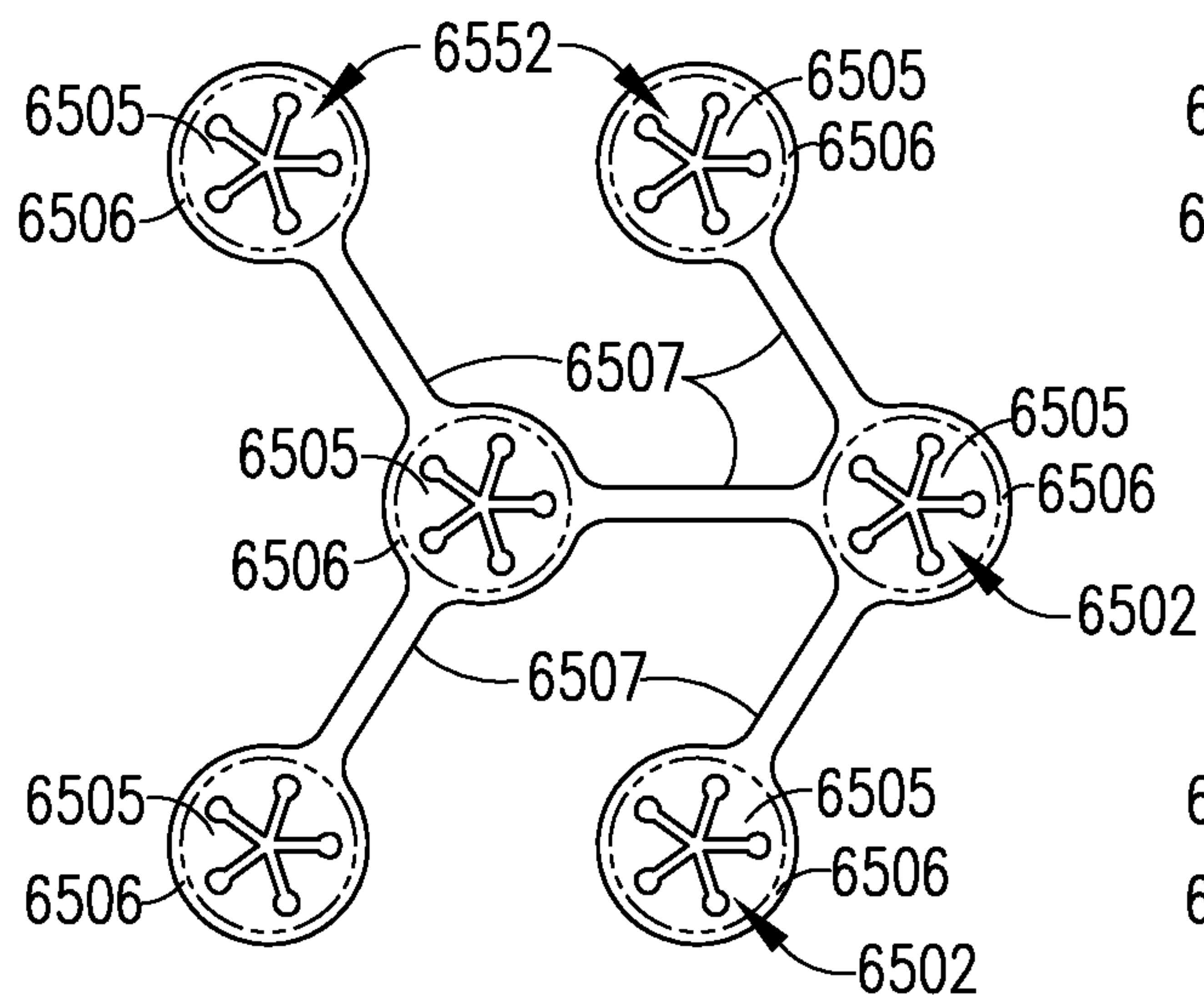


FIG. 142

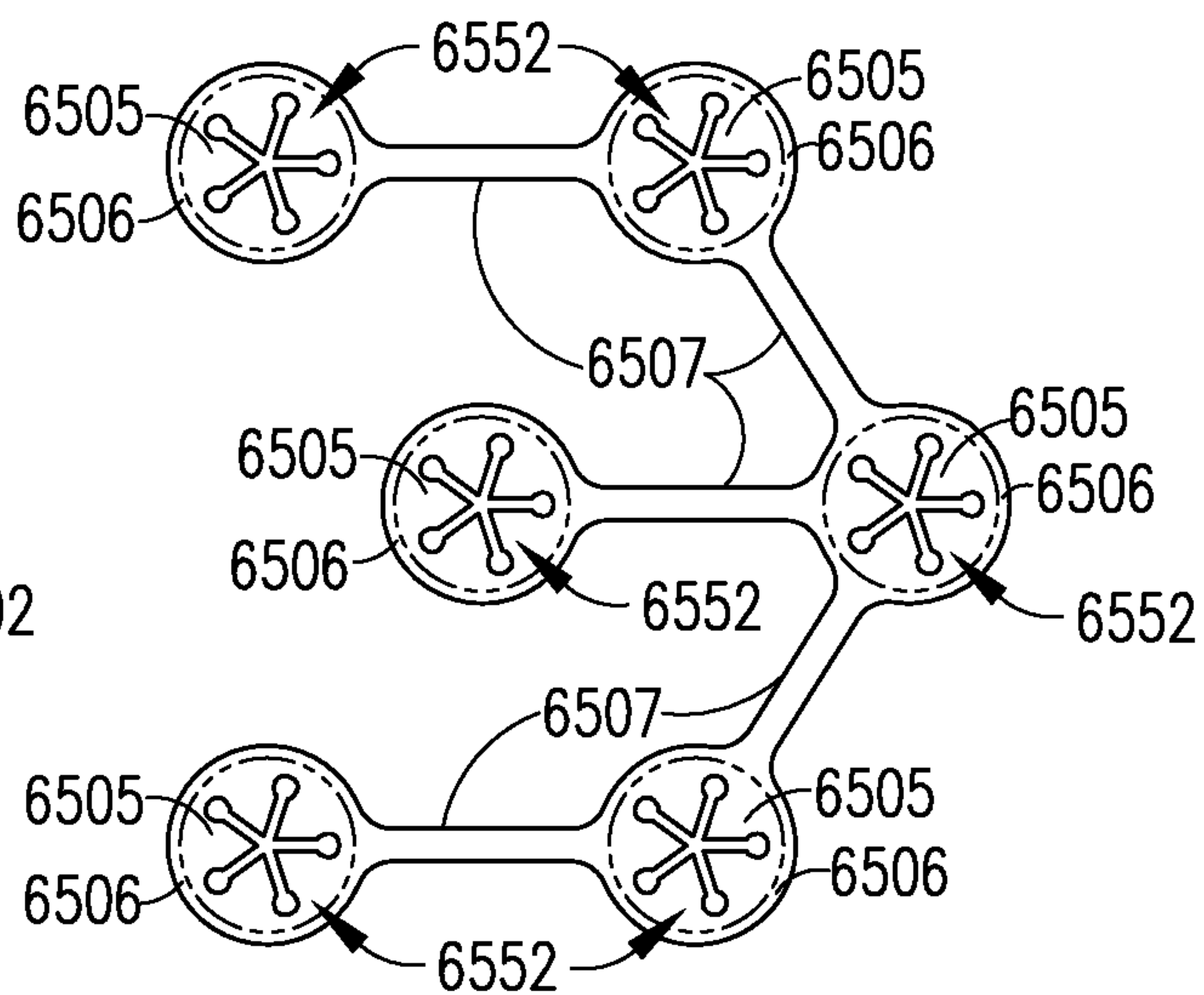


FIG. 143

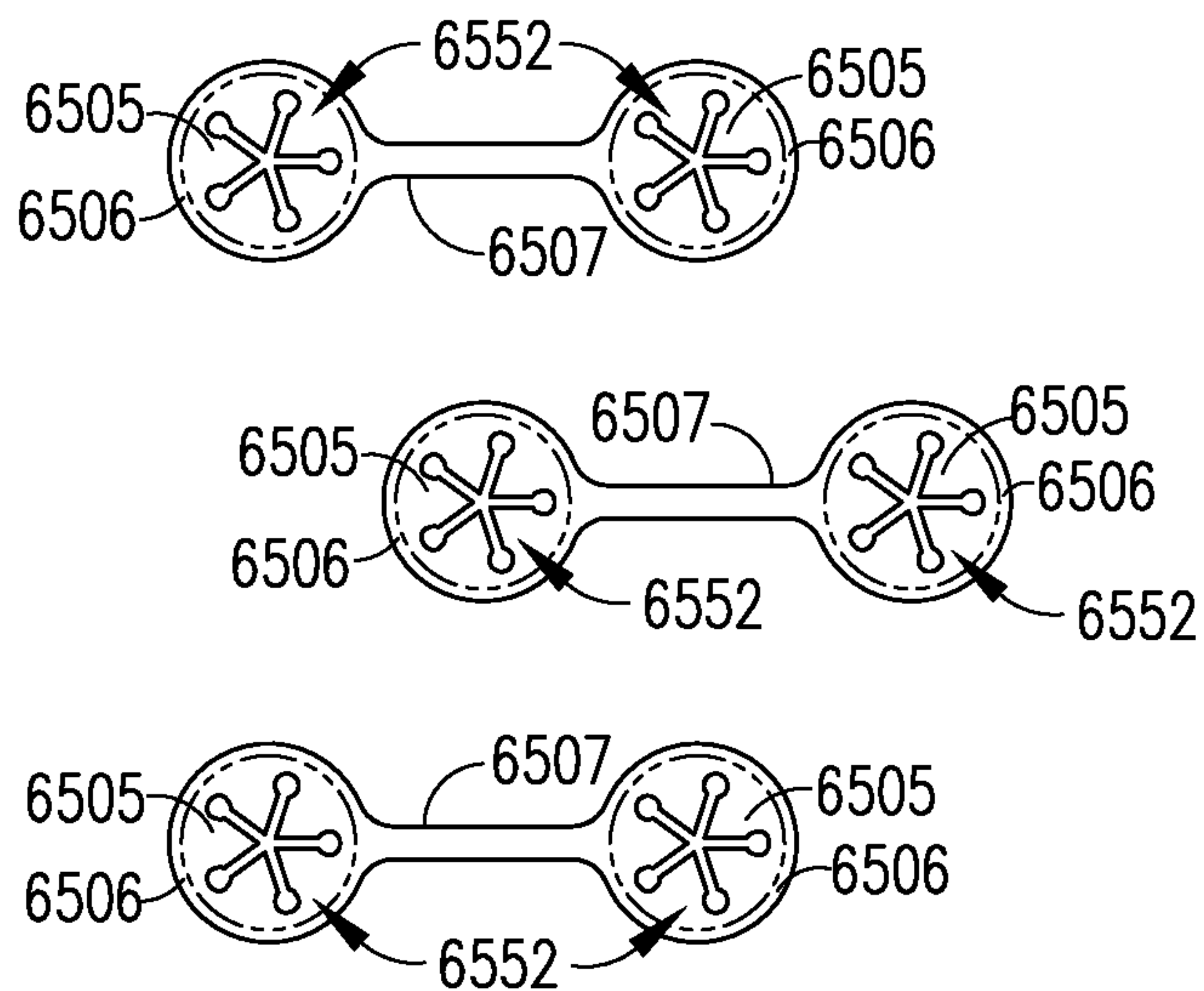


FIG. 144

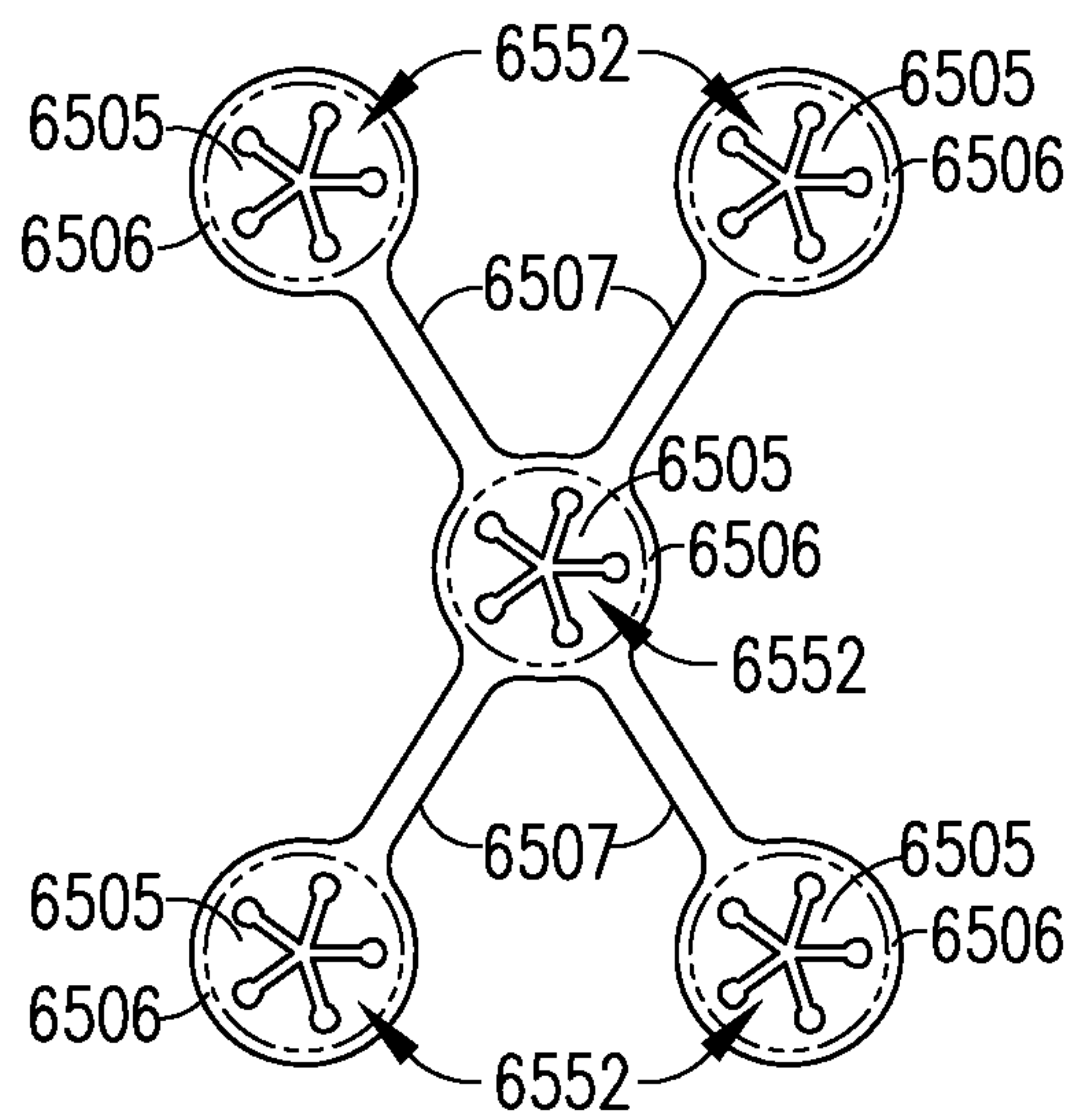


FIG. 145

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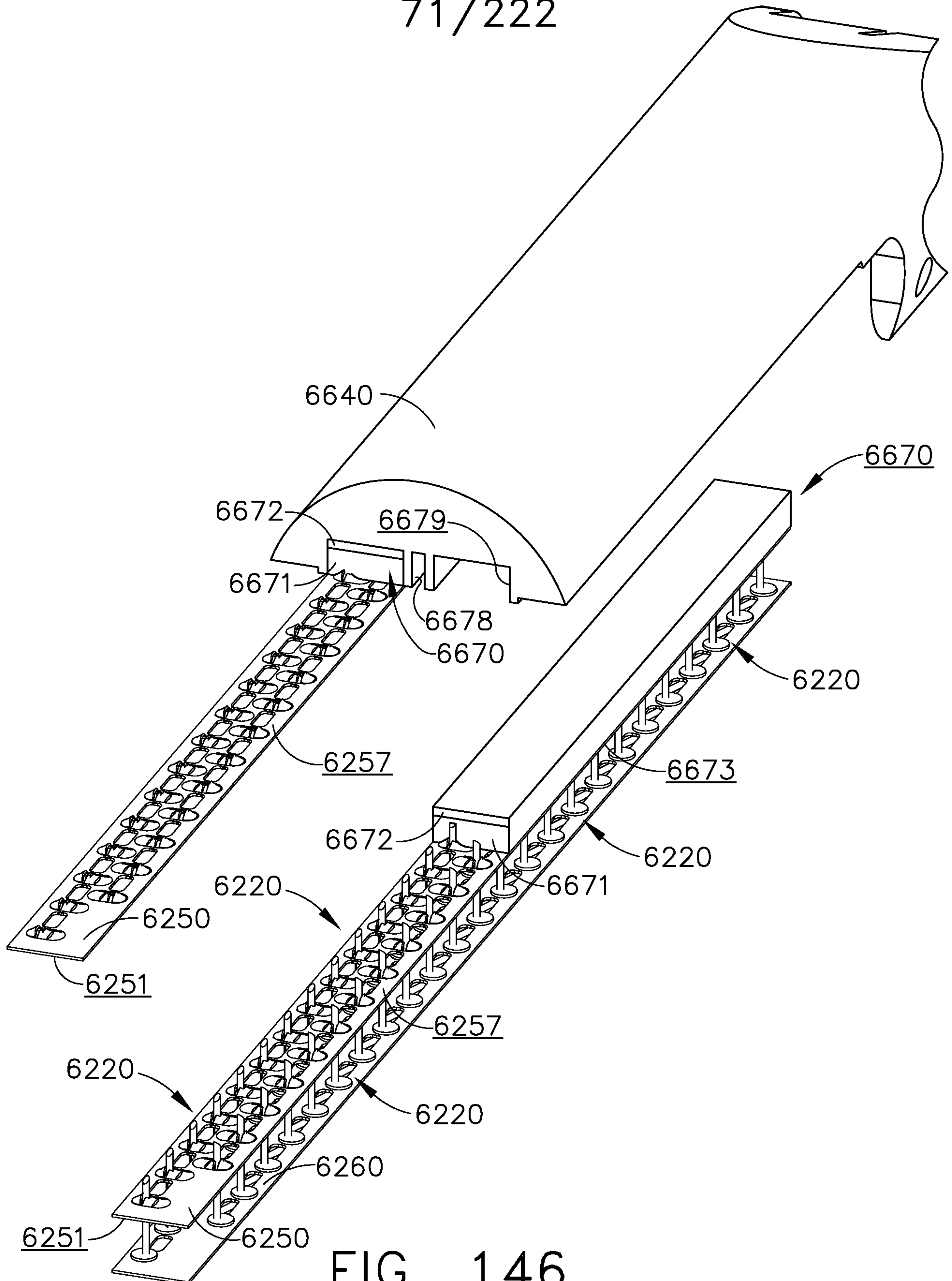


FIG. 146

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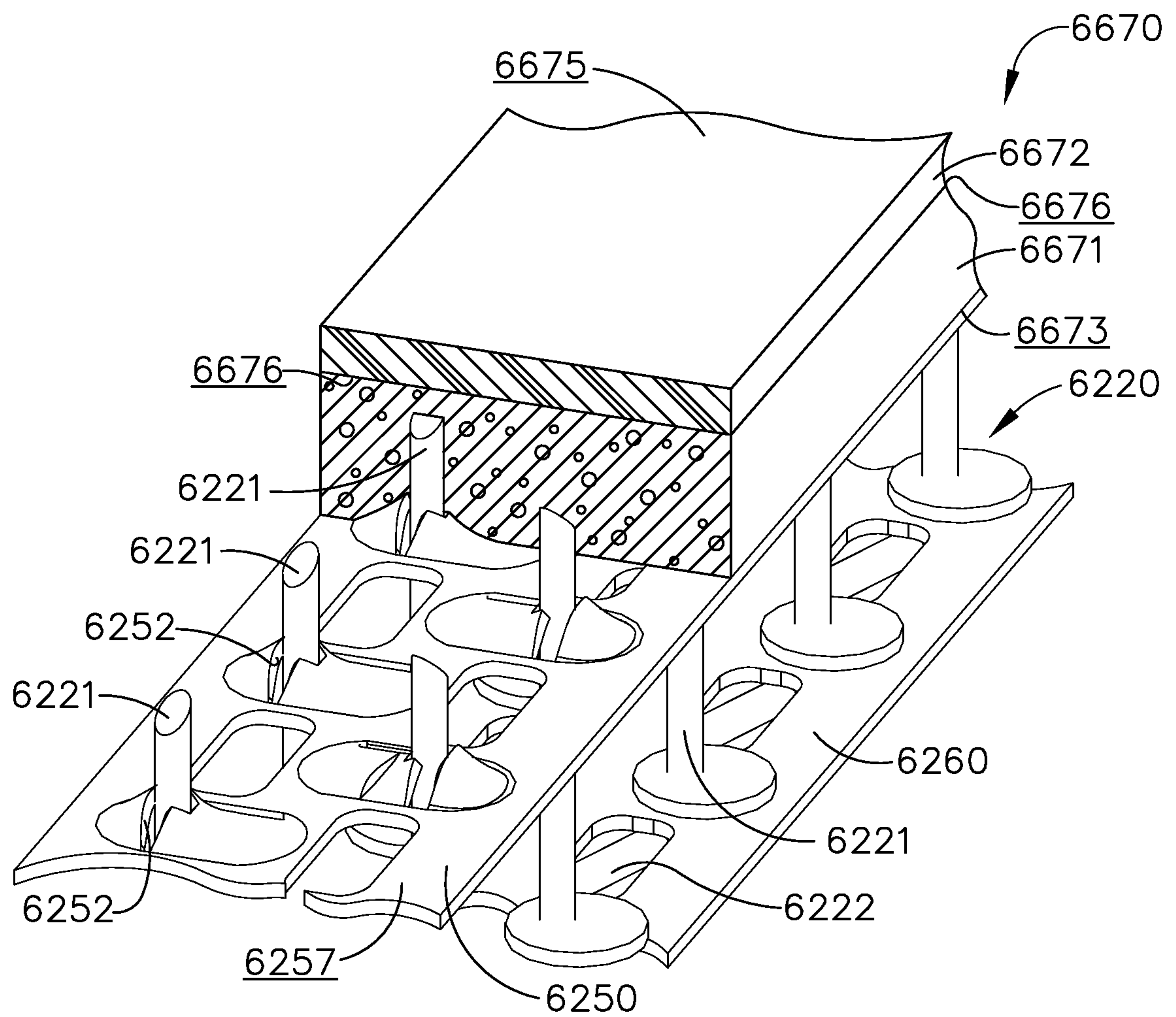


FIG. 147

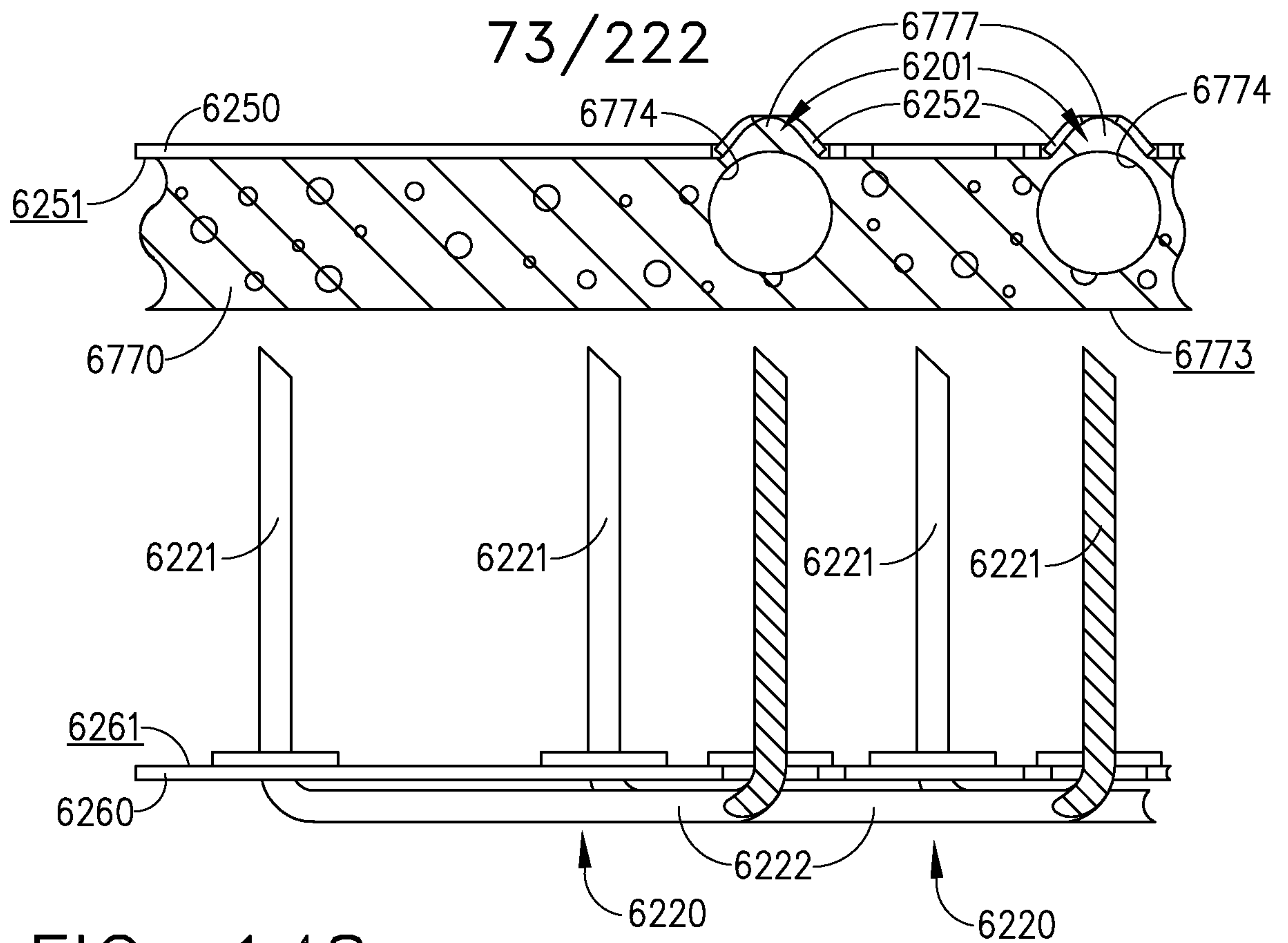
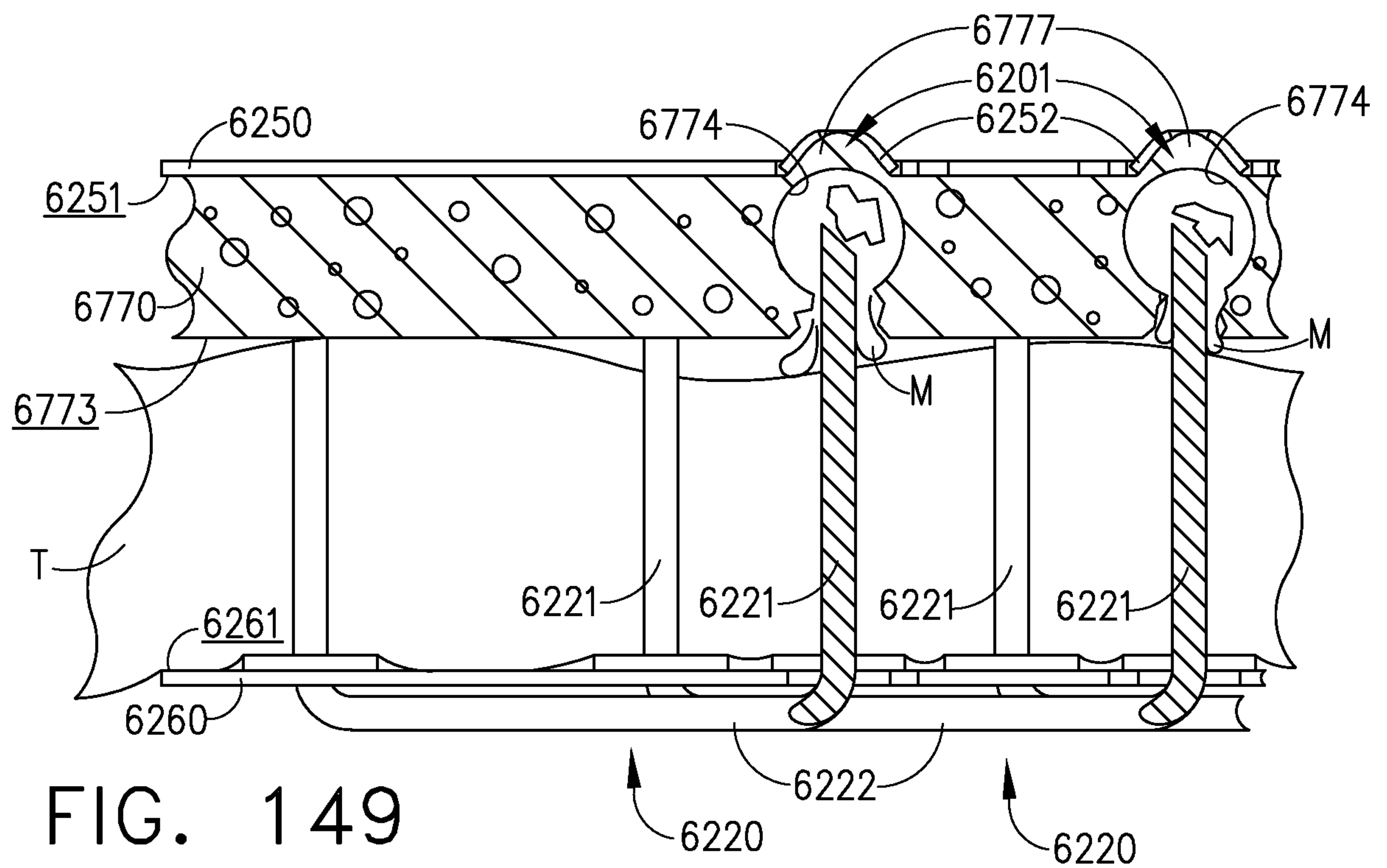


FIG. 148



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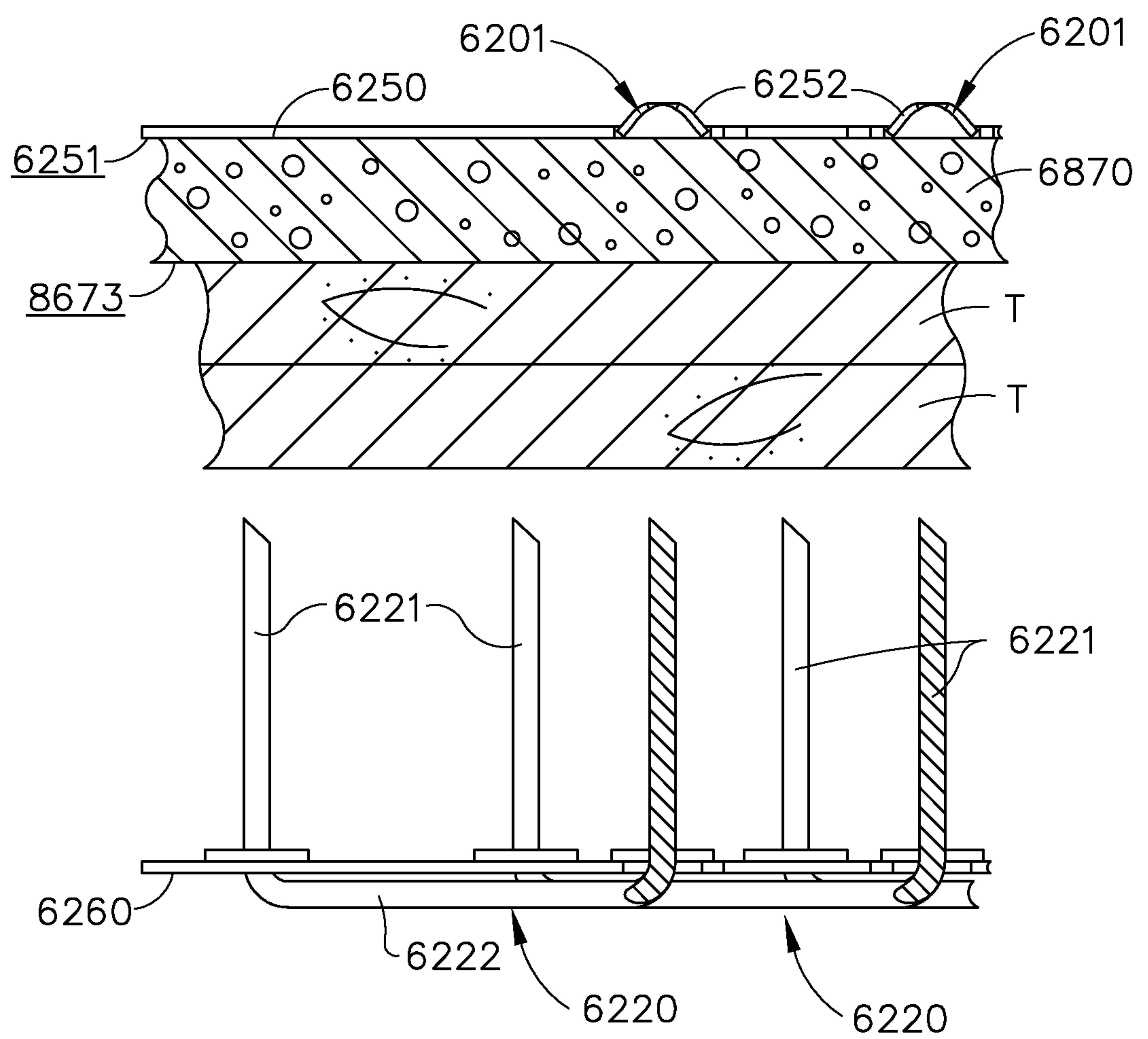


FIG. 150

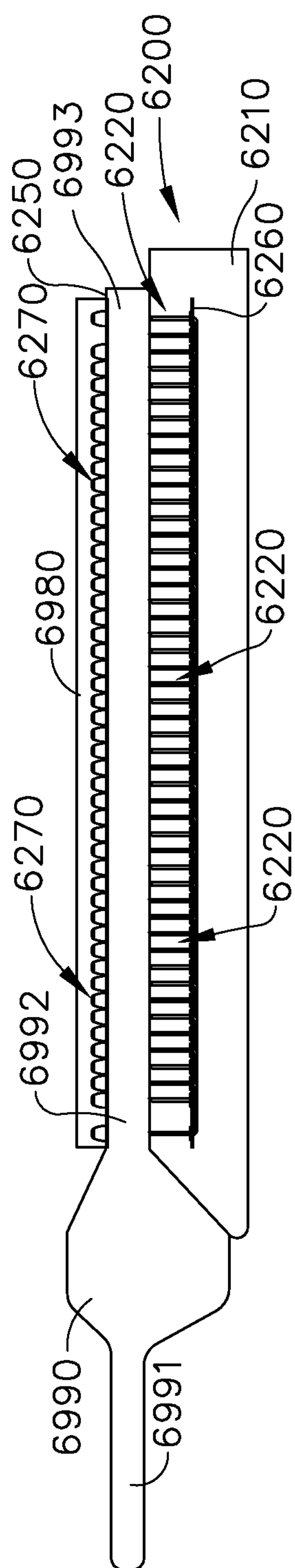


FIG. 151

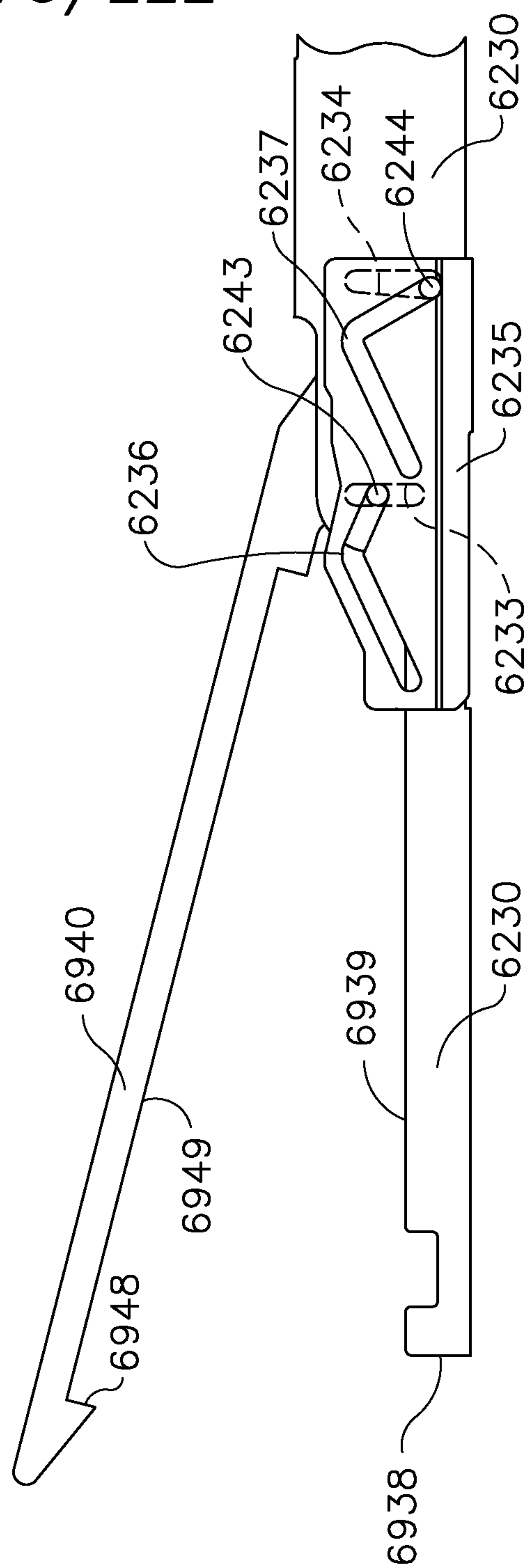
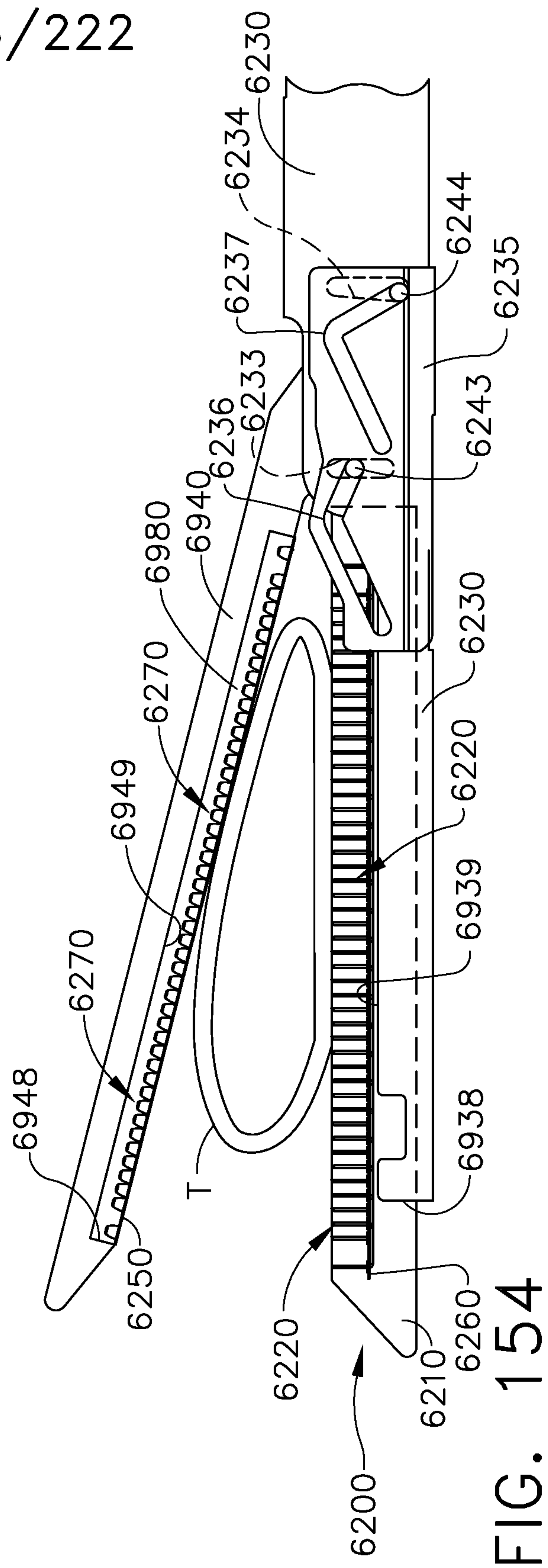
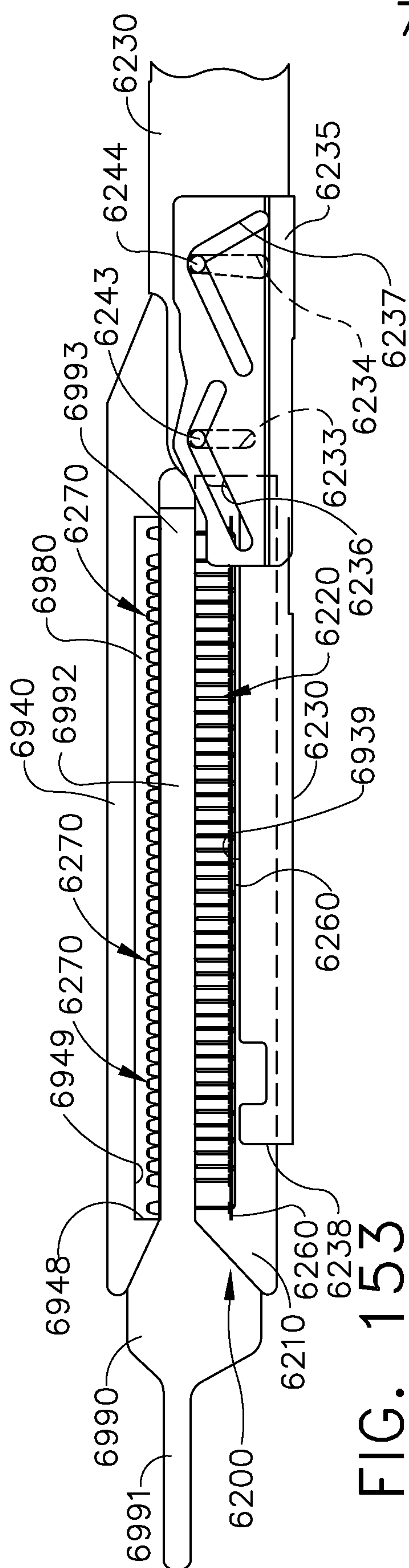
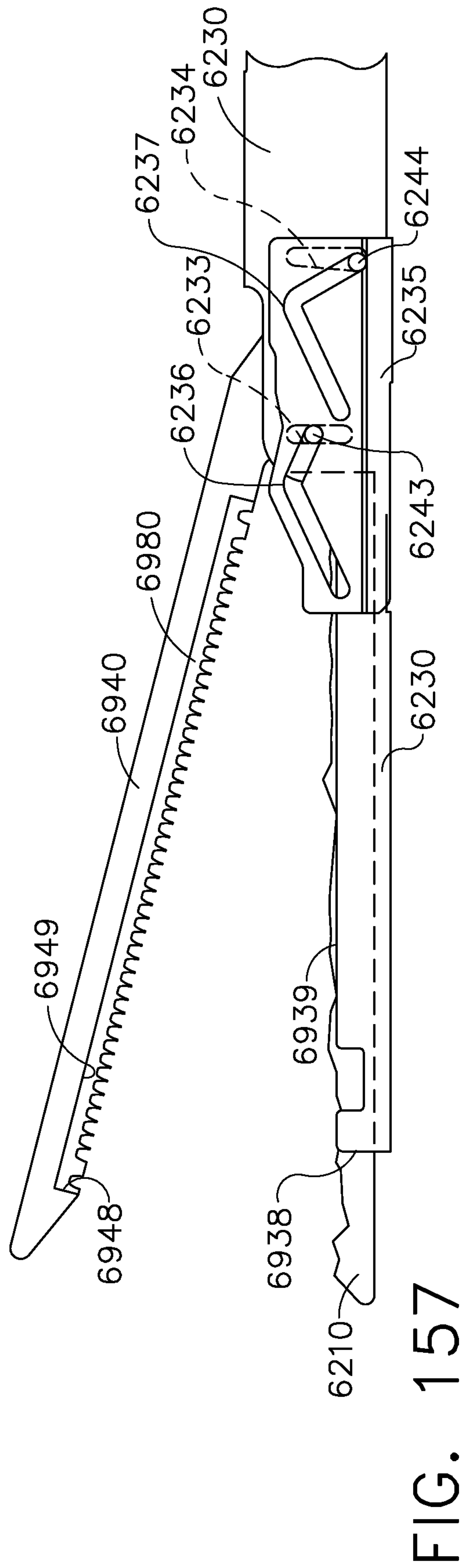
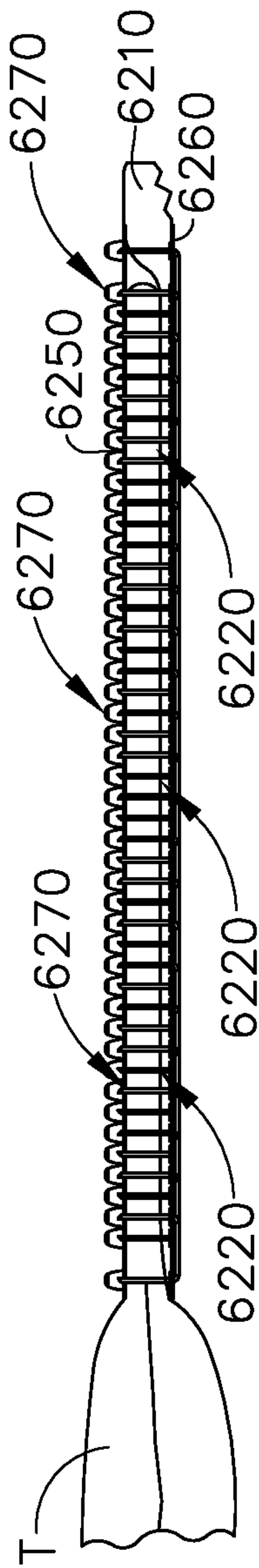
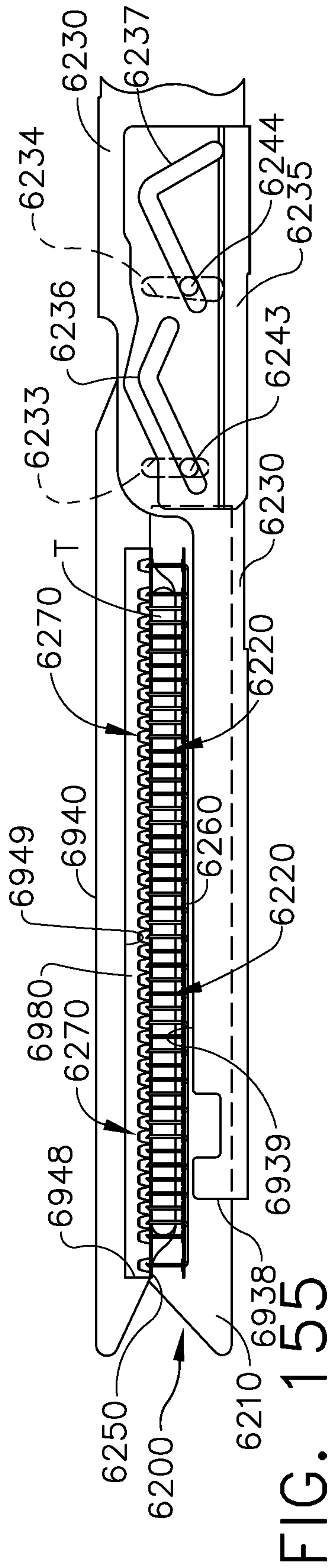


FIG. 152





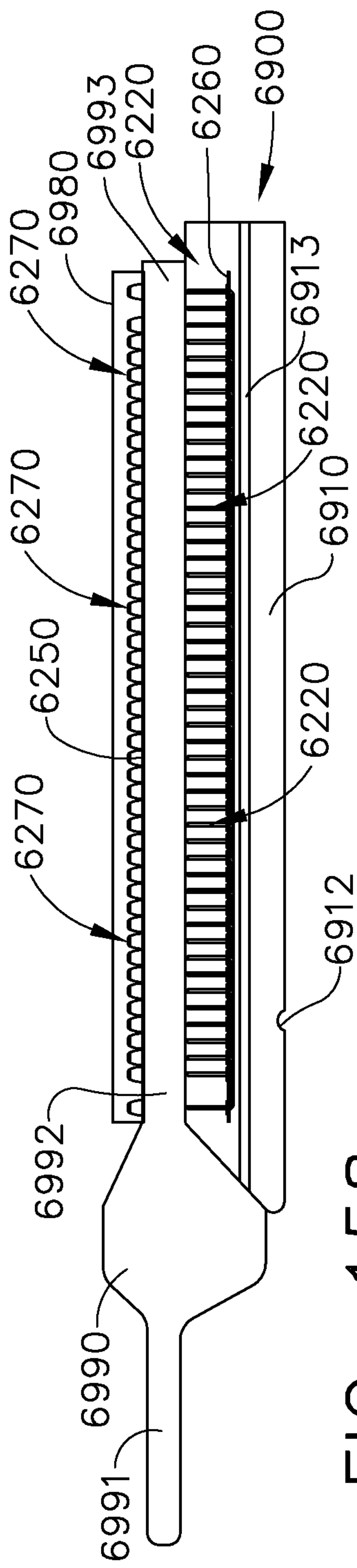


FIG. 158

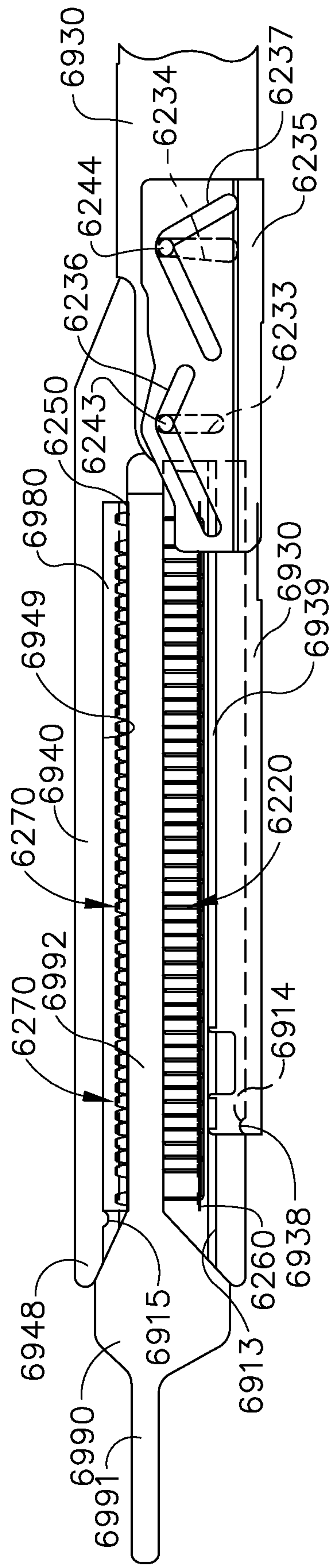


FIG. 159

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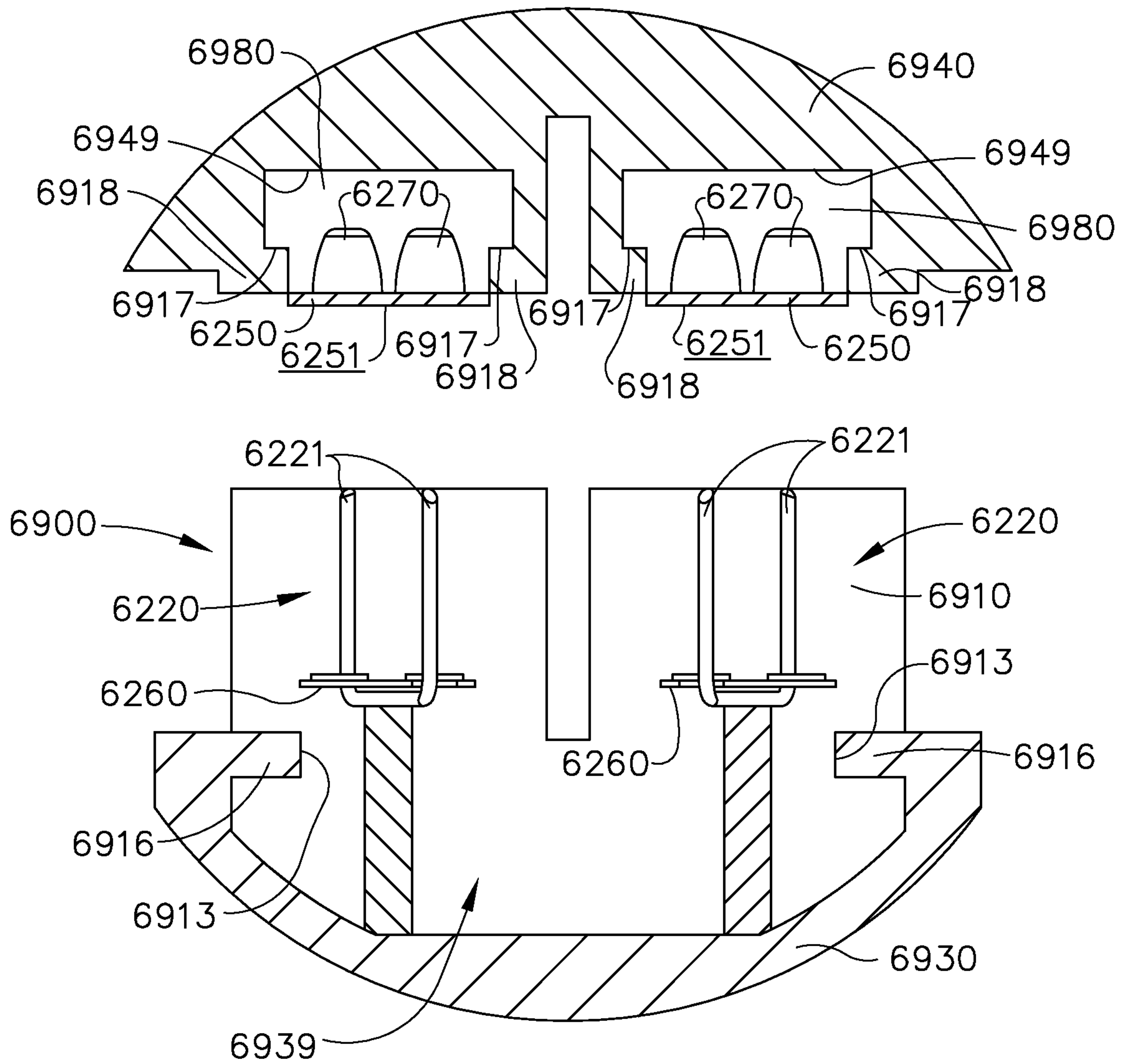


FIG. 160

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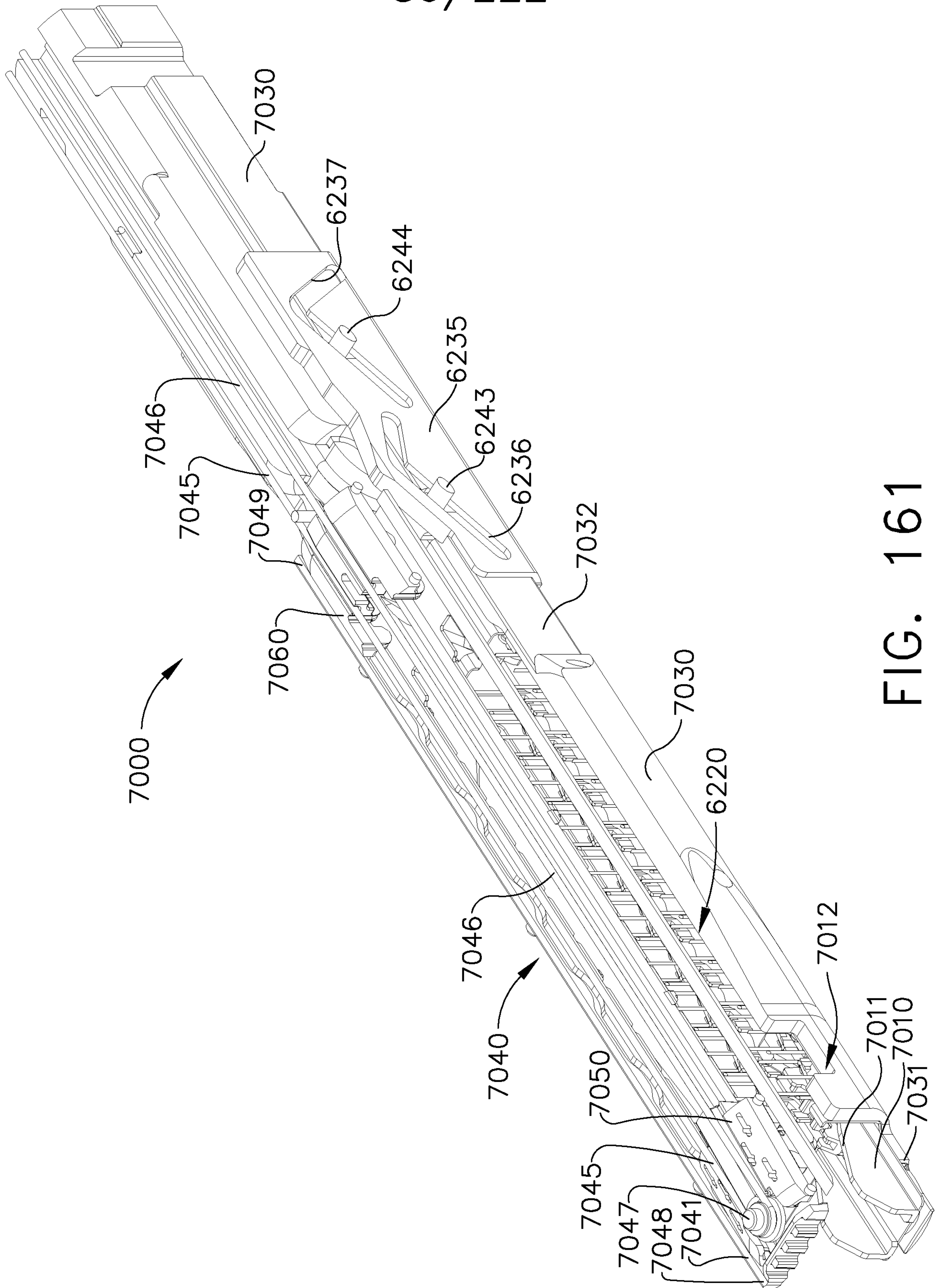


FIG. 161

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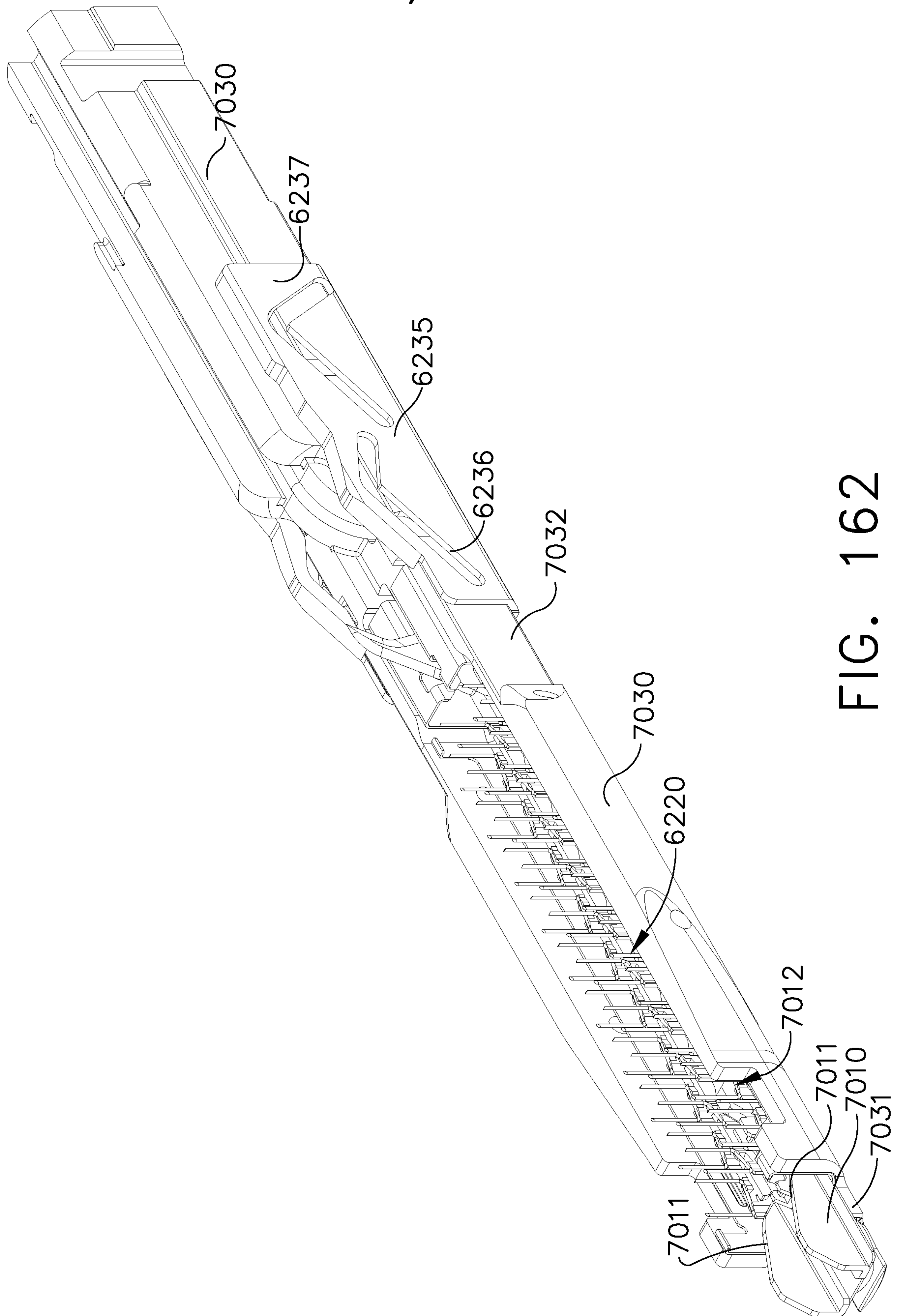


FIG. 162

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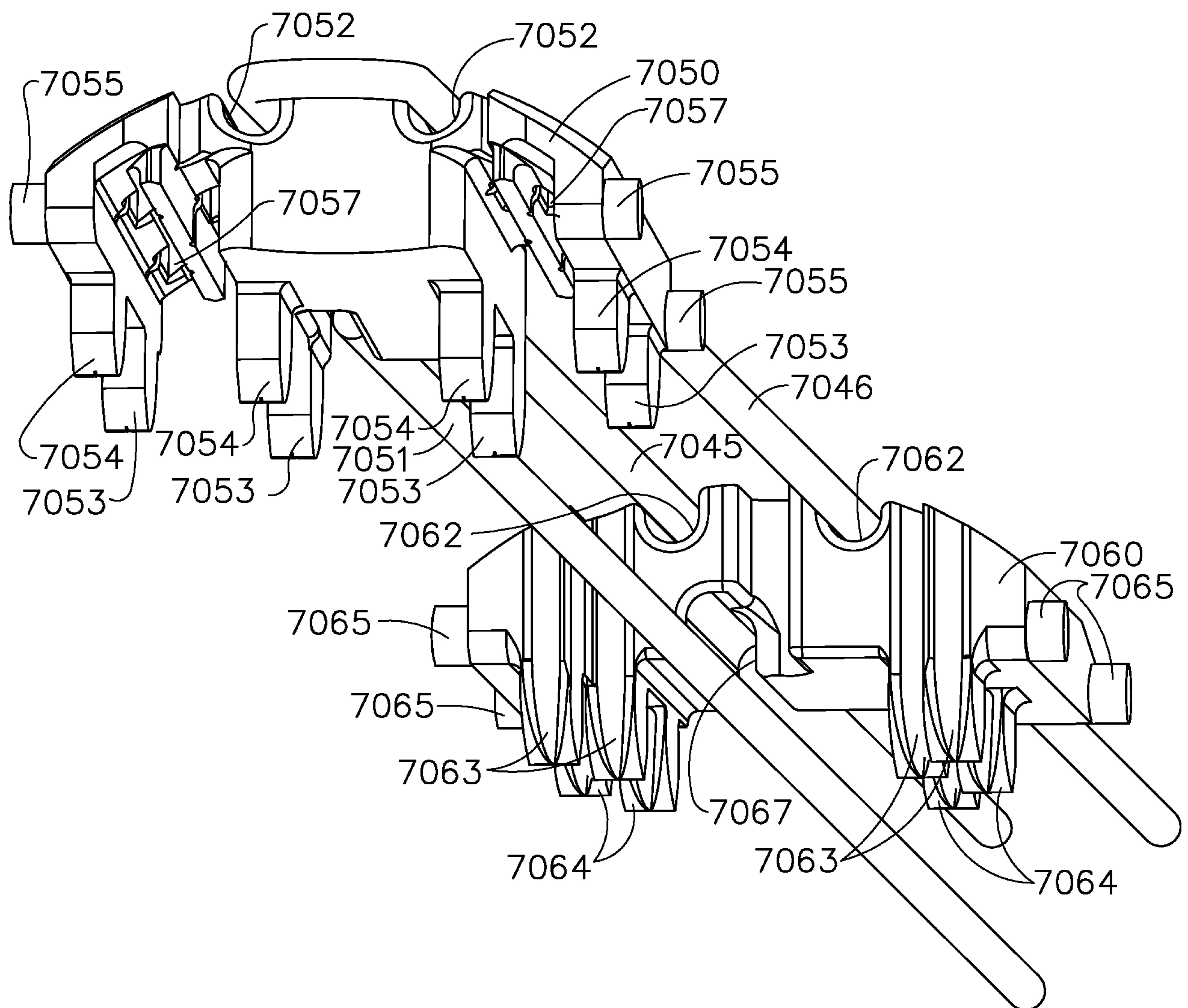


FIG. 163

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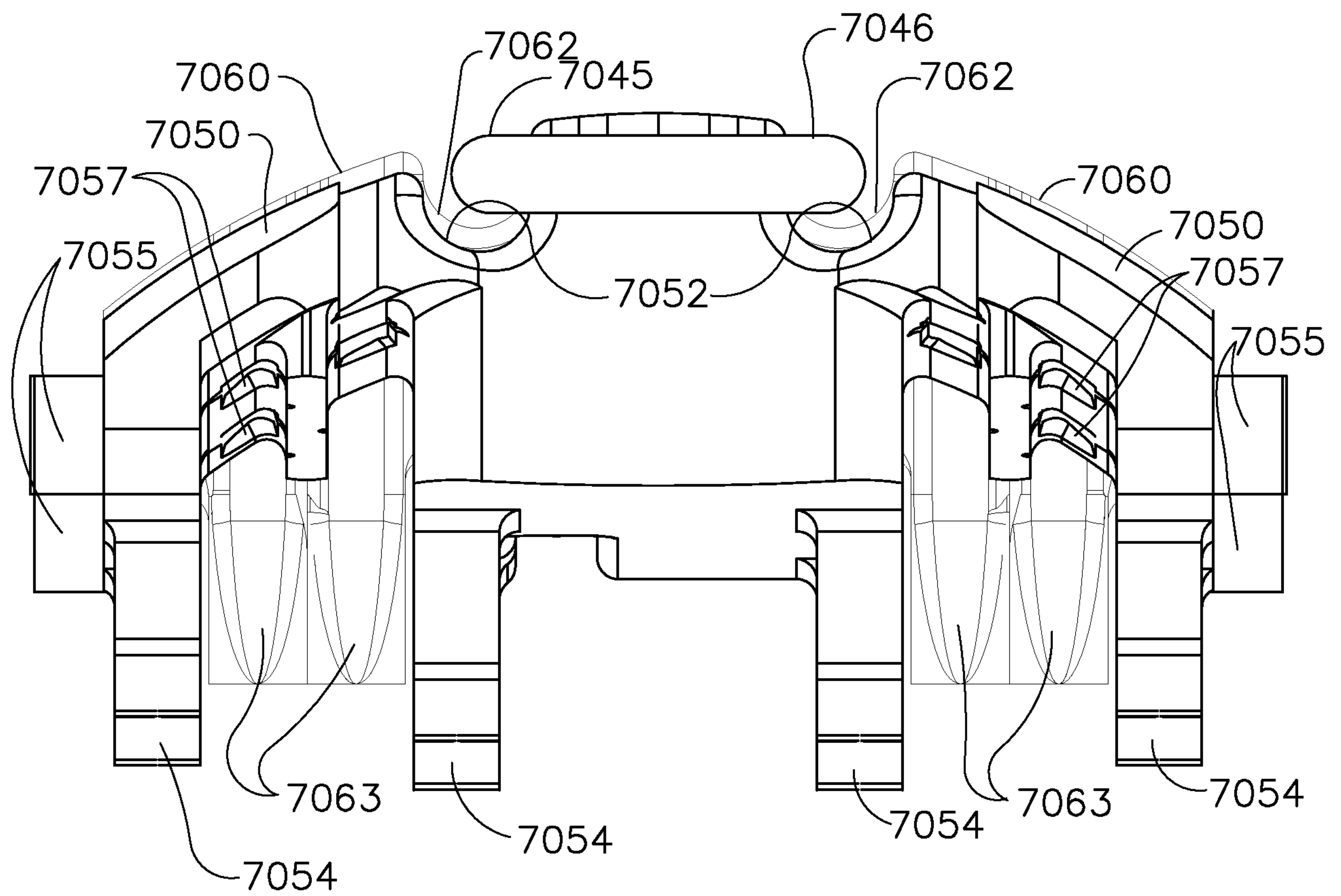


FIG. 164

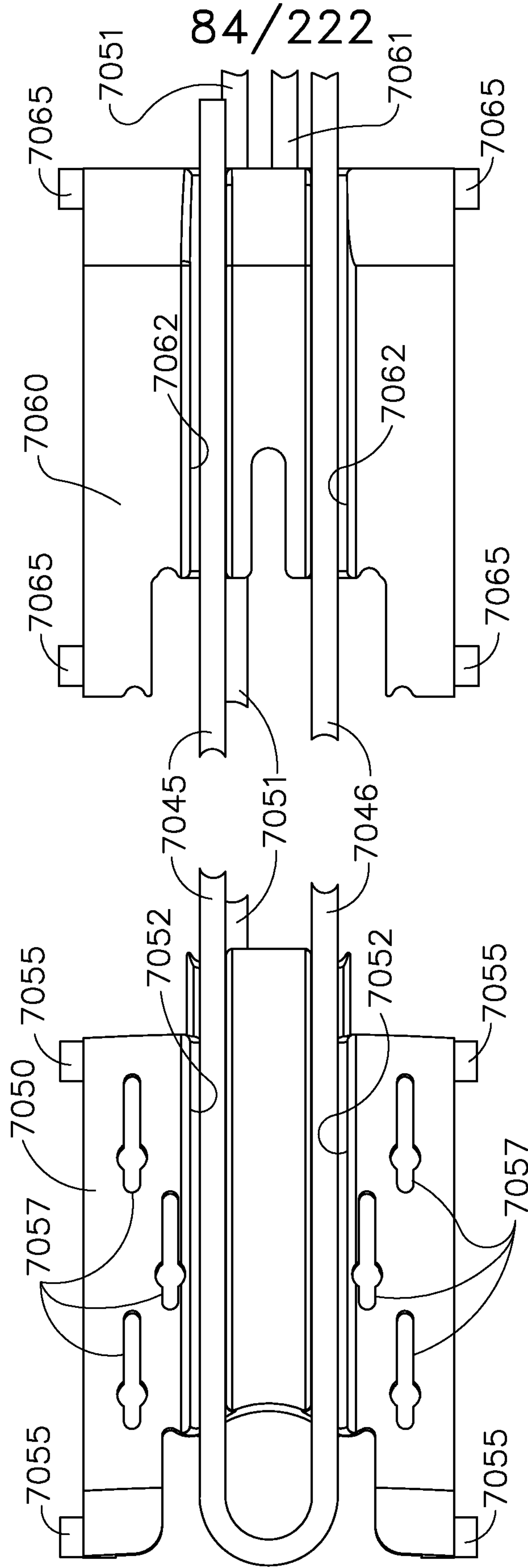


FIG. 165

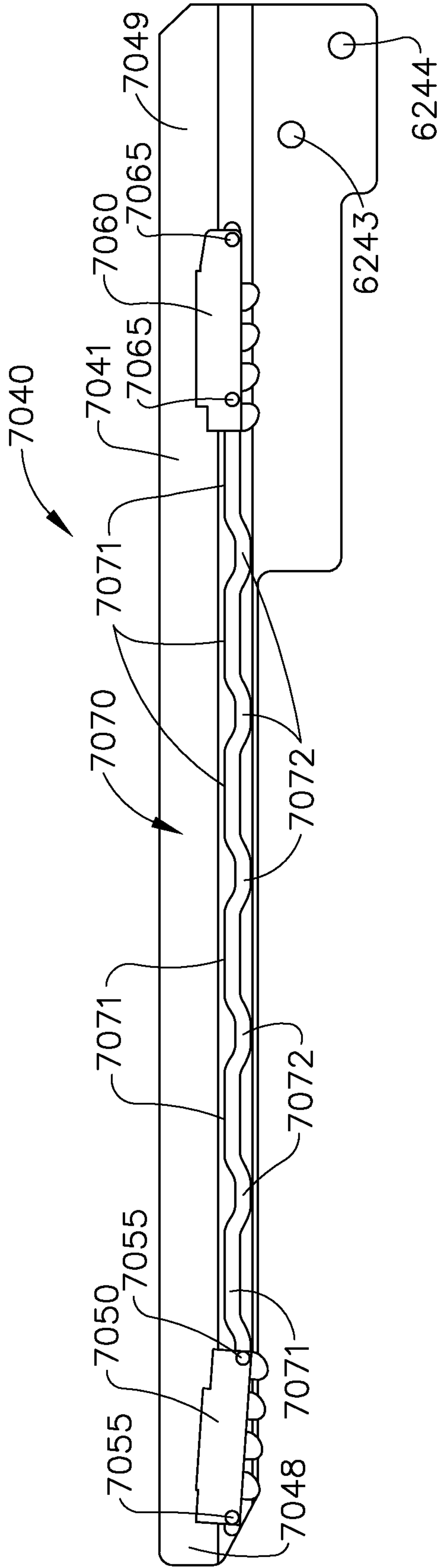
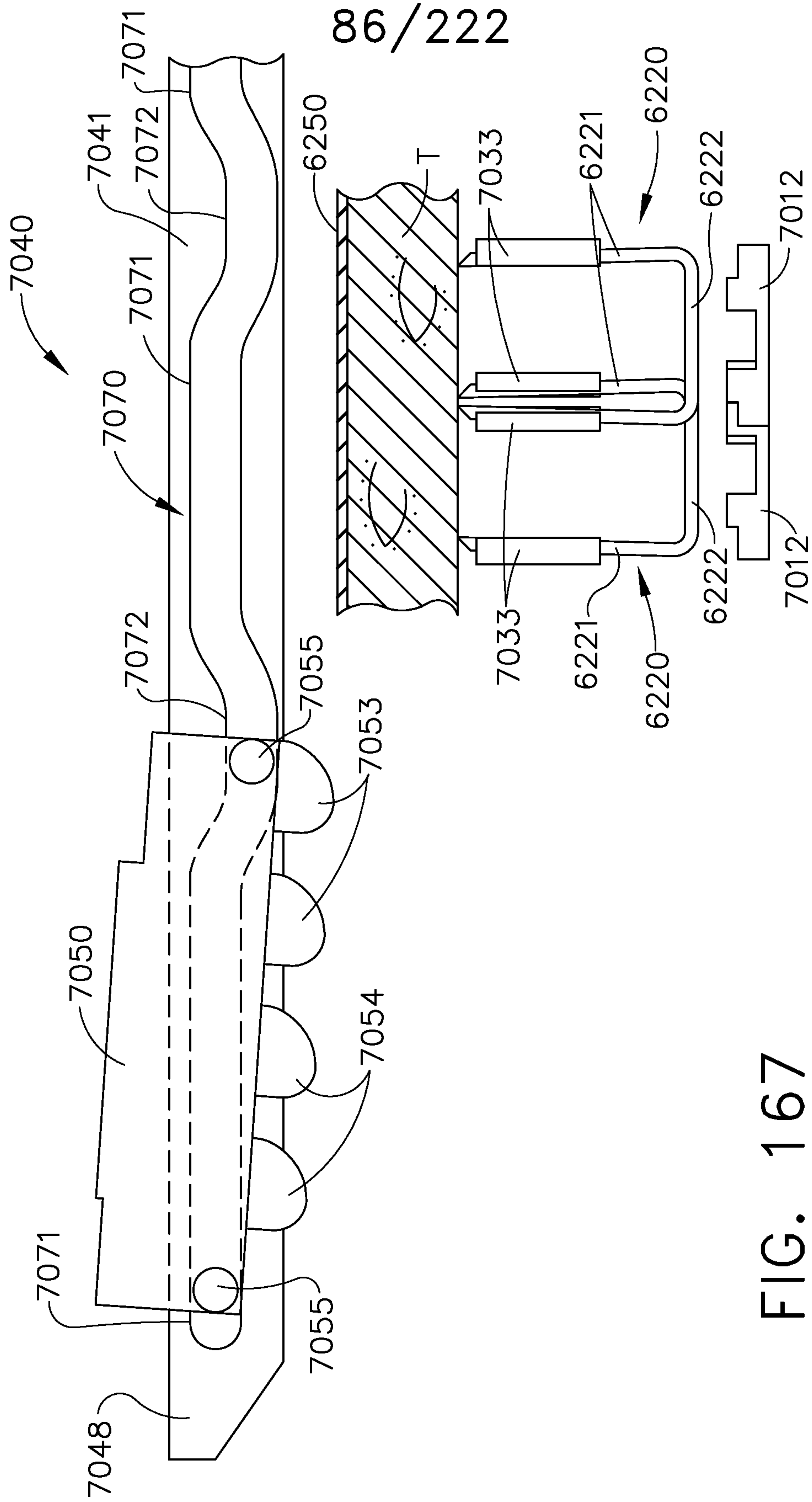


FIG. 166



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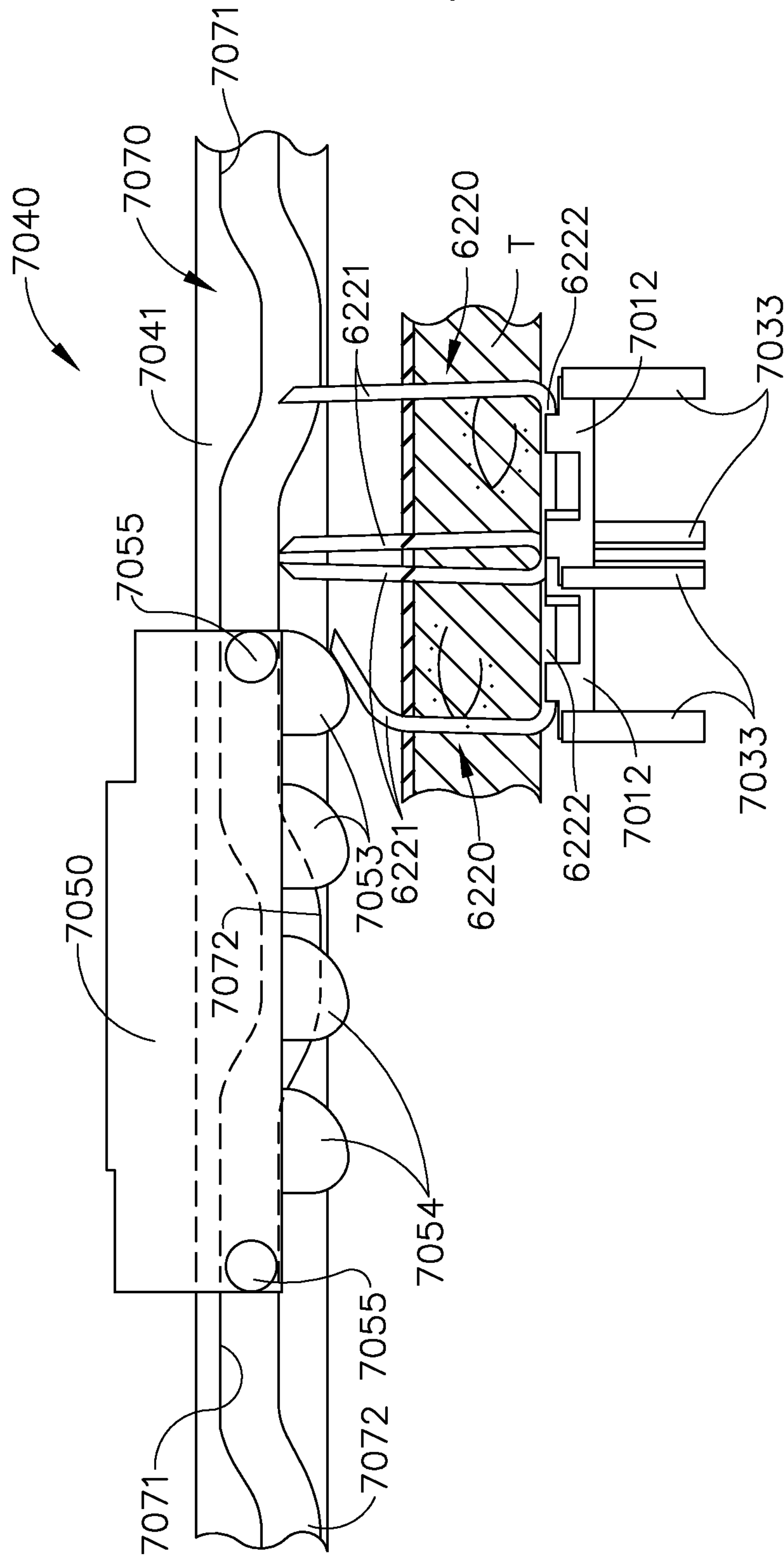
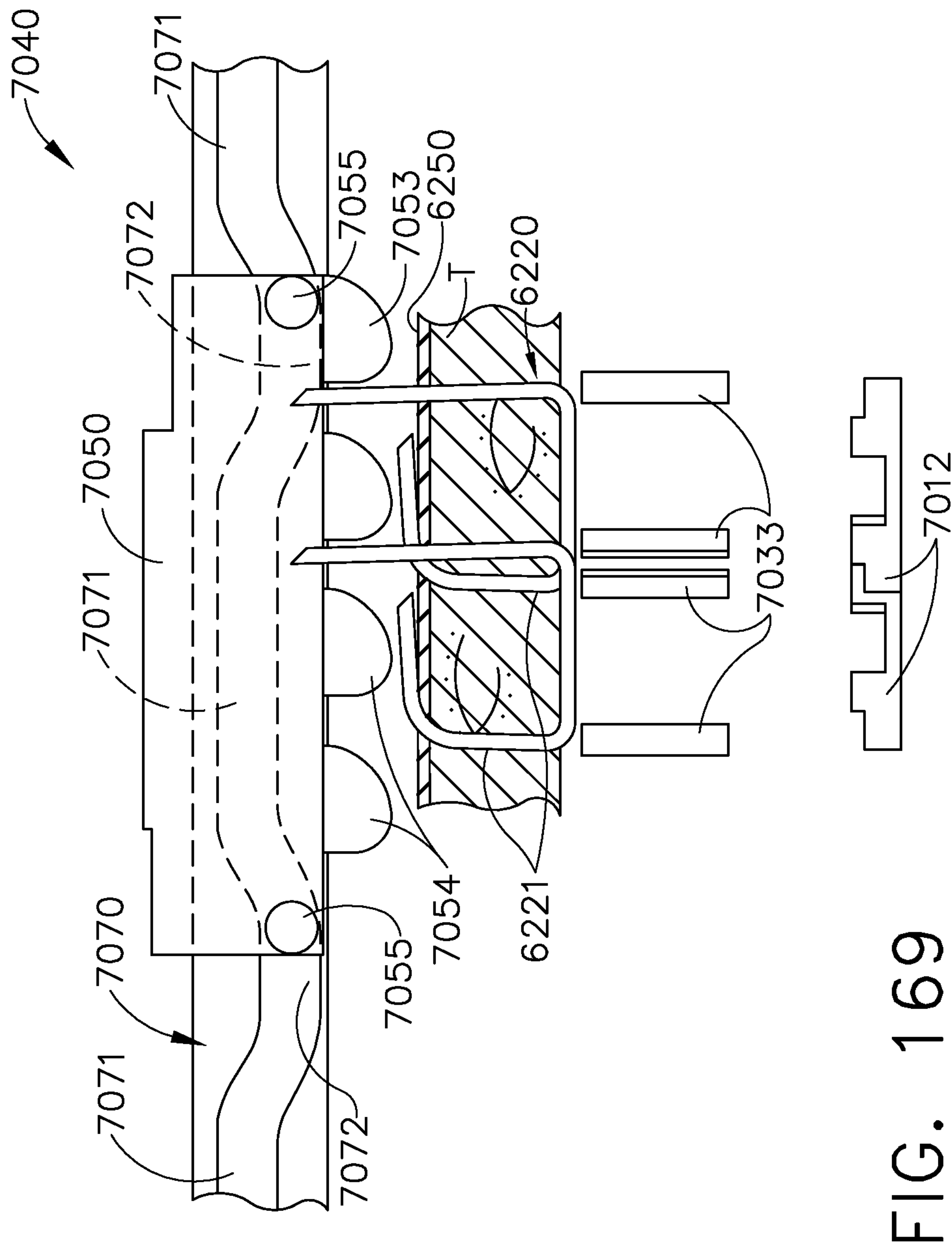


FIG. 168

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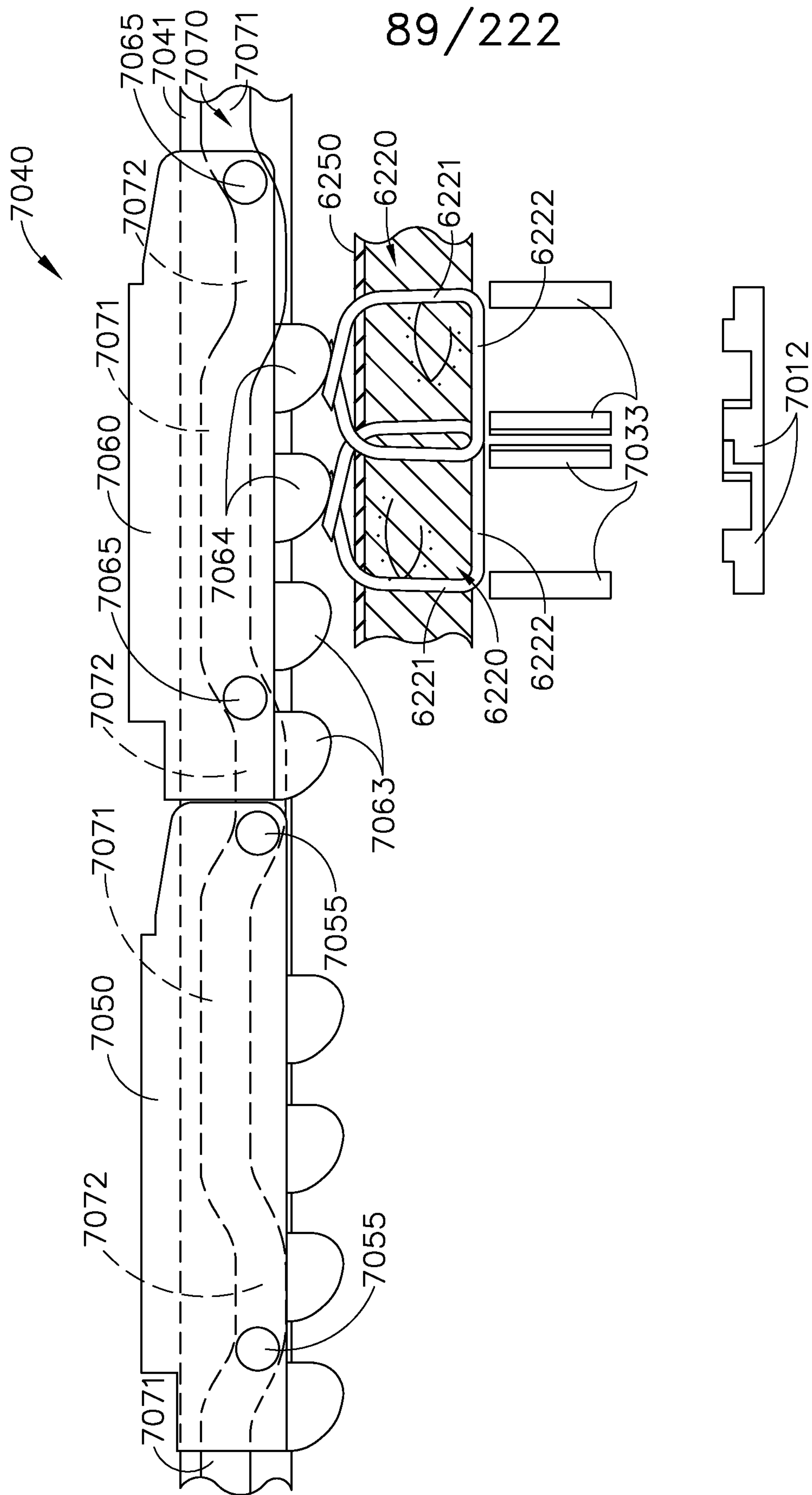


FIG. 170

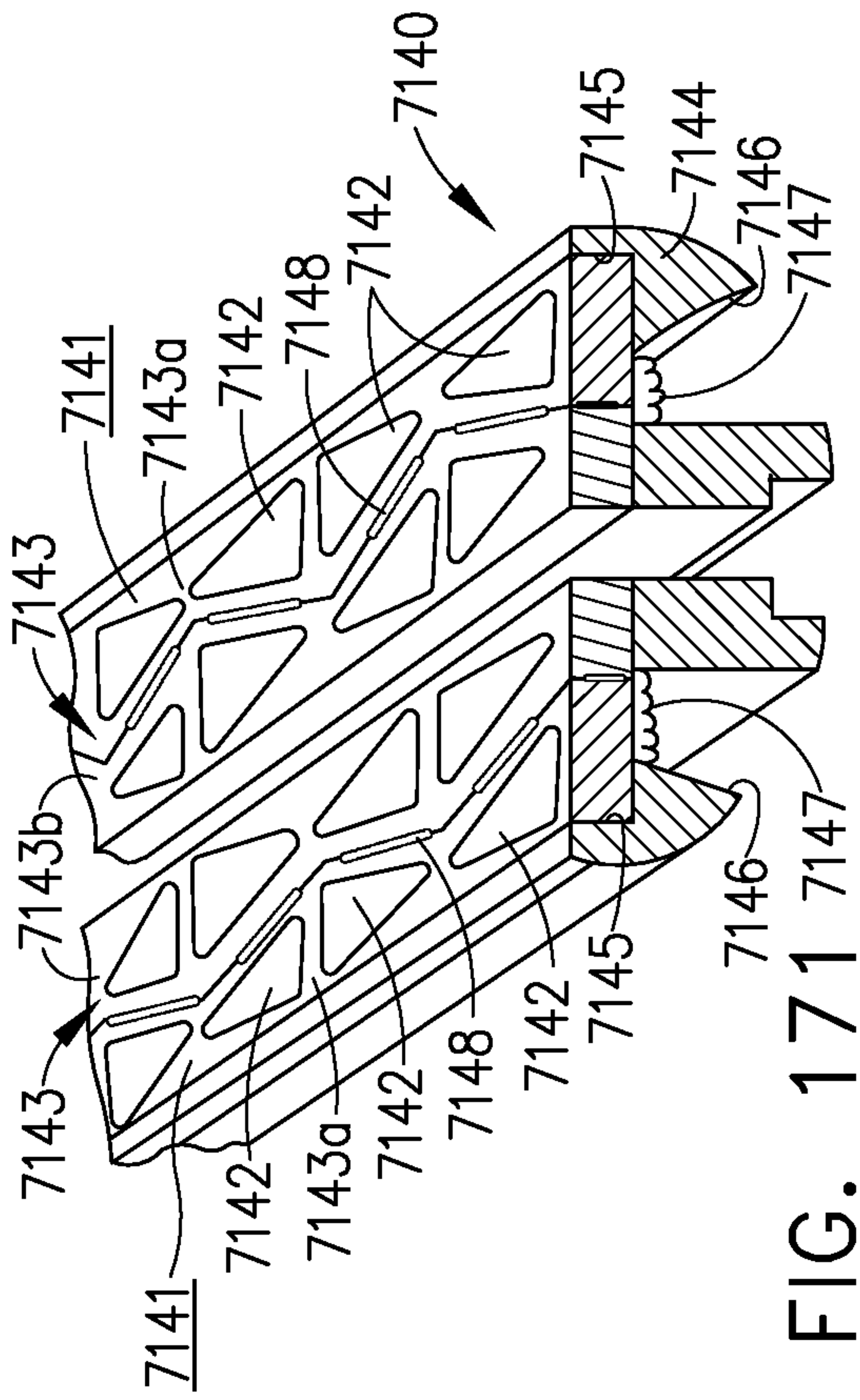


FIG. 171

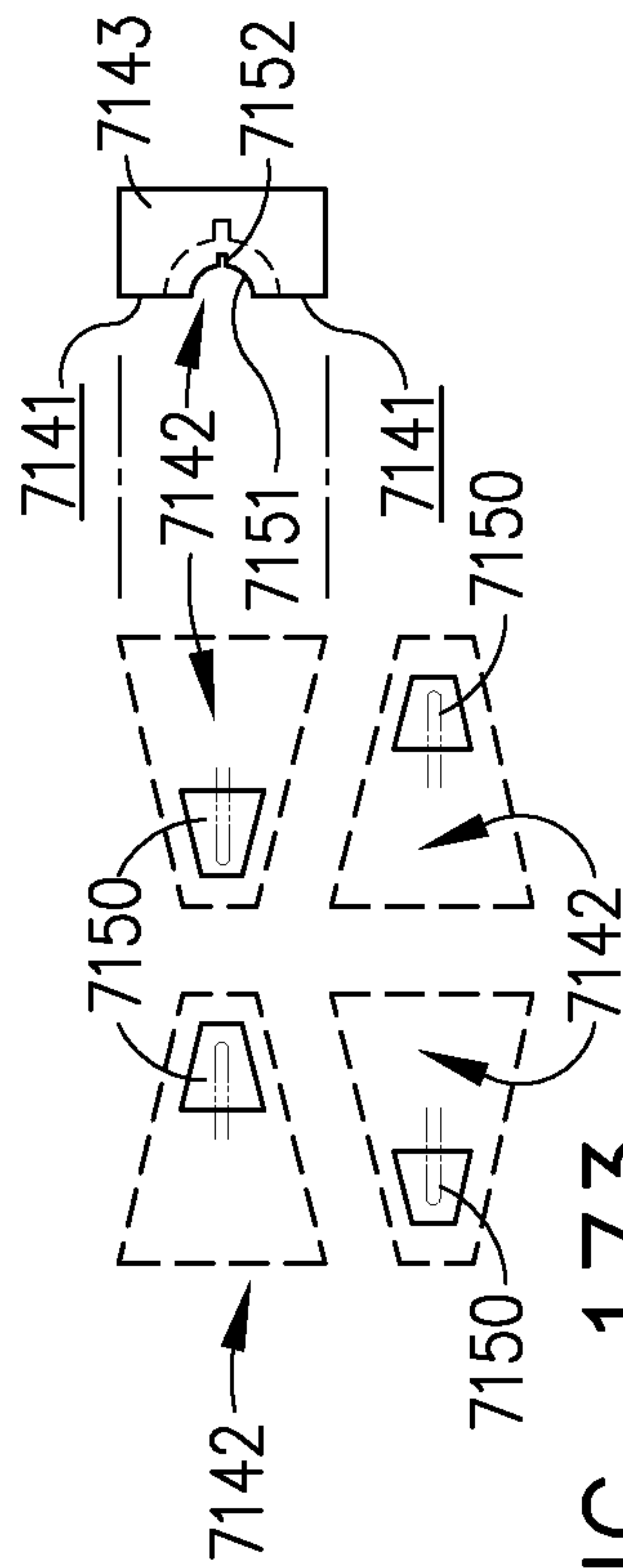


FIG. 173

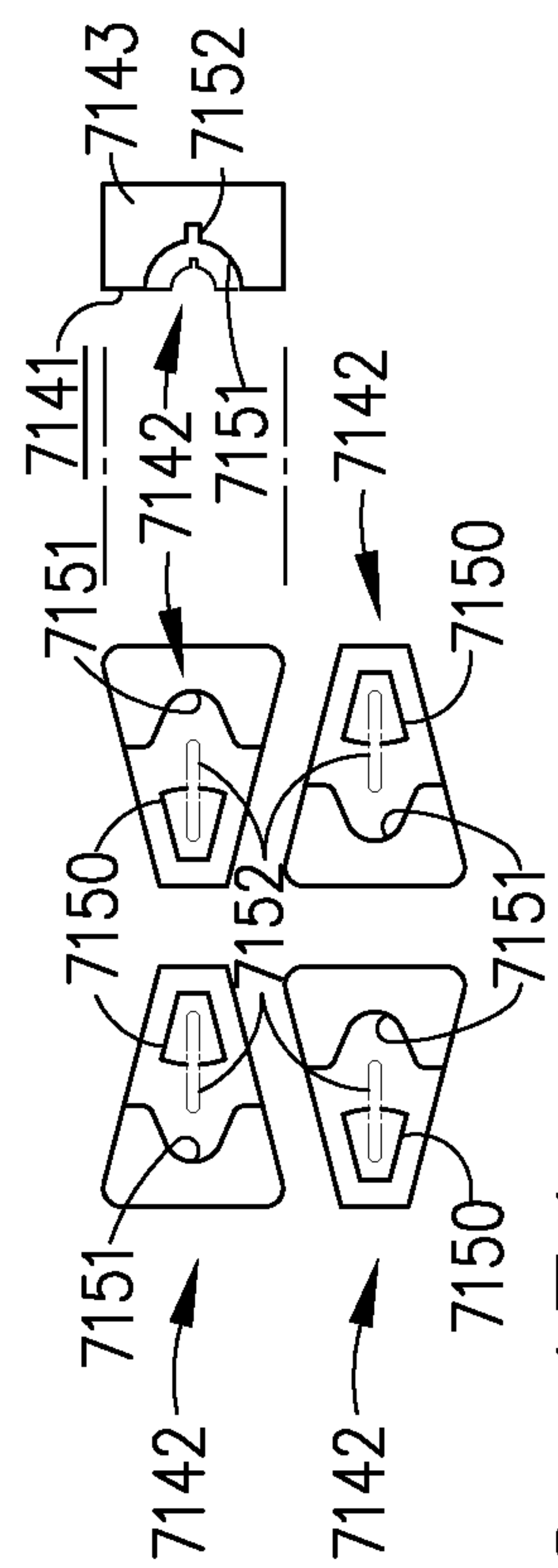


FIG. 174

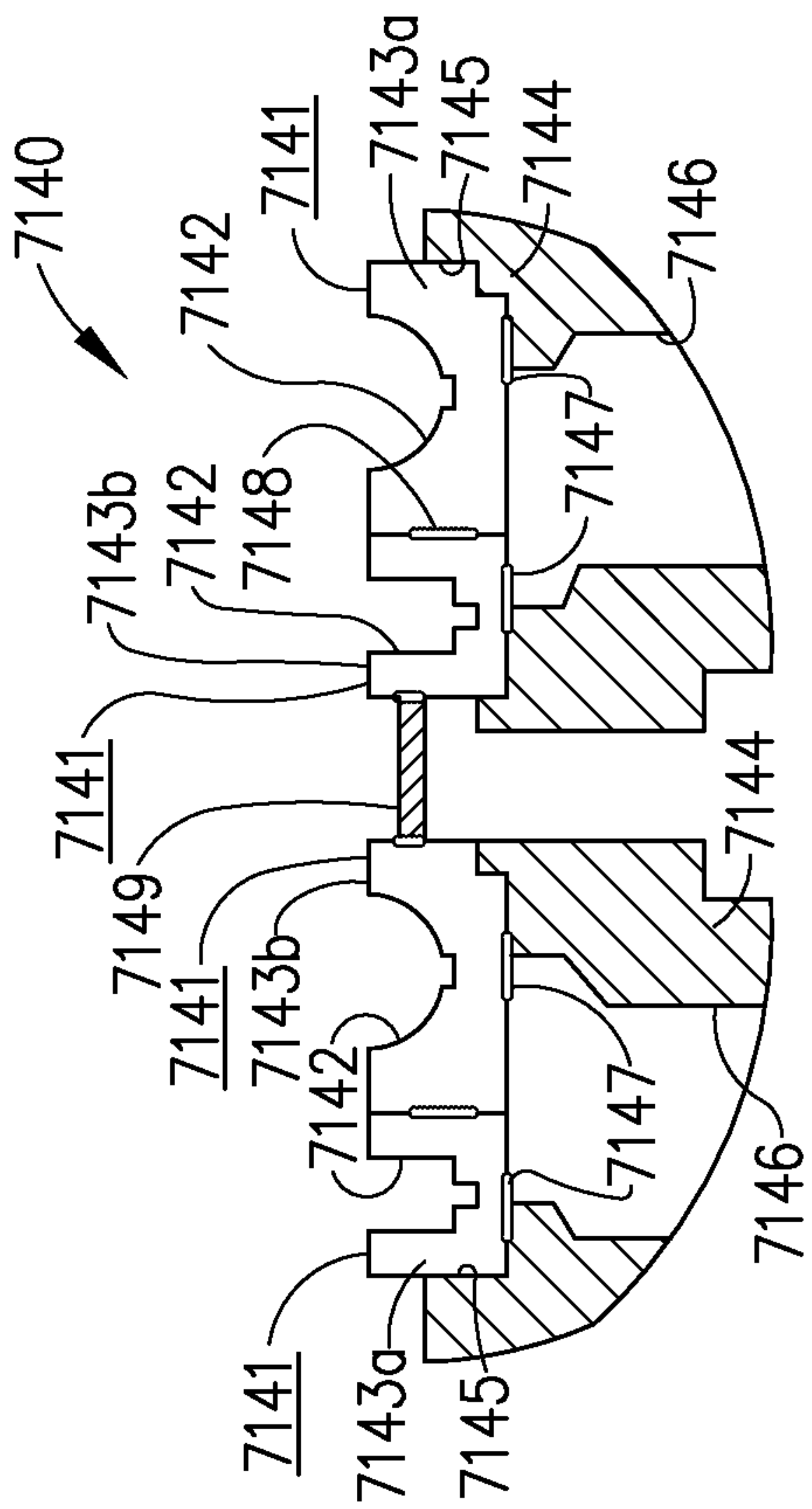


FIG. 172

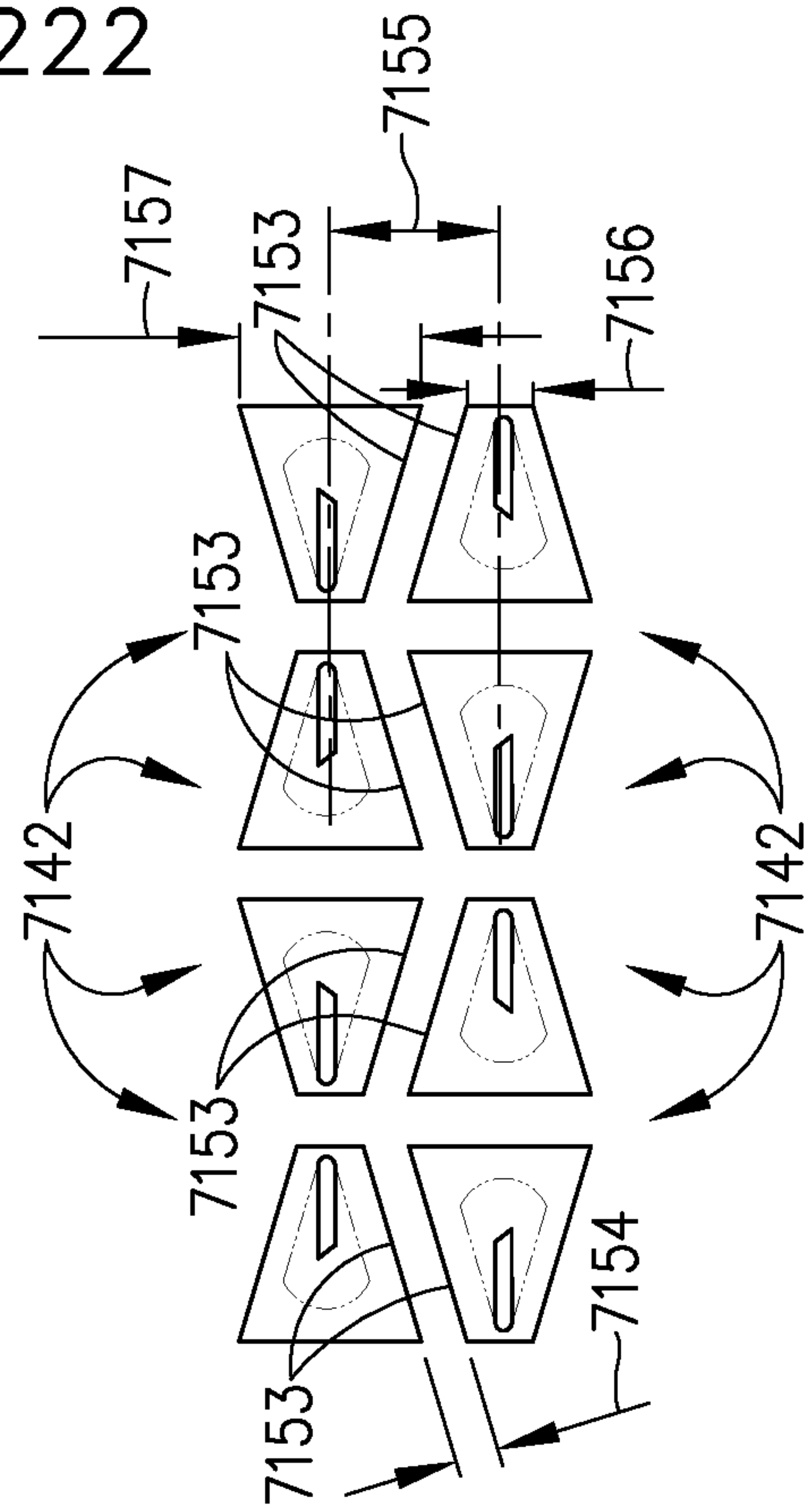


FIG. 175

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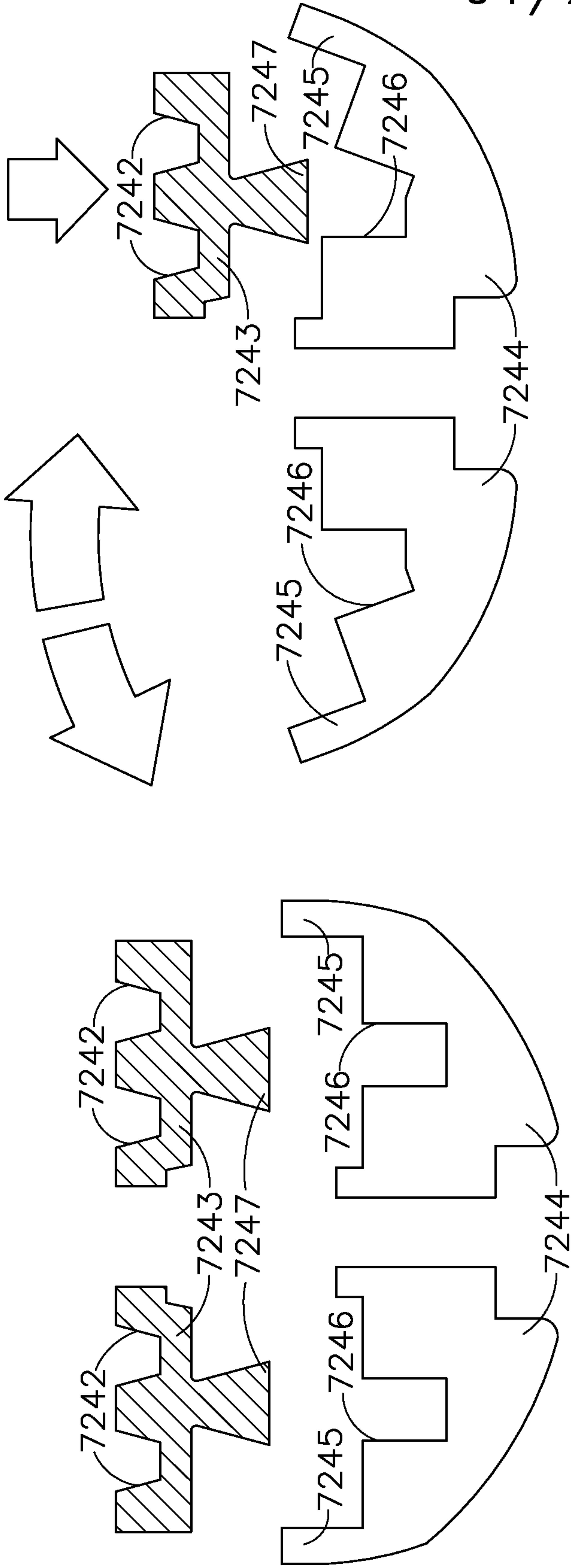


FIG. 176

FIG. 177

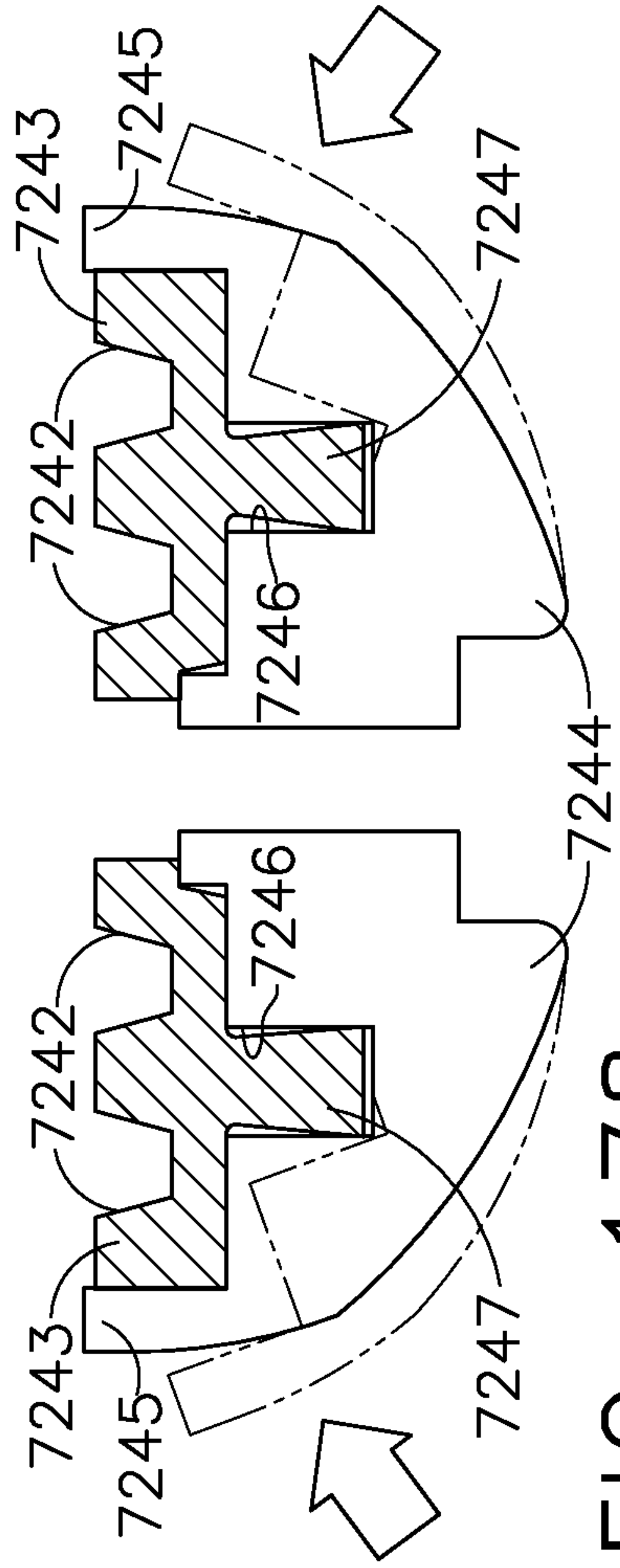


FIG. 178

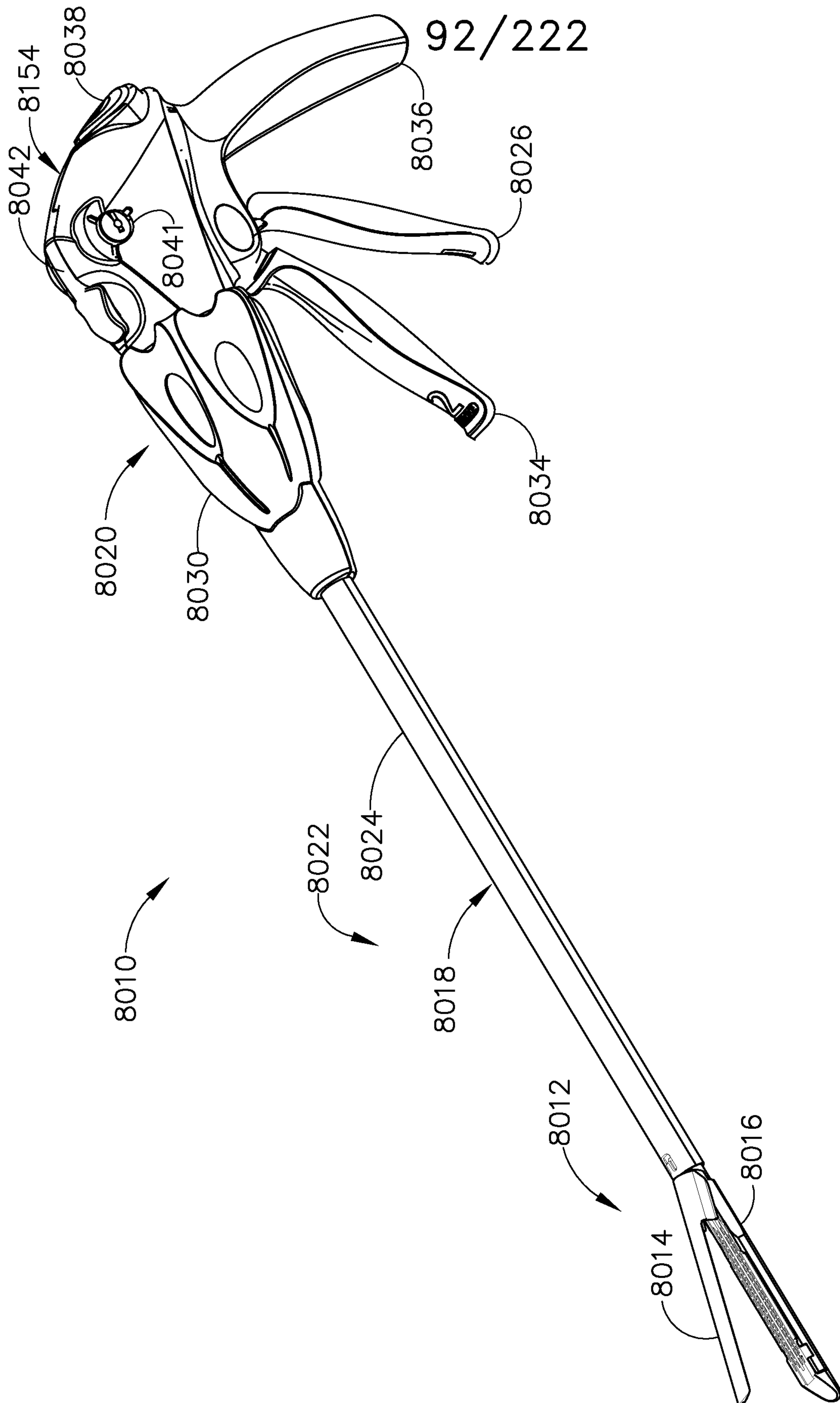


FIG. 179

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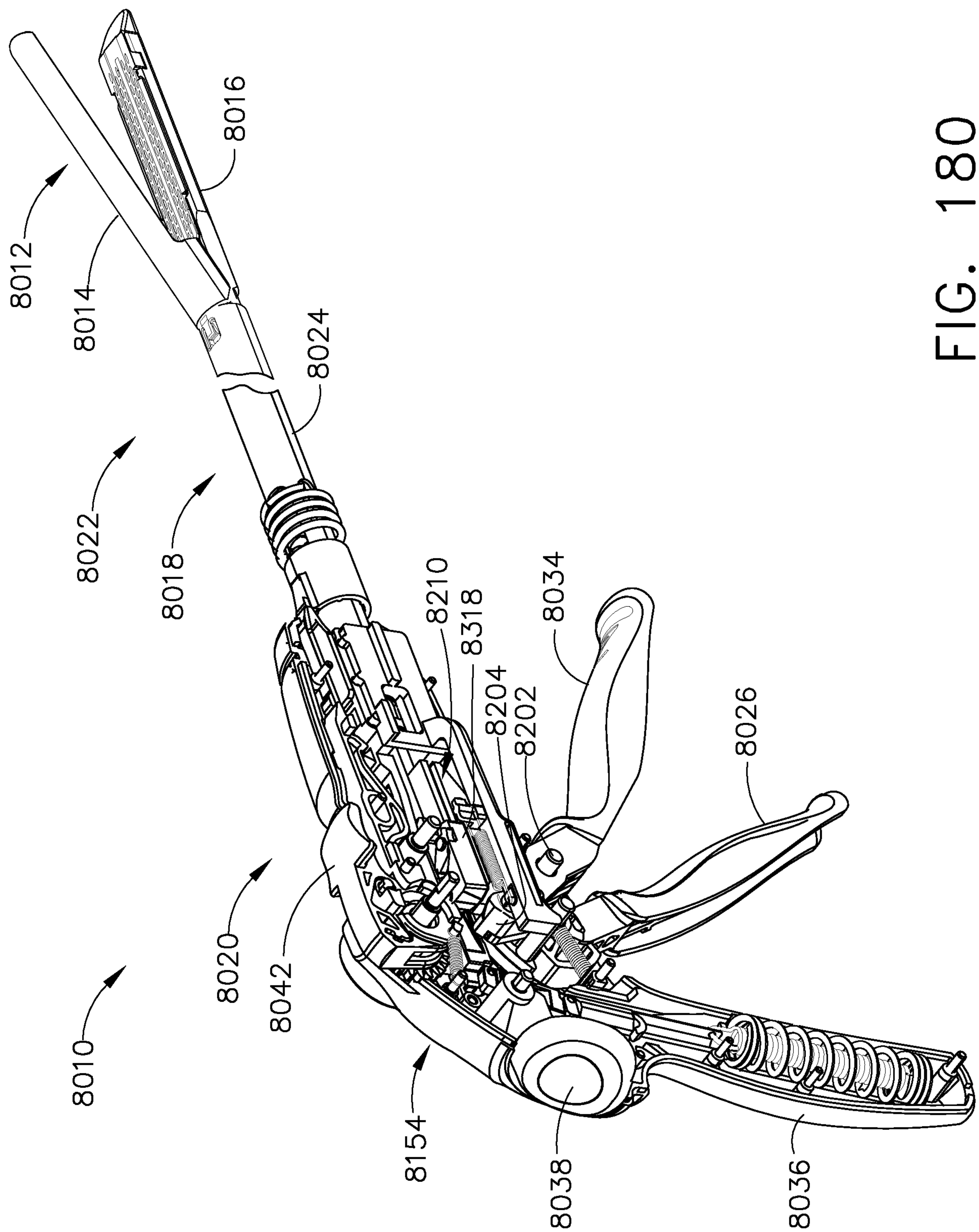
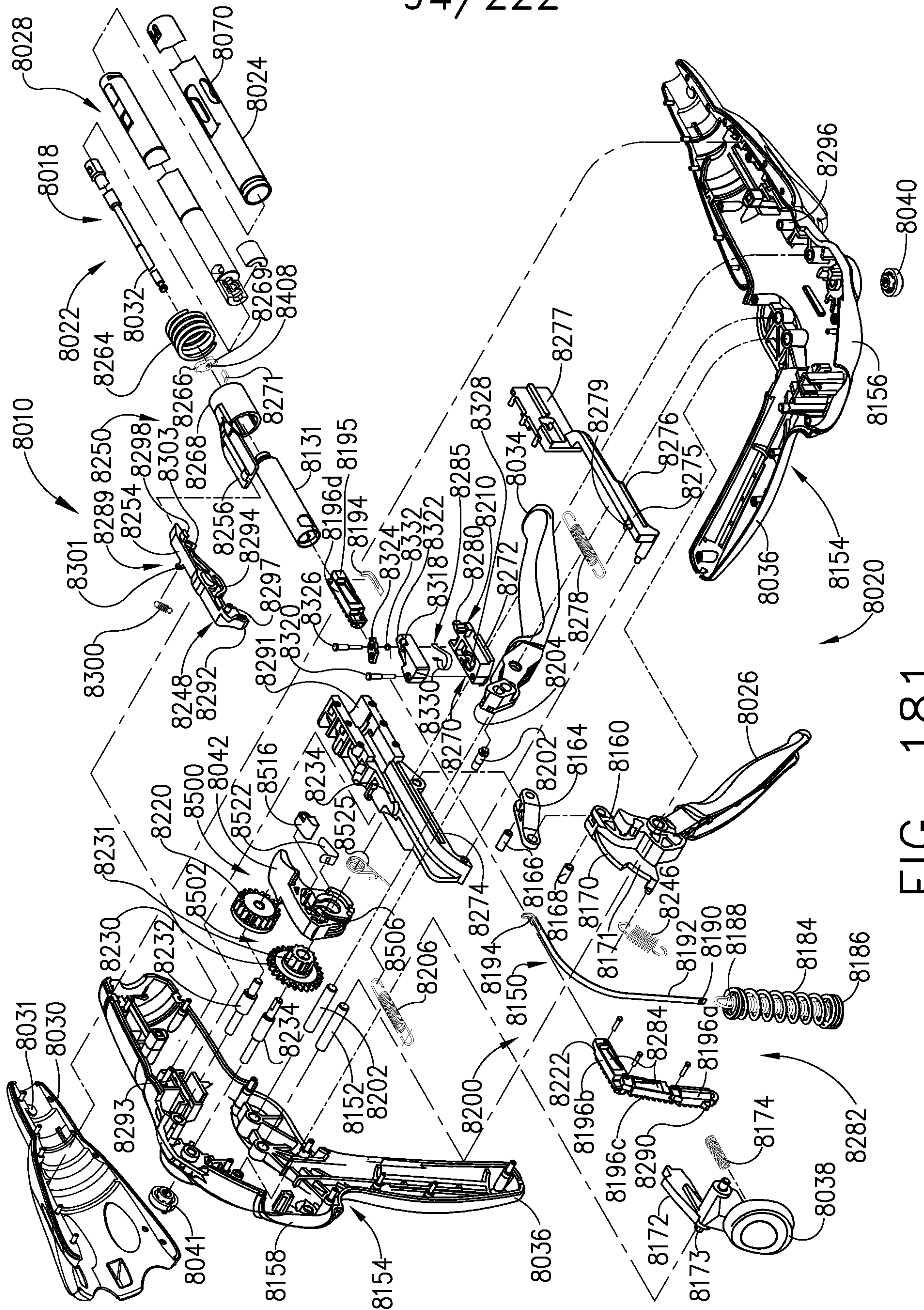


FIG. 180

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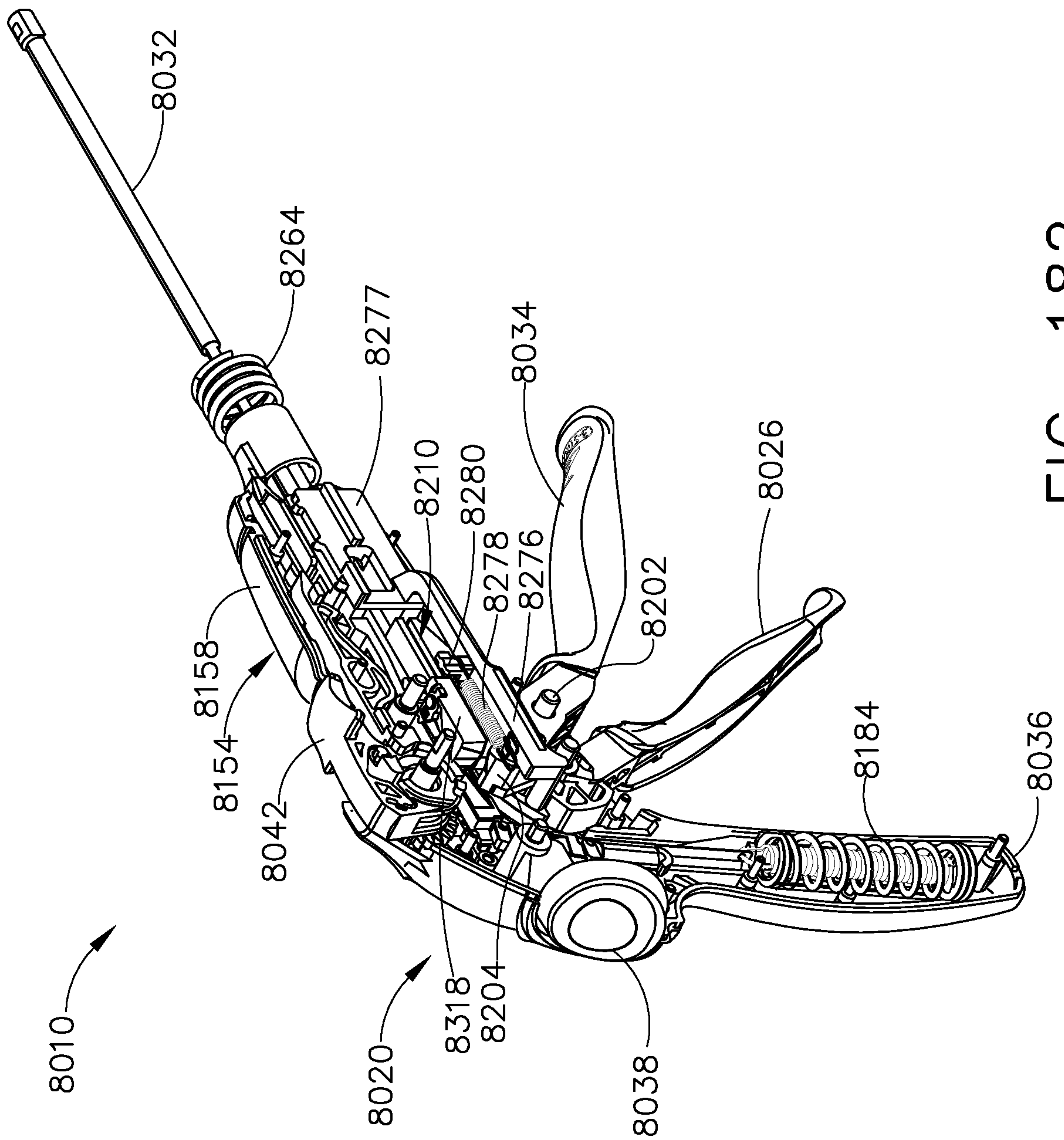


FIG. 182

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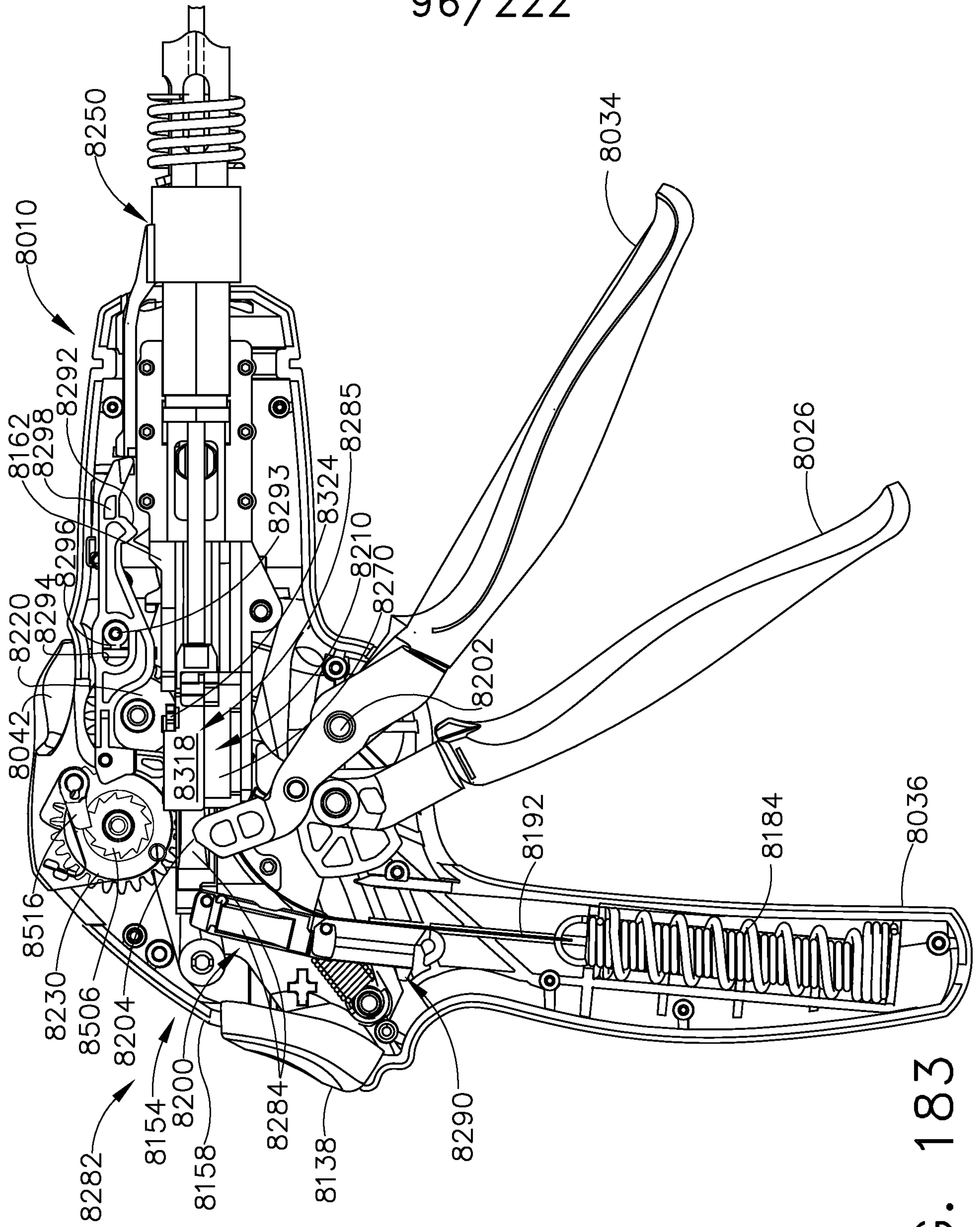
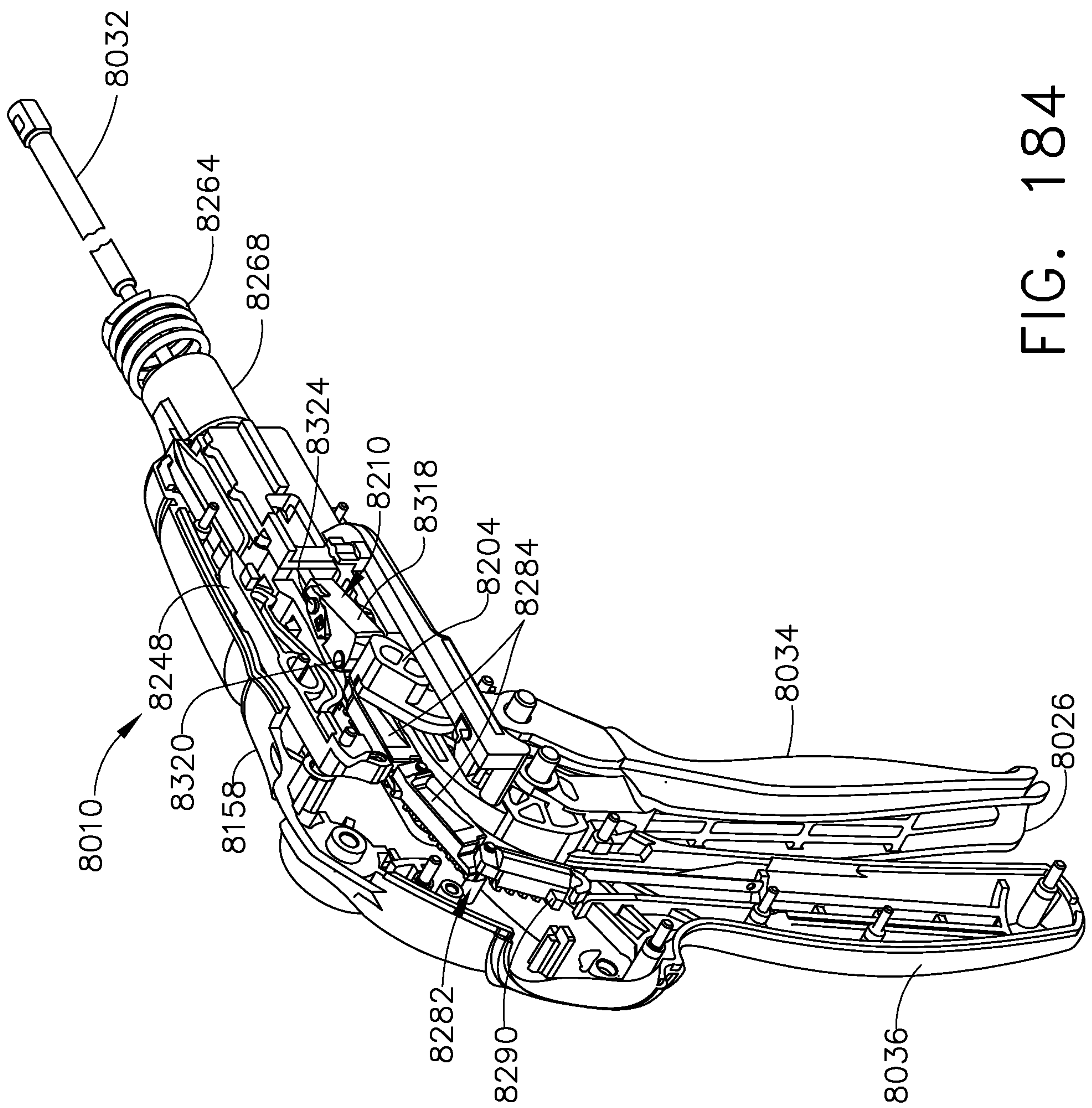
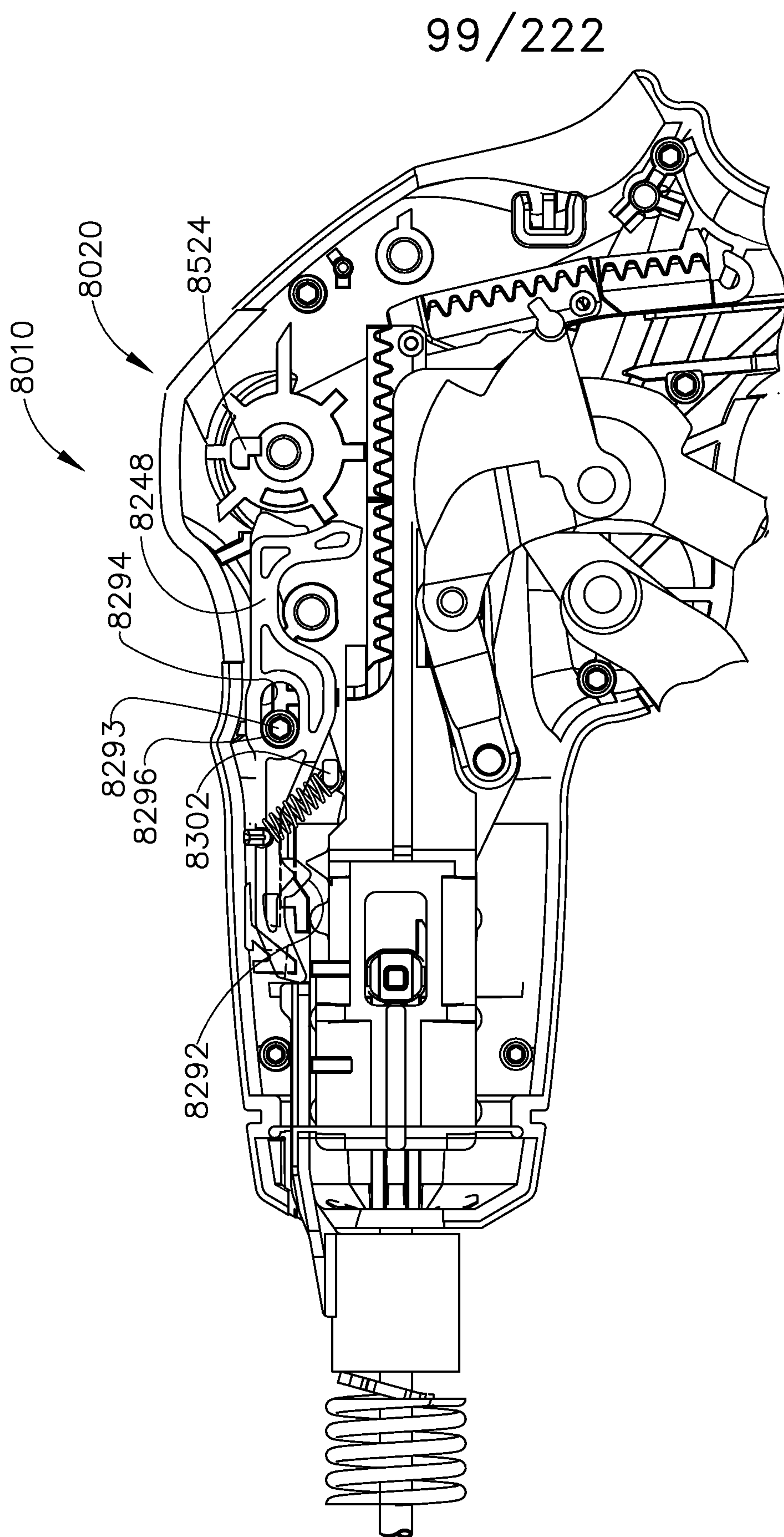


FIG. 183

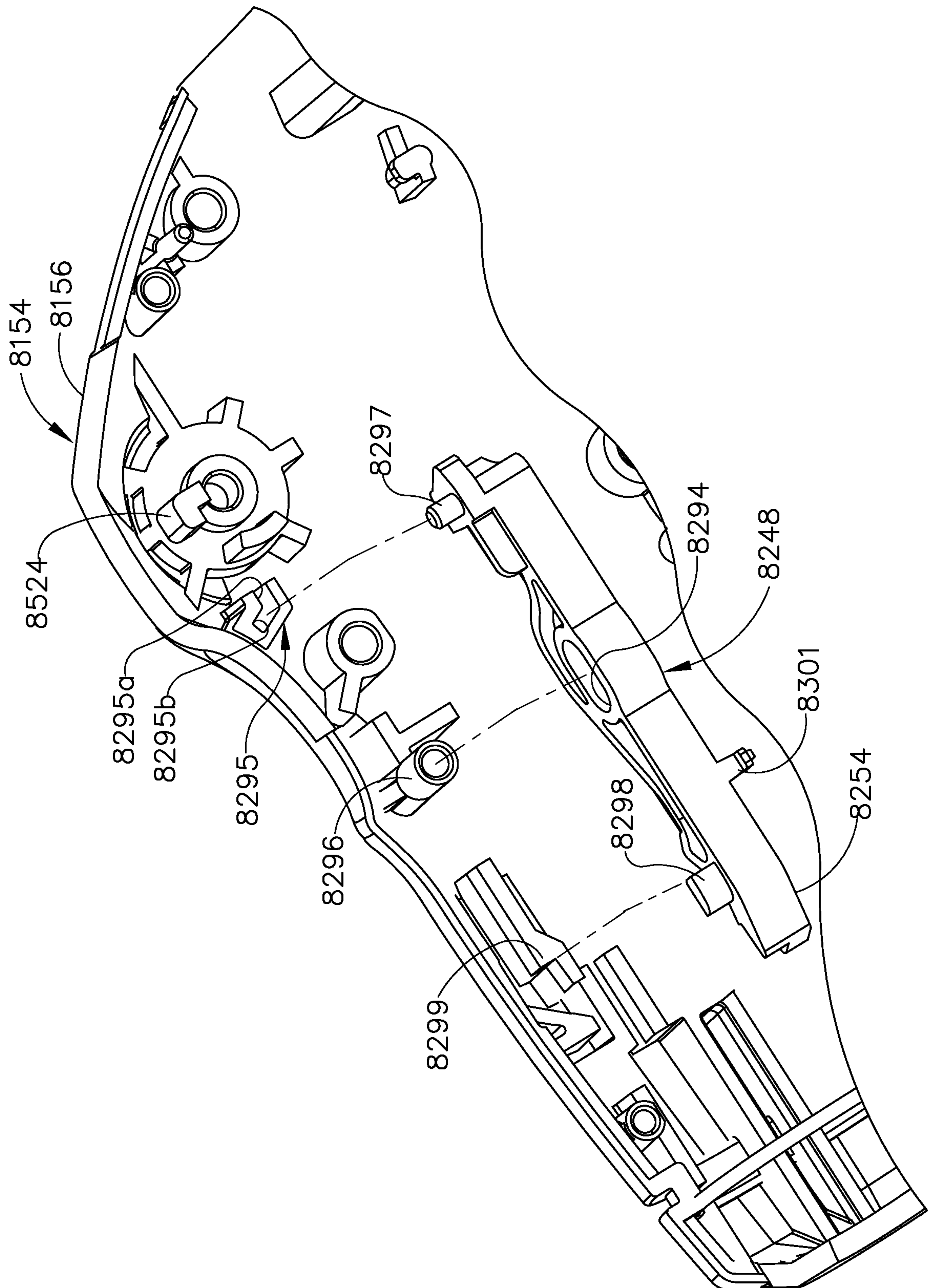
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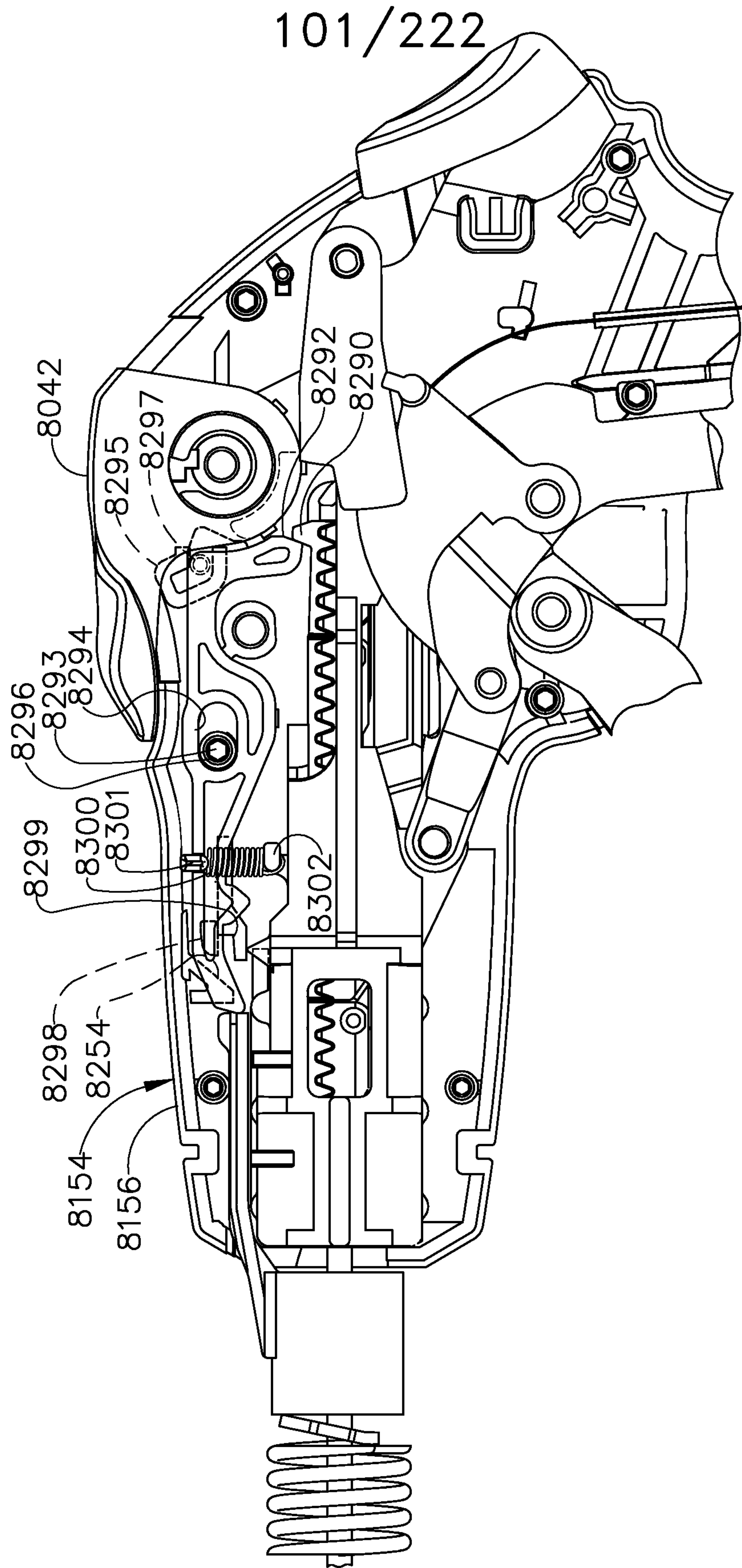


FIG. 188

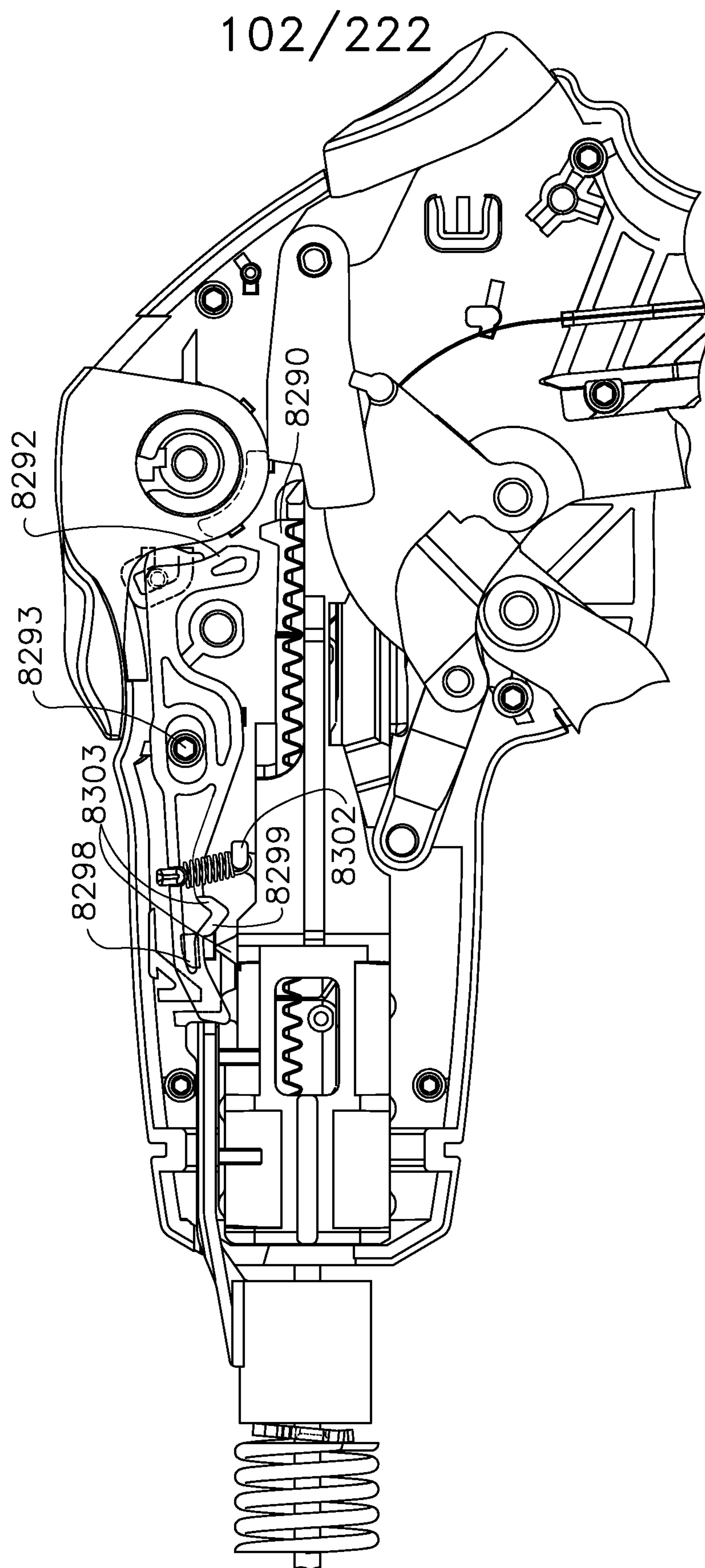
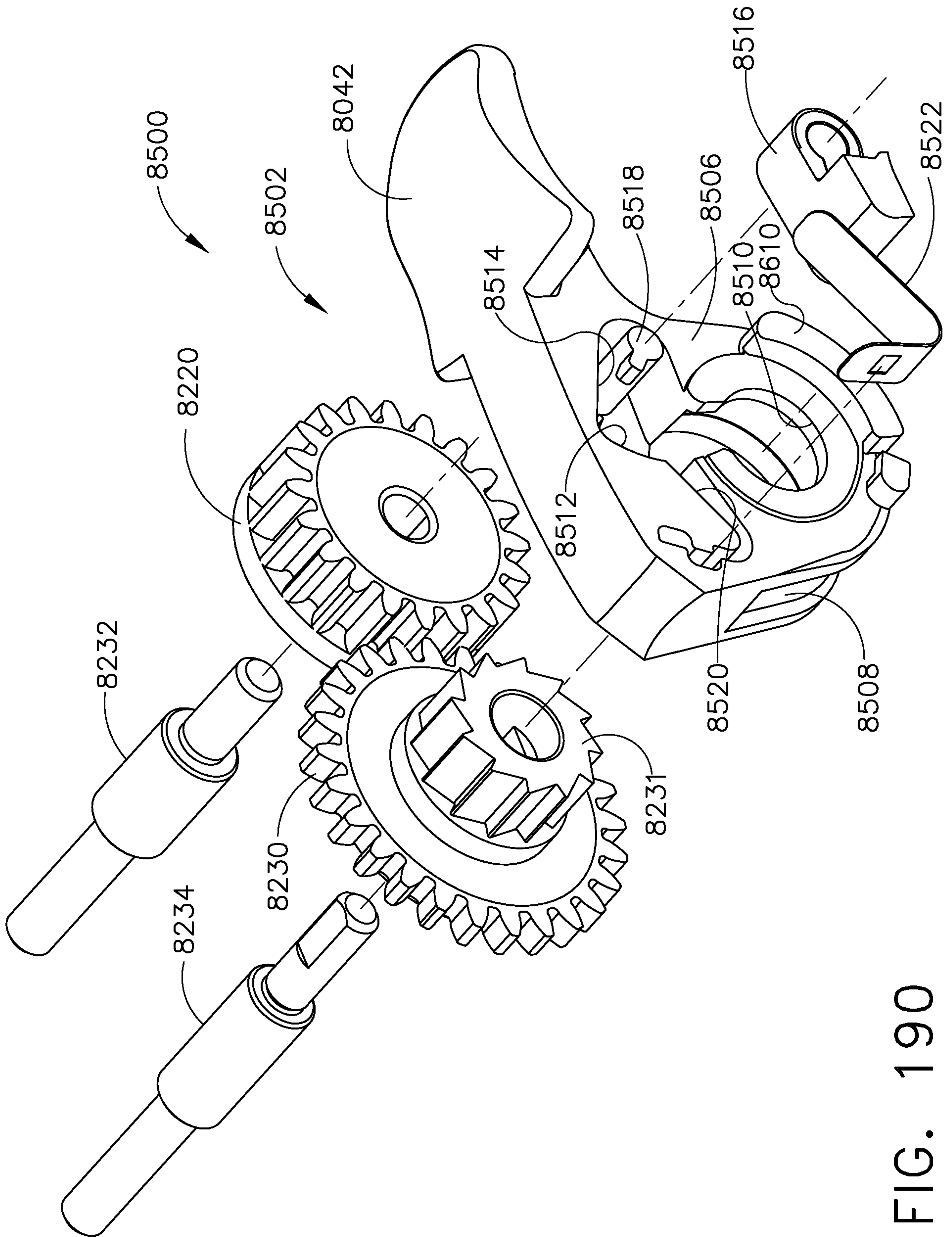
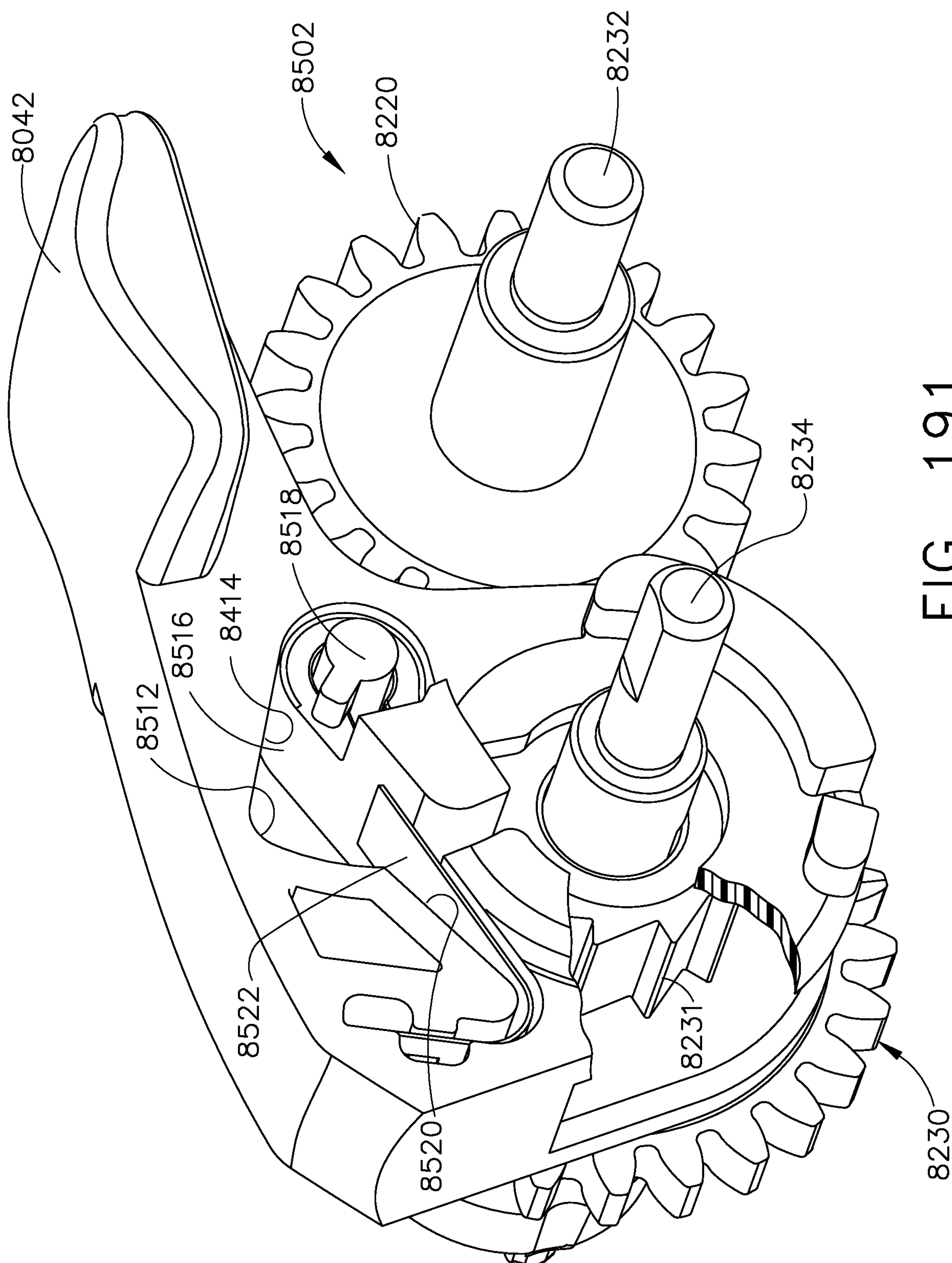


FIG. 189

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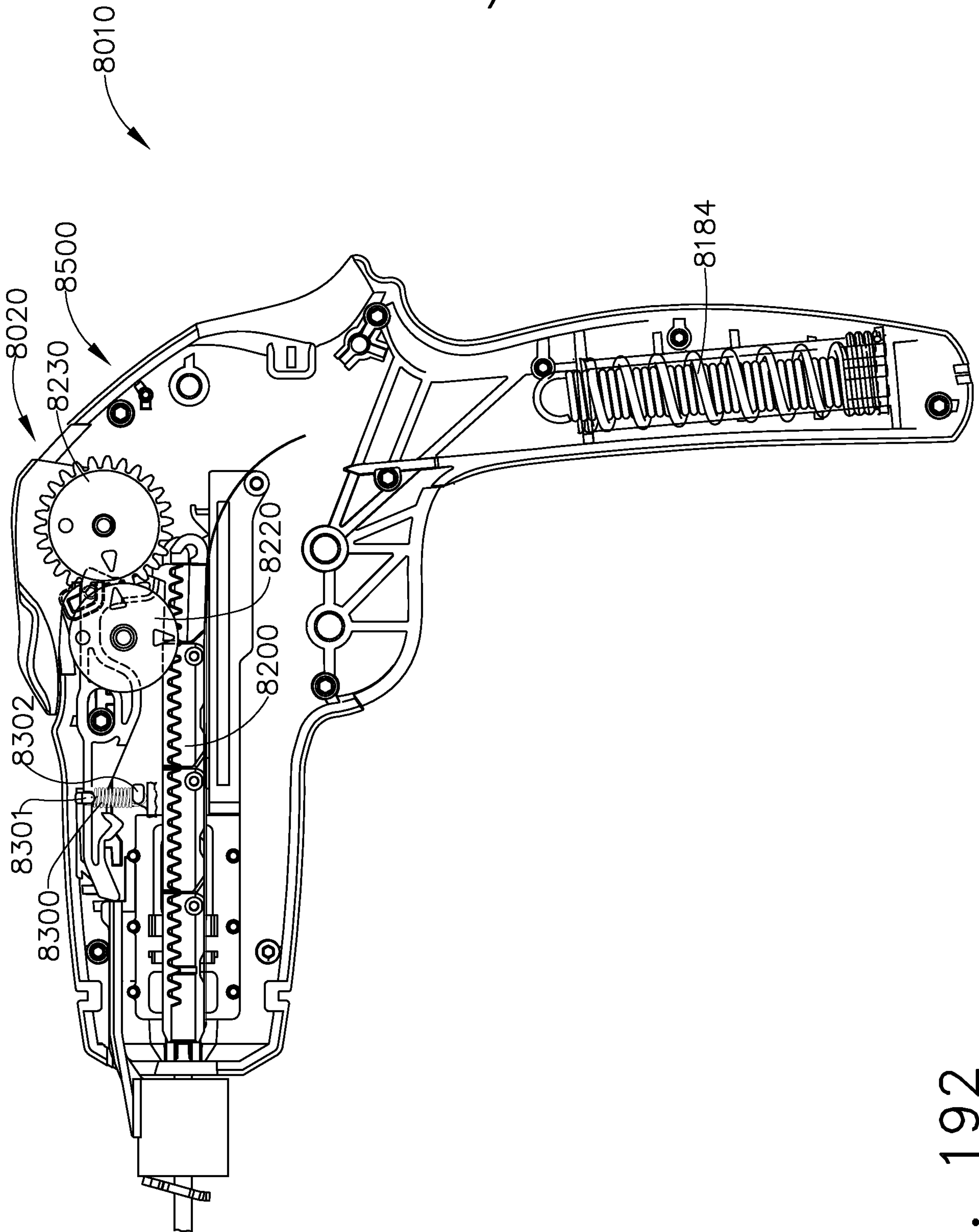


FIG. 192

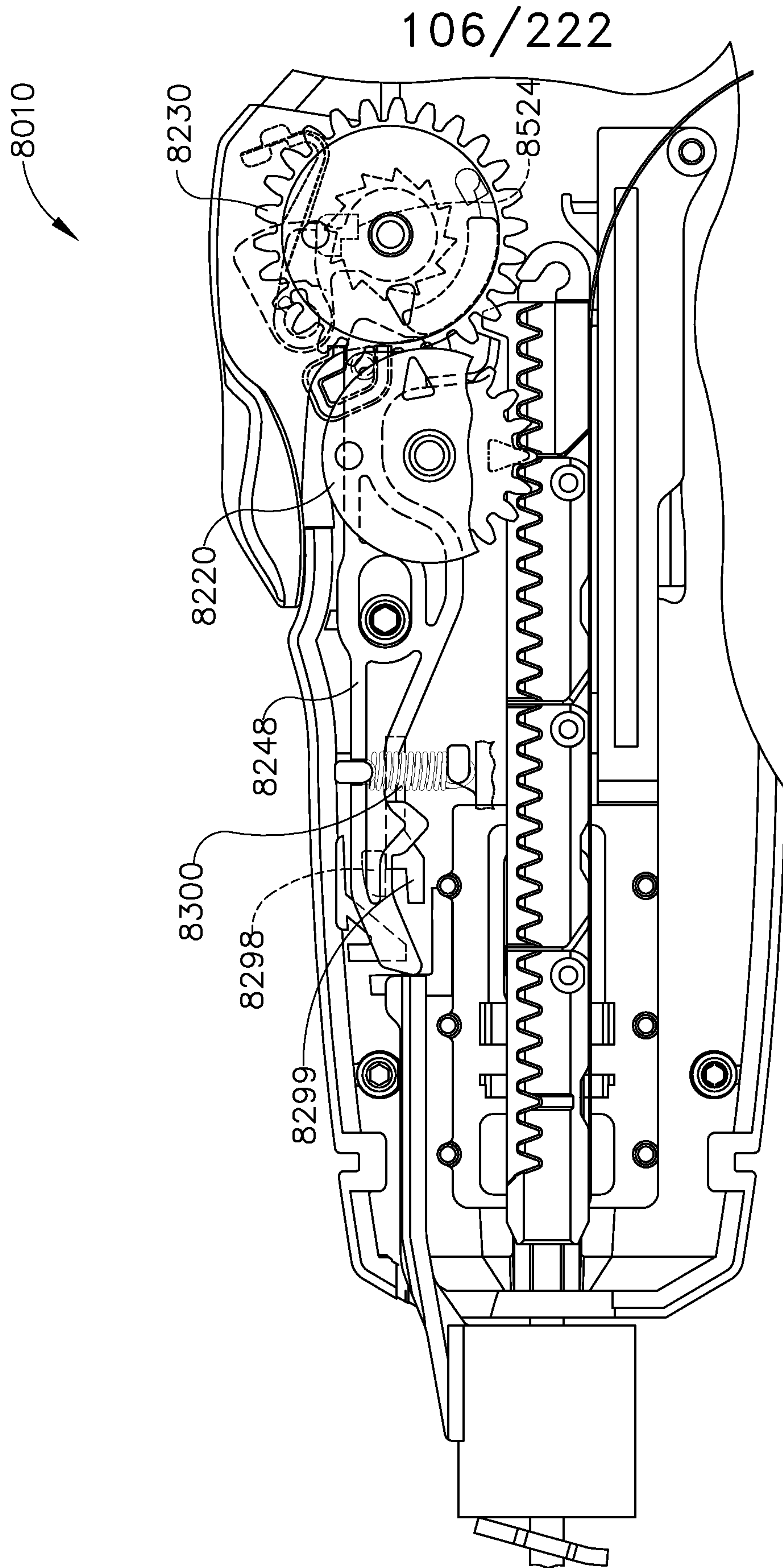


FIG. 193

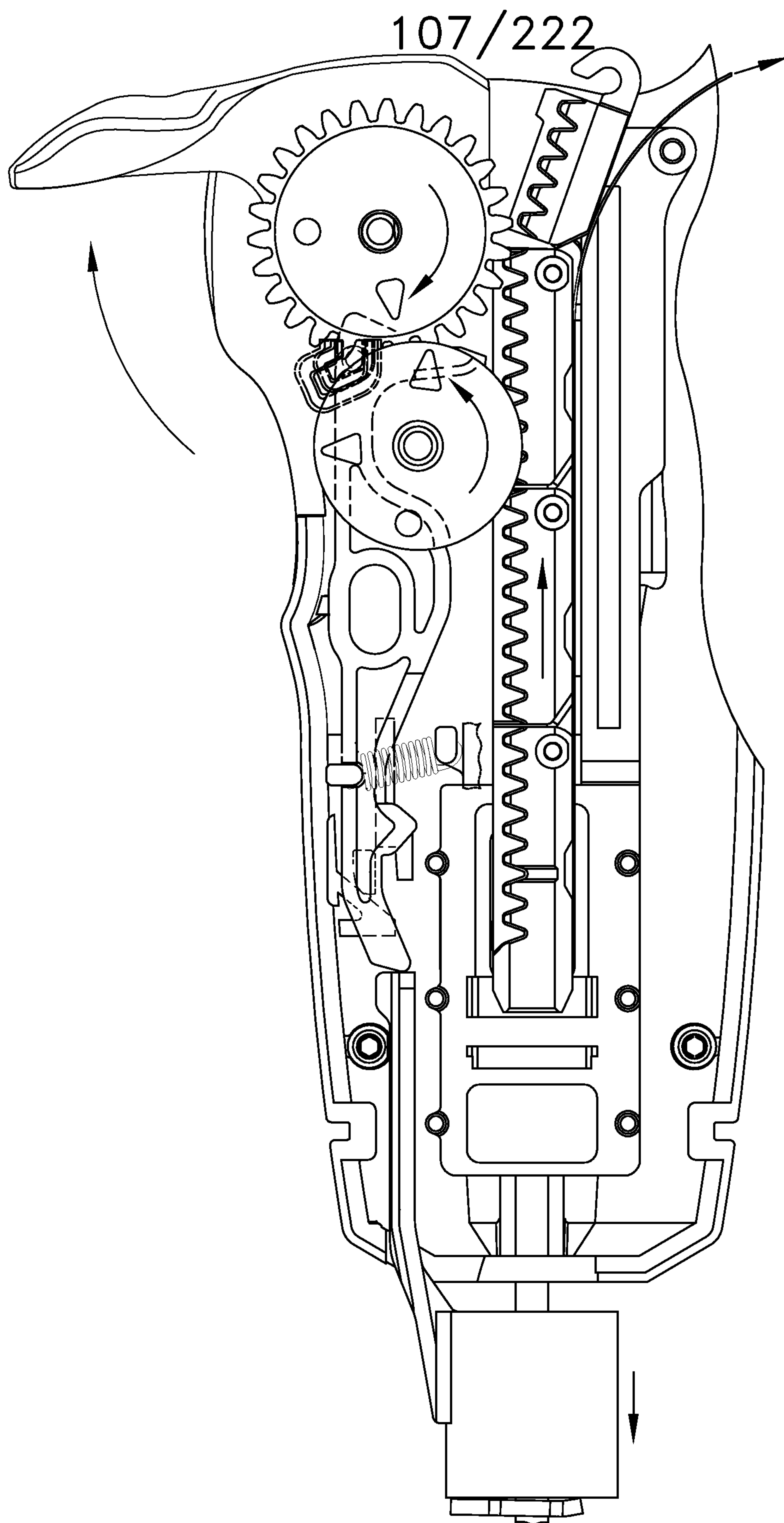


FIG. 194

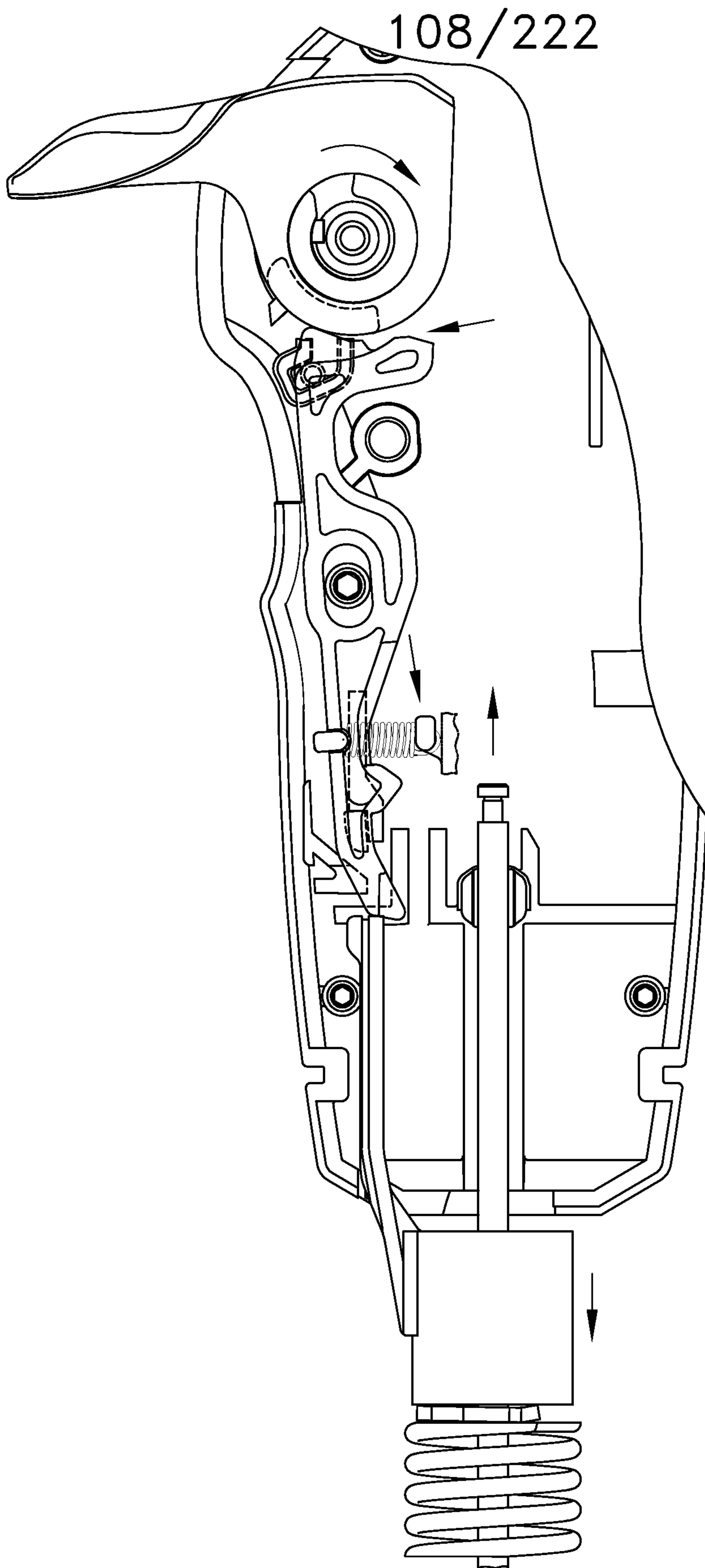


FIG. 195

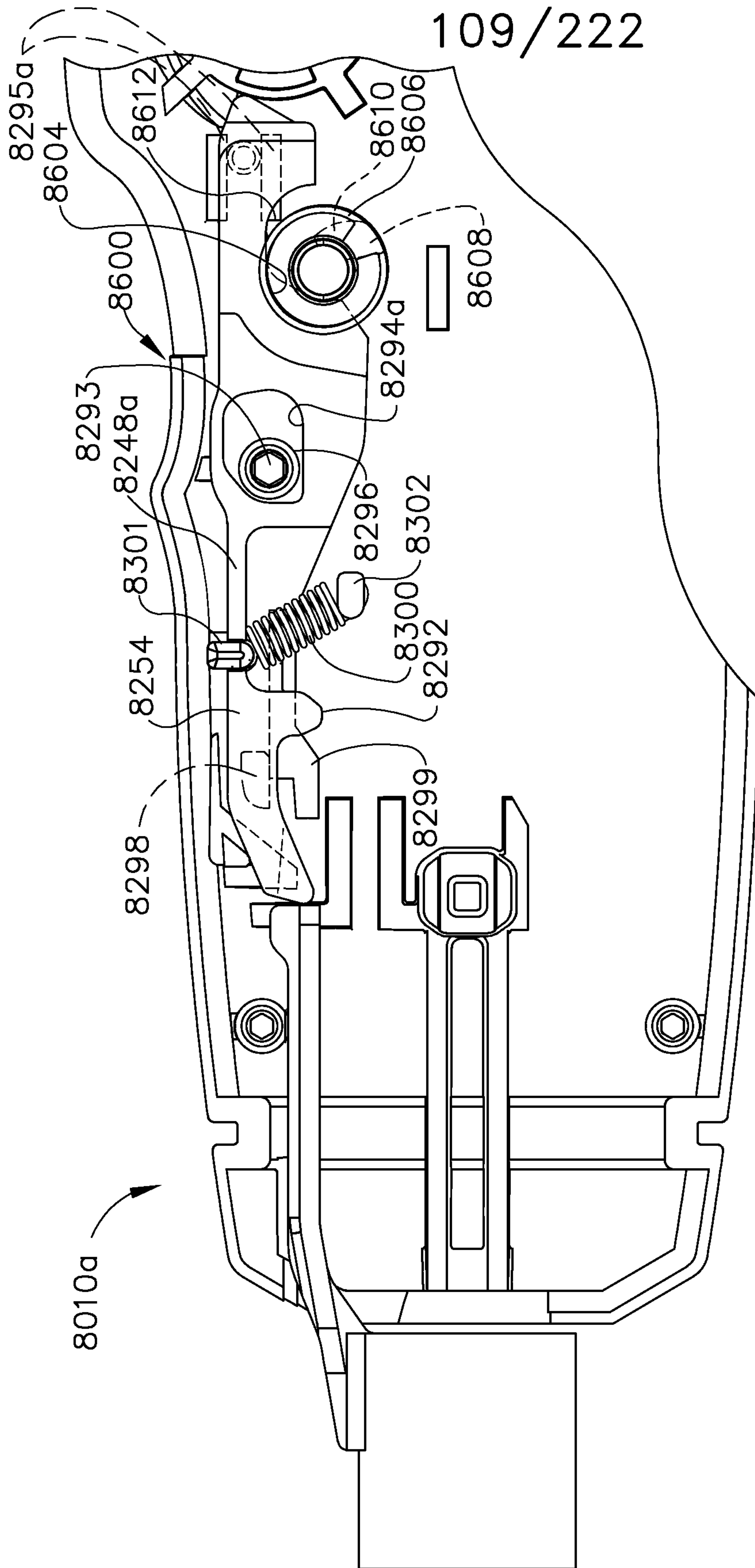


FIG. 196

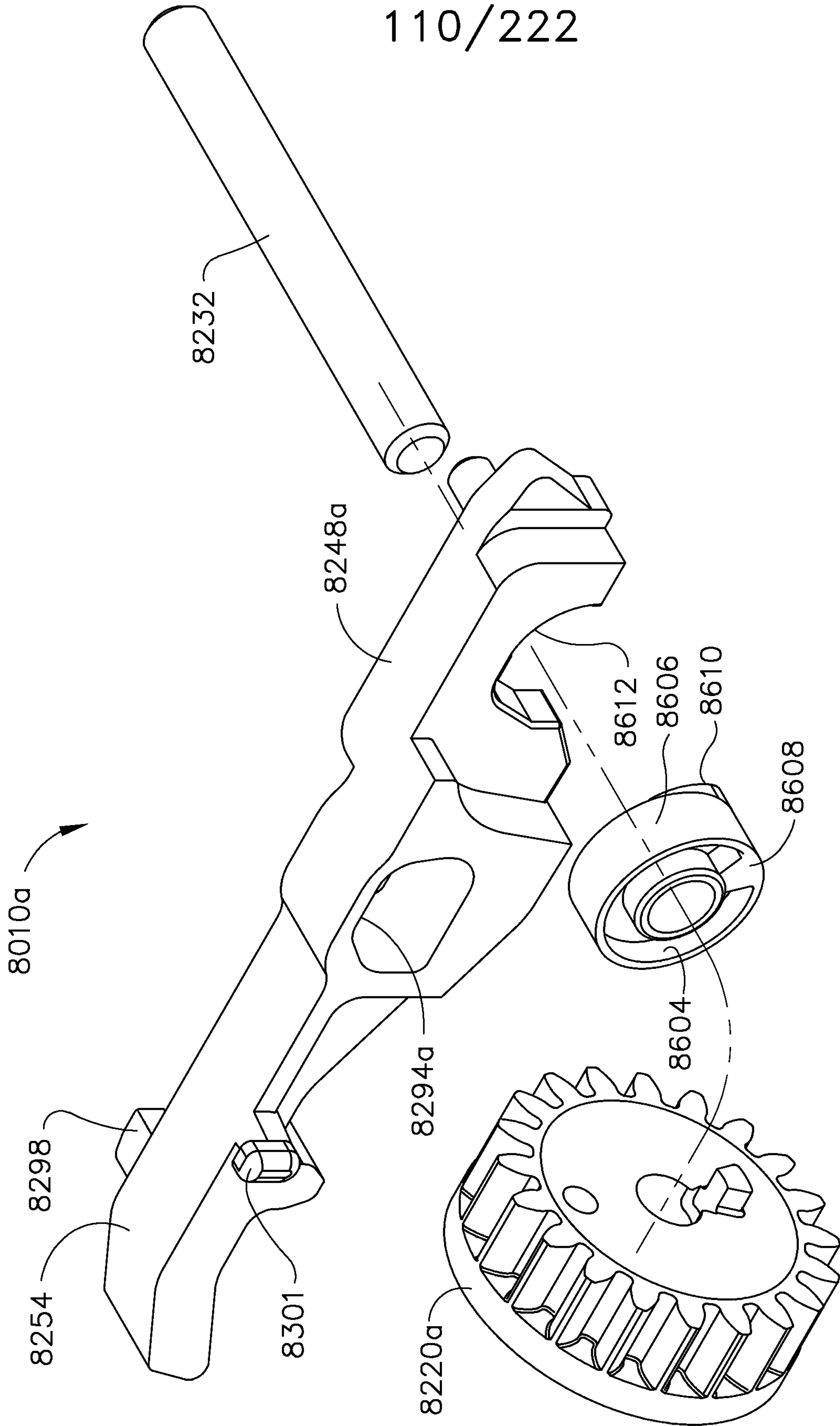
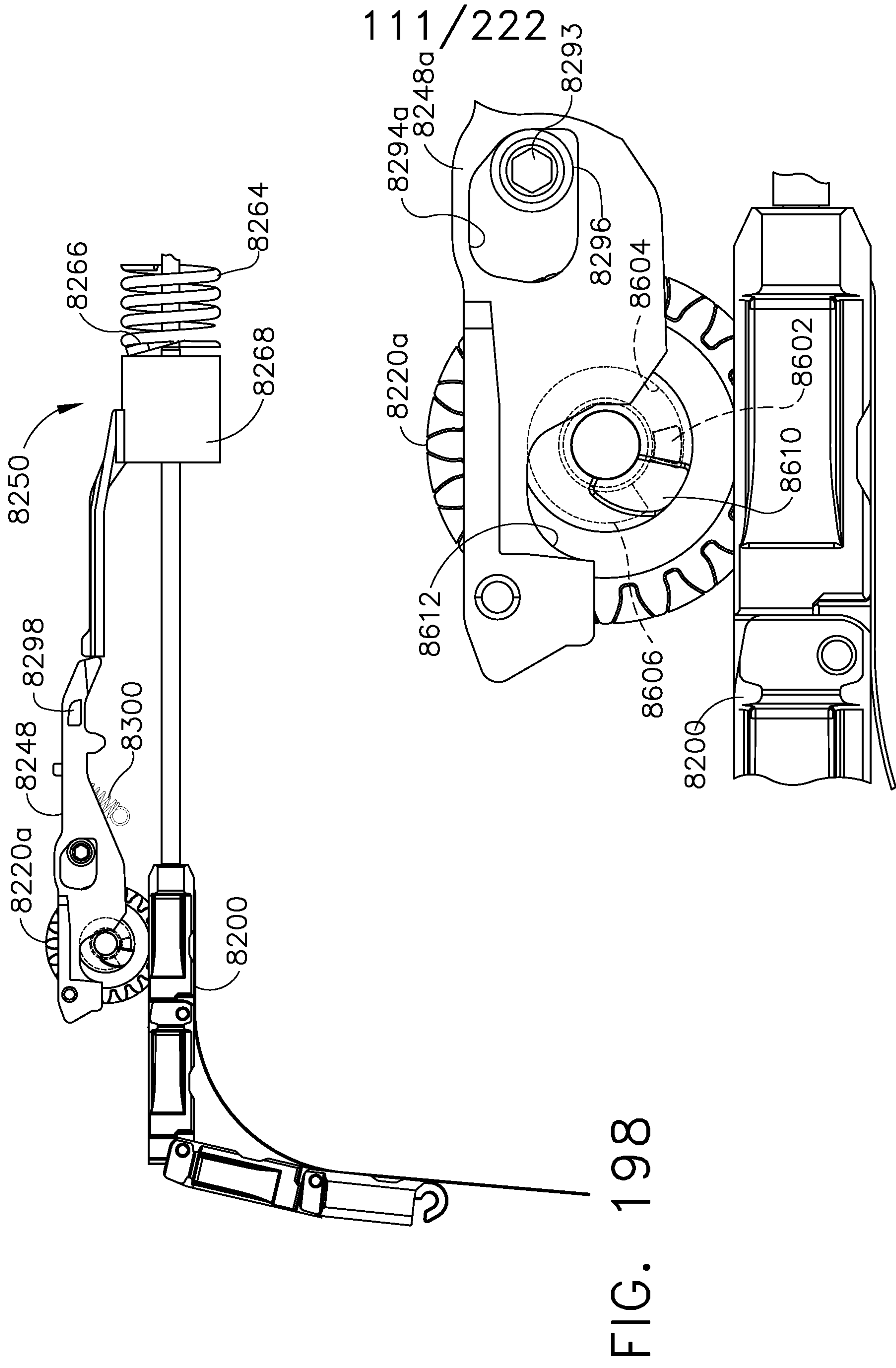


FIG. 197



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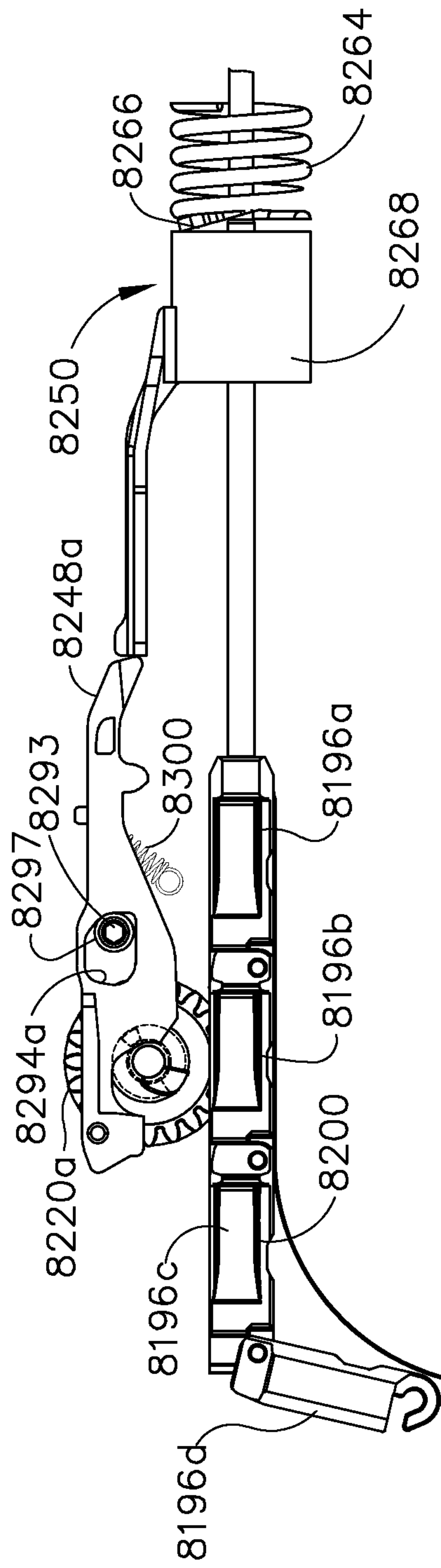


FIG. 199

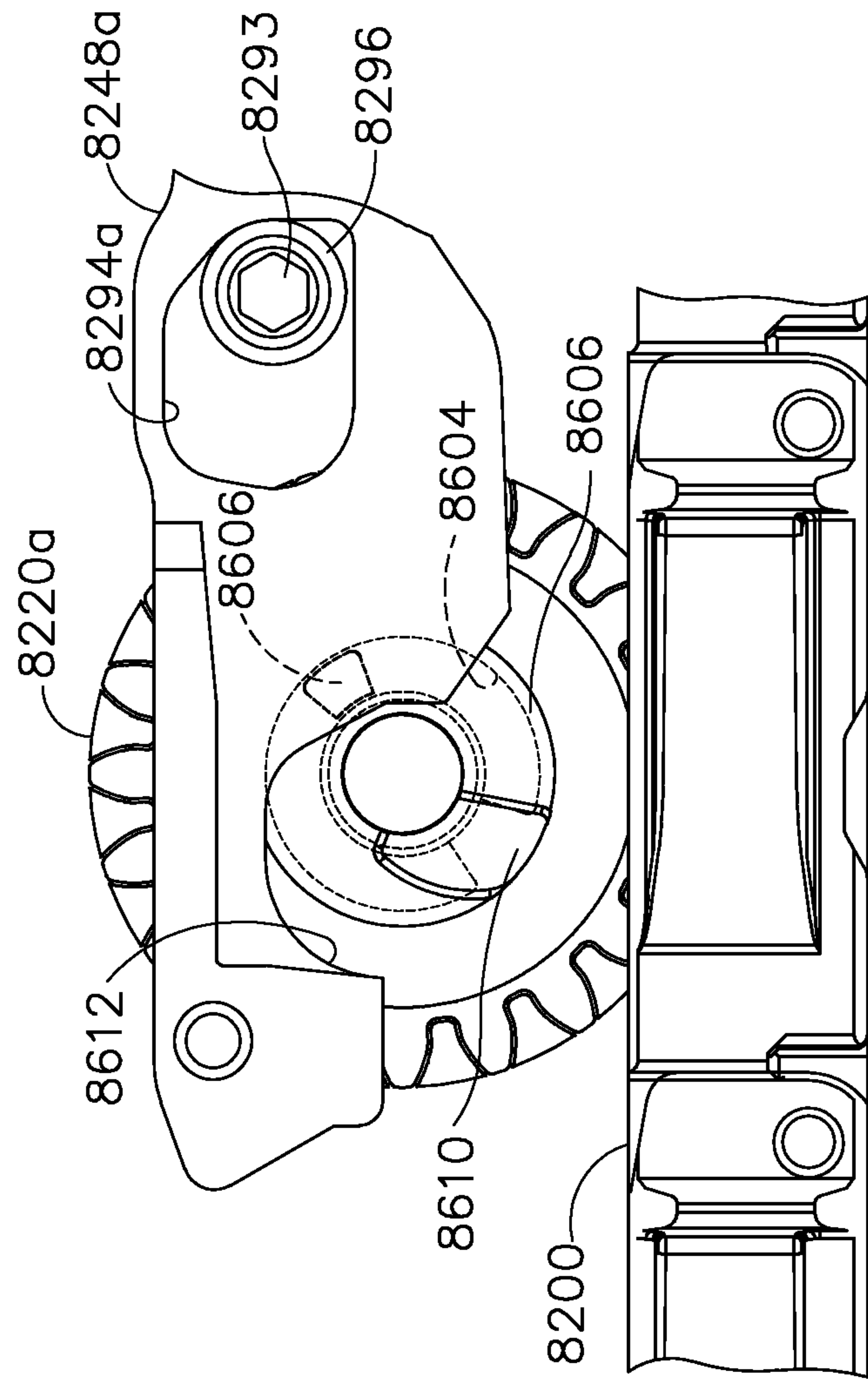


FIG. 199A

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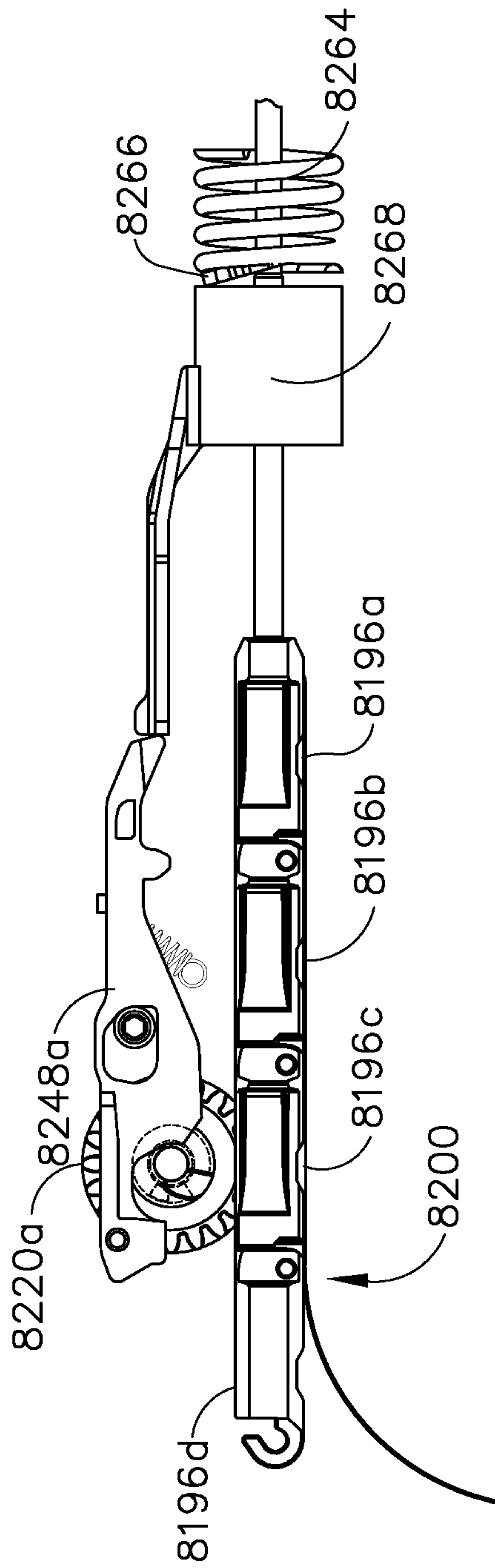


FIG. 200

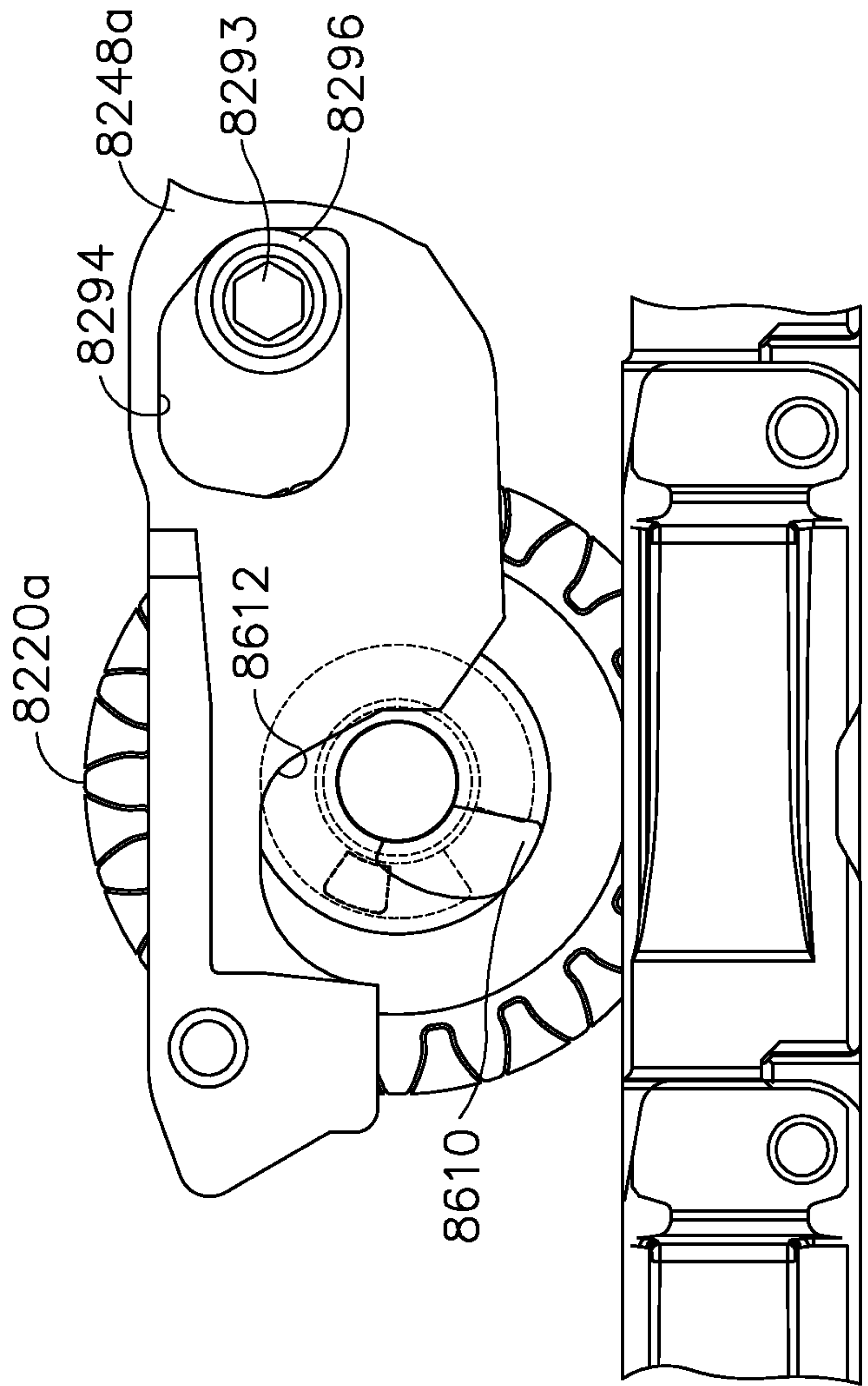


FIG. 200A

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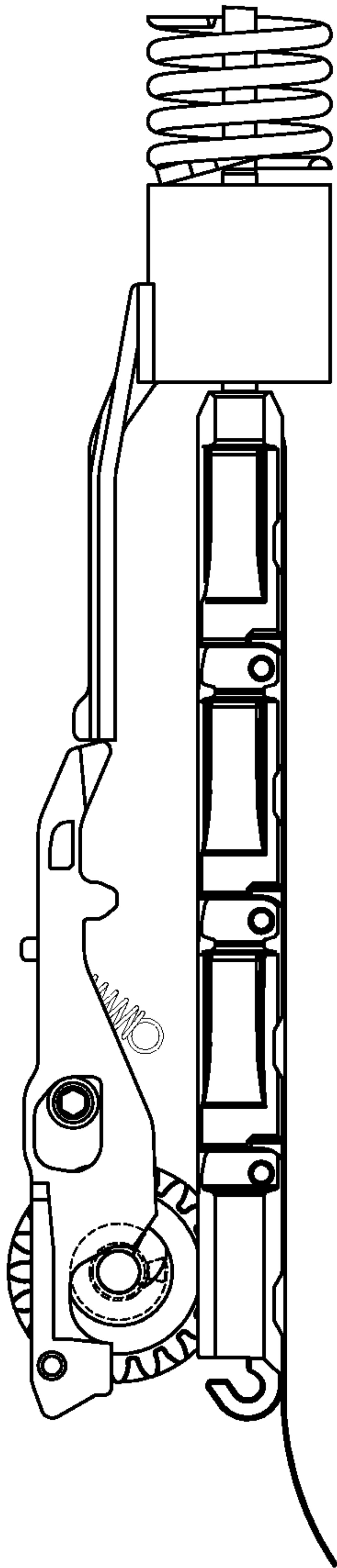


FIG. 201

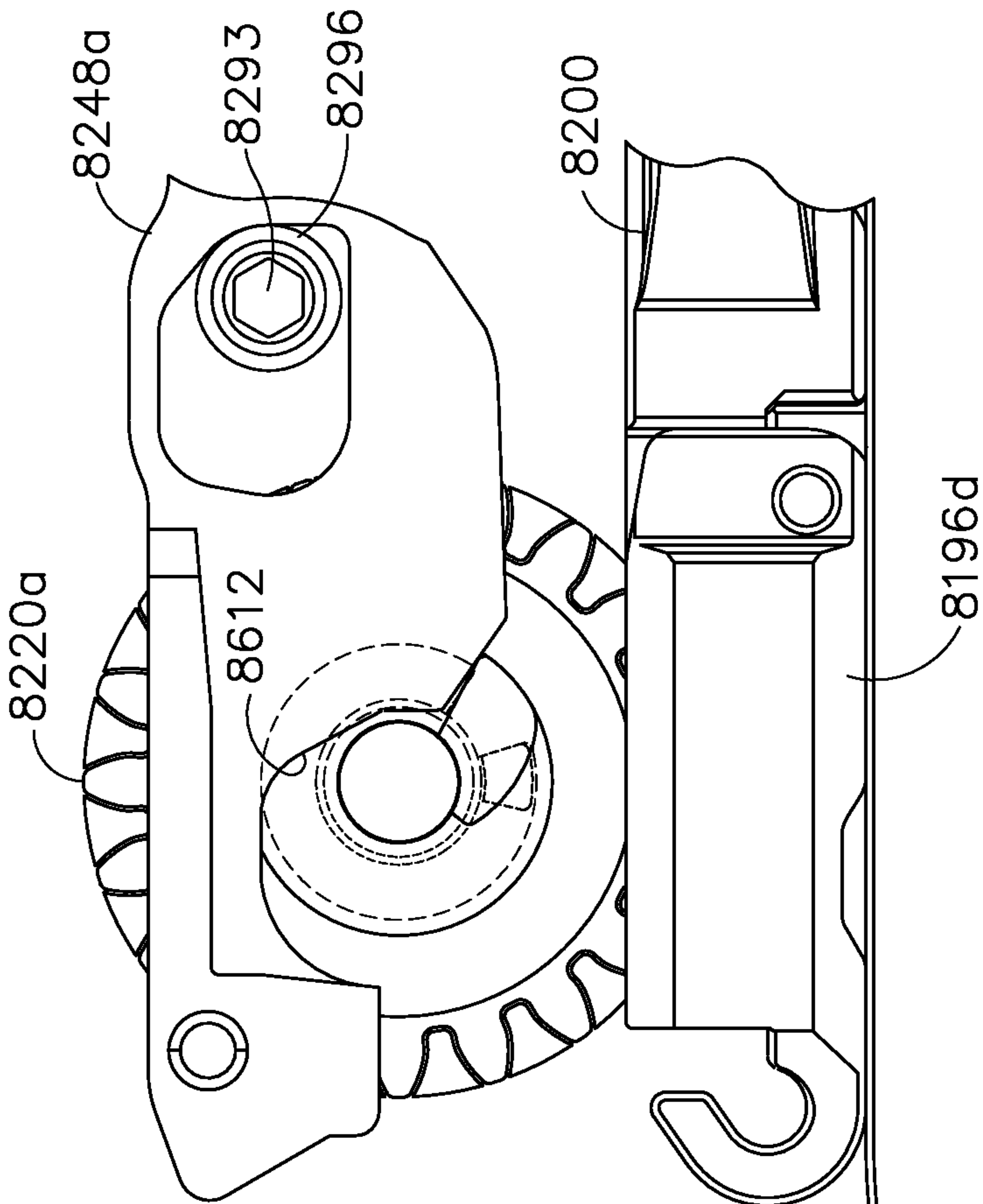


FIG. 201A

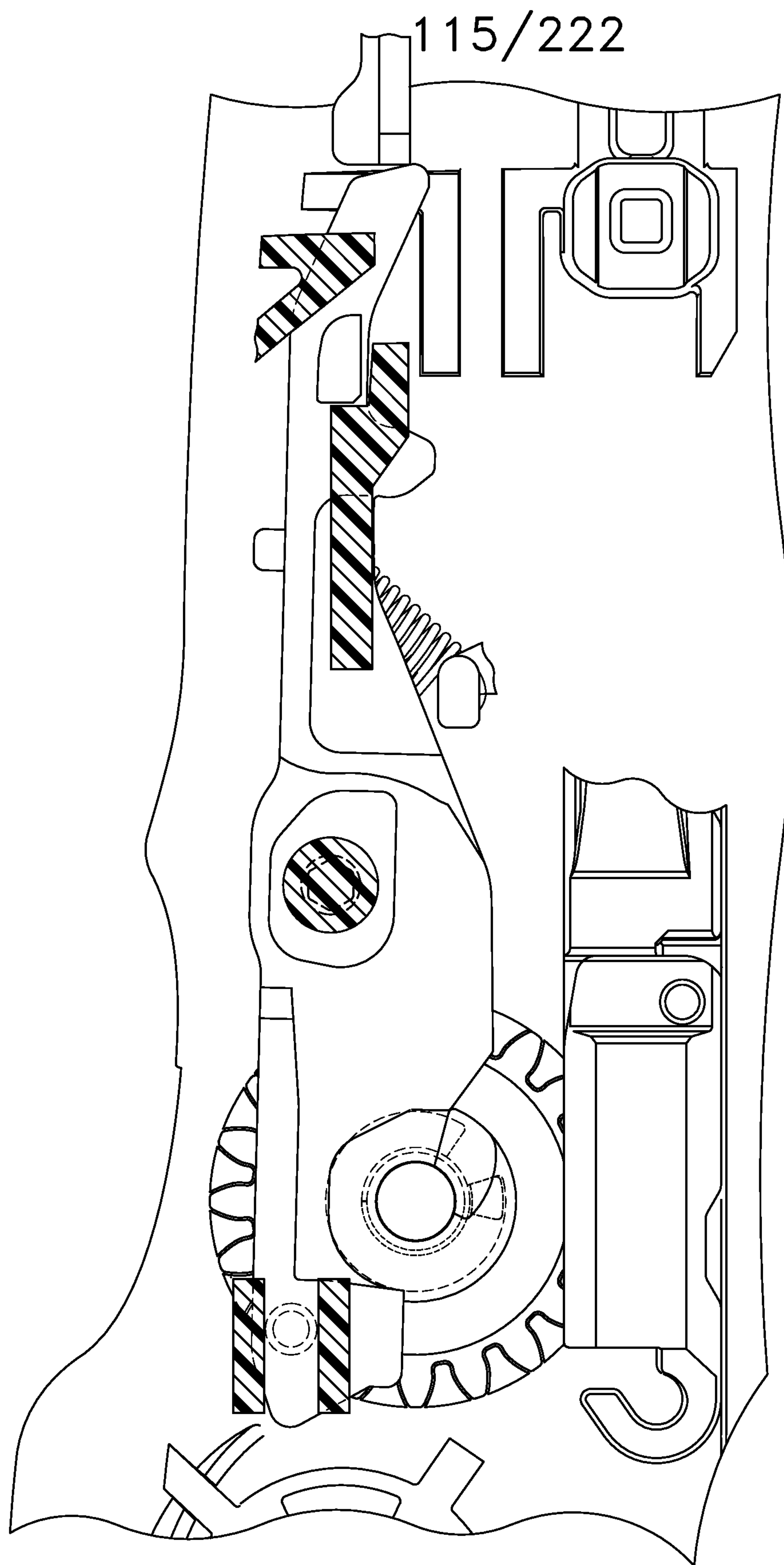
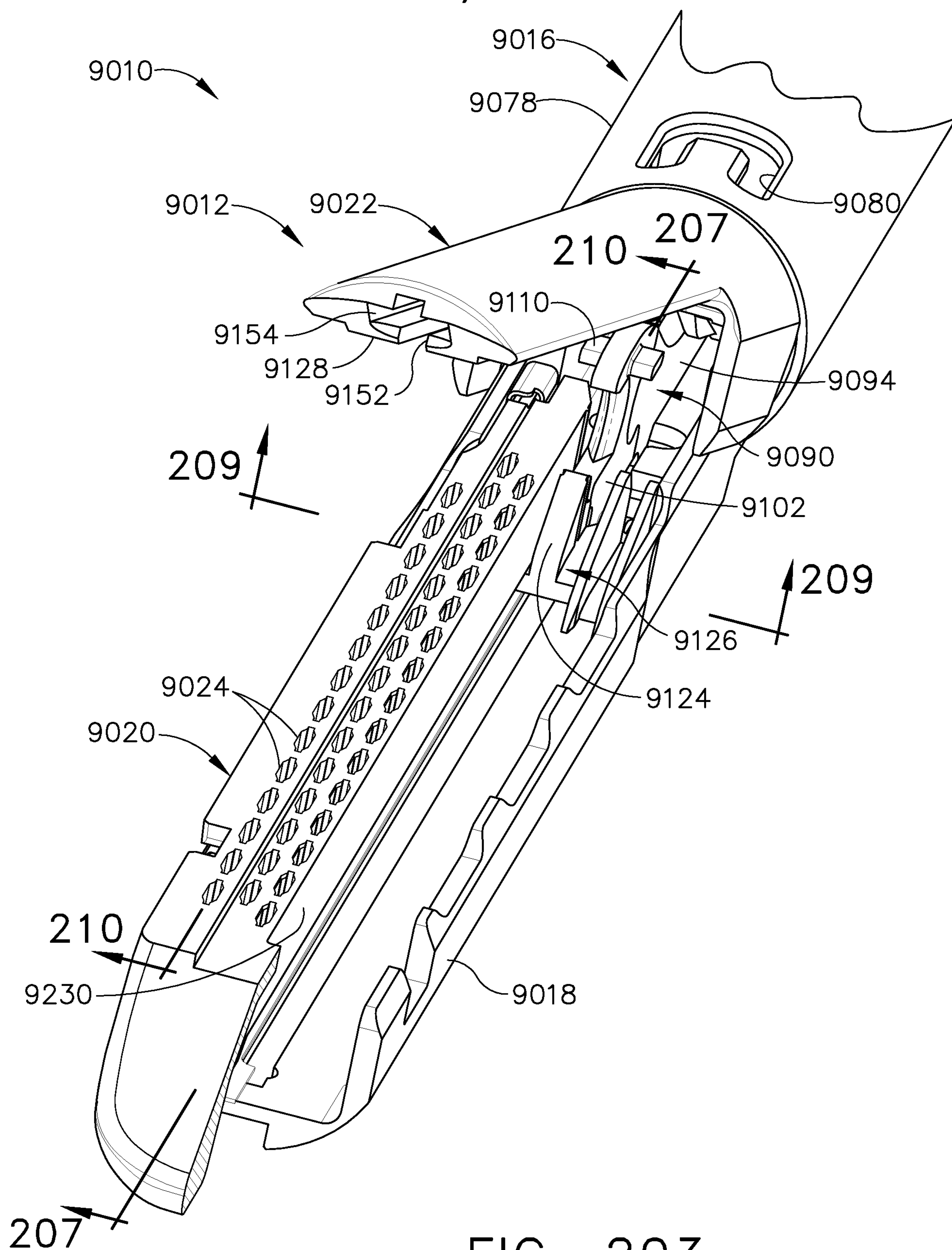
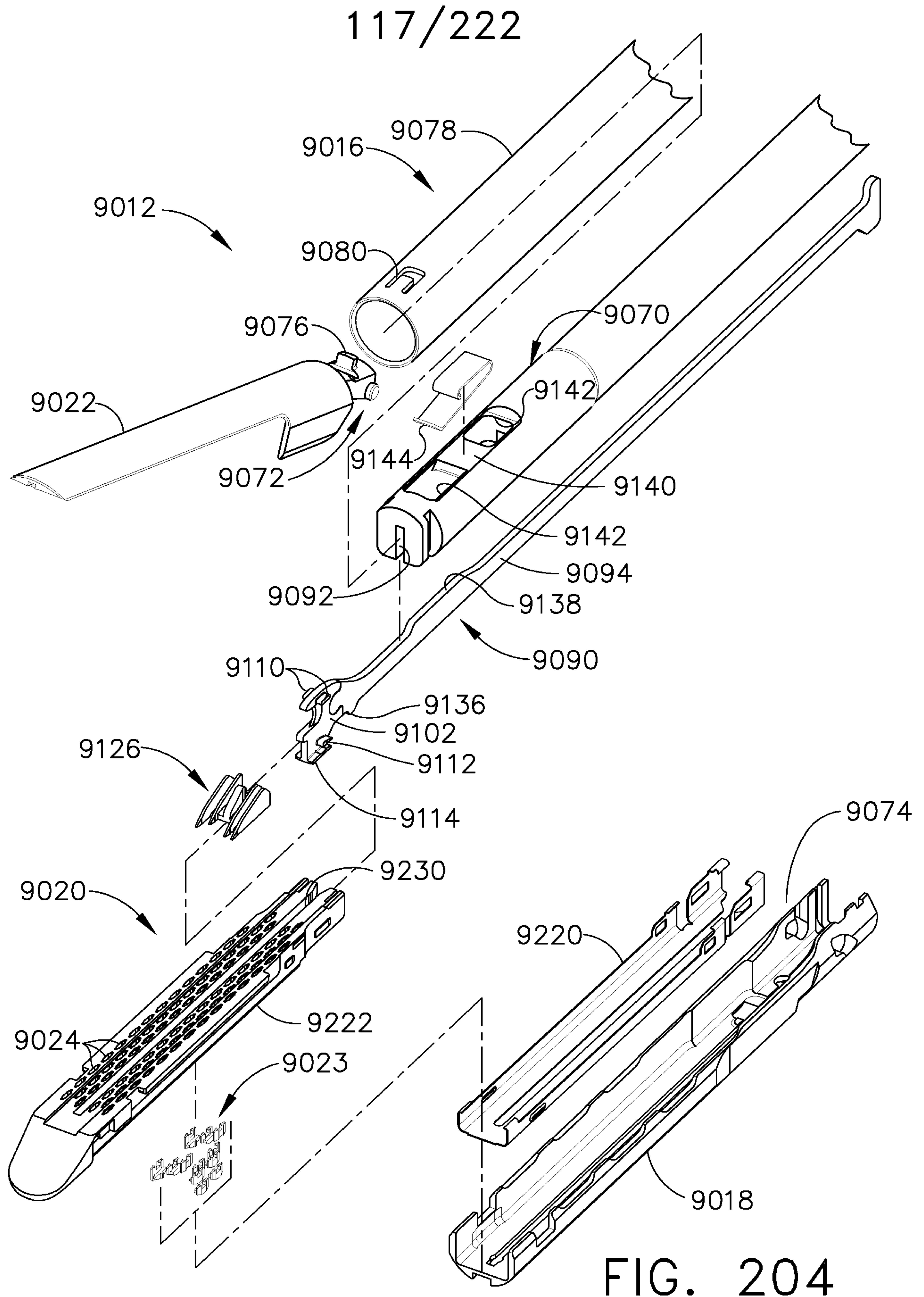


FIG. 202

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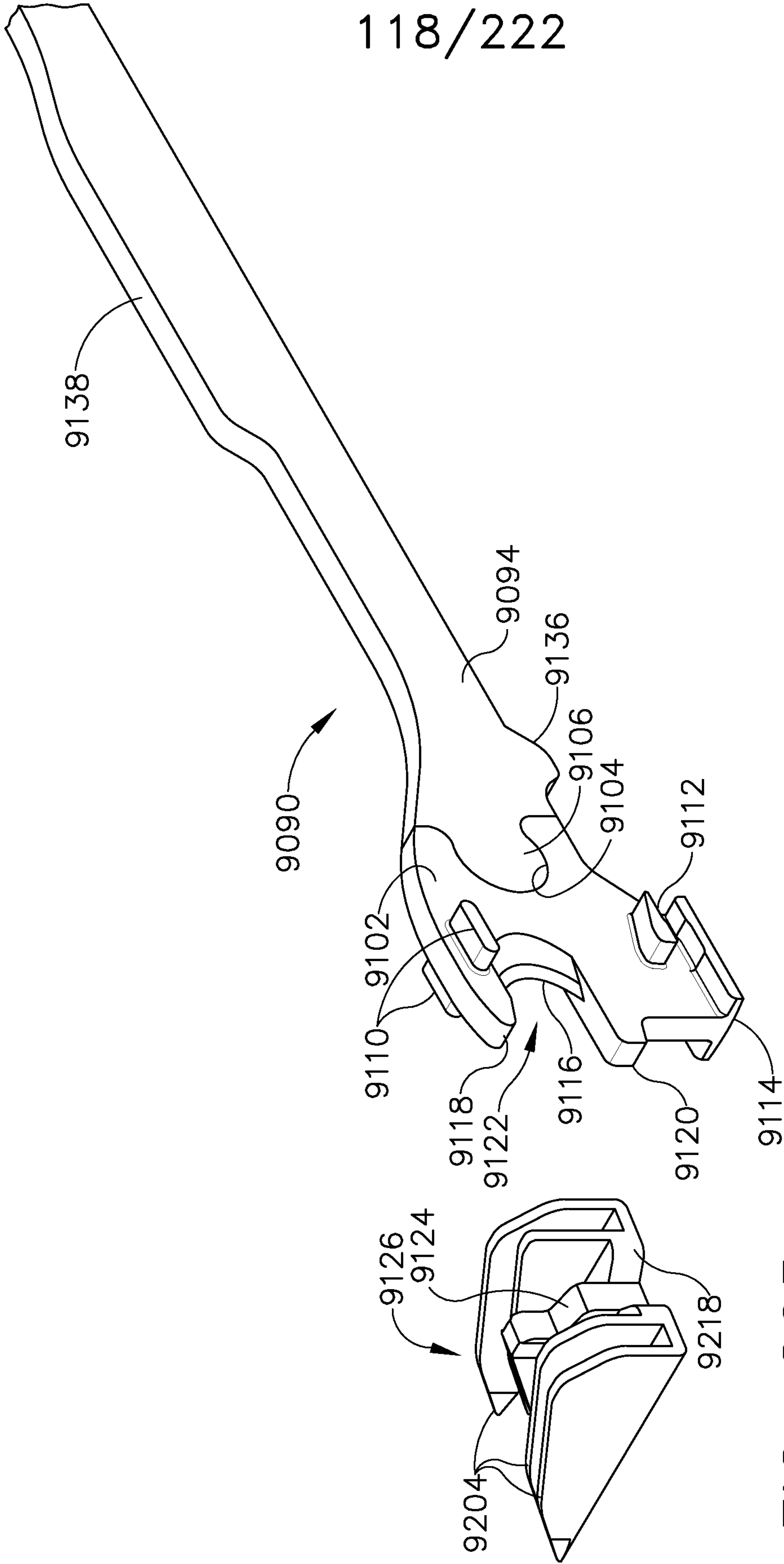


FIG. 206

FIG. 205

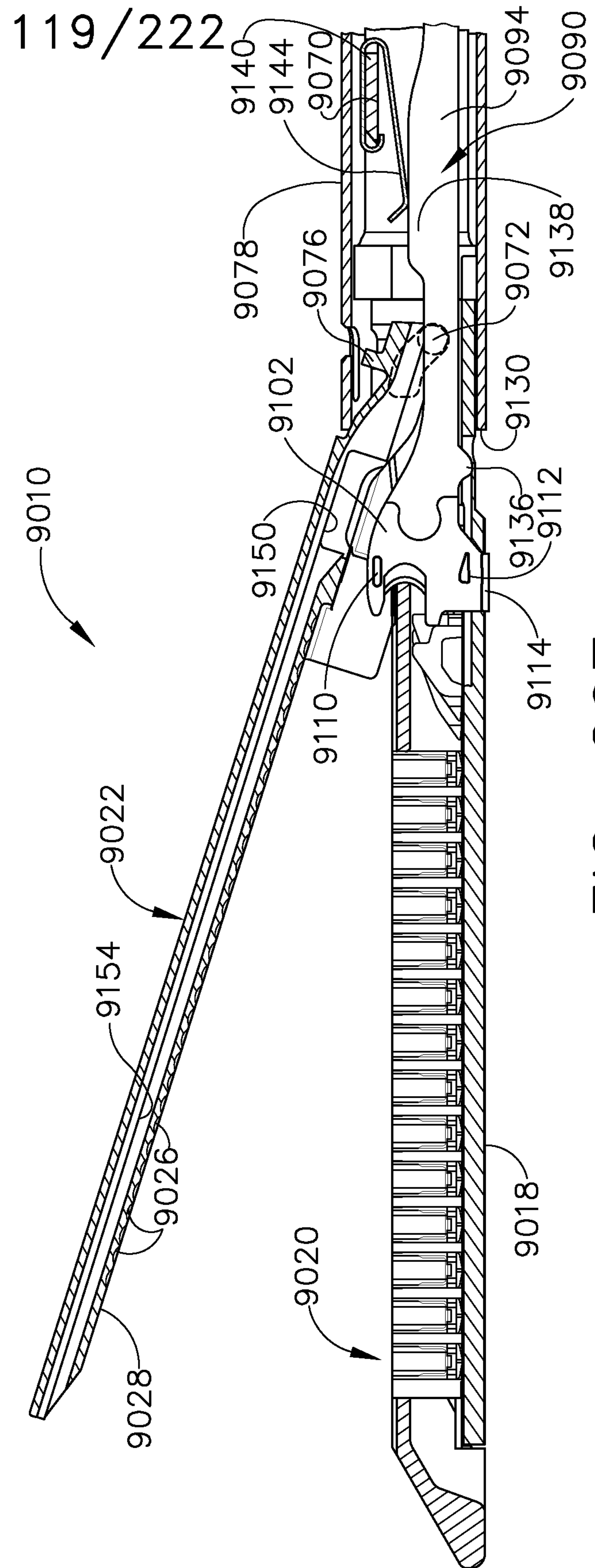


FIG. 207



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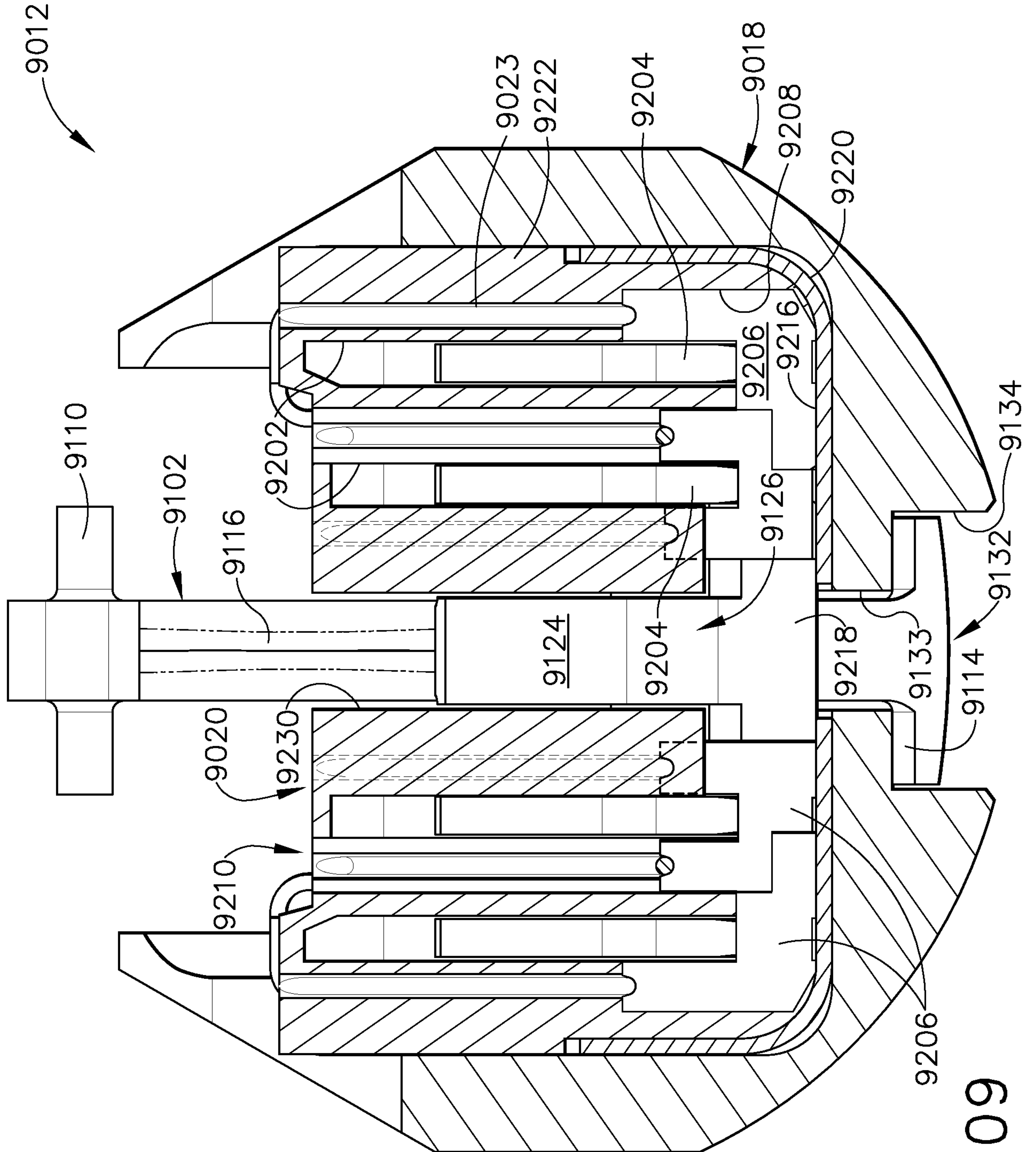


FIG. 209

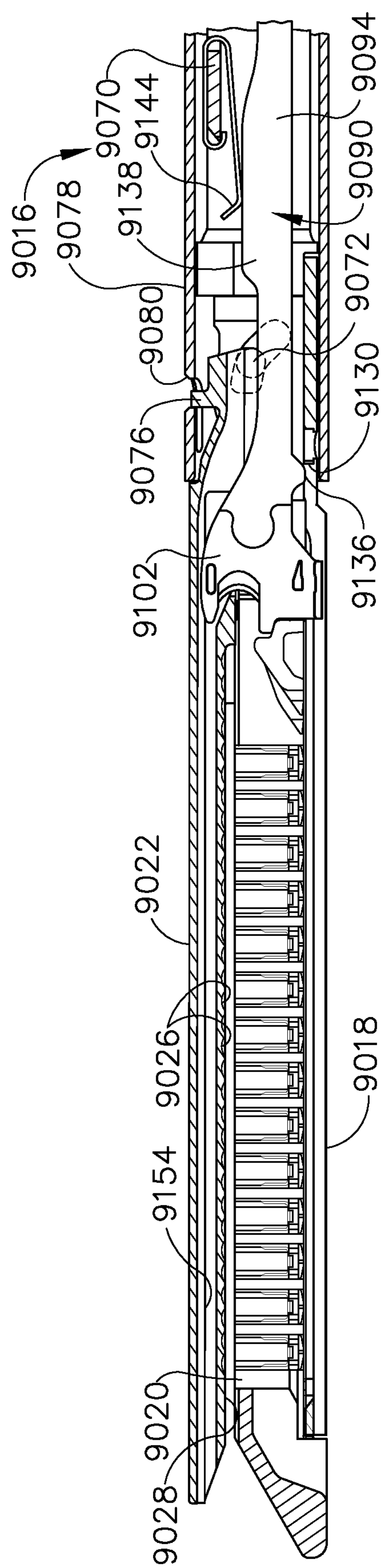


FIG. 210

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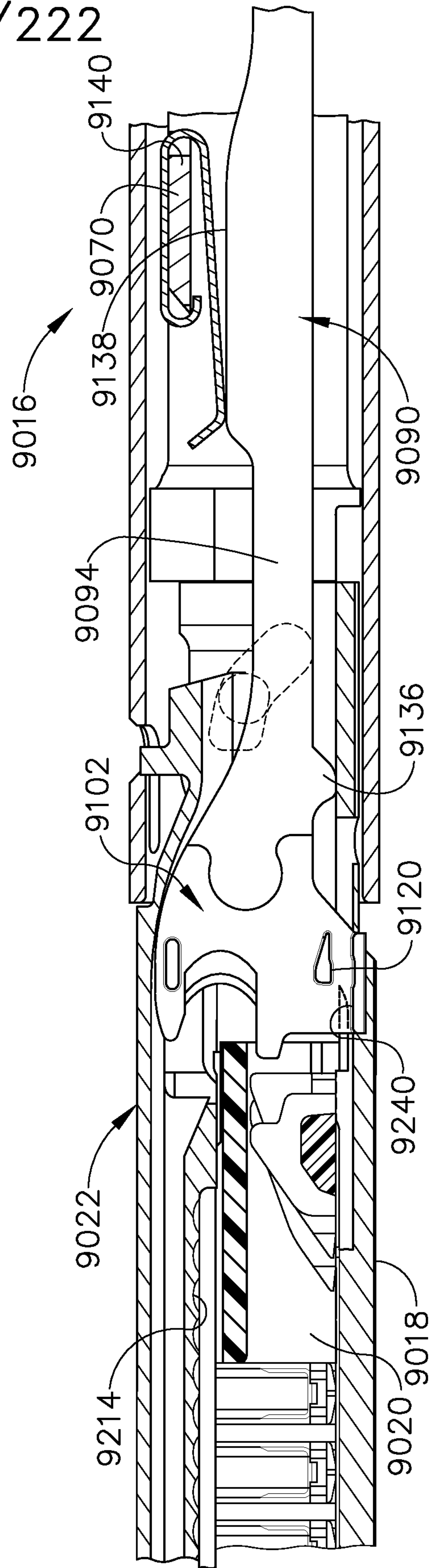


FIG. 211

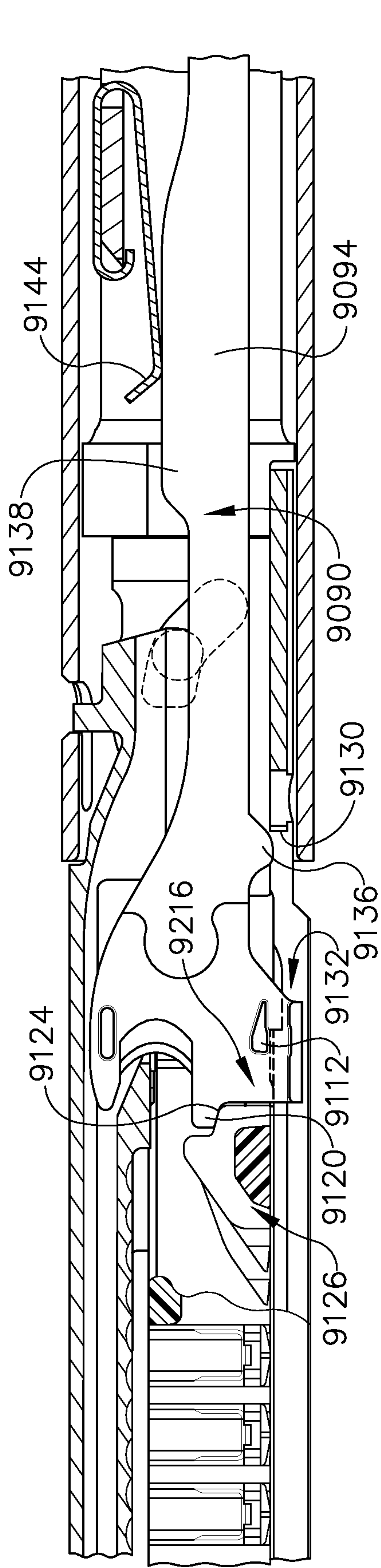


FIG. 212

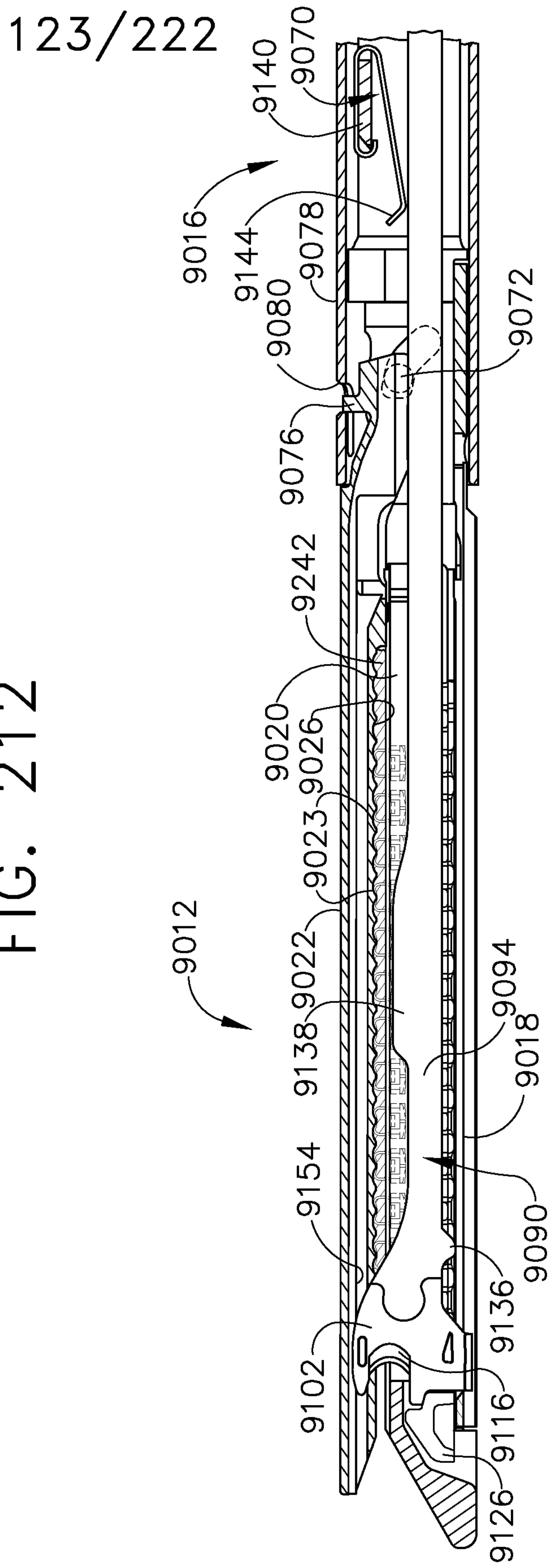


FIG. 213

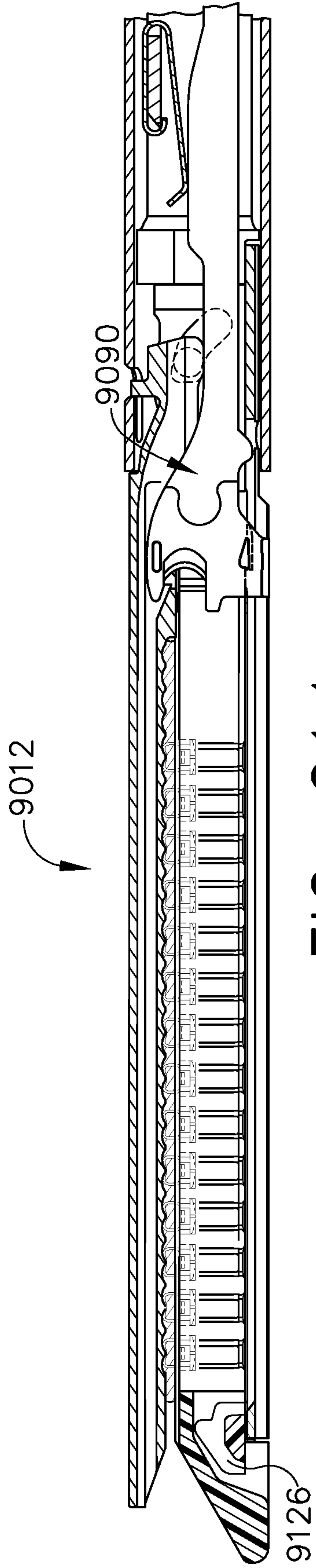


FIG. 214

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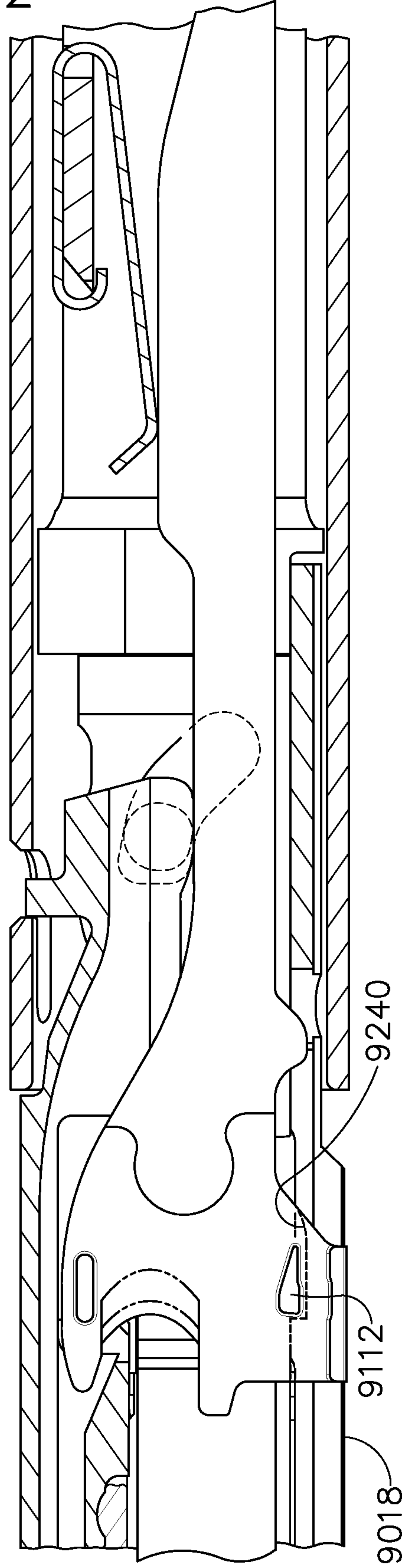


FIG. 215

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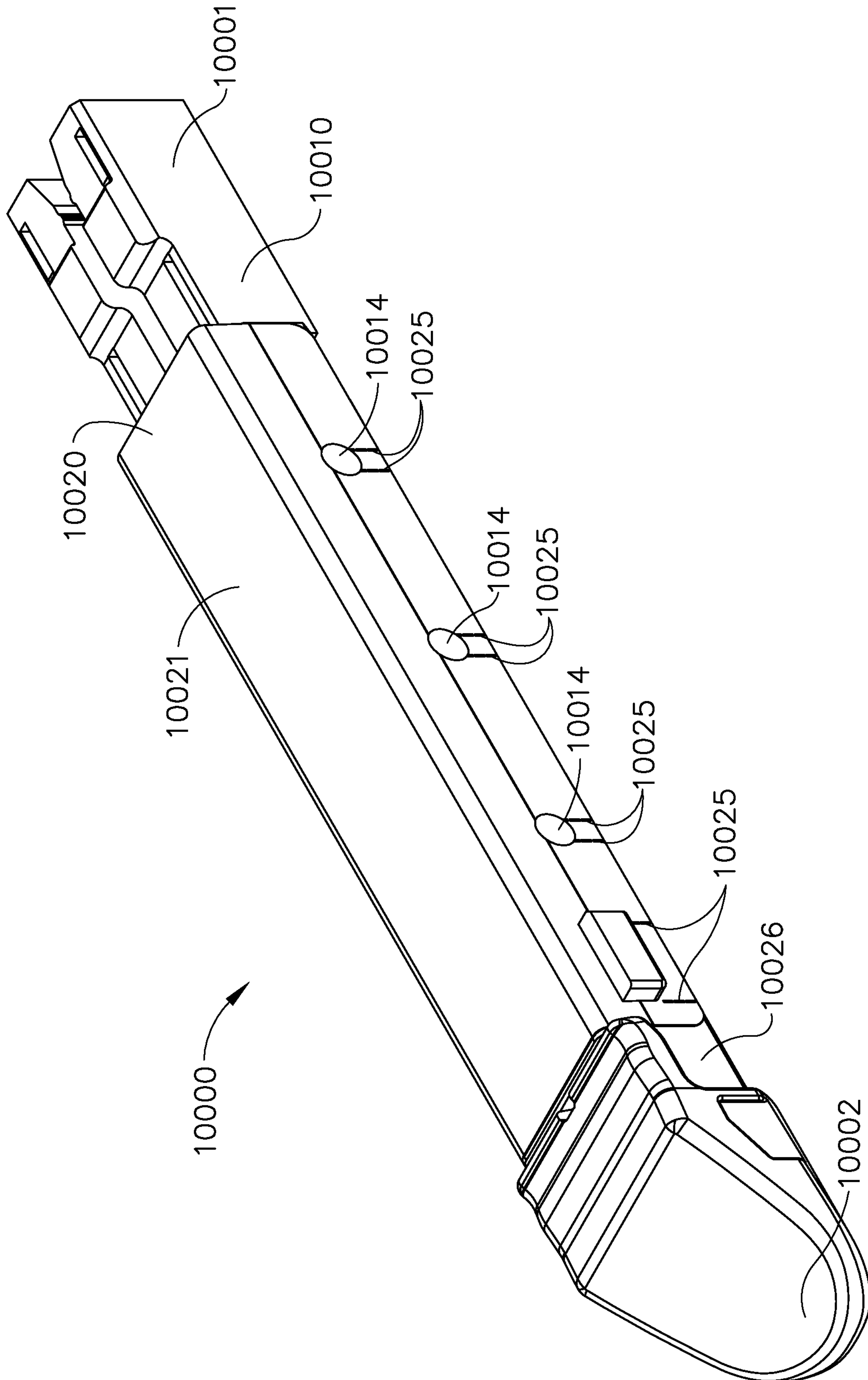


FIG. 216

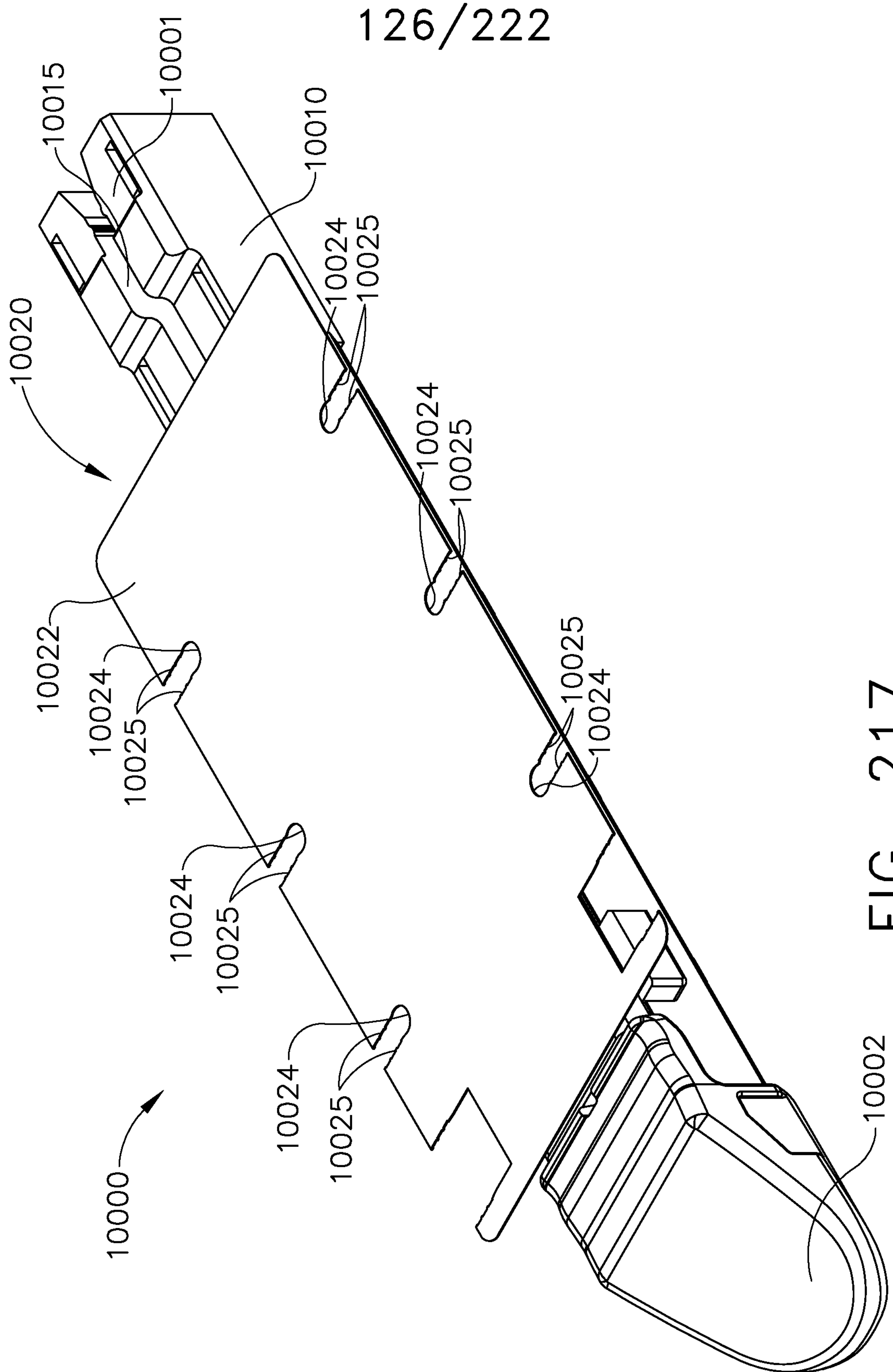


FIG. 217

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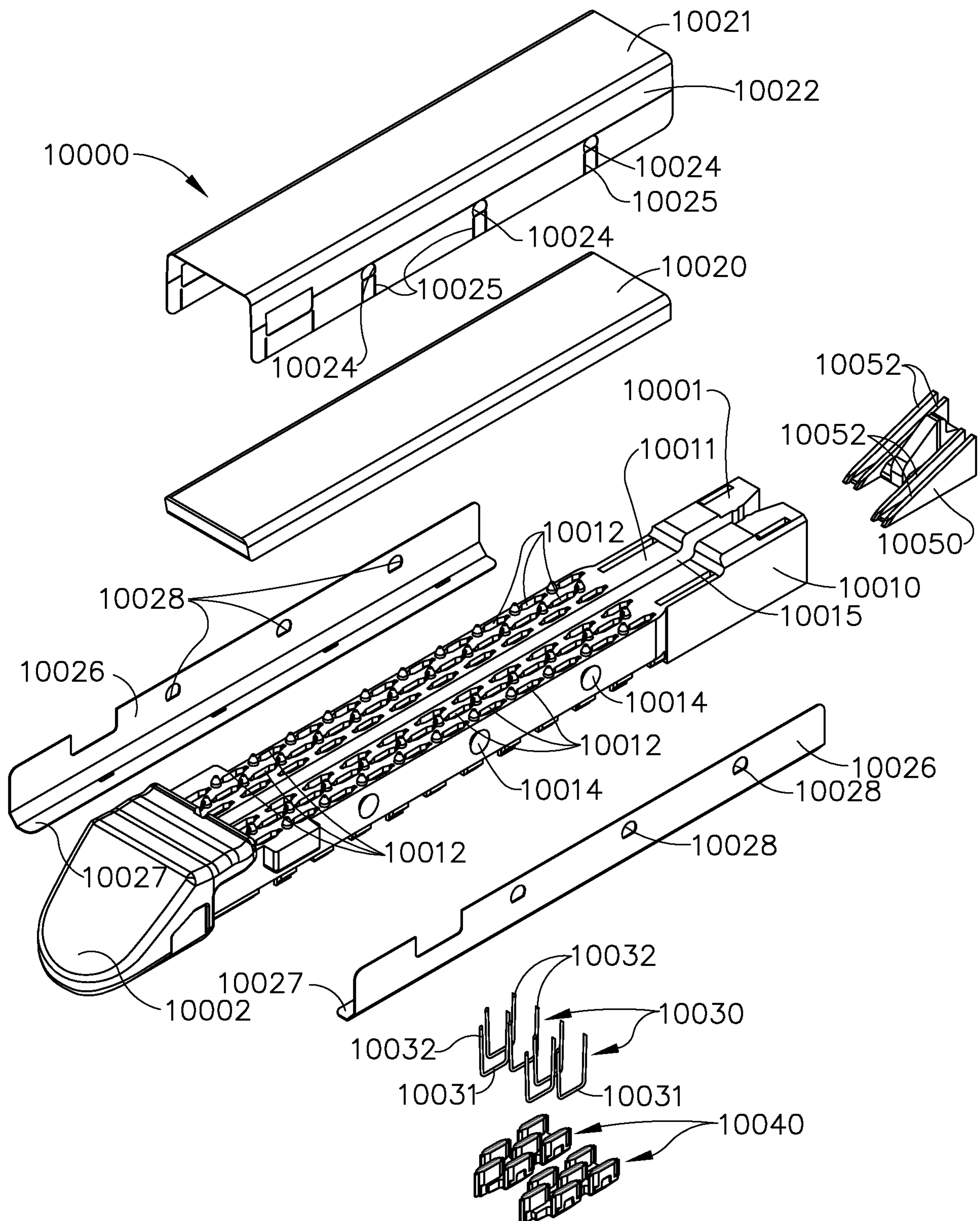


FIG. 218

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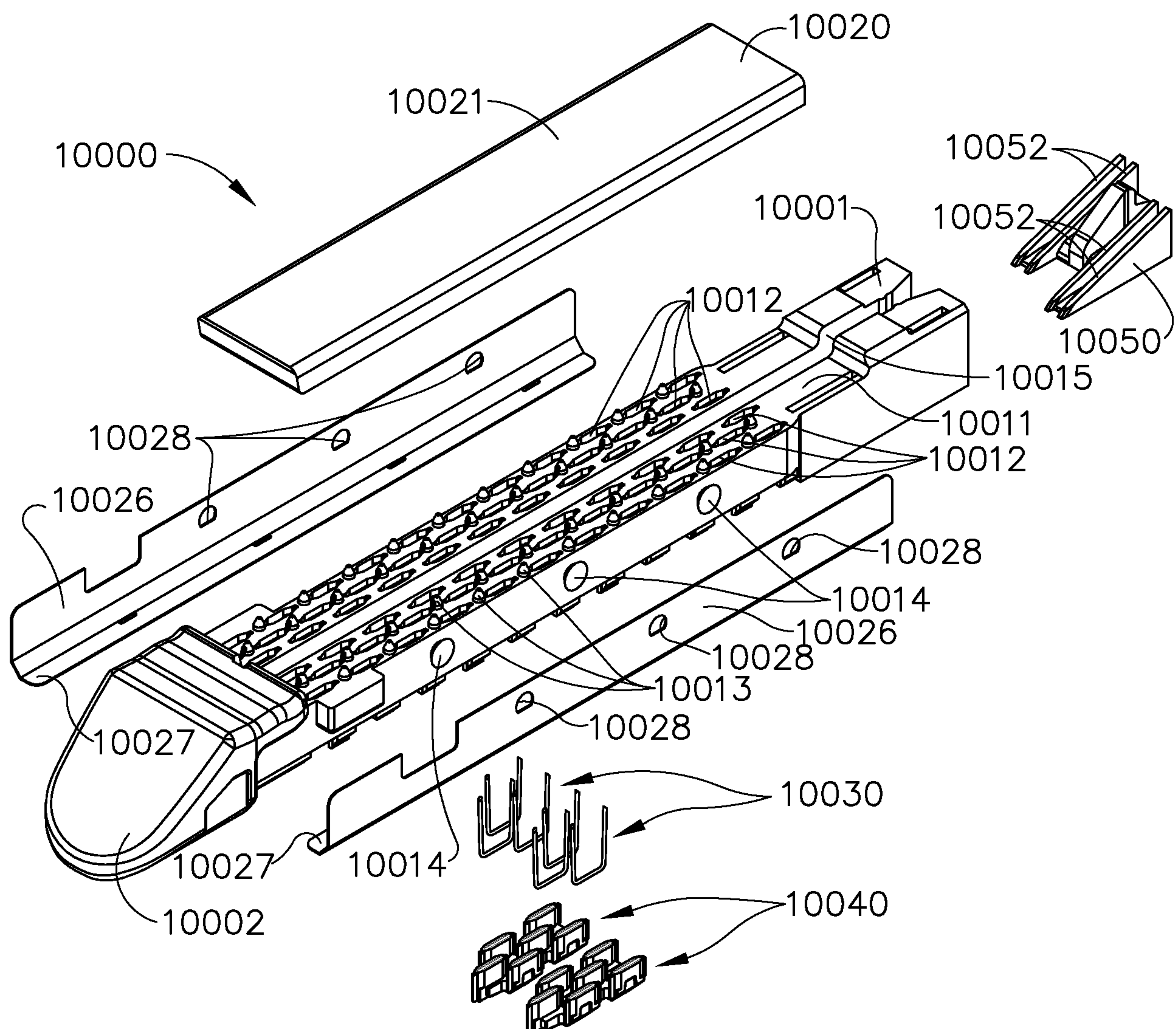


FIG. 219

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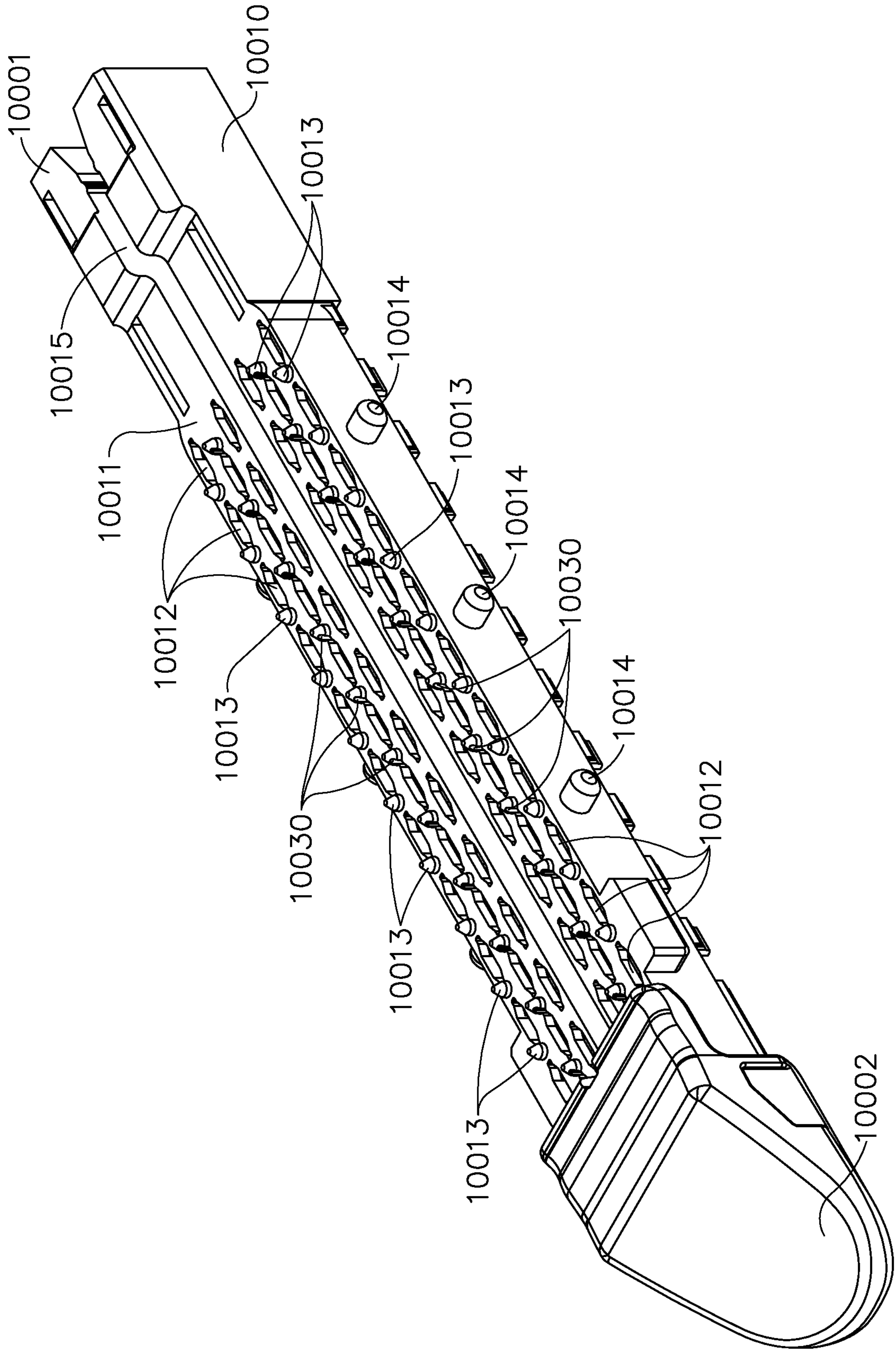


FIG. 220

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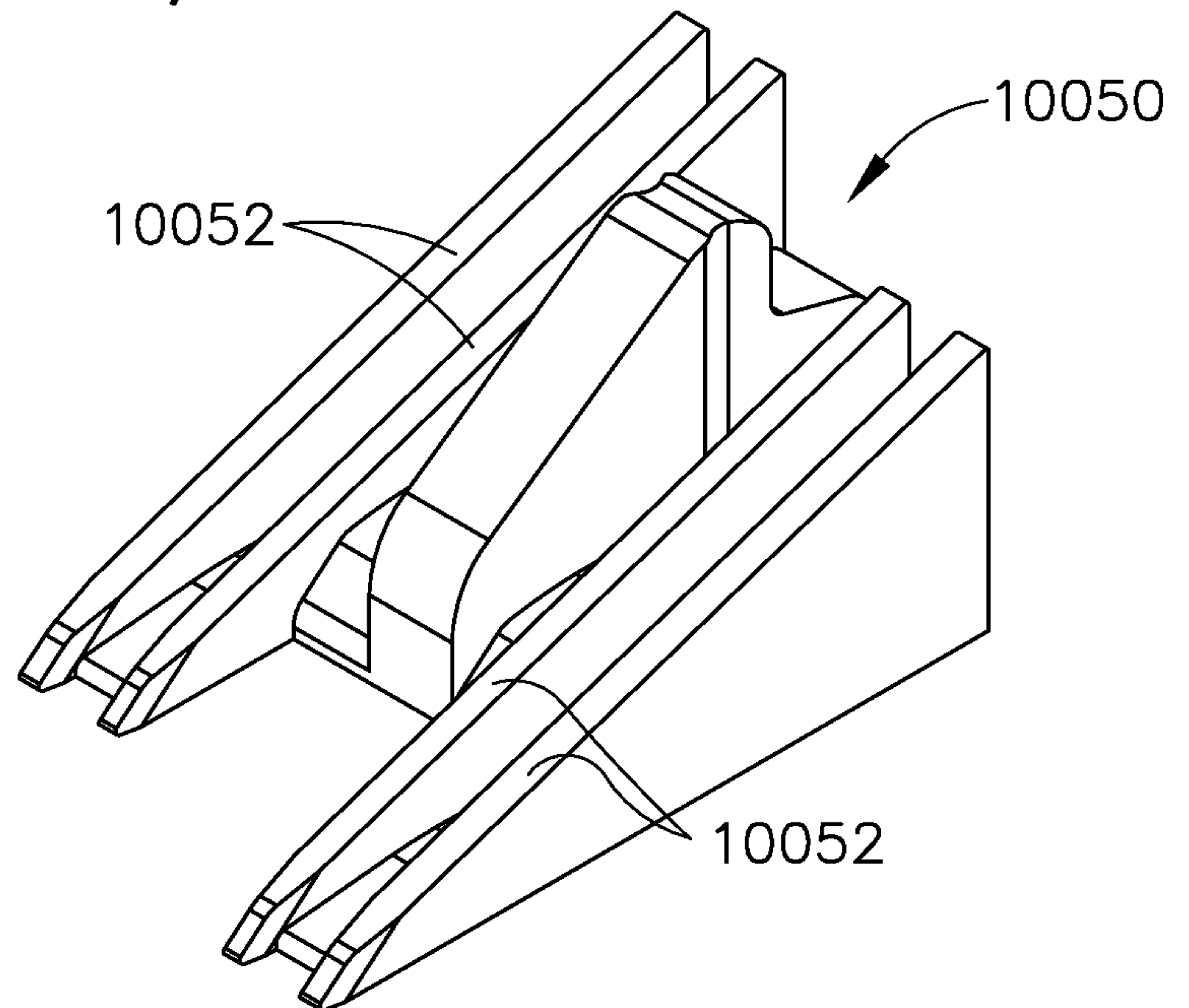


FIG. 221

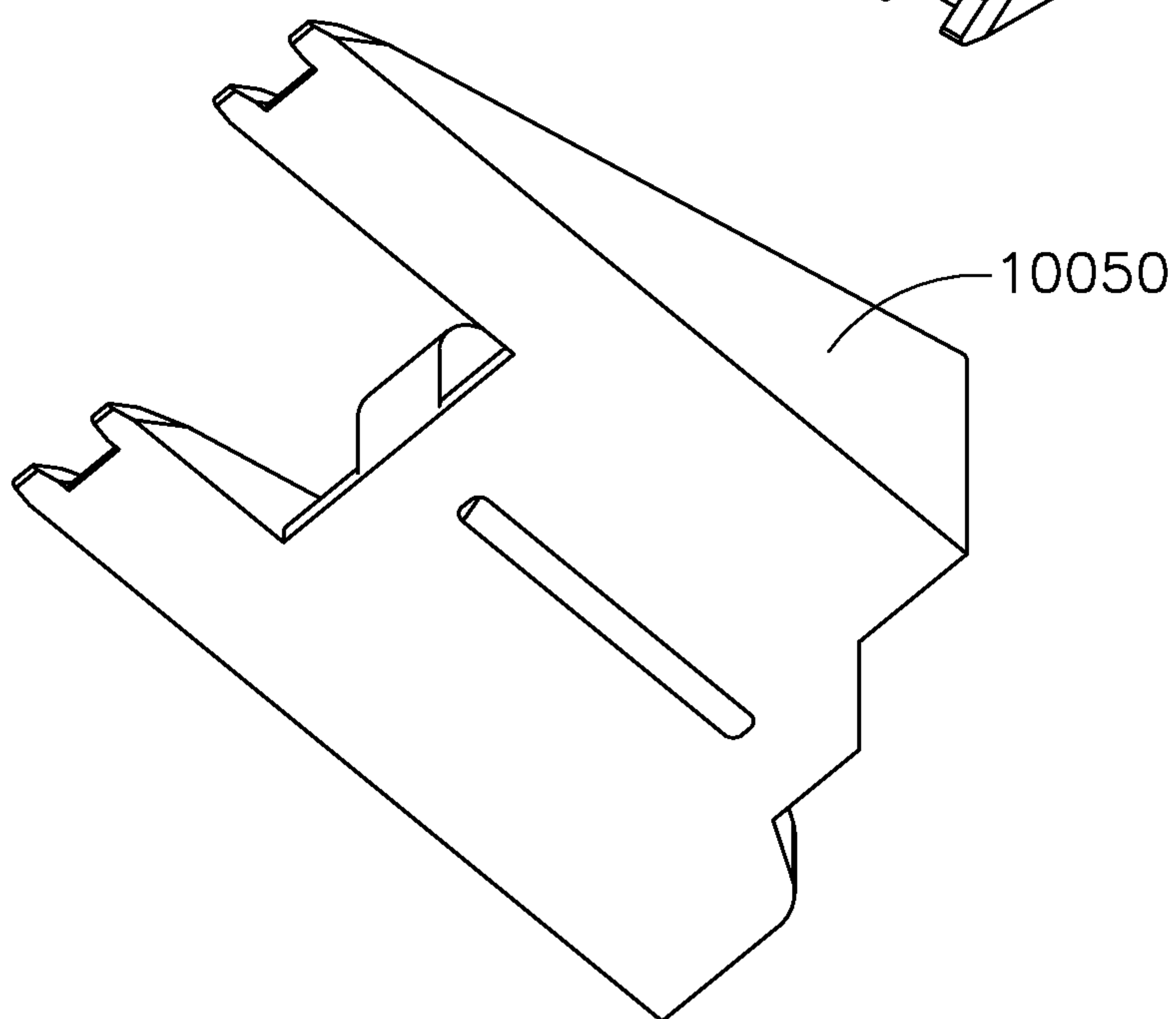


FIG. 222

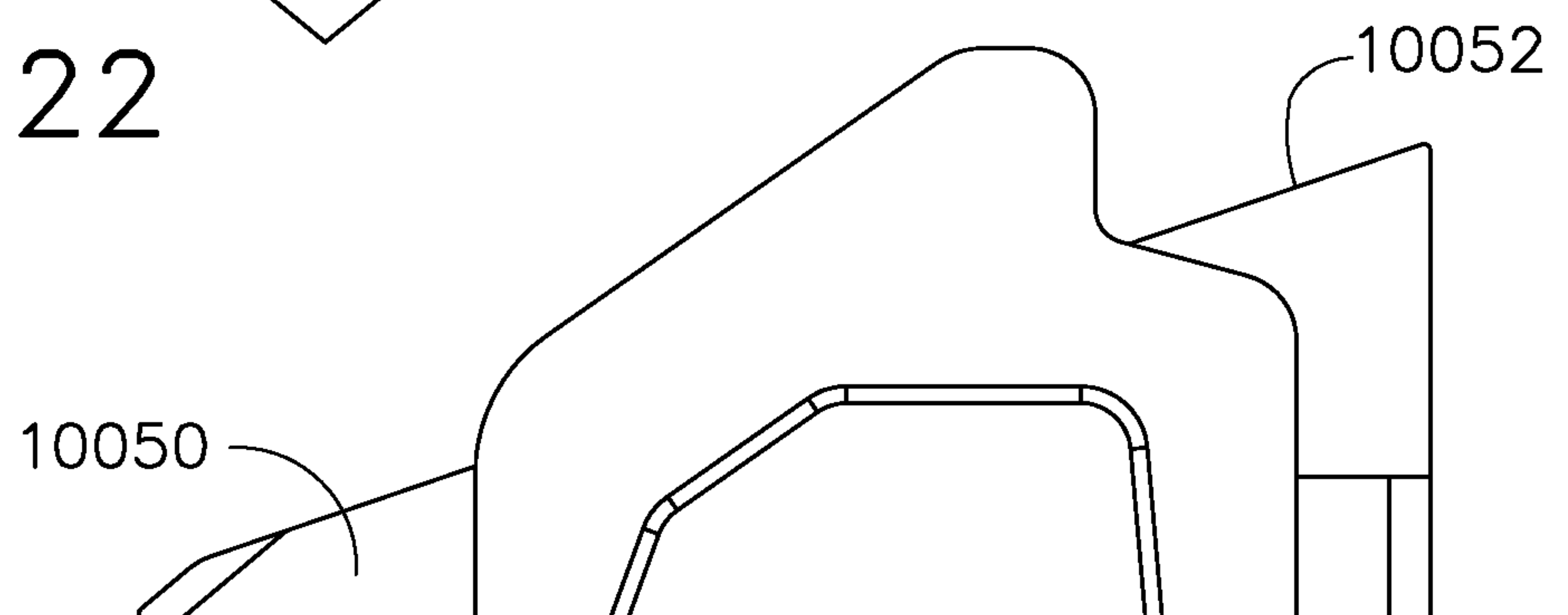


FIG. 223

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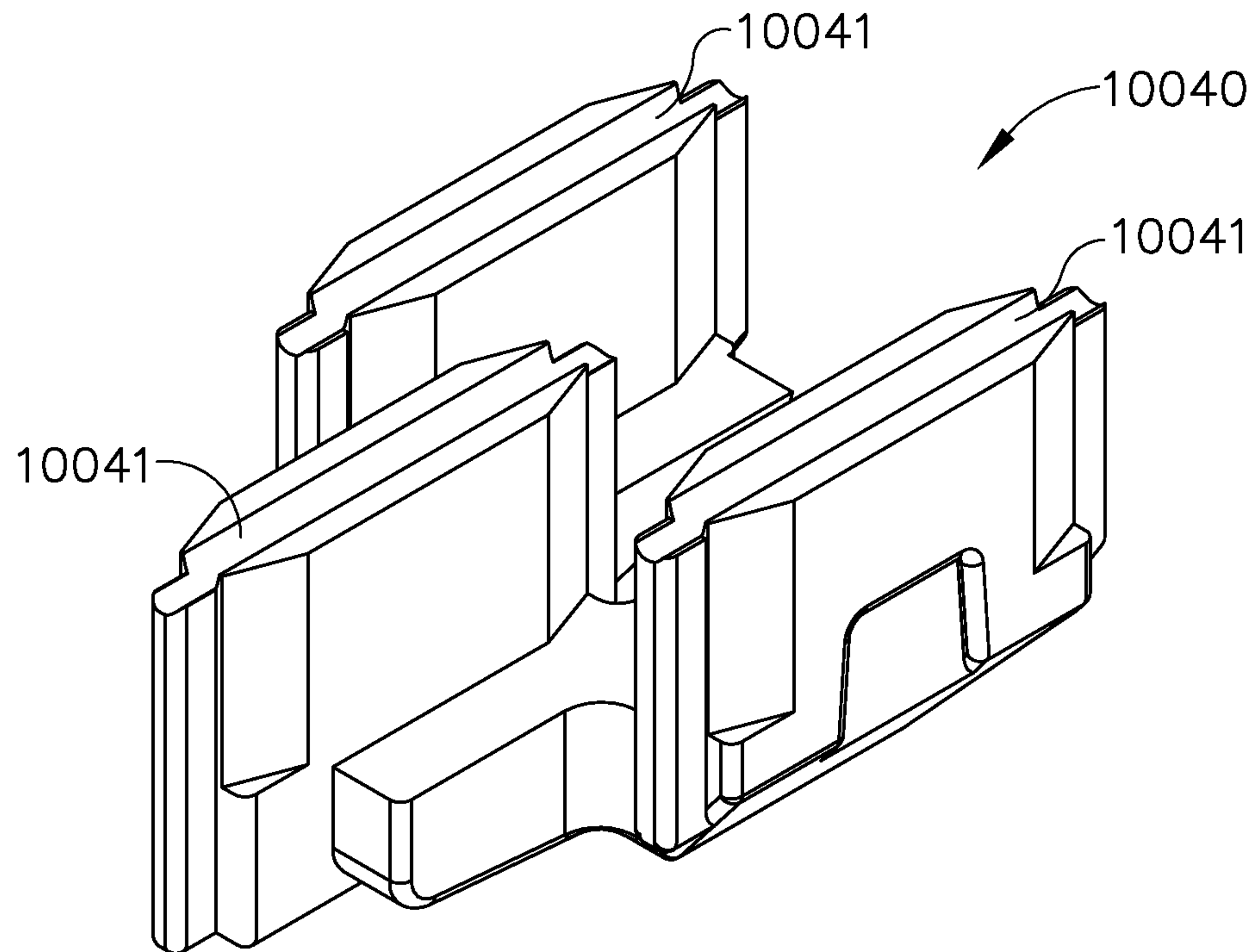


FIG. 224

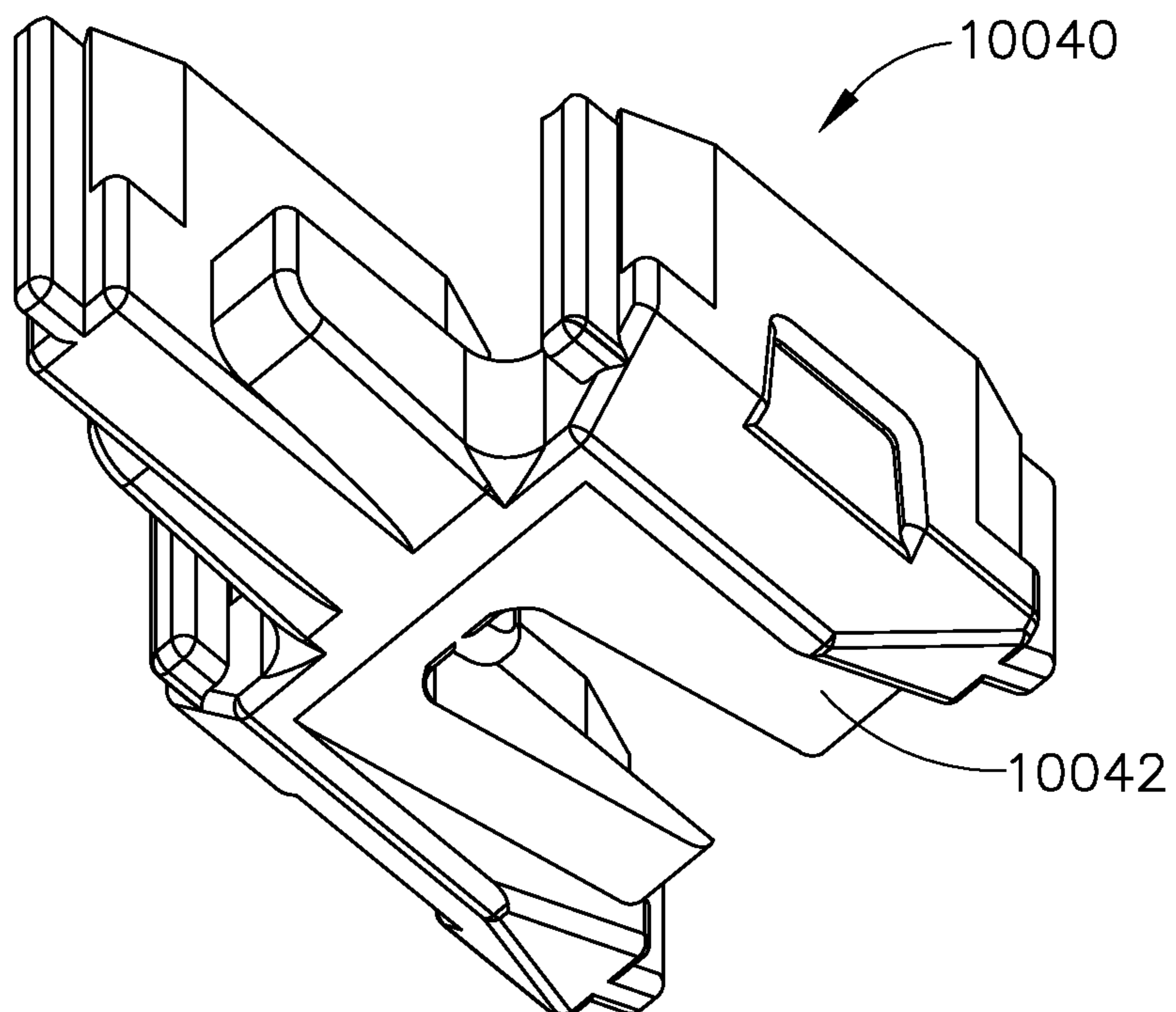


FIG. 225

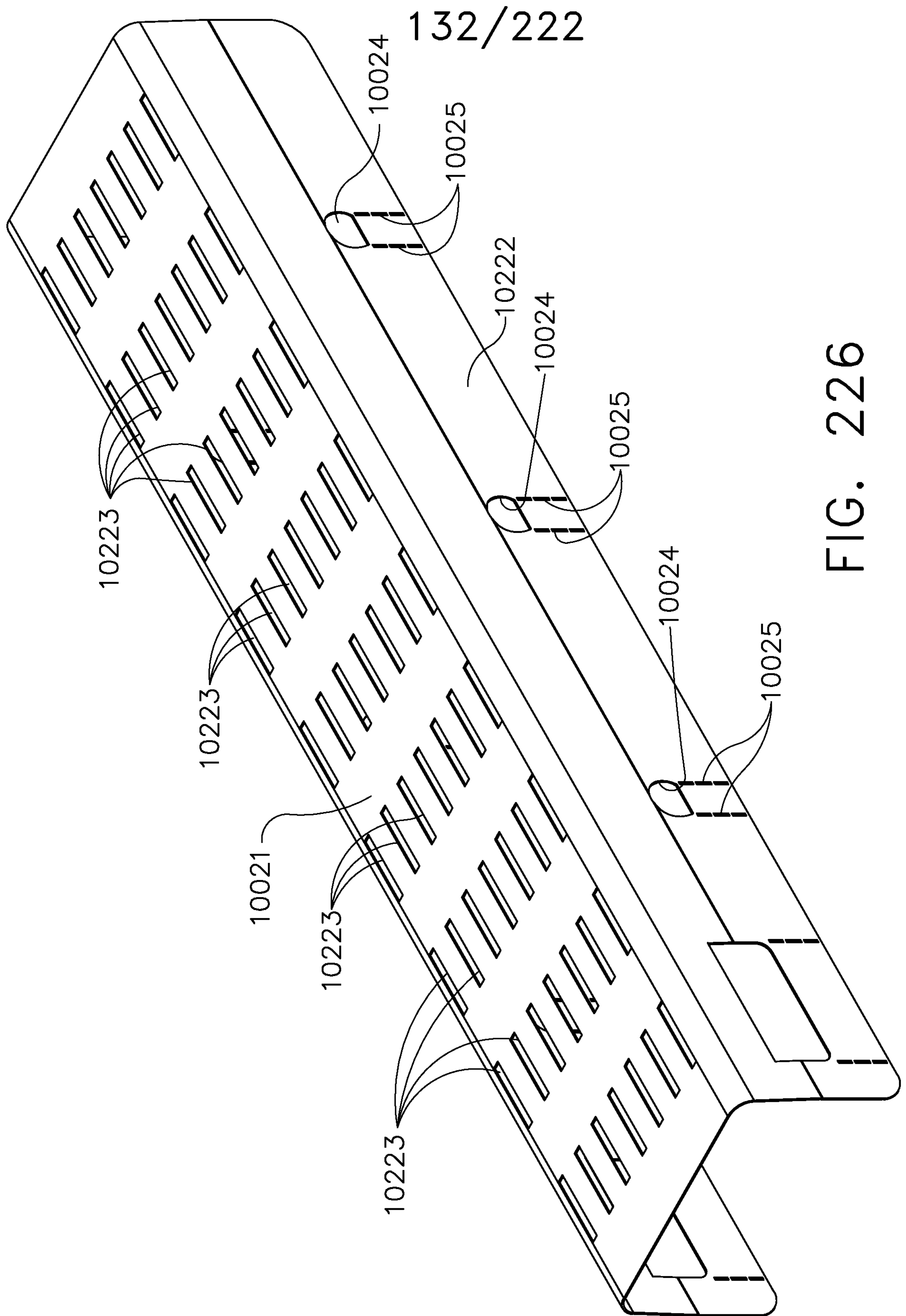


FIG. 226

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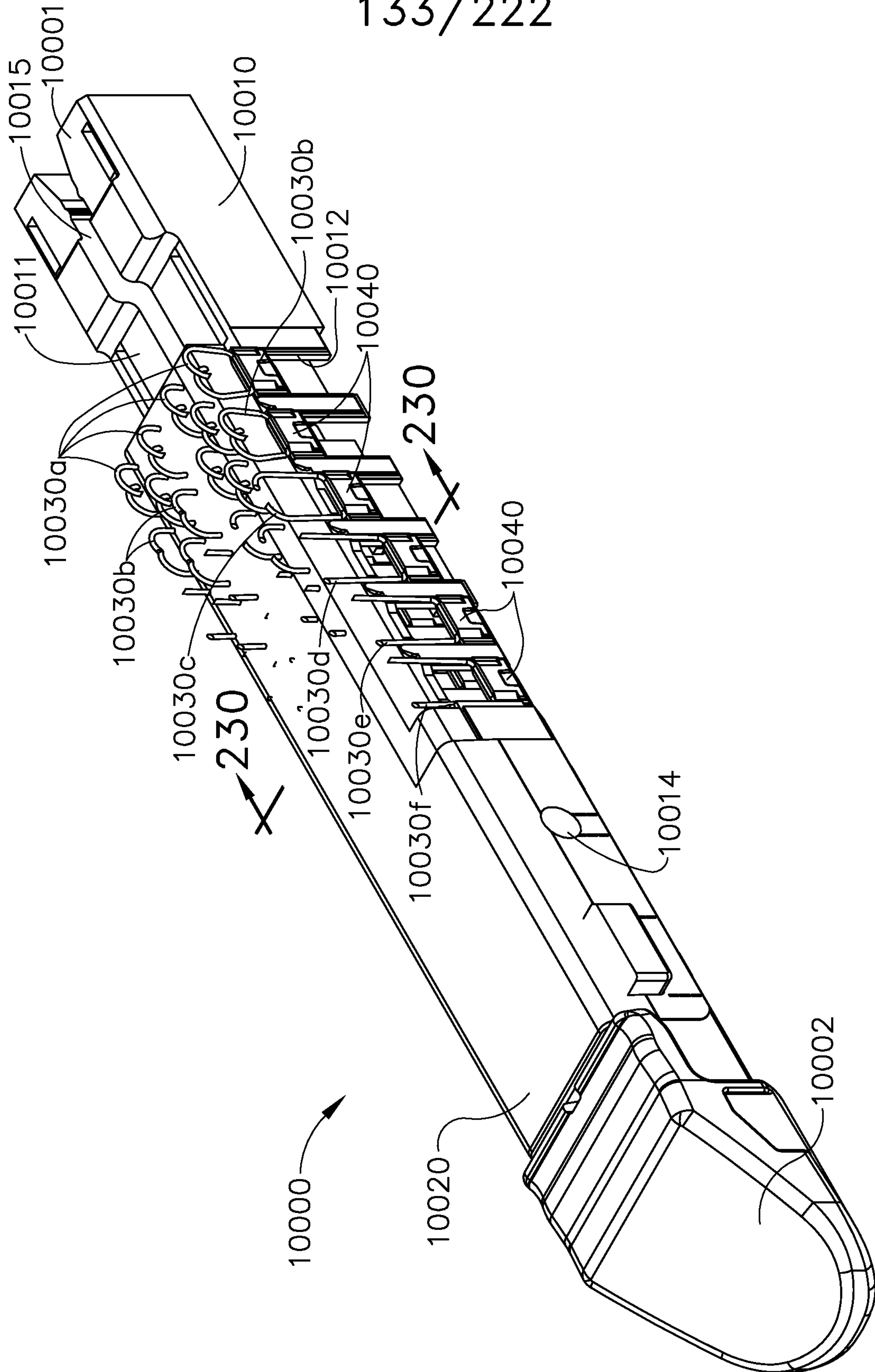


FIG. 227

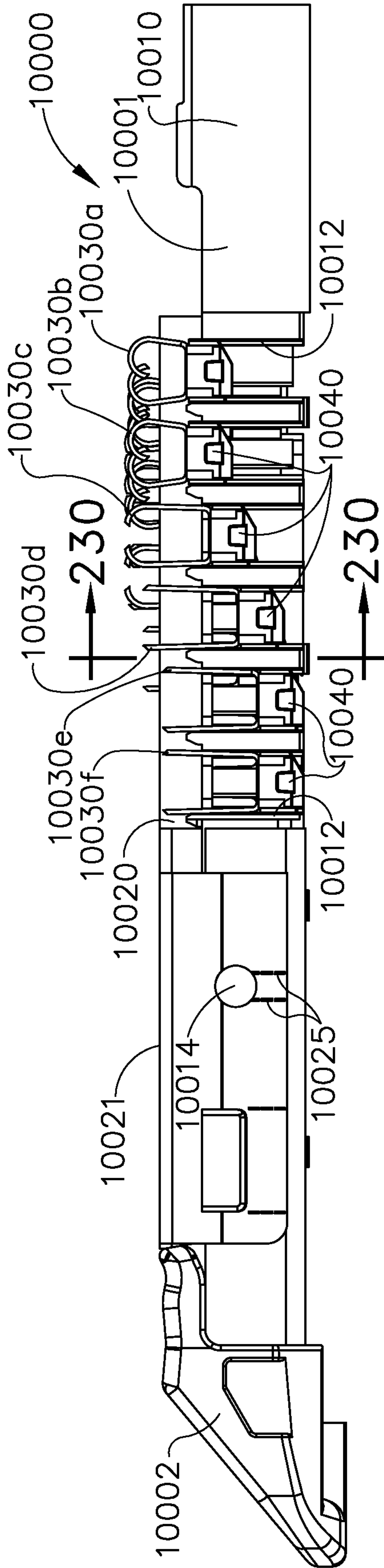


FIG. 228

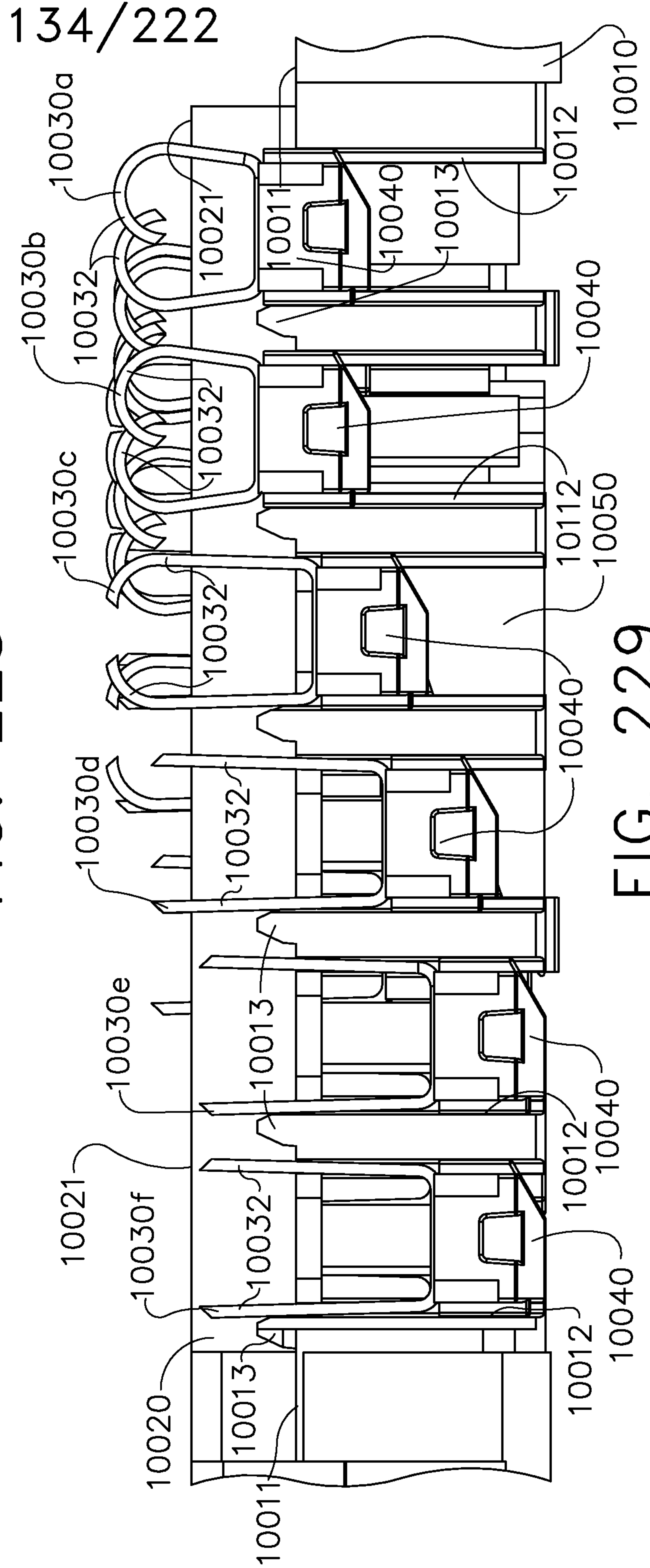
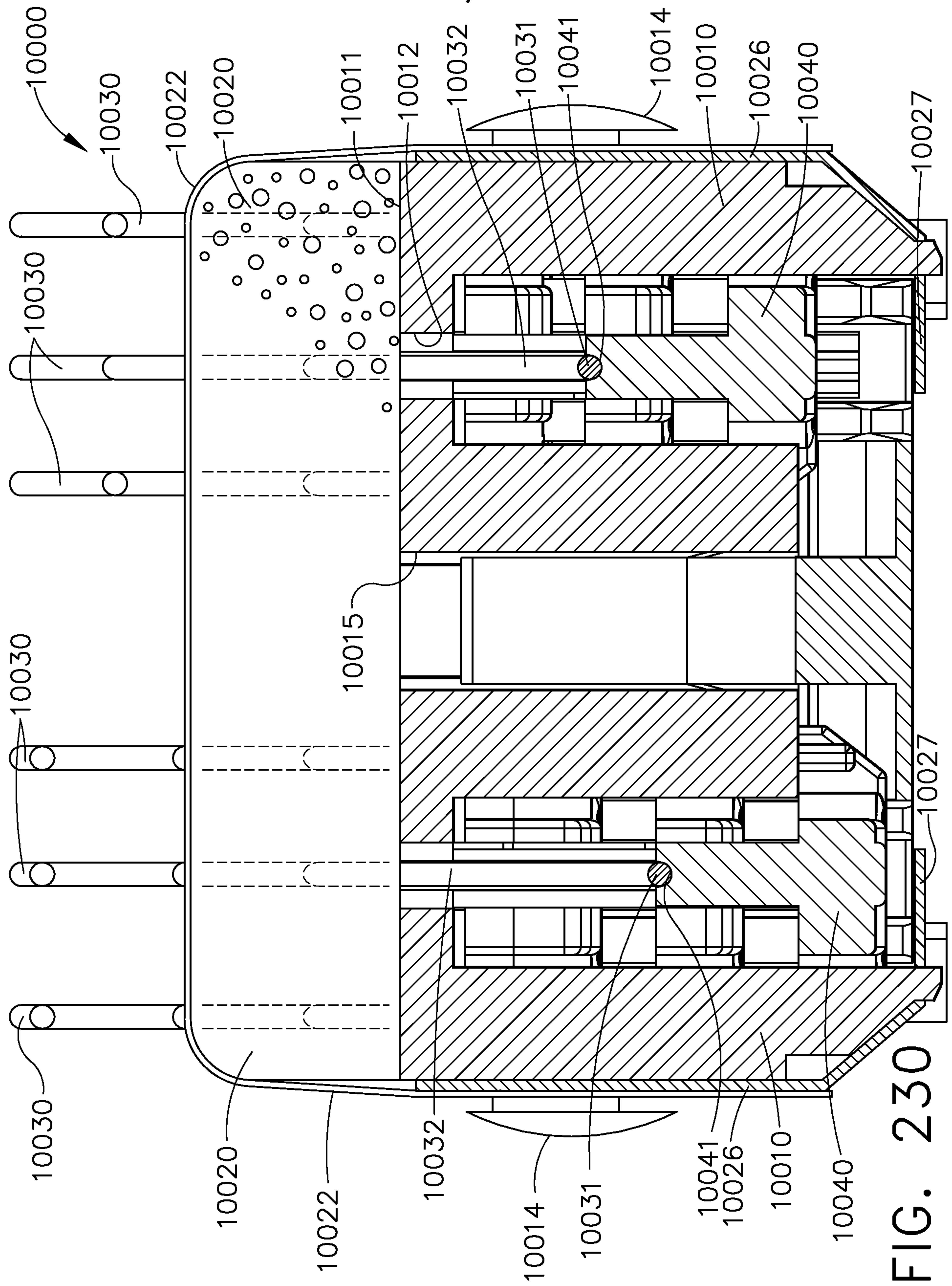


FIG. 229

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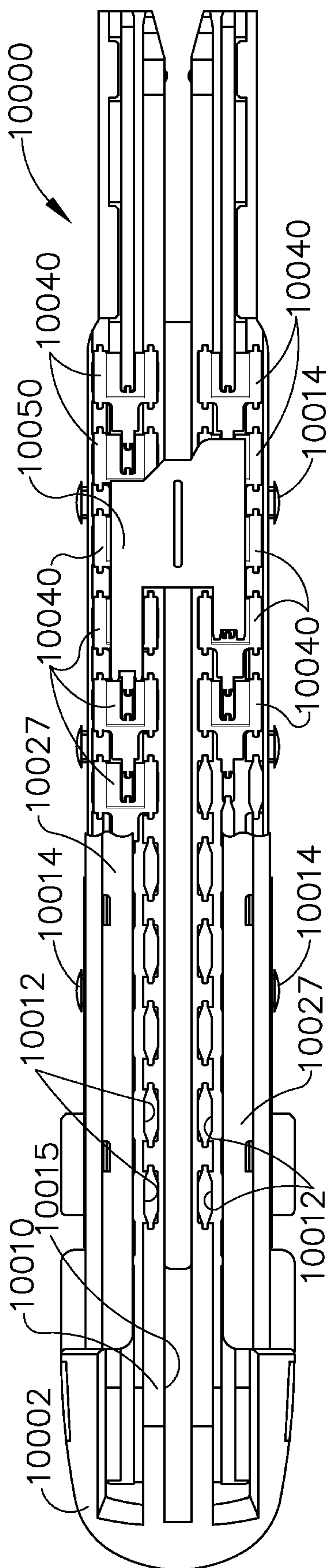


FIG. 231

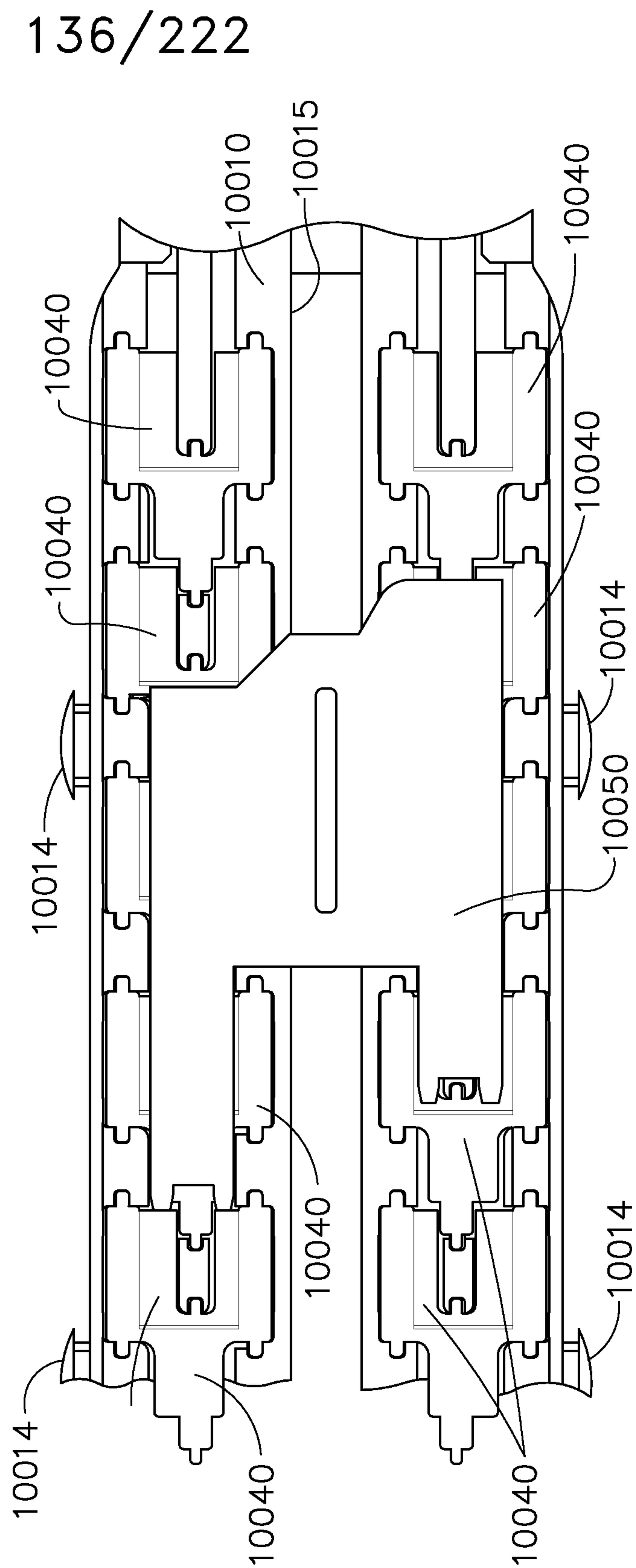
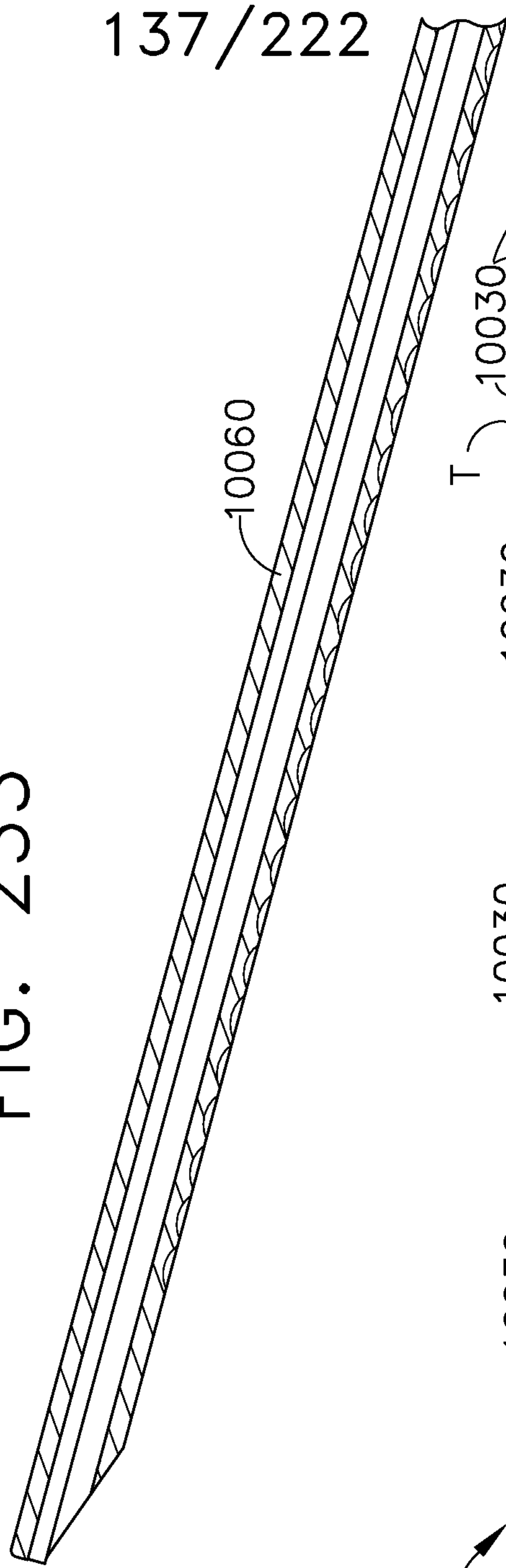
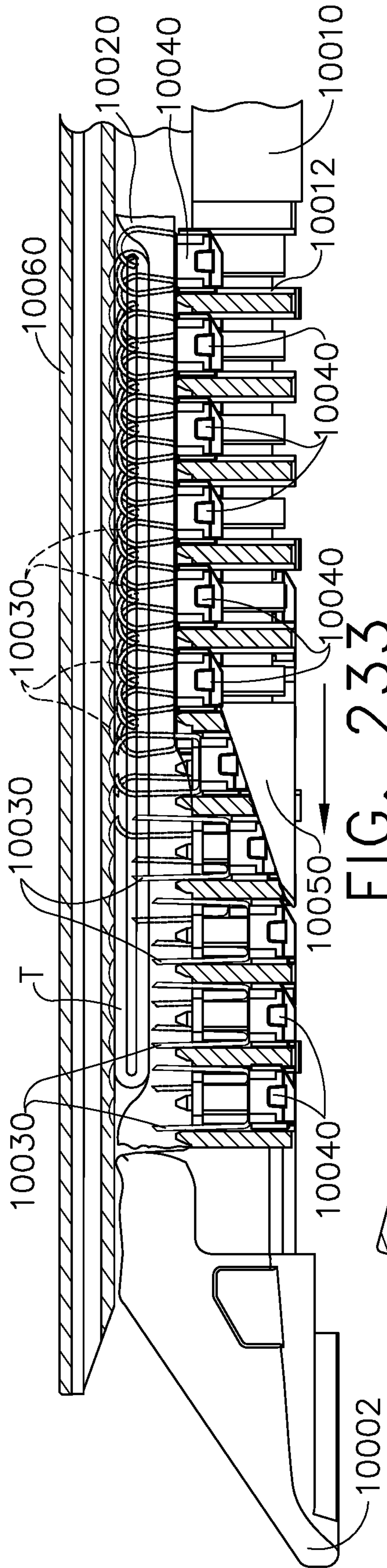


FIG. 232



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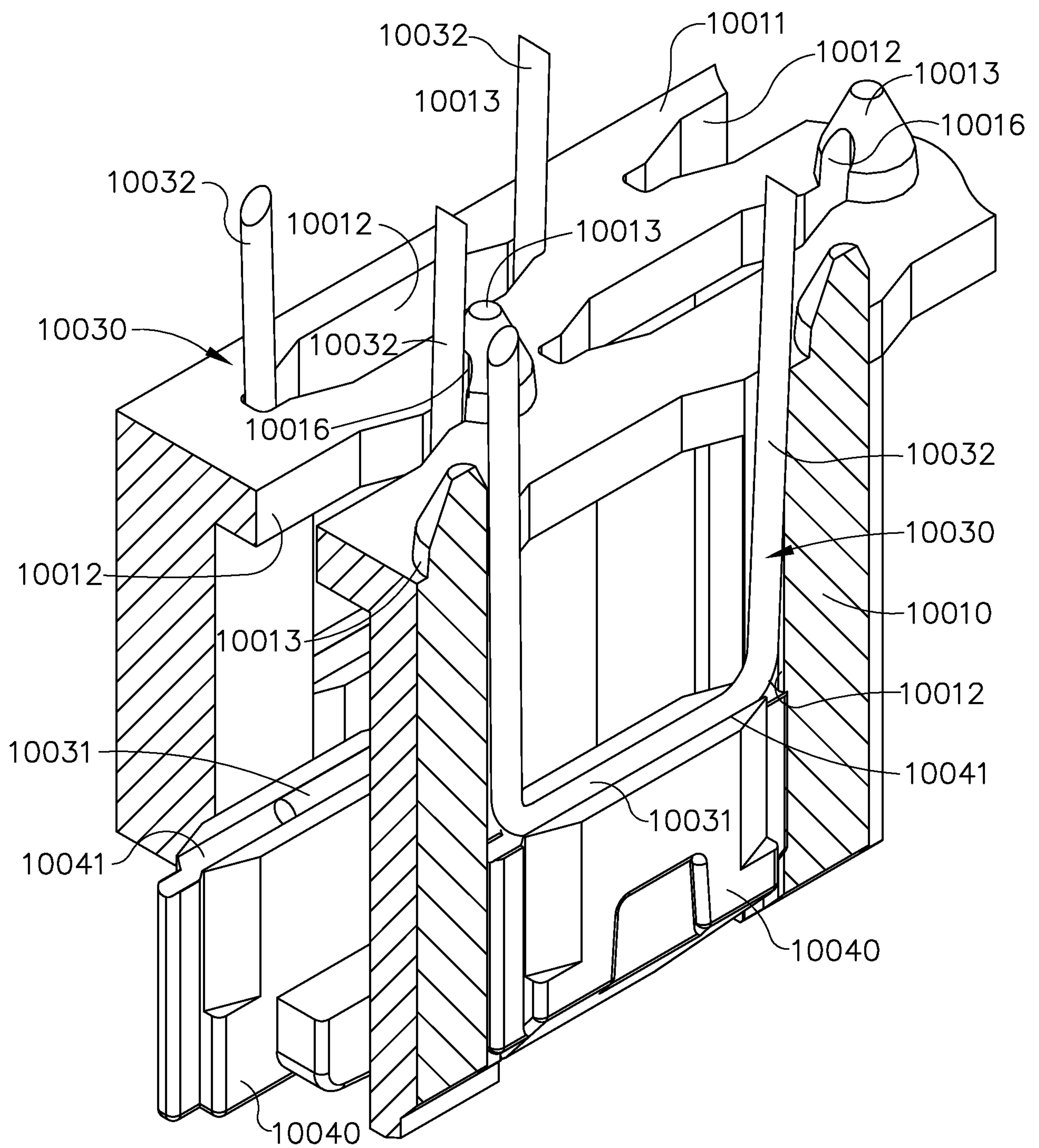


FIG. 235

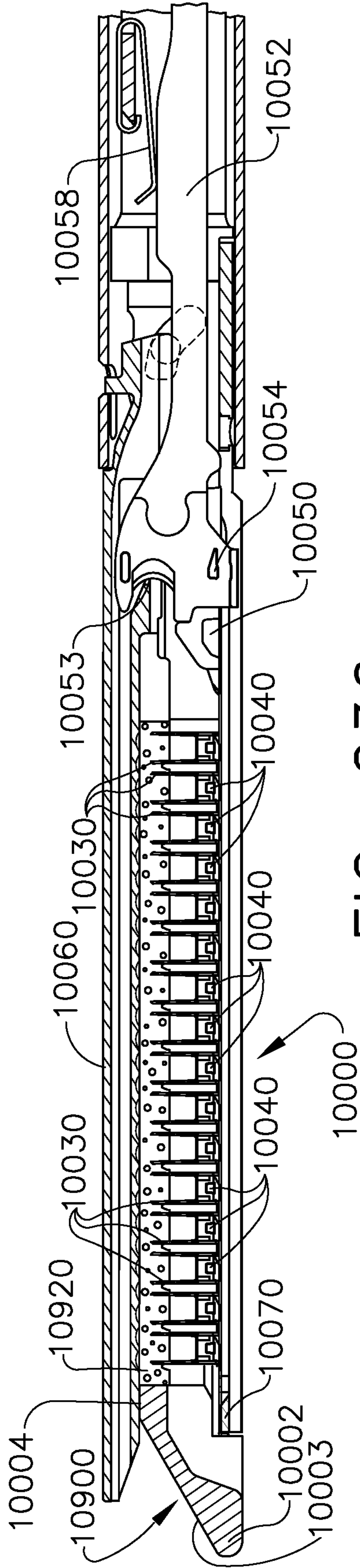


FIG. 236

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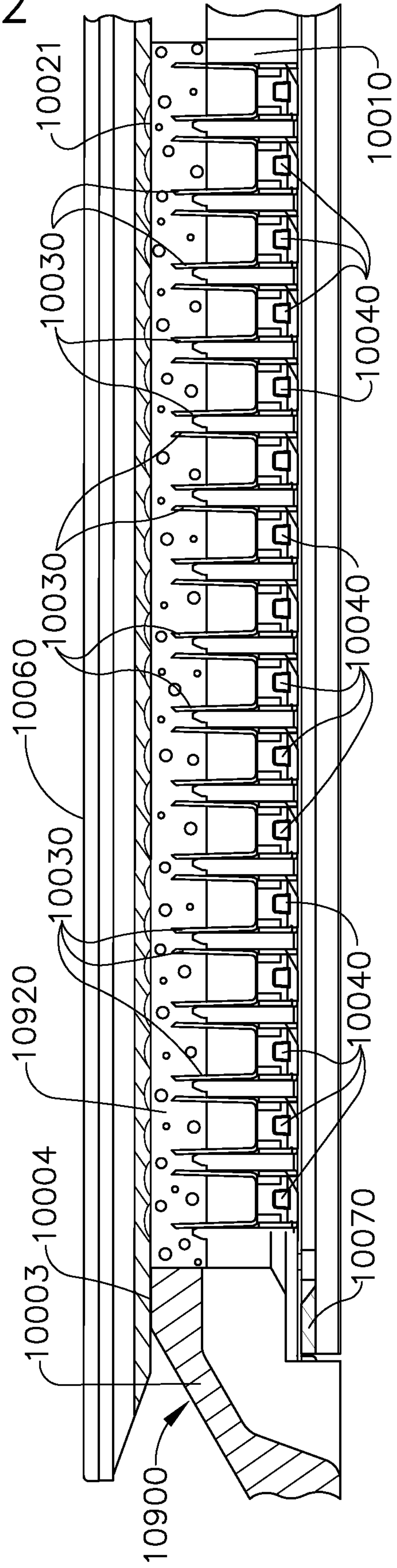


FIG. 237

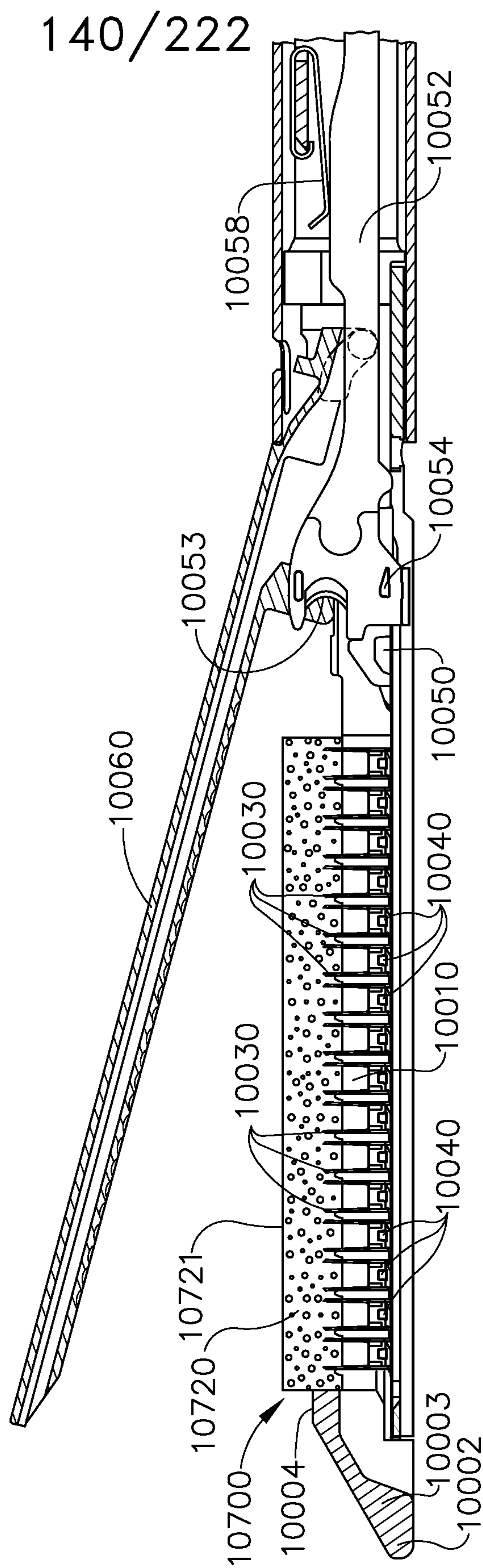


FIG. 238

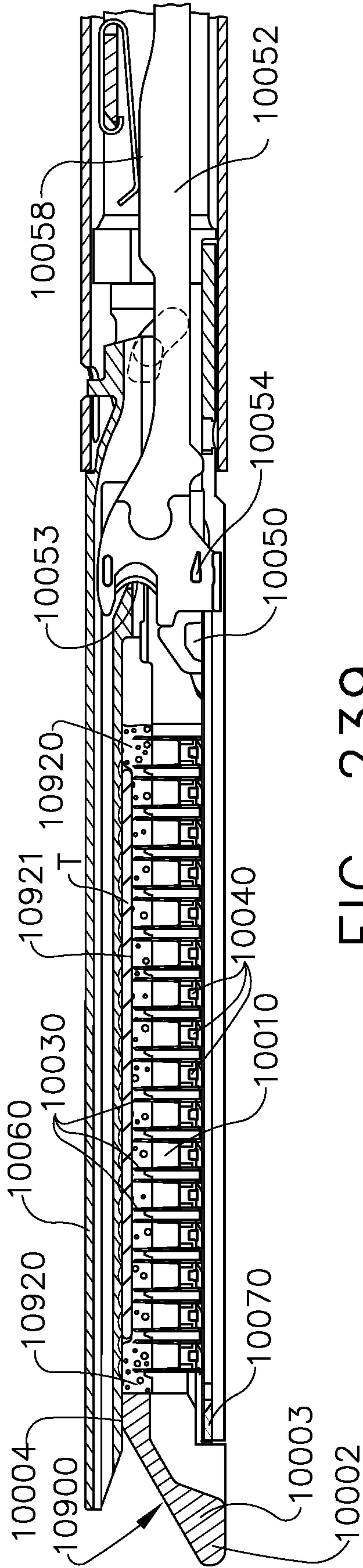


FIG. 239

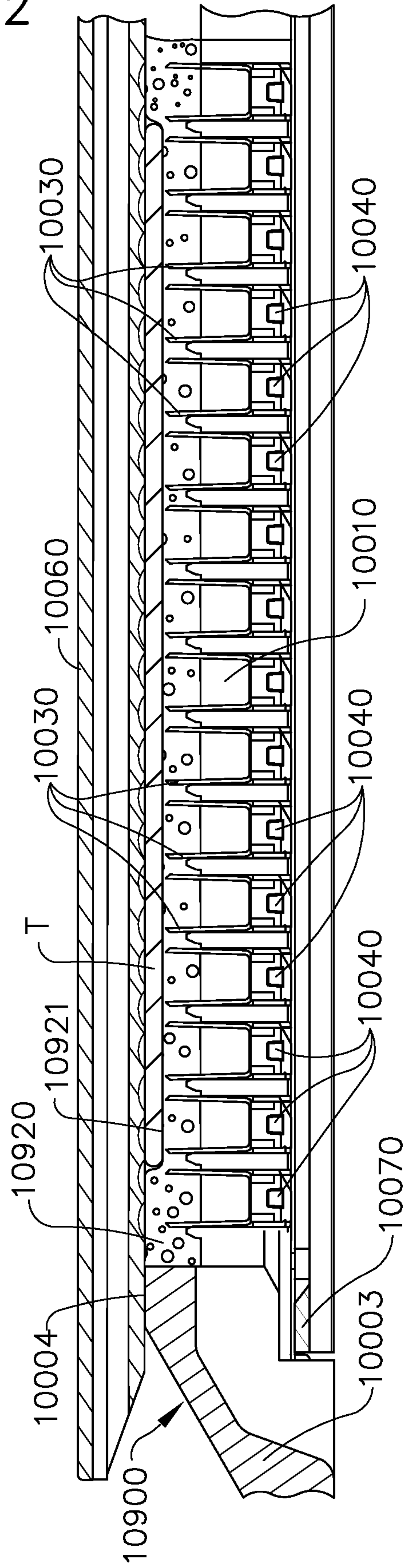


FIG. 240



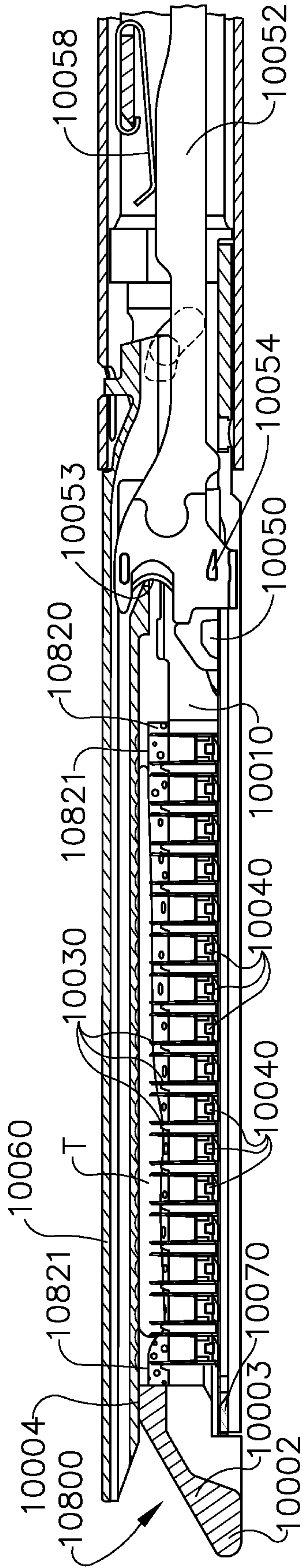


FIG. 243

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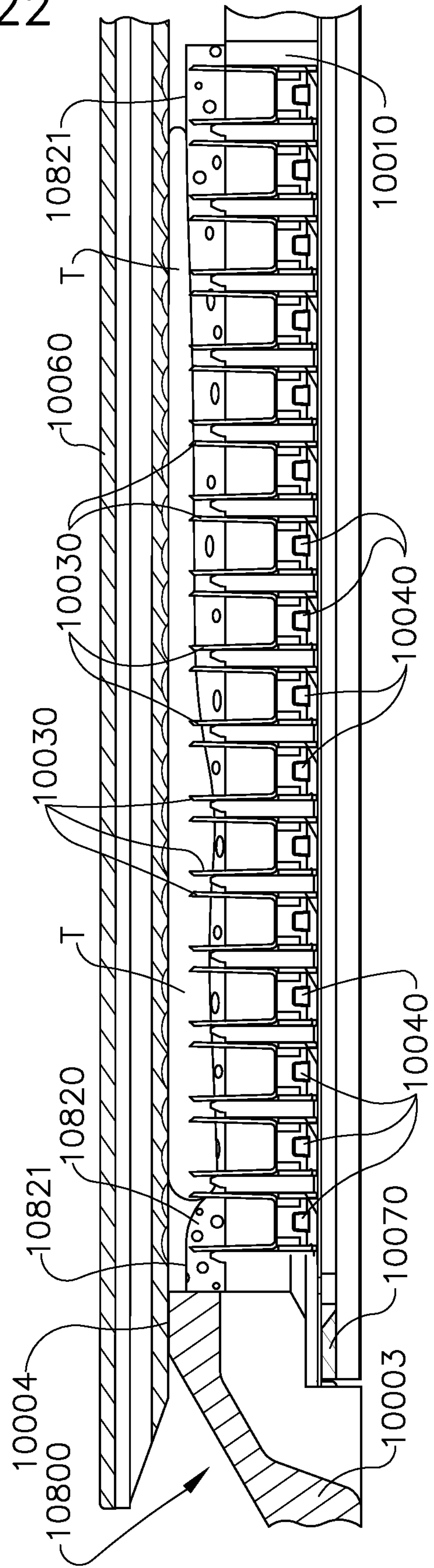


FIG. 244

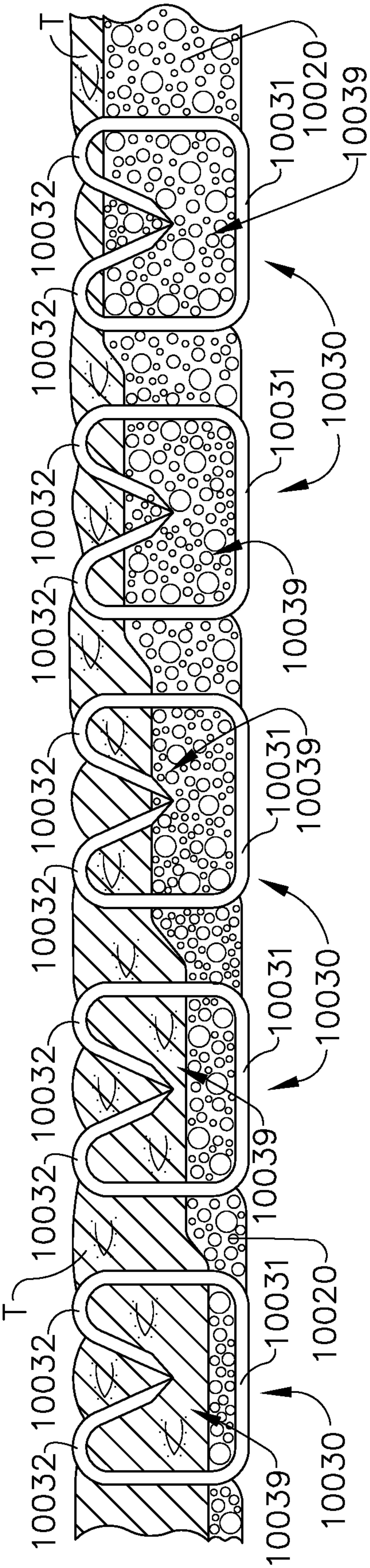


FIG. 245

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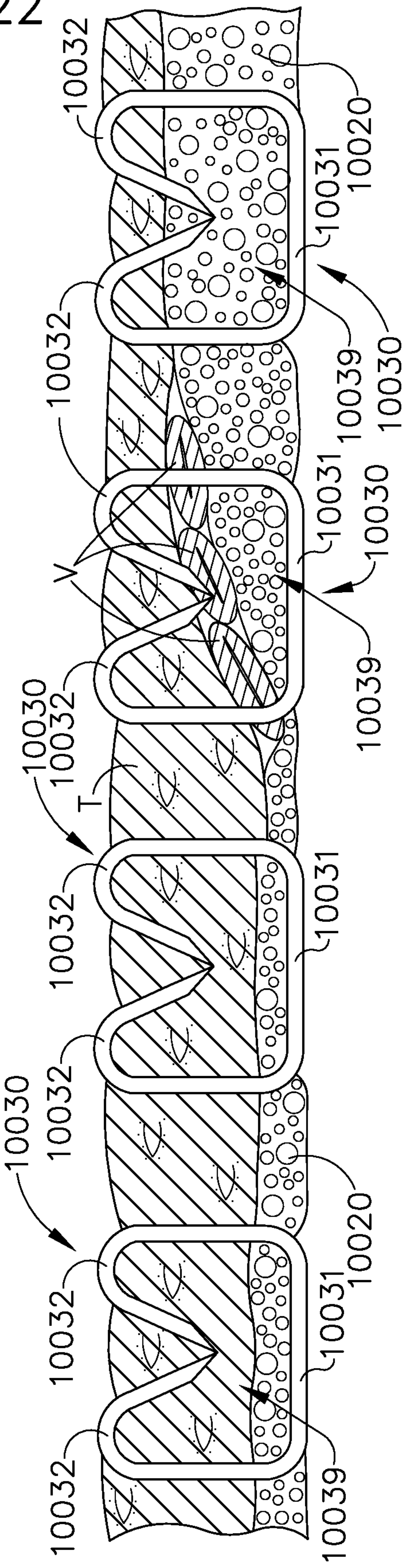
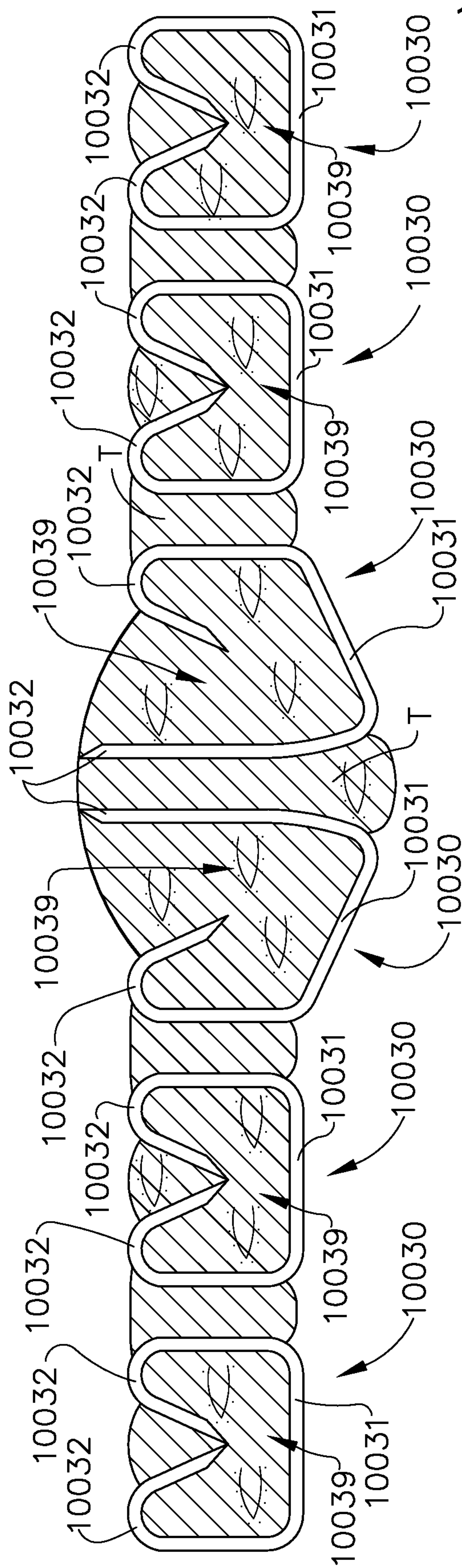


FIG. 246



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FIG. 247

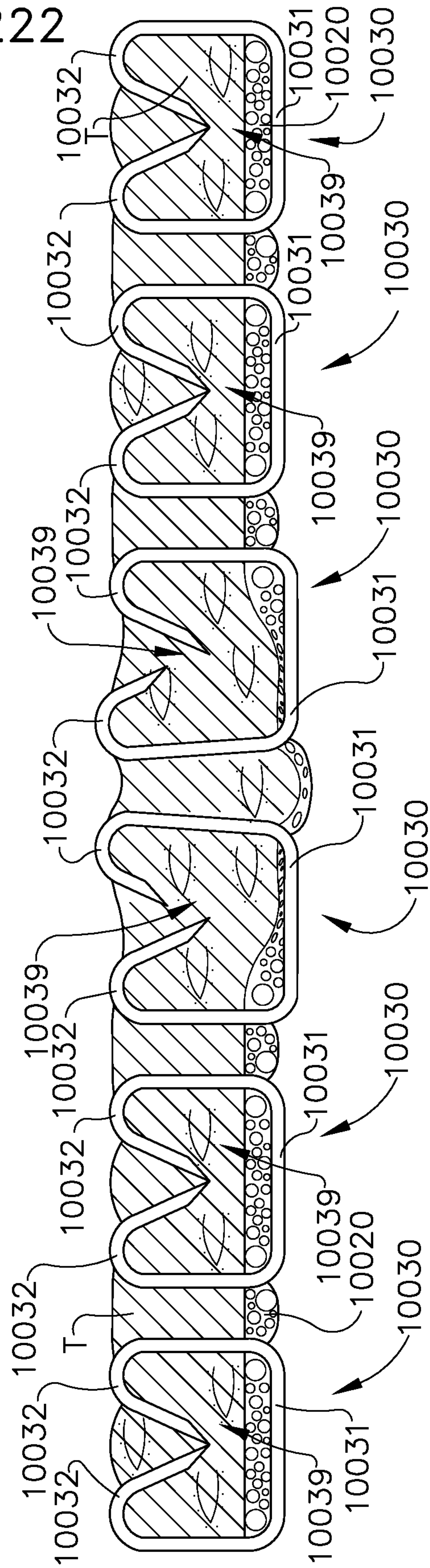


FIG. 248

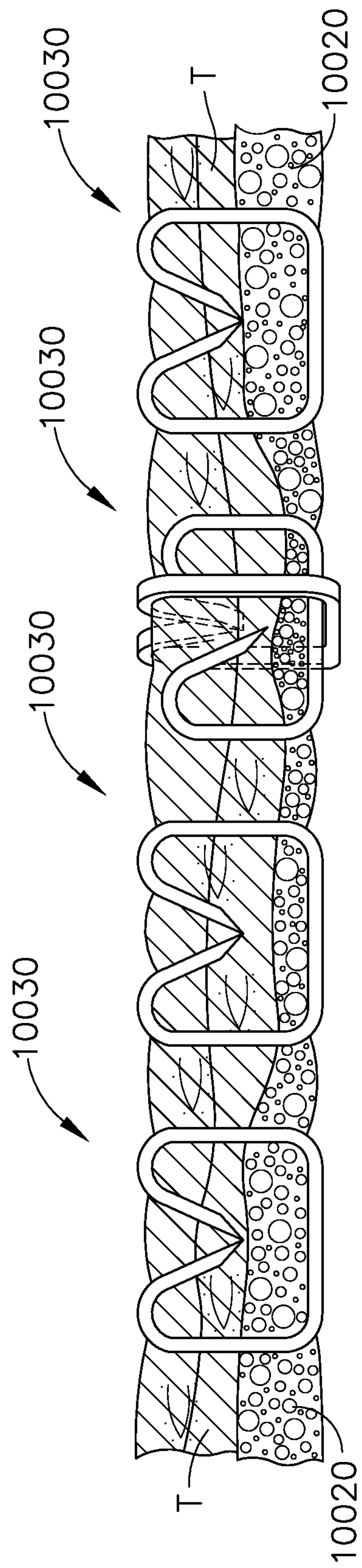


FIG. 249

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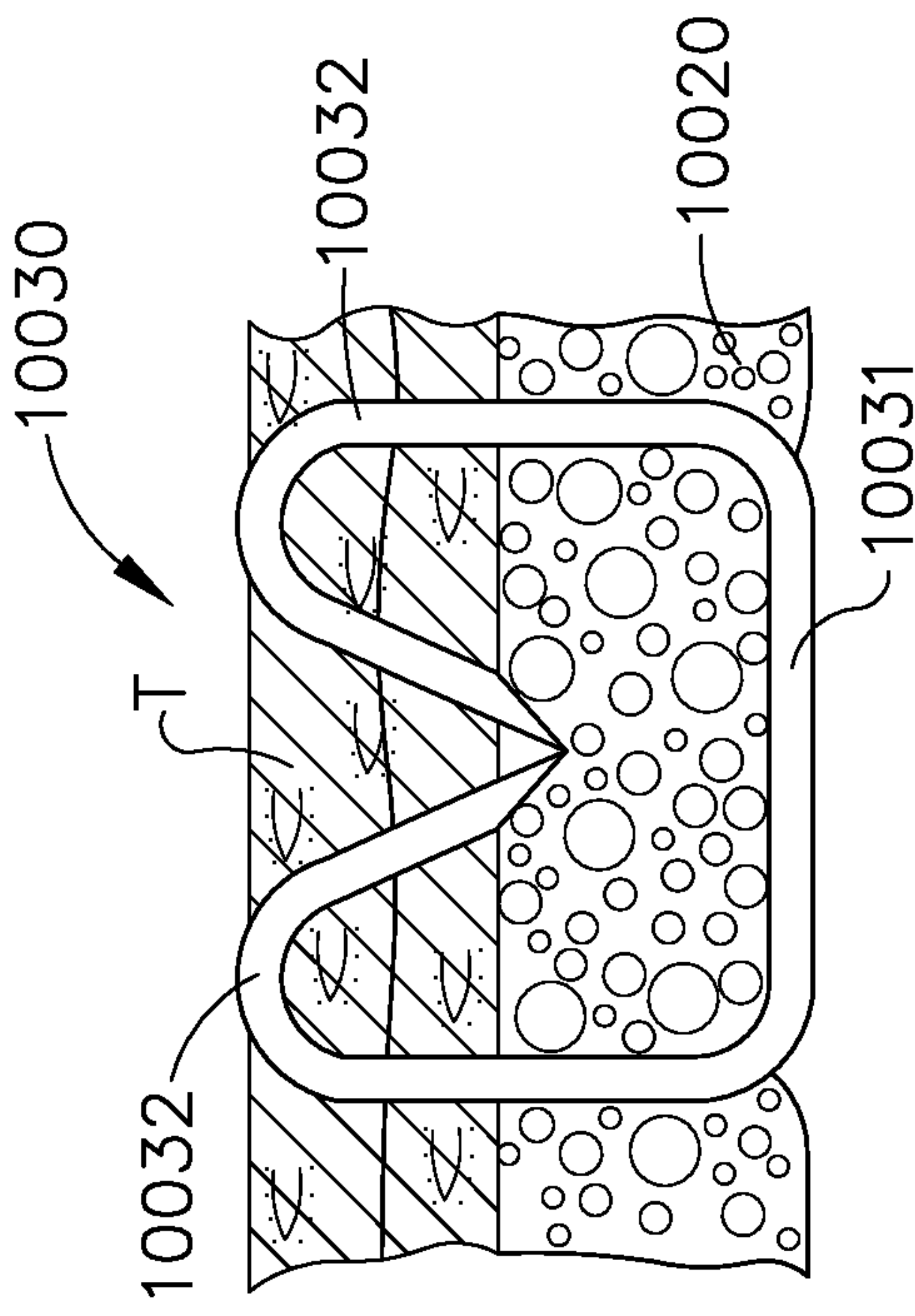


FIG. 251

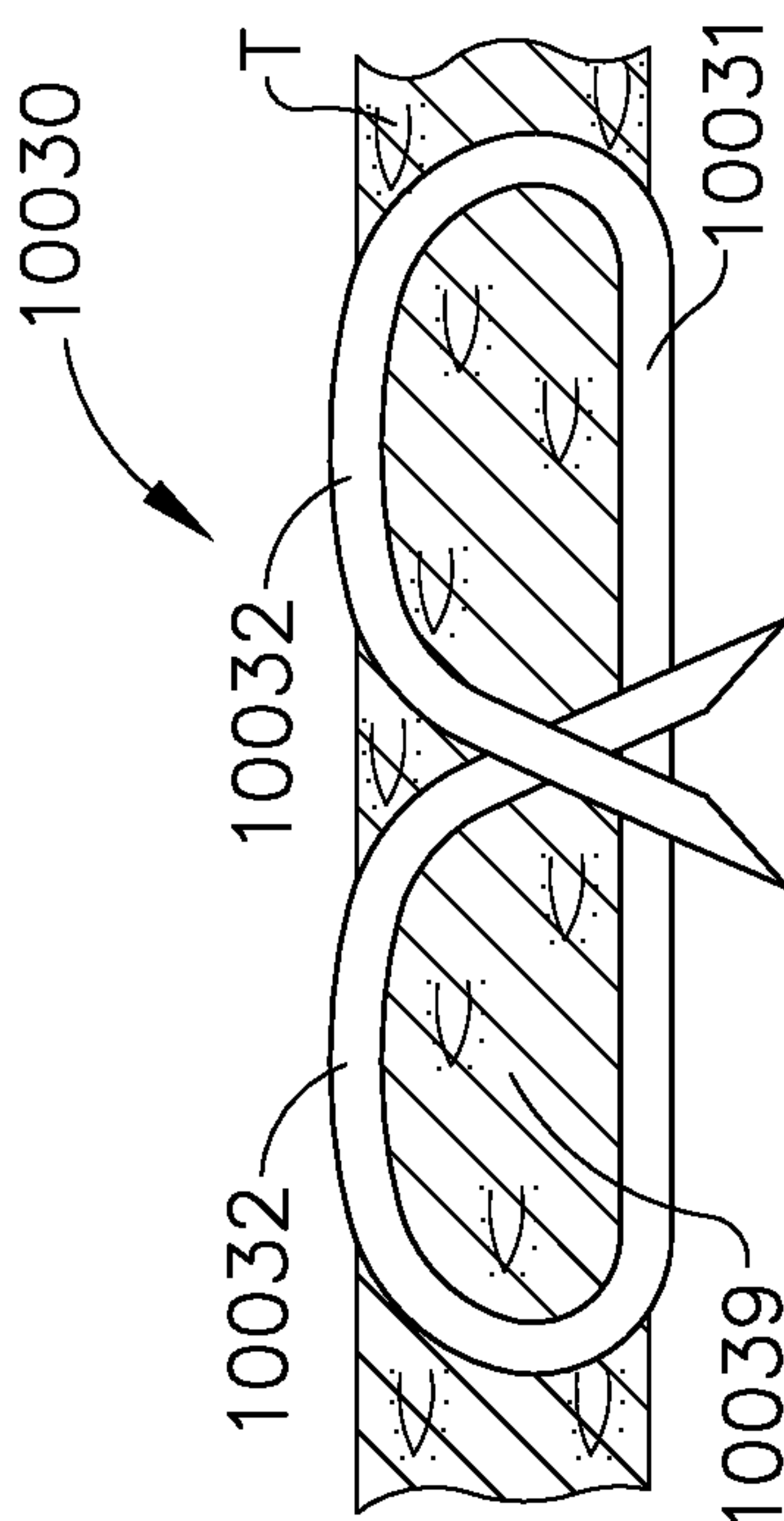


FIG. 250

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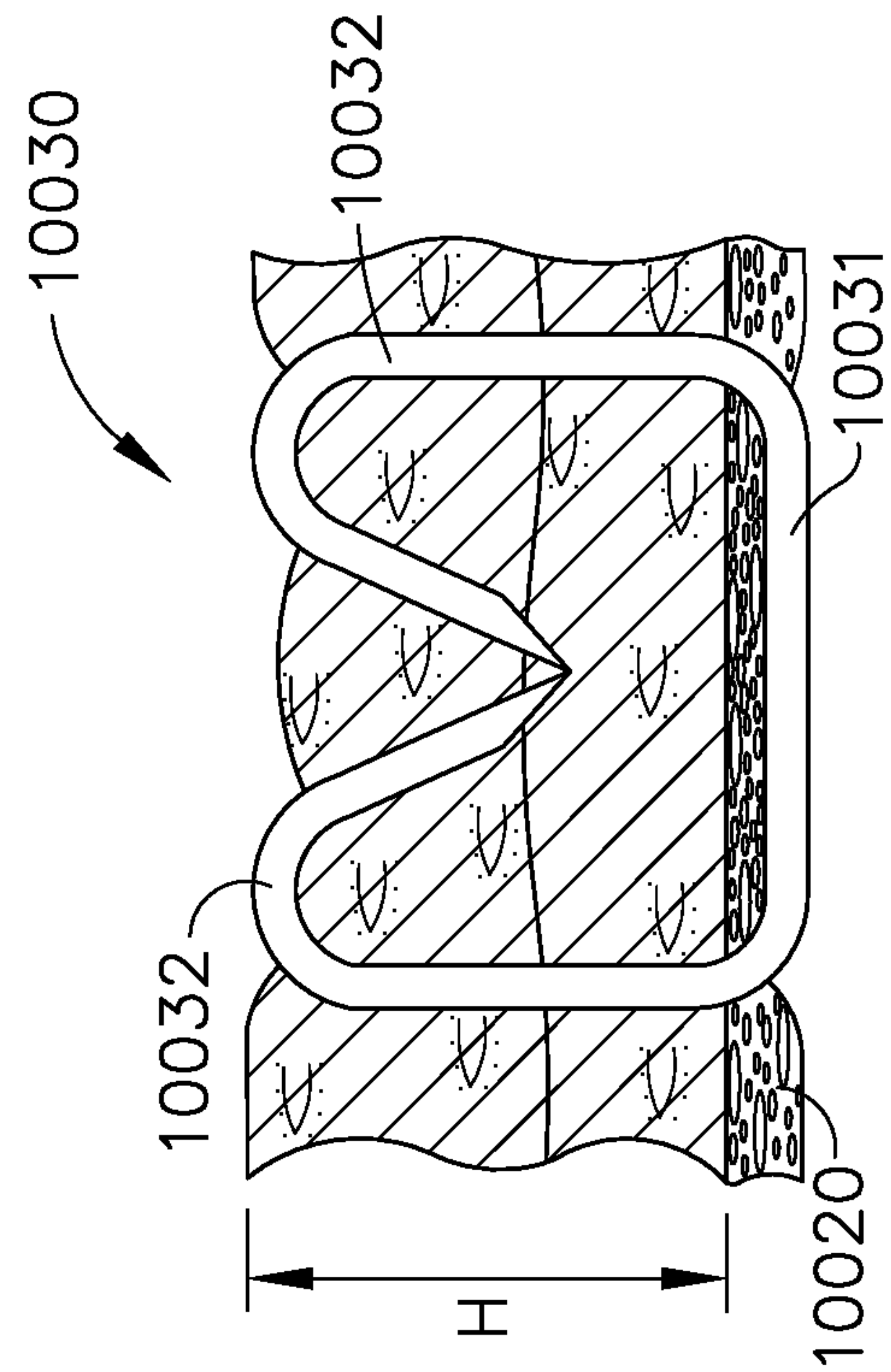


FIG. 253

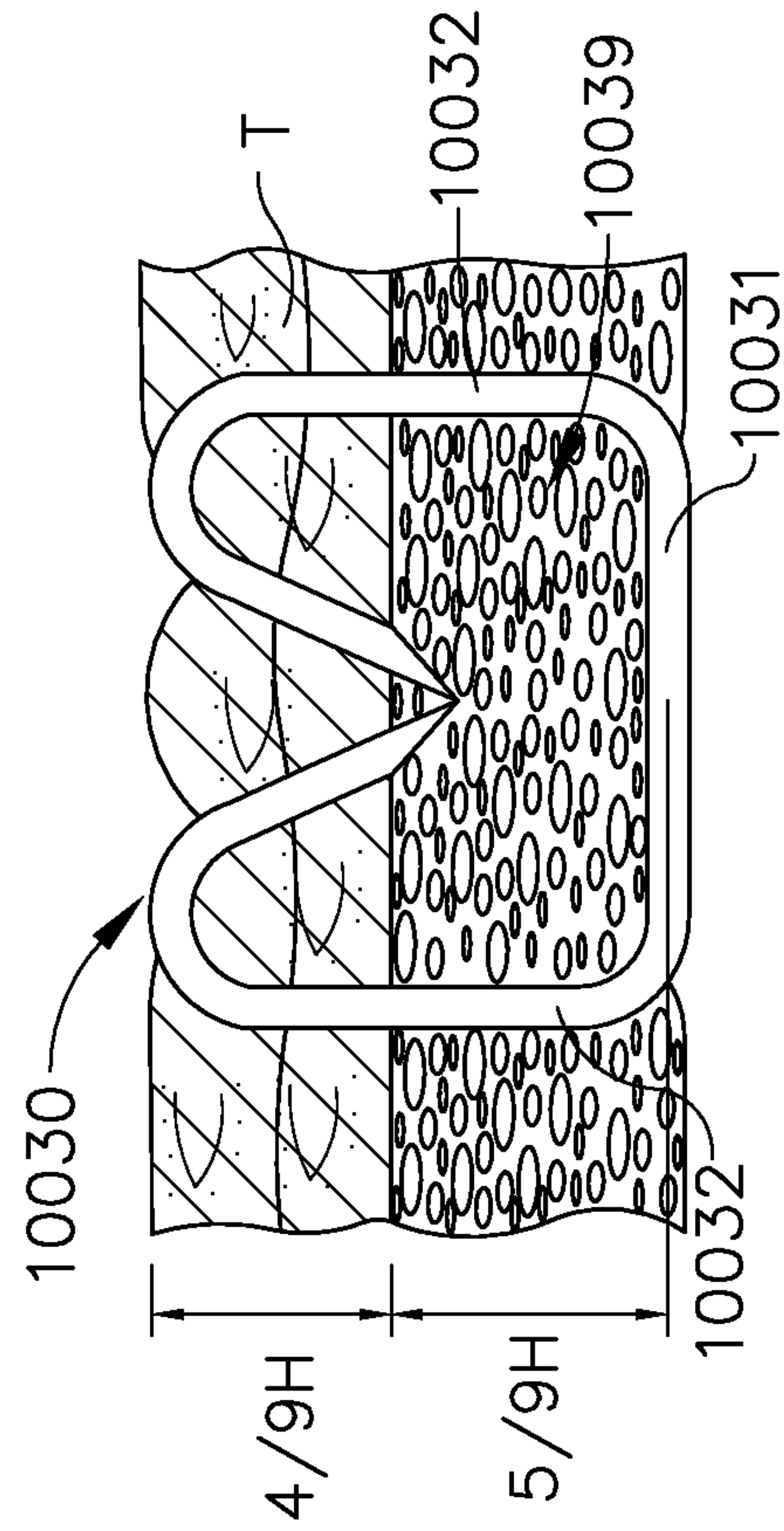


FIG. 254

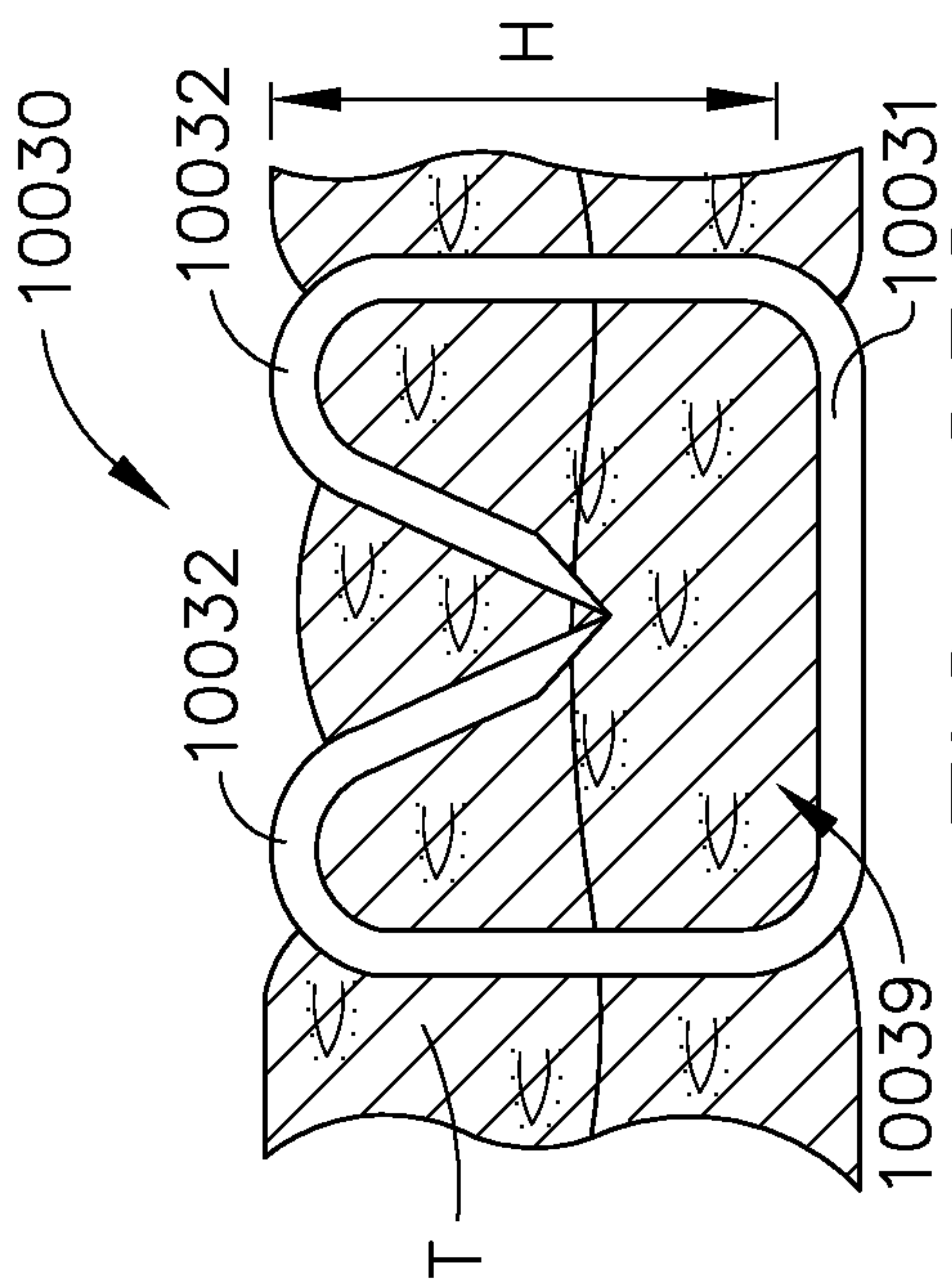


FIG. 255

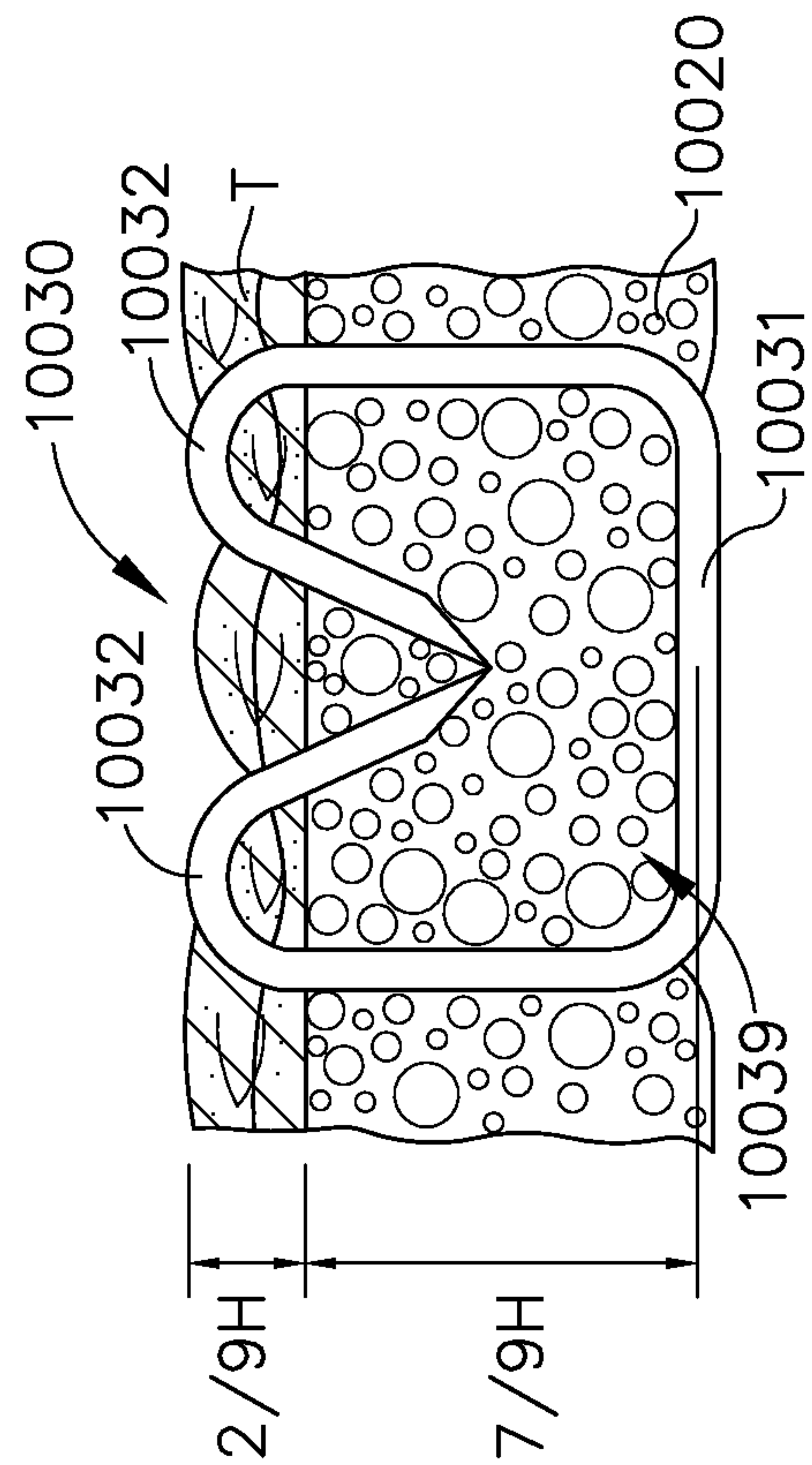


FIG. 256

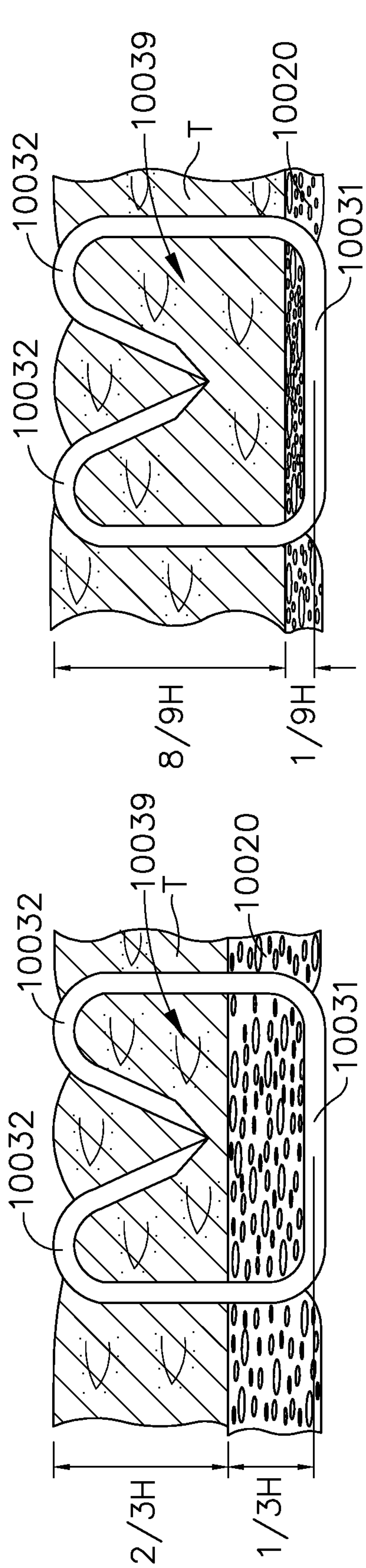


FIG. 257

FIG. 256

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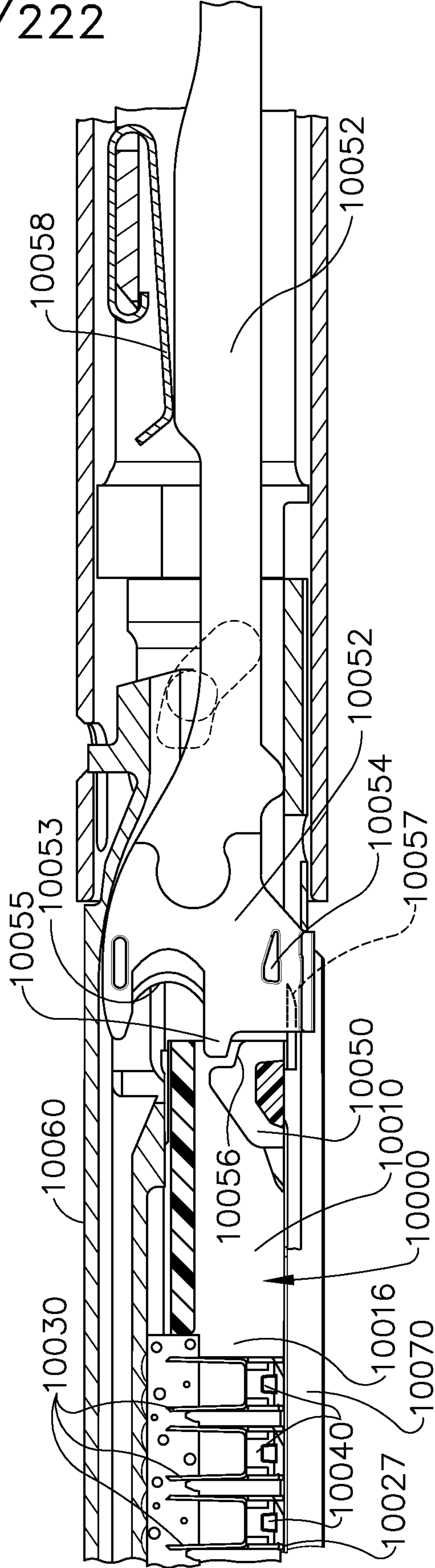


FIG. 258

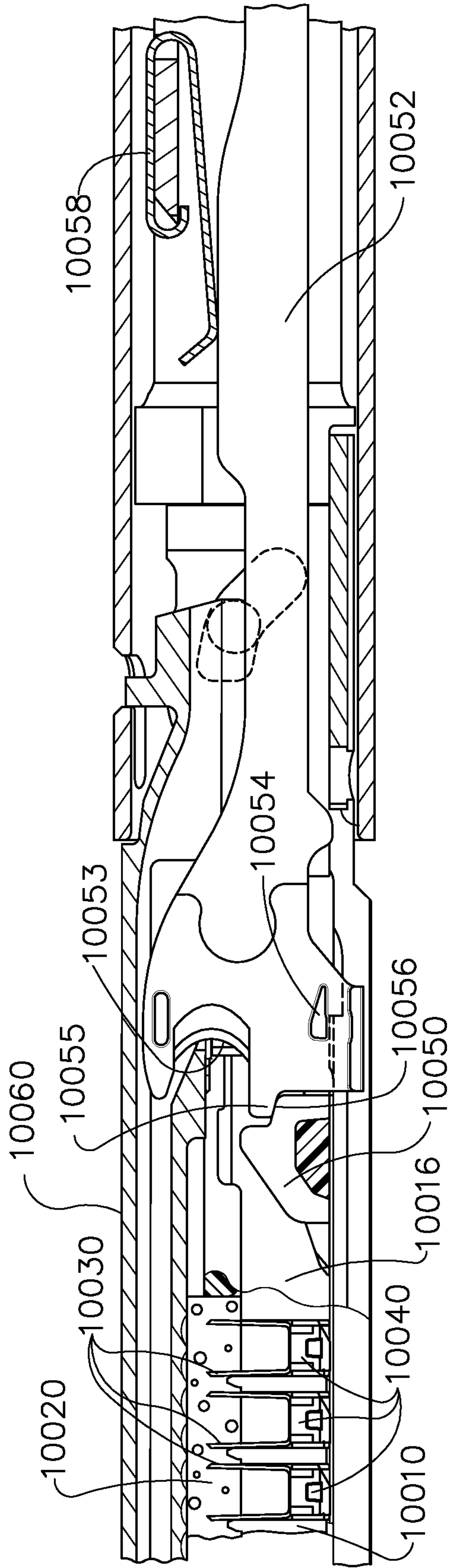


FIG. 259

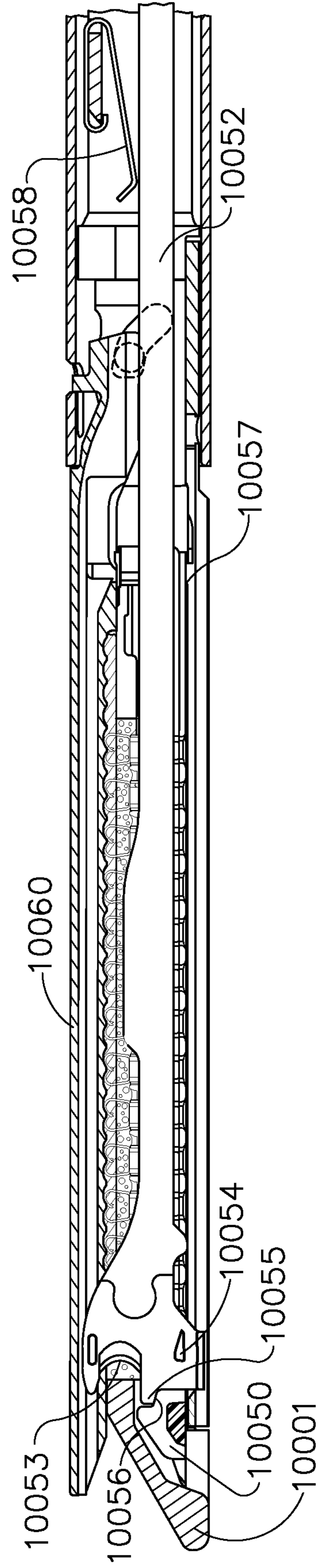


FIG. 260

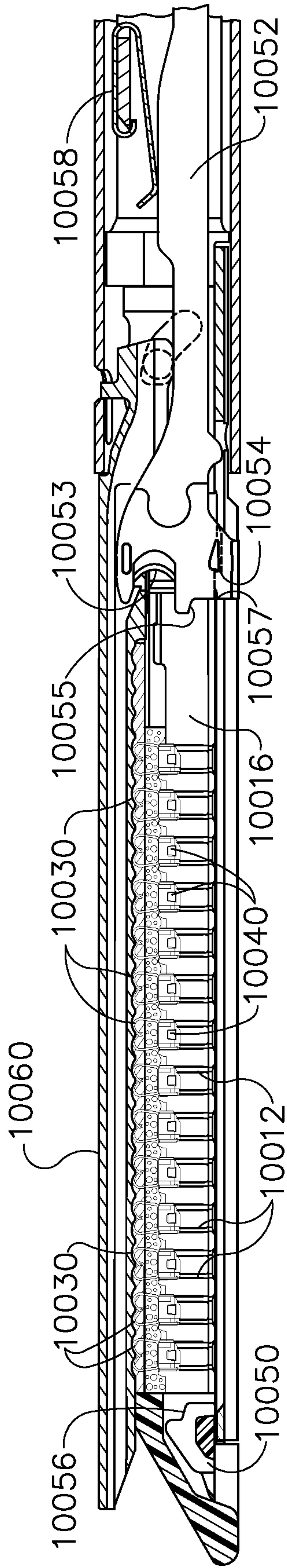


FIG. 261

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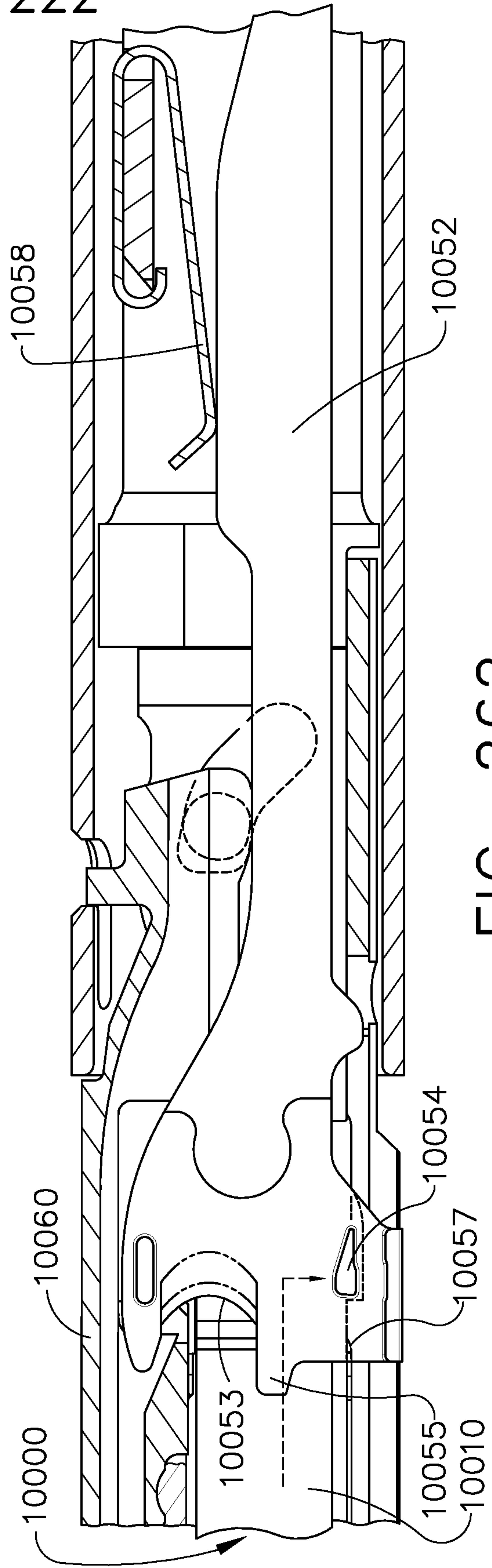


FIG. 262

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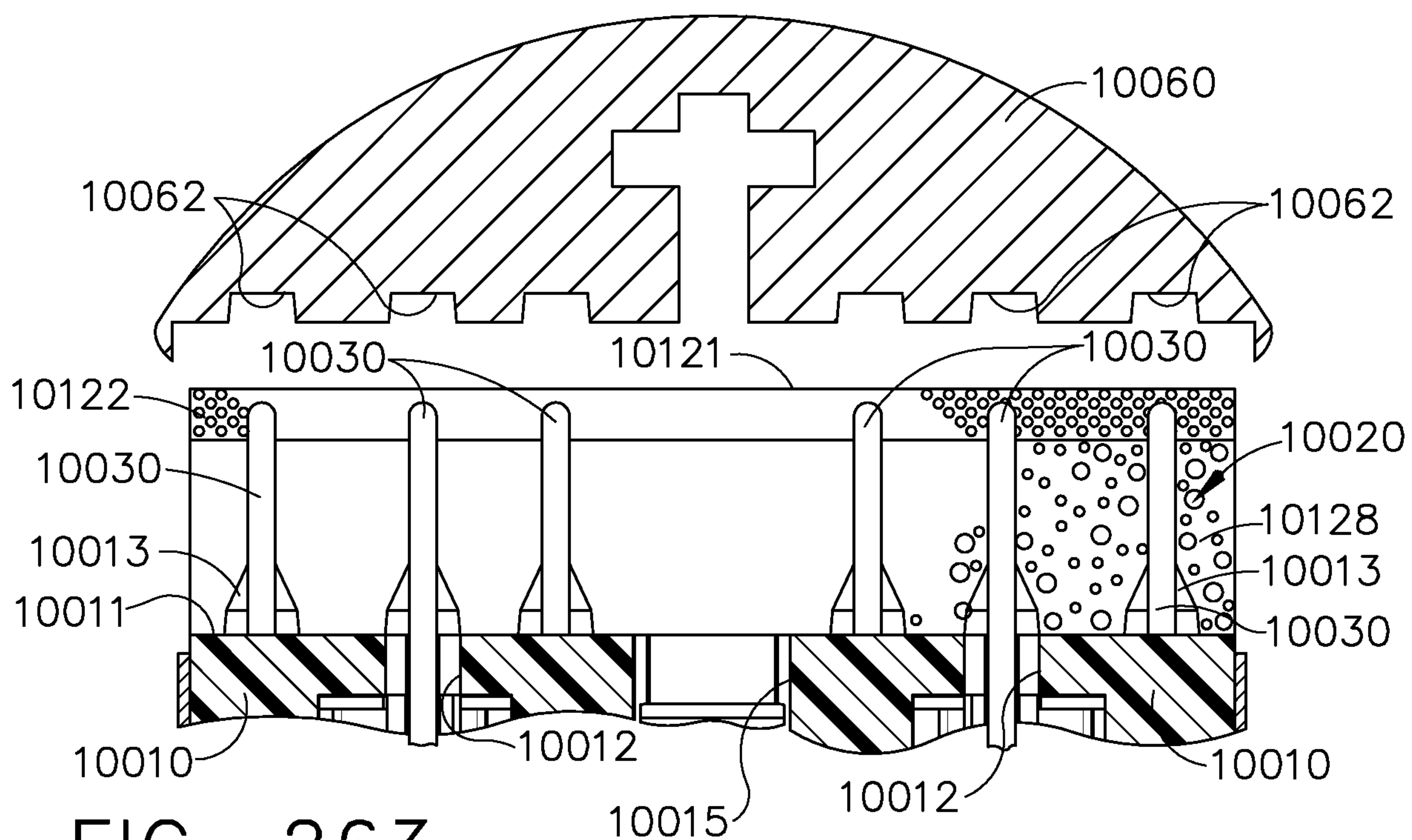


FIG. 263

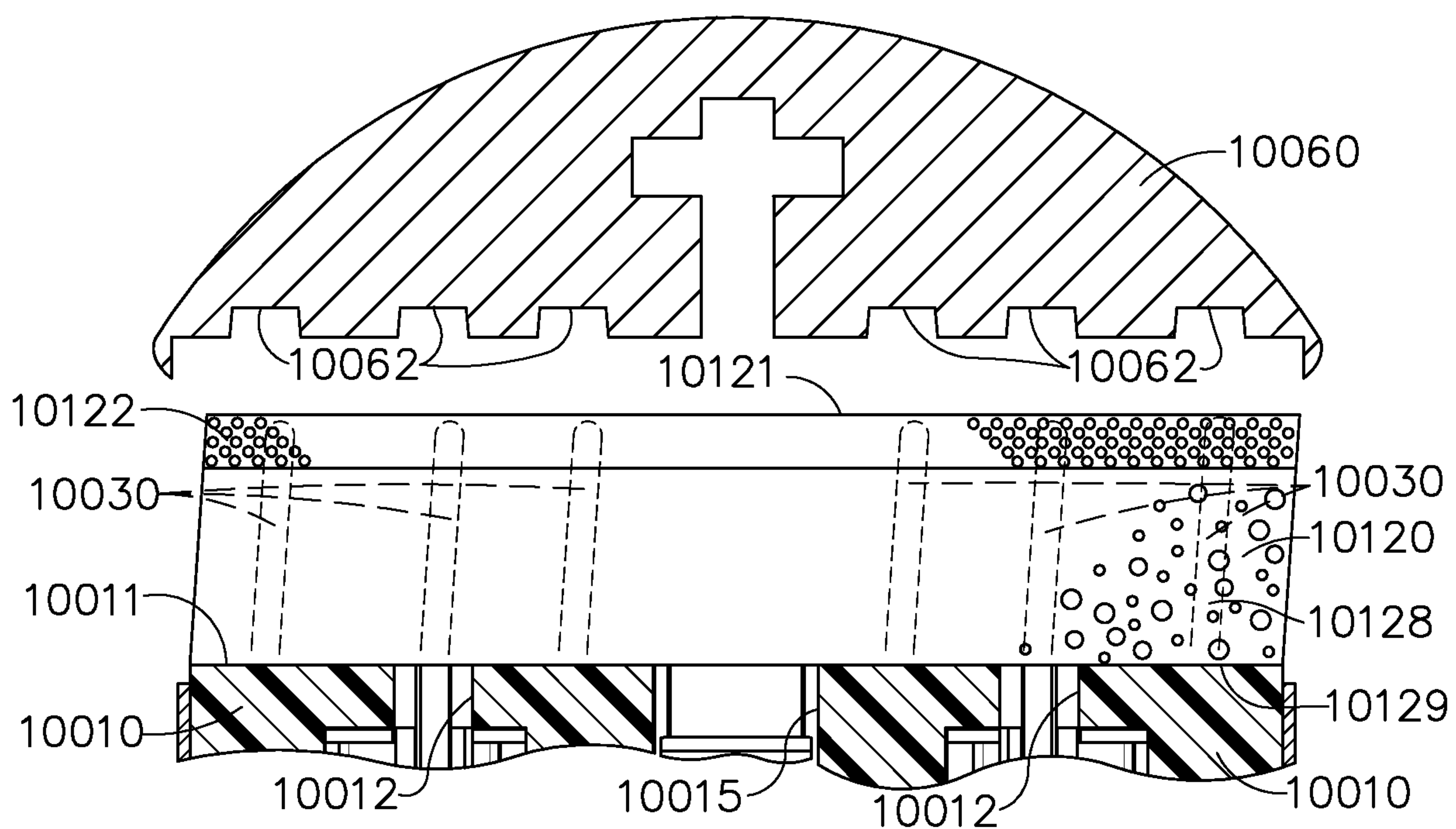


FIG. 264

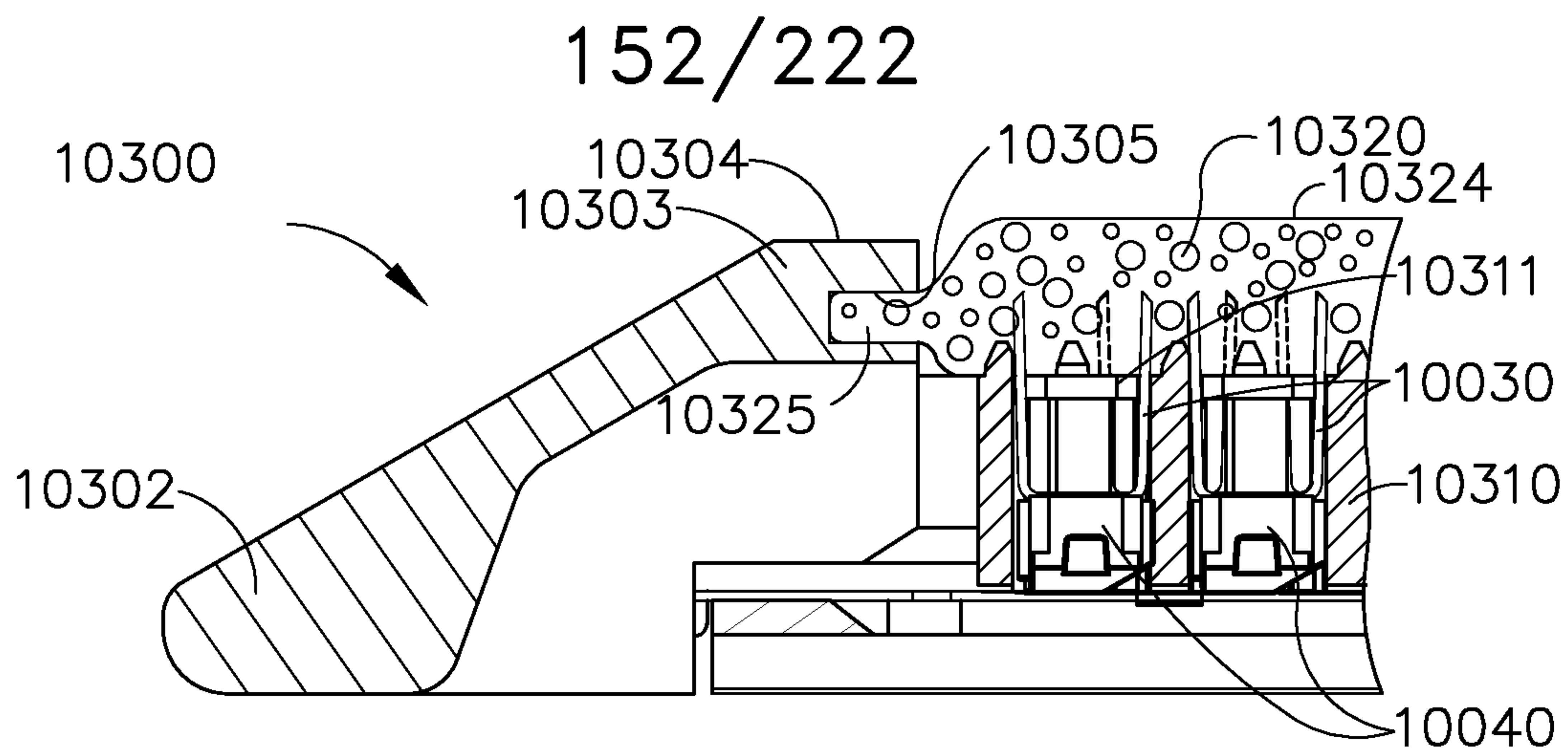


FIG. 265

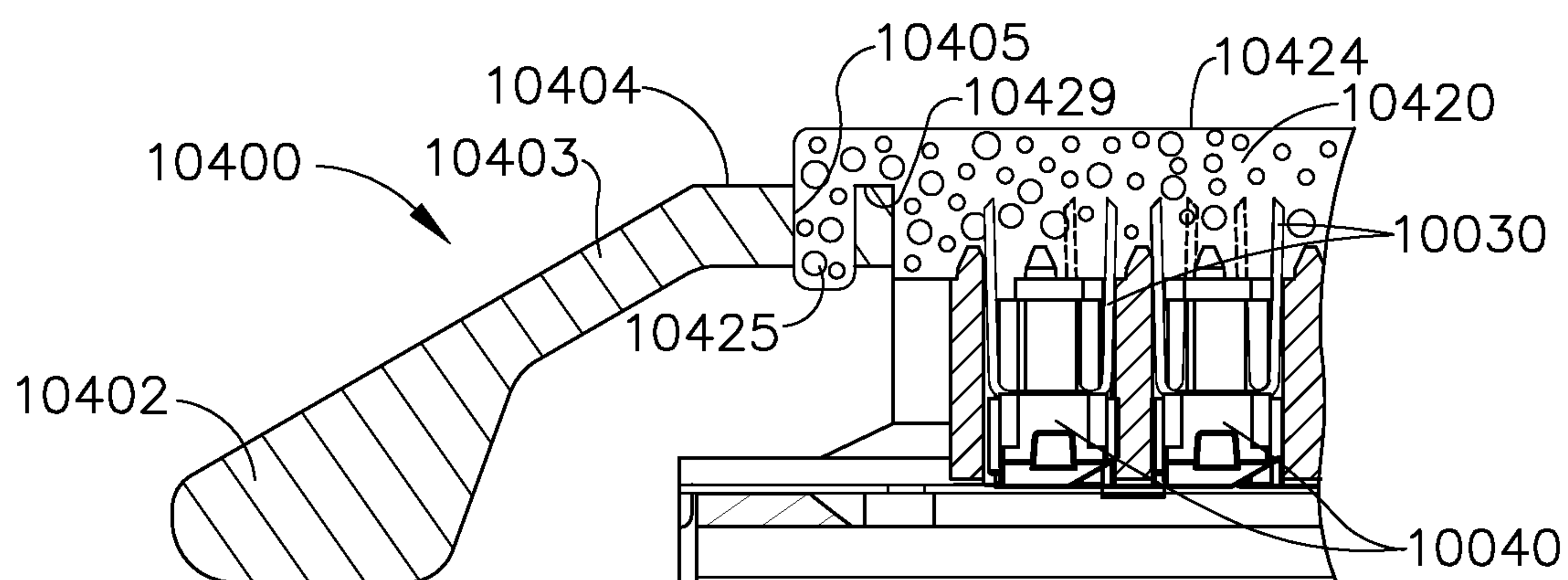


FIG. 266

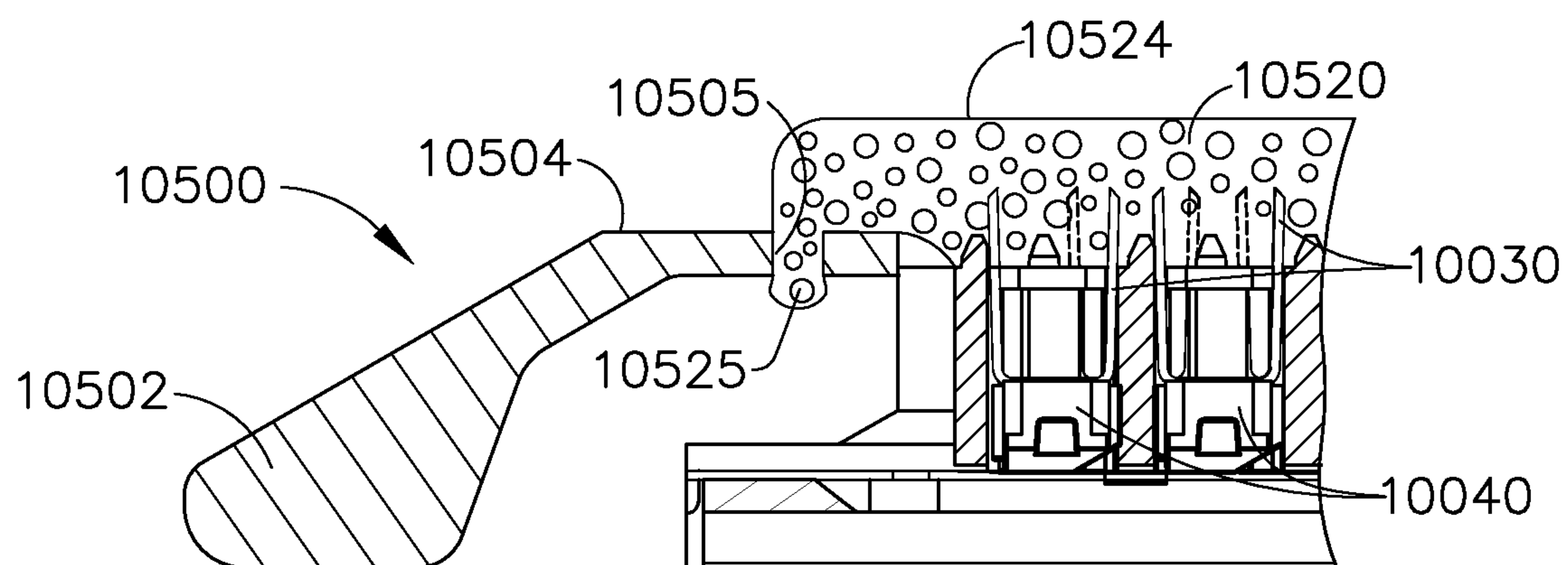


FIG. 267

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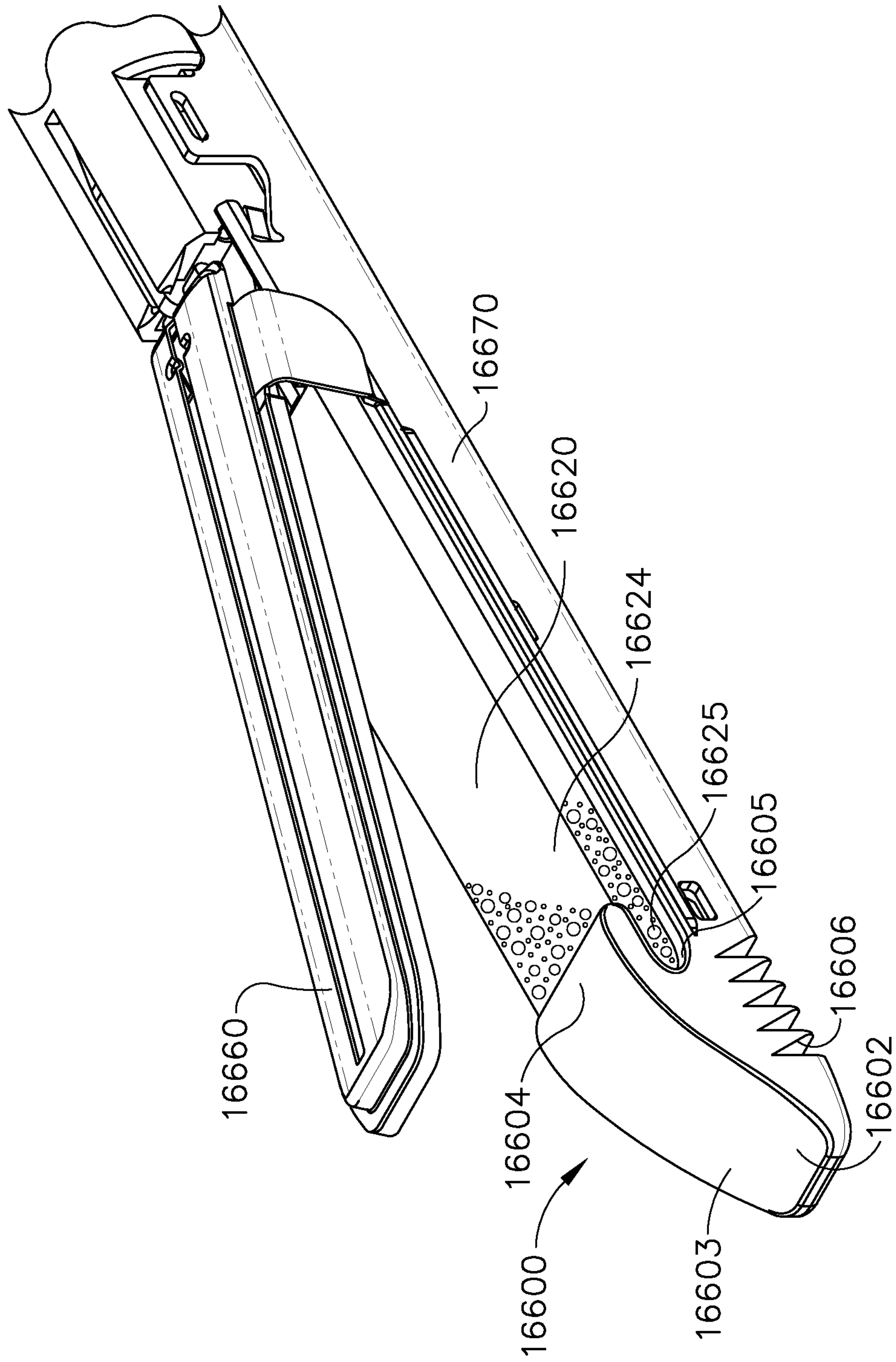


FIG. 268

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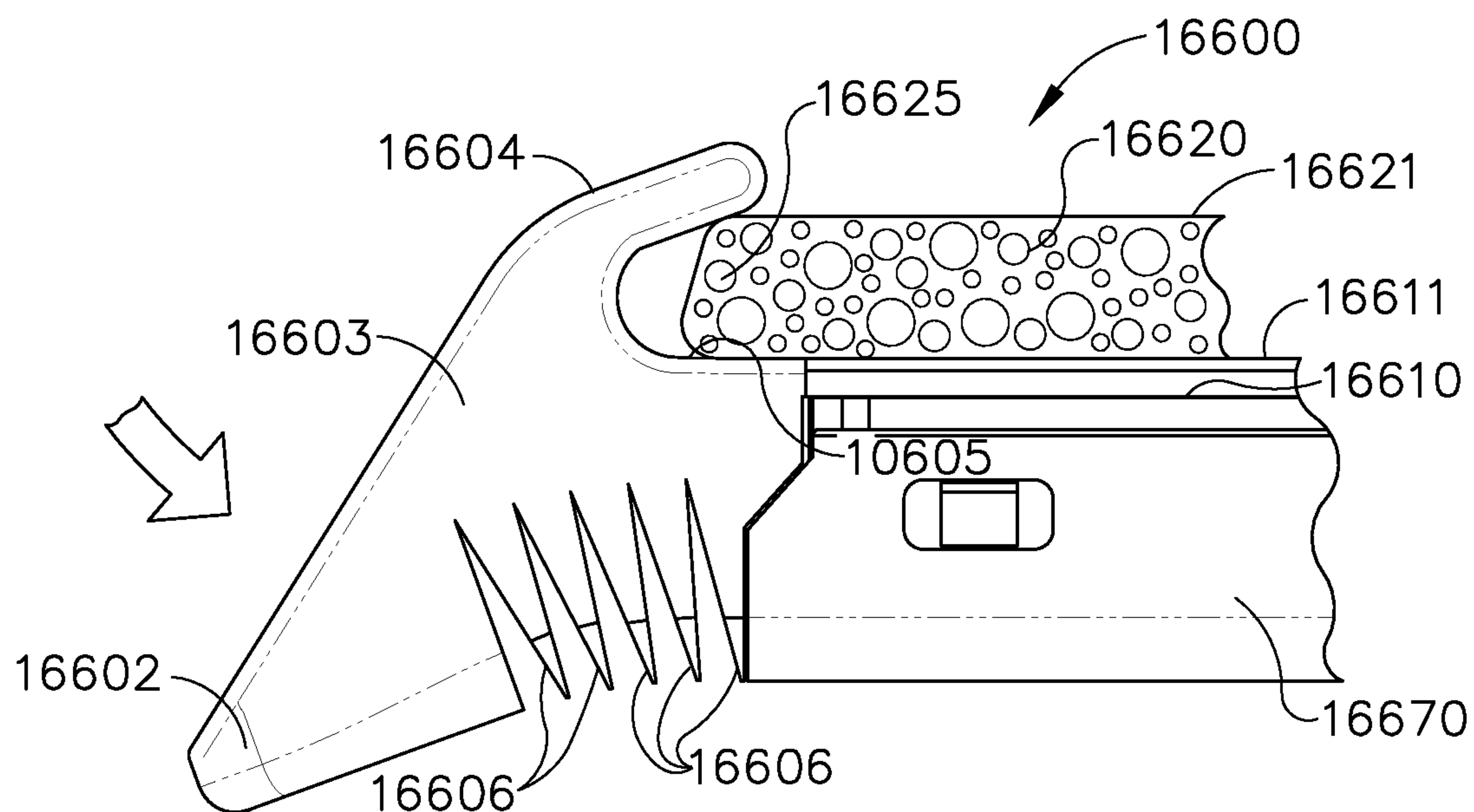


FIG. 269

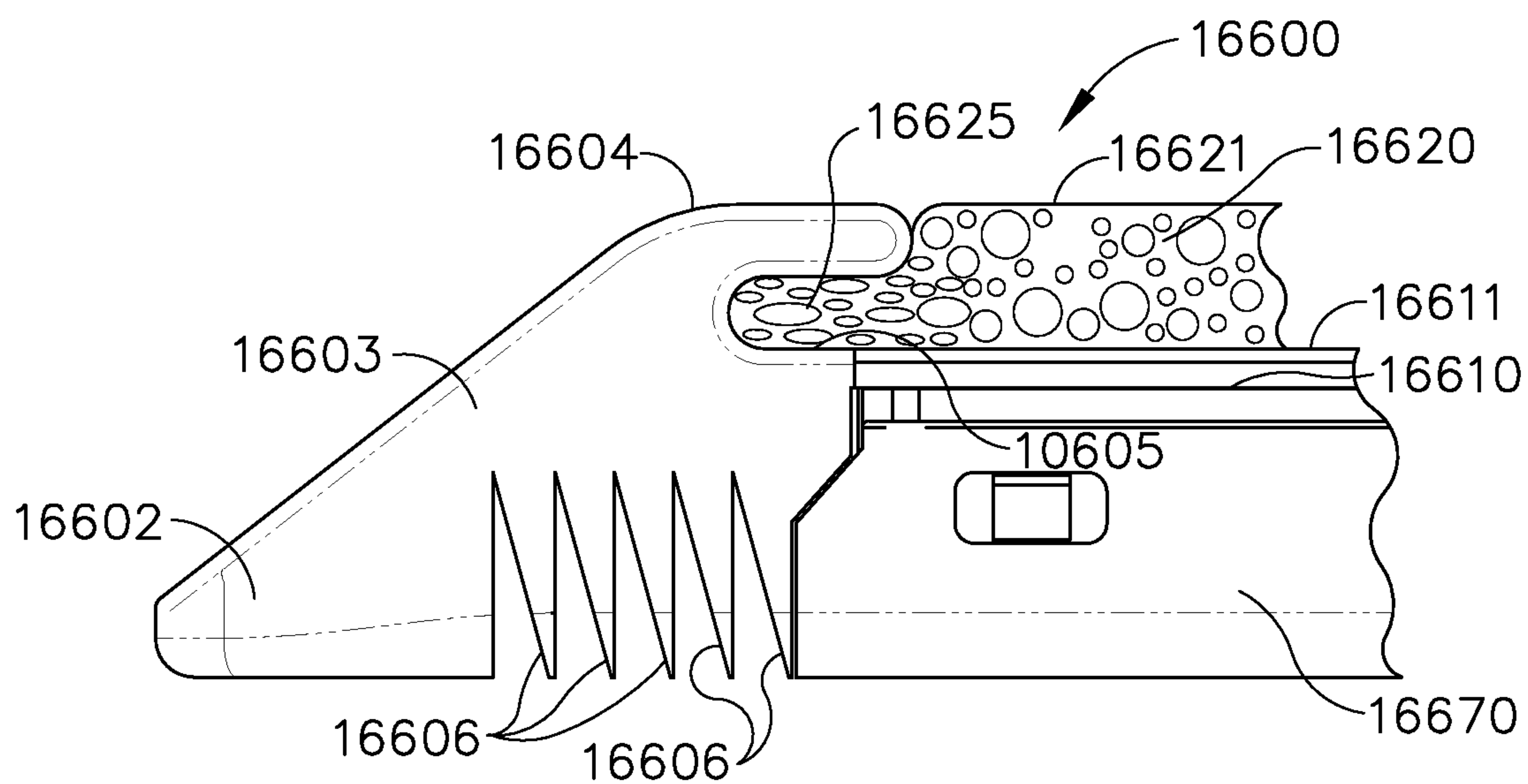


FIG. 270

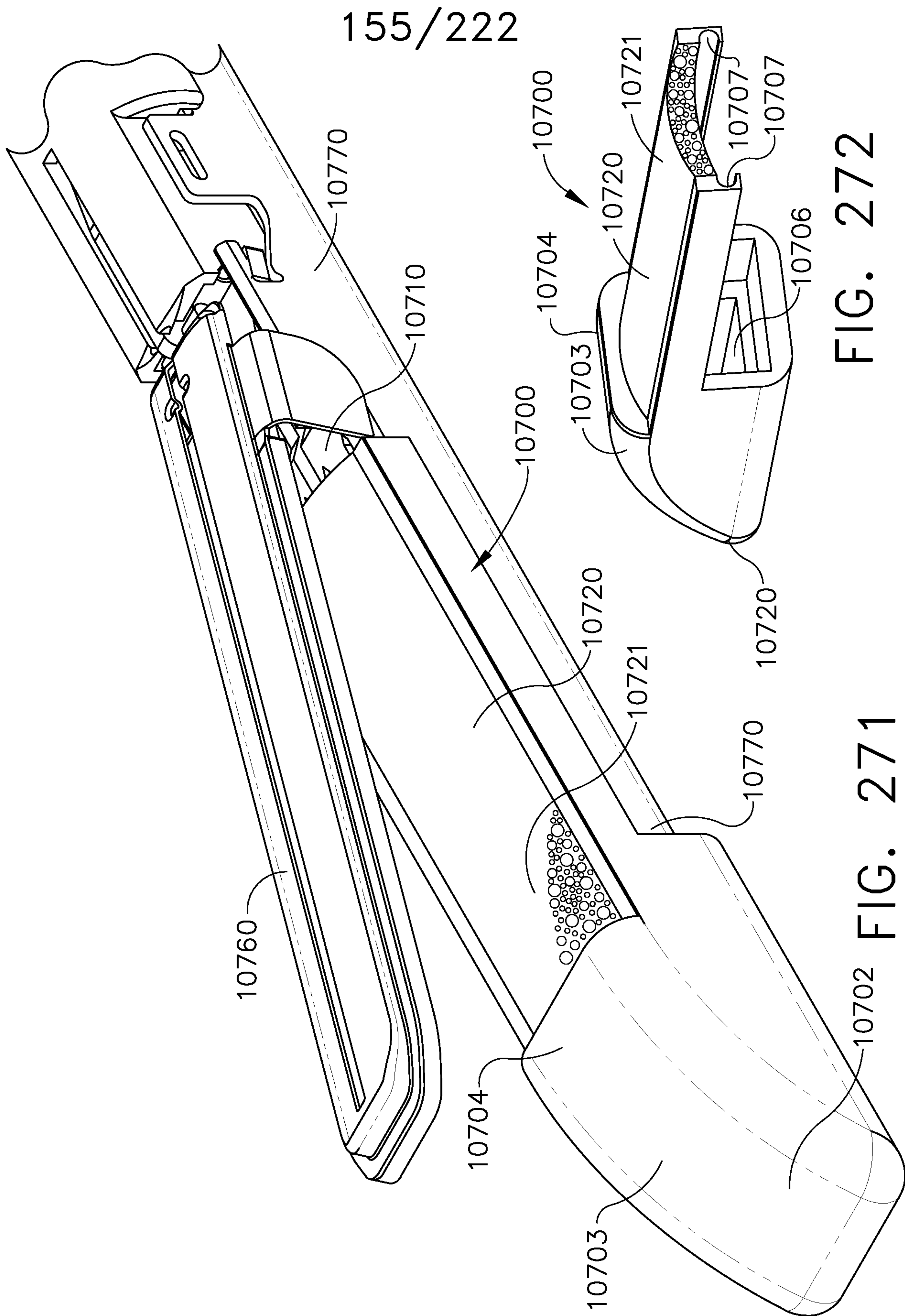


FIG. 272

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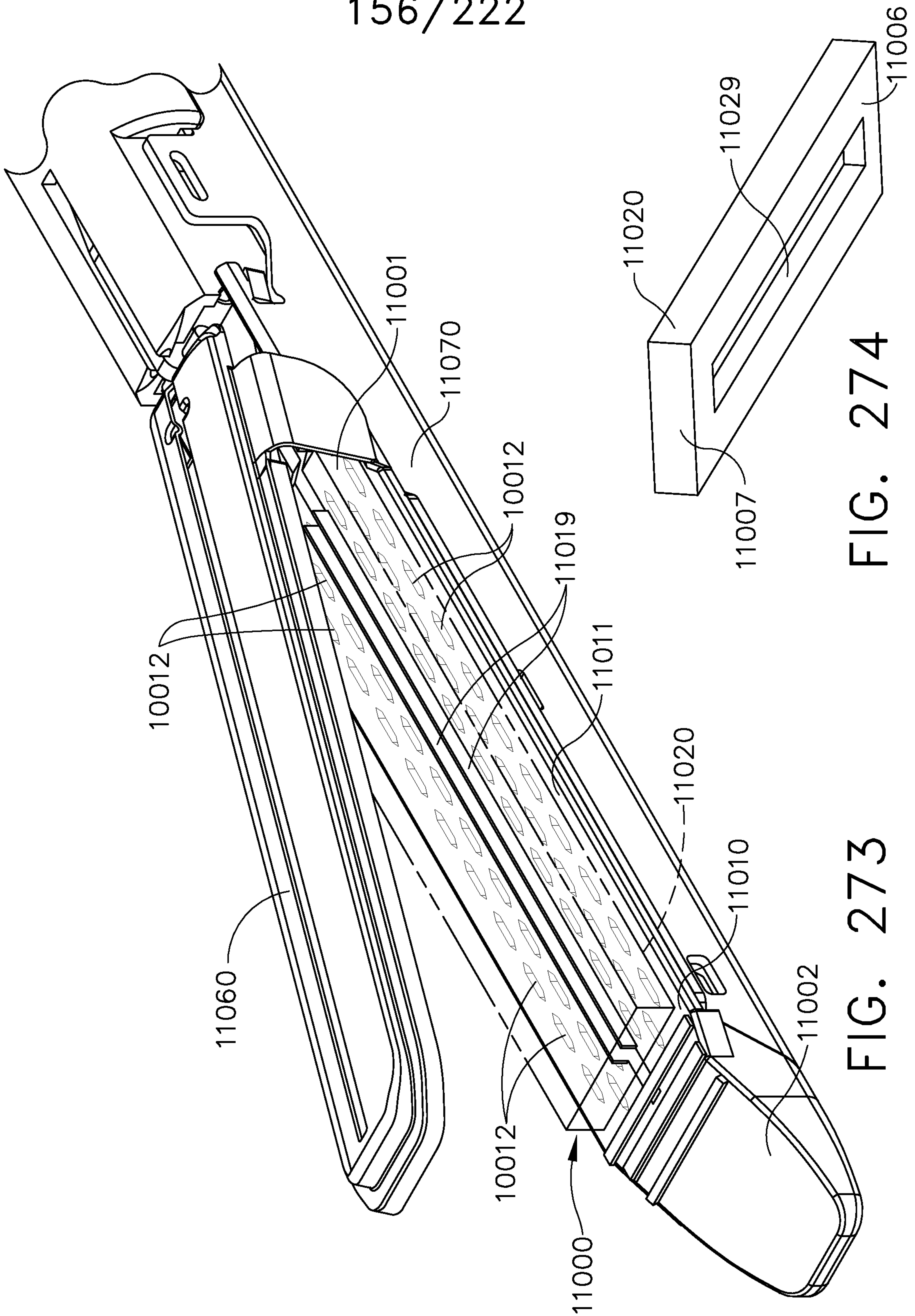
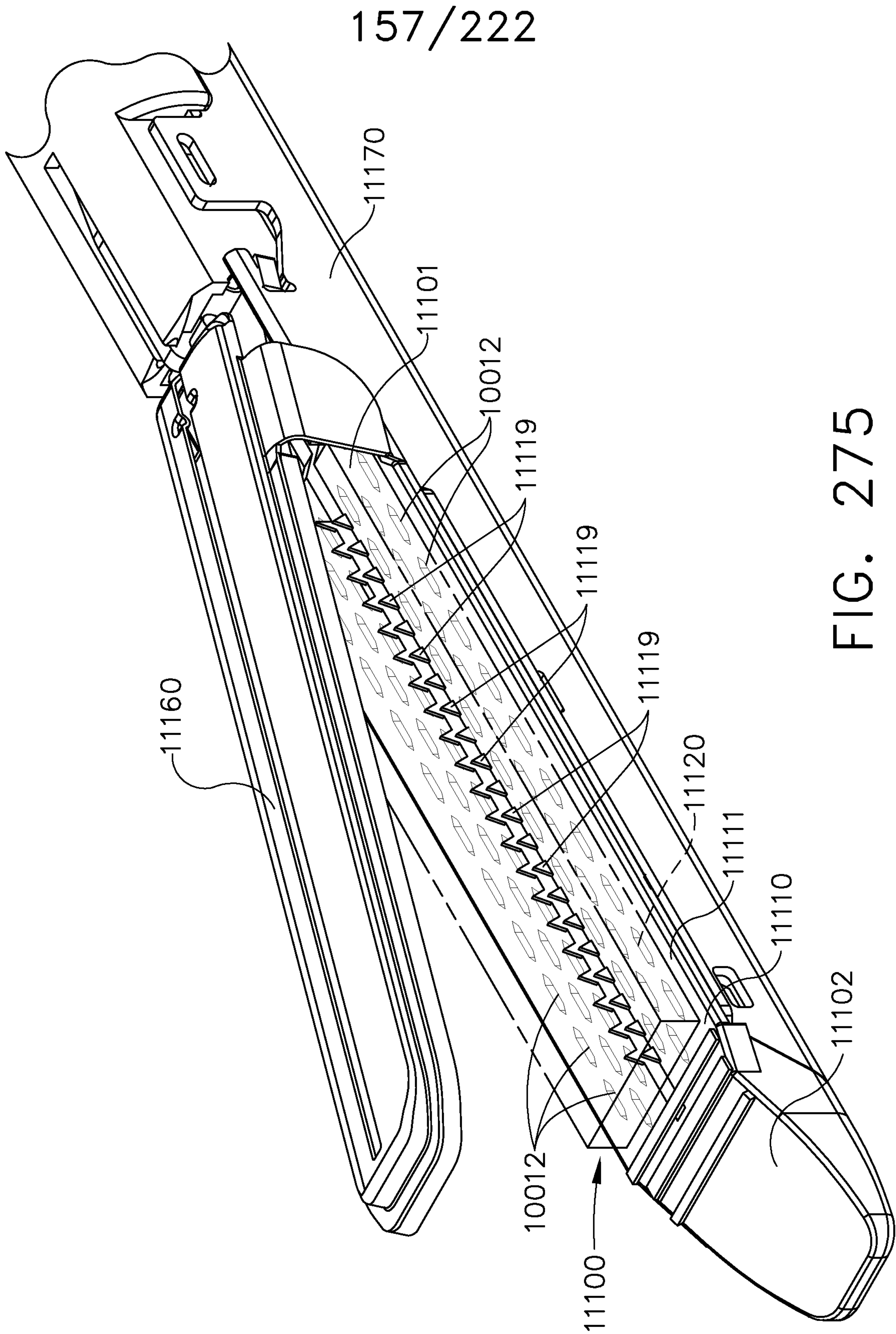
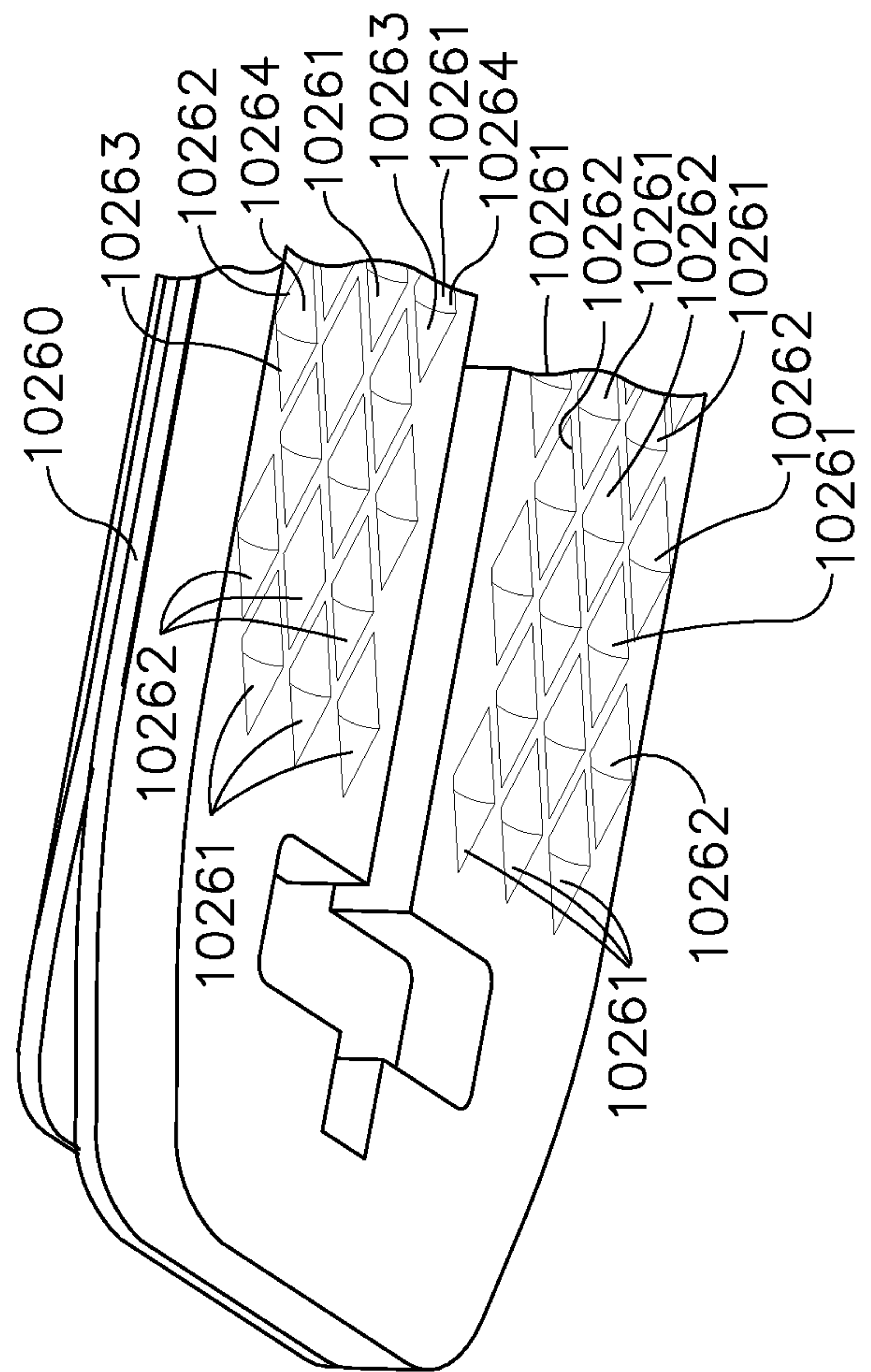
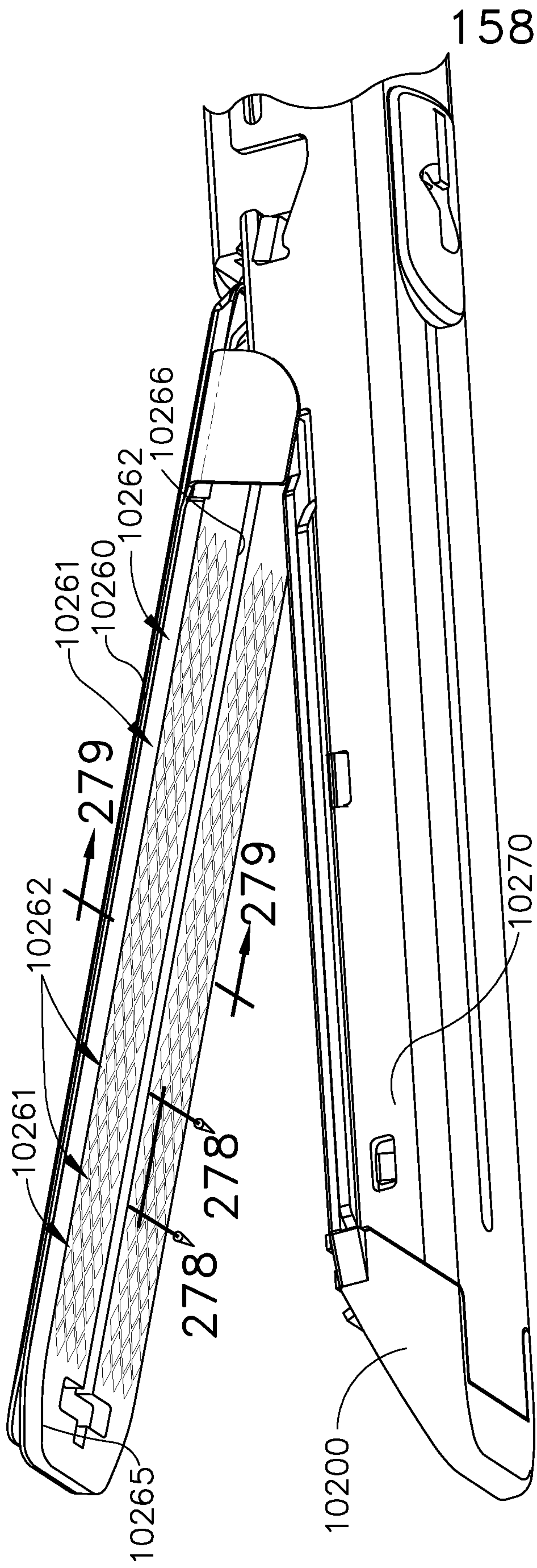


FIG. 274

FIG. 273





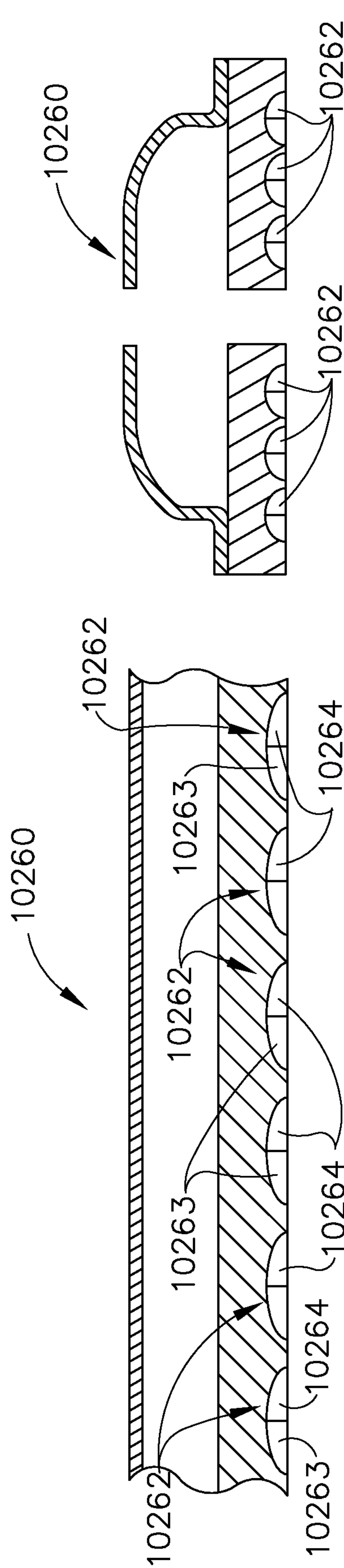


FIG. 278

FIG. 279

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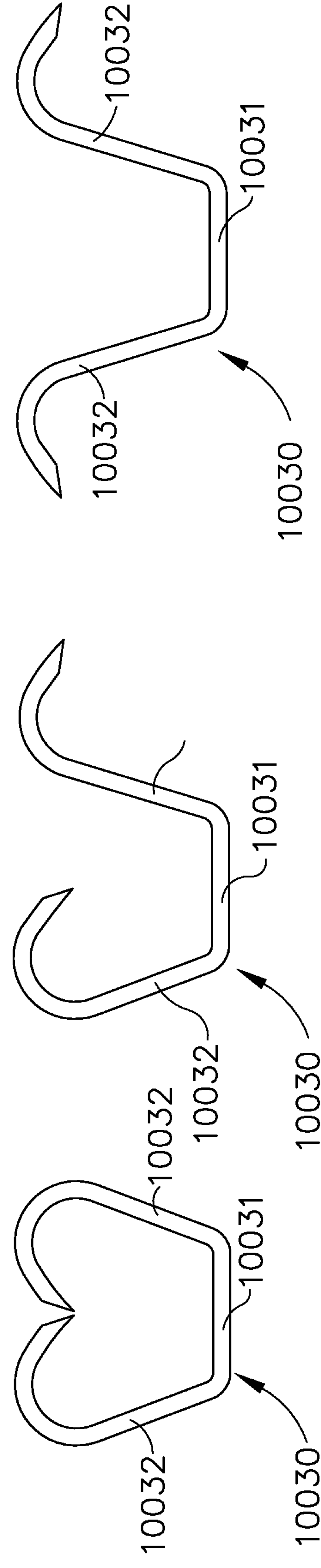


FIG. 280

FIG. 281

FIG. 282

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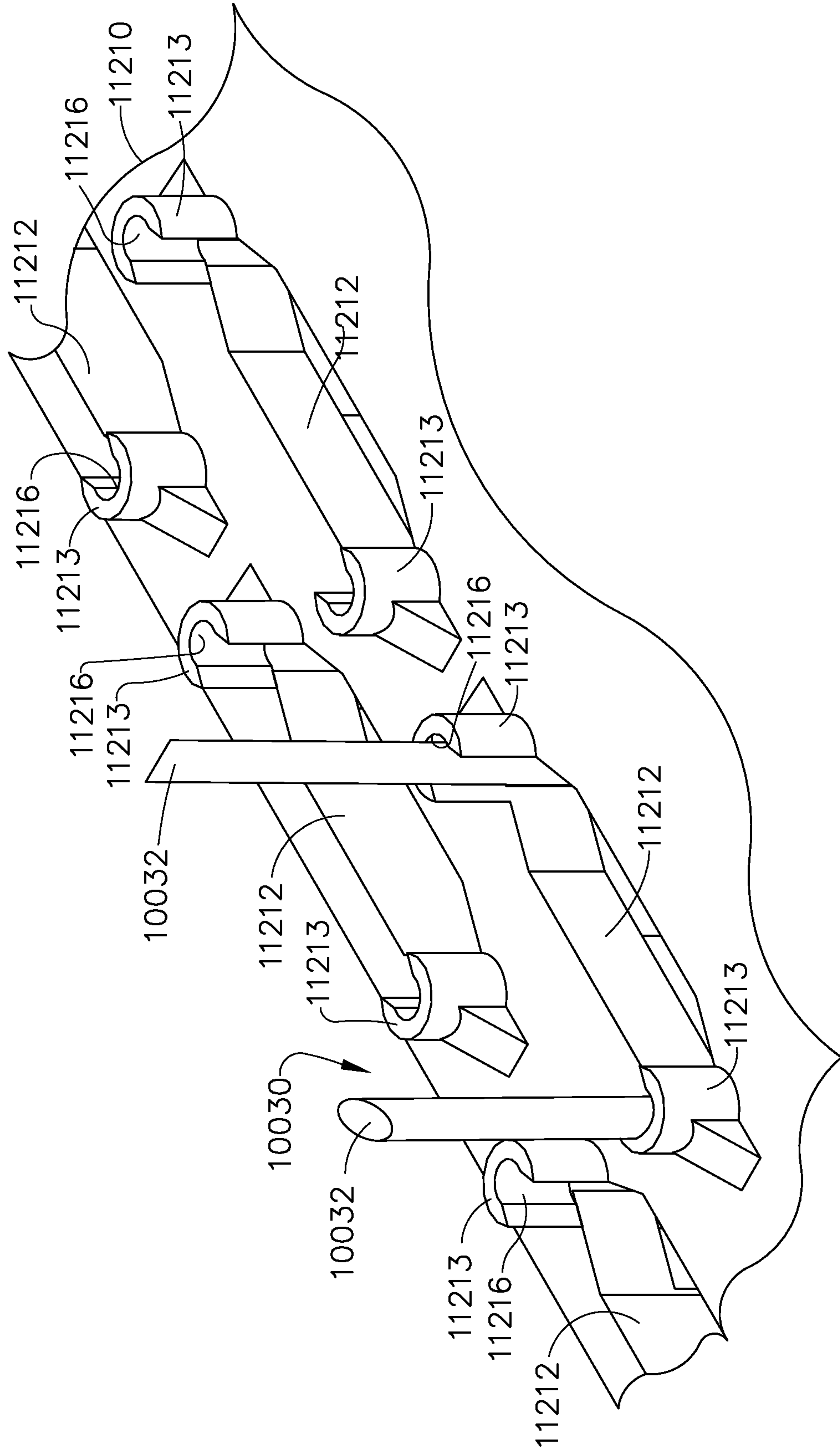


FIG. 283

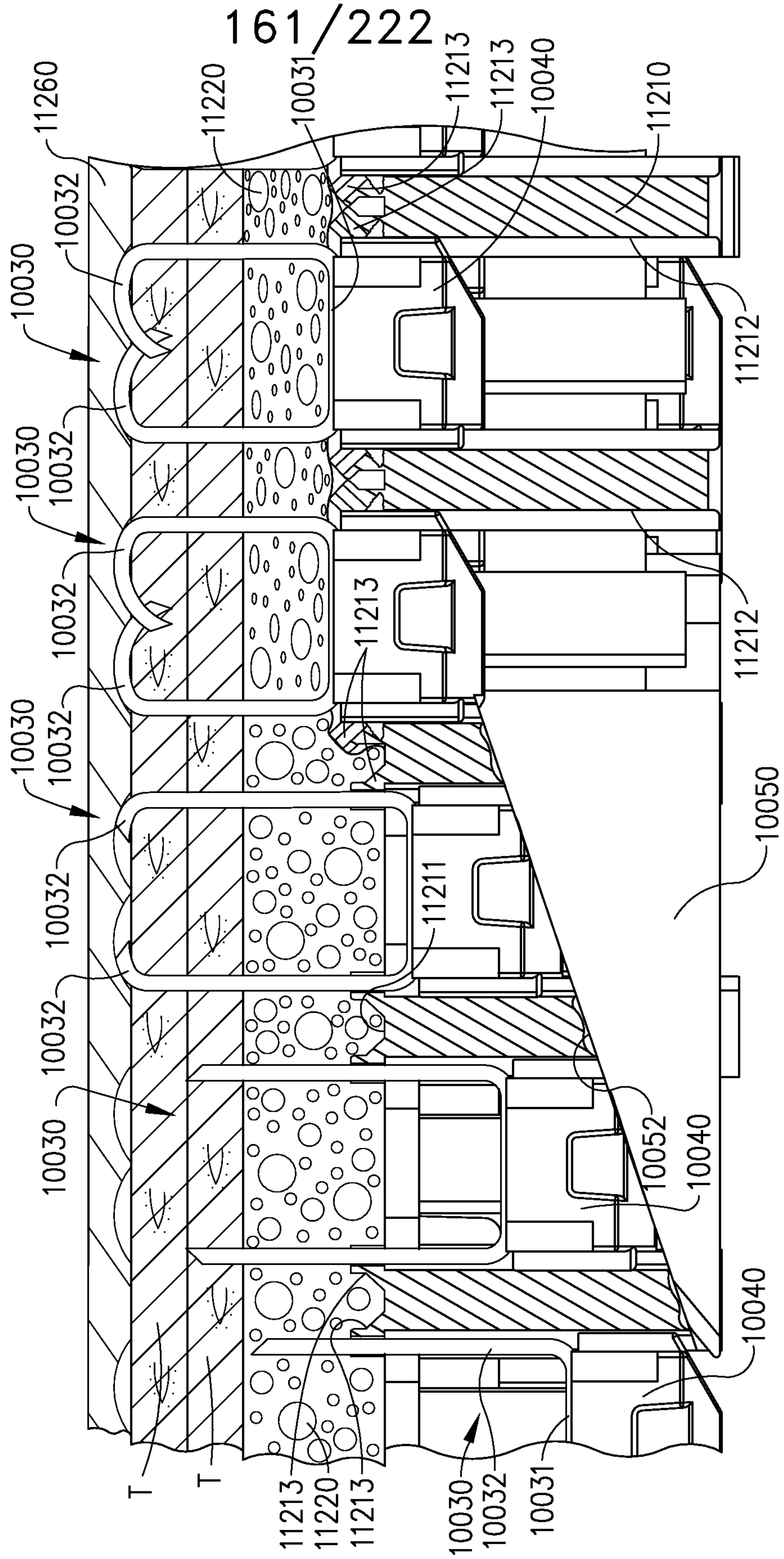


FIG. 284

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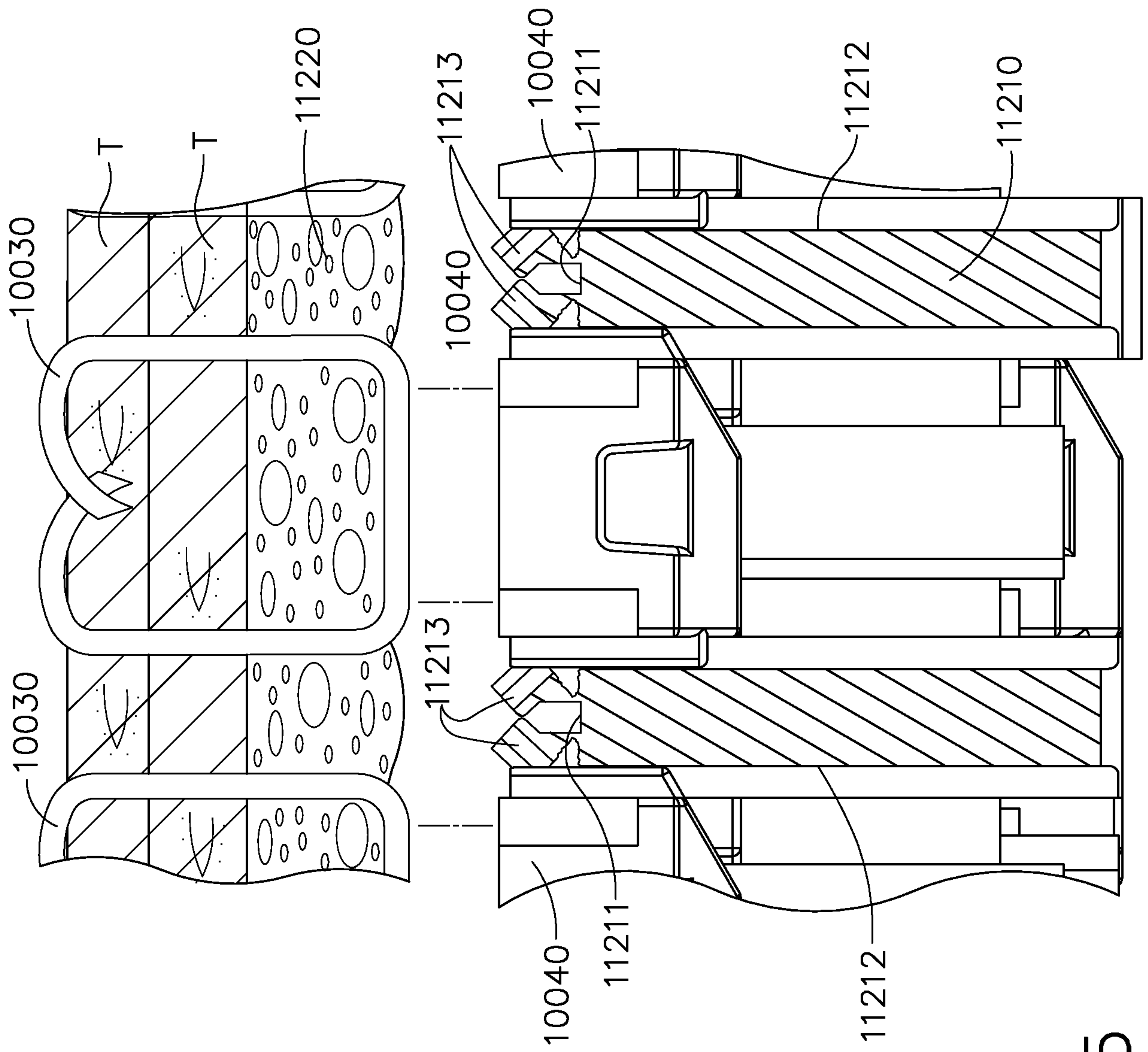


FIG. 285



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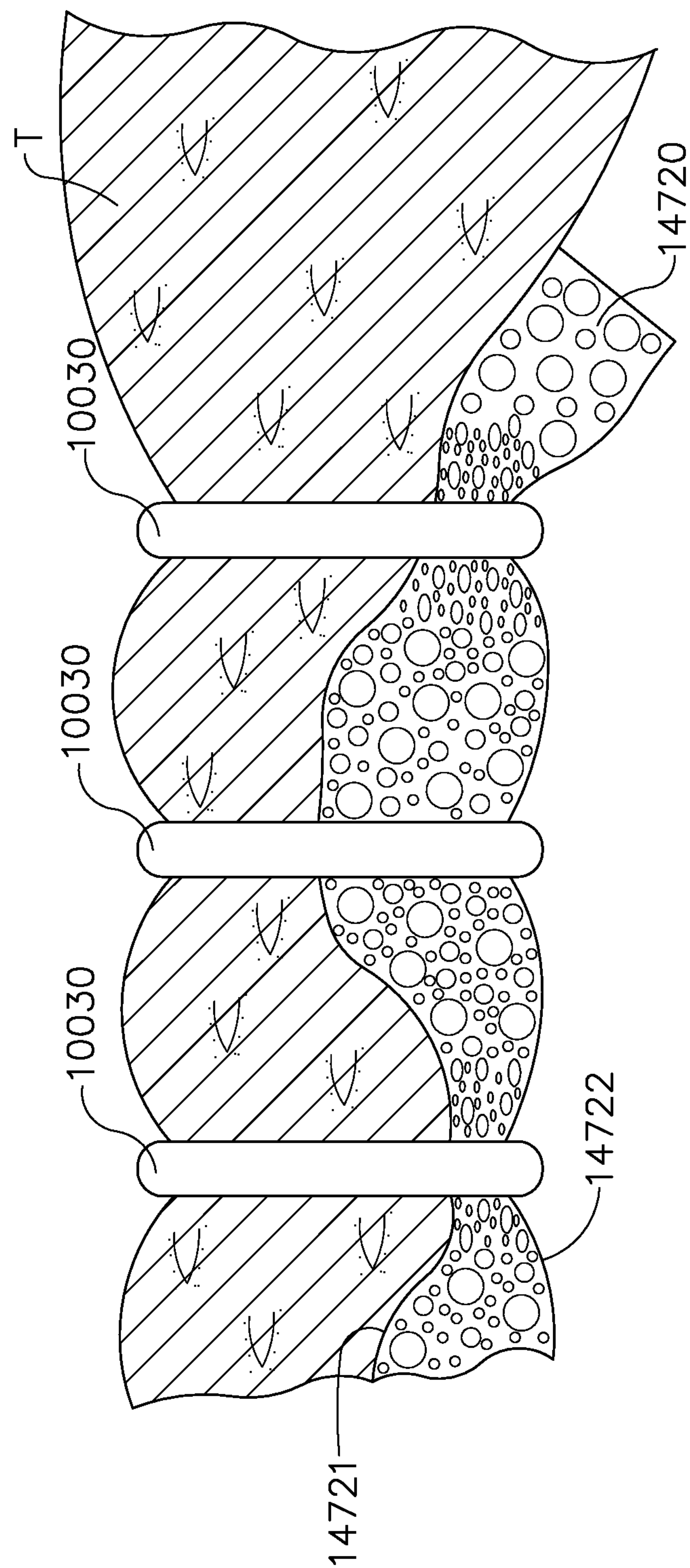


FIG. 287

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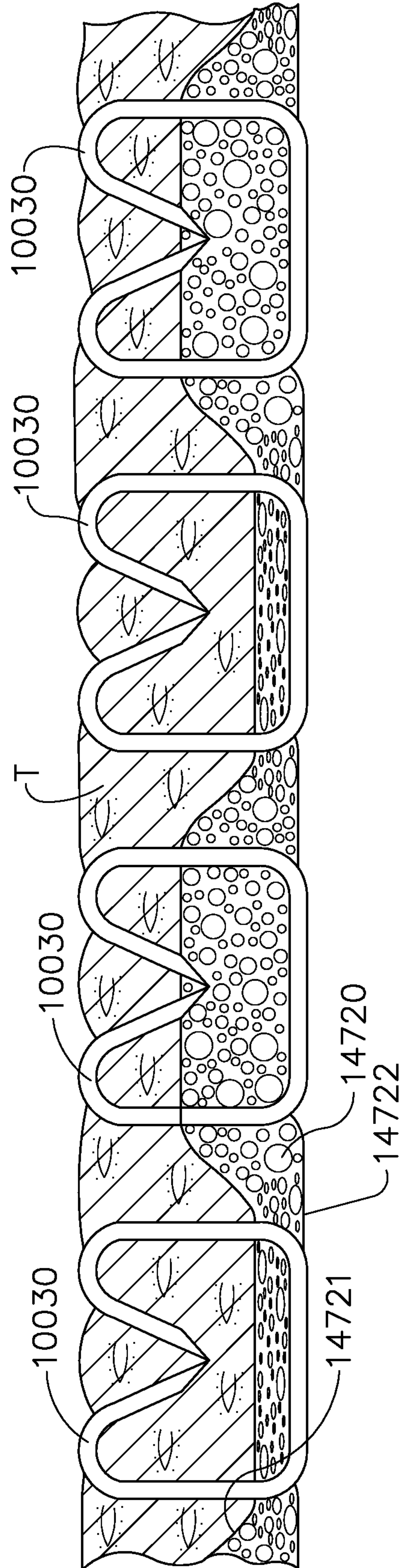


FIG. 288



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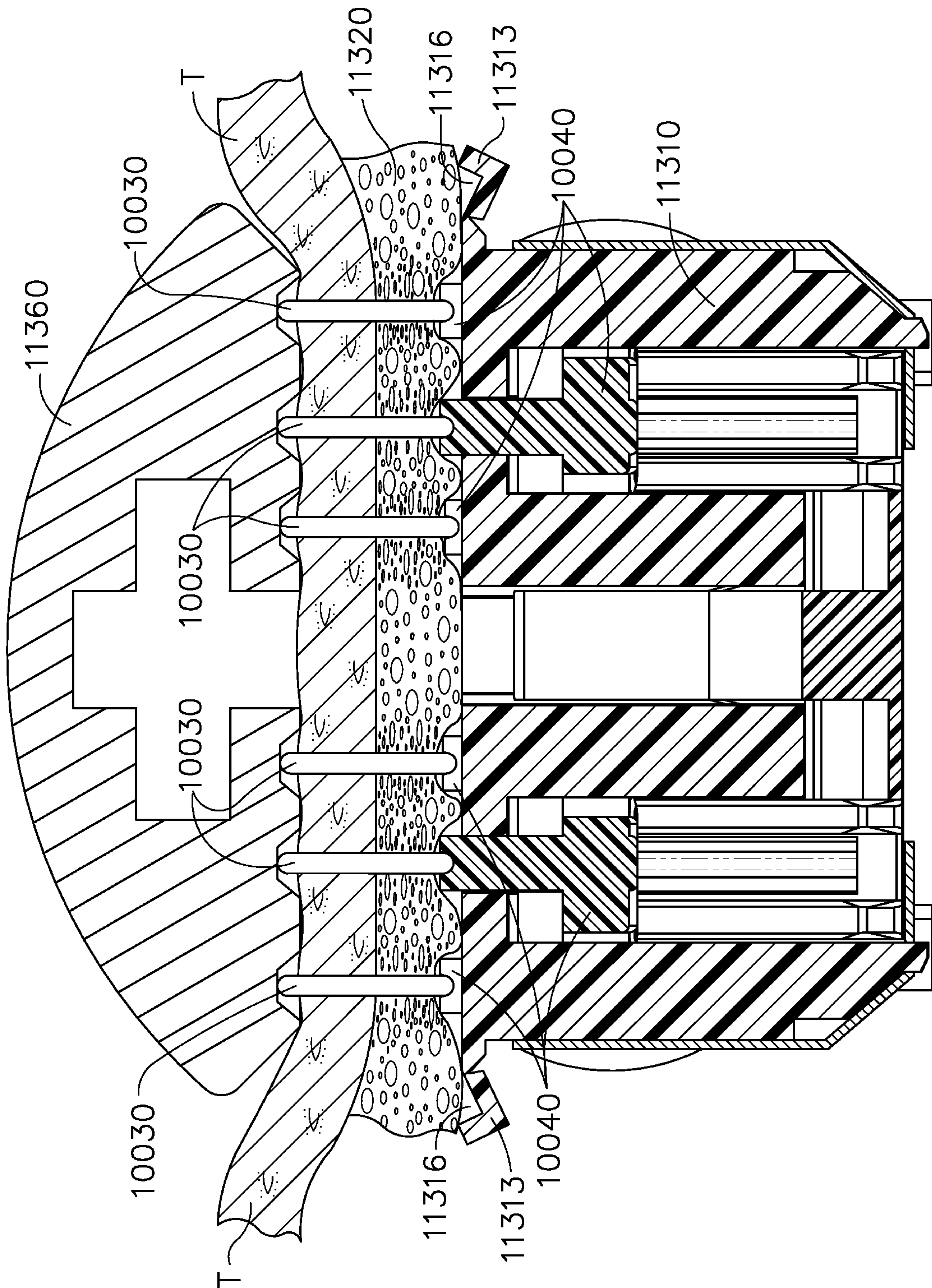


FIG. 290

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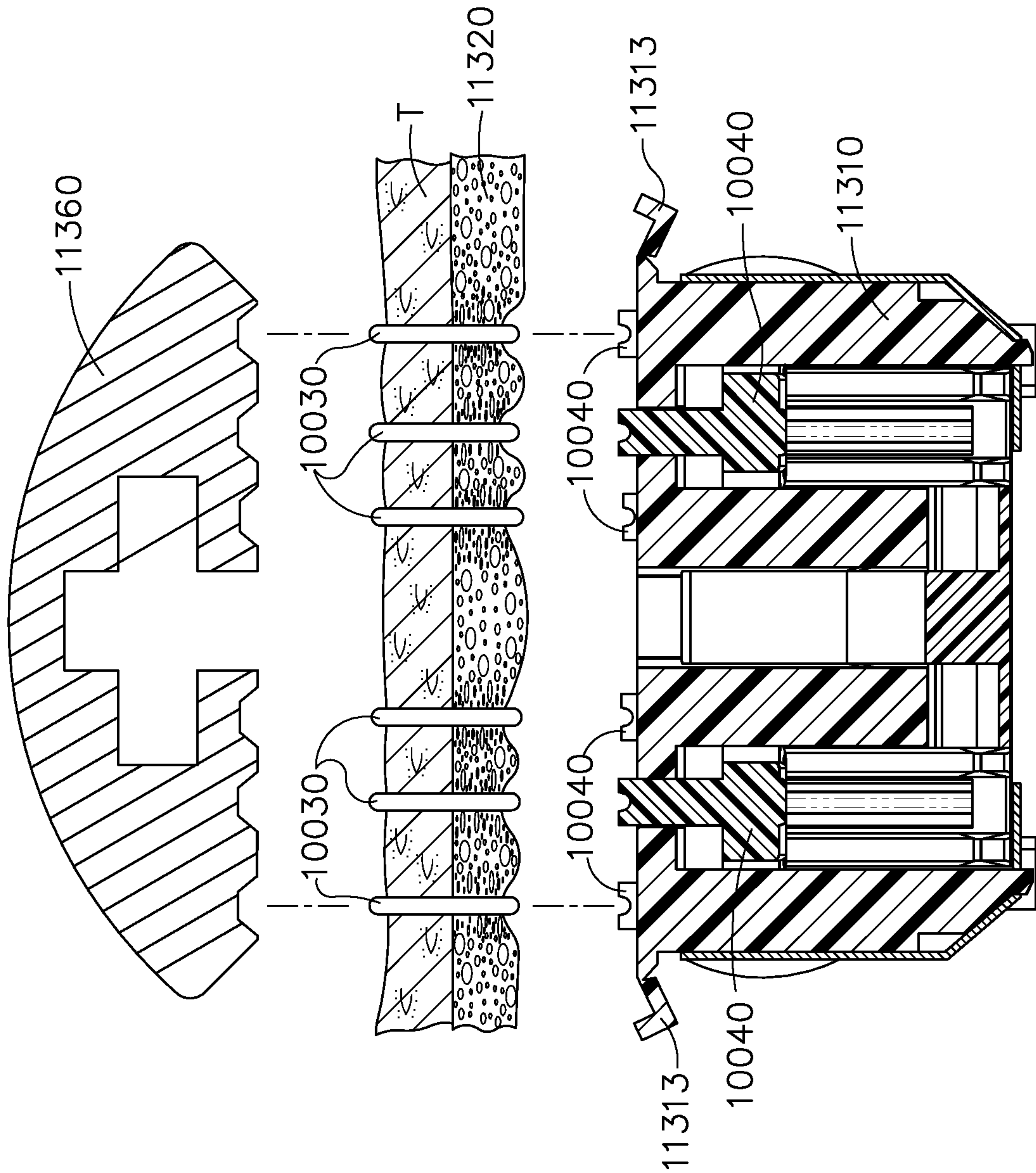


FIG. 291

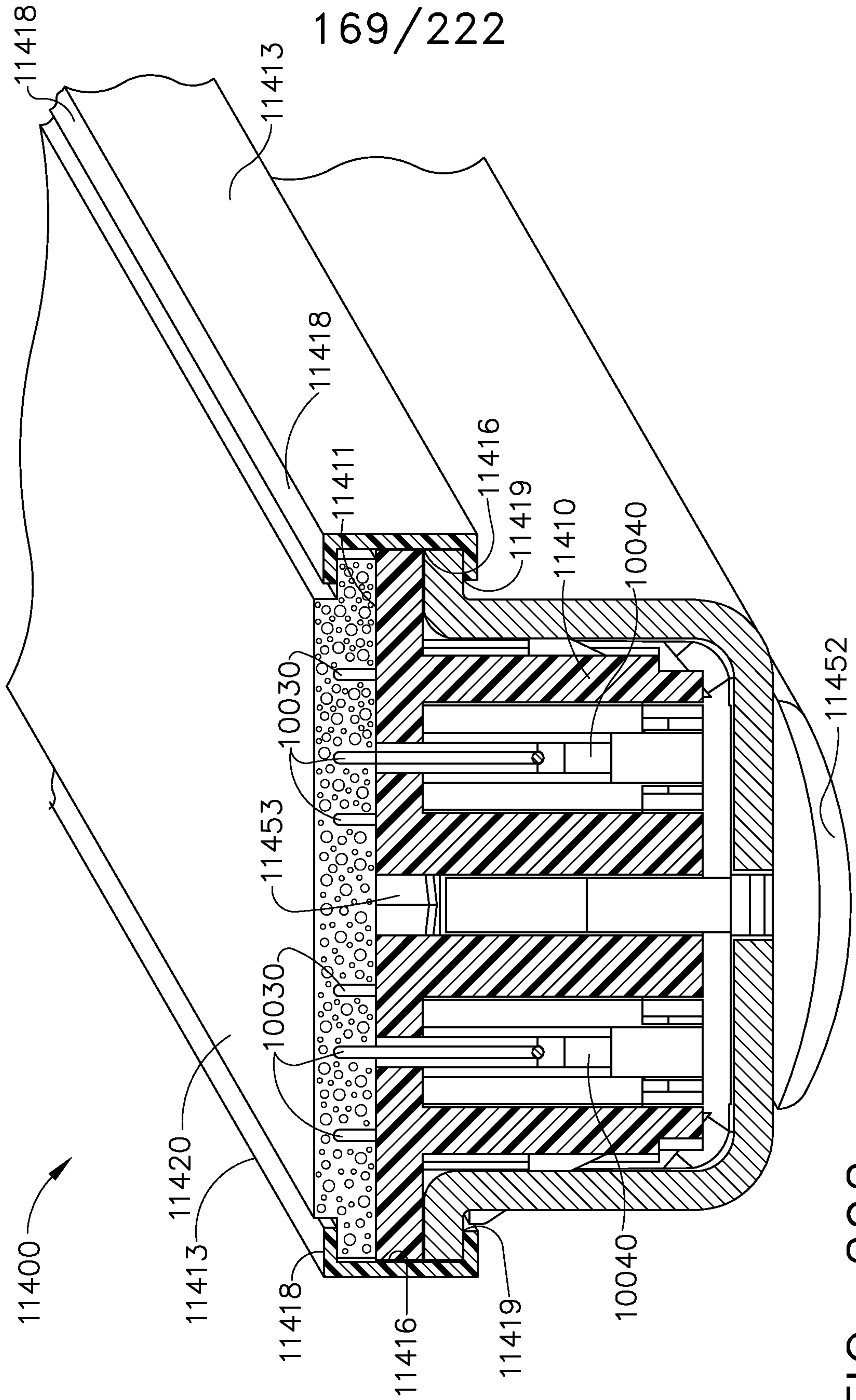
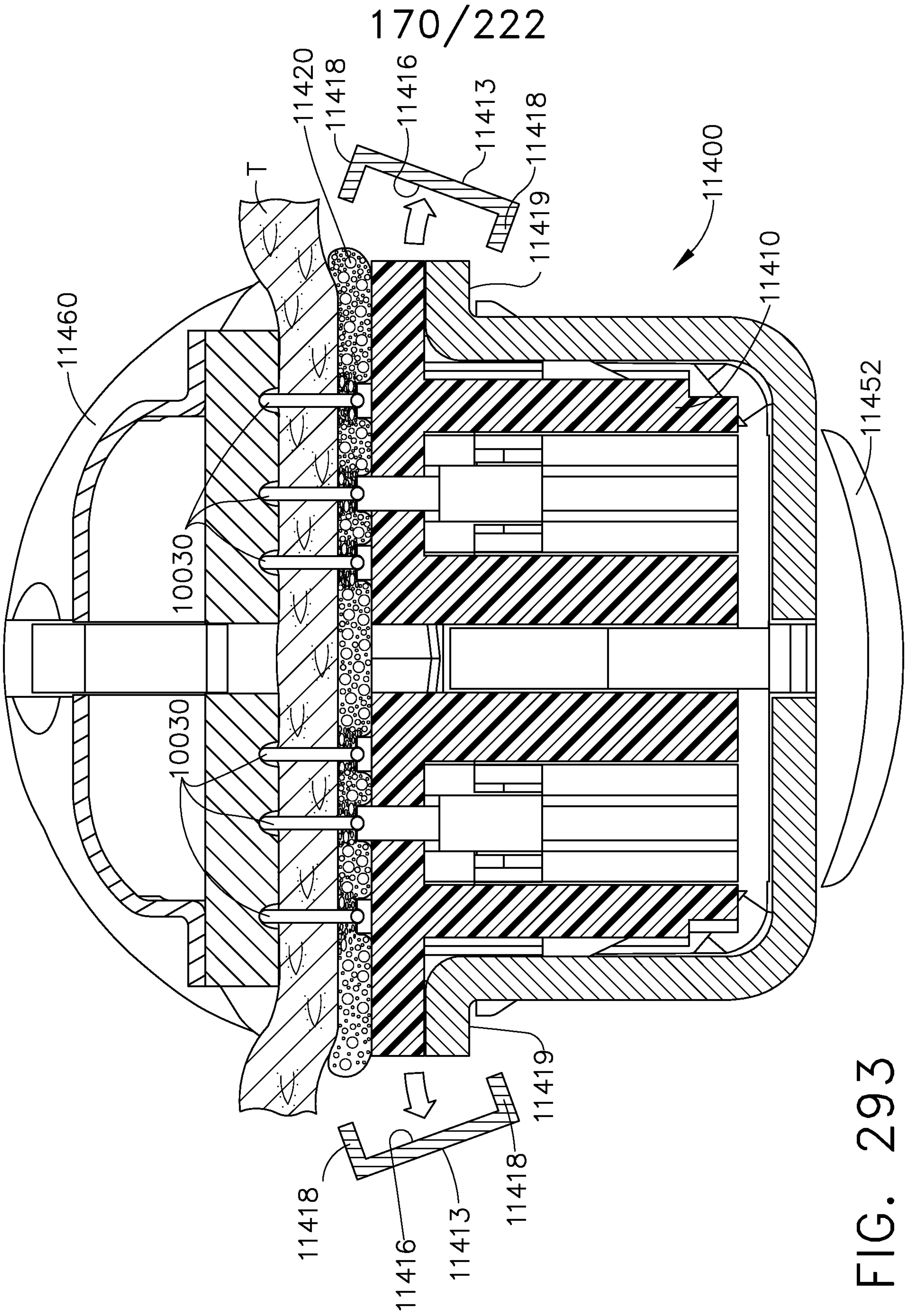


FIG. 292



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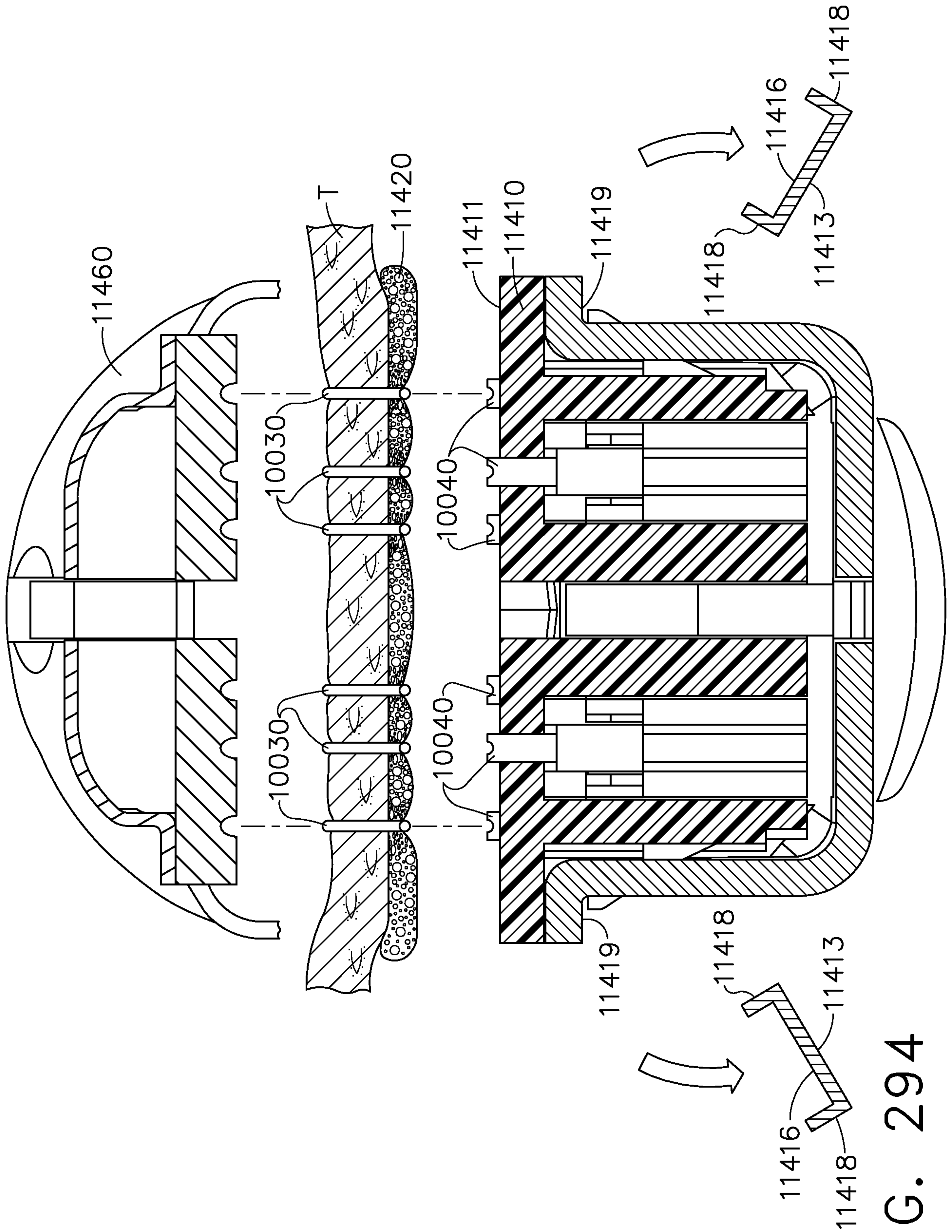


FIG. 294

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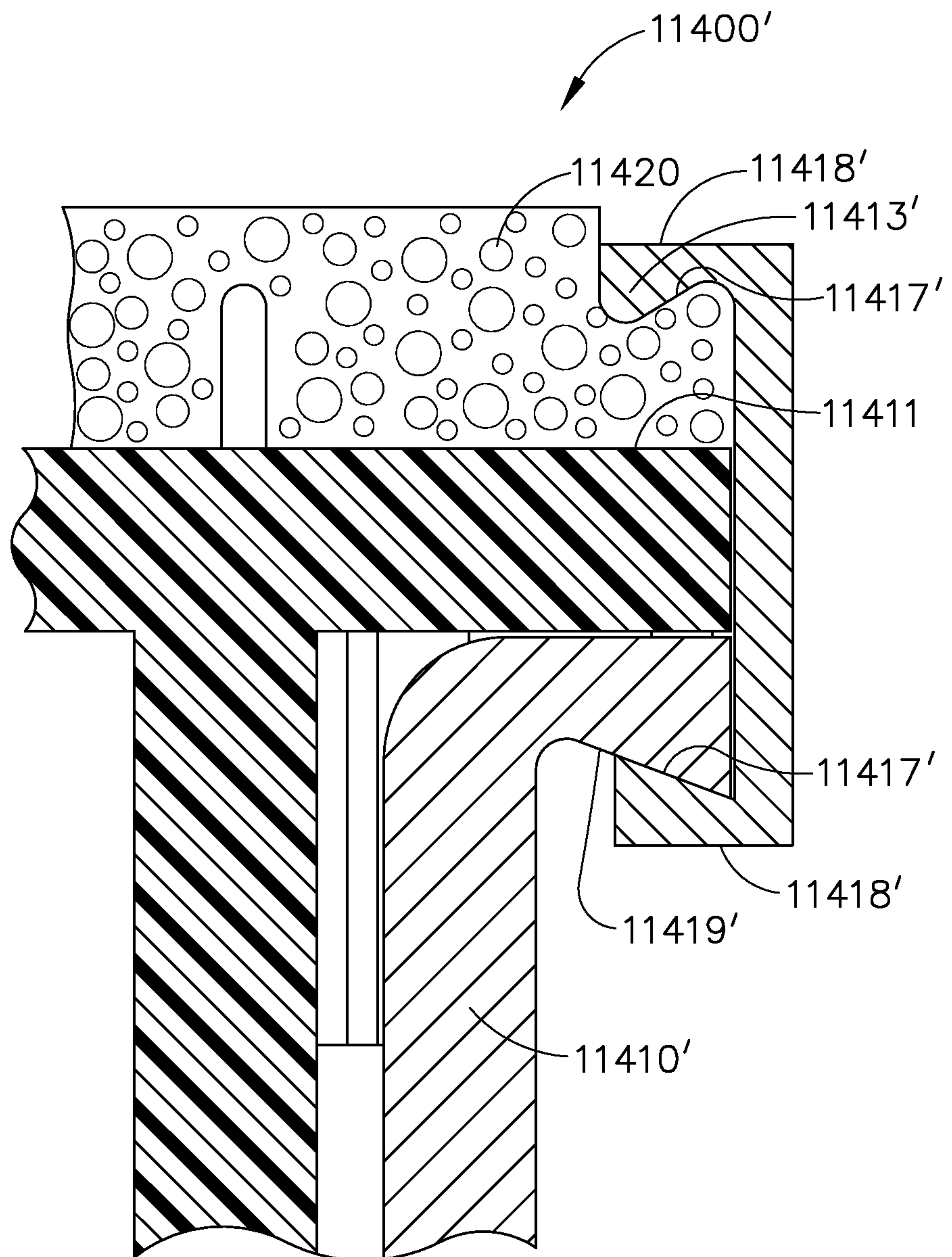


FIG. 295

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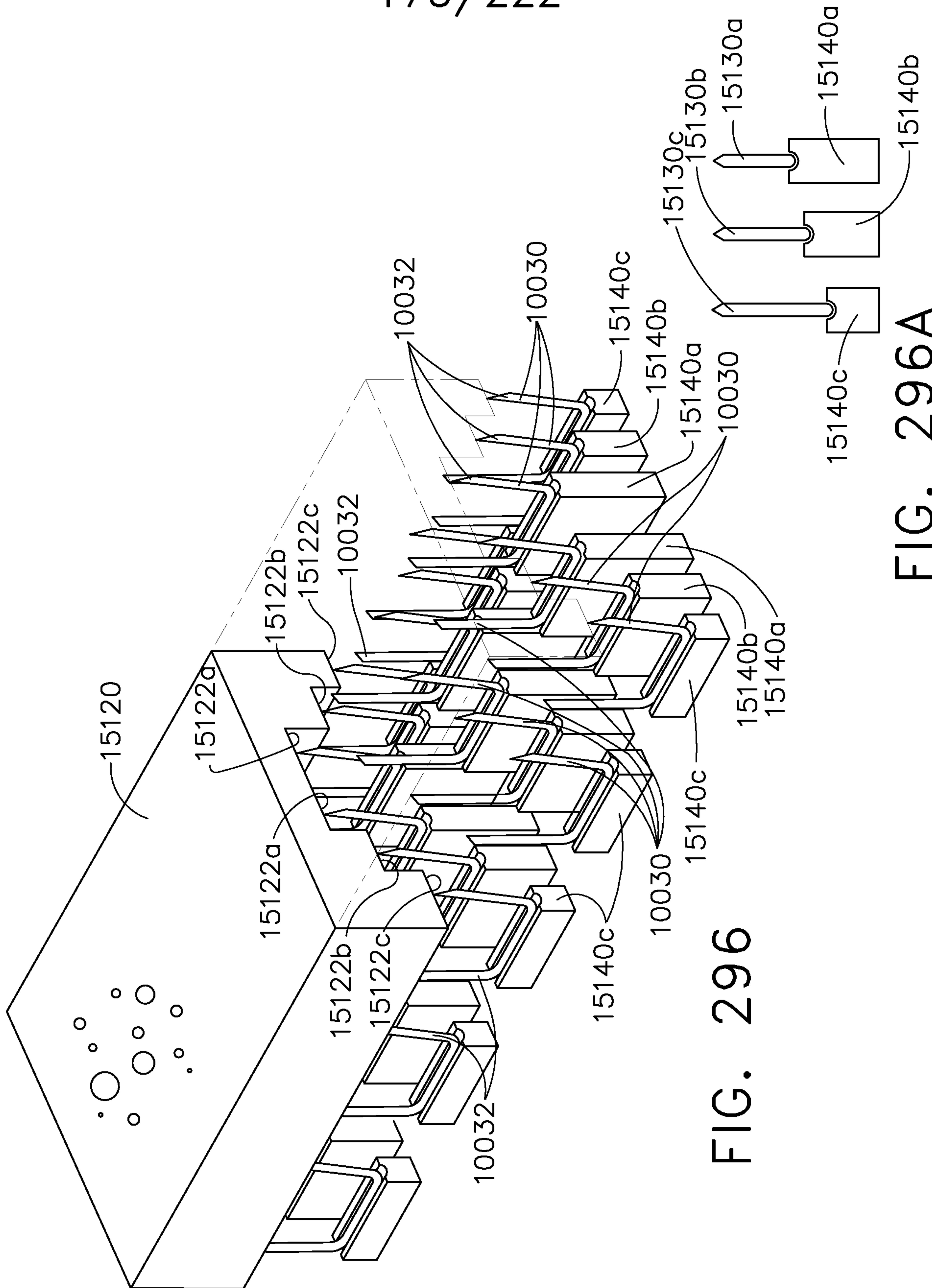


FIG. 296

FIG. 296A

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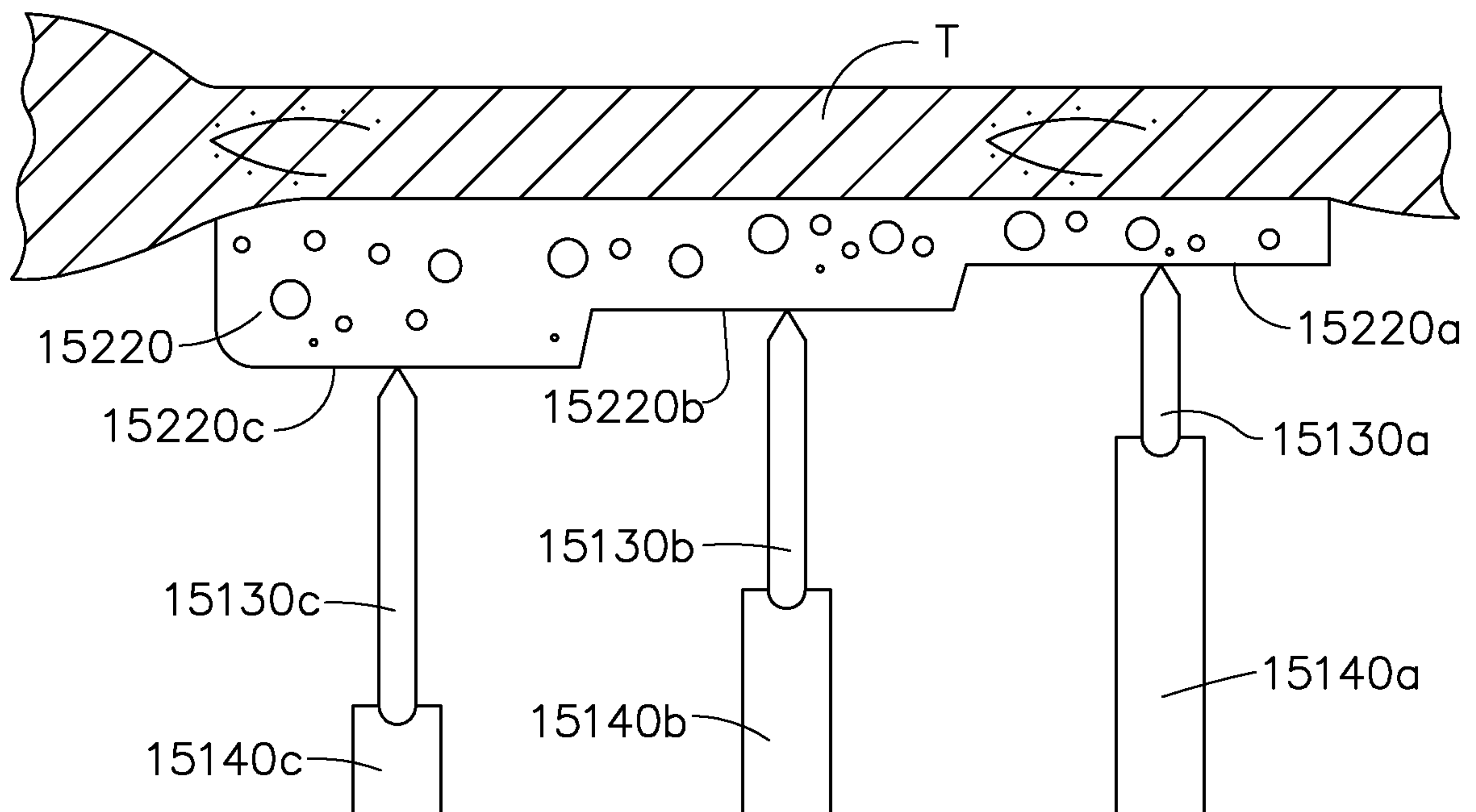


FIG. 297

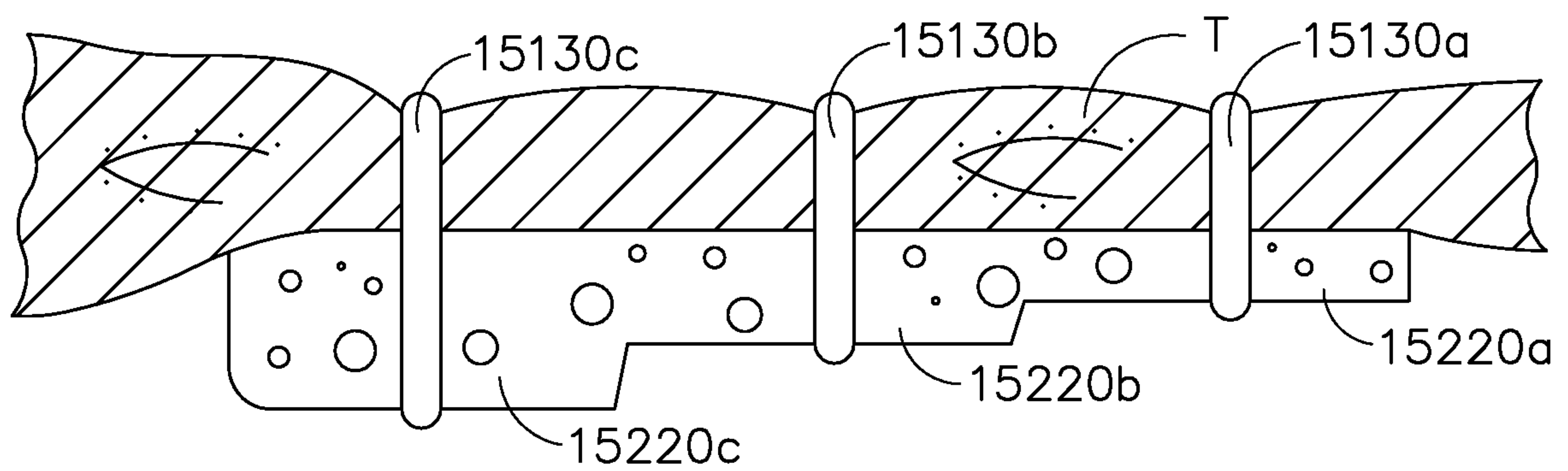
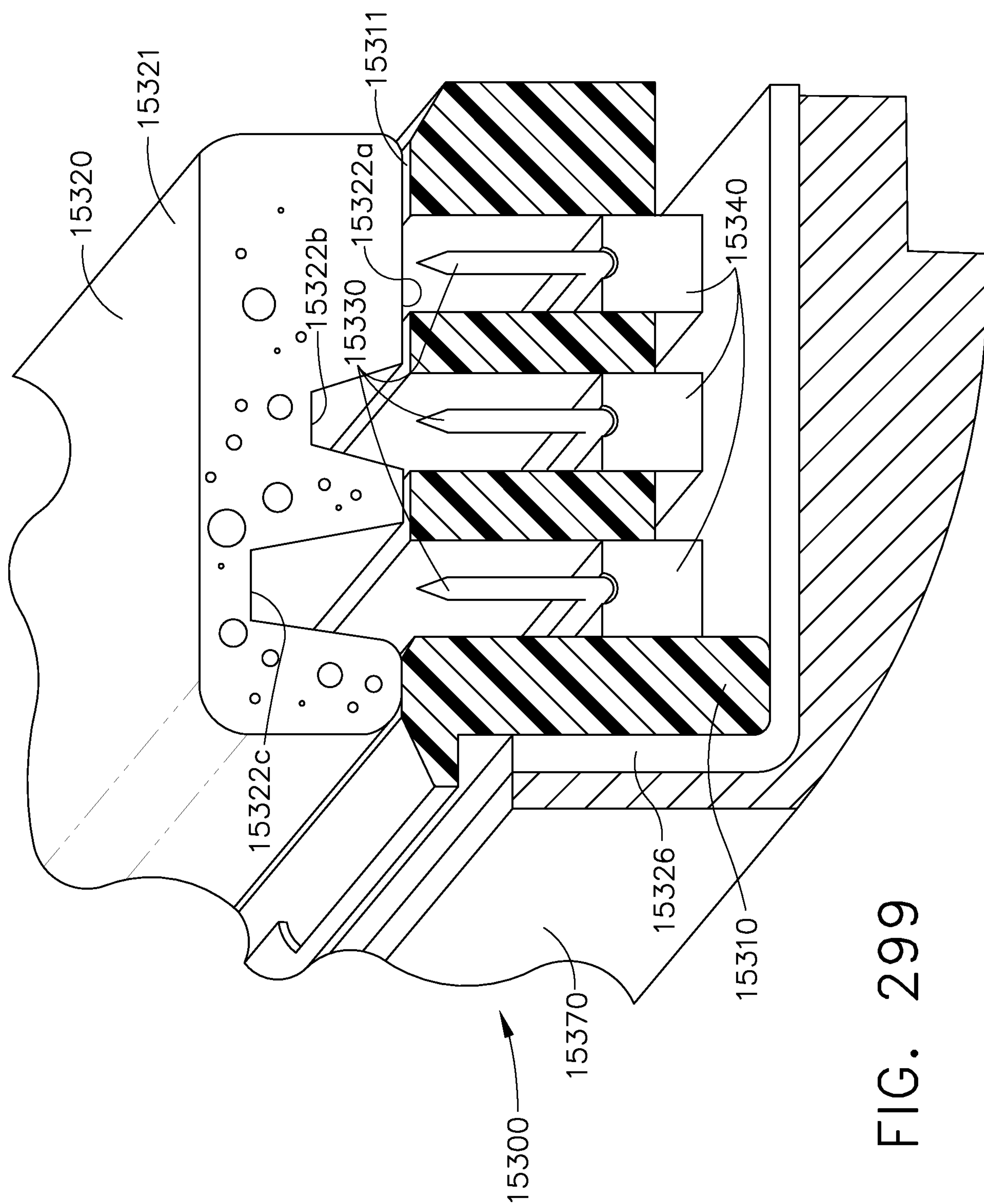


FIG. 298

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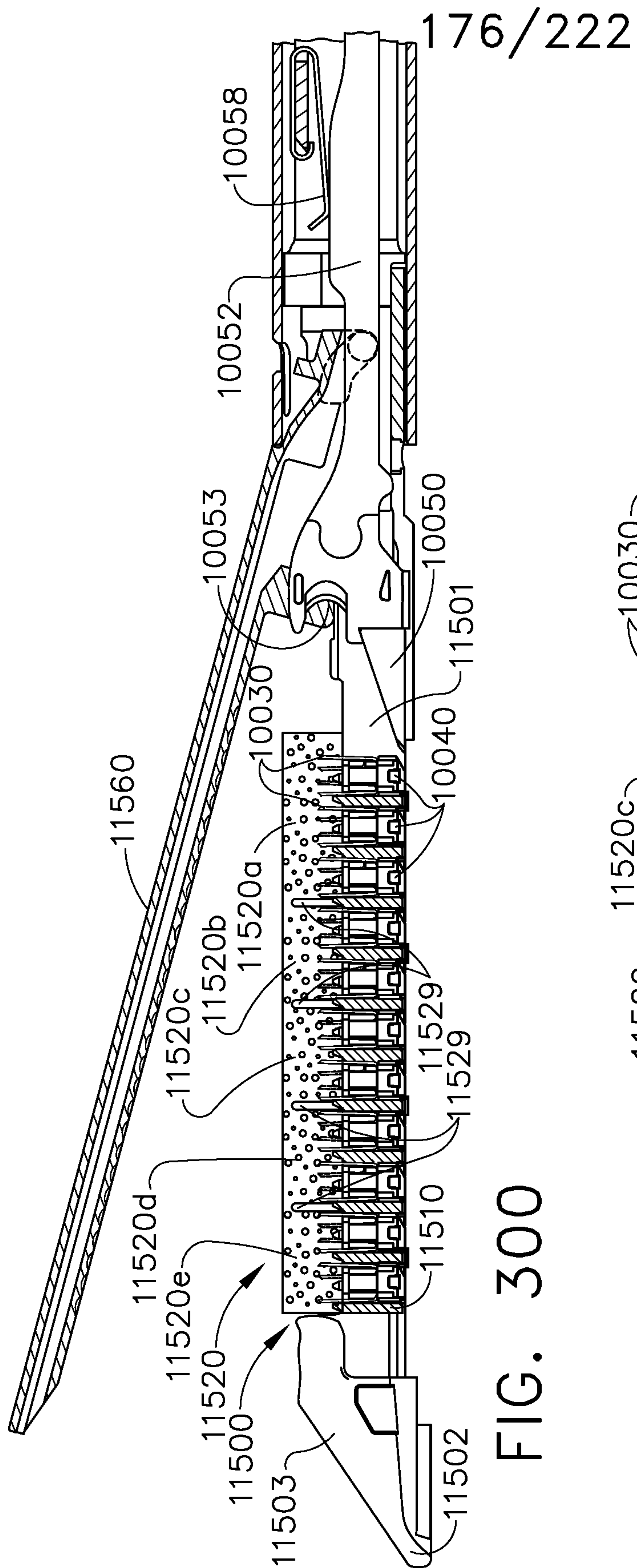


FIG. 300

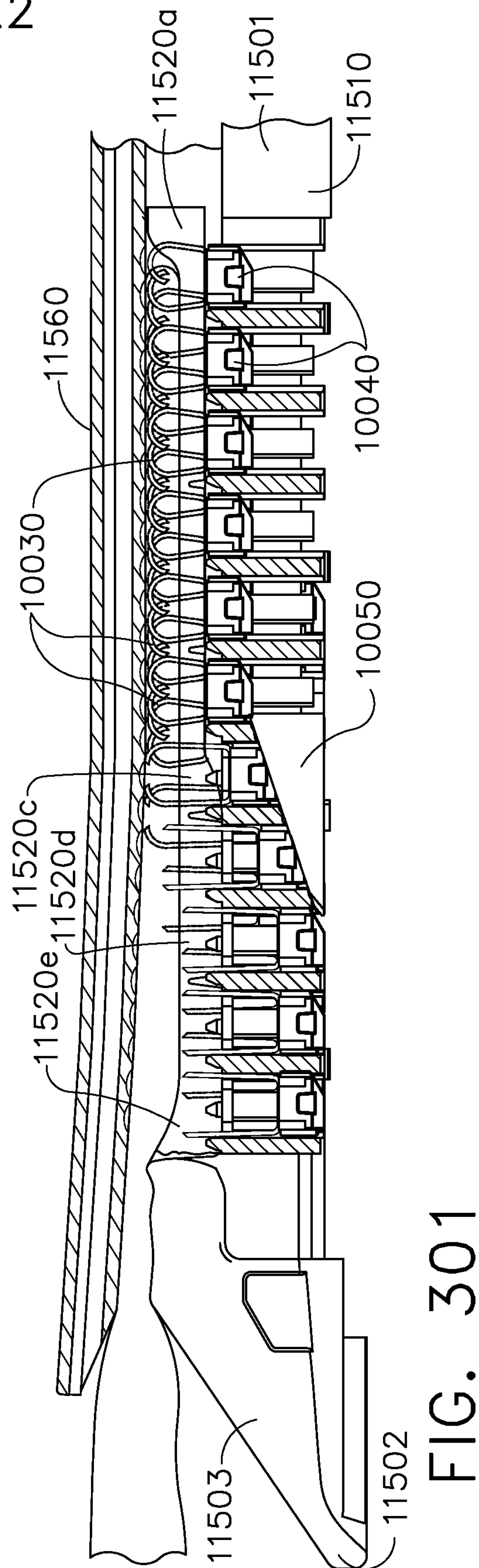


FIG. 301

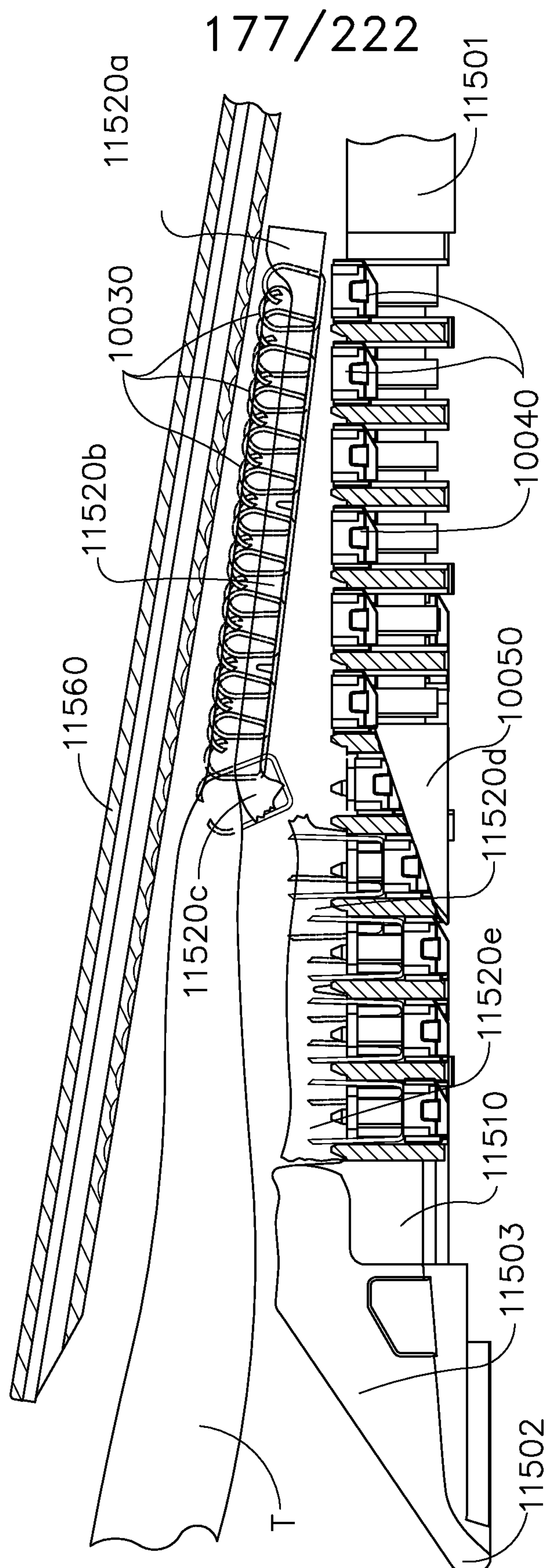


FIG. 302

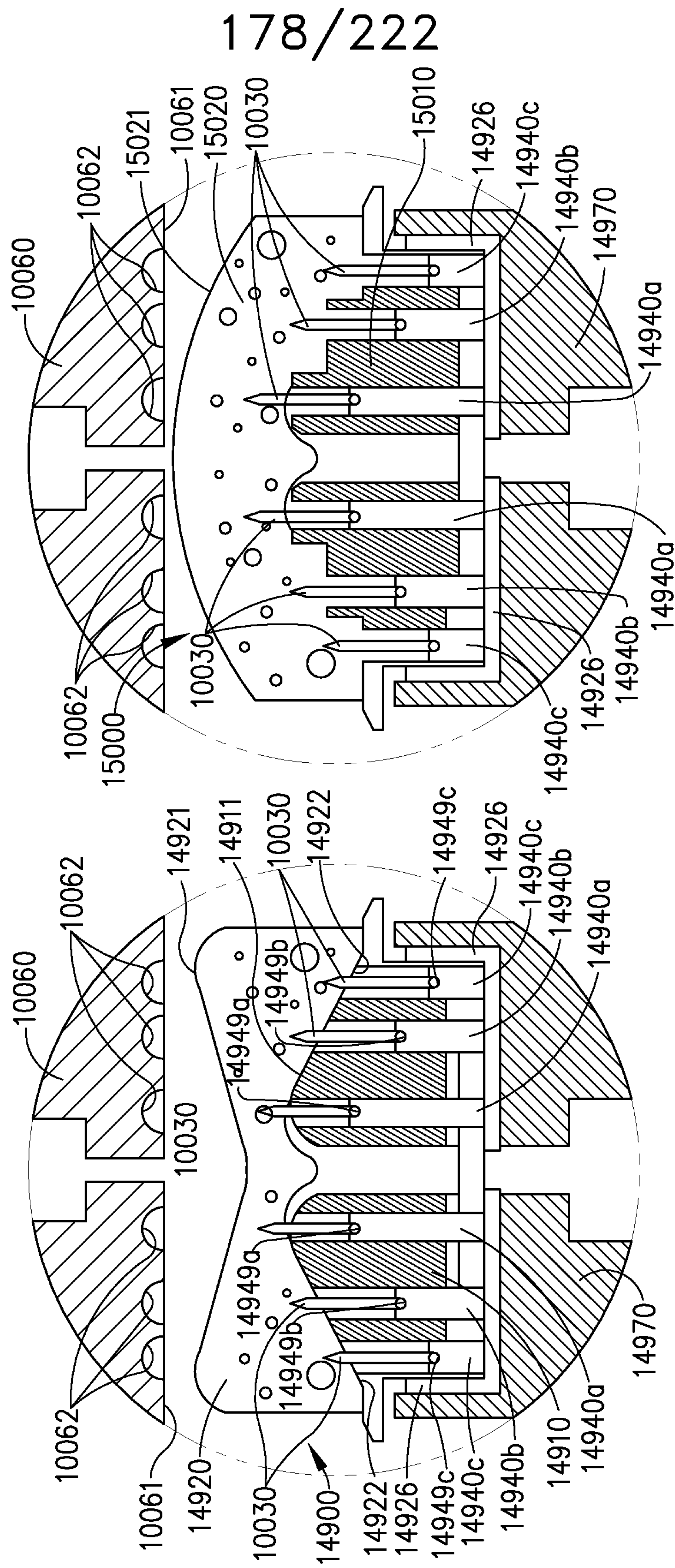
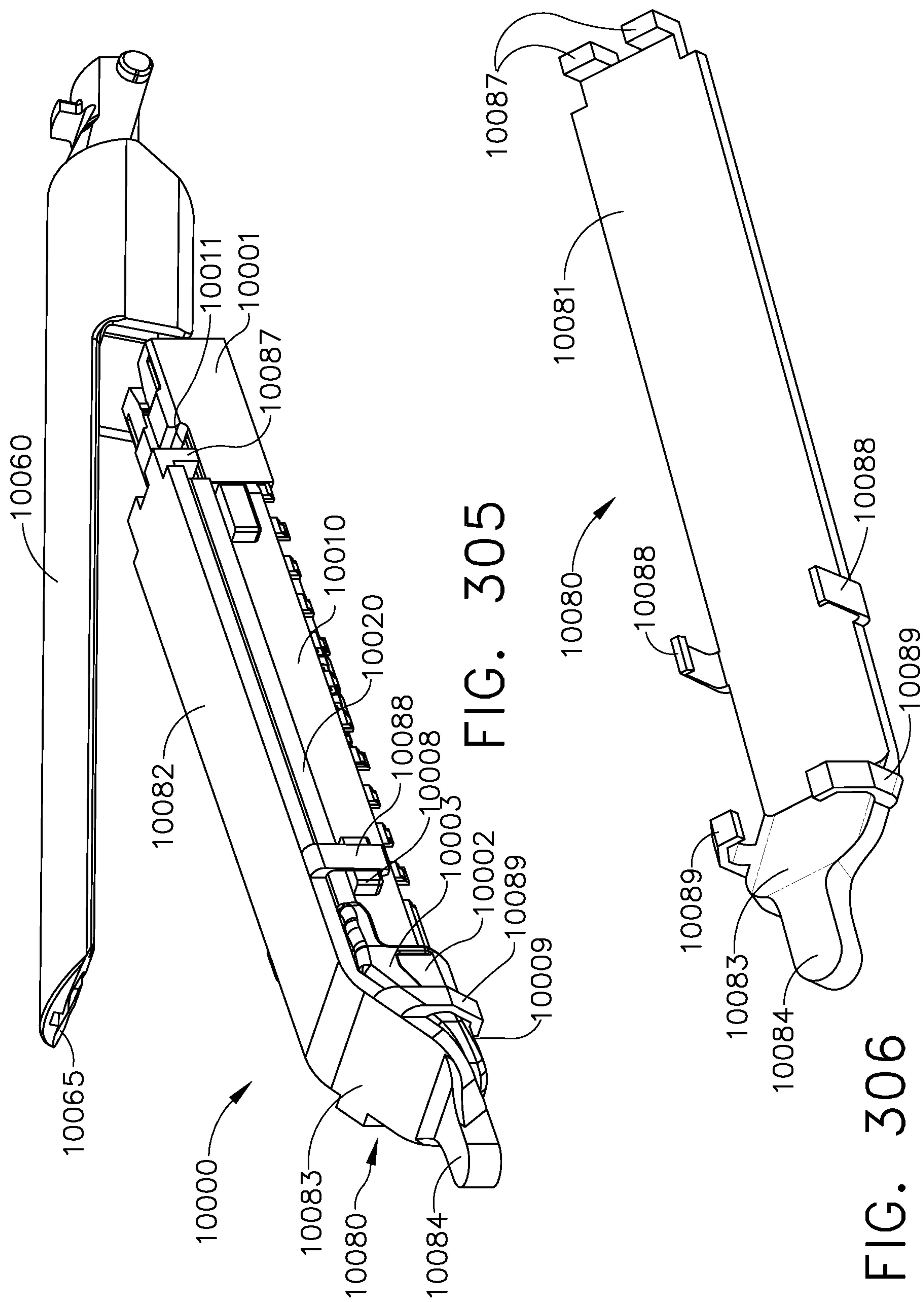


FIG. 304

FIG. 303

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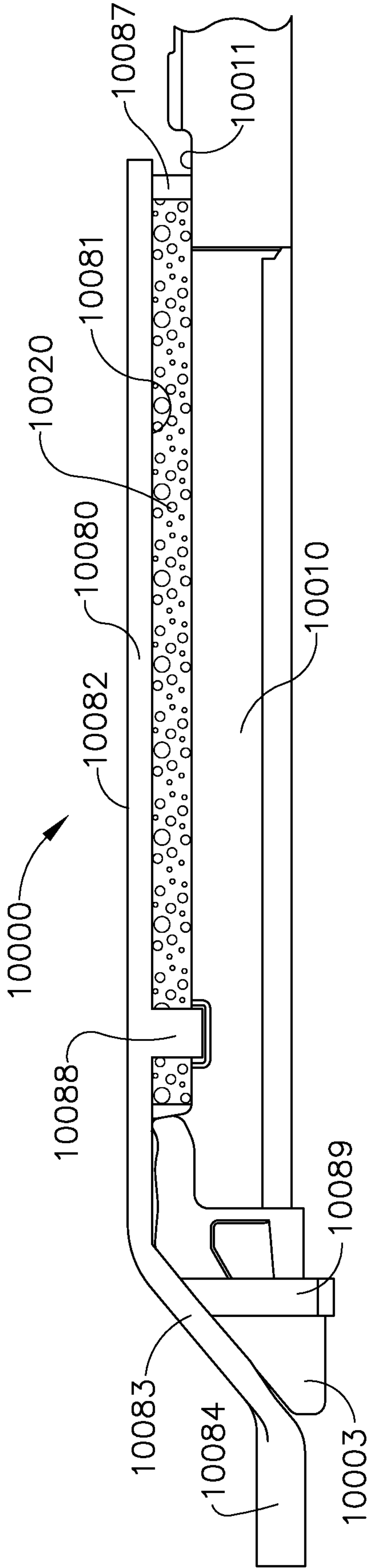


FIG. 307

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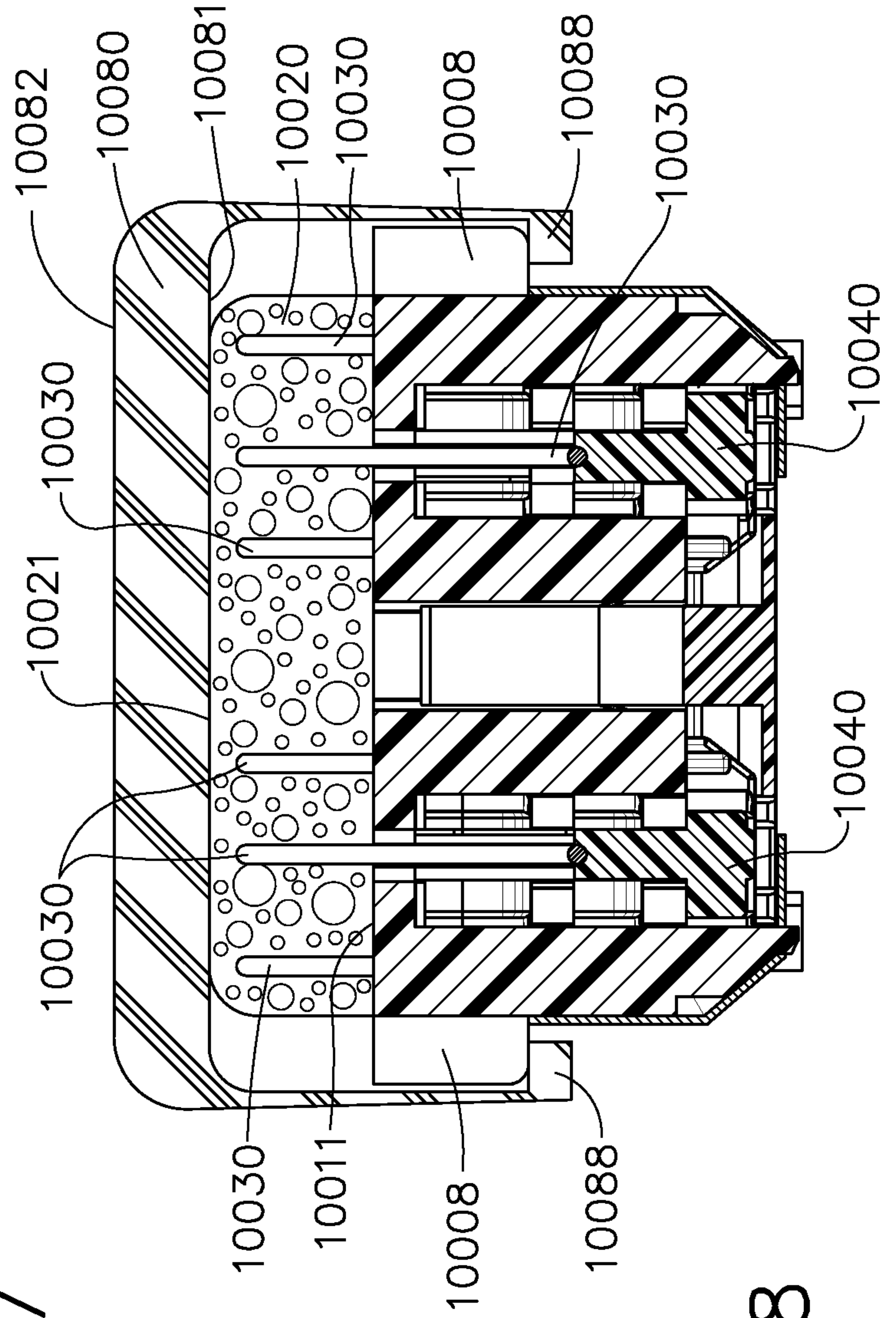


FIG. 308

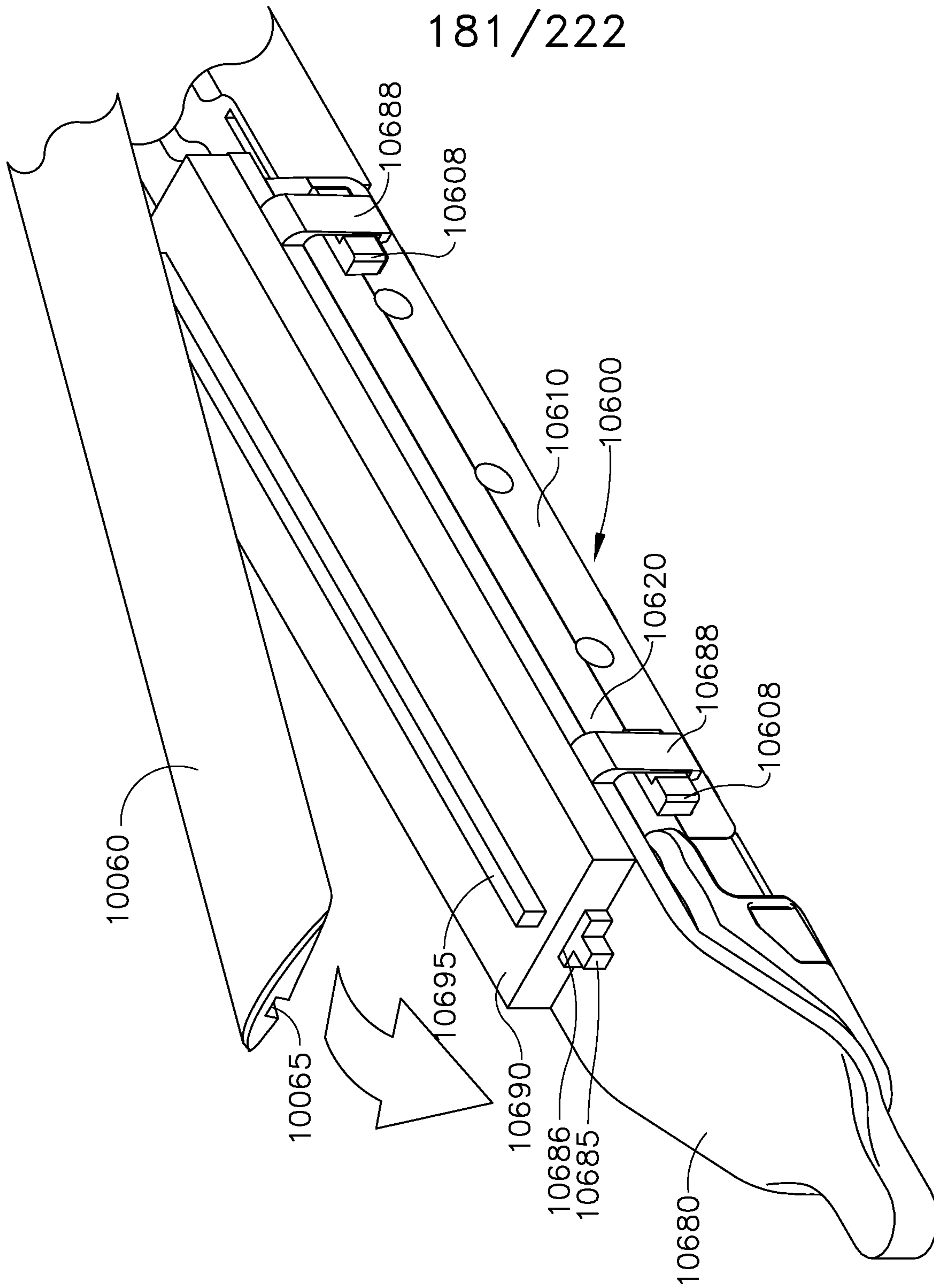


FIG. 309

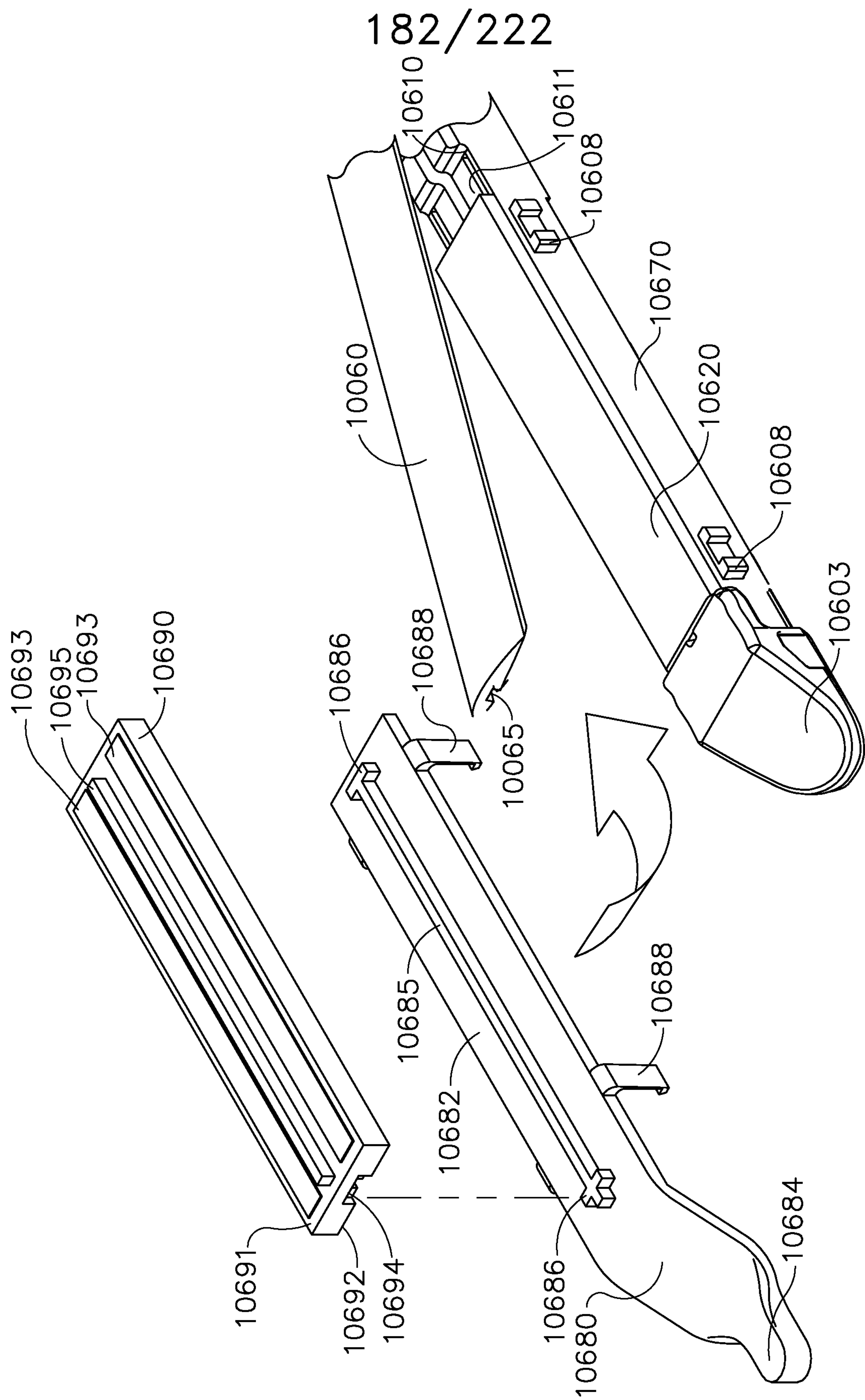


FIG. 310

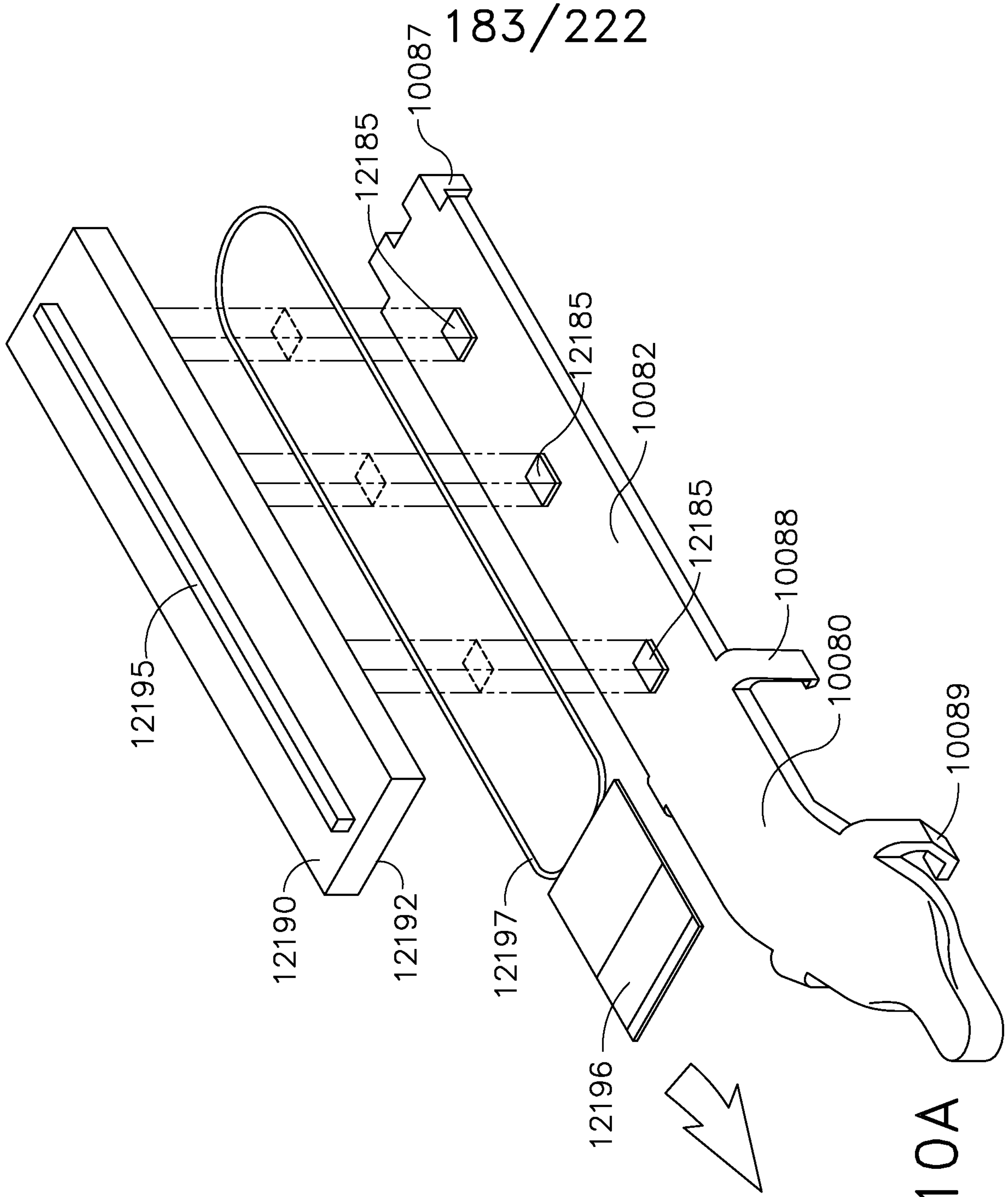


FIG. 310A

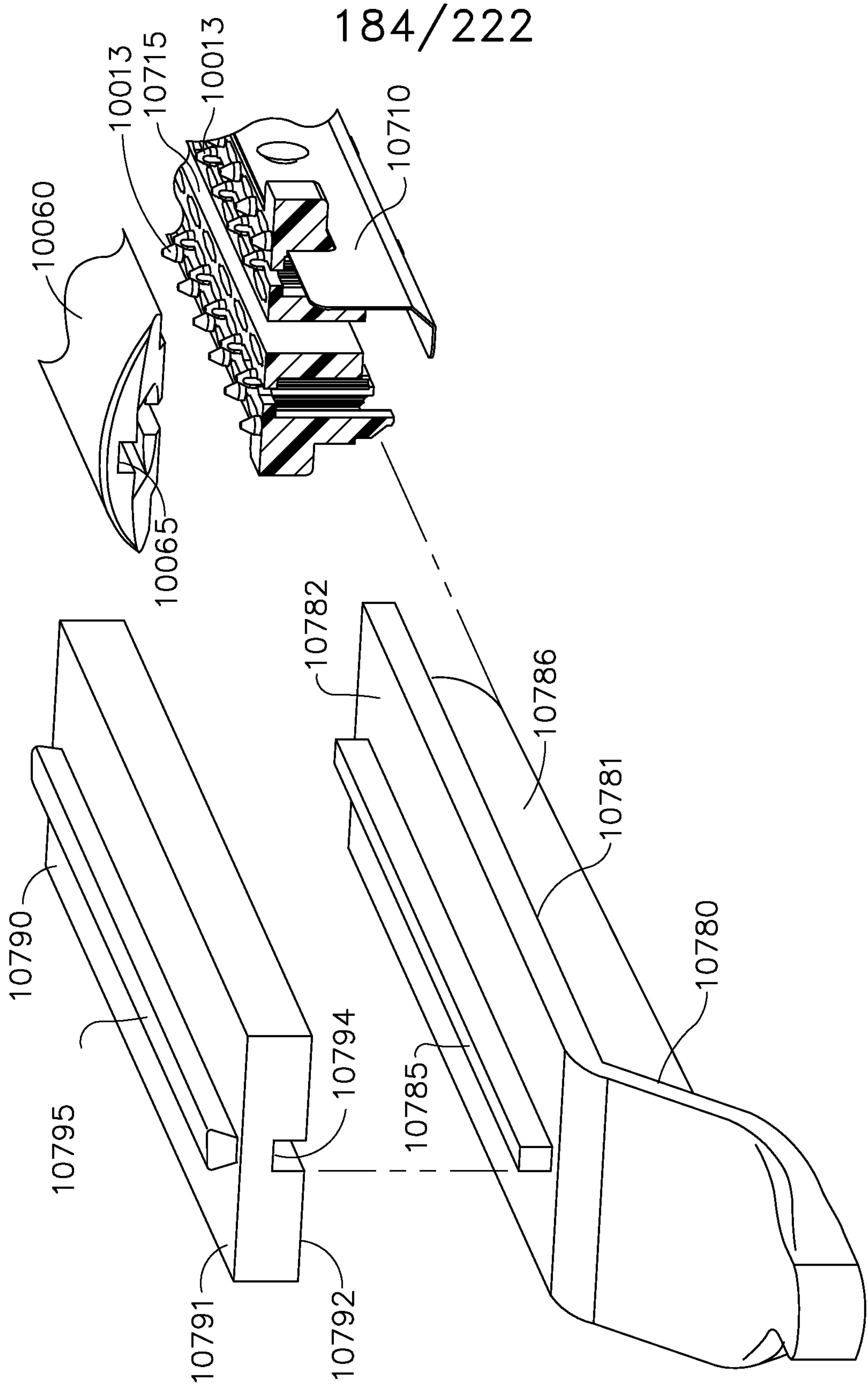
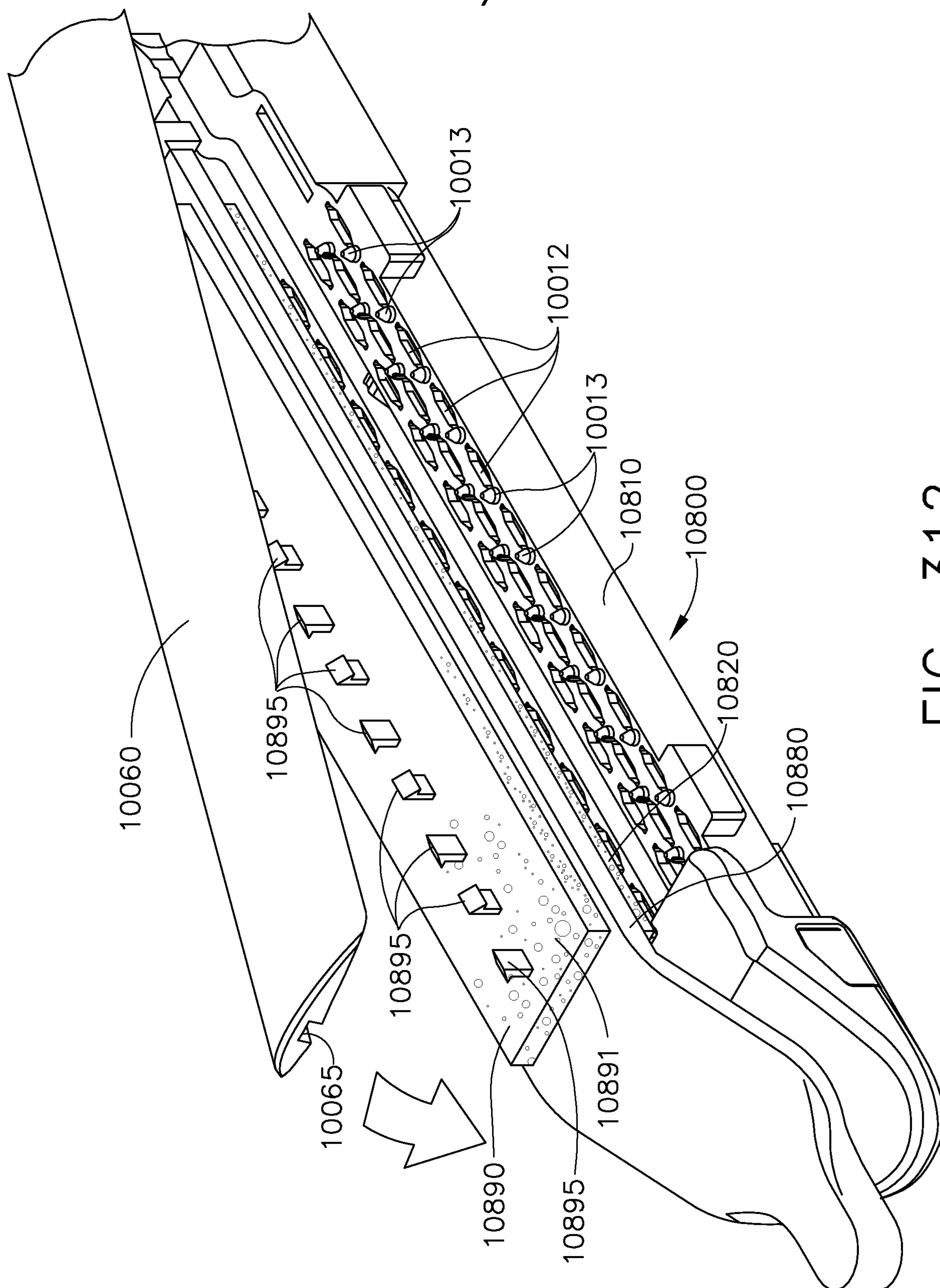
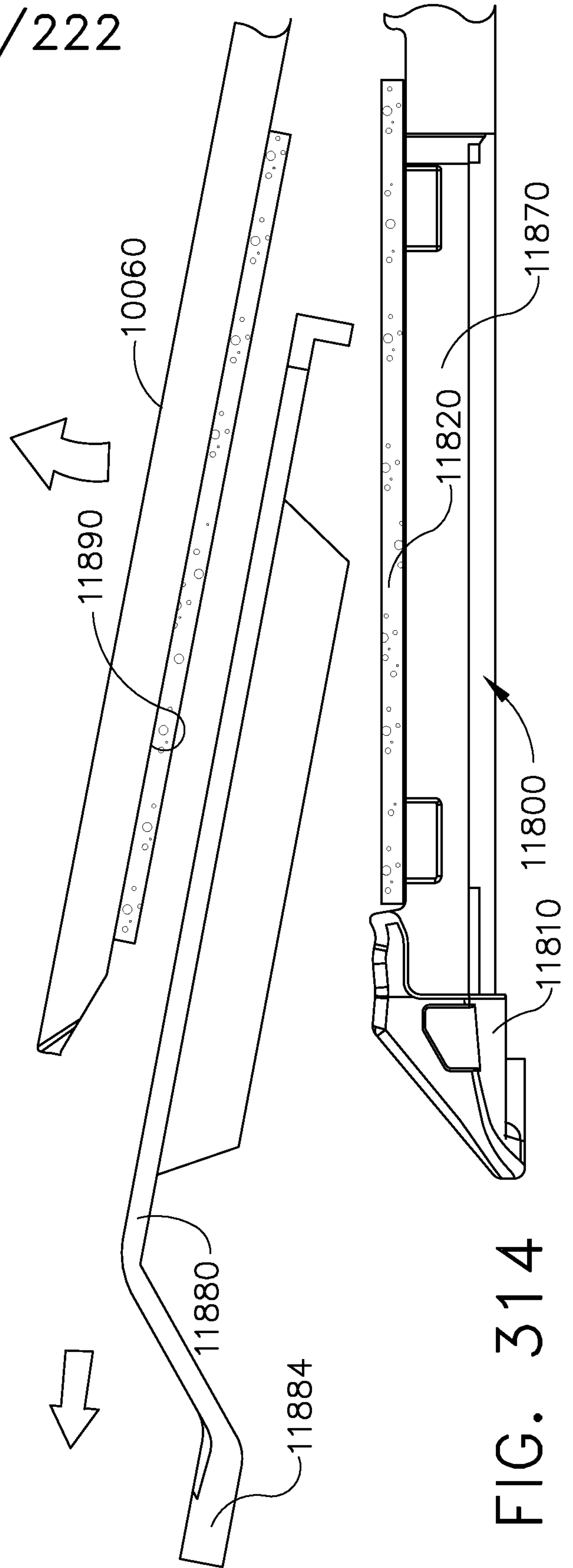
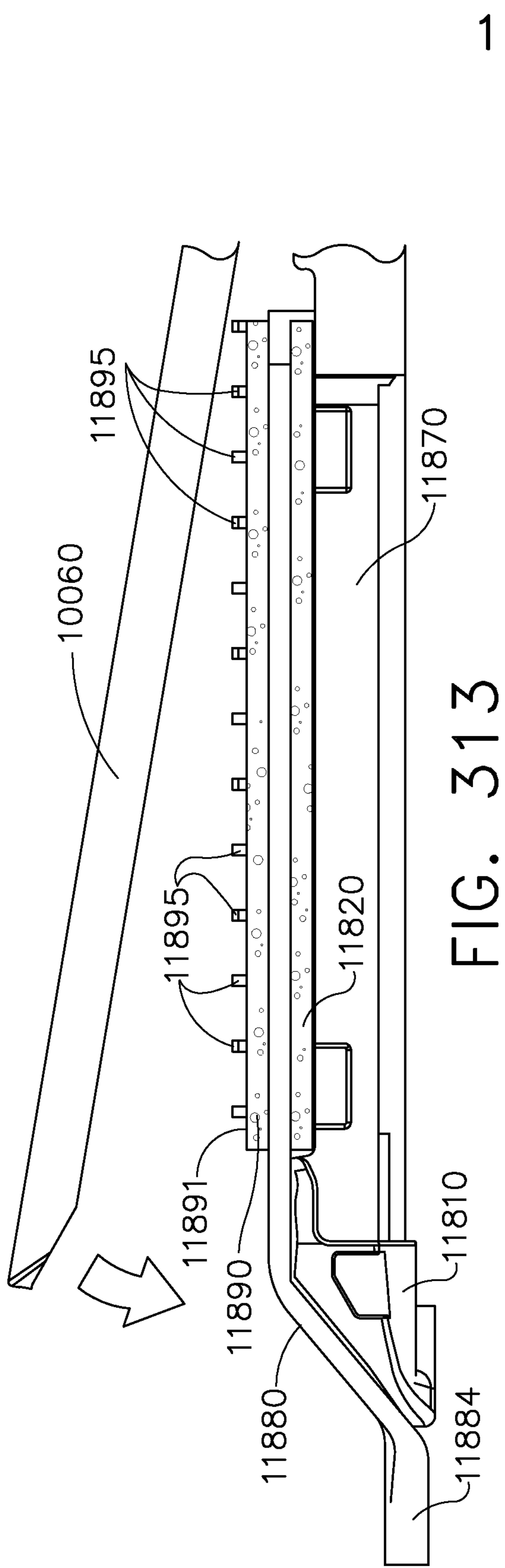


FIG. 311





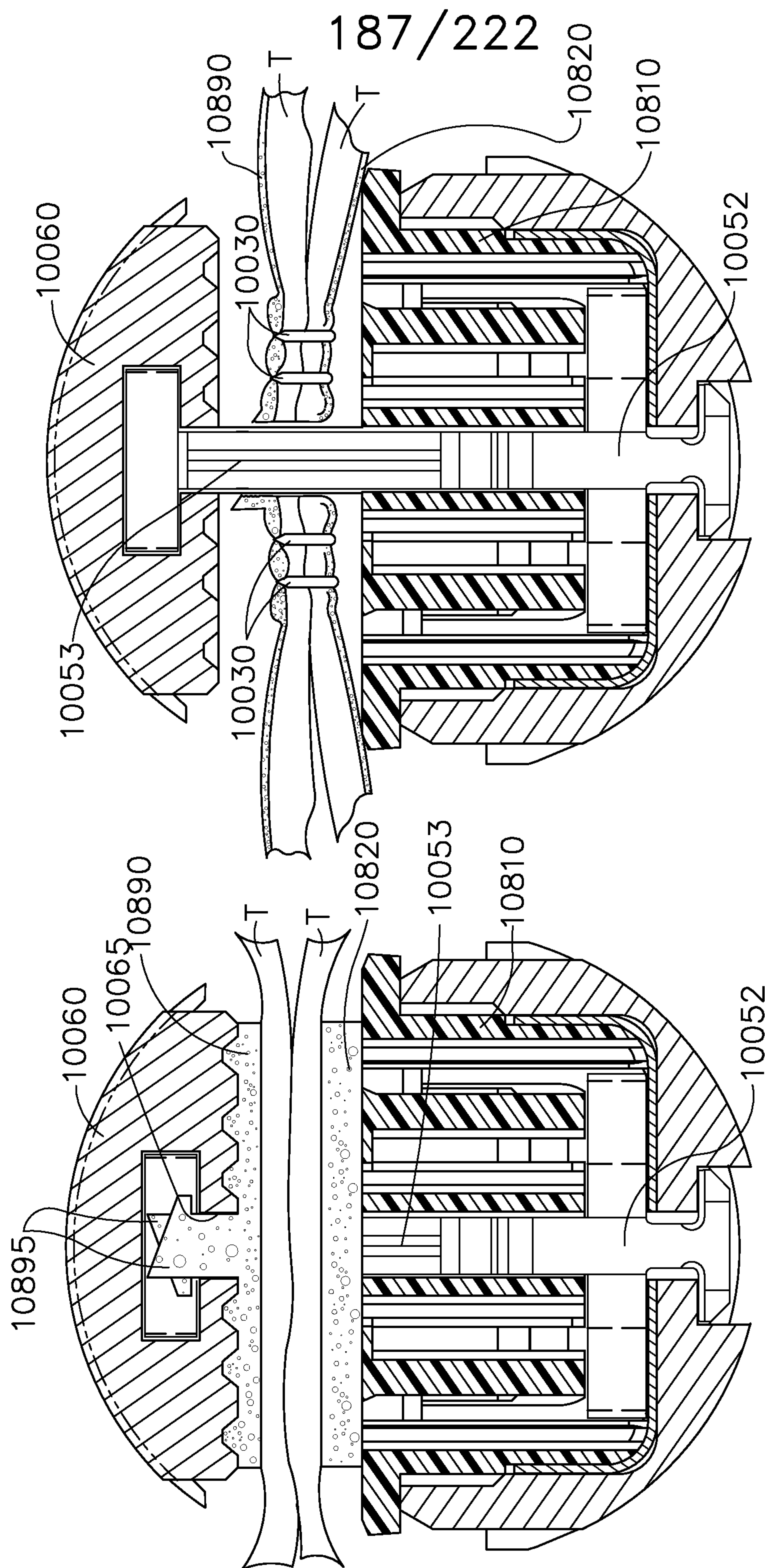


FIG. 314B

FIG. 314A

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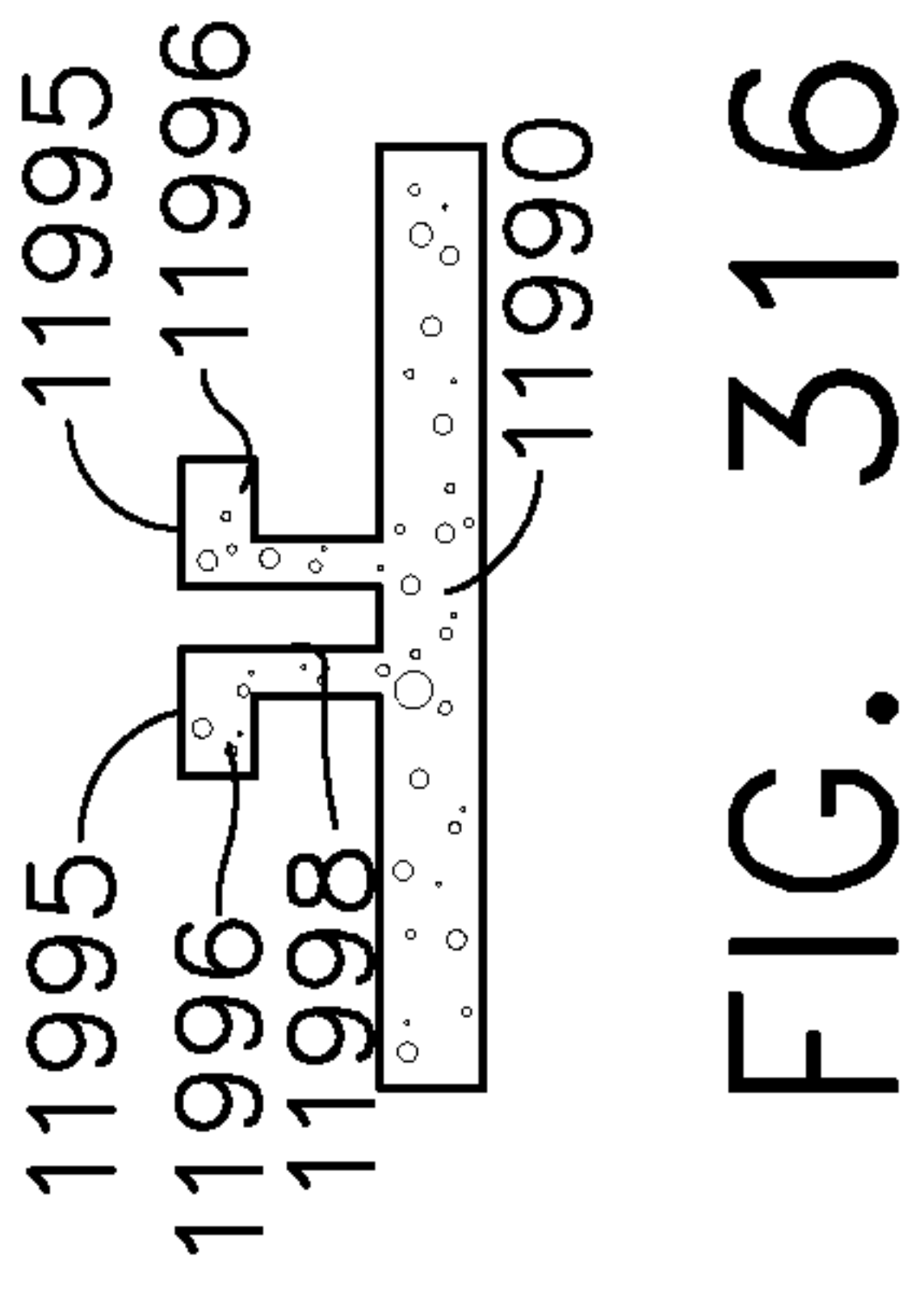


FIG. 316

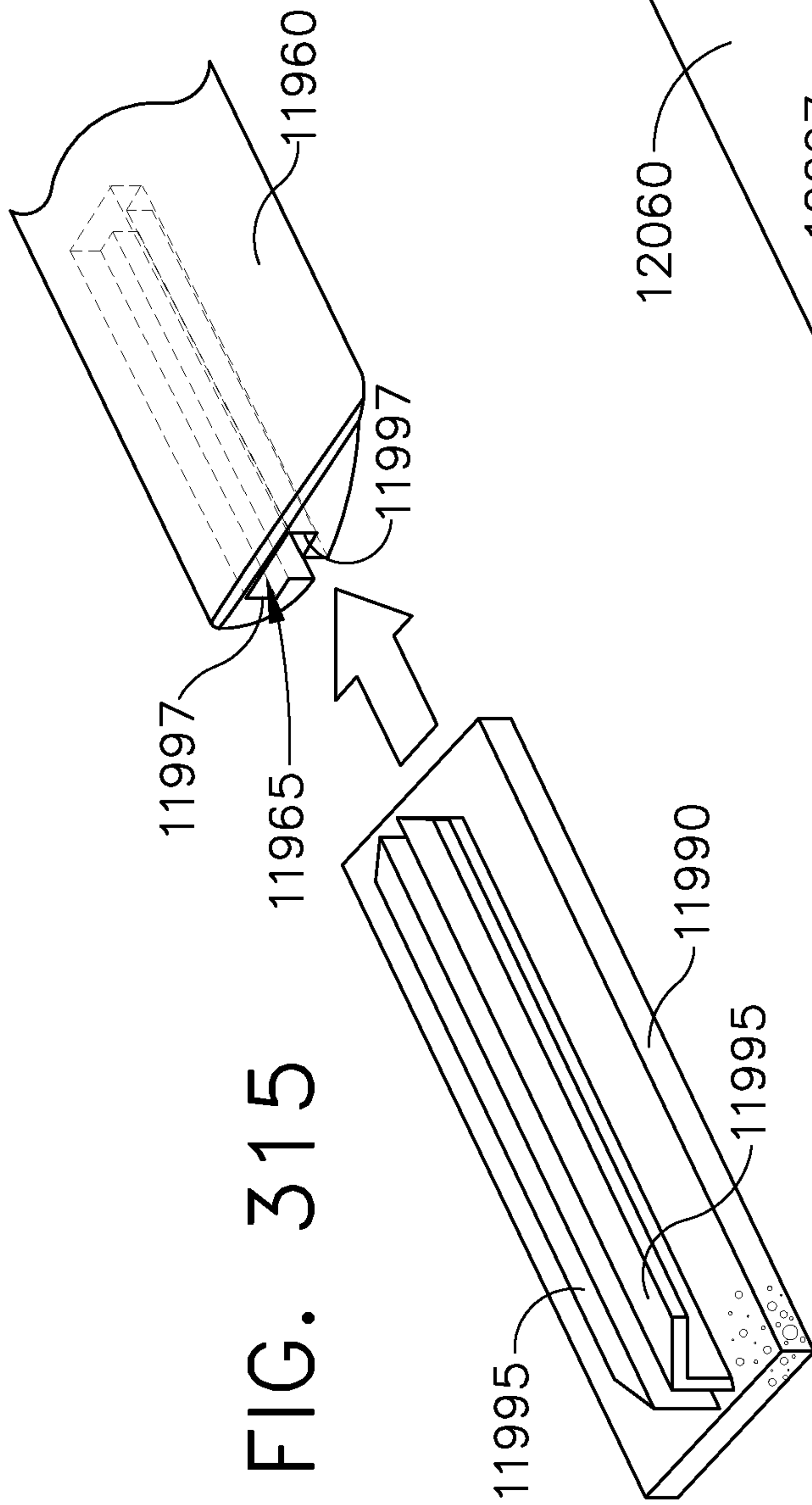


FIG. 315

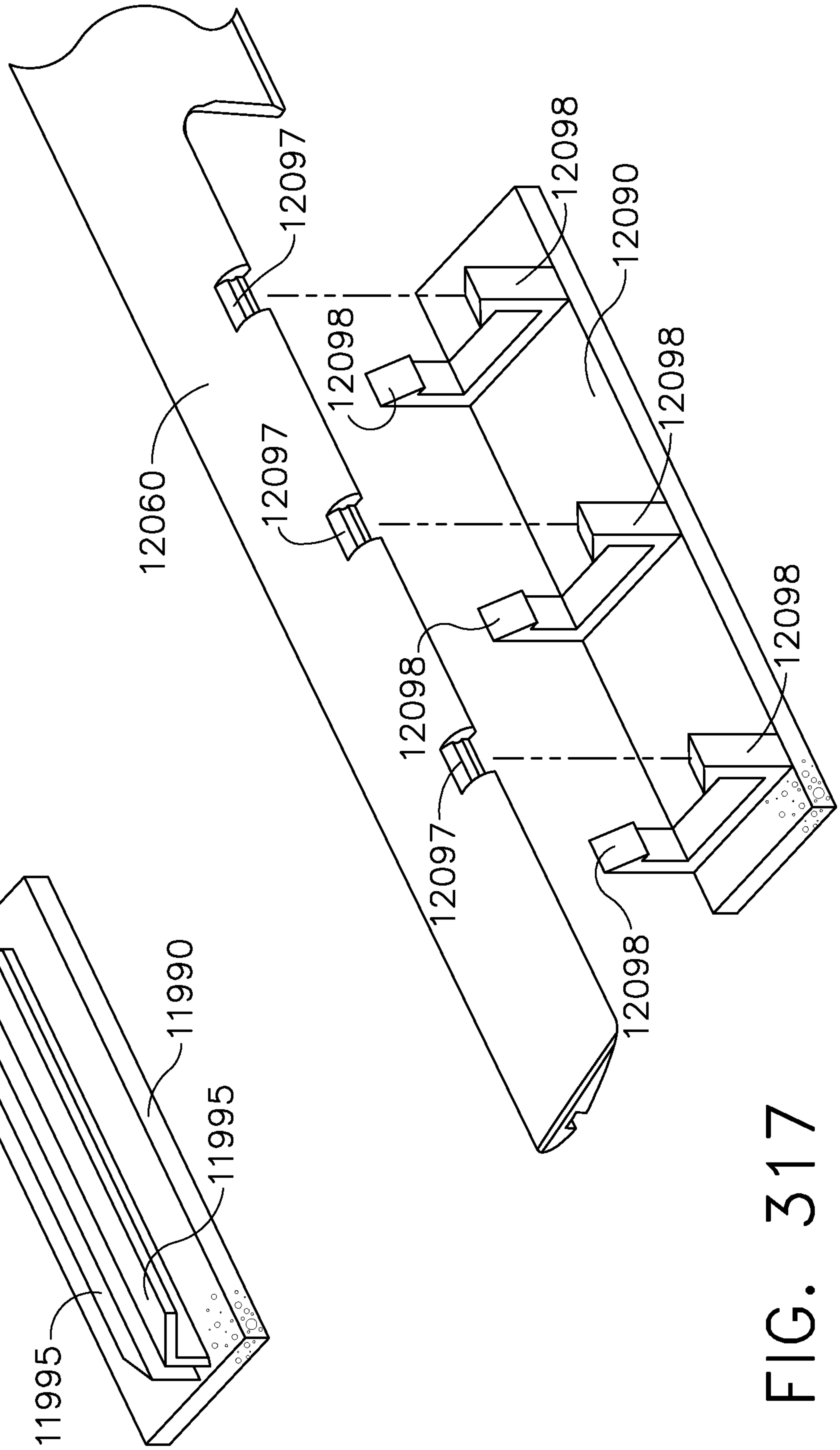


FIG. 317

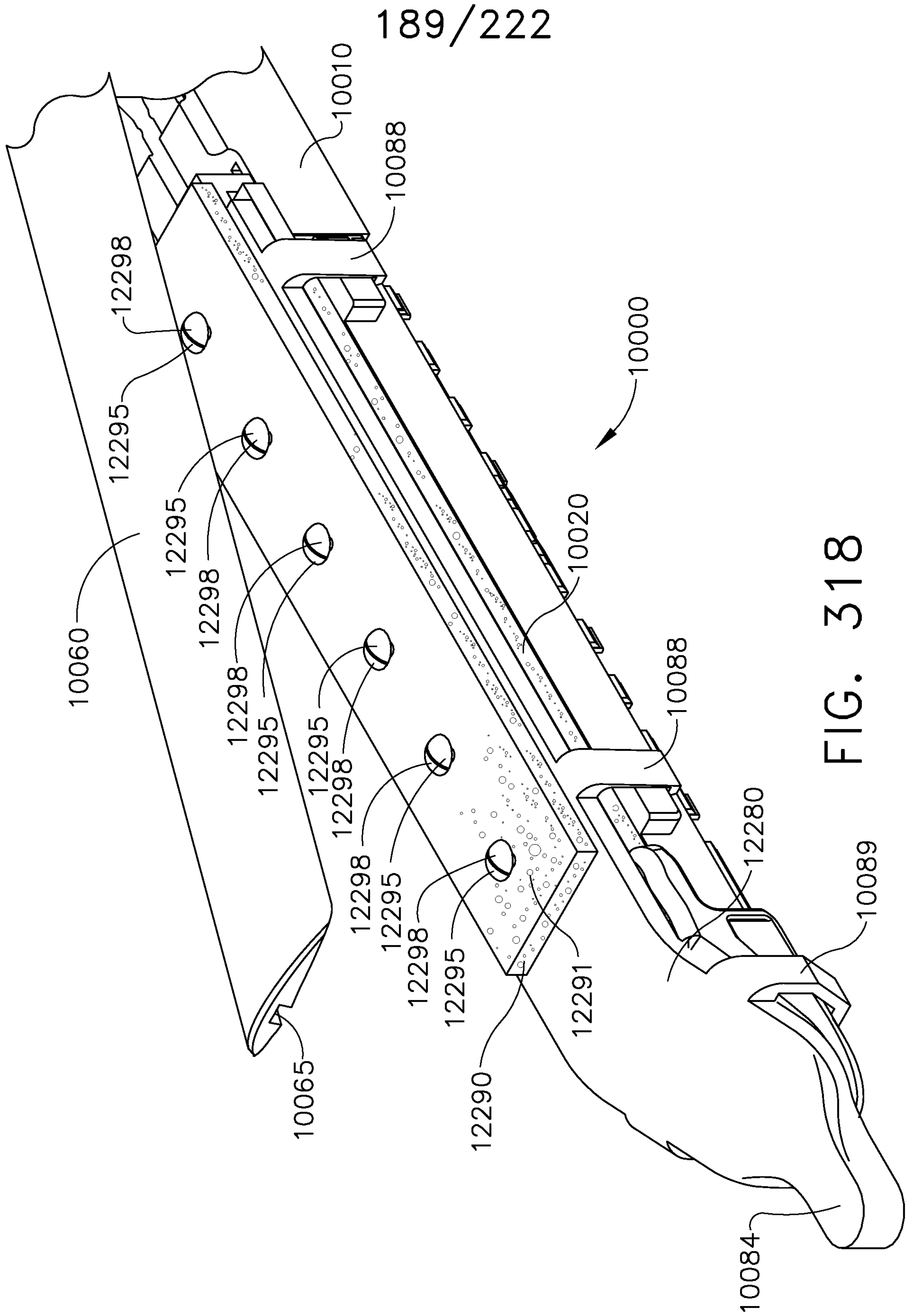


FIG. 318

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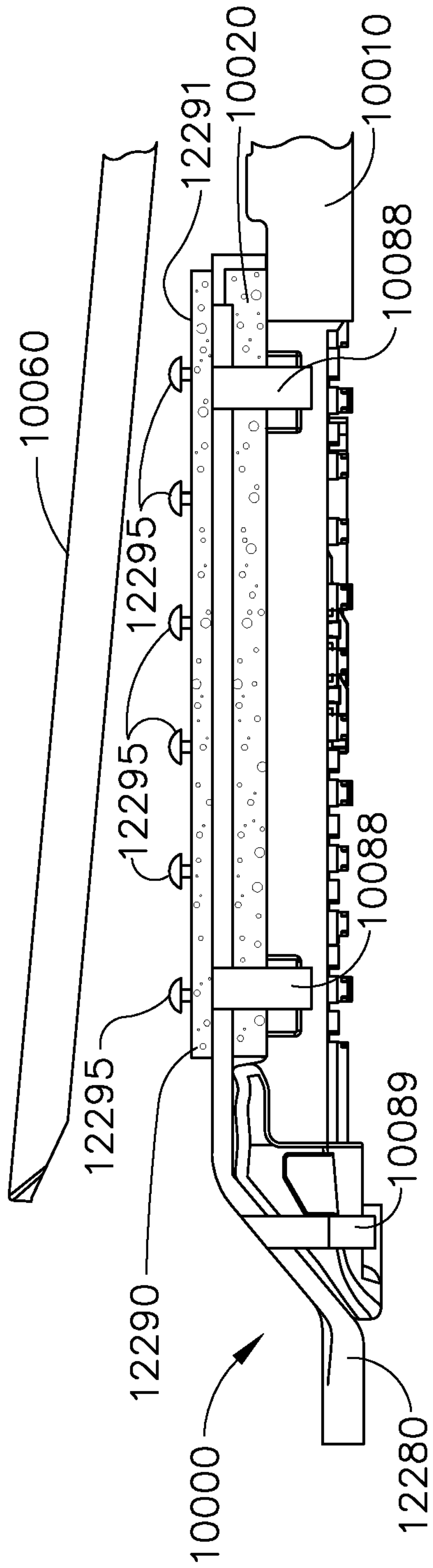


FIG. 319

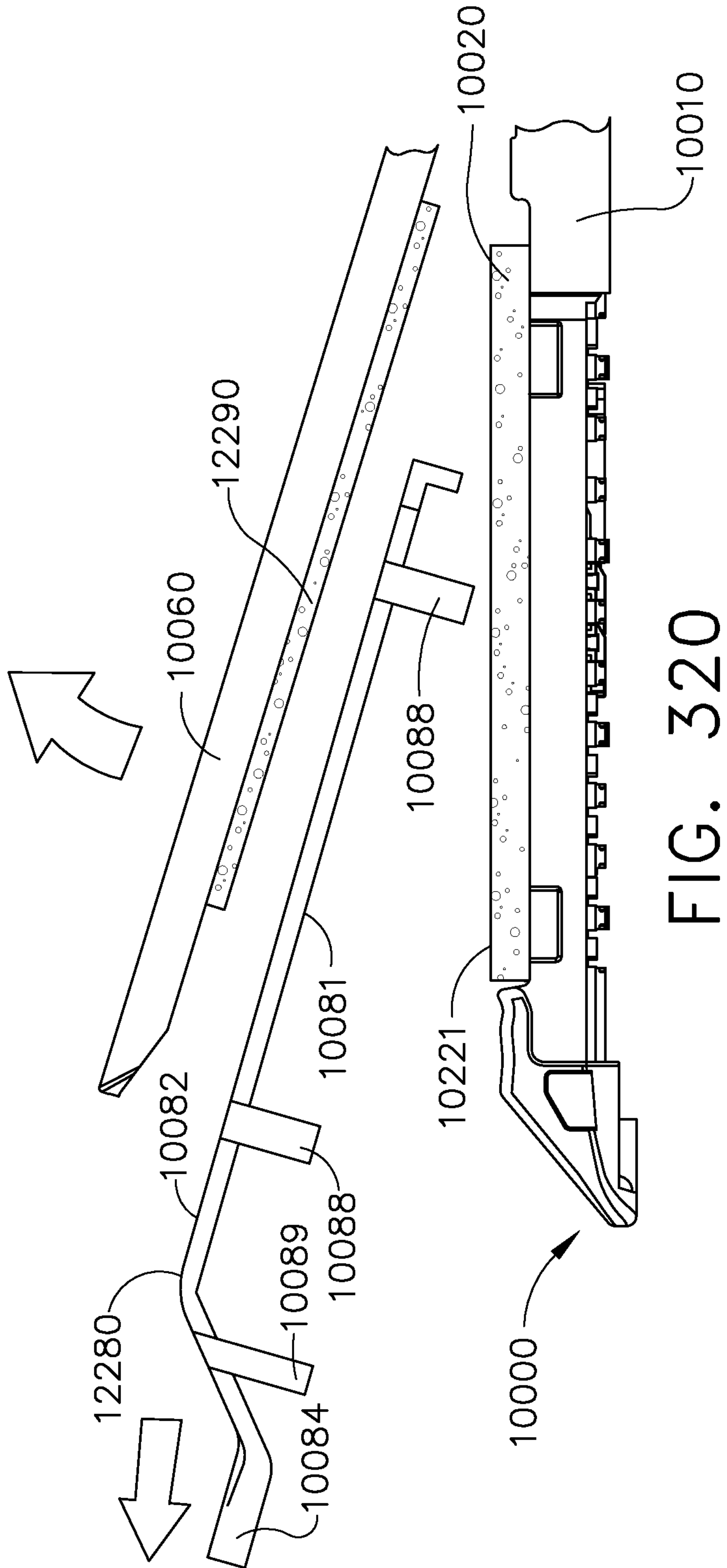


FIG. 320

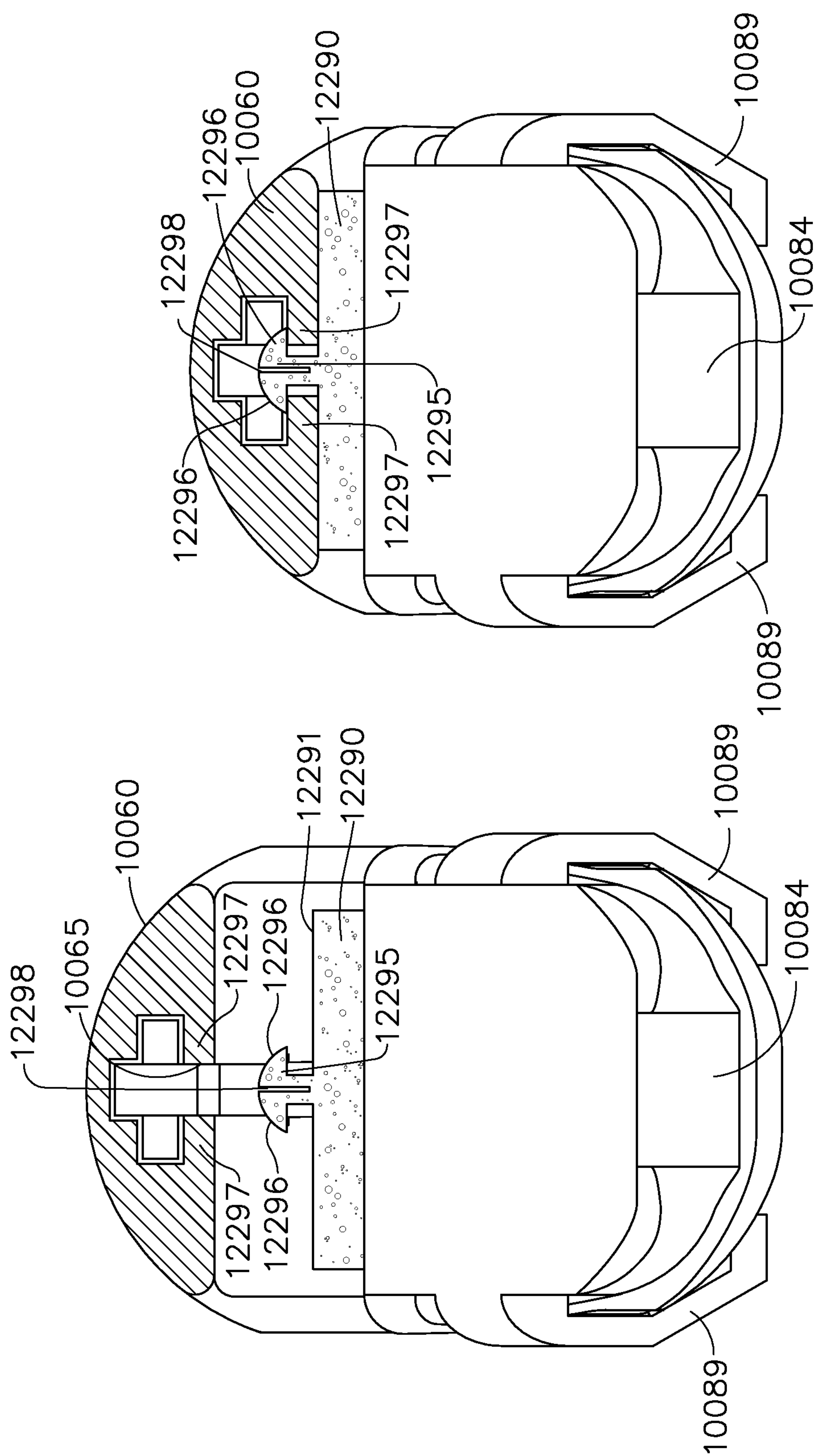


FIG. 321

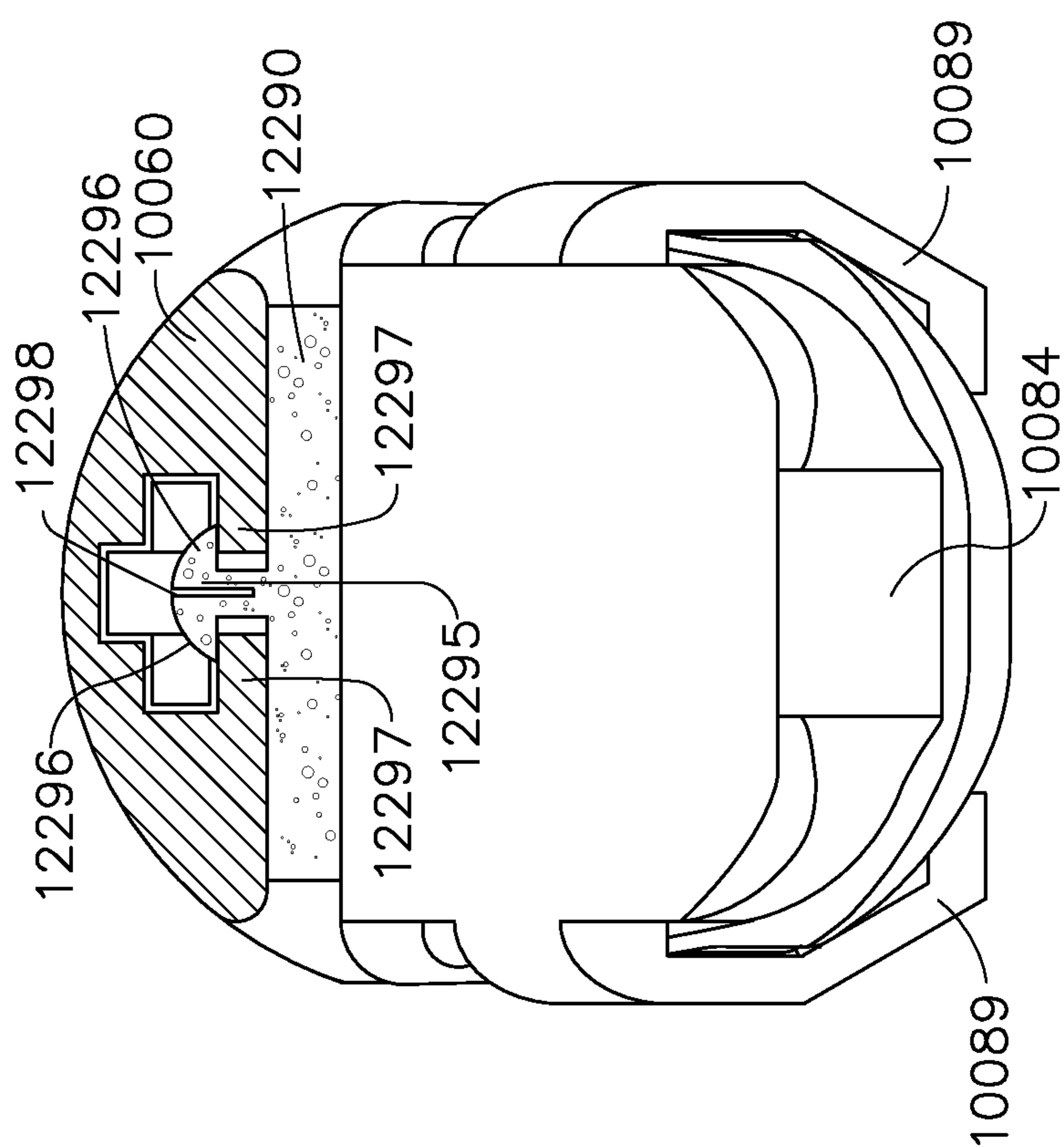


FIG. 322

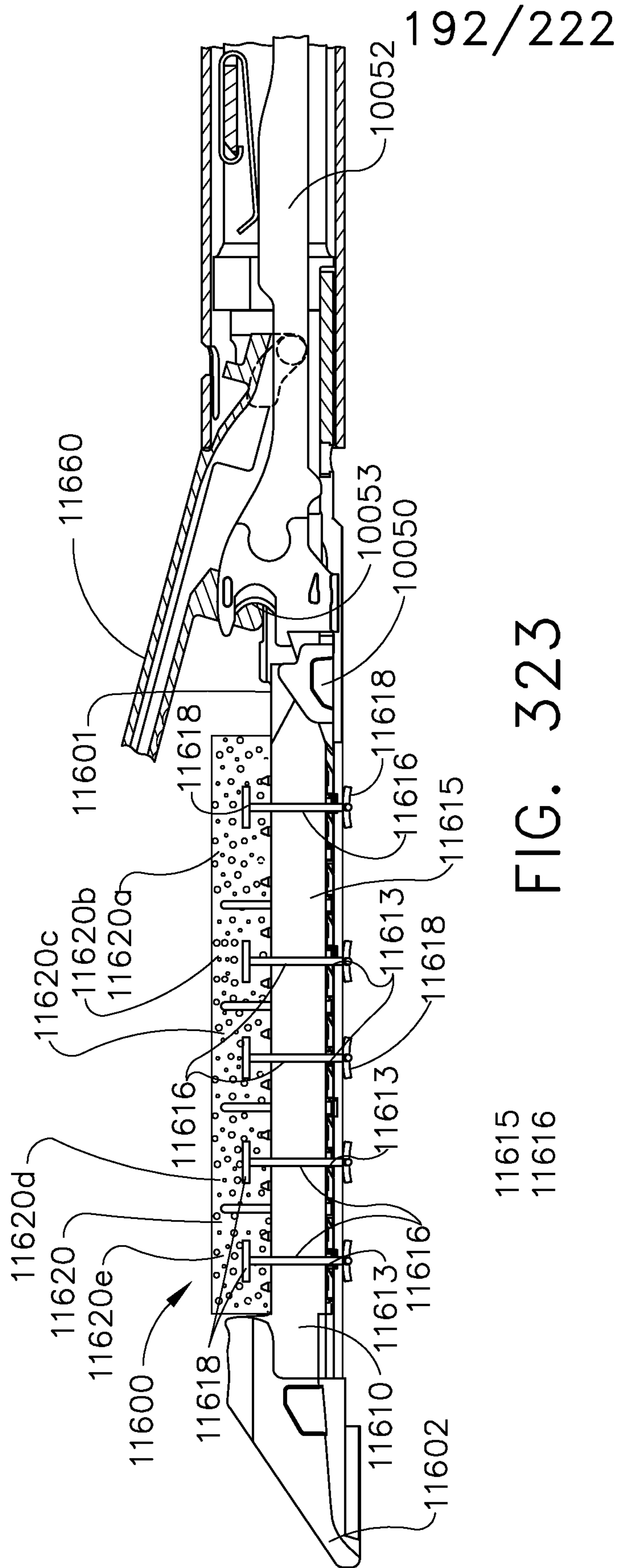


FIG. 323

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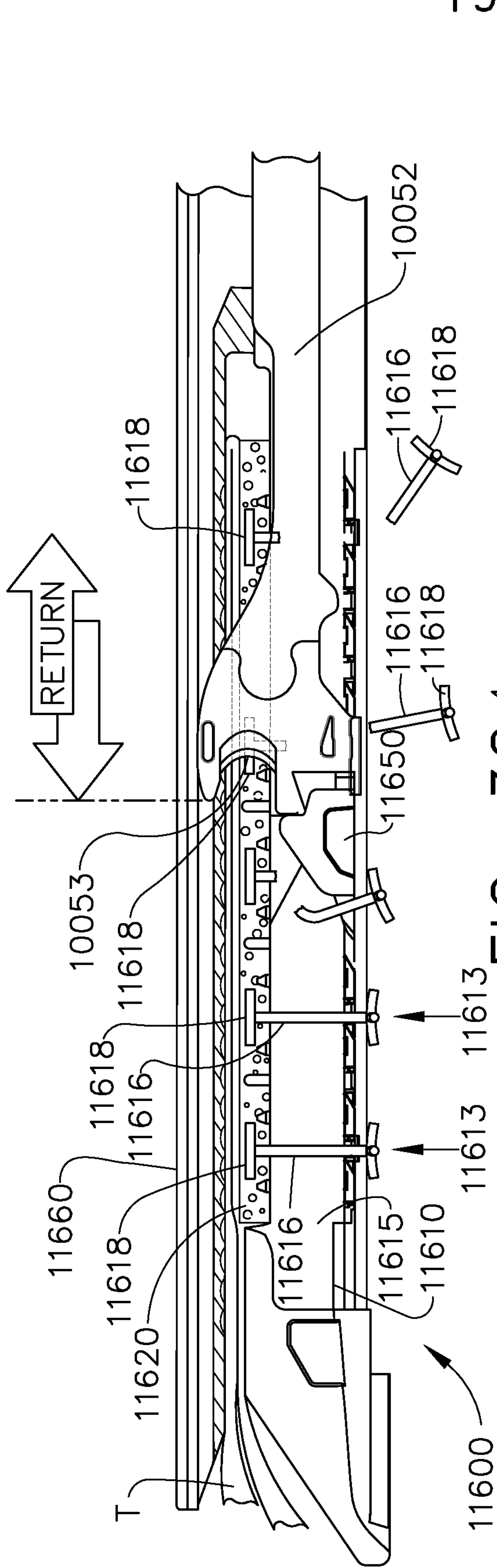


FIG. 324

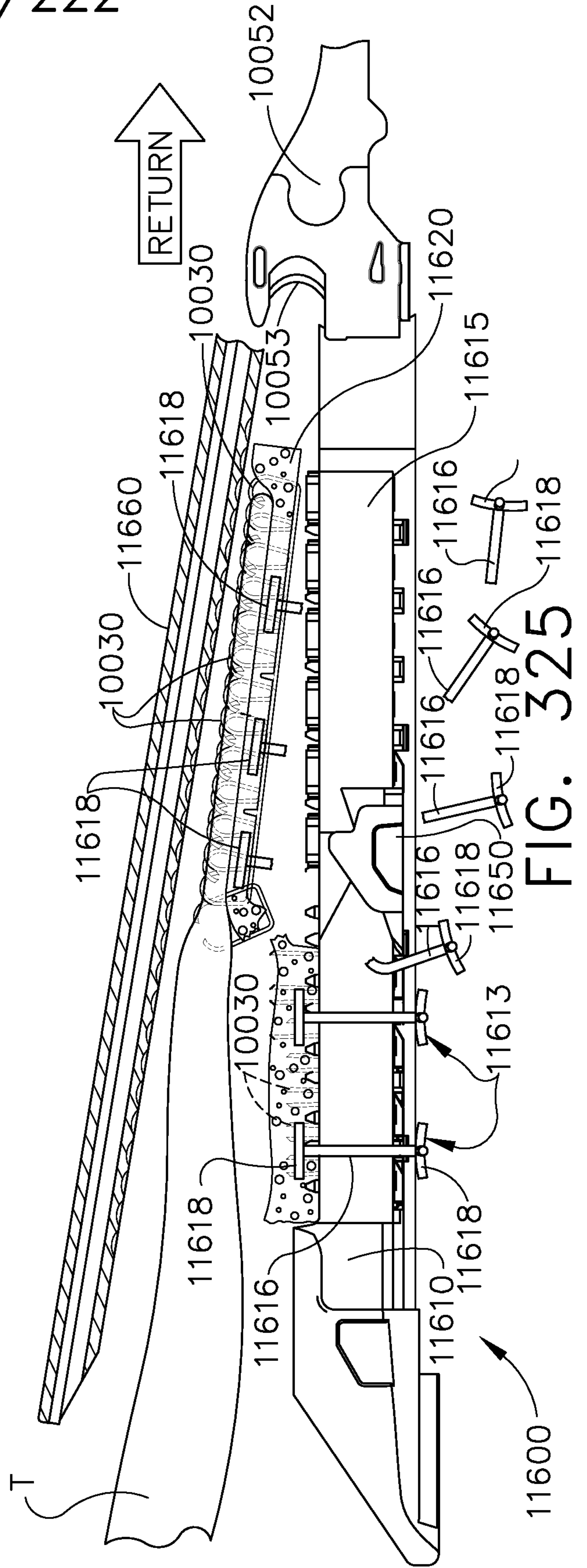


FIG. 325

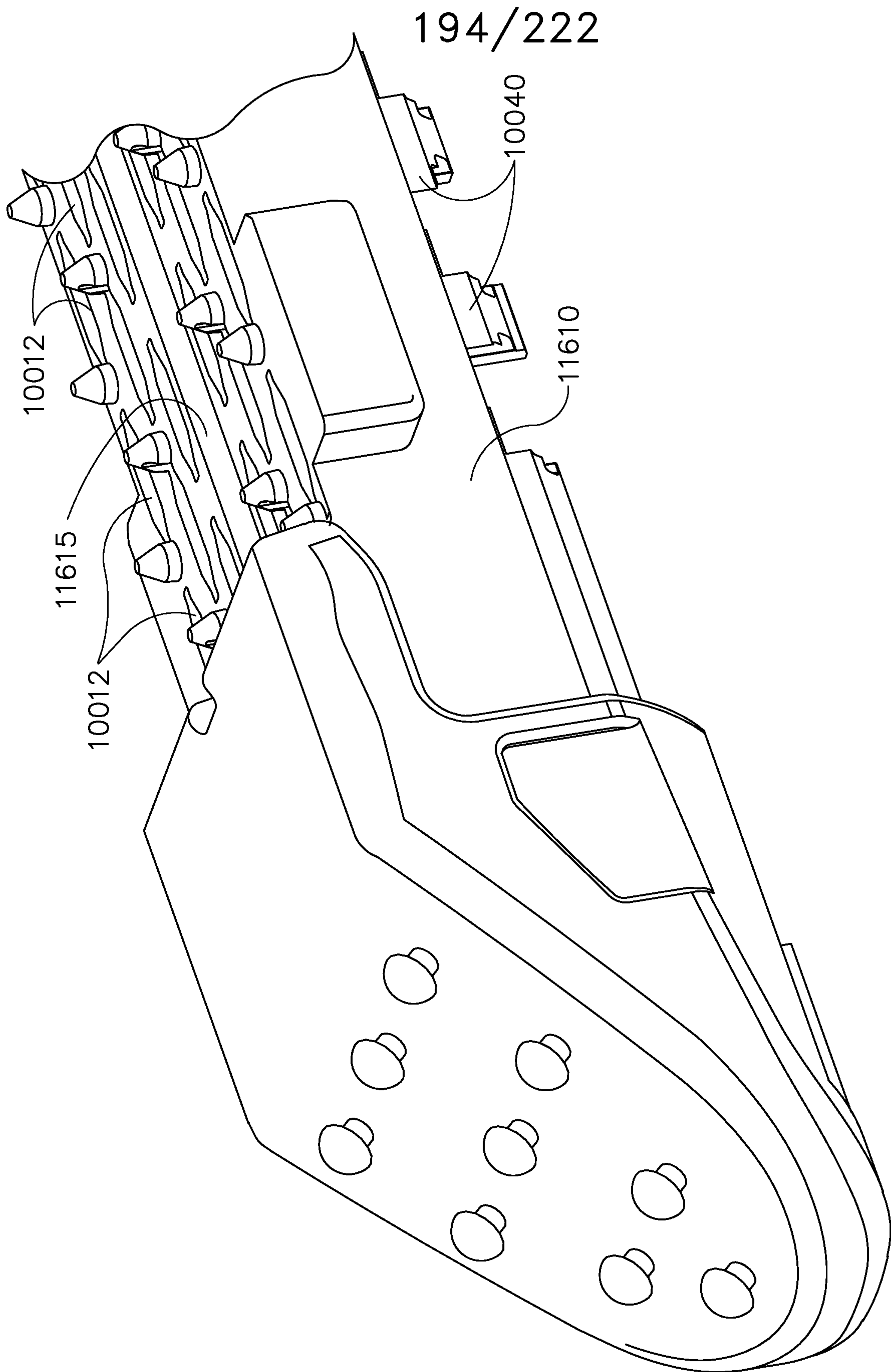


FIG. 326

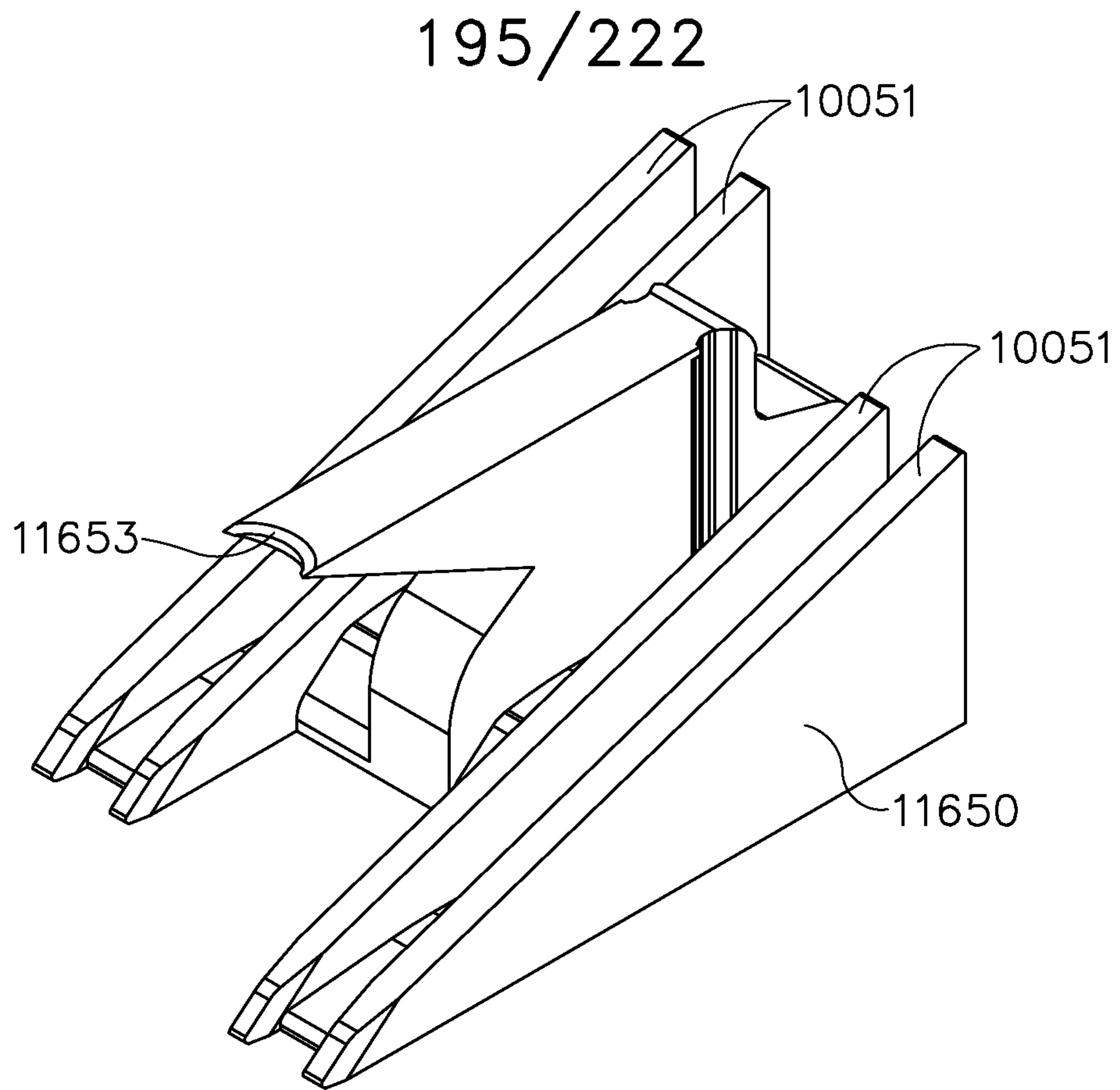


FIG. 327

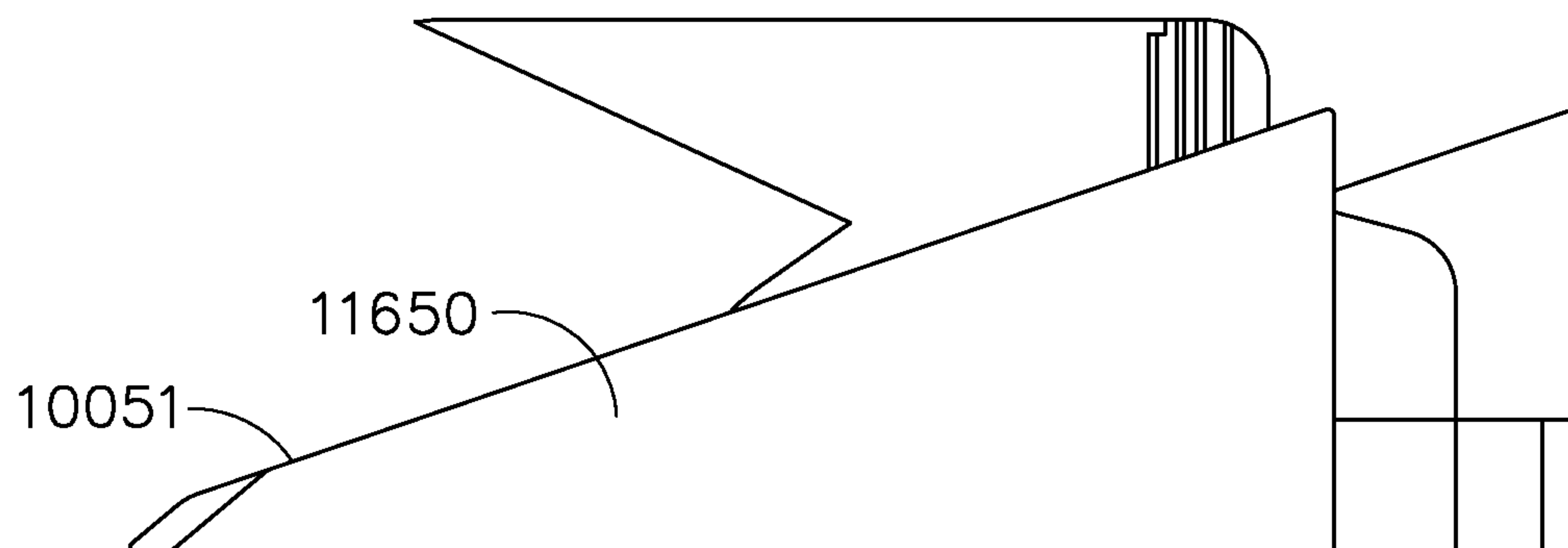
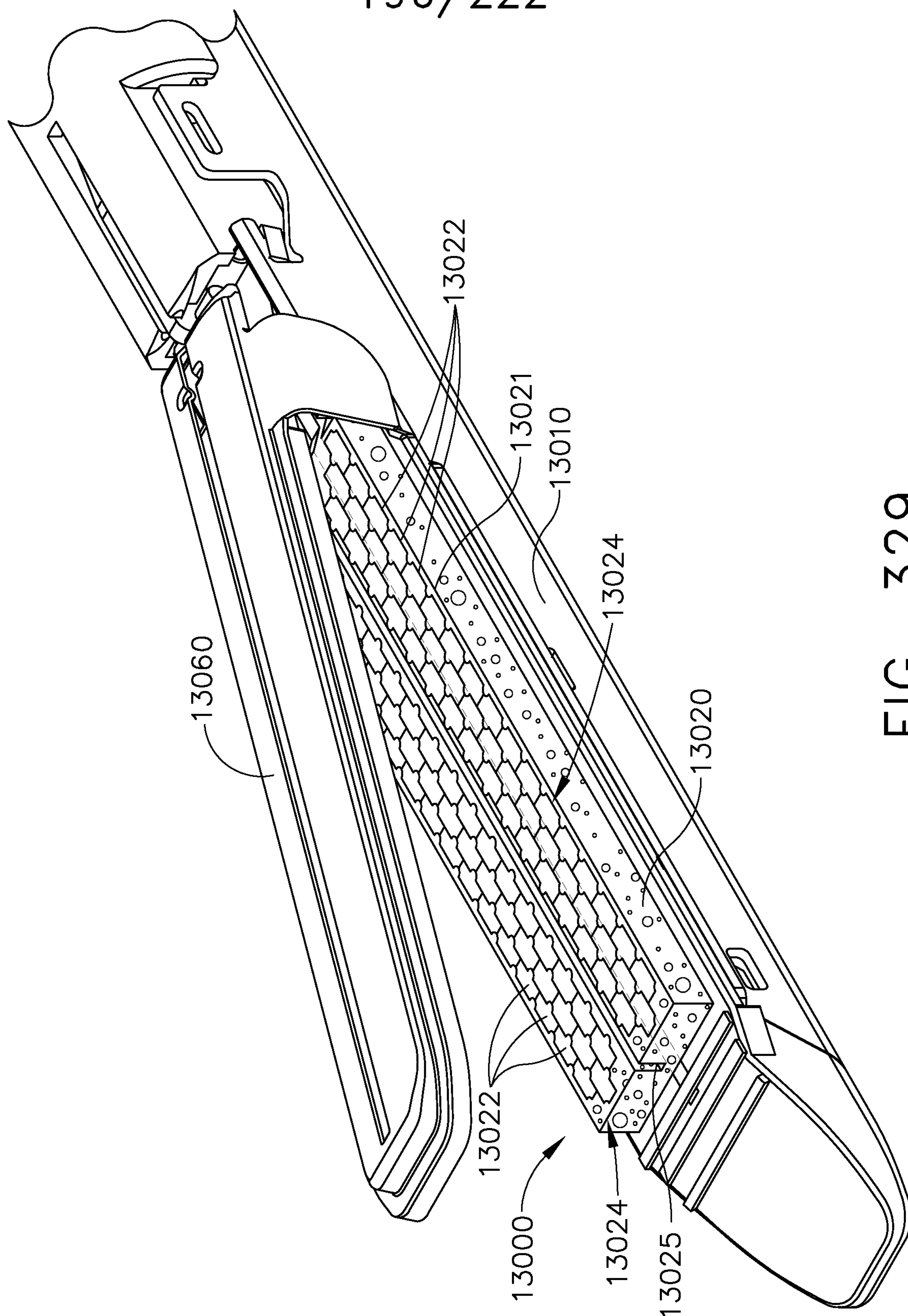
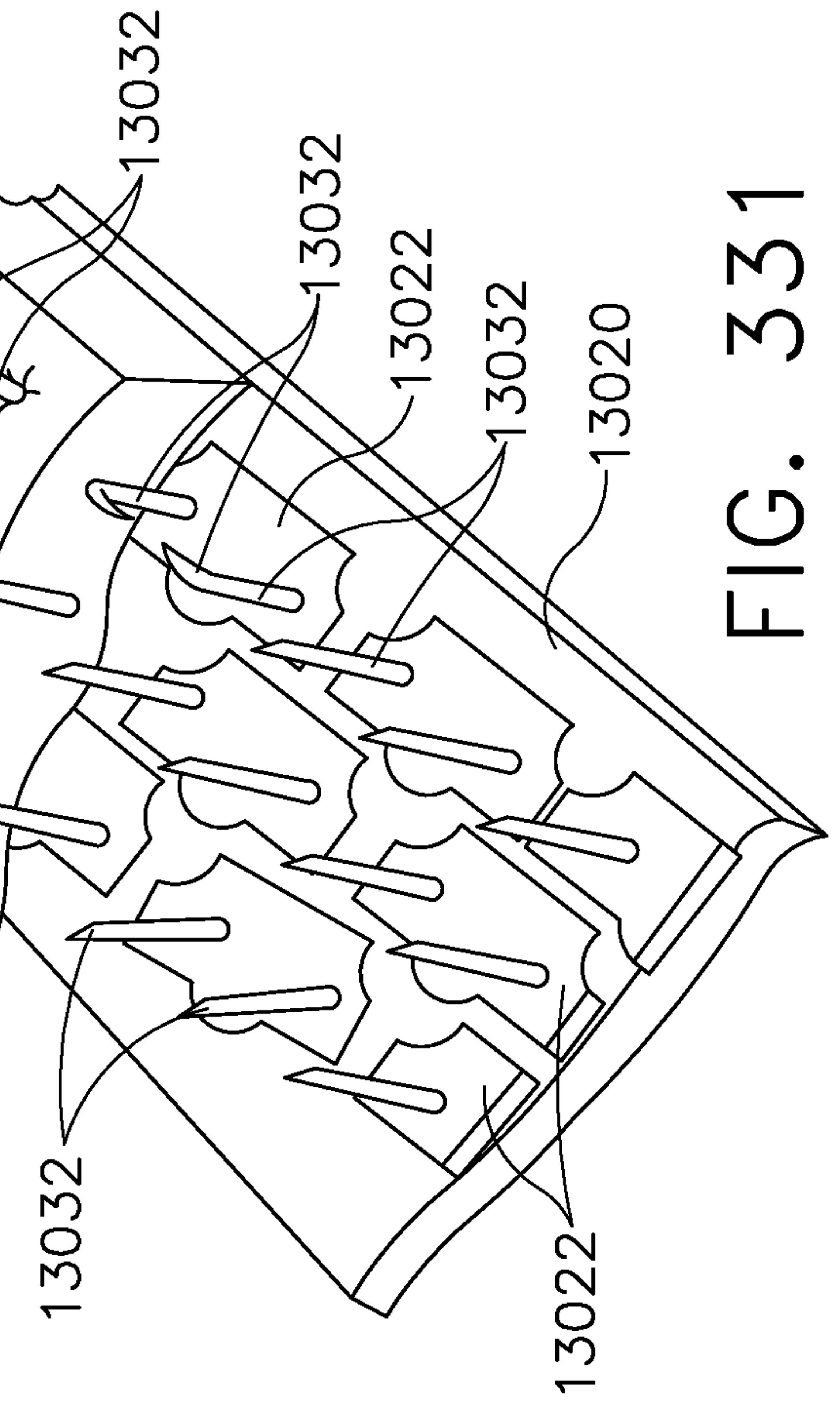
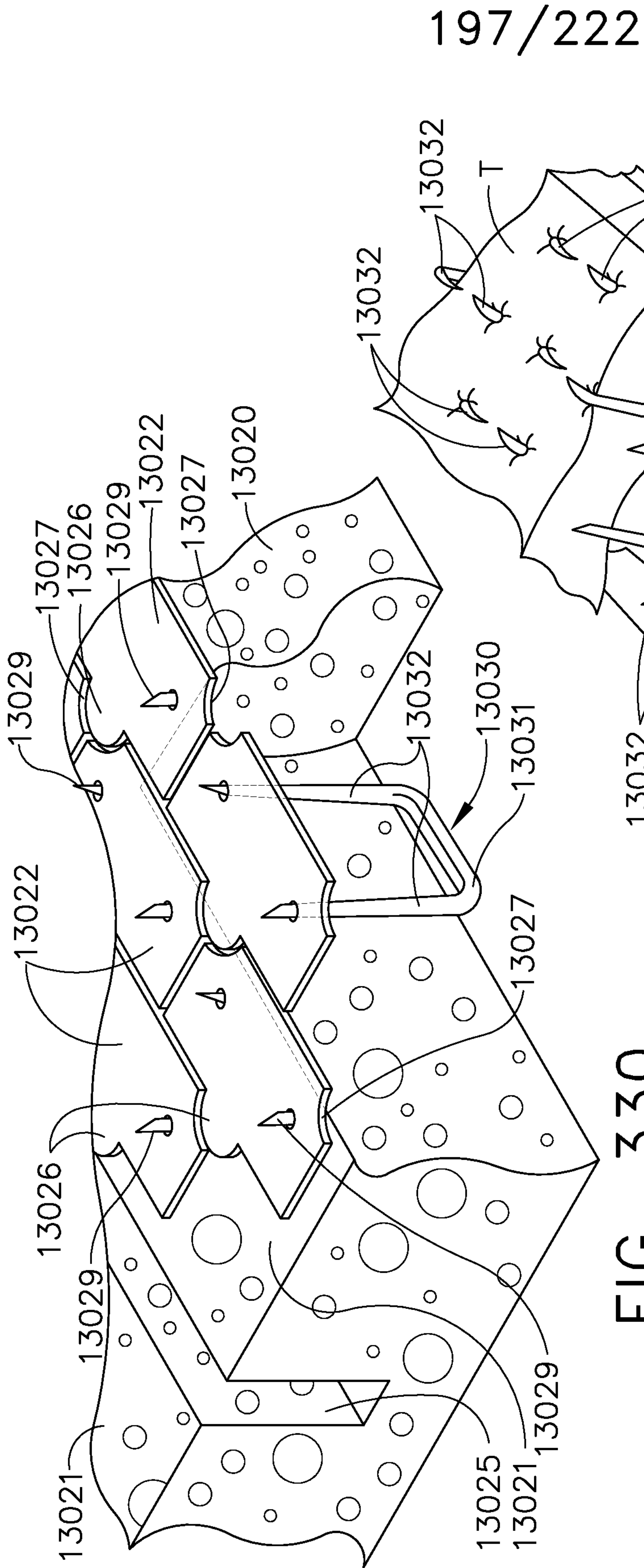


FIG. 328





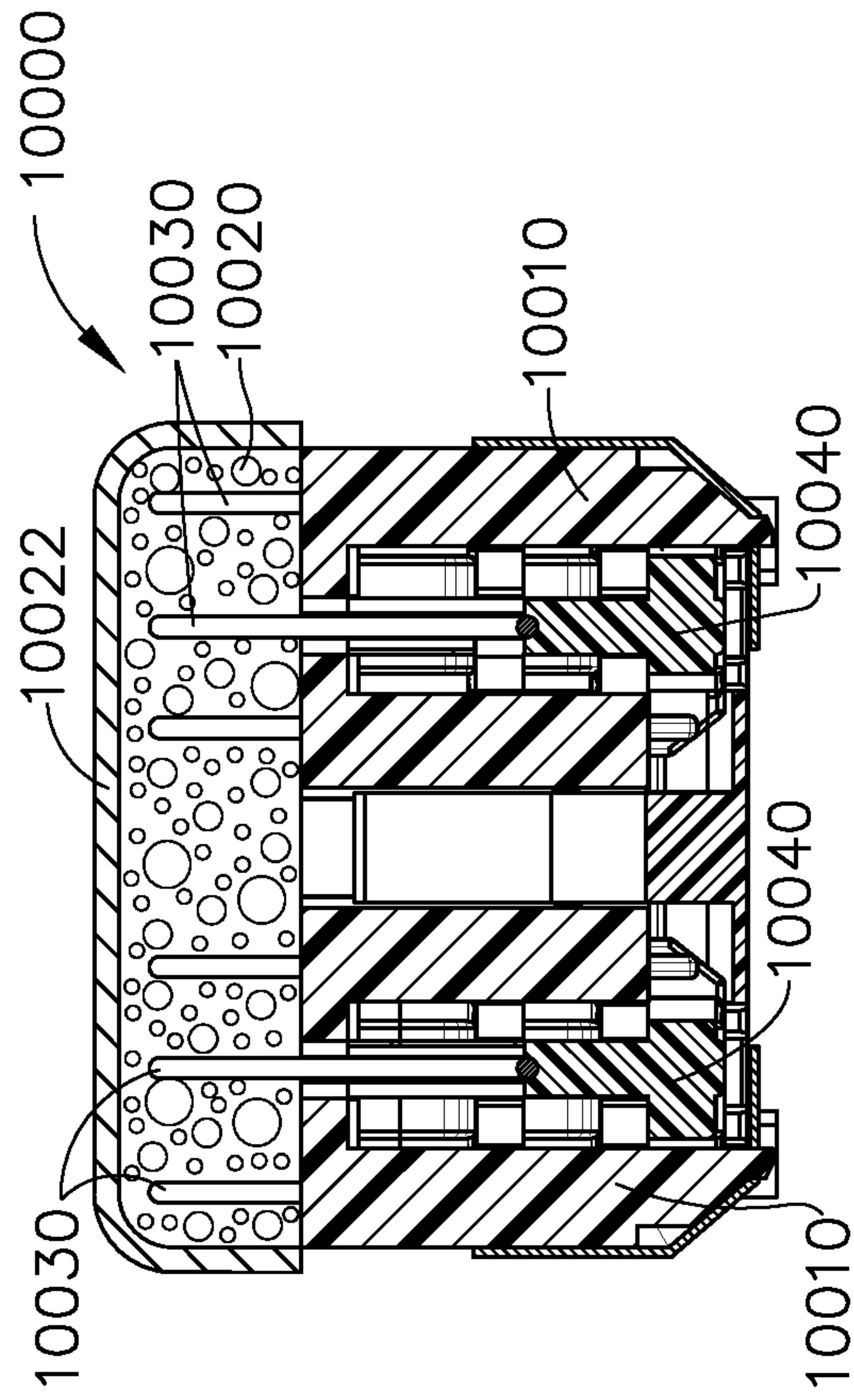


FIG. 332

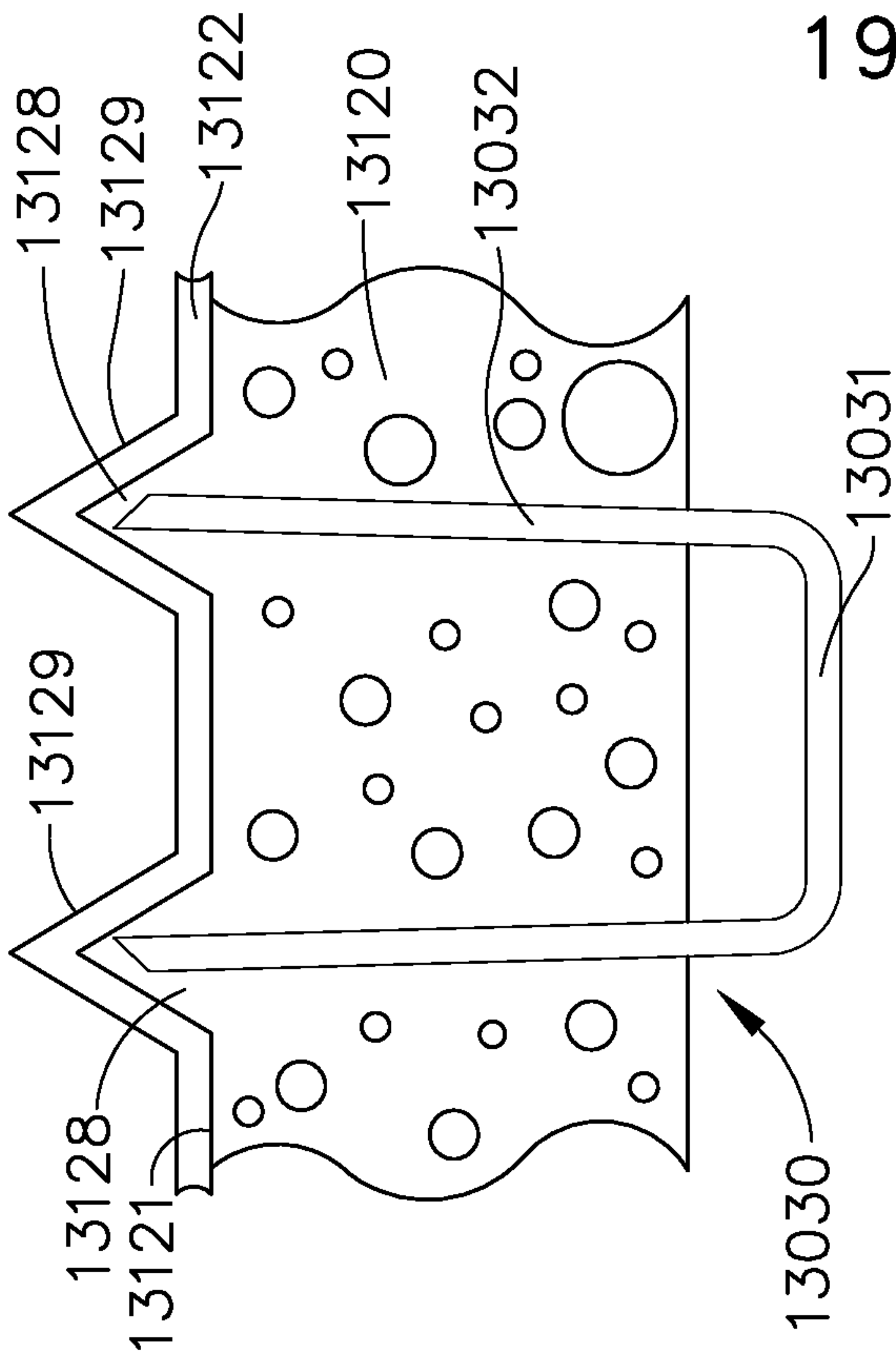


FIG. 333

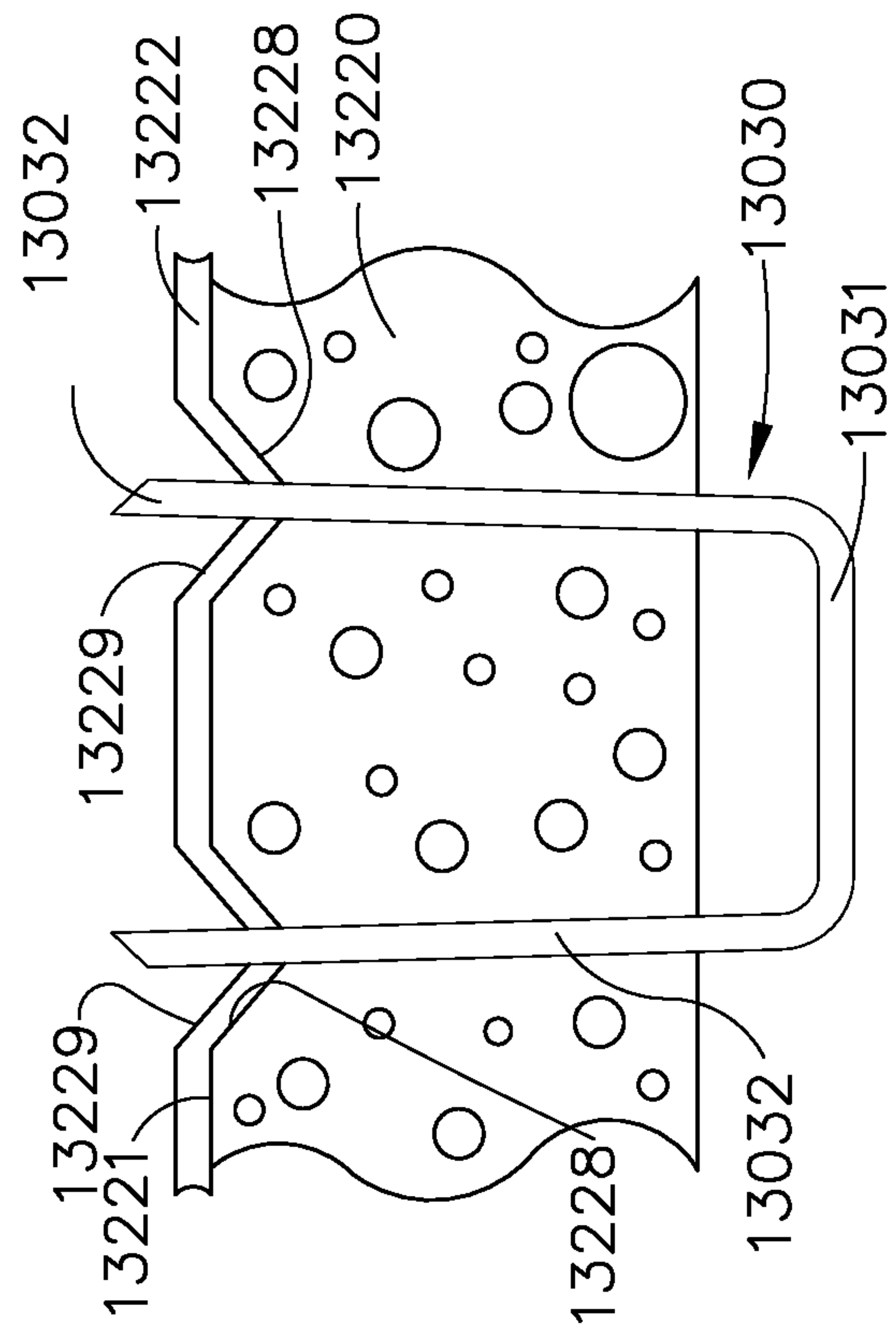


FIG. 334

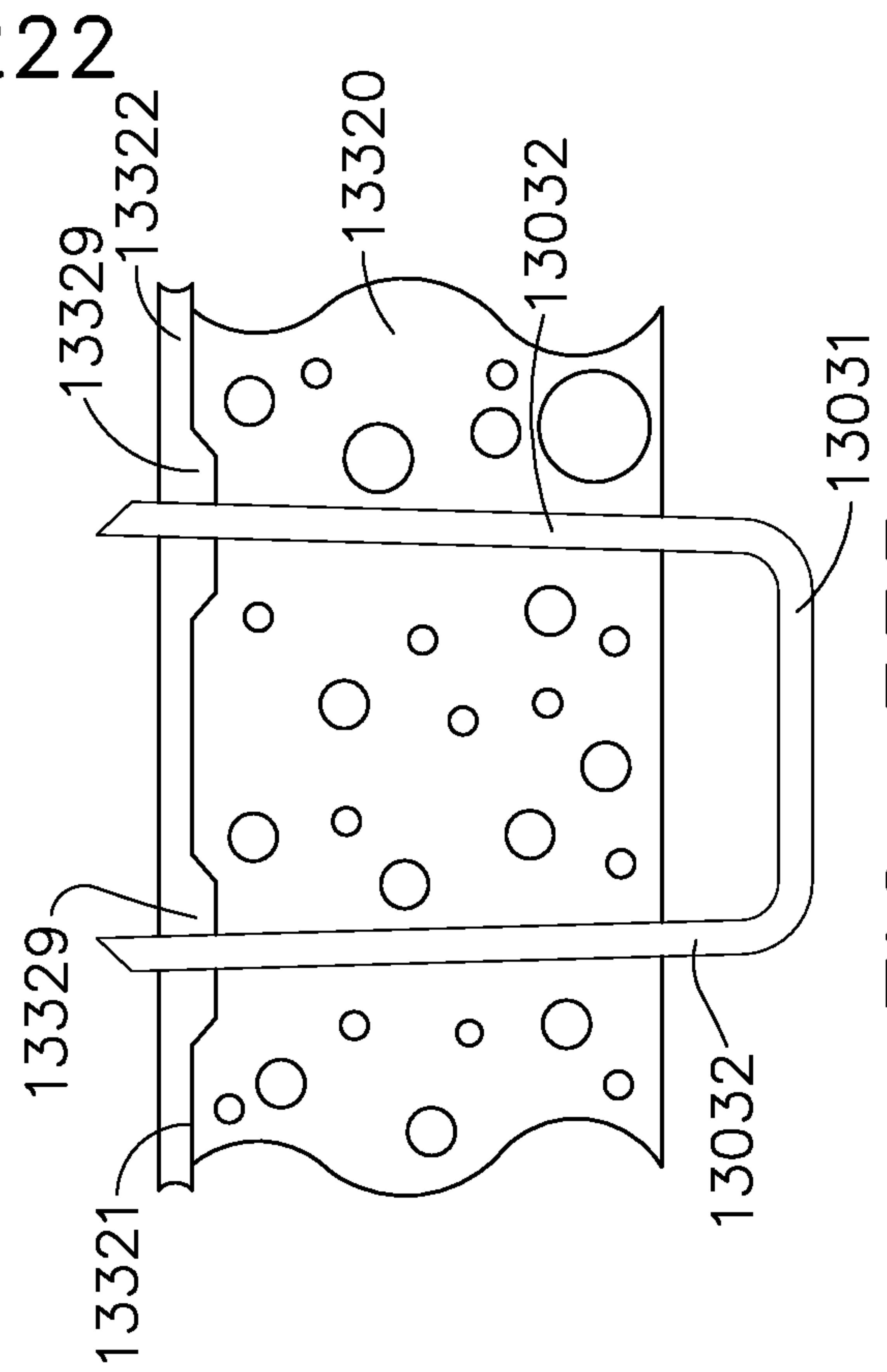


FIG. 335

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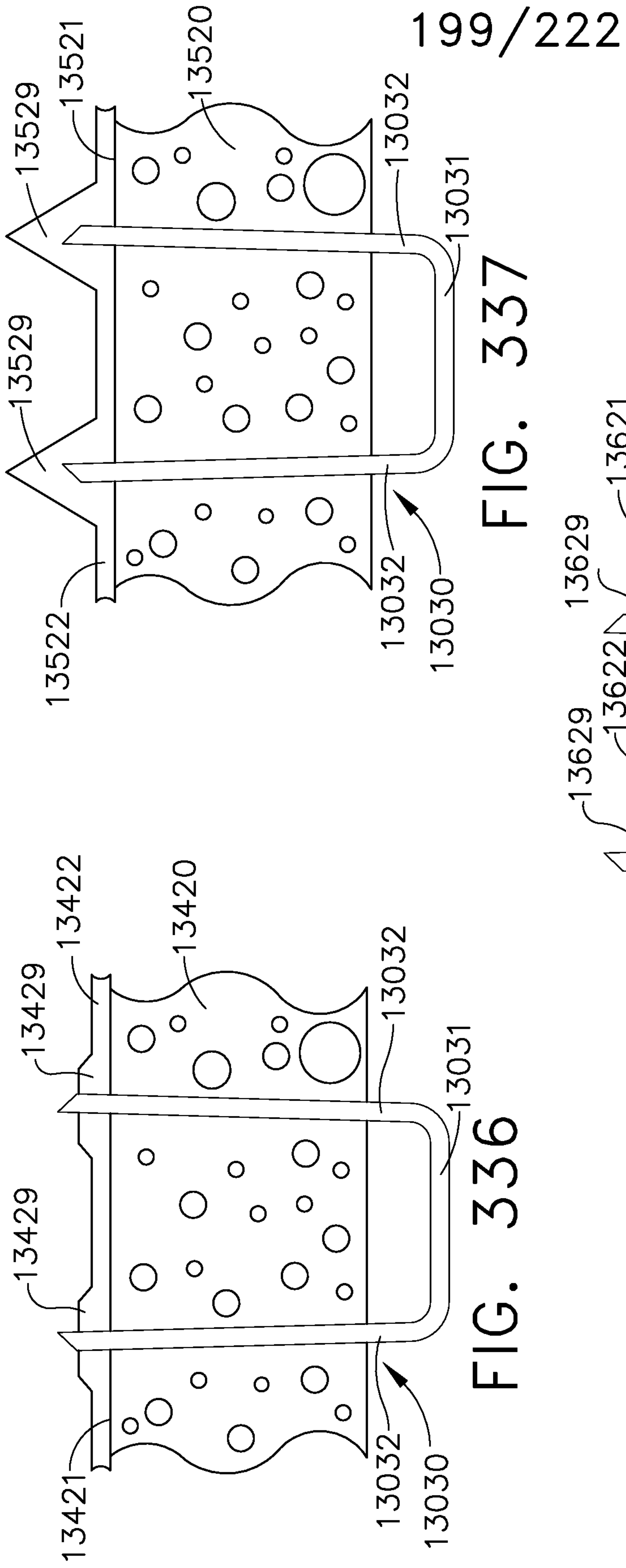


FIG. 337

FIG. 336

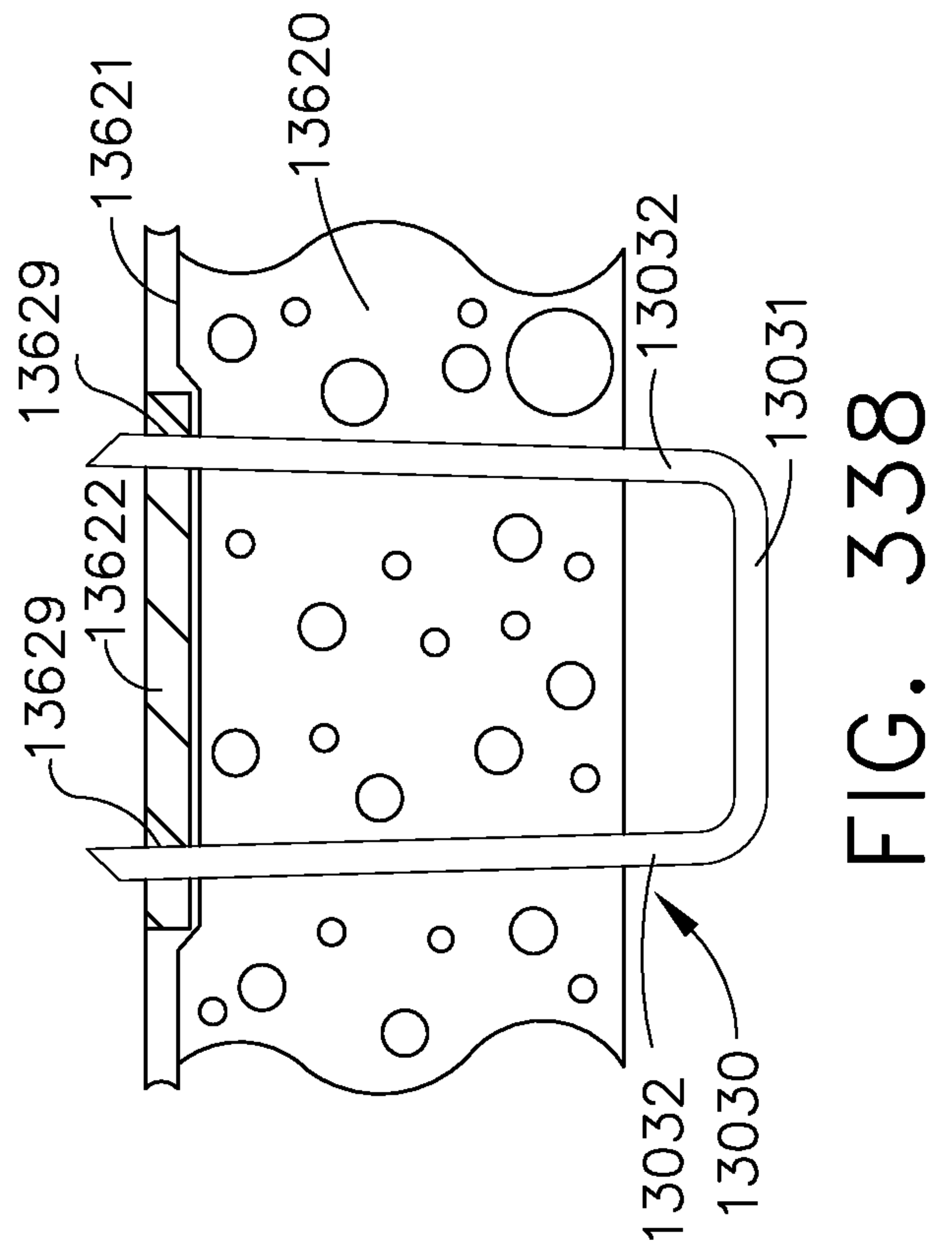


FIG. 338

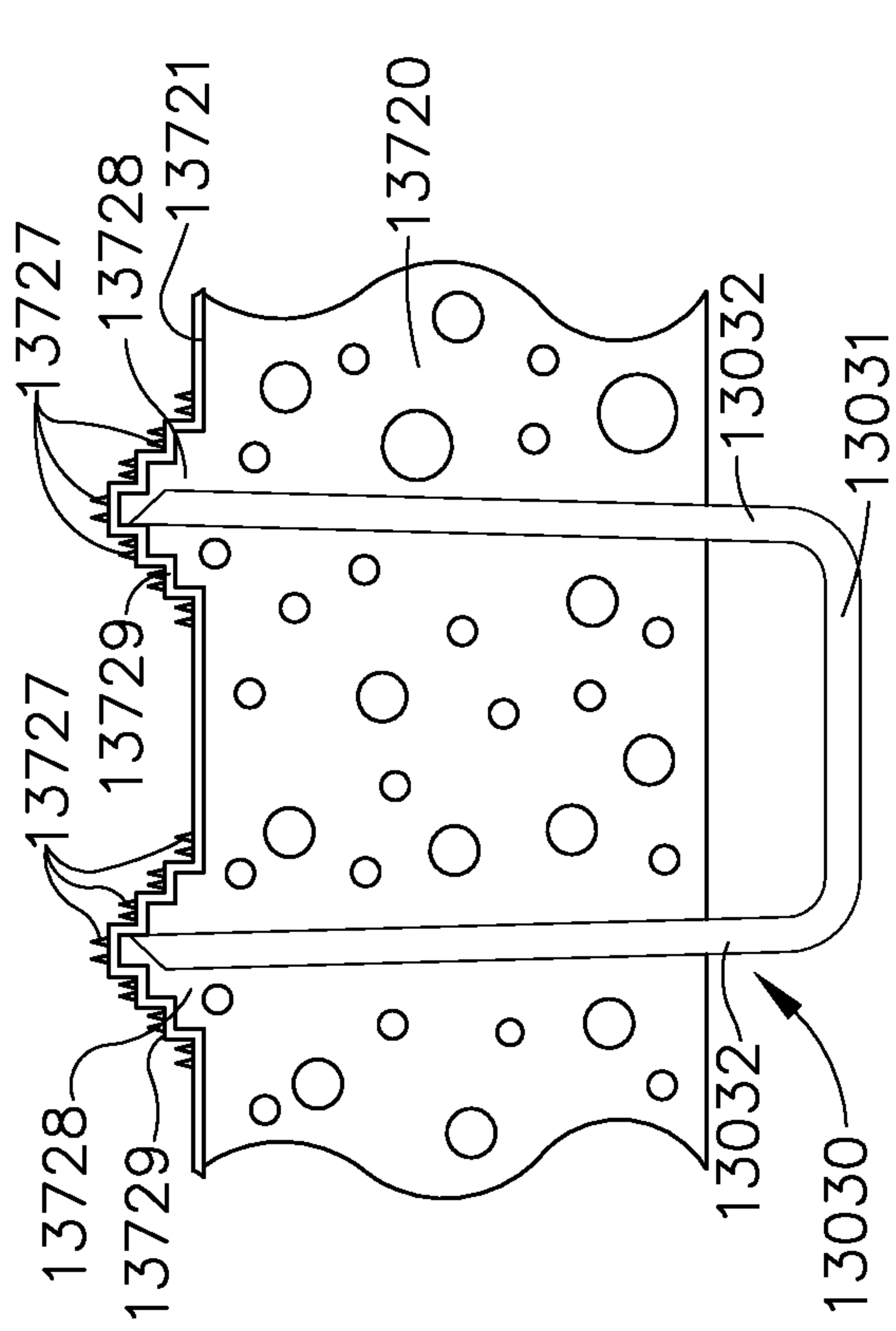


FIG. 339

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FIG. 340

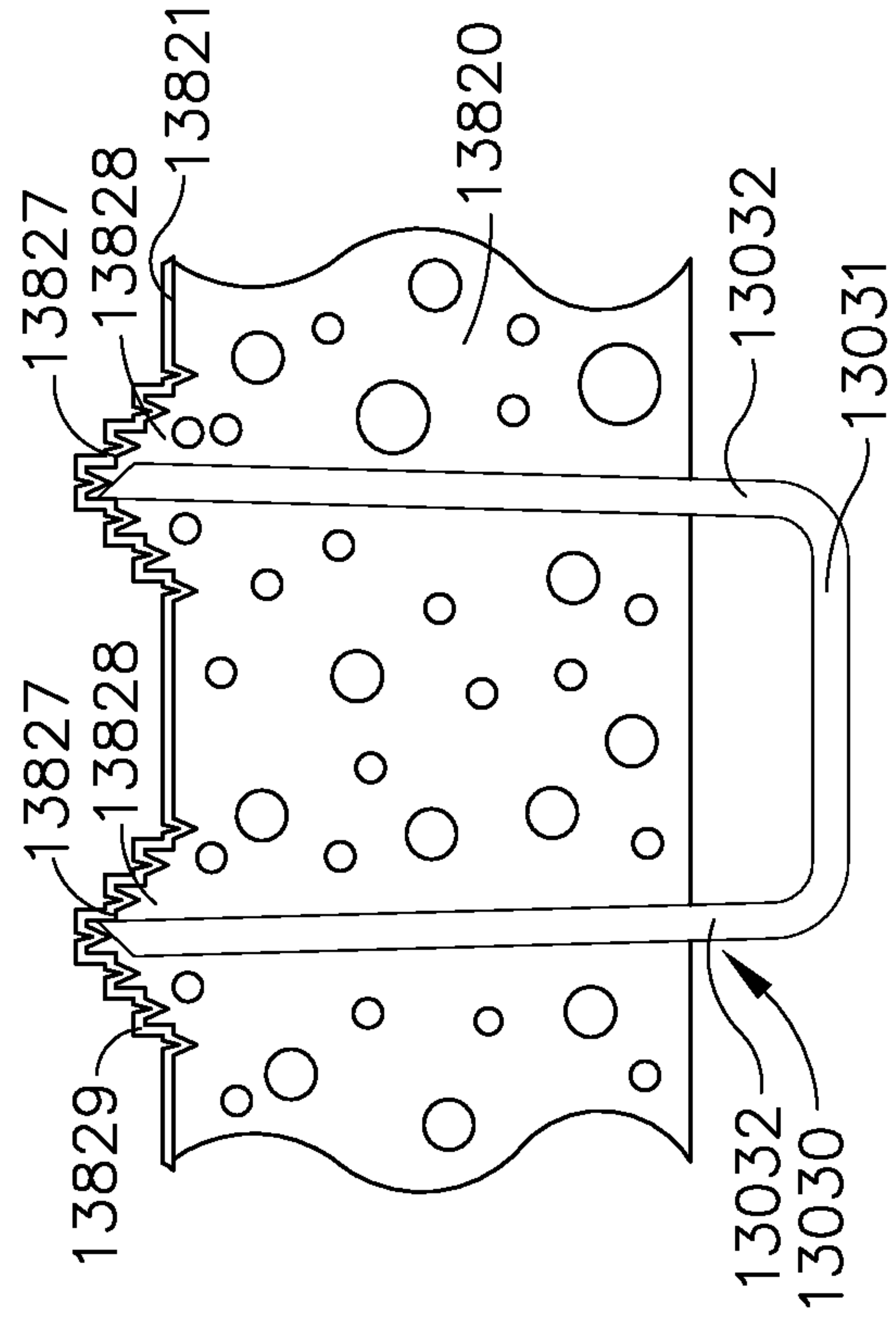


FIG. 341

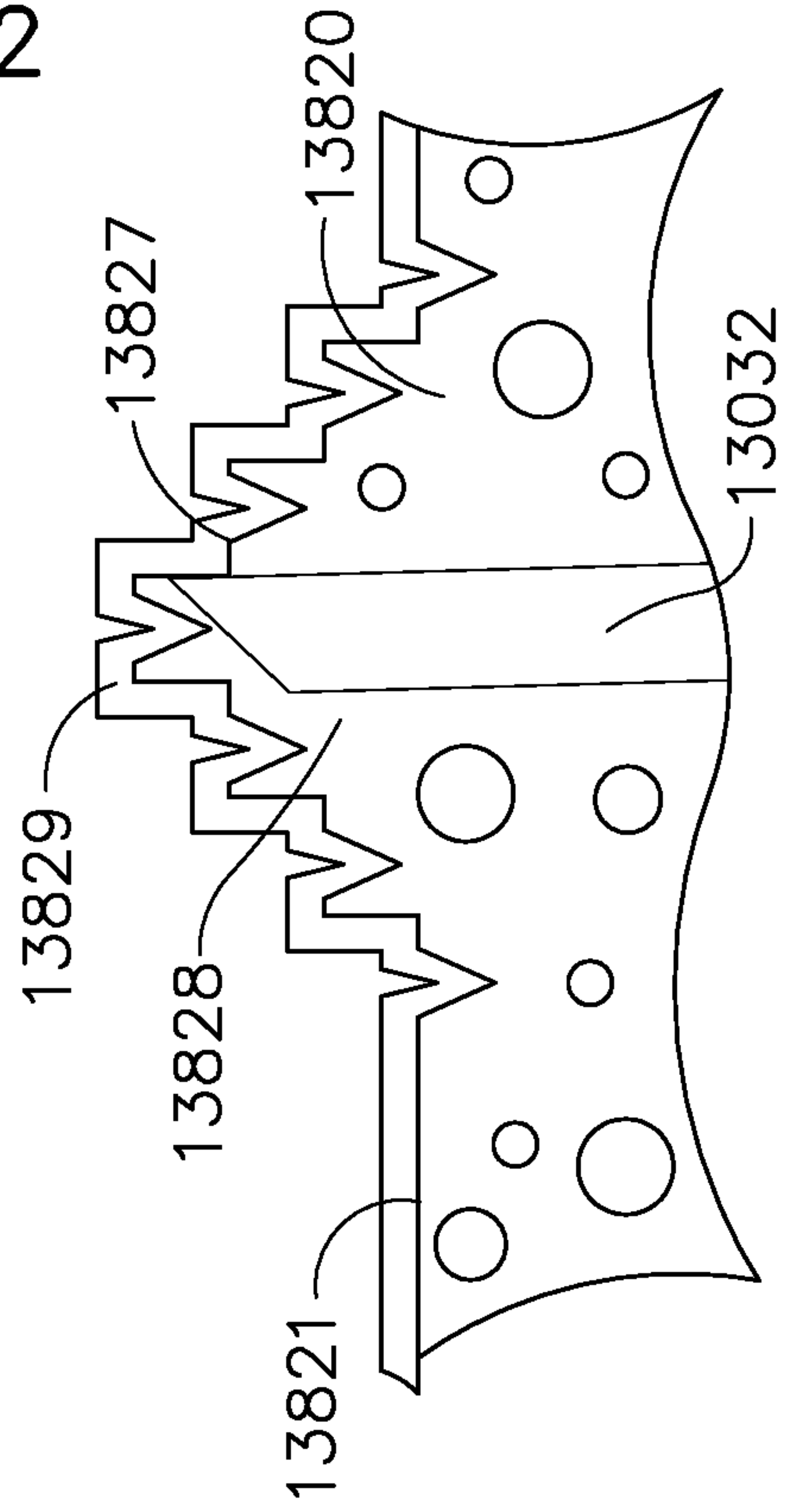


FIG. 342

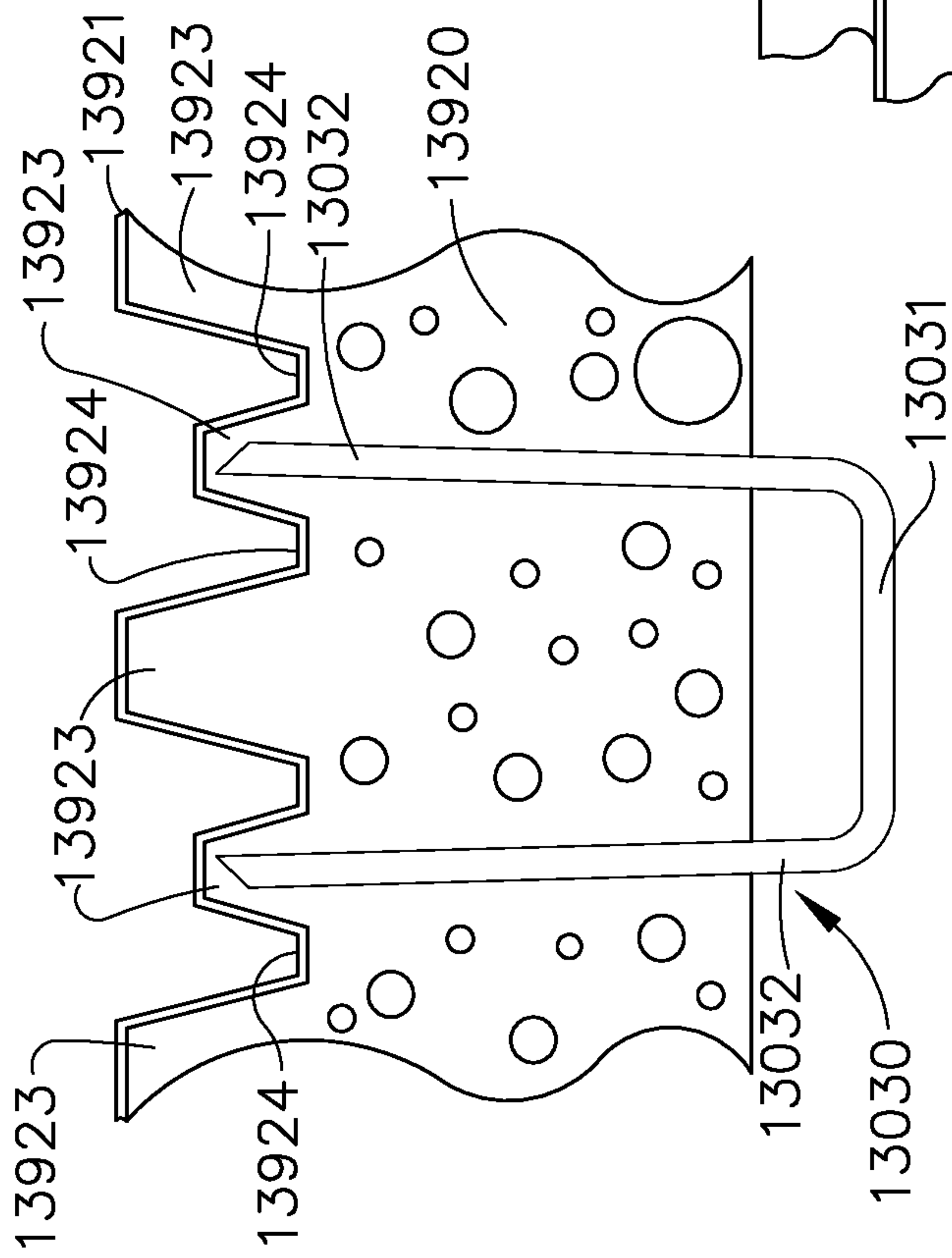


FIG. 343

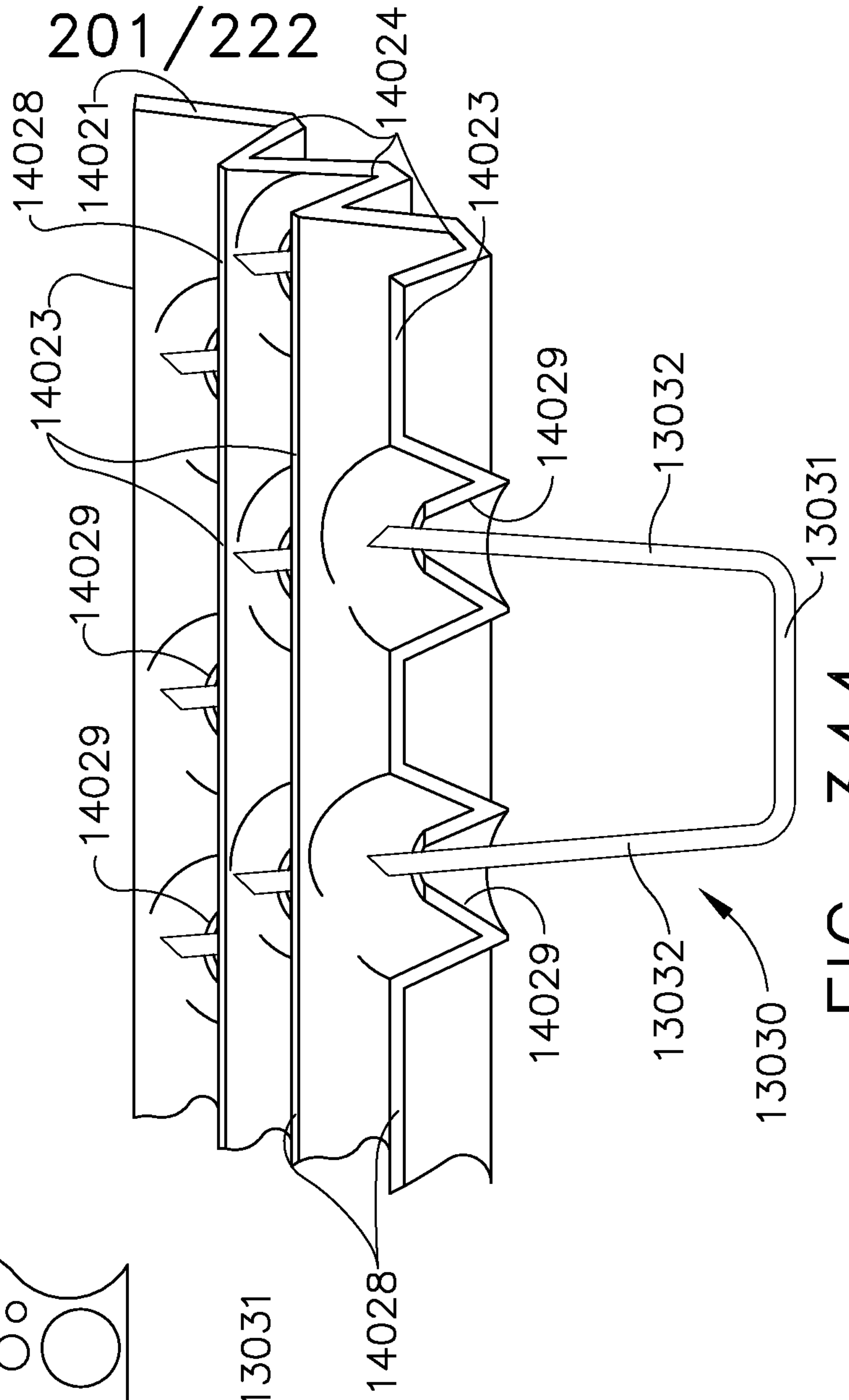
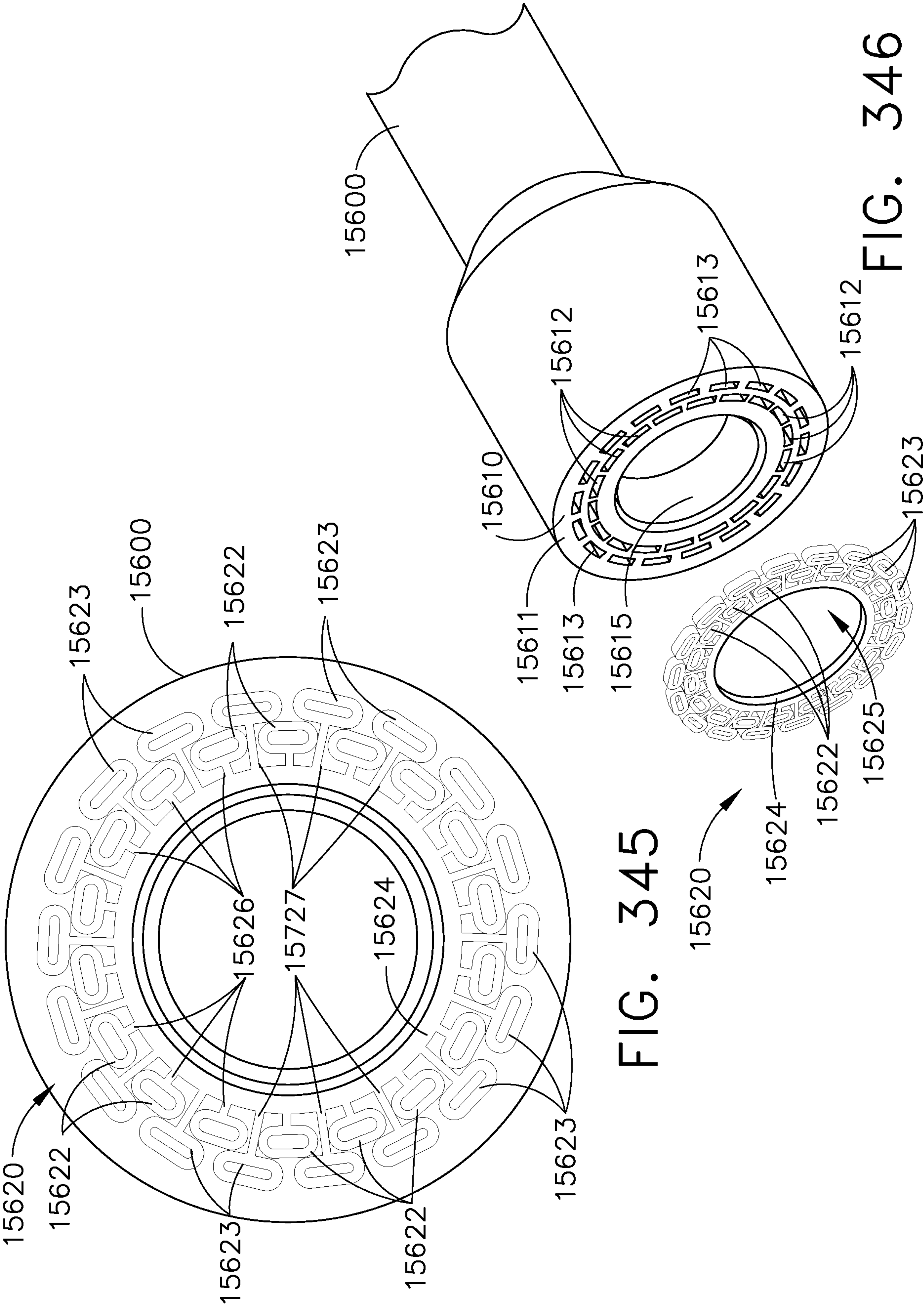


FIG. 344

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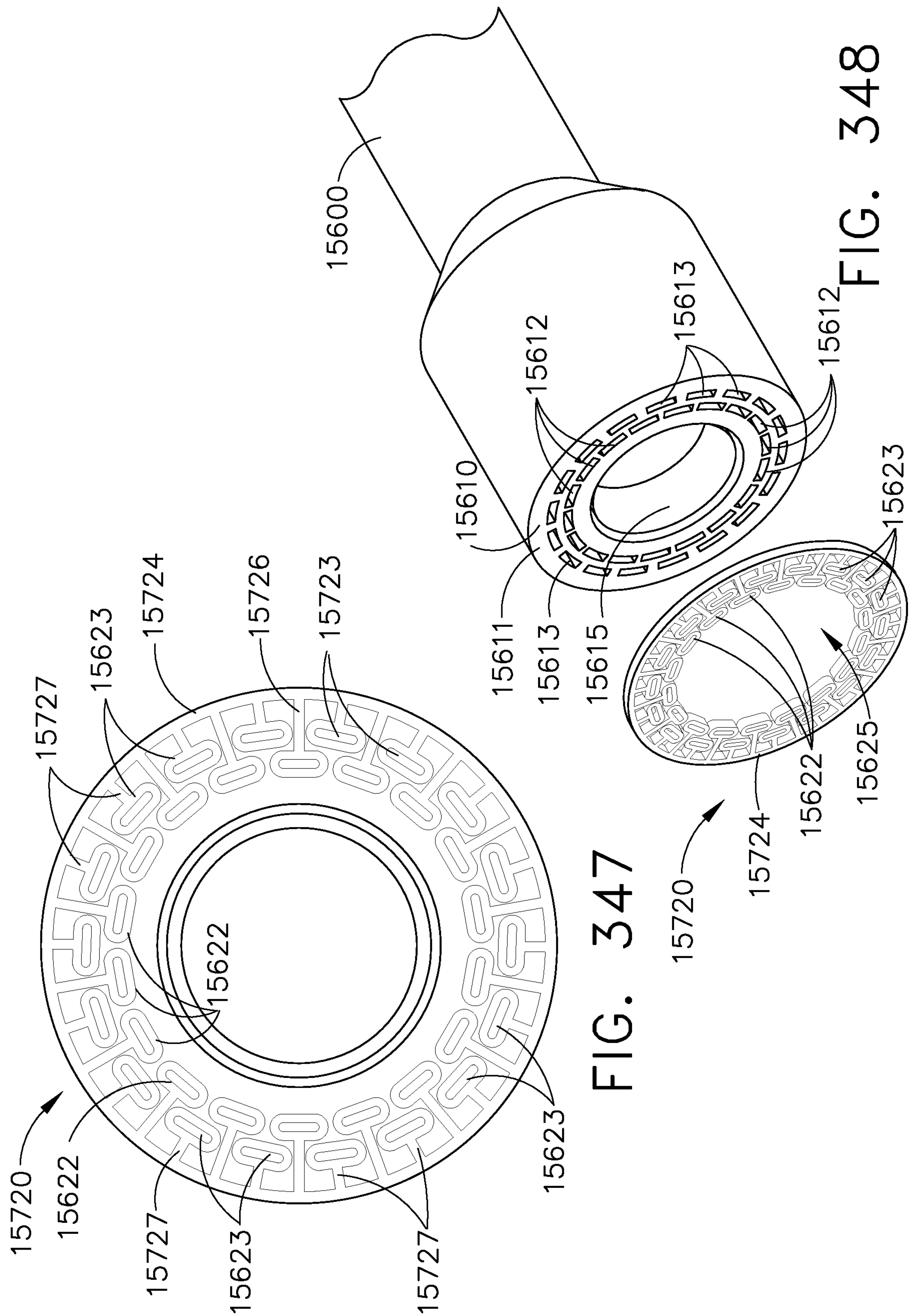


FIG. 348

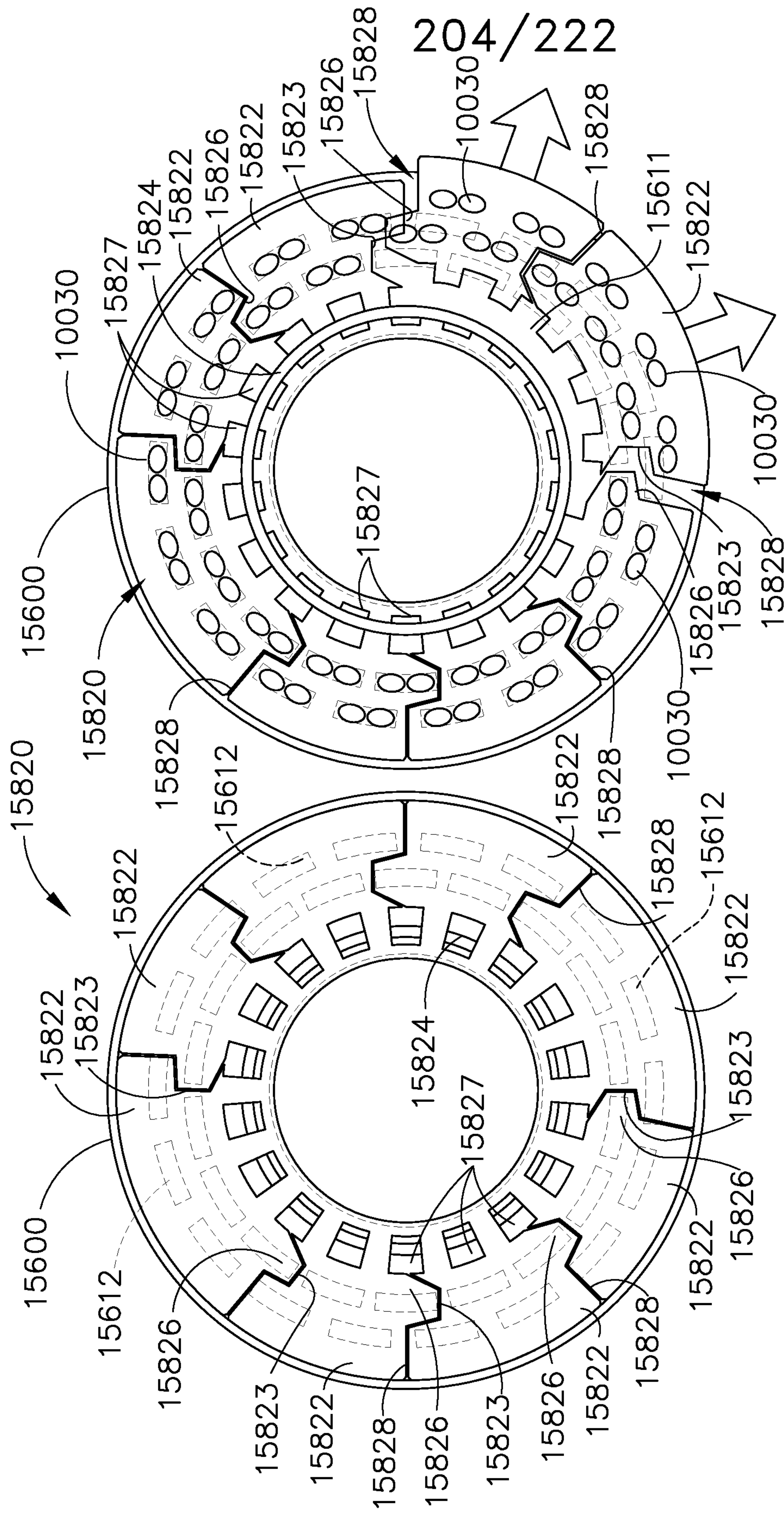


FIG. 349

FIG. 350

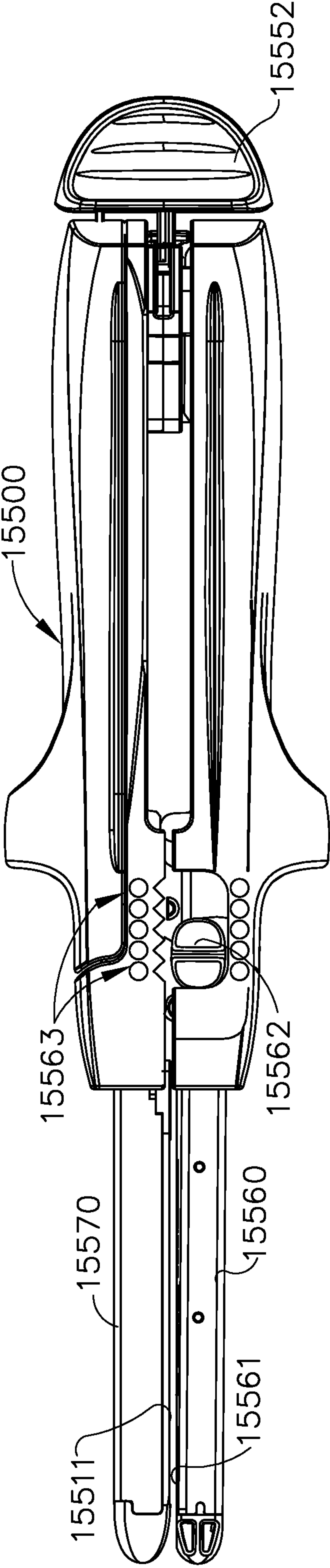


FIG. 351

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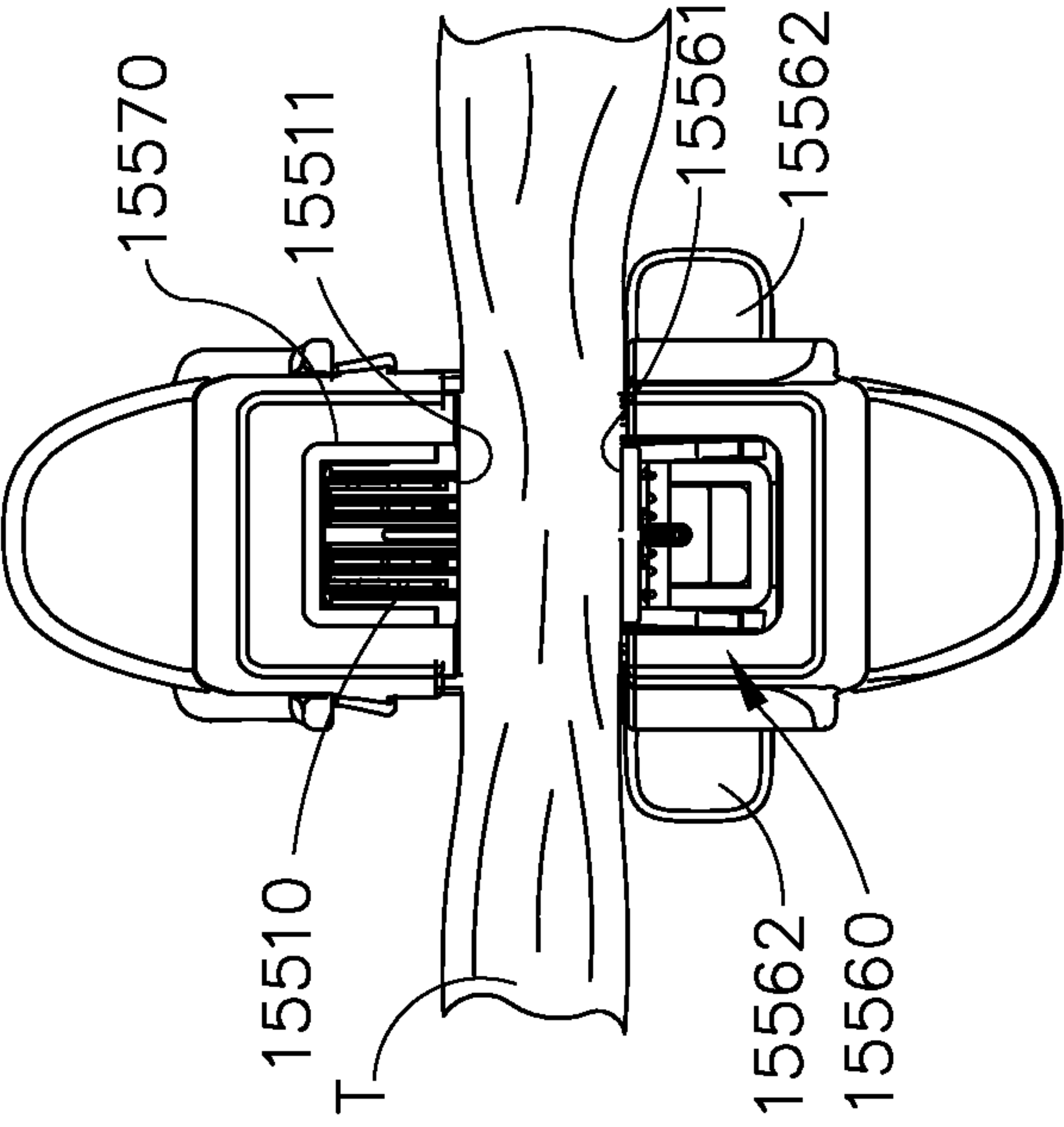


FIG. 352

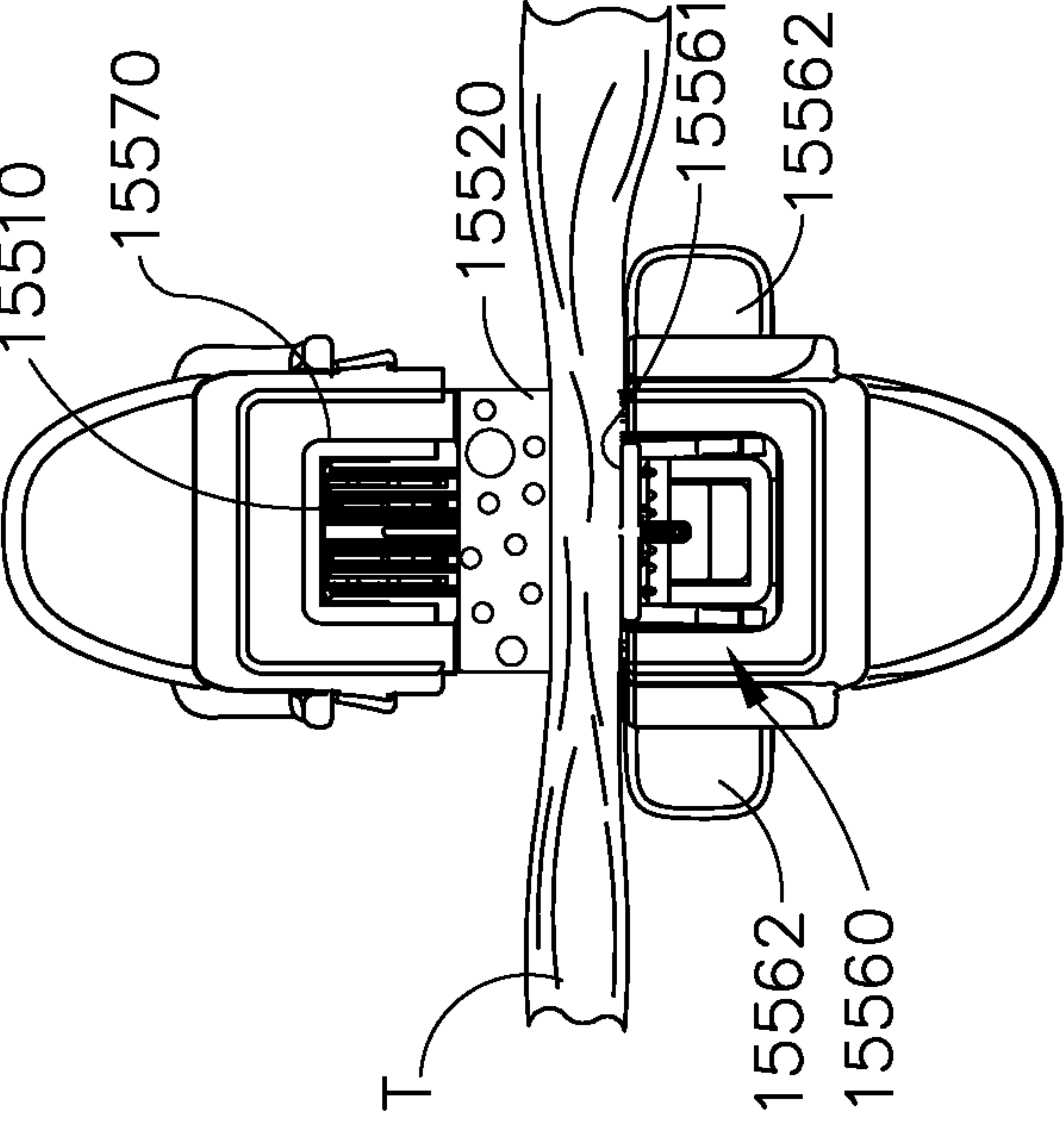


FIG. 353

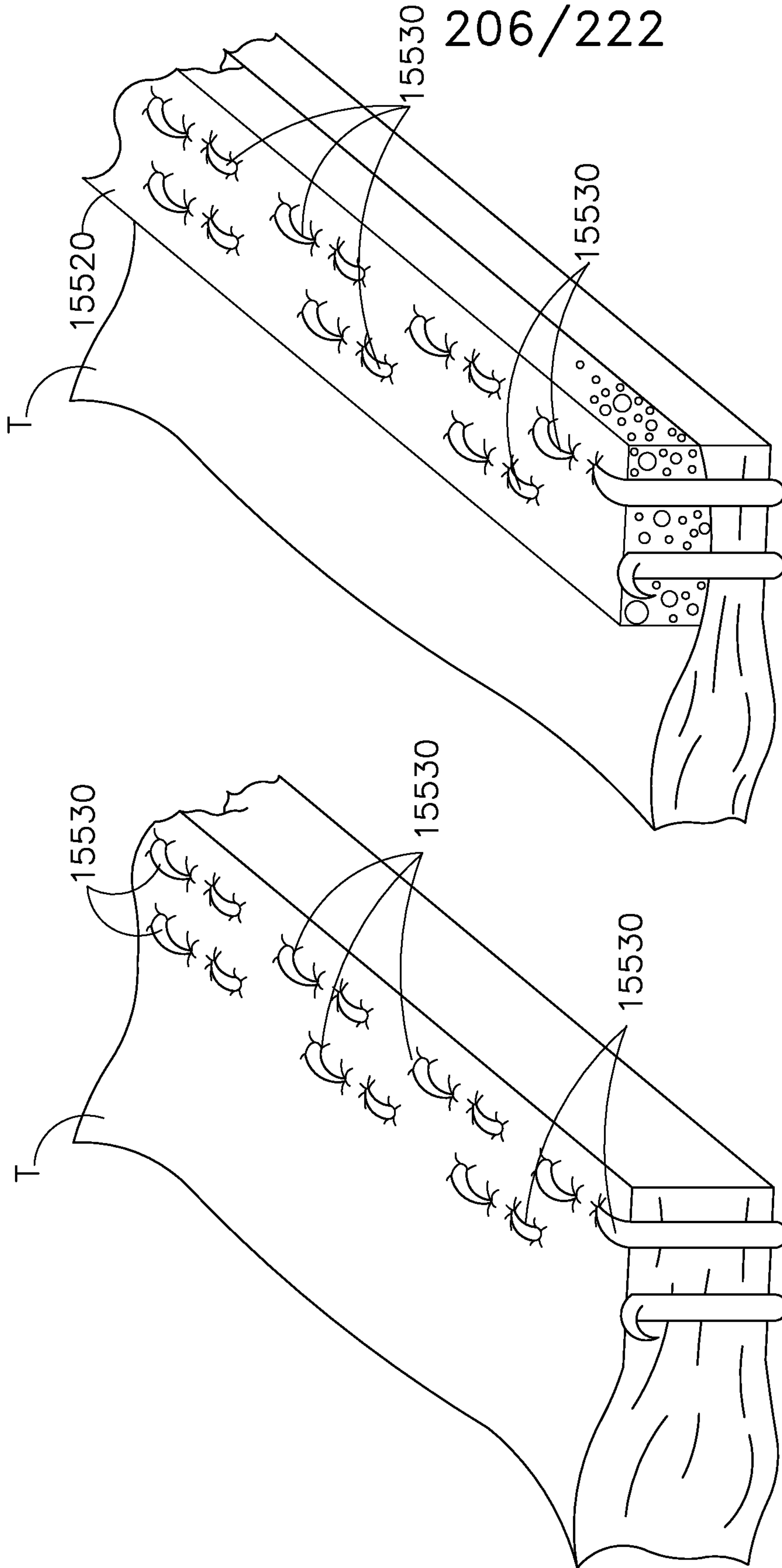
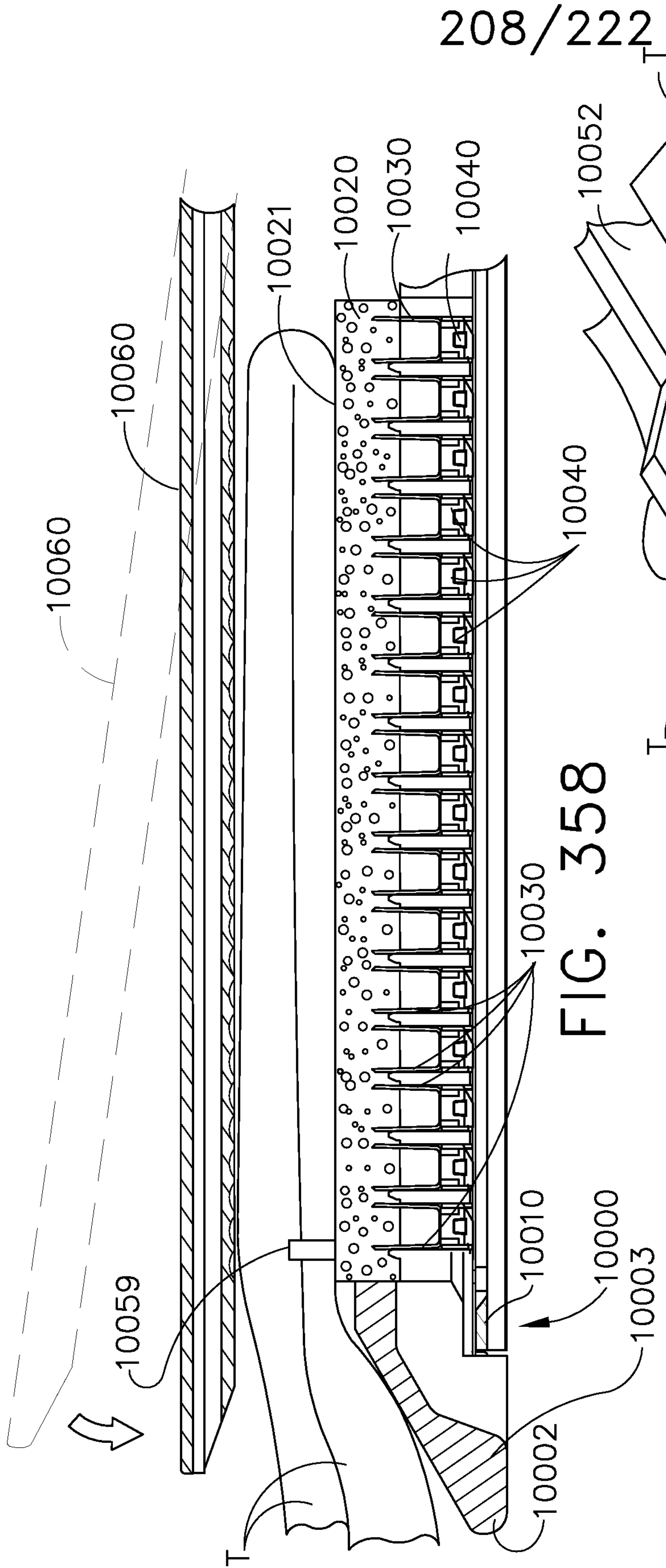


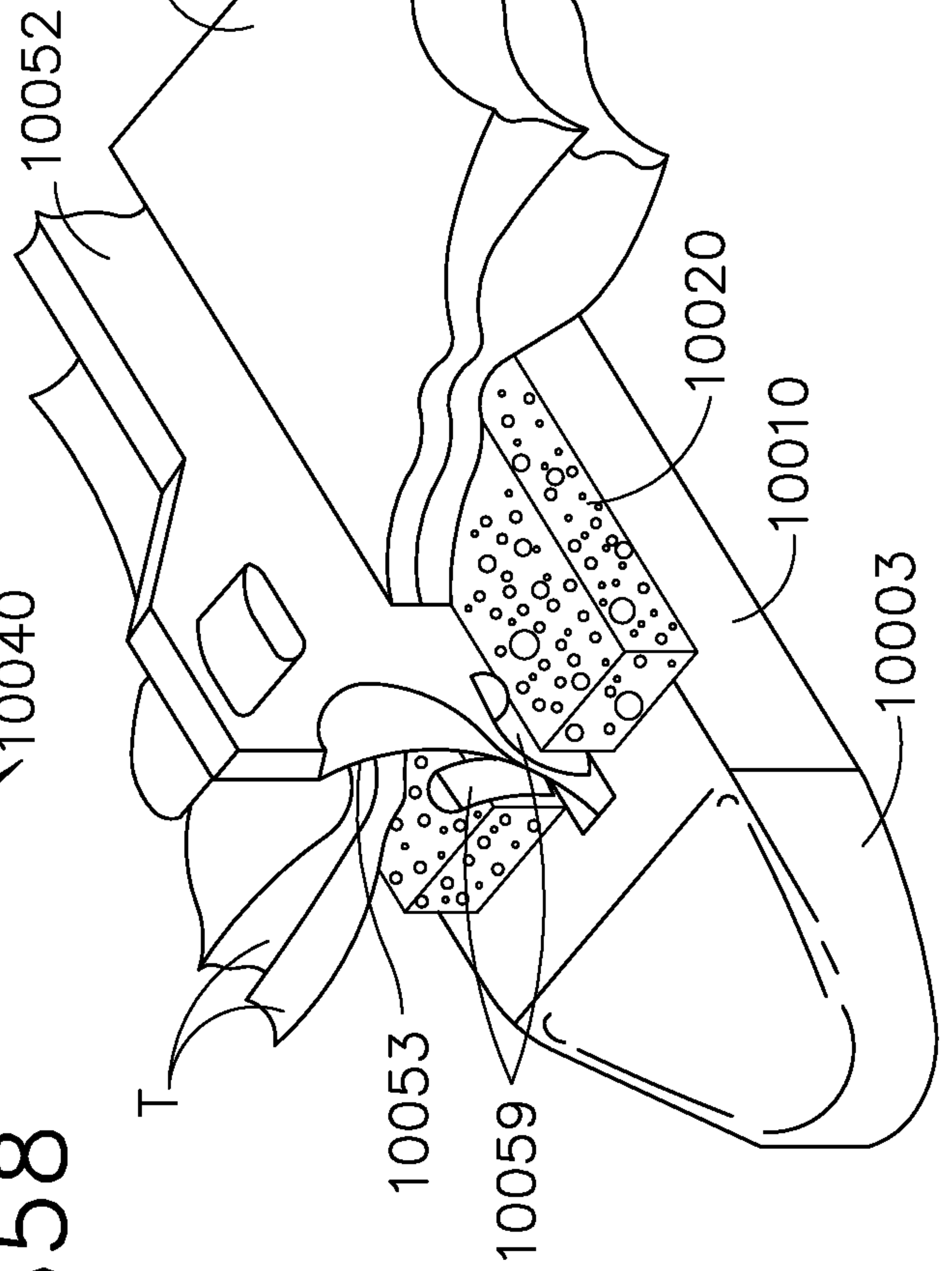
FIG. 355

FIG. 354

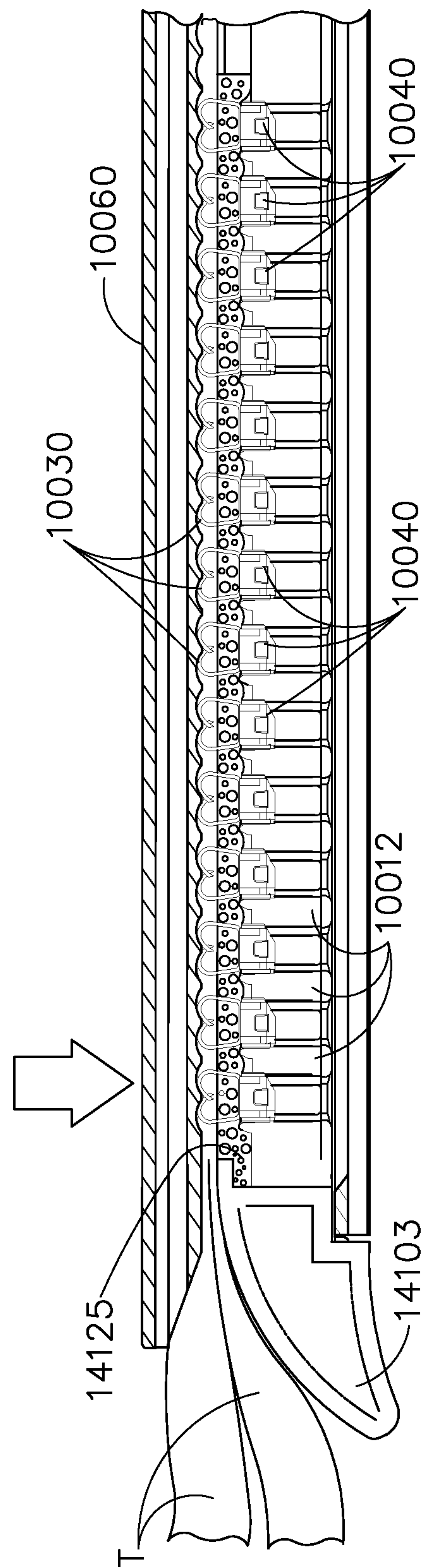
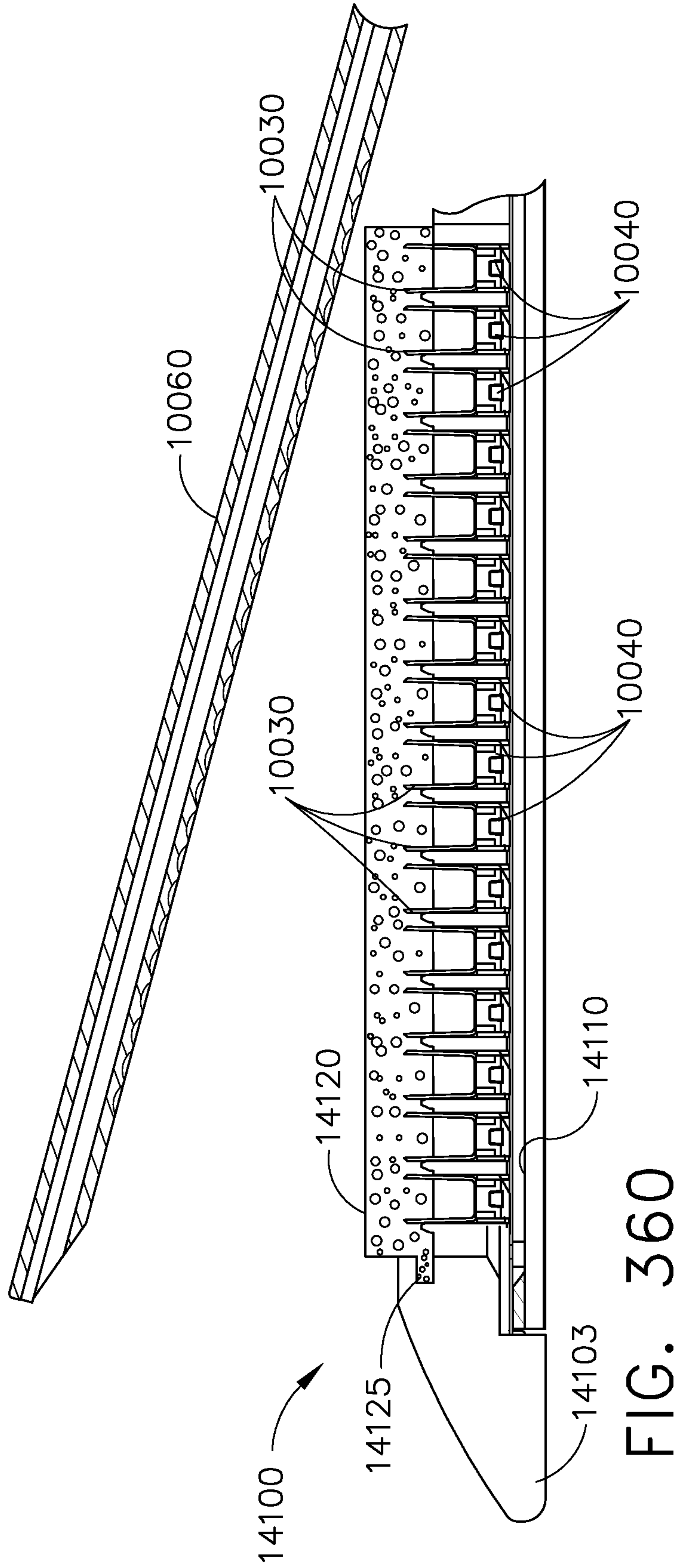




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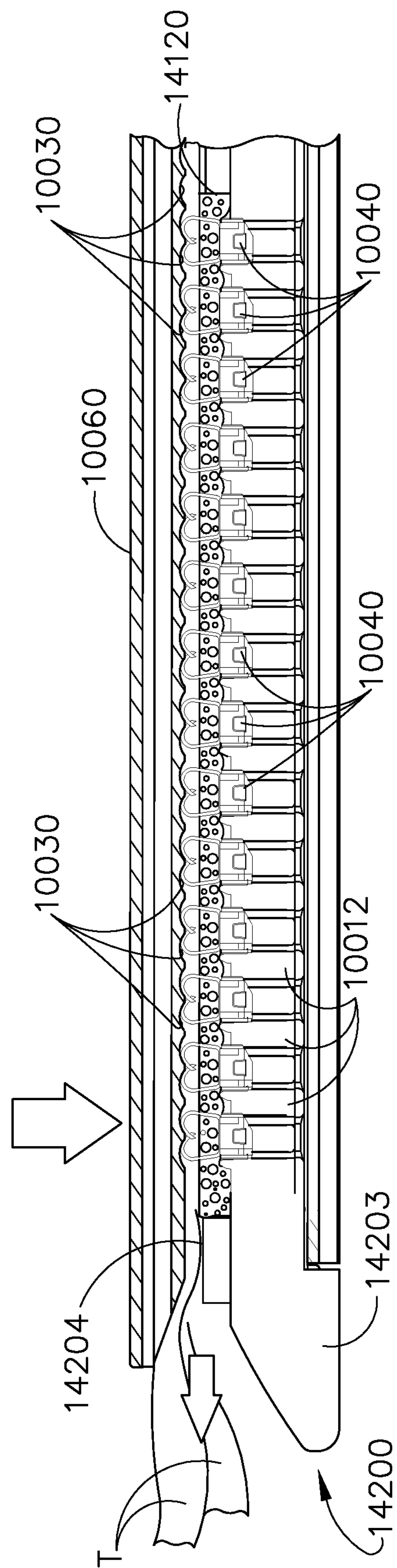
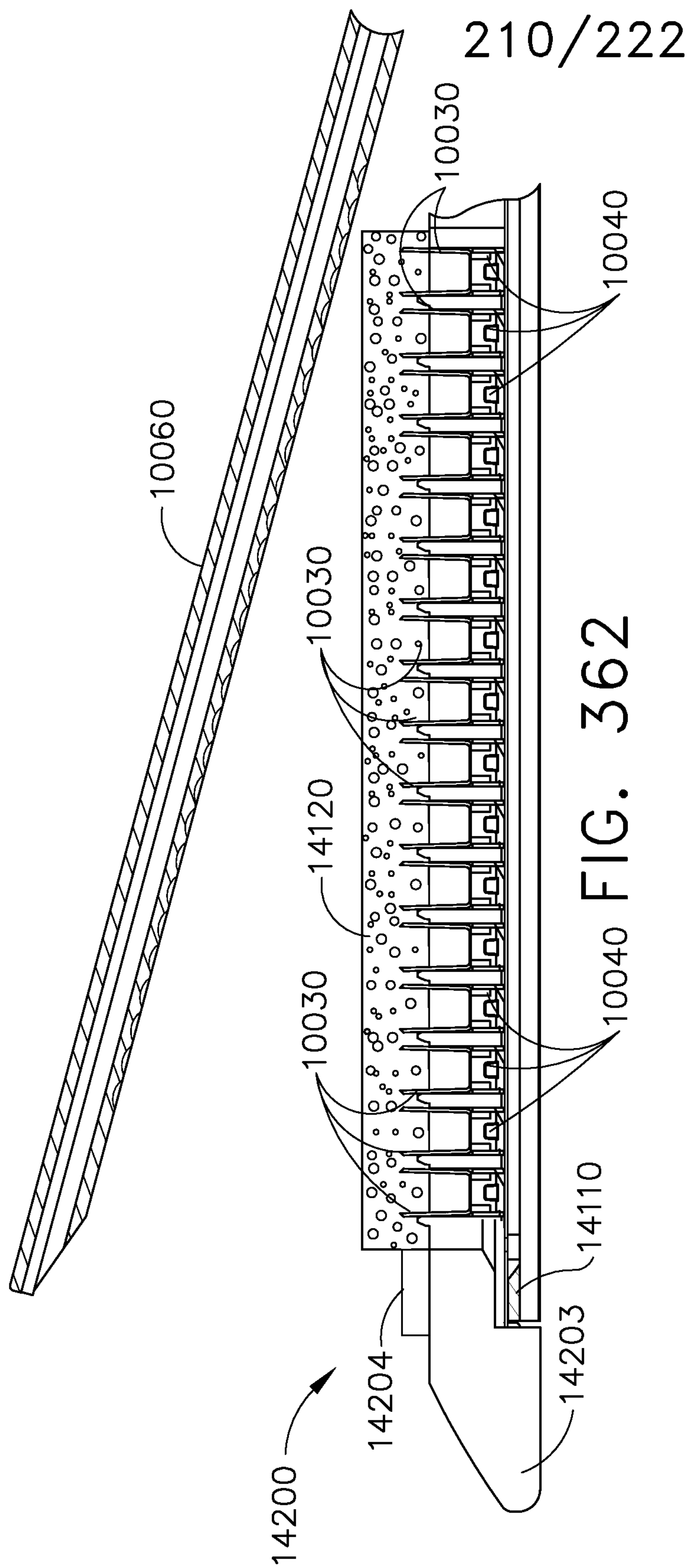
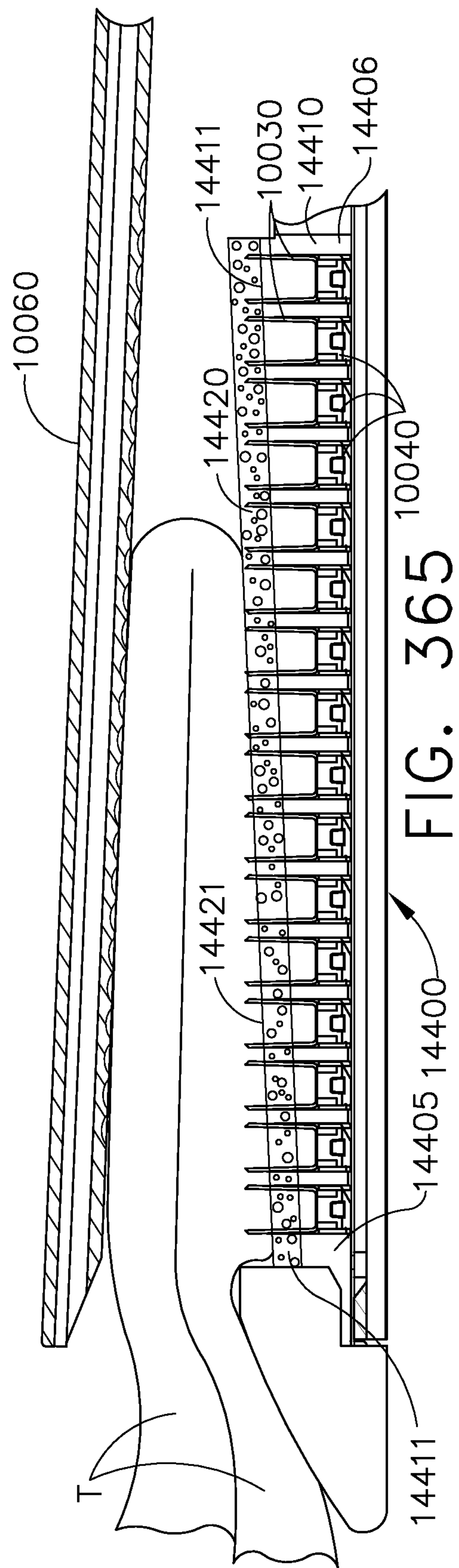
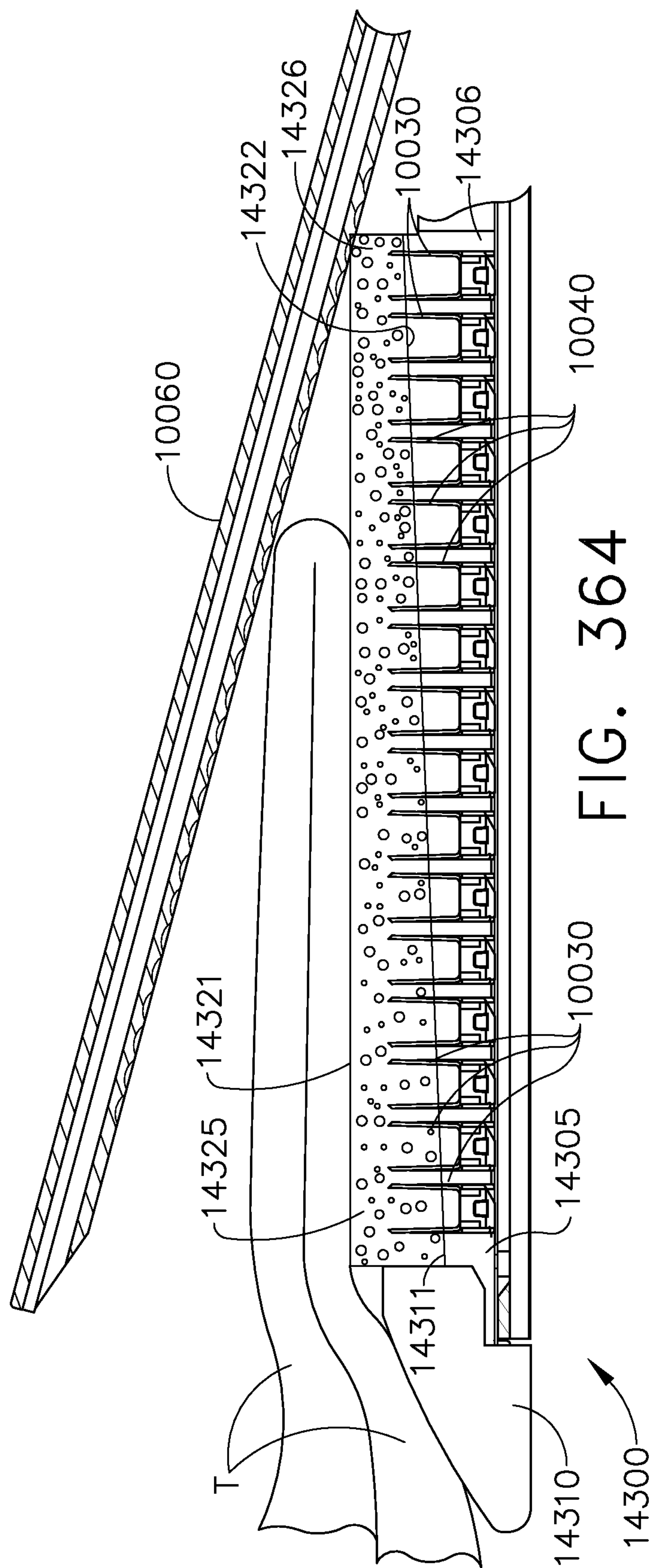


FIG. 363

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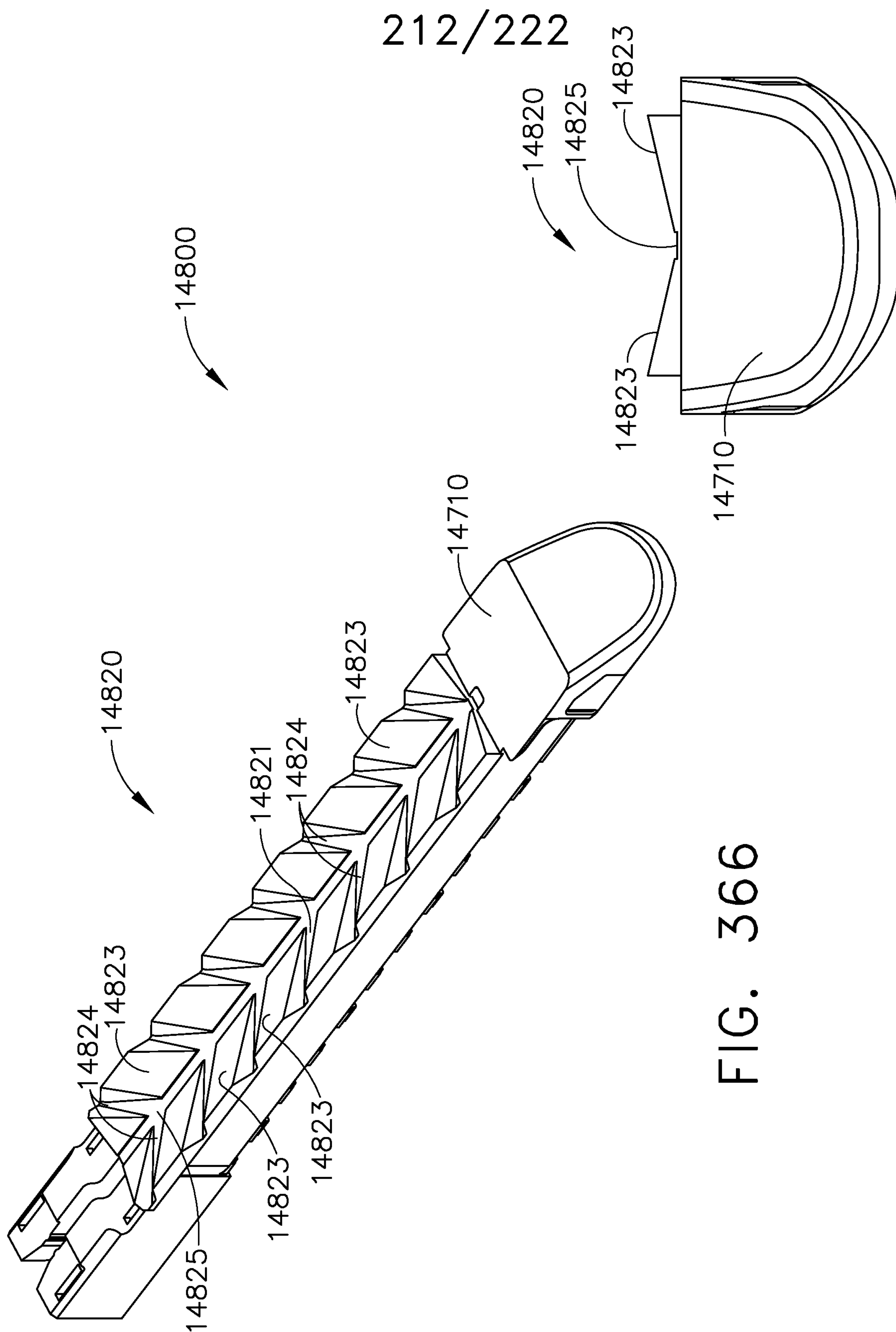


FIG. 366

FIG. 367

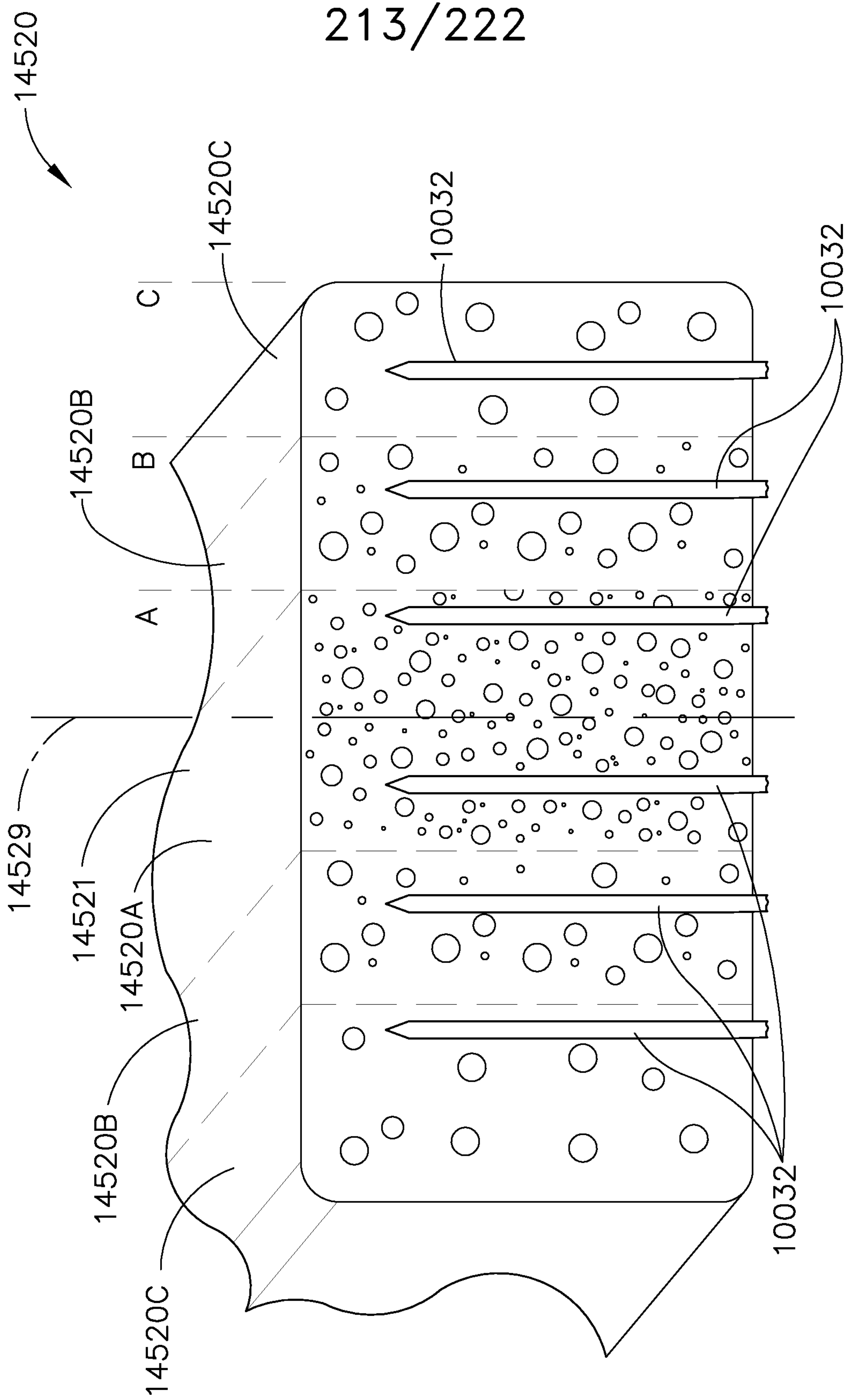
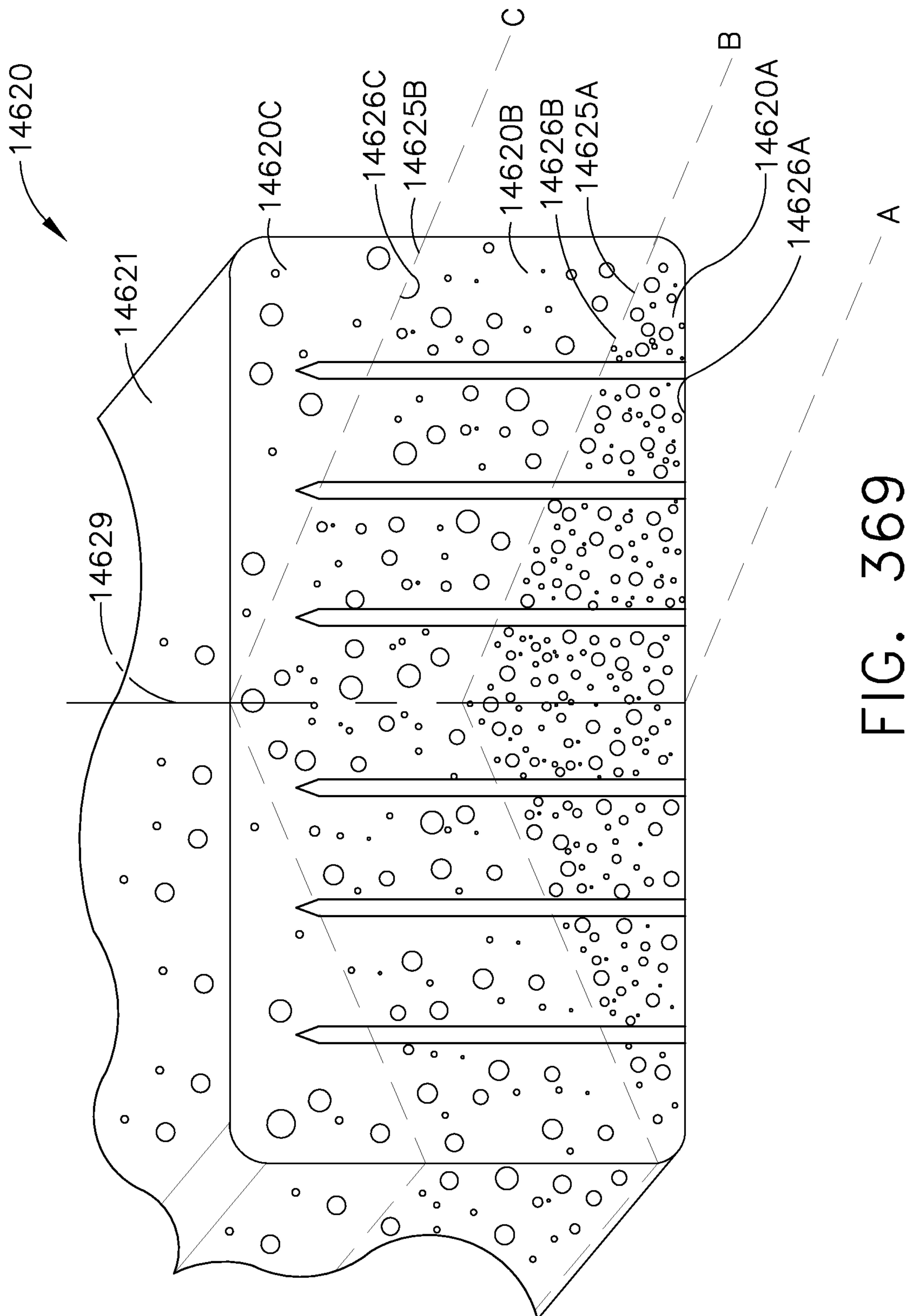


FIG. 368

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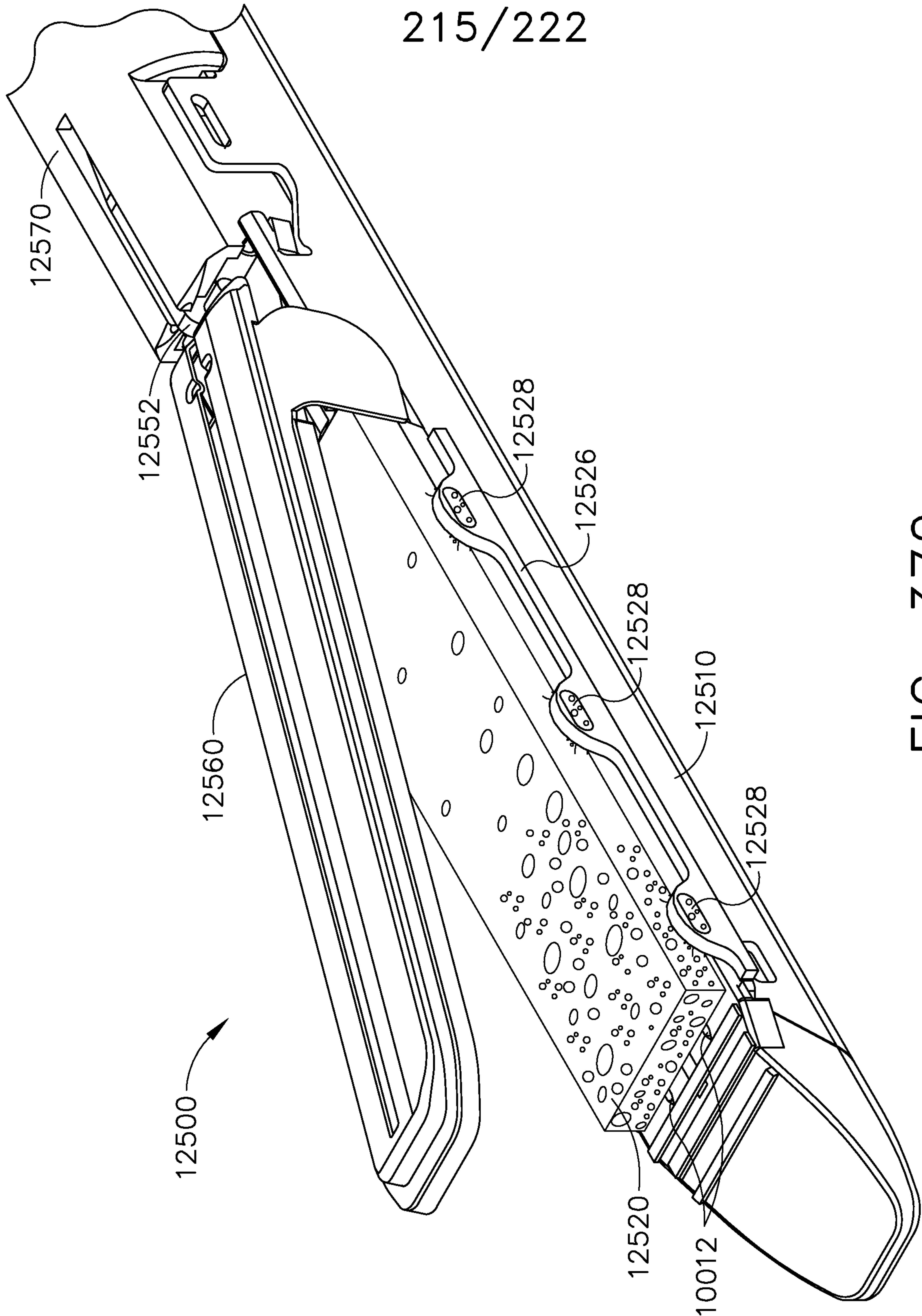


FIG. 370

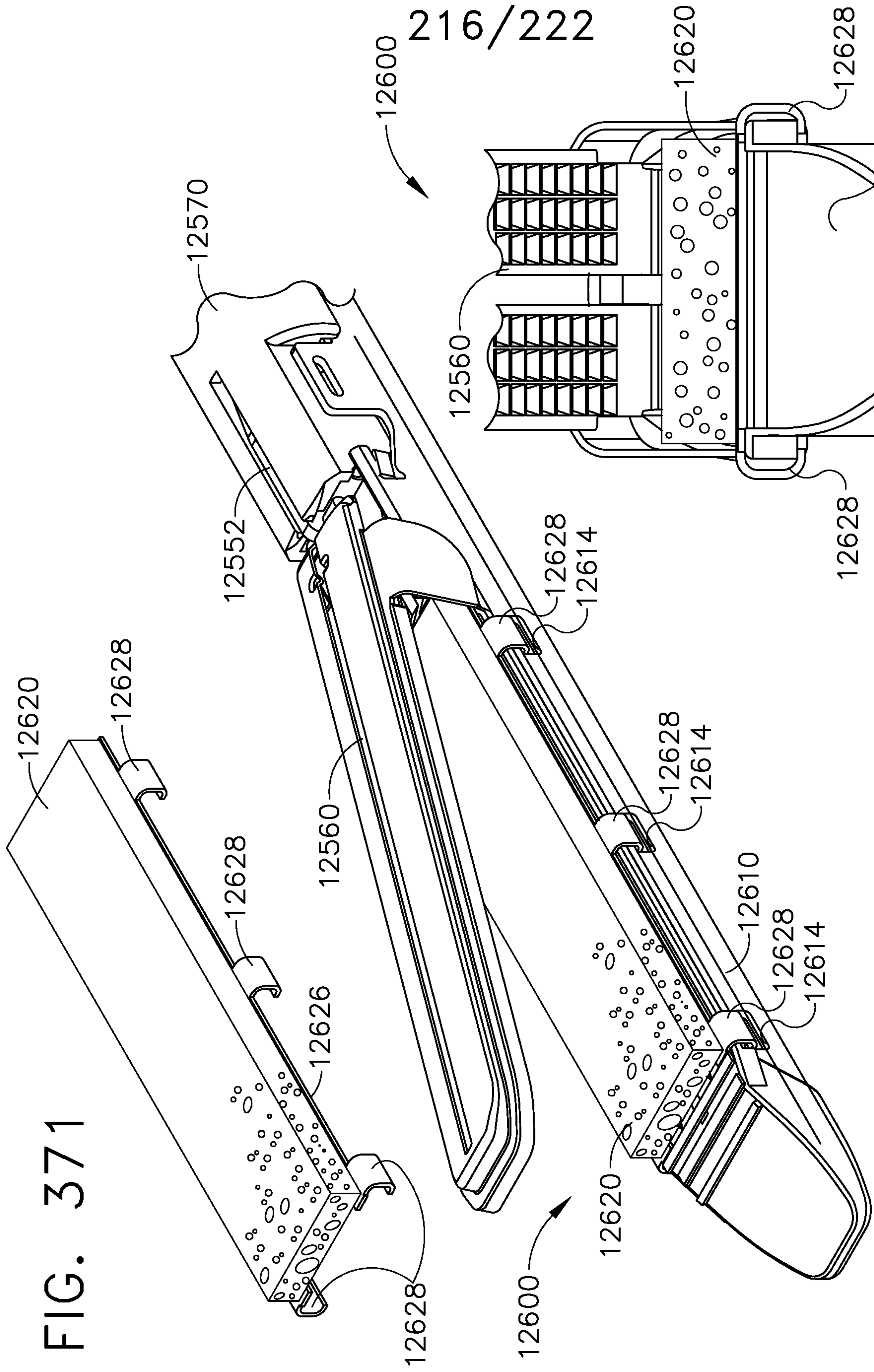
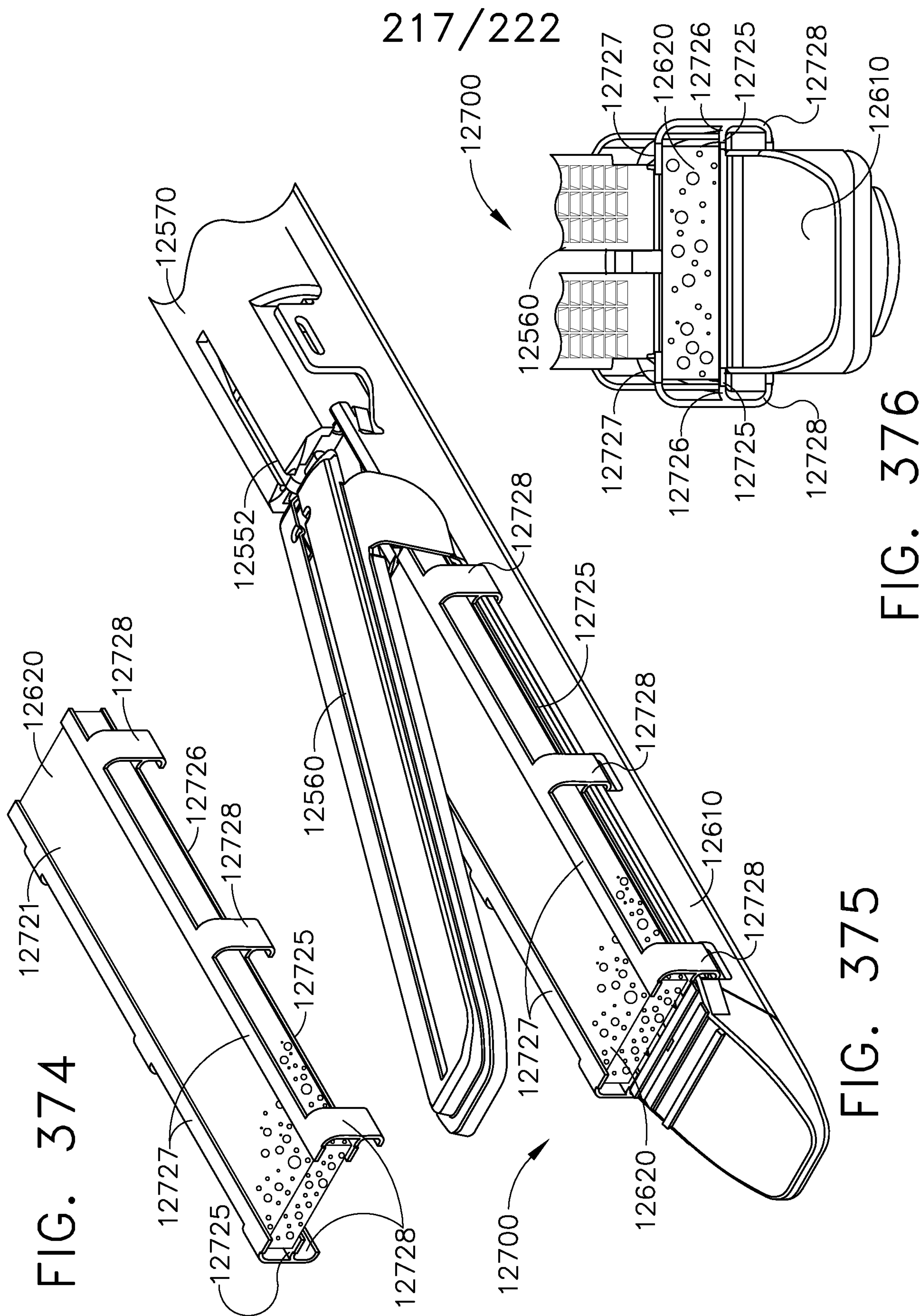
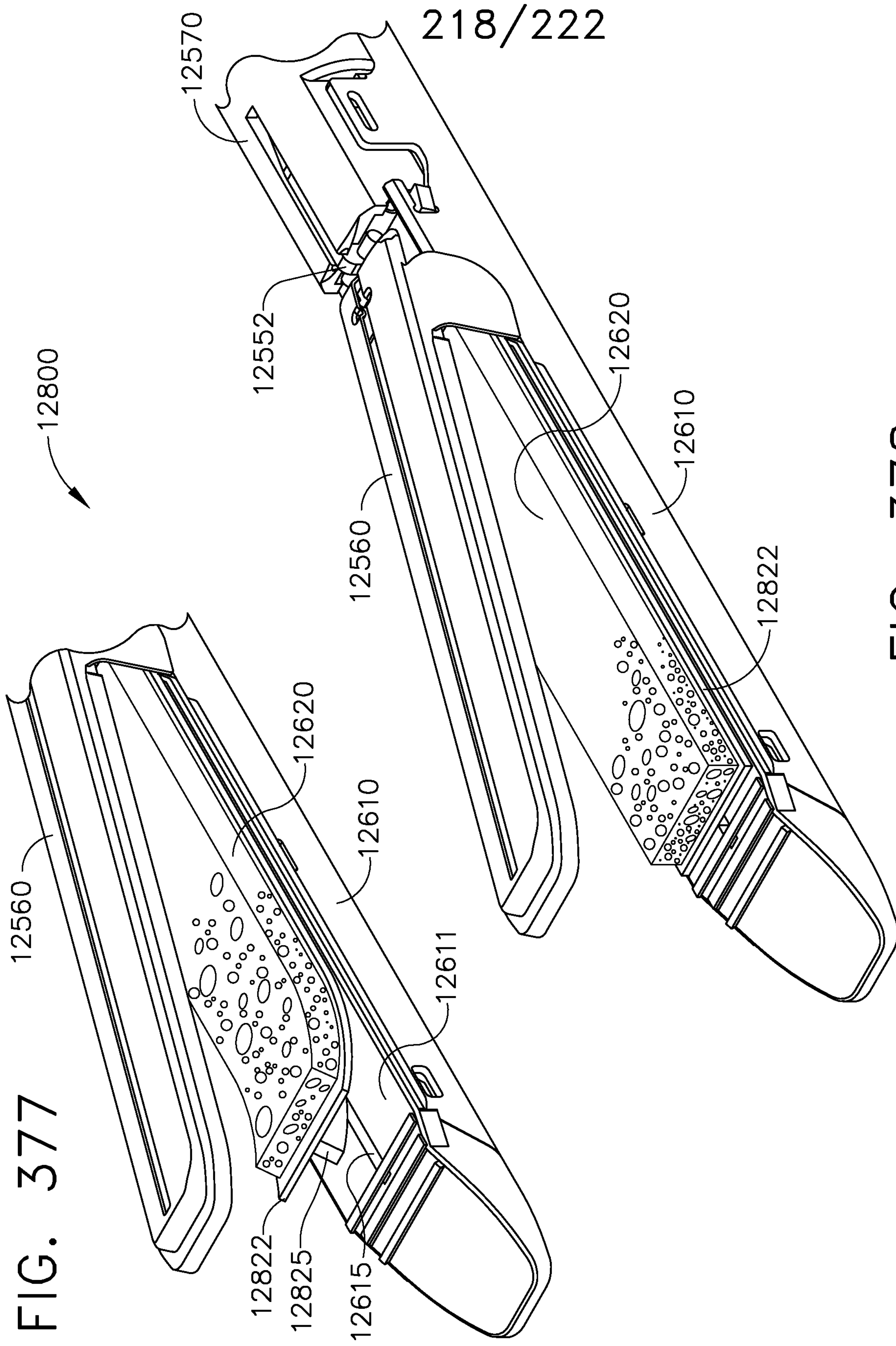


FIG. 371

FIG. 372

FIG. 373





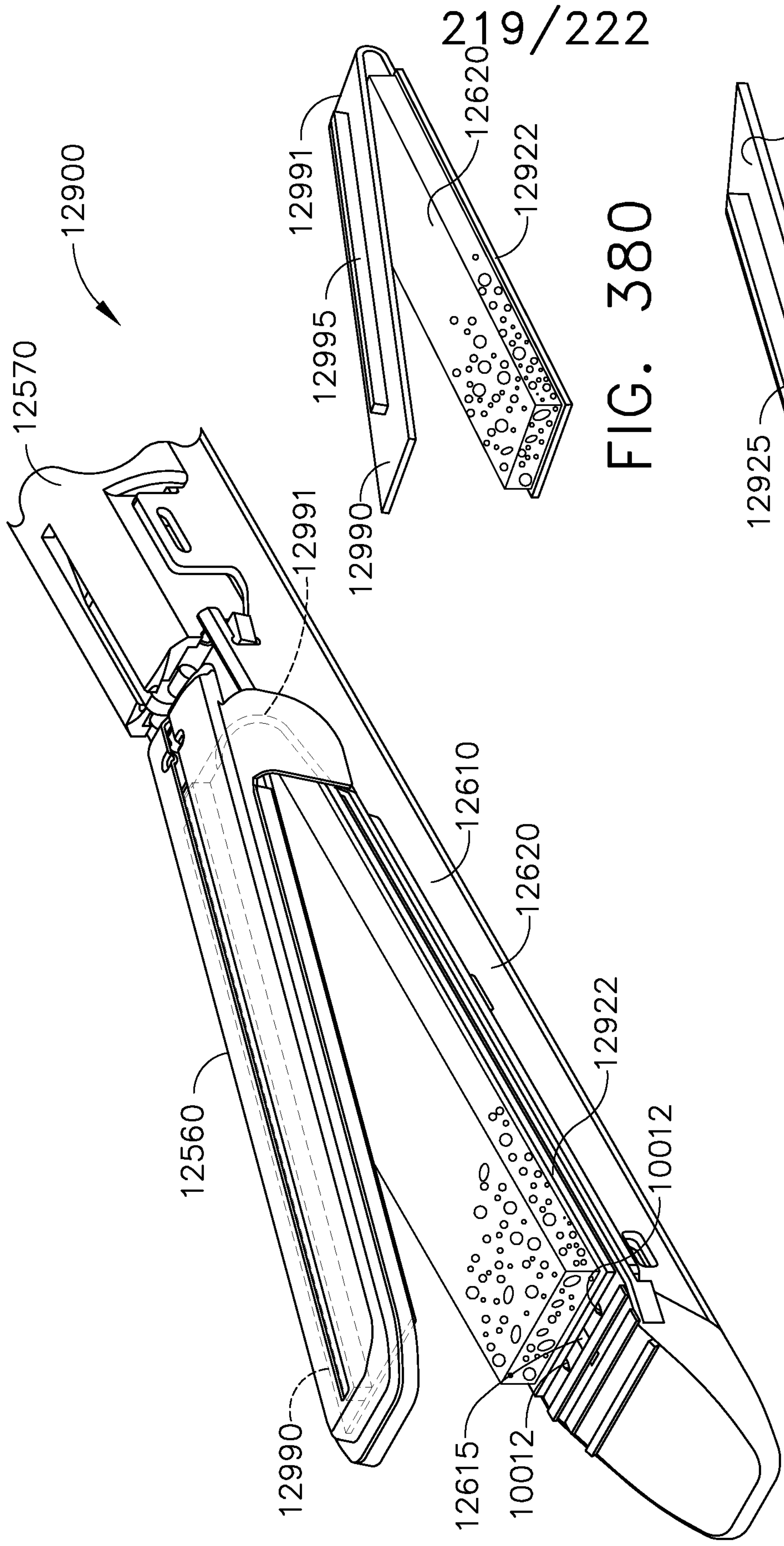


FIG. 380

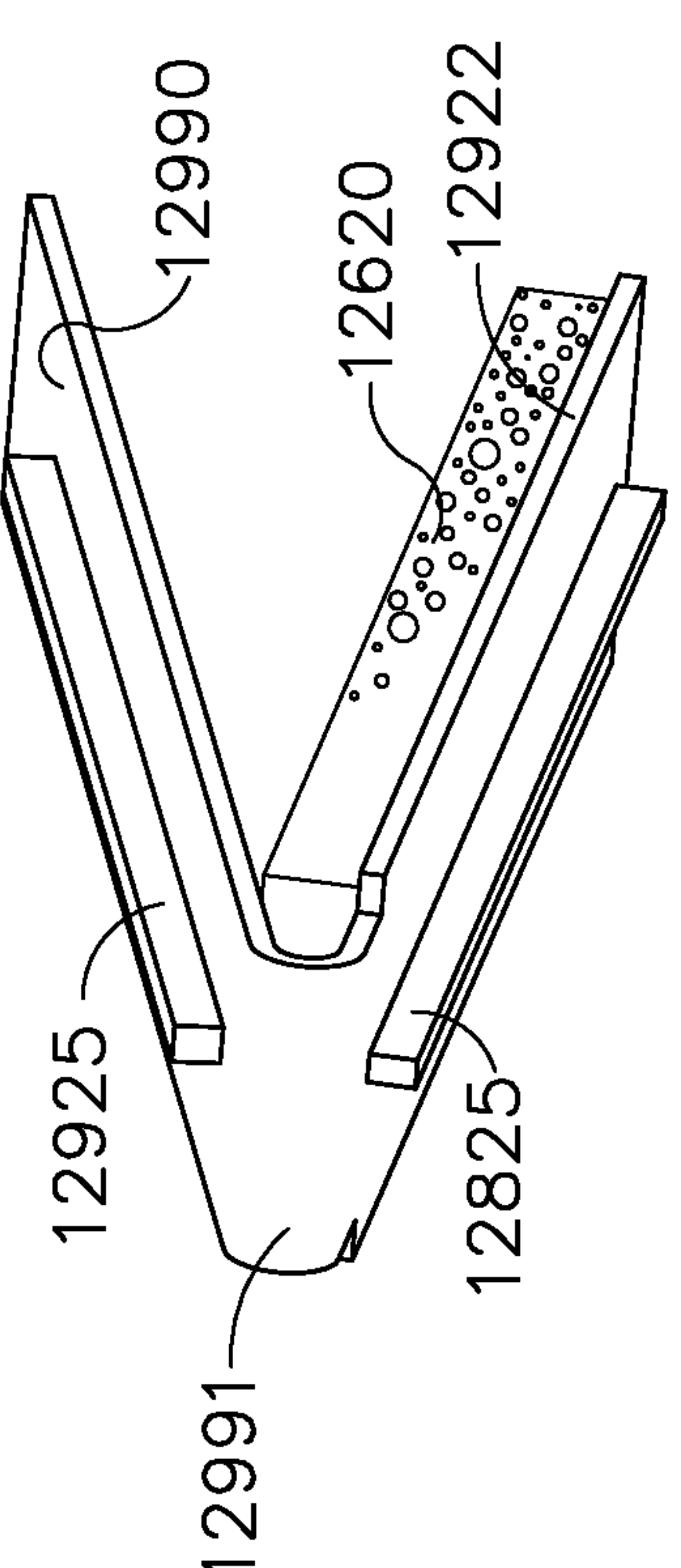


FIG. 379

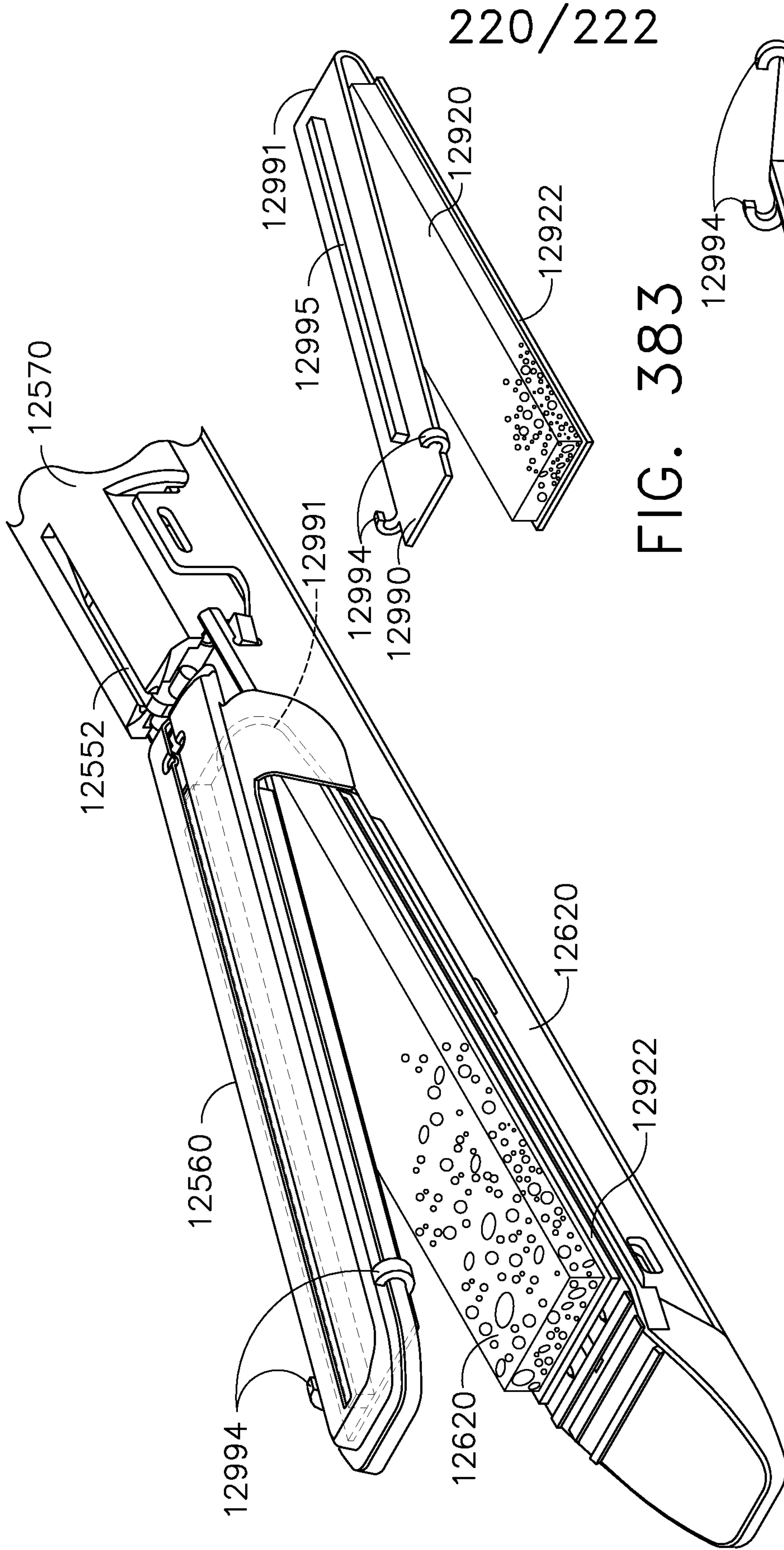


FIG. 382

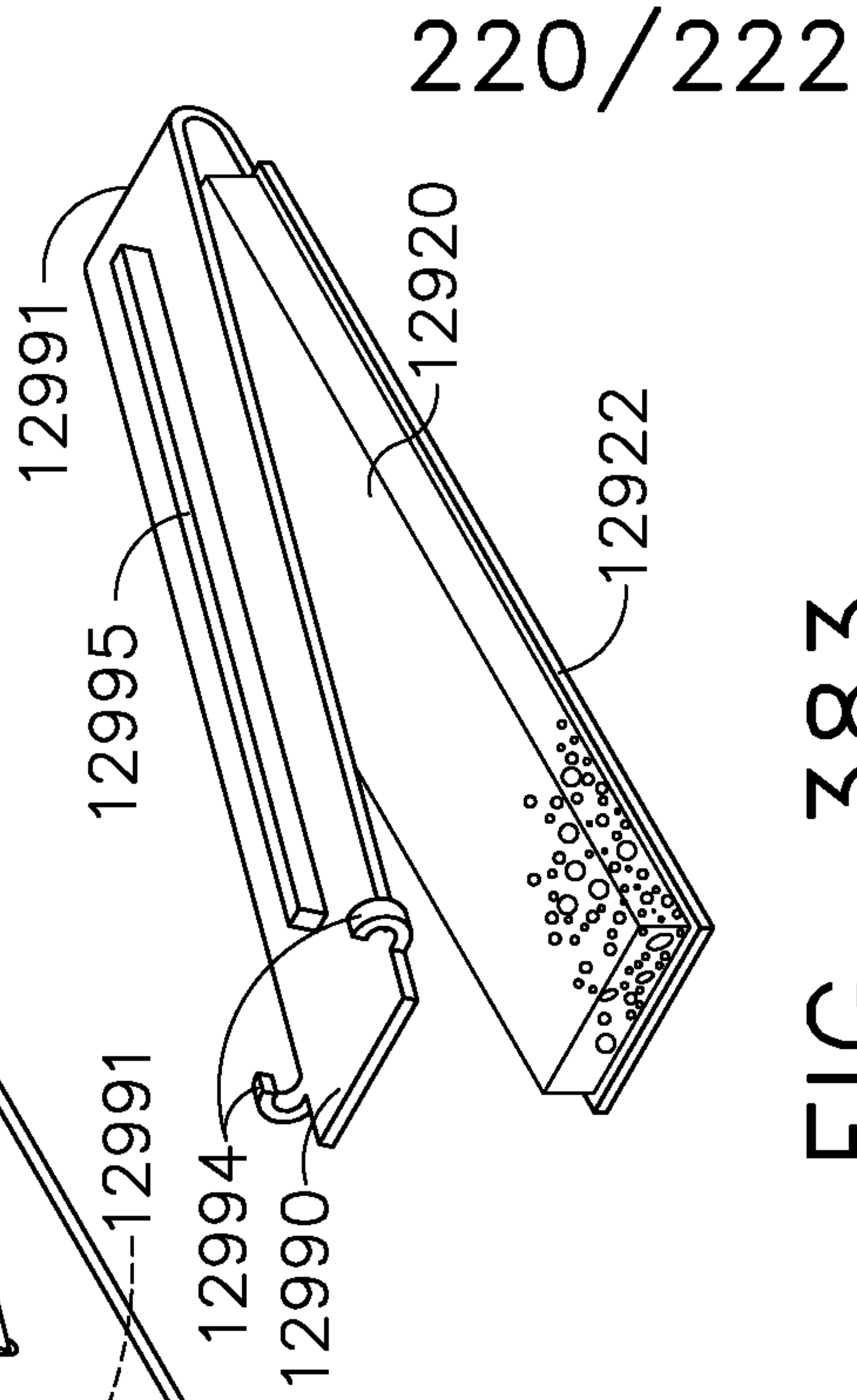


FIG. 383

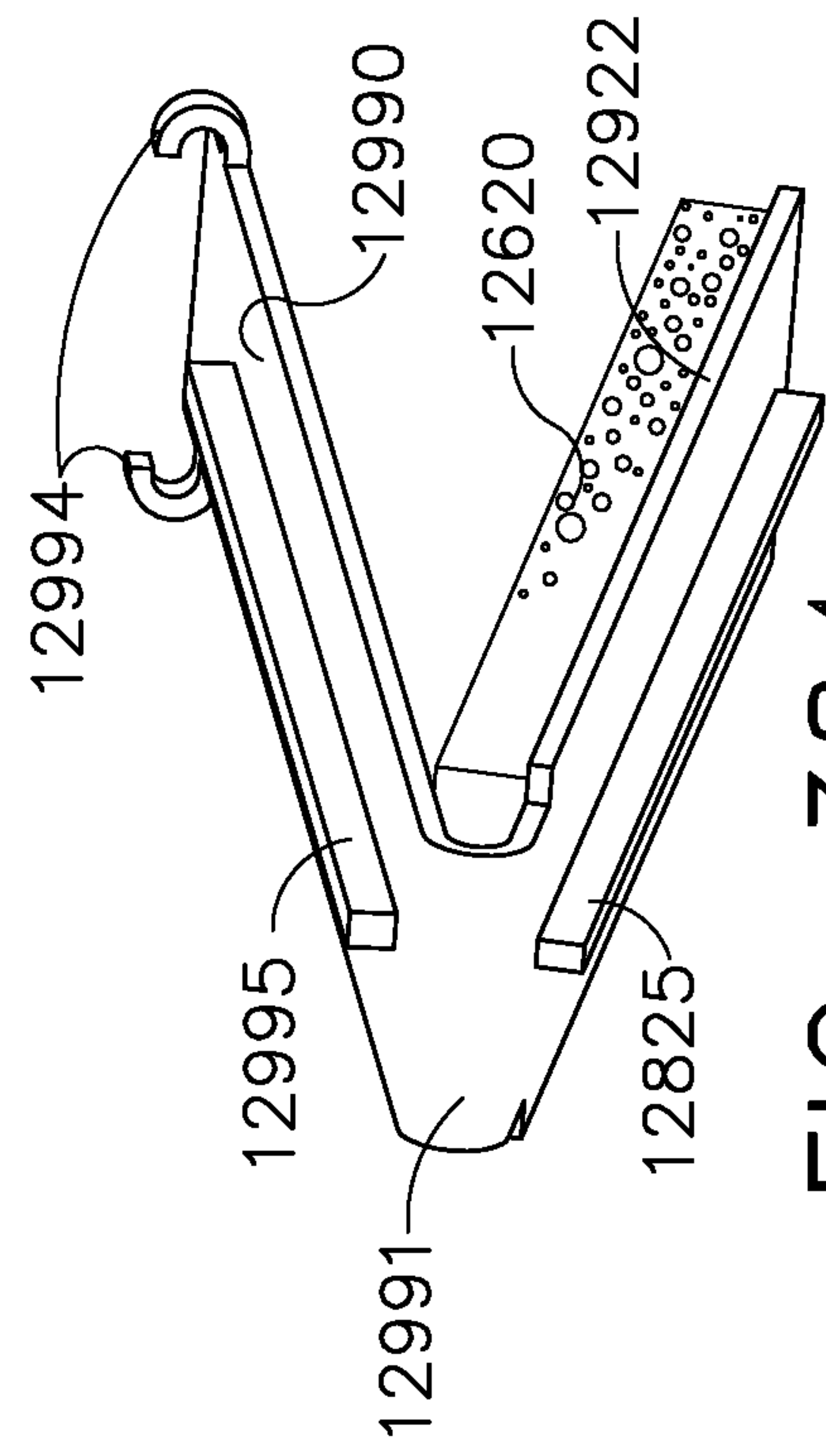


FIG. 384

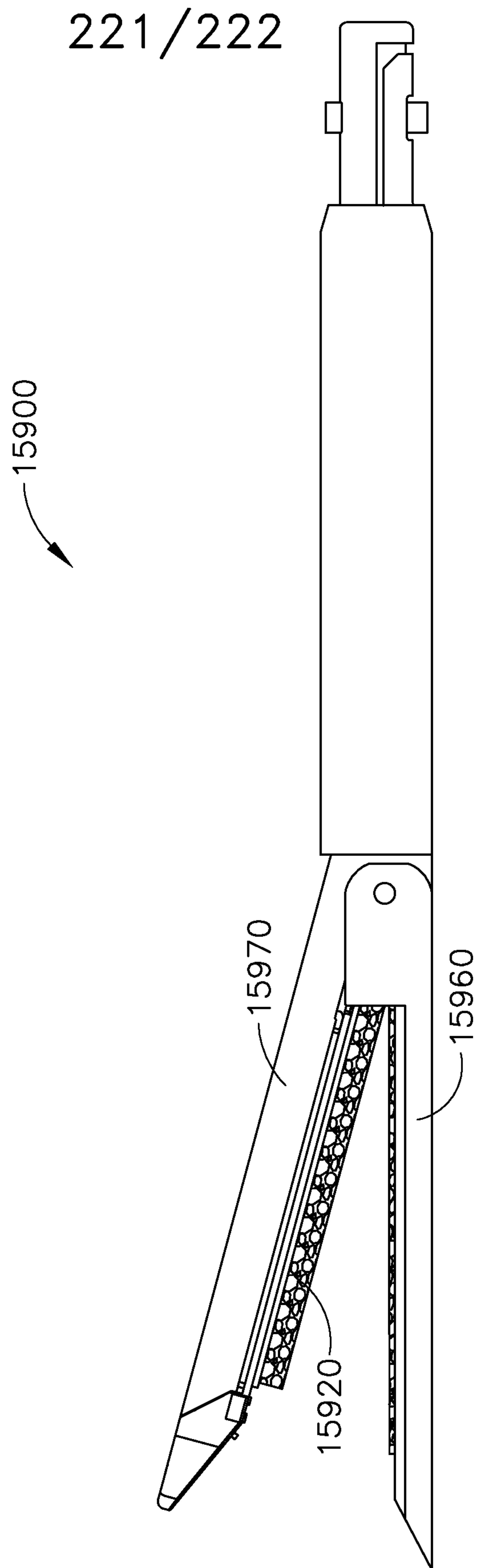


FIG. 385

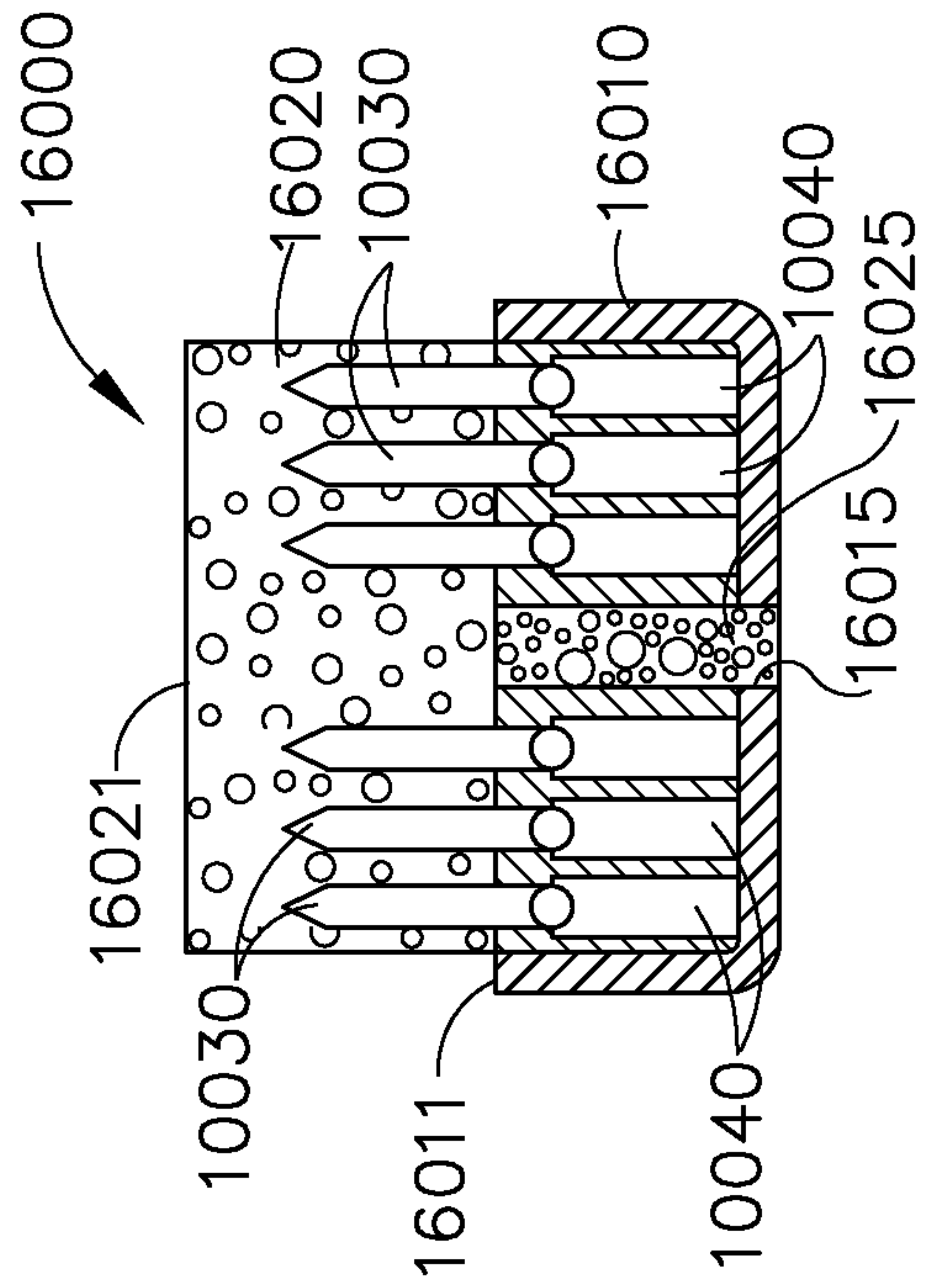


FIG. 386

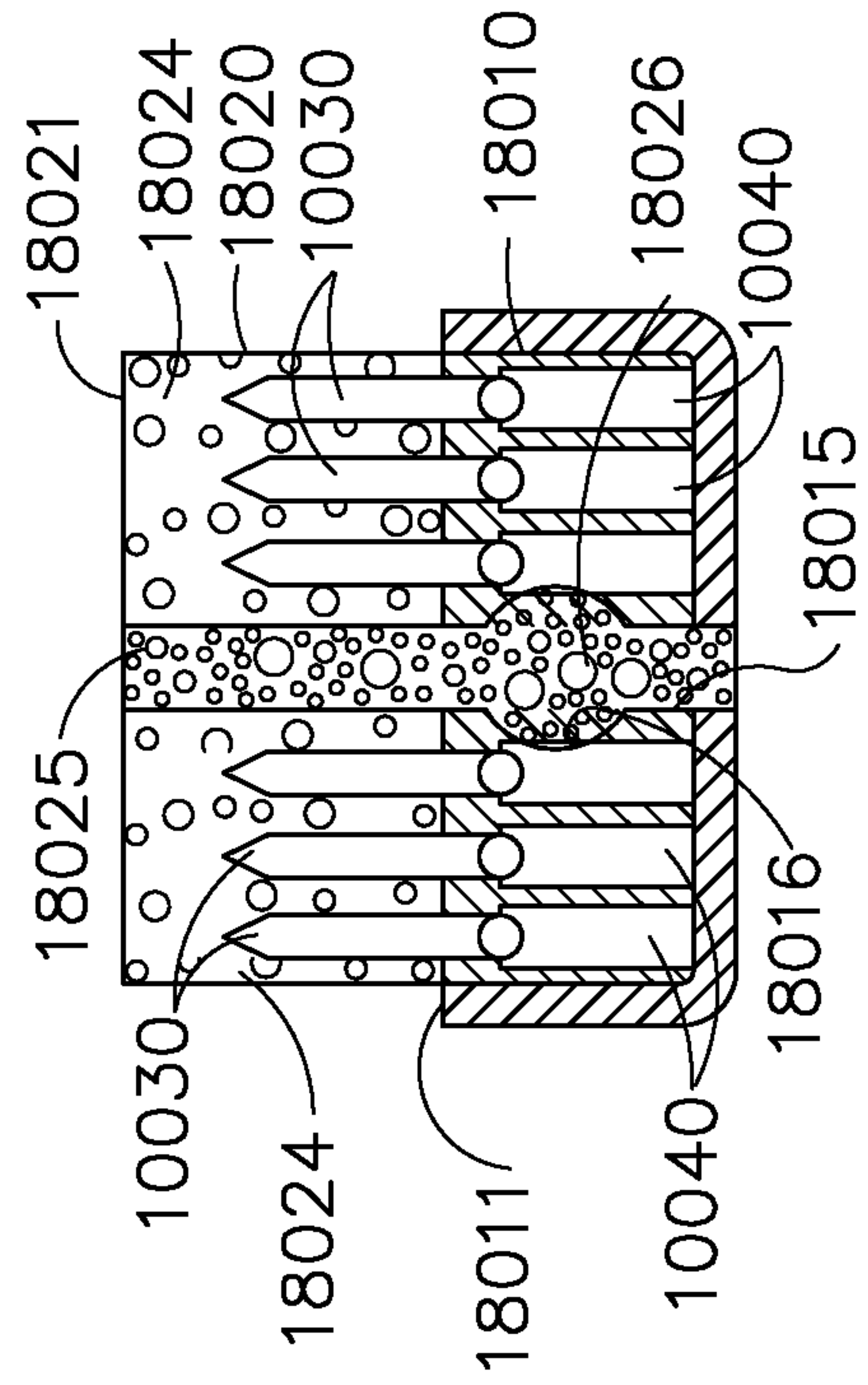


FIG. 388

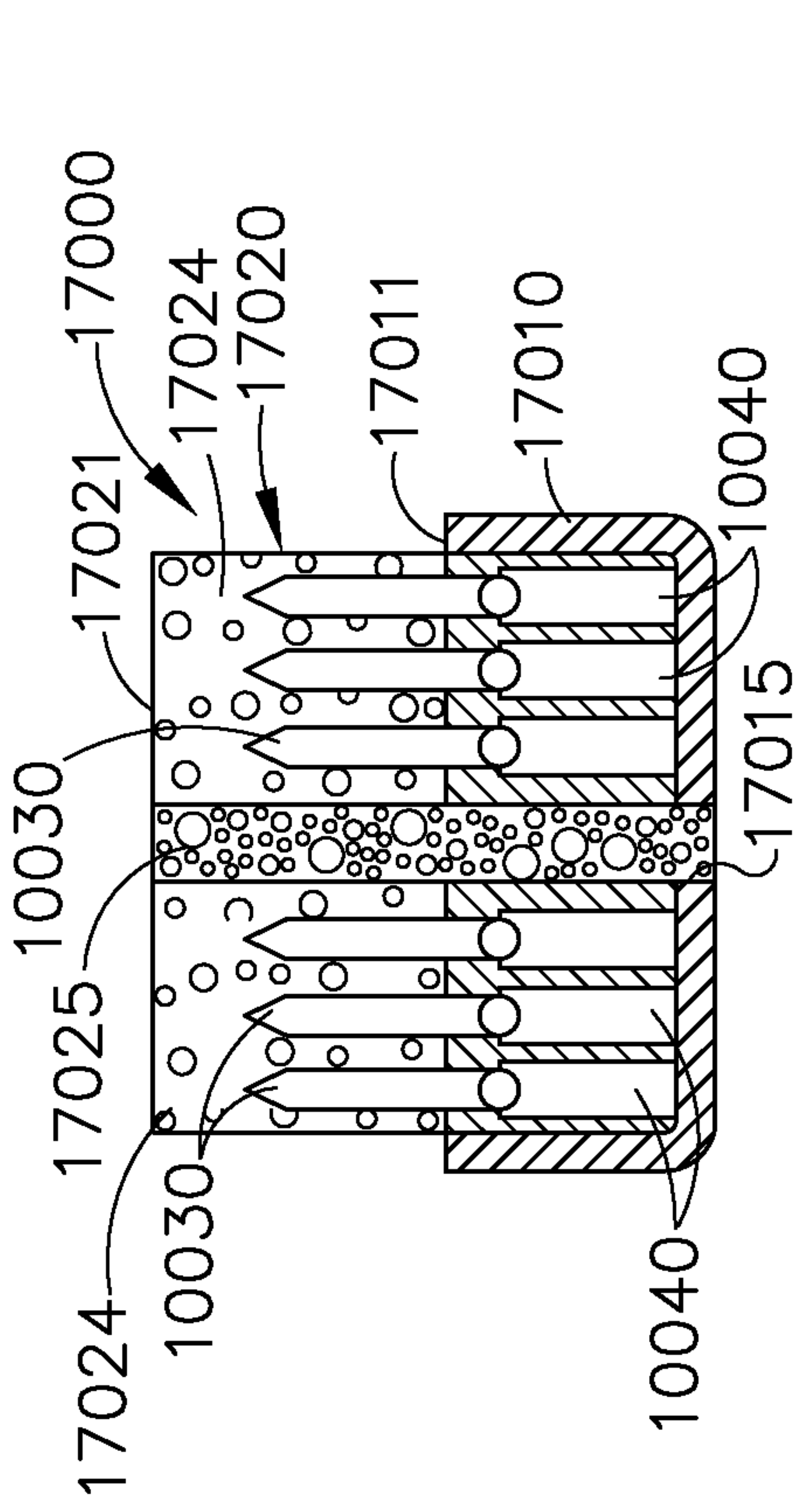


FIG. 387

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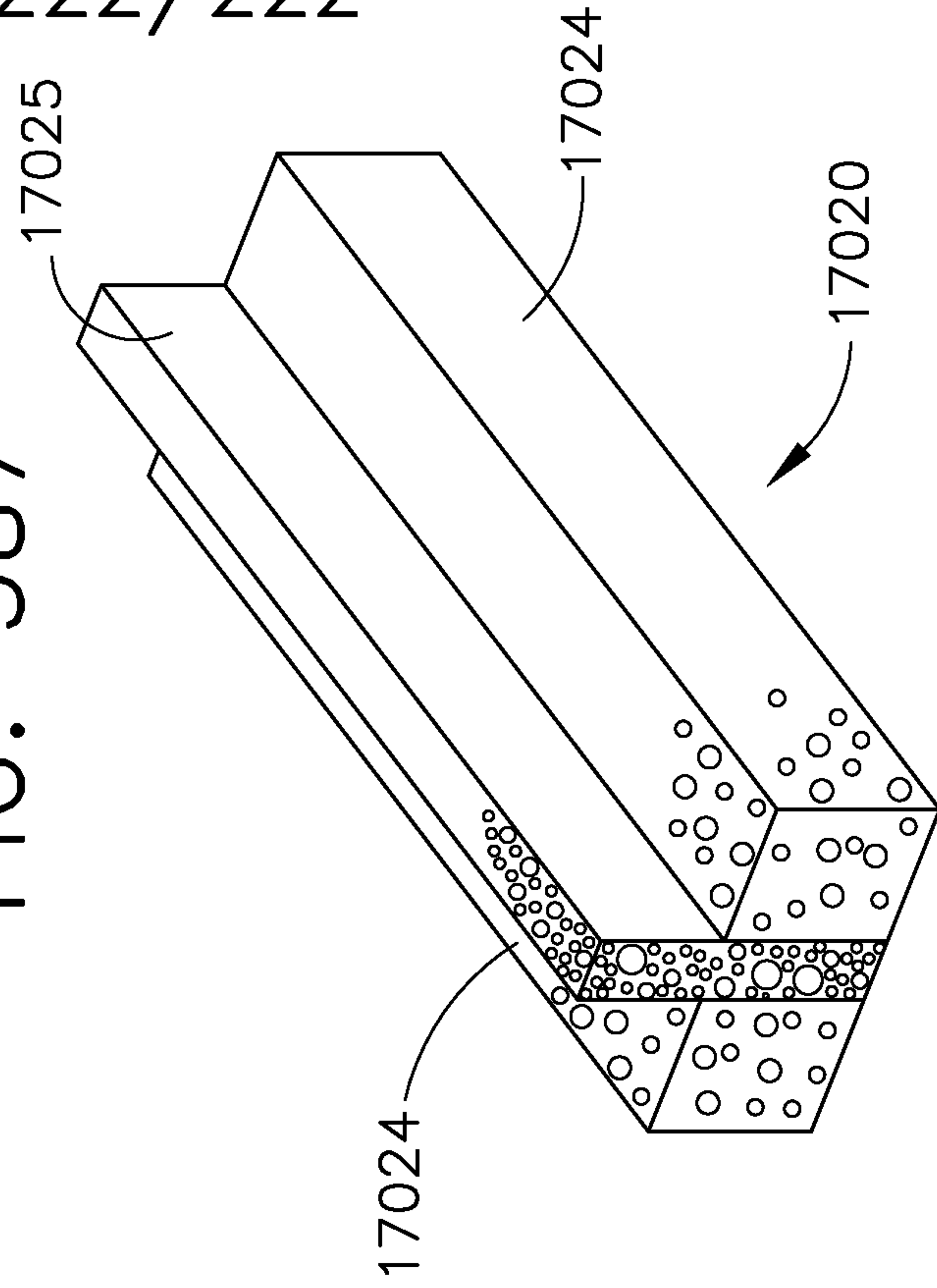


FIG. 389

