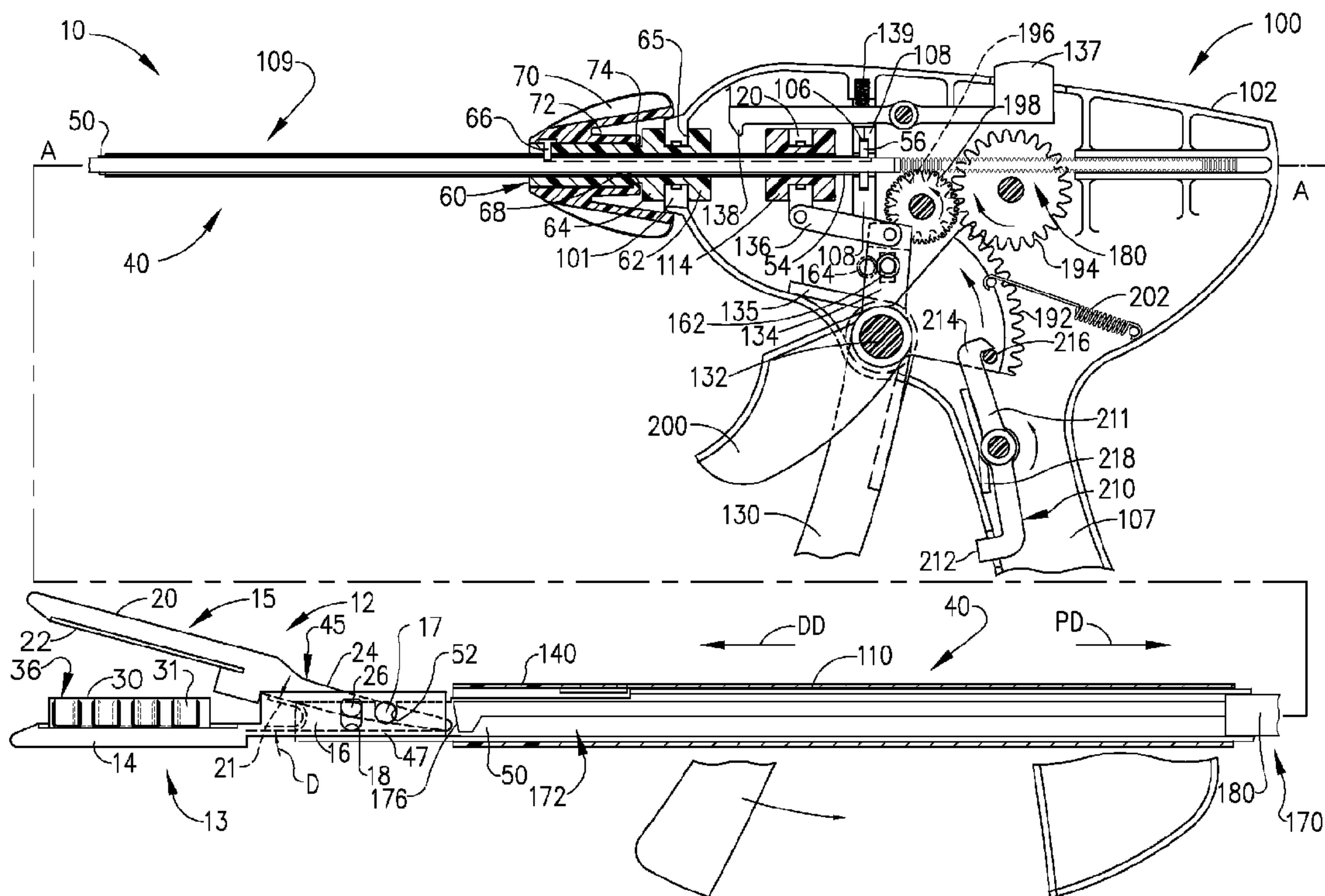




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(54) **Titre : ENSEMBLE CARTOUCHE D'AGRAFES COMPRESSIBLE**  
(54) **Title: COMPRESSIBLE STAPLE CARTRIDGE ASSEMBLY**



(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.

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Court, Loveland, OH 45140 (US).(74) Agents: **JOHNSON, Philip, S.** et al.; Johnson & Johnson,  
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kind of national protection available): AE, AG, AL, AM,  
AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ,  
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DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN,  
HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR,  
KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME,  
MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ,  
OM, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD,  
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kind of regional protection available): ARIPO (BW, GH,  
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GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- as to the identity of the inventor (Rule 4.17(i))
- as to applicant's entitlement to apply for and be granted a  
patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the  
earlier application (Rule 4.17(iii))

[Continued on next page]

(54) Title: COMPRESSIBLE STAPLE CARTRIDGE ASSEMBLY

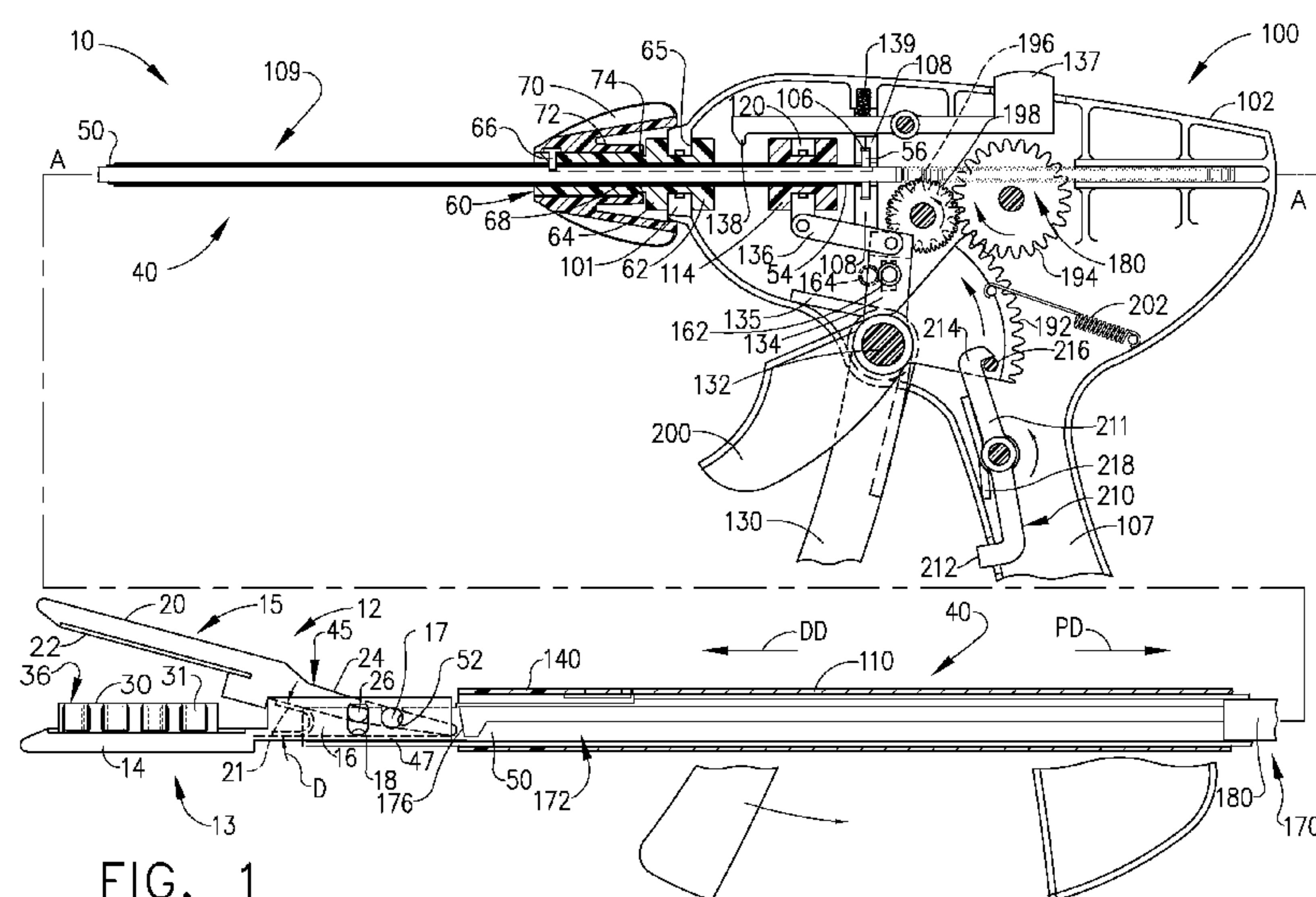


FIG. 1

(57) **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.

# WO 2012/148669 A2



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WHAT IS CLAIMED IS:

1. A staple cartridge, comprising:

a cartridge body comprising a plurality of staple cavities;

a plurality of staples, wherein at least a portion of each said staple is removably stored within said staple cavity, wherein each said staple is movable between an unfired position and a fired position, and wherein each said staple comprises an unfired height and a fired height, and wherein each said staple defines a staple entrapment area when deformed to said fired height; and

an implantable tissue thickness compensator comprised of a porous material having a porosity of greater than 93 percent, wherein said implantable tissue thickness compensator comprises a cartridge-facing surface, a tissue-facing surface, and a continuous portion extending between said cartridge-facing surface and said tissue-facing surface, wherein said continuous portion comprises an uncompressed height which is one of equal to or taller than said fired height of said staples, wherein said tissue thickness compensator is captured within said staple entrapment areas of said staples along with tissue, wherein said tissue thickness compensator assumes different compressed heights within different said staples, and wherein said compressed height of said tissue thickness compensator within said staple entrapment area is dependent on the thickness of tissue and the porosity of said porous material captured within said same staple entrapment area.

2. The staple cartridge of Claim 1, wherein said tissue thickness compensator is comprised of an elastic material having a durometer of less than 15 Shore A.

3. The staple cartridge of Claim 1, wherein said uncompressed height of said tissue thickness compensator is less than twice said fired height of said staples.
4. The staple cartridge of Claim 1, wherein said uncompressed height of said tissue thickness compensator is twice said fired height of said staples.
5. The staple cartridge of Claim 1, wherein said uncompressed height of said tissue thickness compensator is three times said fired height of said staples.
6. The staple cartridge of Claim 1, wherein said uncompressed height of said tissue thickness compensator is four times said fired height of said staples.
7. The staple cartridge of Claim 1, wherein said uncompressed height of said tissue thickness compensator is at least 50 percent larger than the largest of said different compressed heights.
8. The staple cartridge of Claim 1, wherein said uncompressed height of said tissue thickness compensator is 10 percent larger than the largest of said different compressed heights.
9. The staple cartridge of Claim 7, wherein said uncompressed height of said tissue thickness compensator is less than 100 times larger than the largest of said different compressed heights.

10. The staple cartridge of Claim 7, further comprising:  
a plurality of staple drivers for moving said staples between their unfired positions and their fired positions; and  
a sled for traversing said cartridge body and lift said staple drivers.
11. The staple cartridge of Claim 1, further comprising:  
a plurality of staple drivers for moving said staples between their unfired positions and their fired positions; and  
a sled for traversing said cartridge body and lift said staple drivers.
12. The staple cartridge of Claim 11, wherein said uncompressed height of said tissue thickness compensator is less than 100 times larger than the largest of said different compressed heights.
13. A staple cartridge, comprising:  
a cartridge body comprising a plurality of staple cavities;  
a plurality of staples, wherein at least a portion of each said staple is removably stored within said staple cavity, wherein each said staple is movable between an unfired position and a fired position, and wherein each said staple comprises an unfired height and a fired height; and  
an implantable tissue thickness compensator comprising a cartridge-facing surface, a tissue-facing surface, and a continuous portion extending between said cartridge-facing surface and said tissue-facing surface, wherein said continuous portion comprises an uncompressed height, wherein said uncompressed height is one of equal to or taller than said fired height of at

least one said staple, wherein said tissue thickness compensator is comprised of an elastic material having a durometer of less than 15 Shore A and a porosity of greater than 93 percent, wherein said tissue thickness compensator is captured within said staples along with tissue, wherein said tissue thickness compensator assumes different compressed heights within different said staples, and wherein said compressed height of said tissue thickness compensator within said staple is dependent on the thickness of tissue and the durometer and the porosity of said elastic material captured within said same staple.

14. The staple cartridge of Claim 13, wherein said uncompressed height of said tissue thickness compensator is taller than said fired height of said staples and shorter than twice said fired height of said staples.

15. The staple cartridge of Claim 13, wherein said uncompressed height of said tissue thickness compensator is taller than said fired height of said staples and three times said fired height of said staples.

16. The staple cartridge of Claim 13, wherein said uncompressed height of said tissue thickness compensator is taller than said fired height of said staples and four times said fired height of said staples.

17. The staple cartridge of Claim 13, wherein said uncompressed height of said tissue thickness compensator is at least 50 percent larger than the largest of said different compressed heights.

18. A staple cartridge, comprising:

a cartridge body comprising a plurality of staple cavities;

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

an implantable tissue thickness compensator comprising a cartridge-facing surface, a tissue-facing surface, and a continuous portion extending between said cartridge-facing surface and said tissue-facing surface, wherein said continuous portion comprises an uncompressed height, wherein said uncompressed height is one of equal to or taller than said fired height of at least one said staple, wherein said tissue thickness compensator is comprised of a porous material having a porosity of at least 85 percent, wherein said tissue thickness compensator is captured within said staples, wherein said tissue thickness compensator assumes different compressed heights within different said staples, and wherein said compressed height of said tissue thickness compensator within said staple is dependent on the thickness of tissue and the porosity of said porous material captured within said same staple.

19. The staple cartridge of Claim 18, wherein said tissue thickness compensator is comprised of an elastic material having a durometer of less than 15 Shore A.

20. The staple cartridge of Claim 18, wherein said uncompressed height of said tissue thickness compensator is taller than said fired height of said staples and shorter than twice said fired height of said staples.

21. The staple cartridge of Claim 18, wherein said uncompressed height of said tissue thickness compensator is at least 50 percent larger than the largest of said different compressed heights.
22. The staple cartridge of Claim 18, wherein said uncompressed height of said tissue thickness compensator is less than 100 times larger than the largest of said different compressed heights.
23. The staple cartridge of Claim 18, further comprising:  
a plurality of staple drivers for moving said staples between their unfired positions and their fired positions; and  
a sled for traversing said cartridge body and lift said staple drivers.
24. A staple cartridge, comprising:  
a cartridge body comprising a plurality of staple cavities arranged along a longitudinal line;  
a plurality of staples, wherein at least a portion of each said staple is removably stored within said staple cavity, wherein each said staple is movable between an unfired position and a fired position, and wherein each said staple comprises an unfired height and a fired height; and  
an implantable tissue thickness compensator working in conjunction with said staples to provide a variable compression force to tissue between said staples along said longitudinal line, wherein said tissue thickness compensator is comprised of a porous material having a porosity

of greater than 93 percent, wherein said tissue thickness compensator comprises a cartridge-facing surface, a tissue-facing surface, and a continuous portion extending between said cartridge-facing surface and said tissue-facing surface, wherein said continuous portion comprises an uncompressed height, wherein said uncompressed height is one of equal to or taller than said fired height of at least one said staple, wherein said implantable tissue thickness compensator assumes different compressed heights along said longitudinal line, and wherein said compressed height of each portion of said implantable tissue thickness compensator is dependent on the thickness of adjacent tissue and the porosity of said porous material.

25. The staple cartridge of Claim 24, wherein said implantable tissue thickness compensator comprises an uncompressed thickness, and wherein said uncompressed thickness is substantially constant along said longitudinal line.

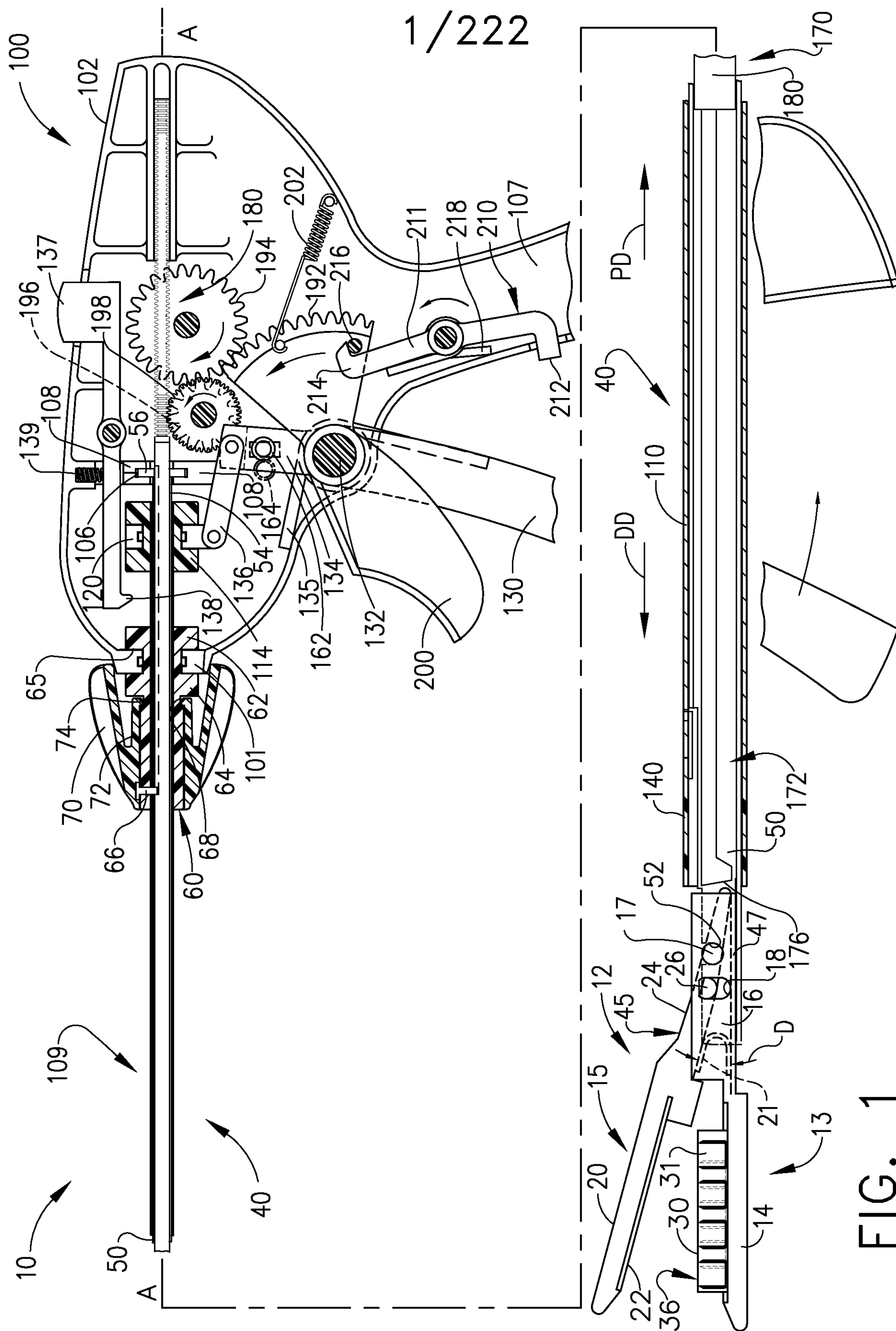


FIG. 1

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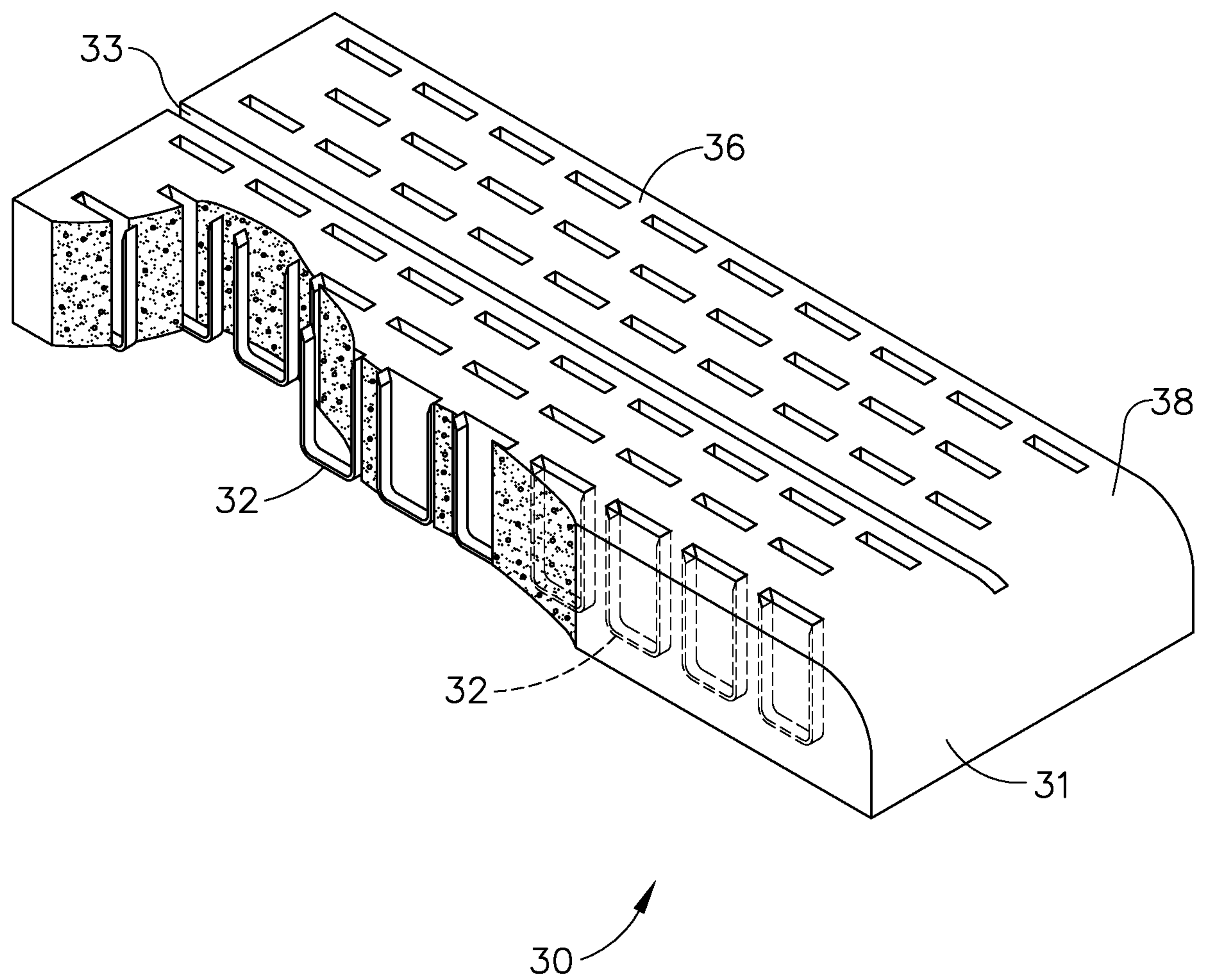


FIG. 1A

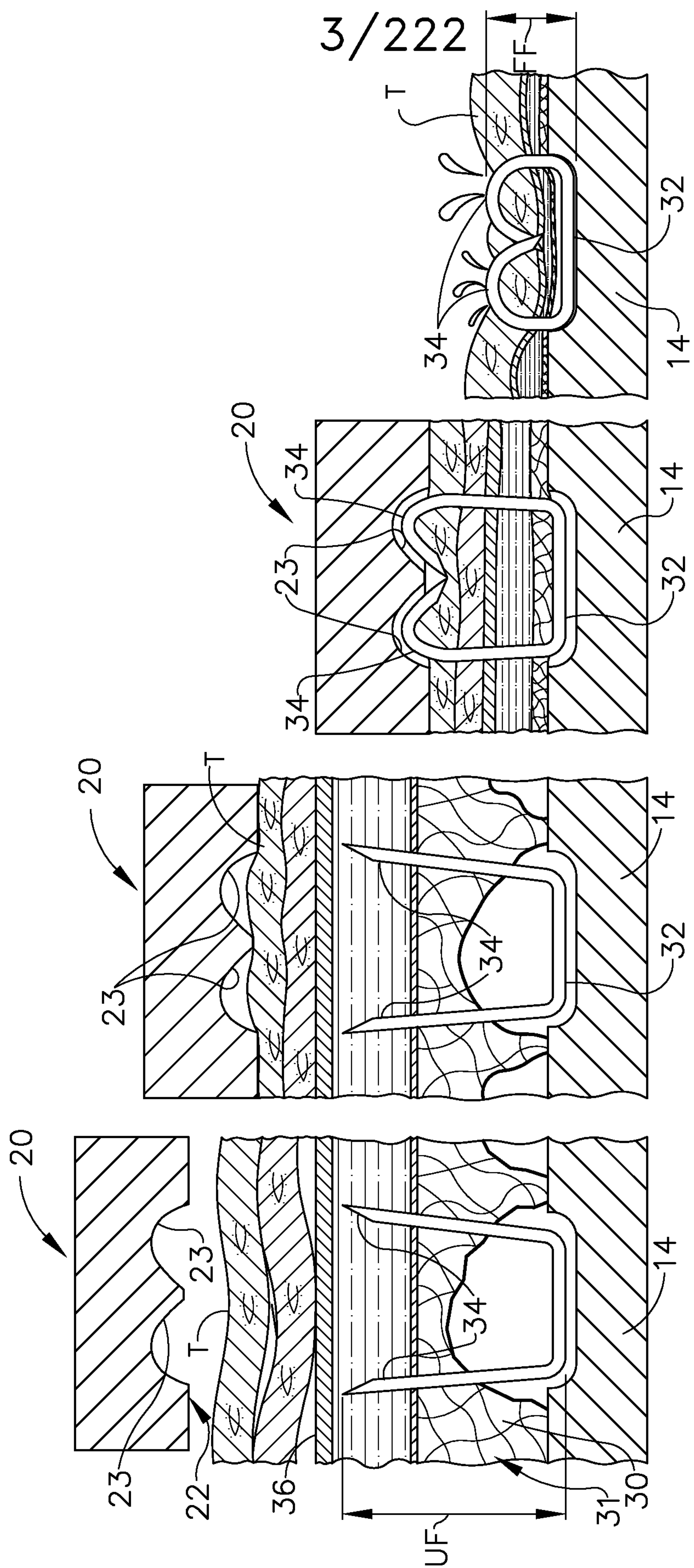


FIG. 1B FIG. 1C FIG. 1D FIG. 1E

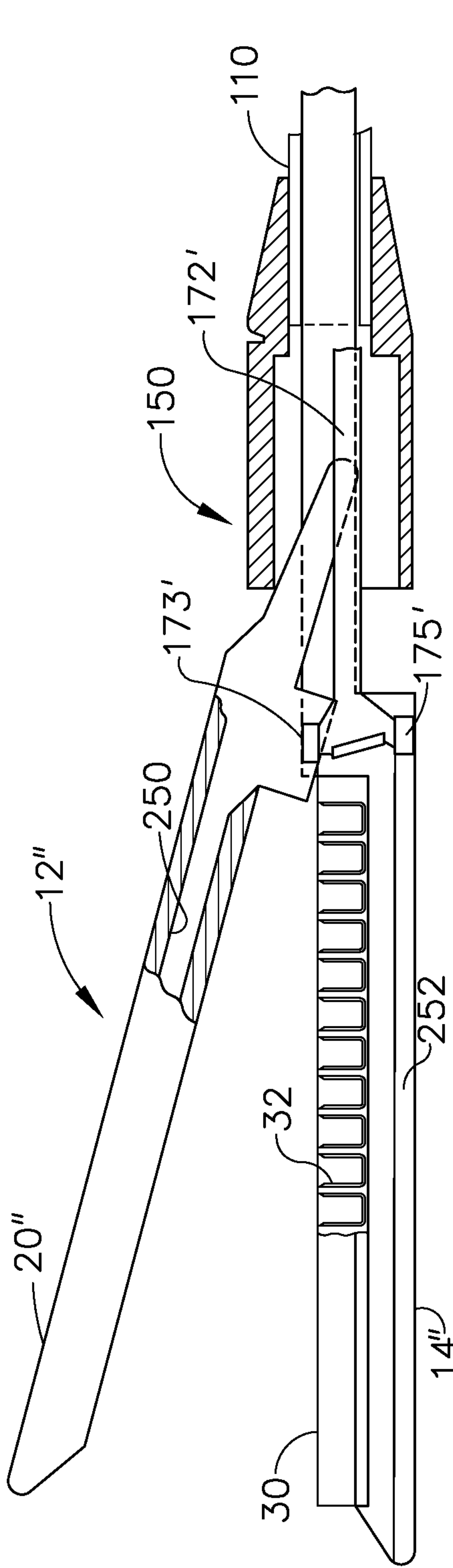


FIG. 2

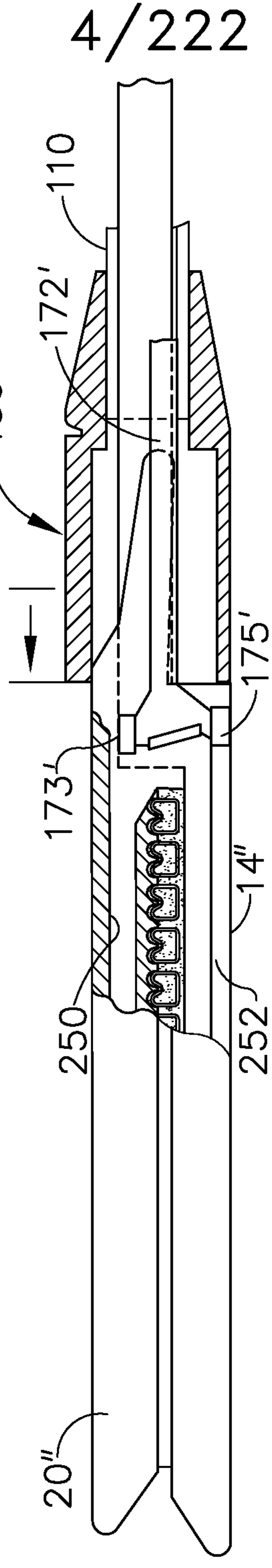


FIG. 3

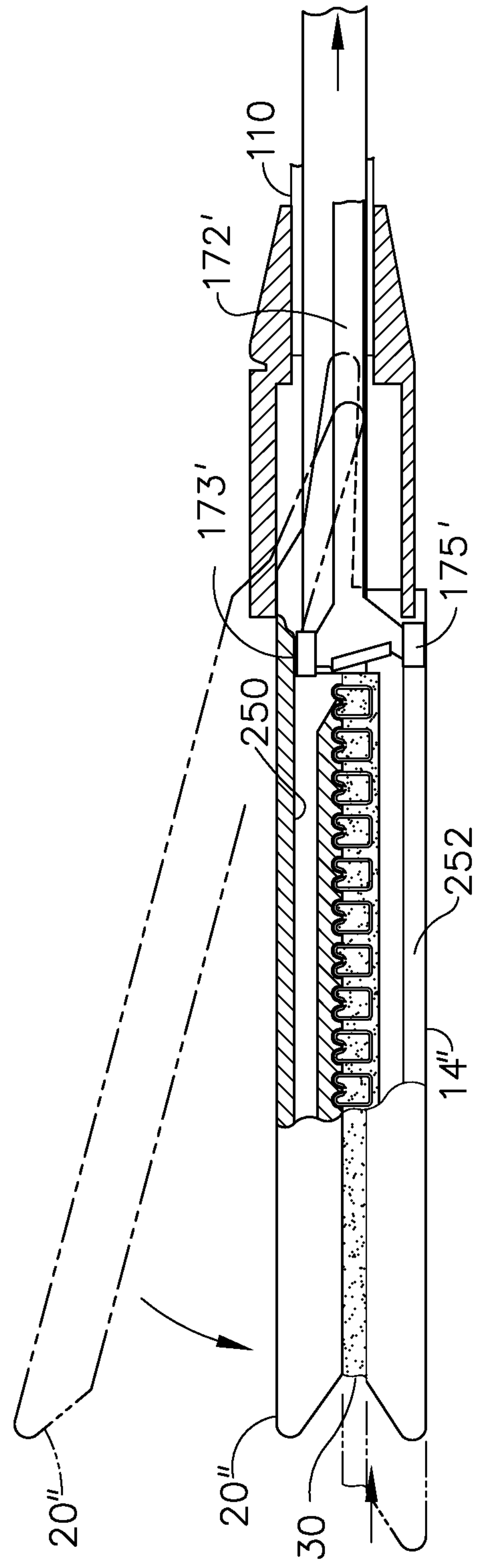


FIG. 4

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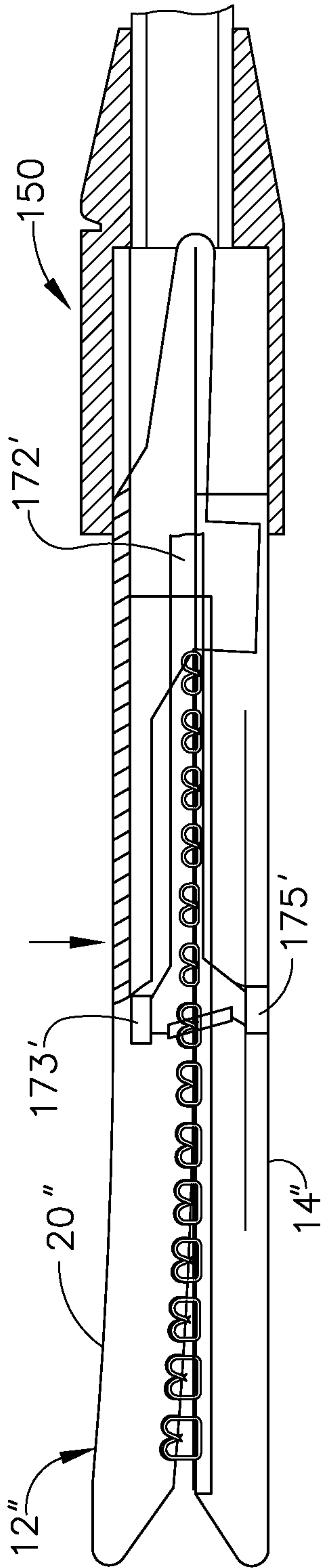


FIG. 5

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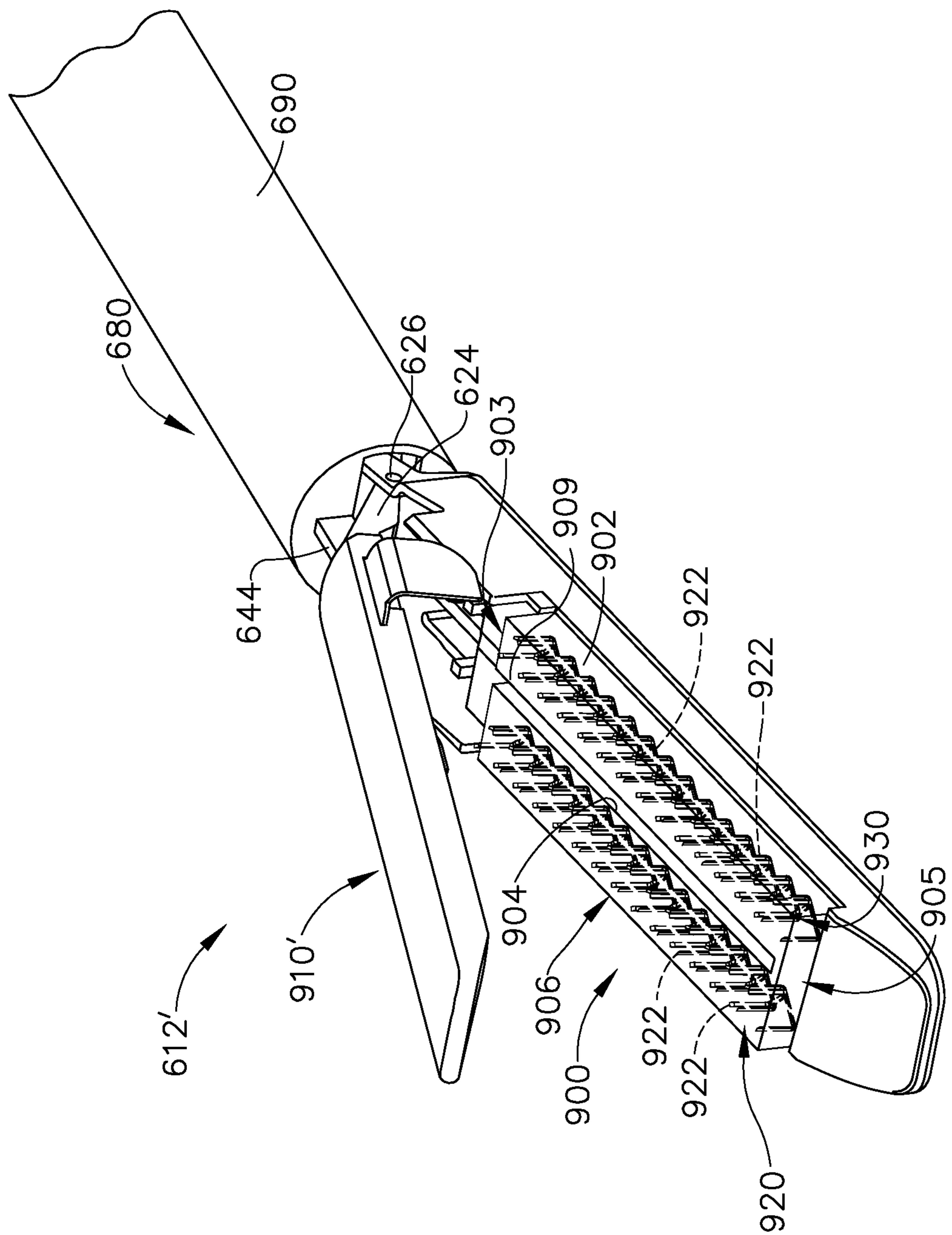


FIG. 6

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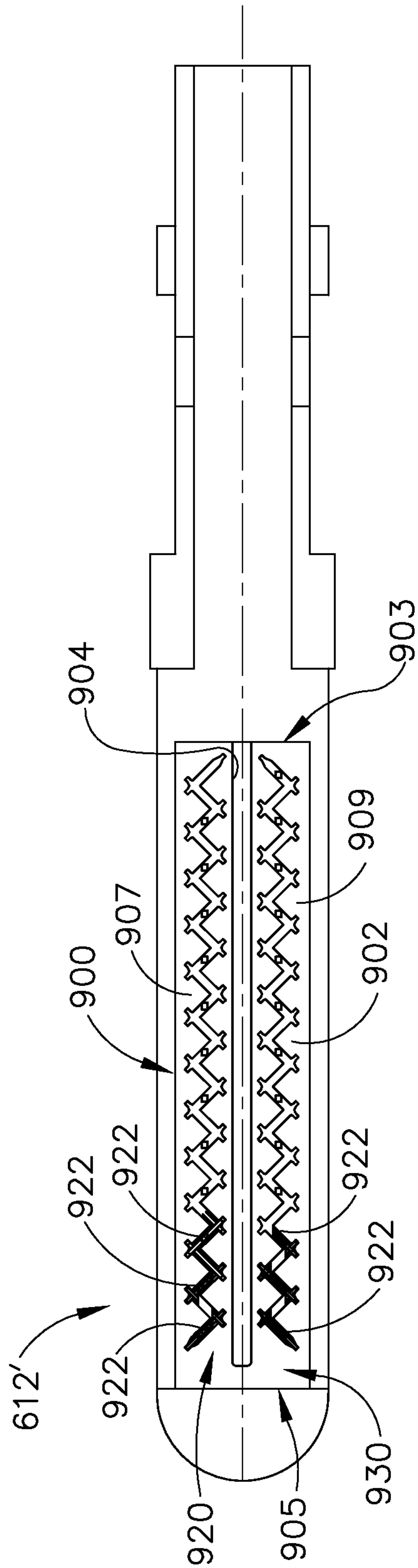


FIG. 7

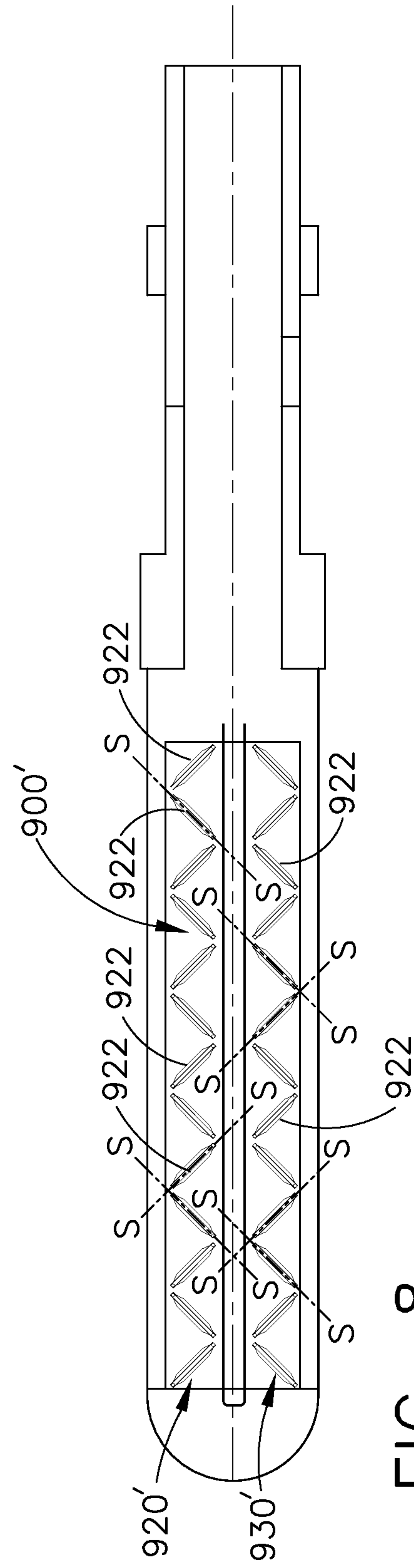


FIG. 8

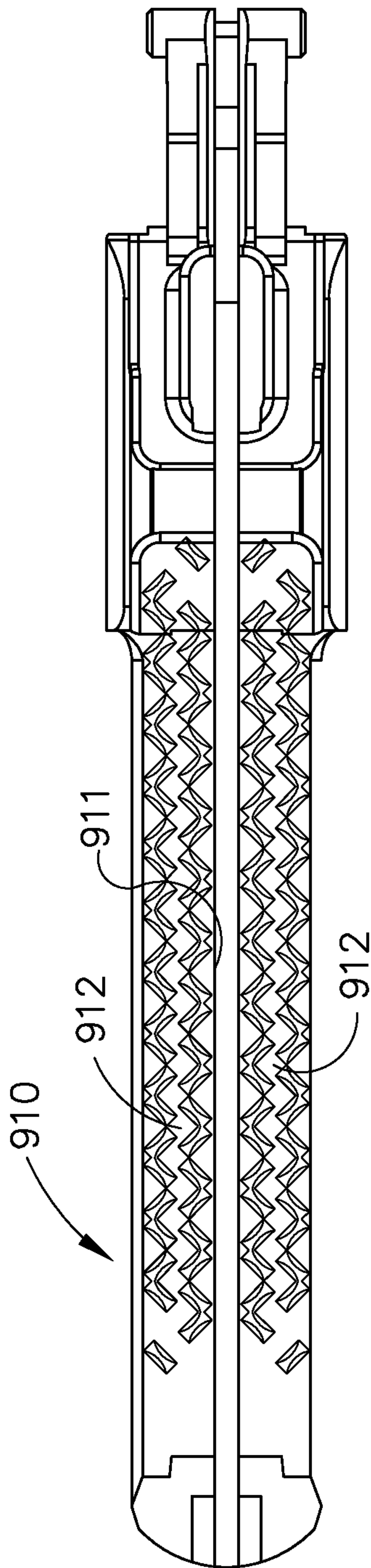


FIG. 9

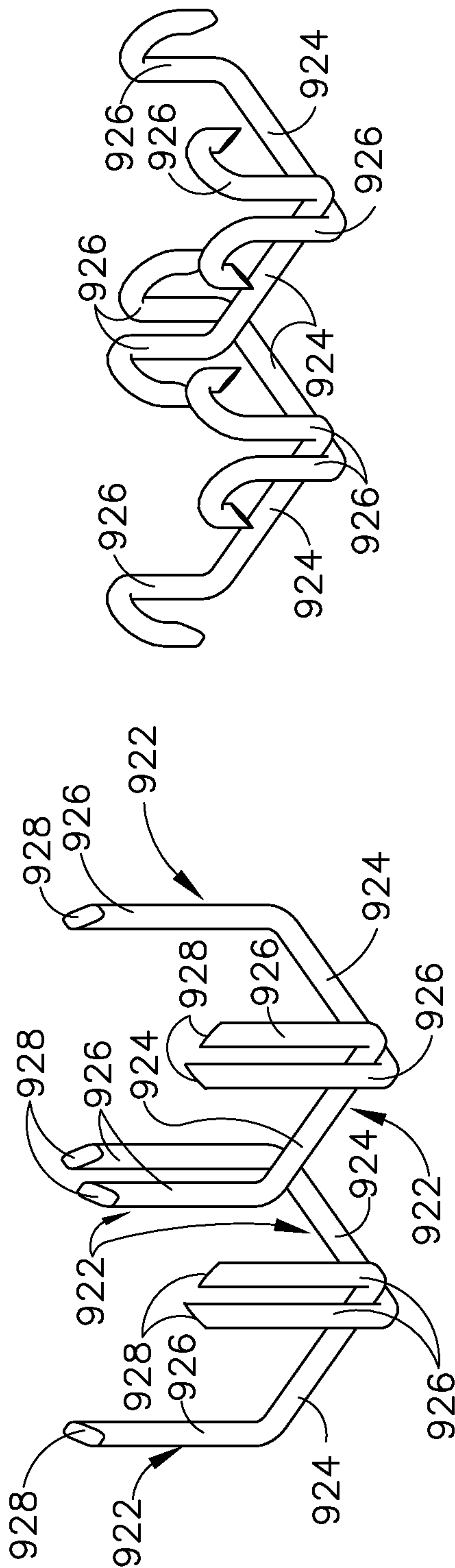


FIG. 10

FIG. 11

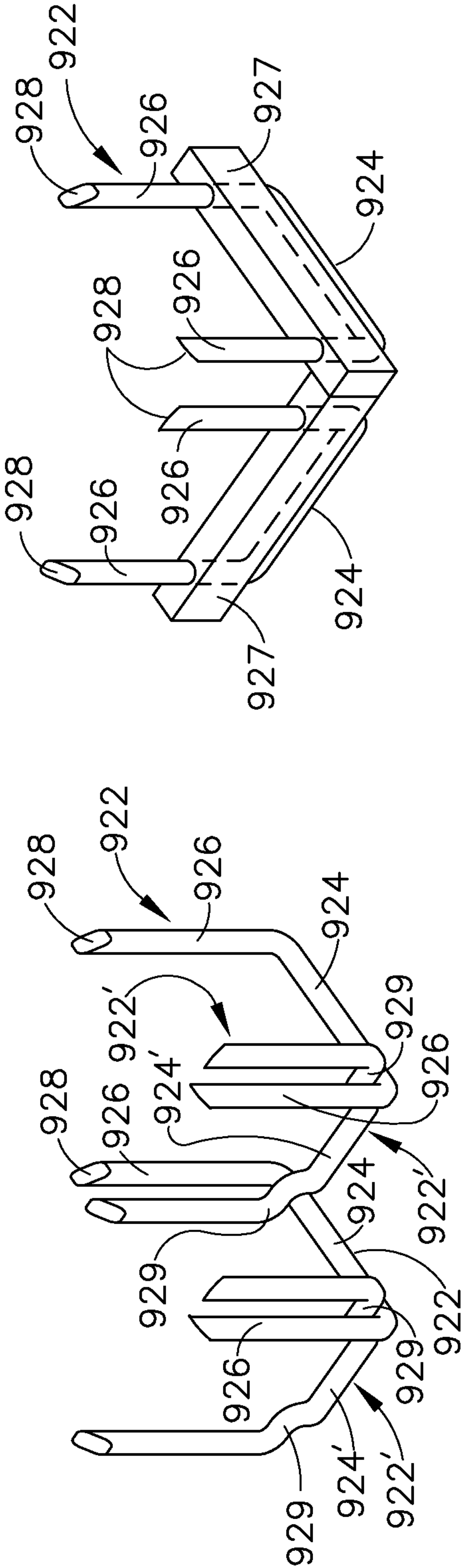


FIG. 13

FIG. 12

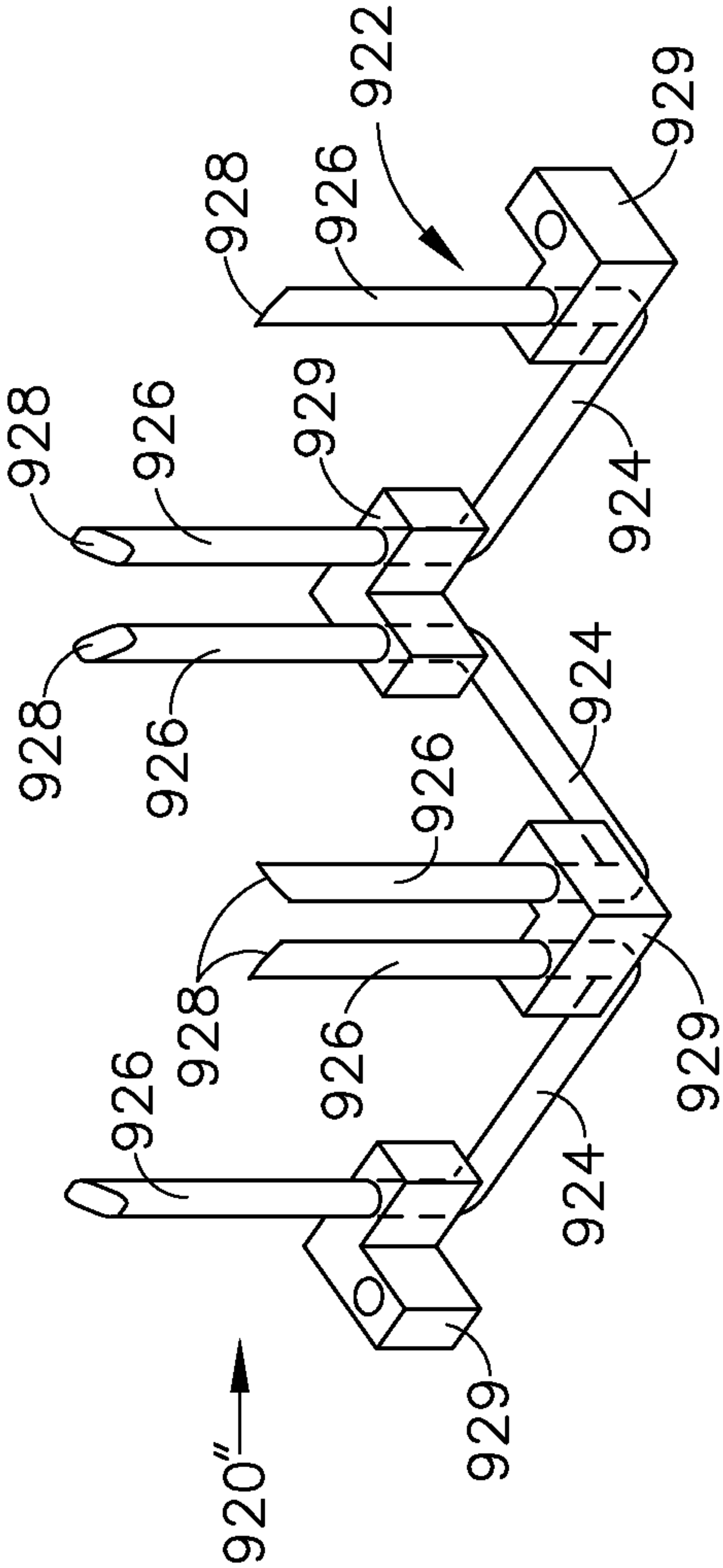


FIG. 14

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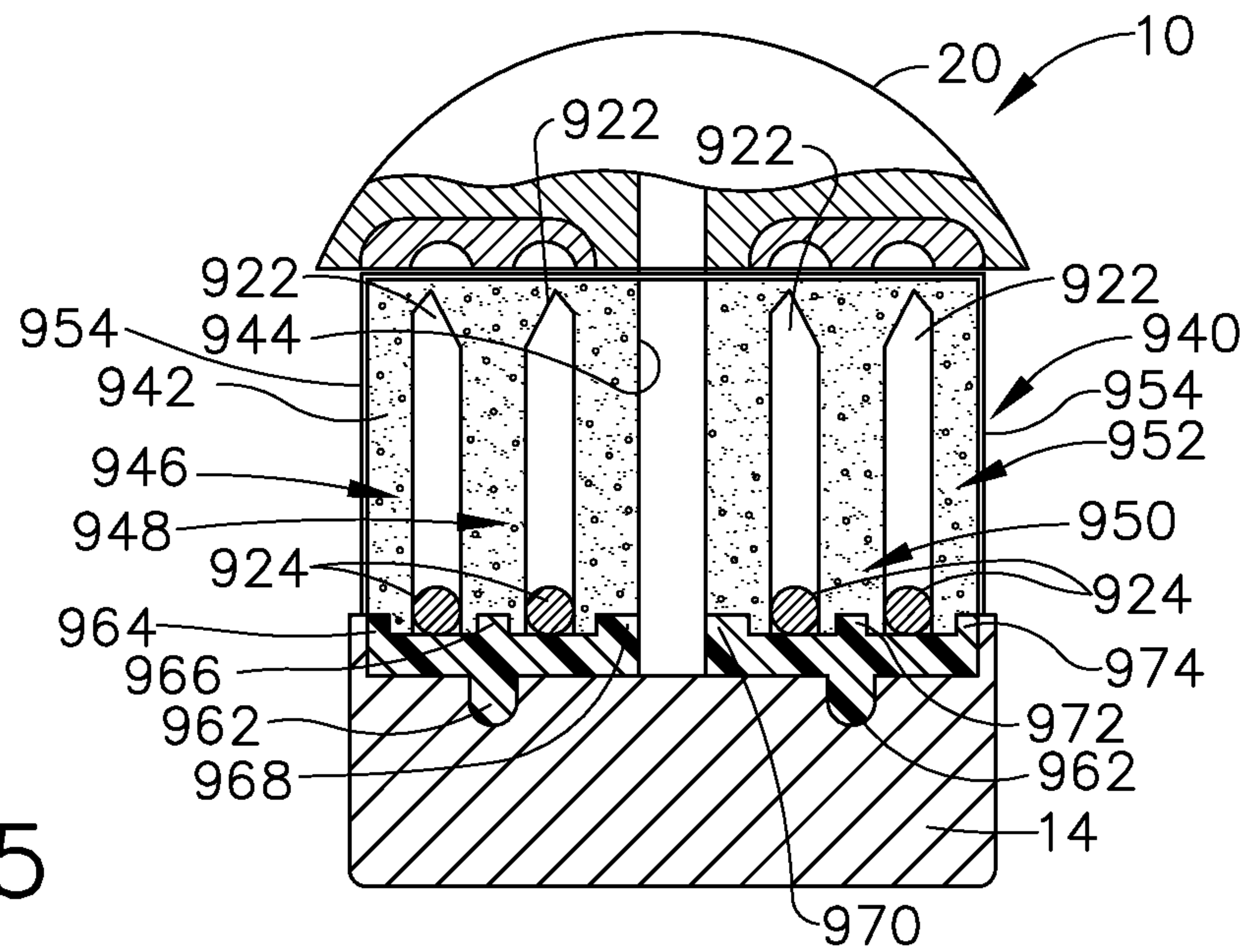


FIG. 15

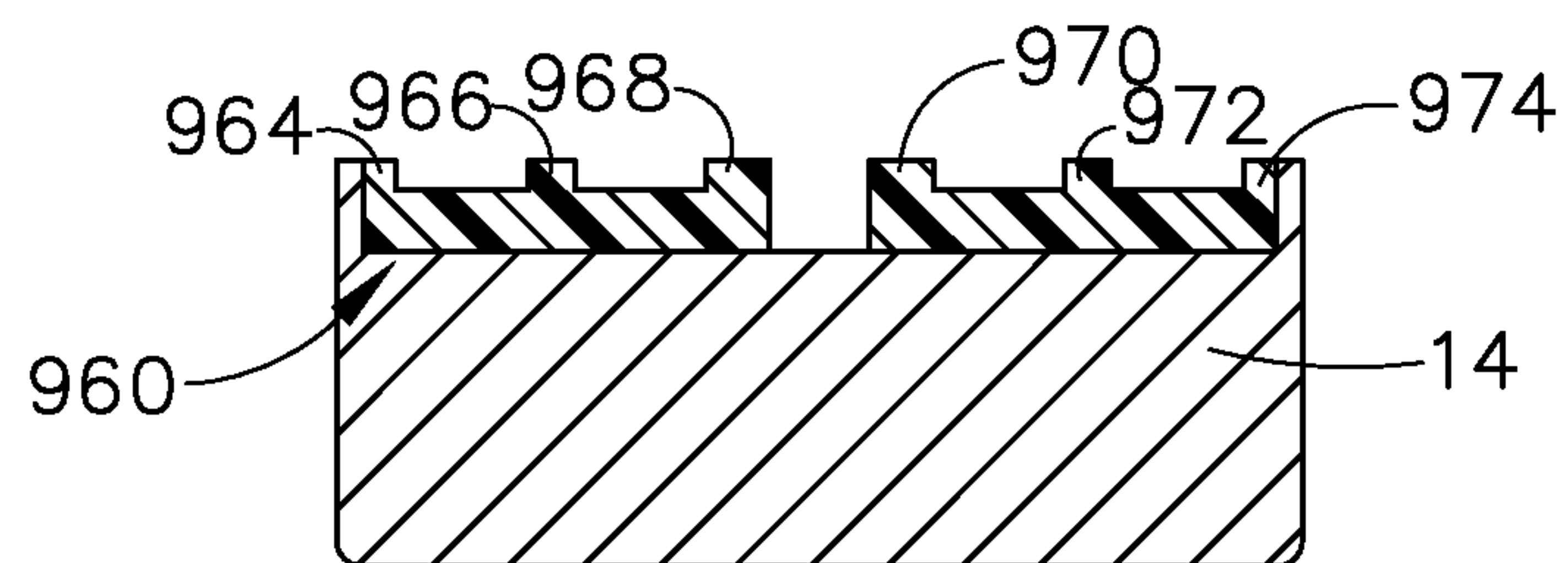


FIG. 16

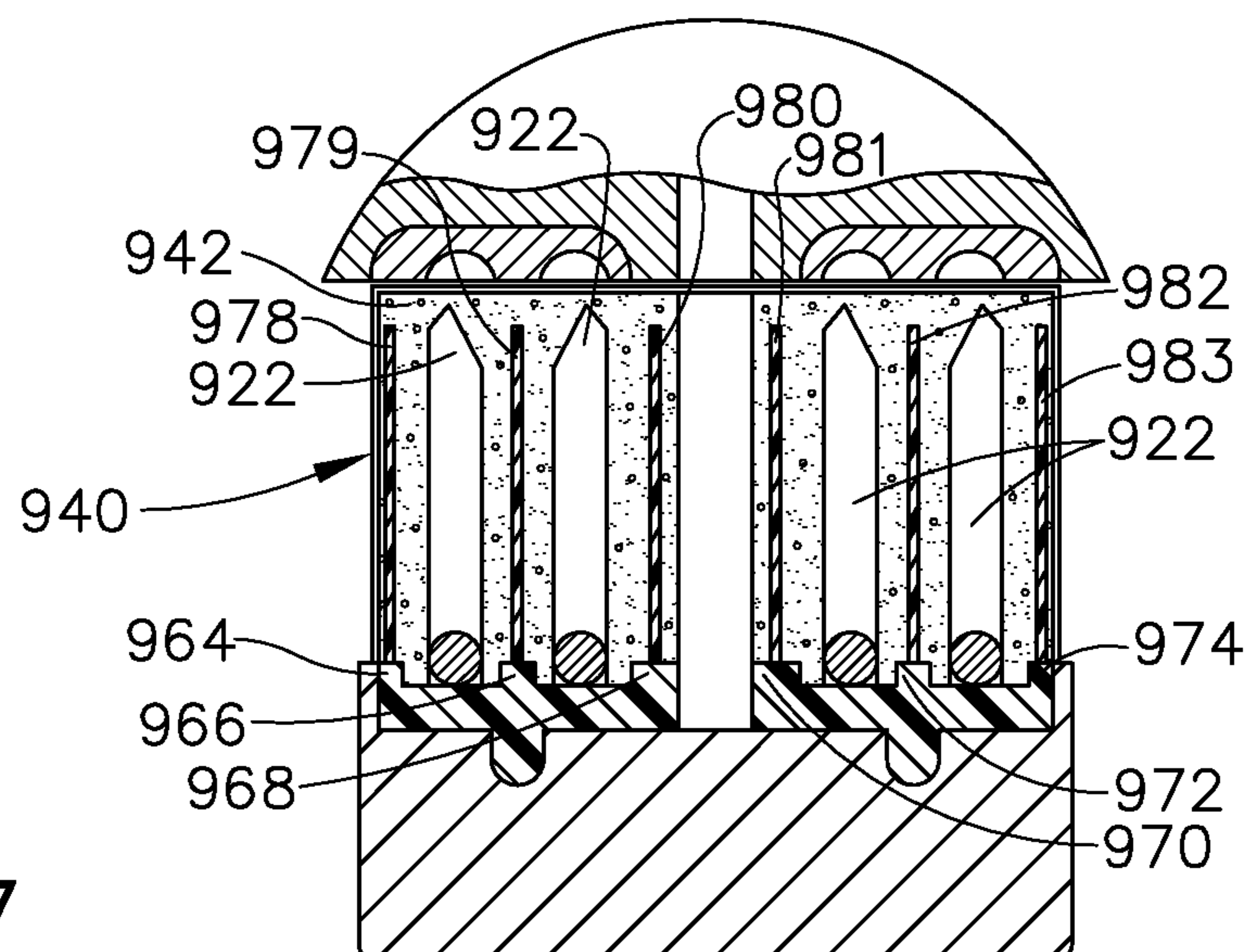
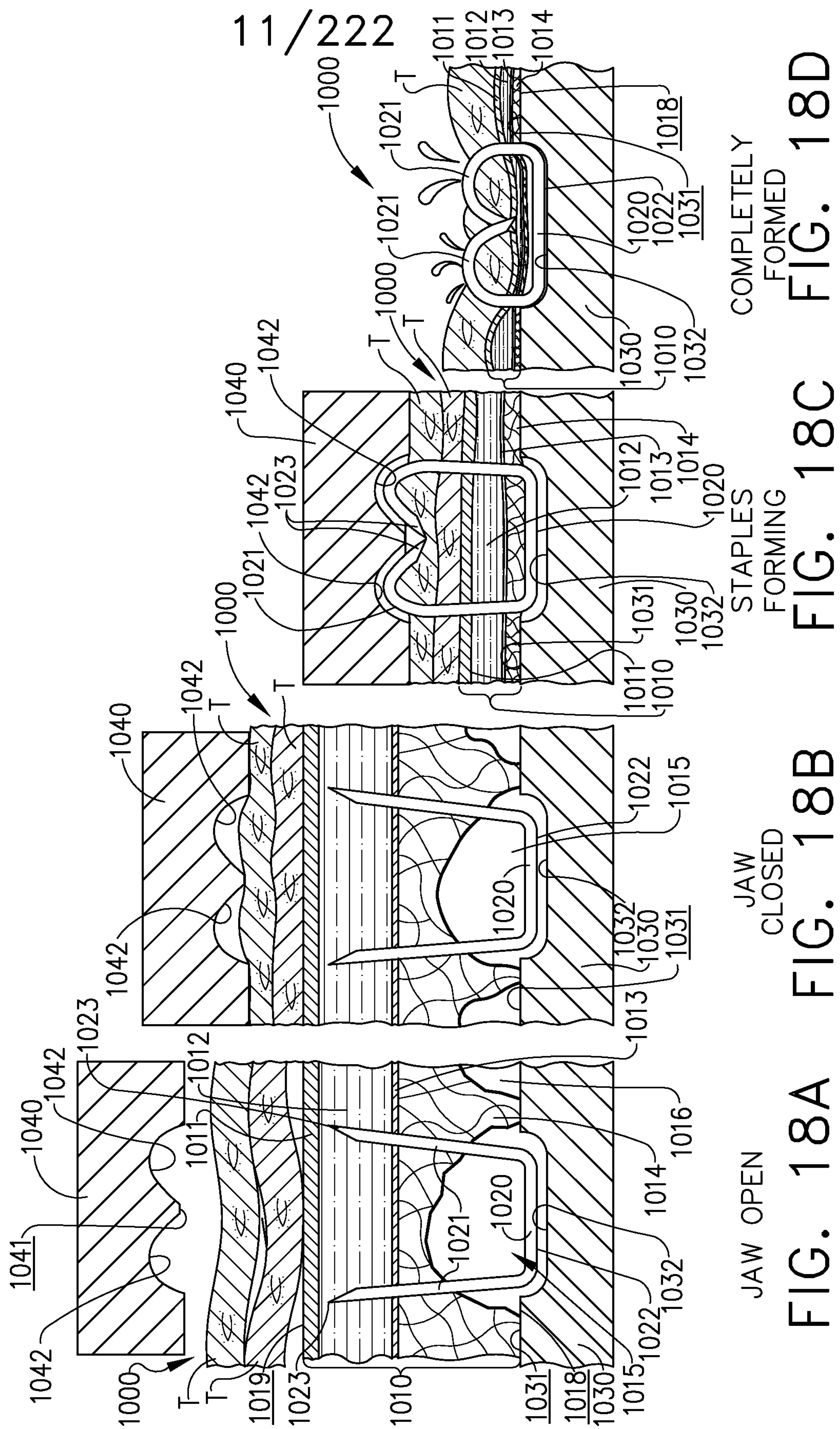


FIG. 17





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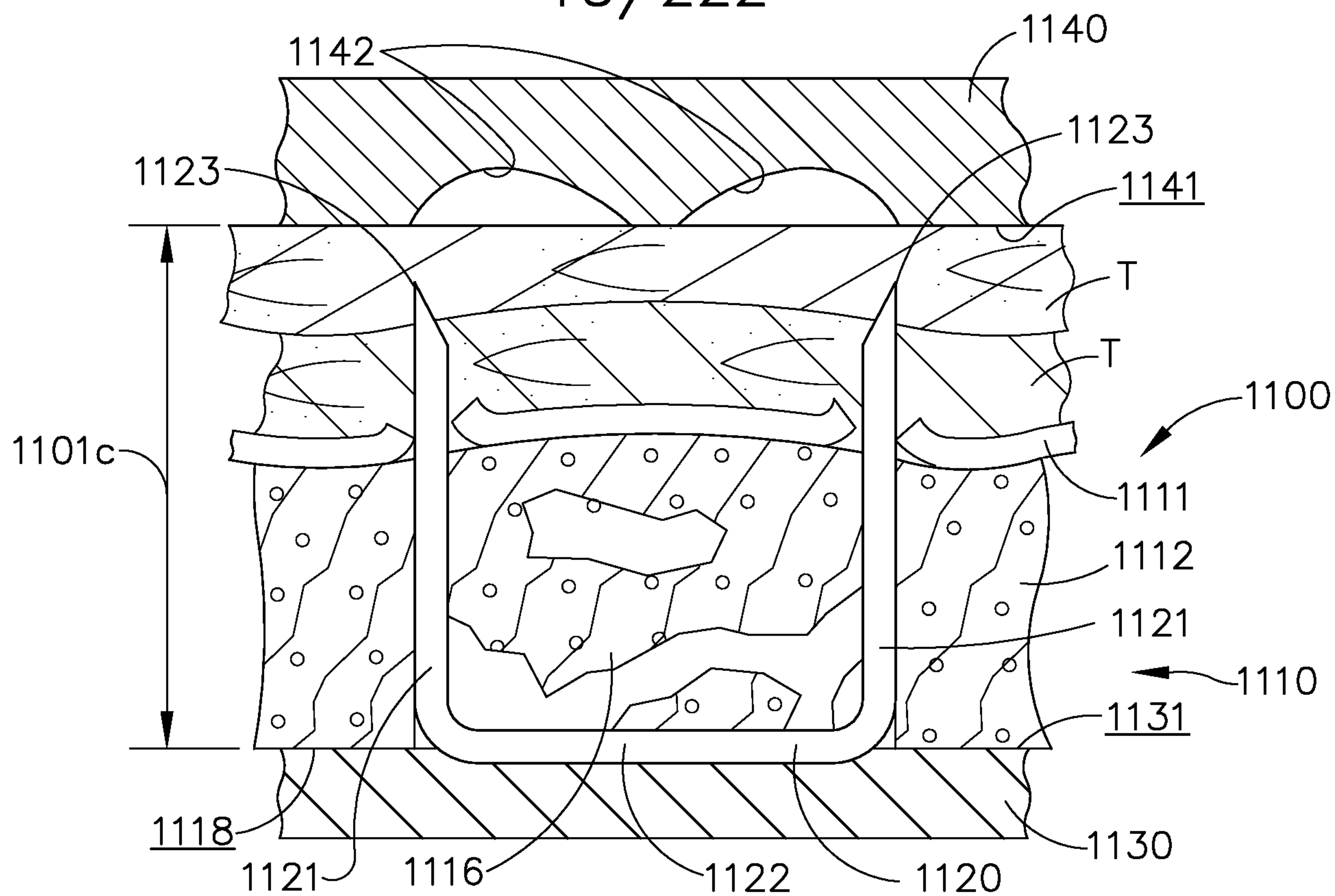


FIG. 19C

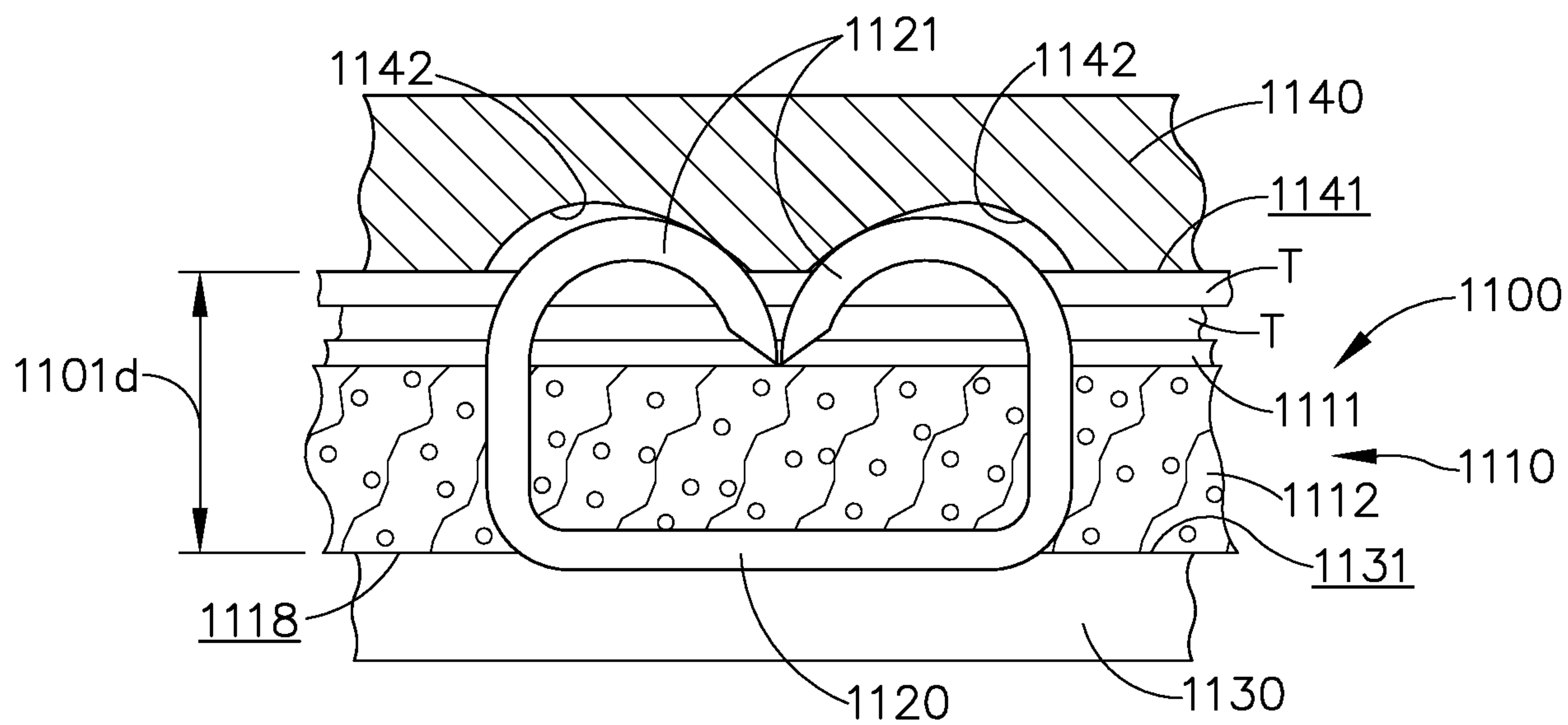


FIG. 19D

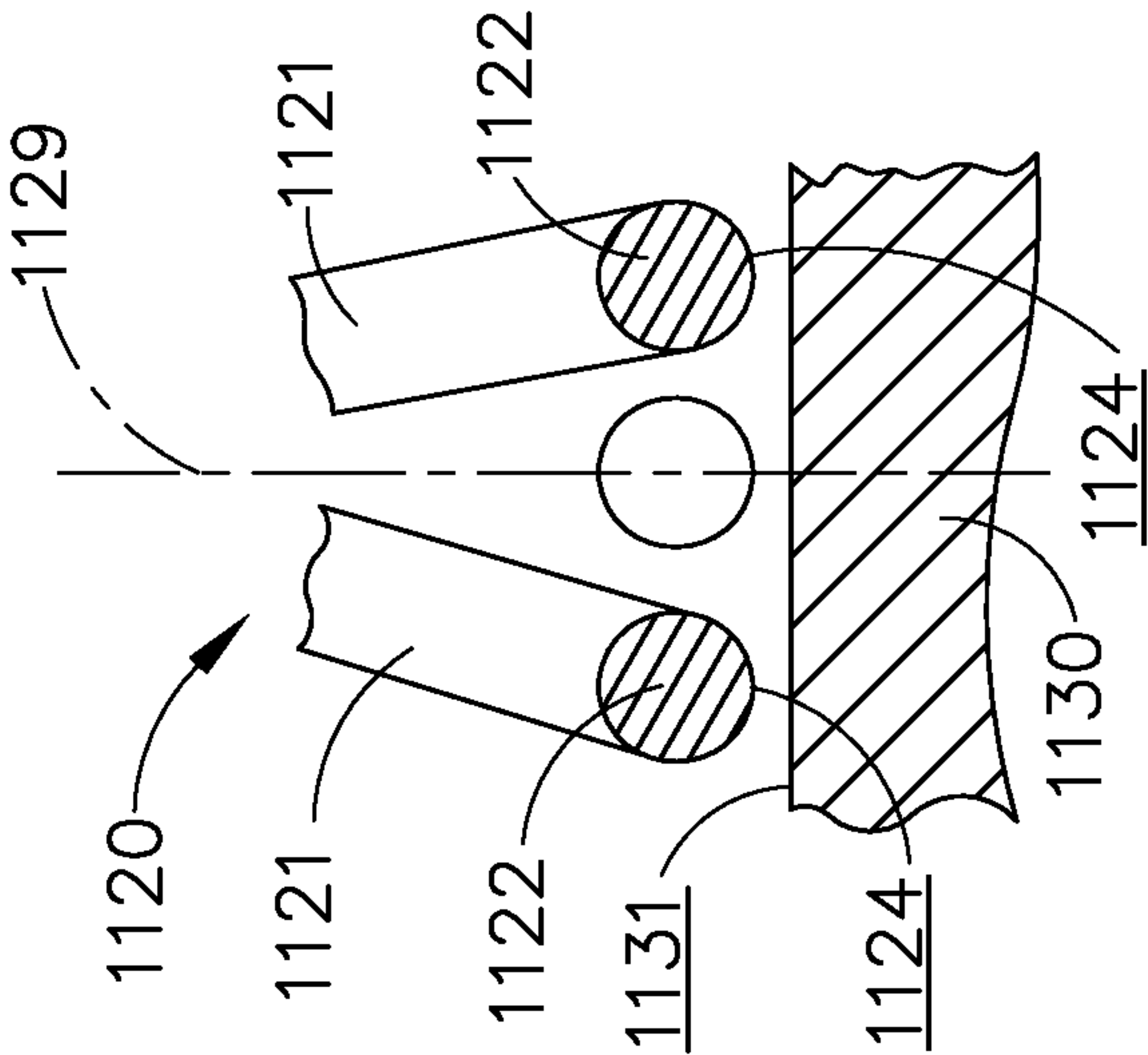


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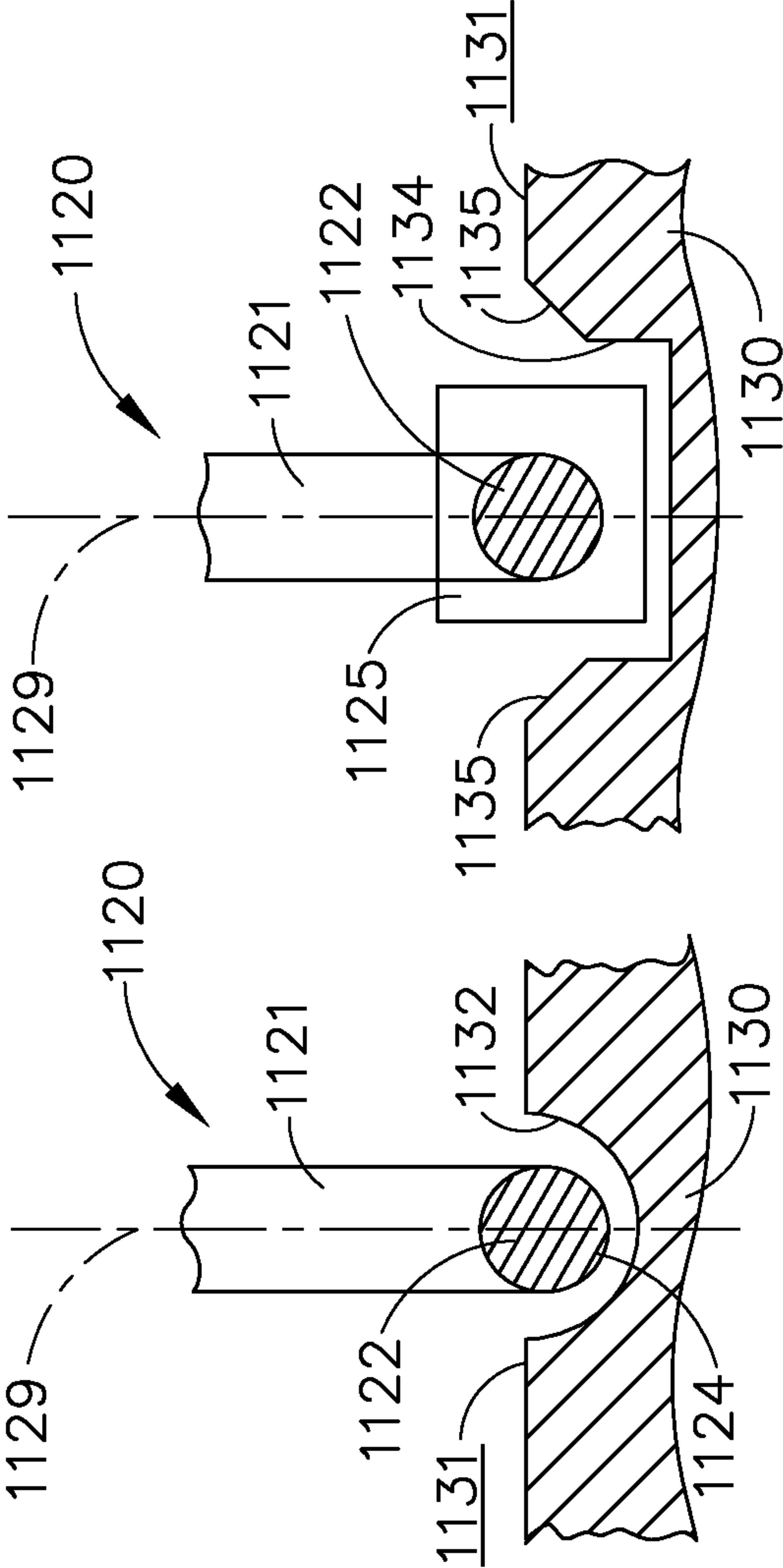


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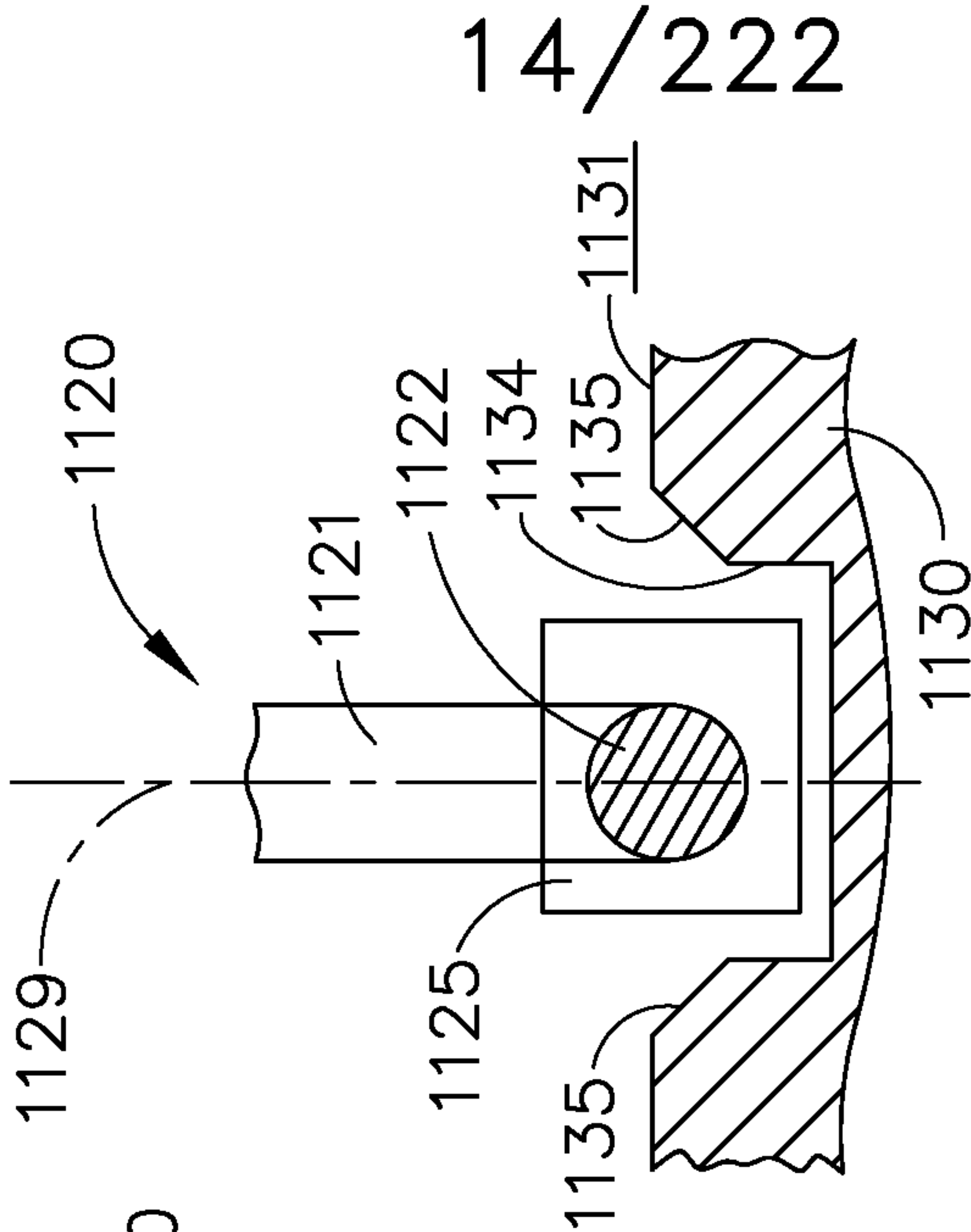


FIG. 22

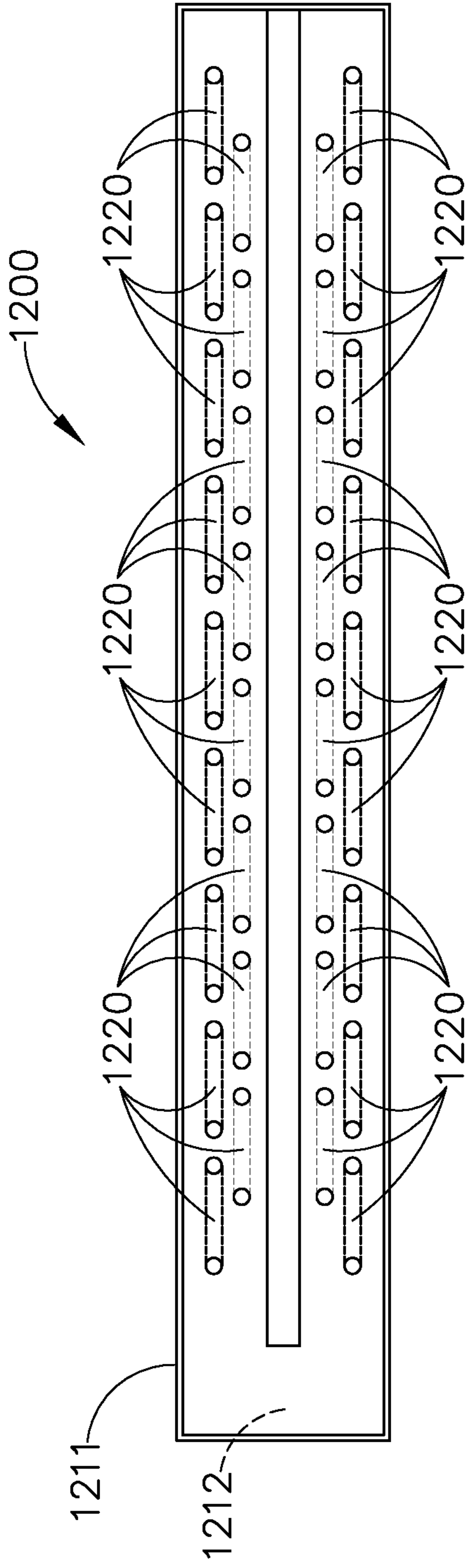


FIG. 23

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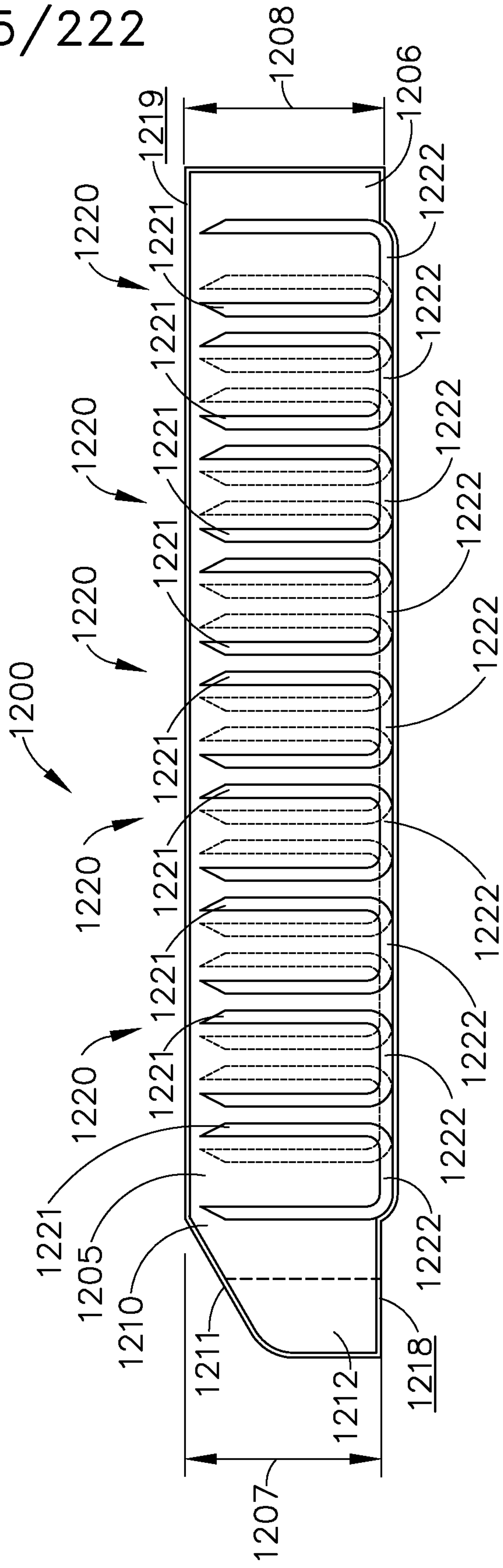
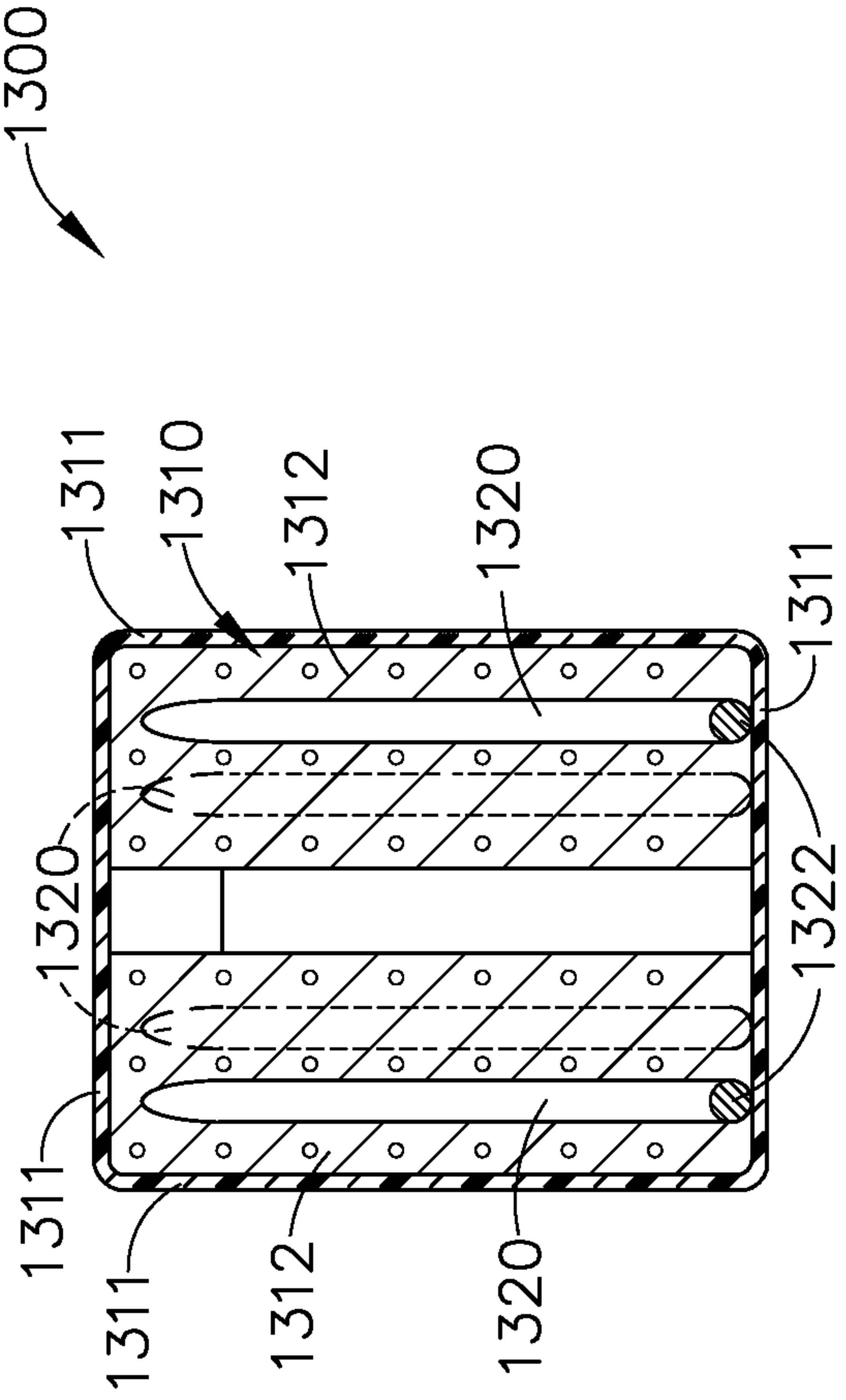
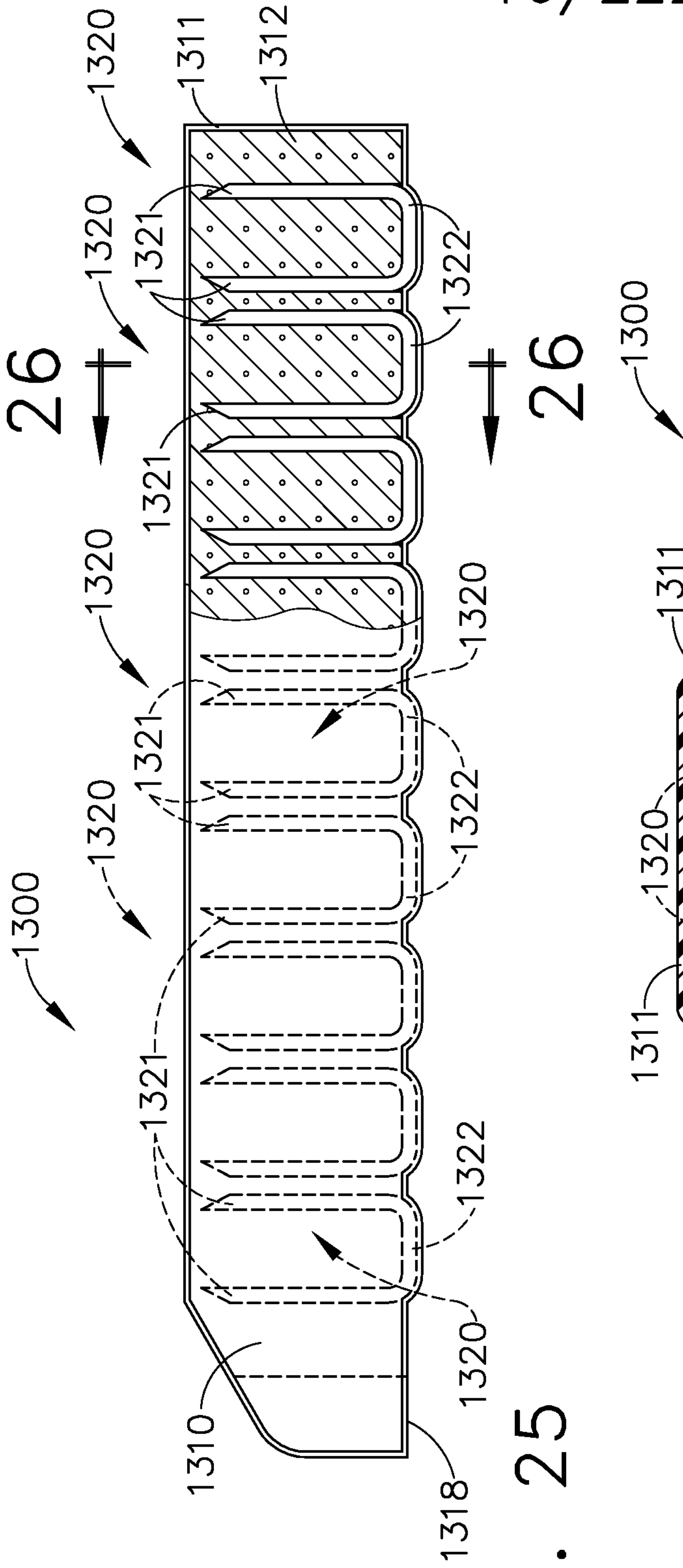


FIG. 24

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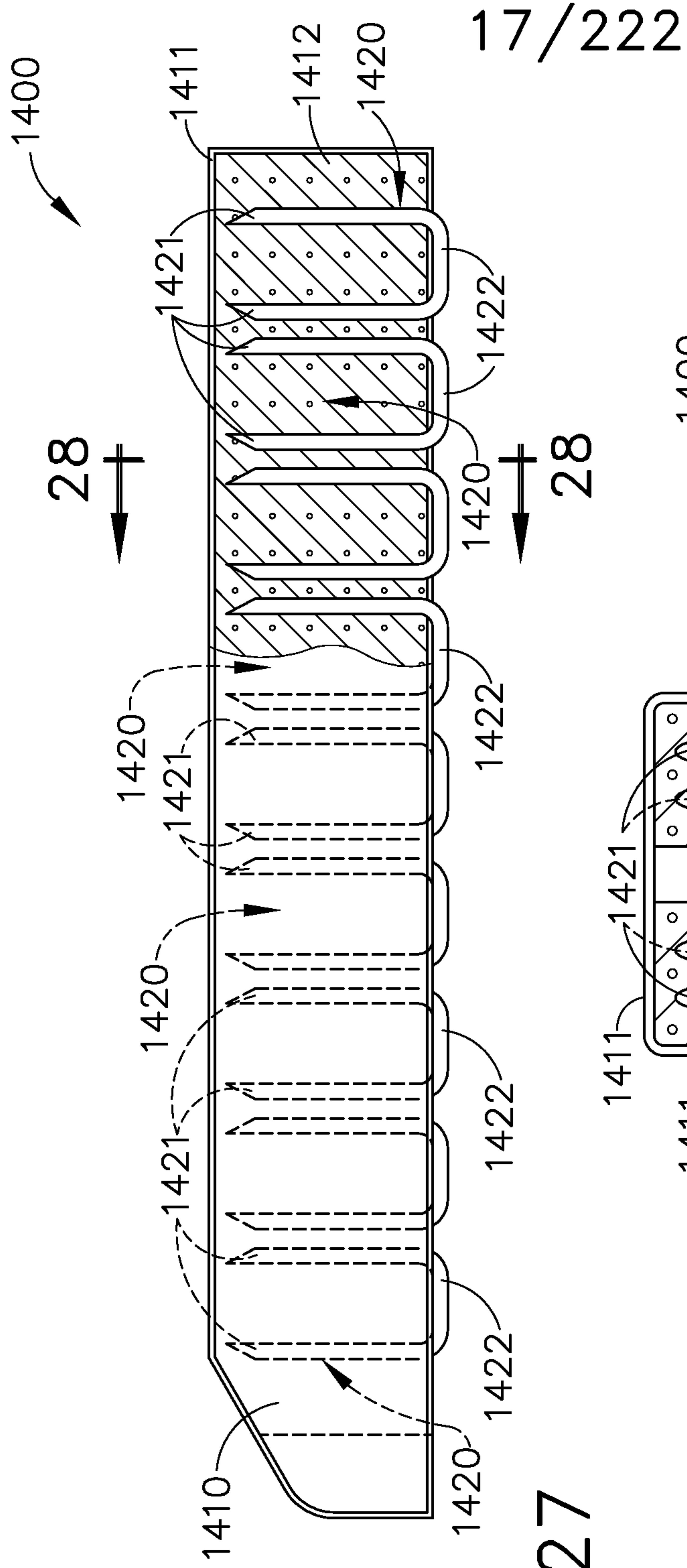


FIG. 27

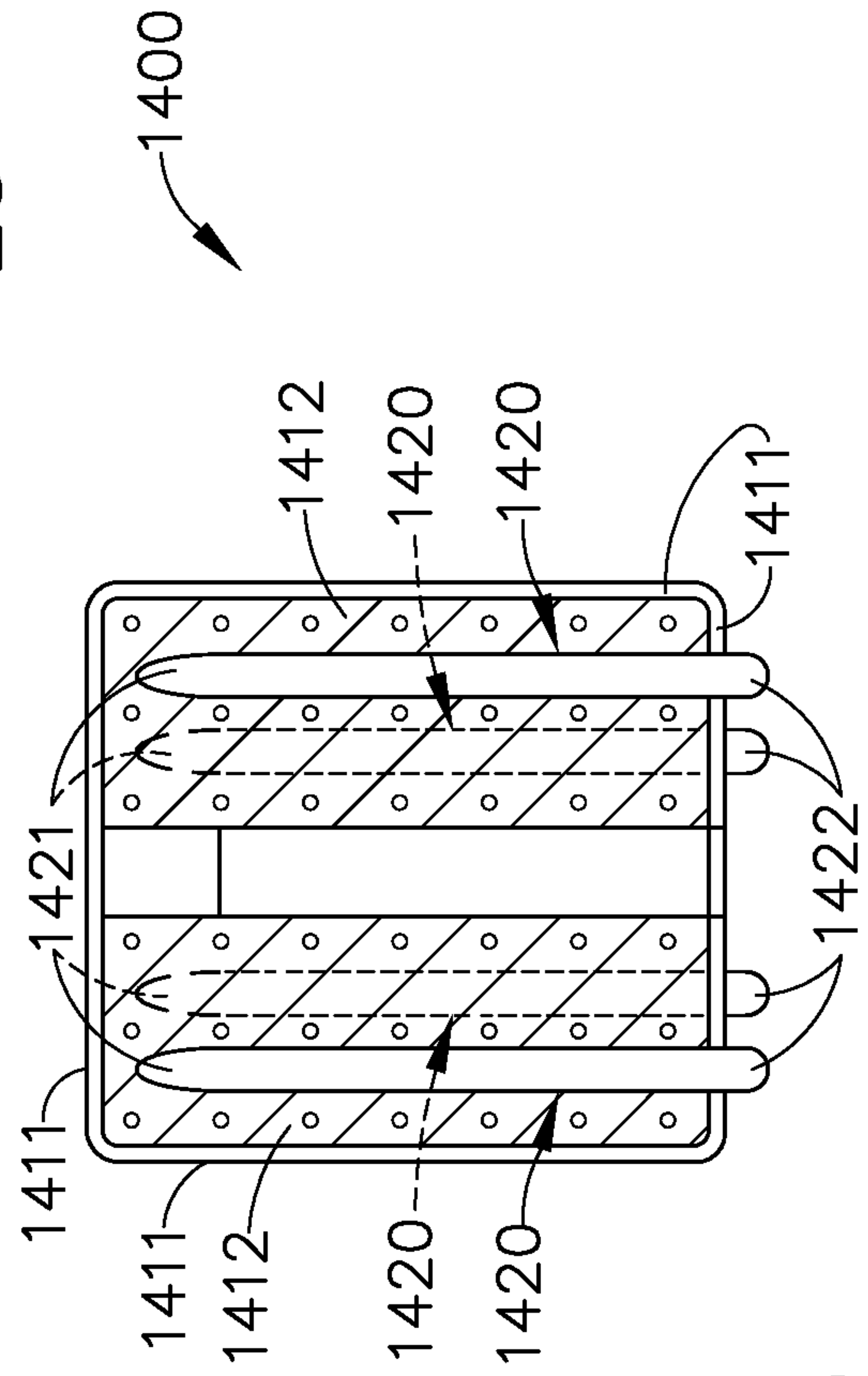


FIG. 28

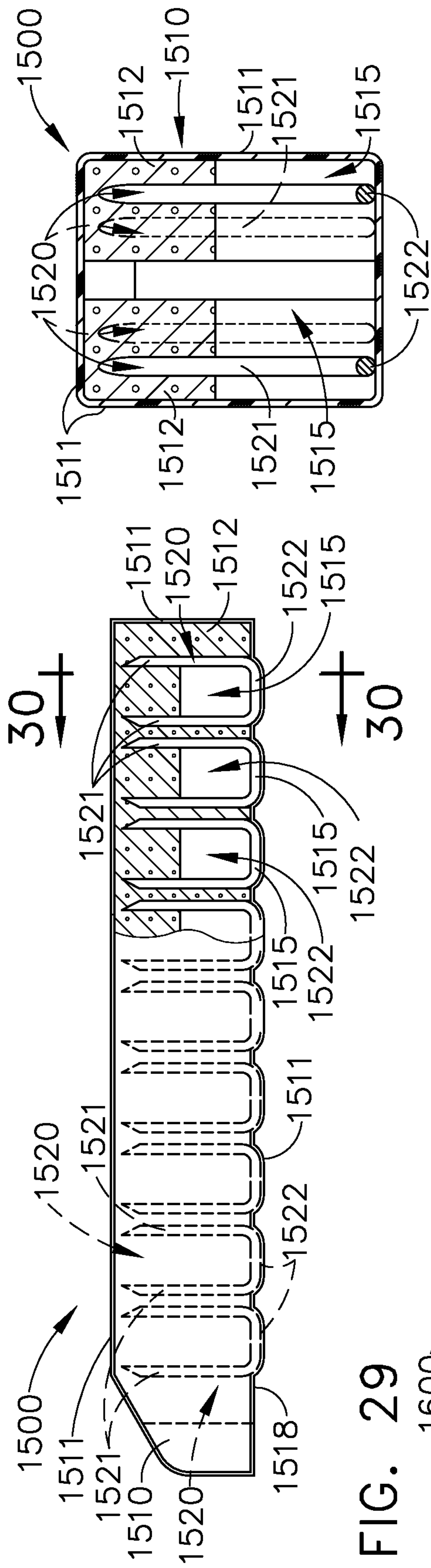


FIG. 29

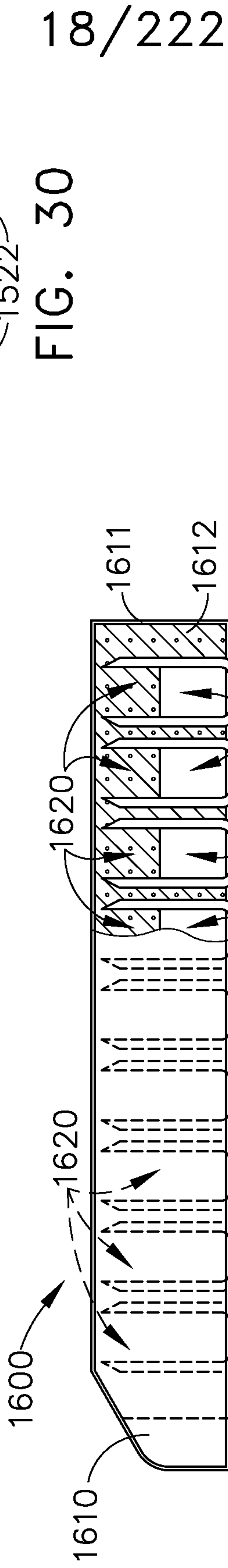


FIG. 30

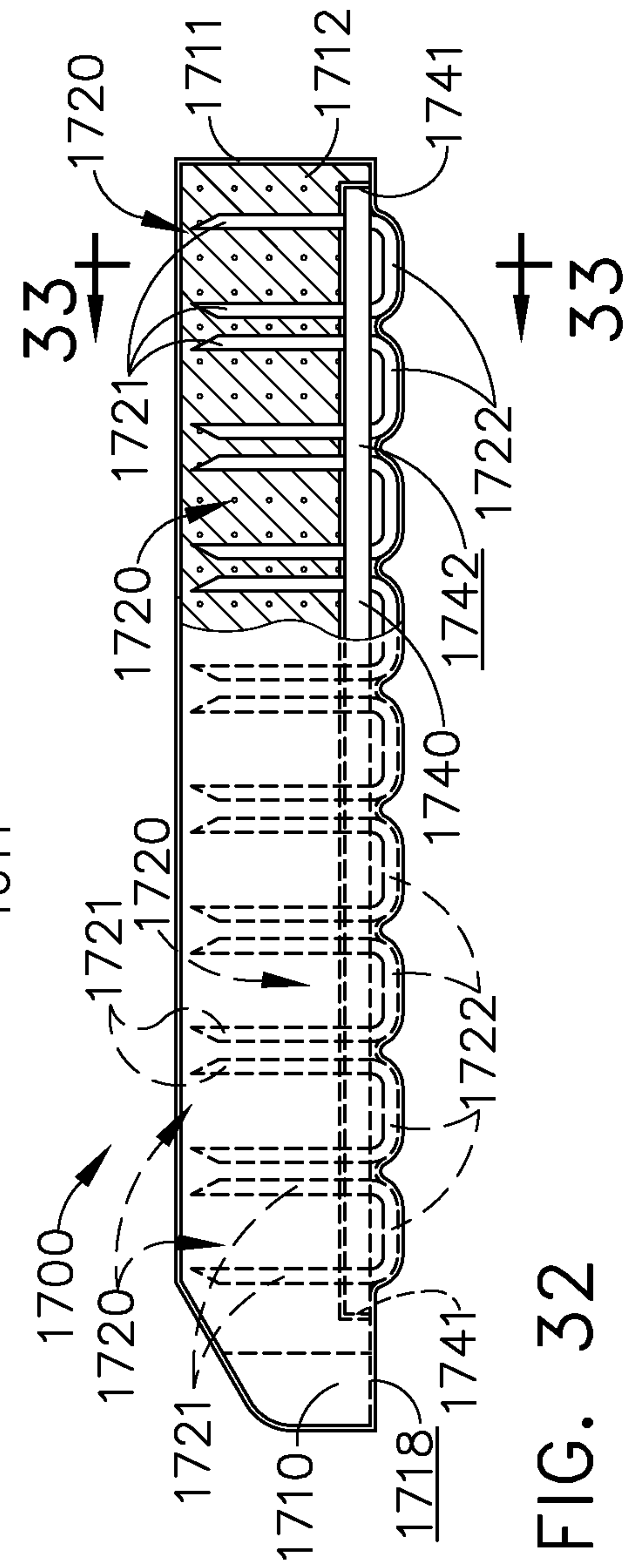


FIG. 31

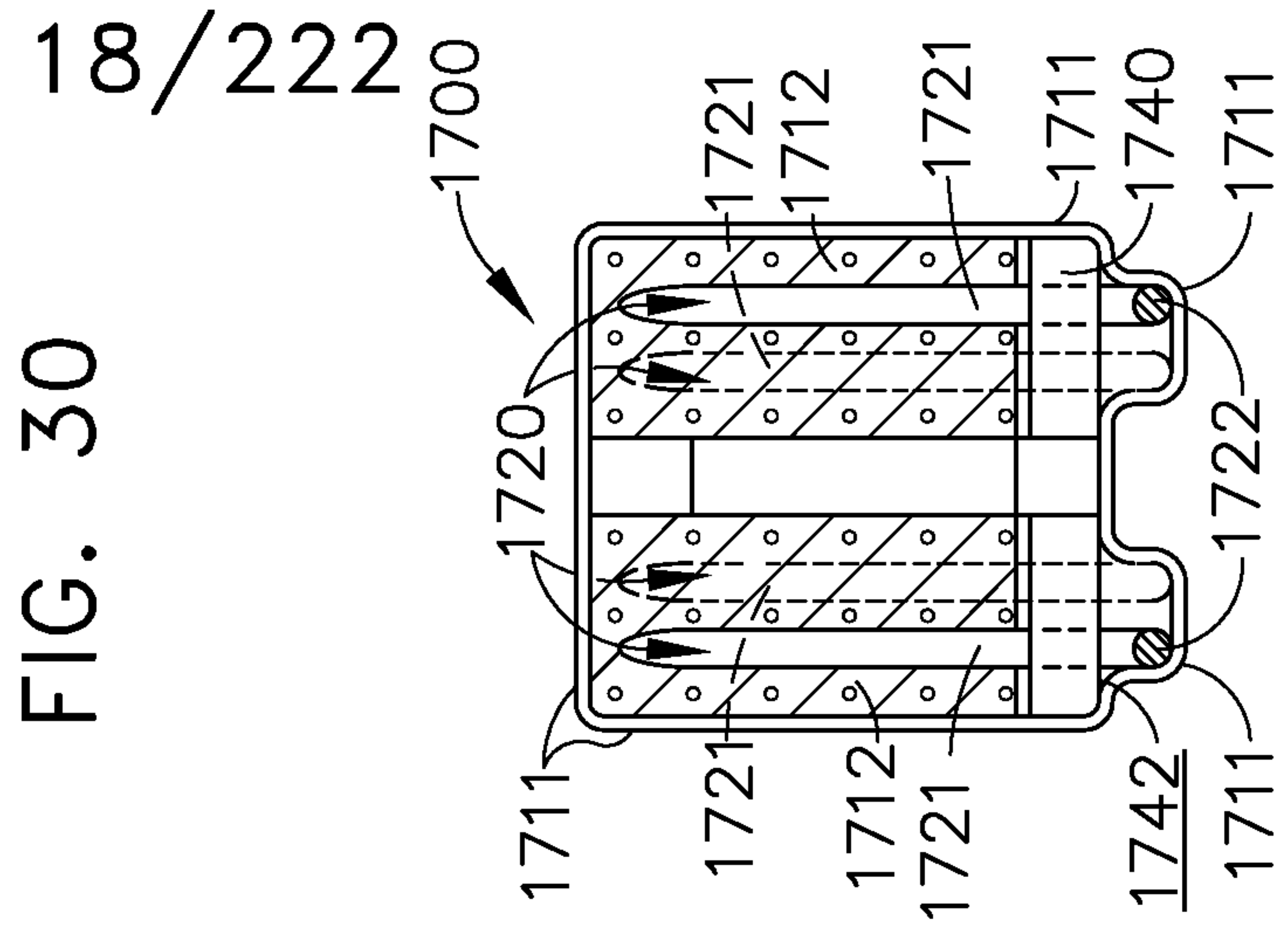


FIG. 32

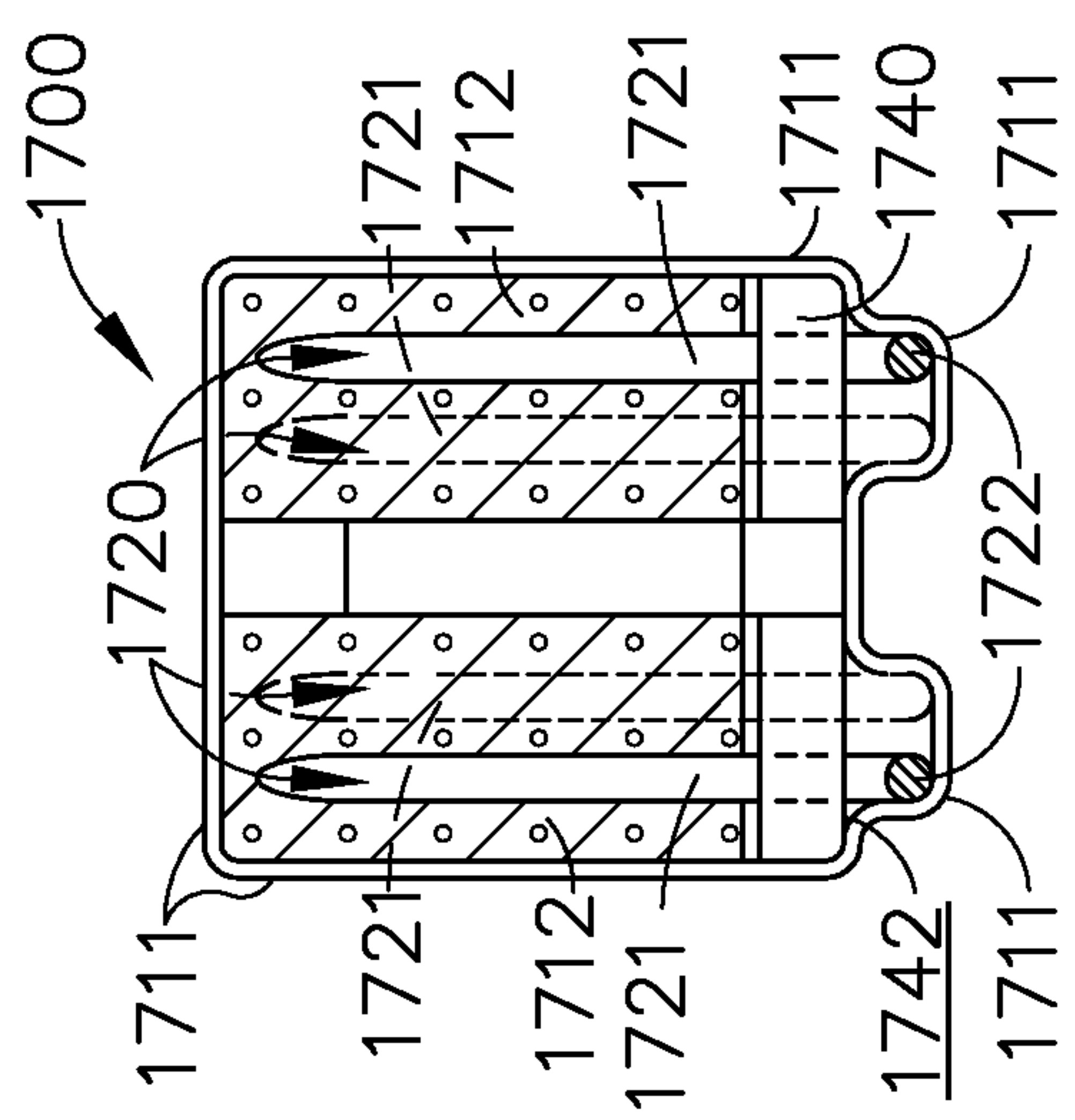


FIG. 33

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FIG. 34

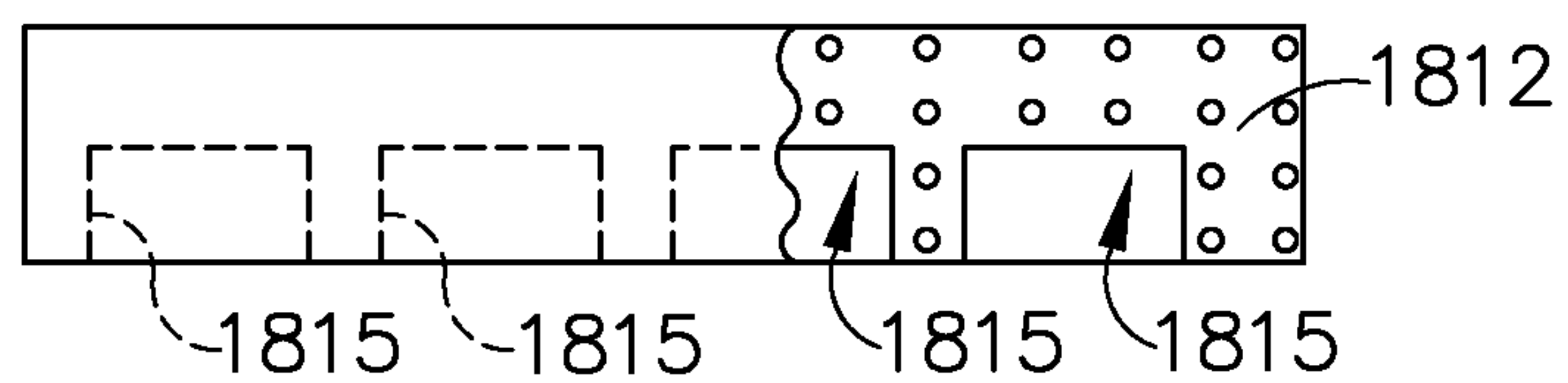


FIG. 35

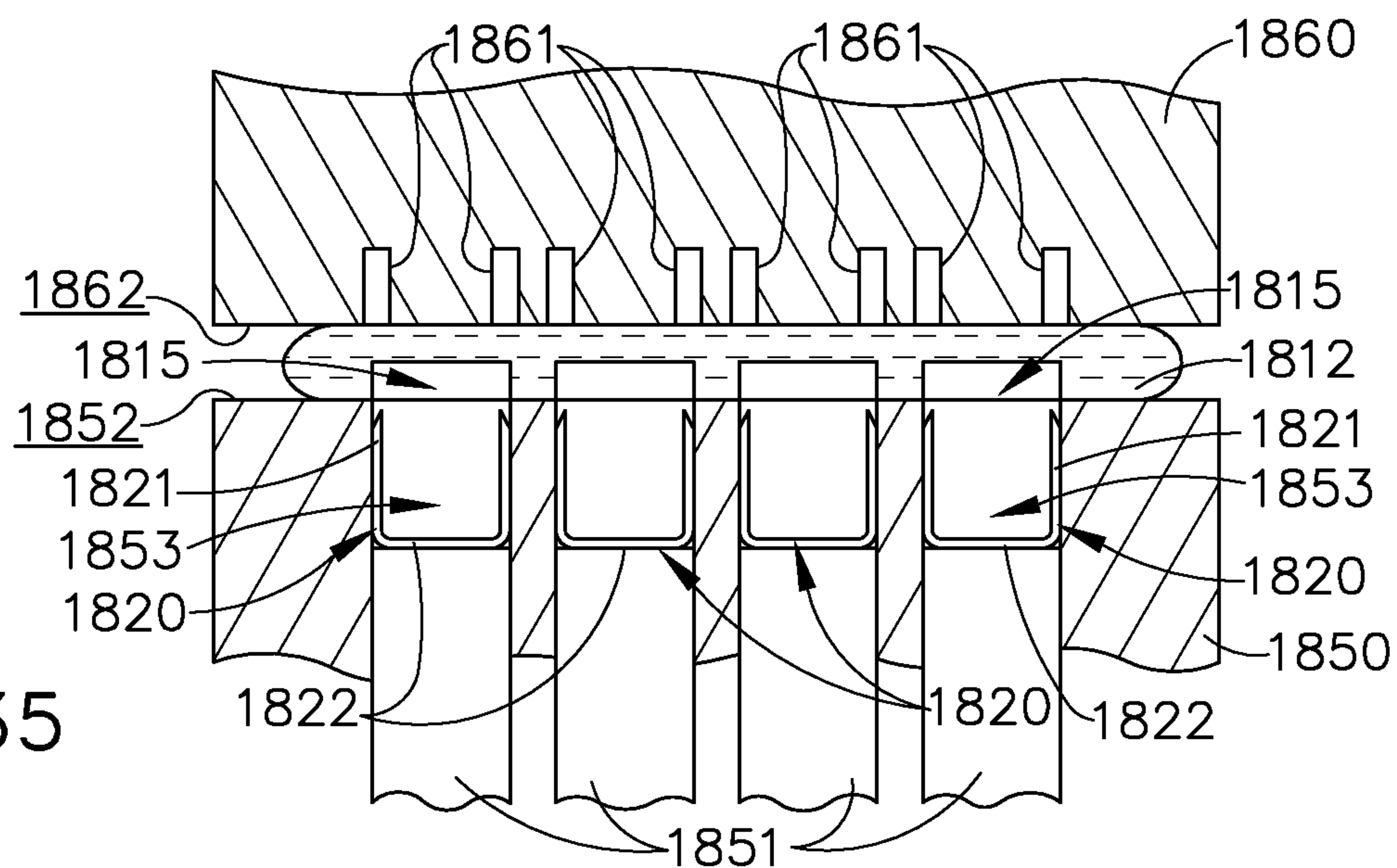
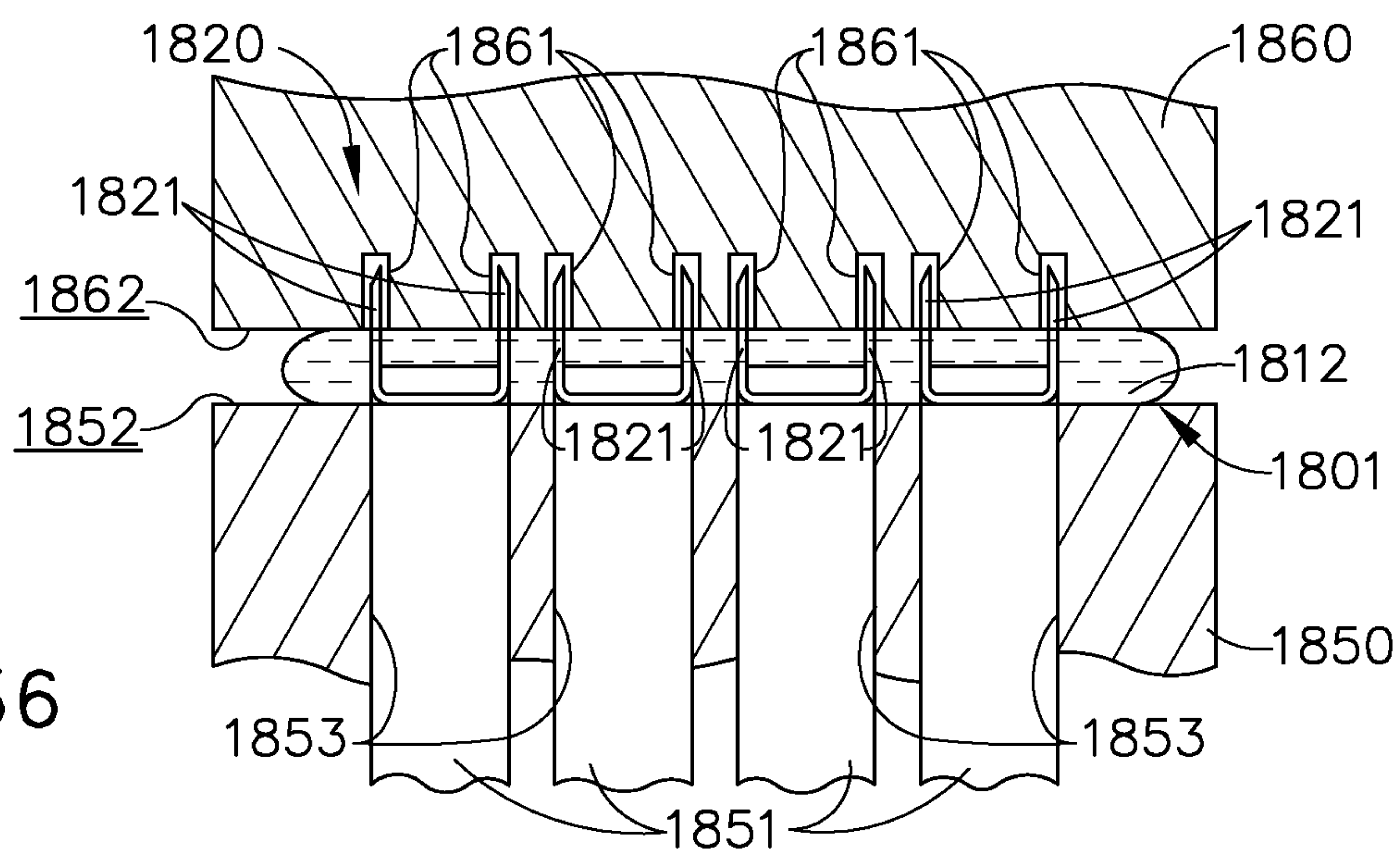


FIG. 36



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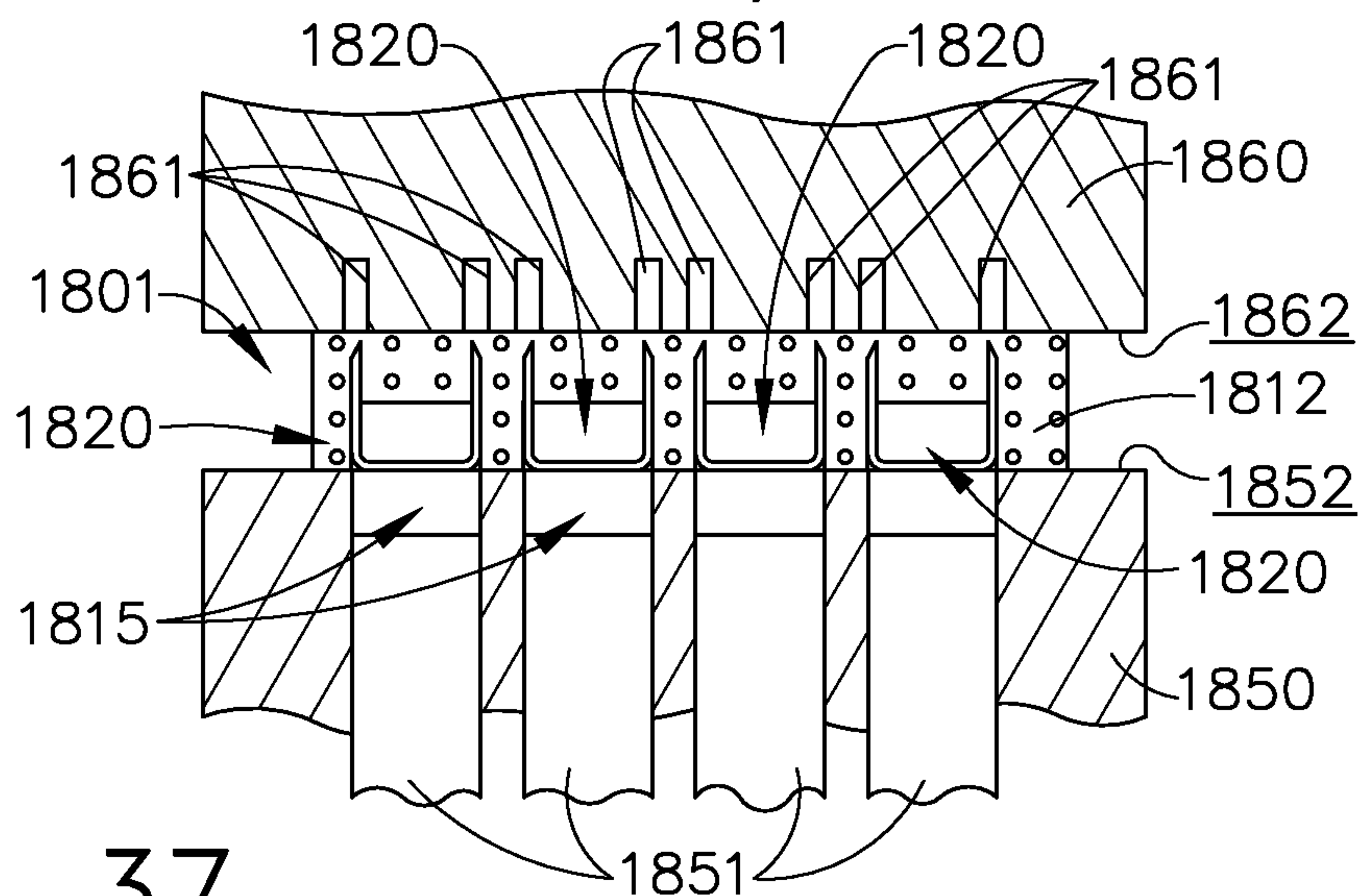


FIG. 37

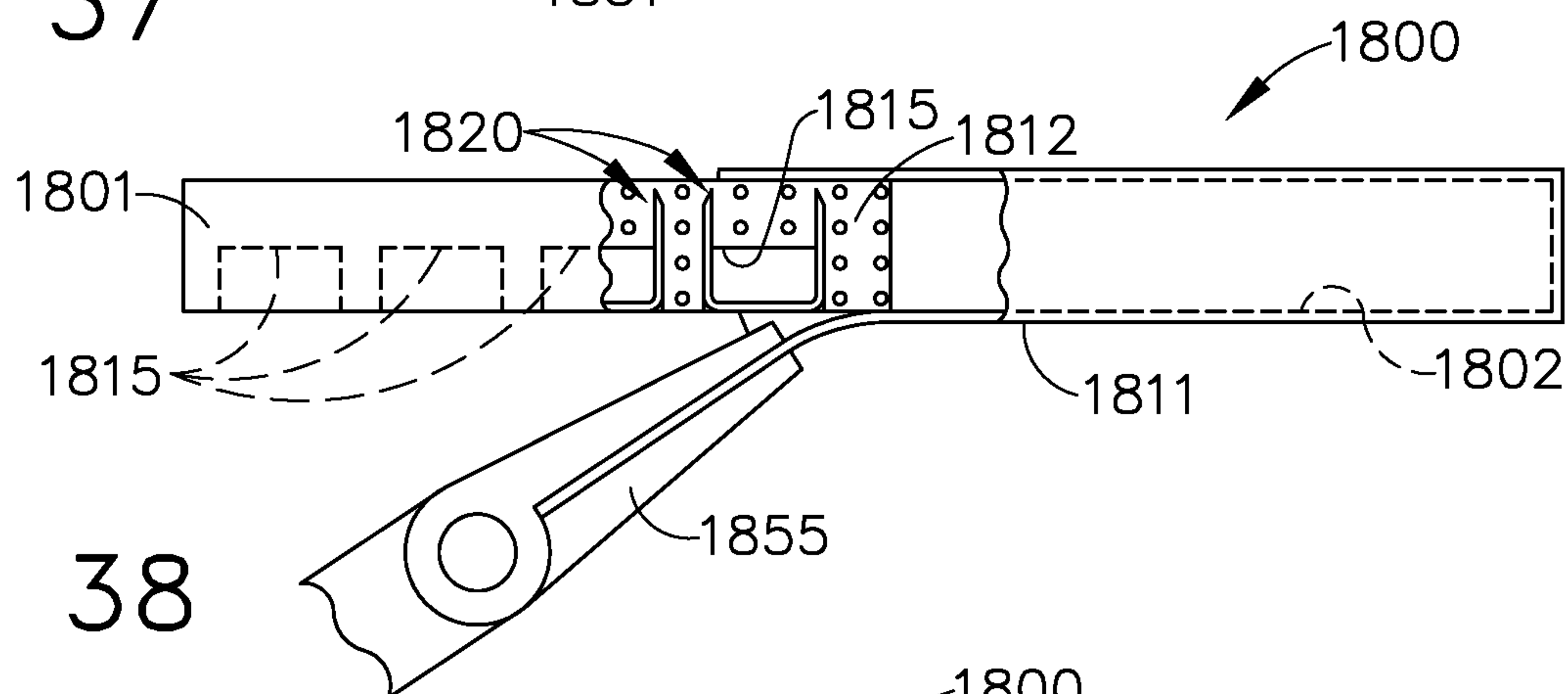


FIG. 38

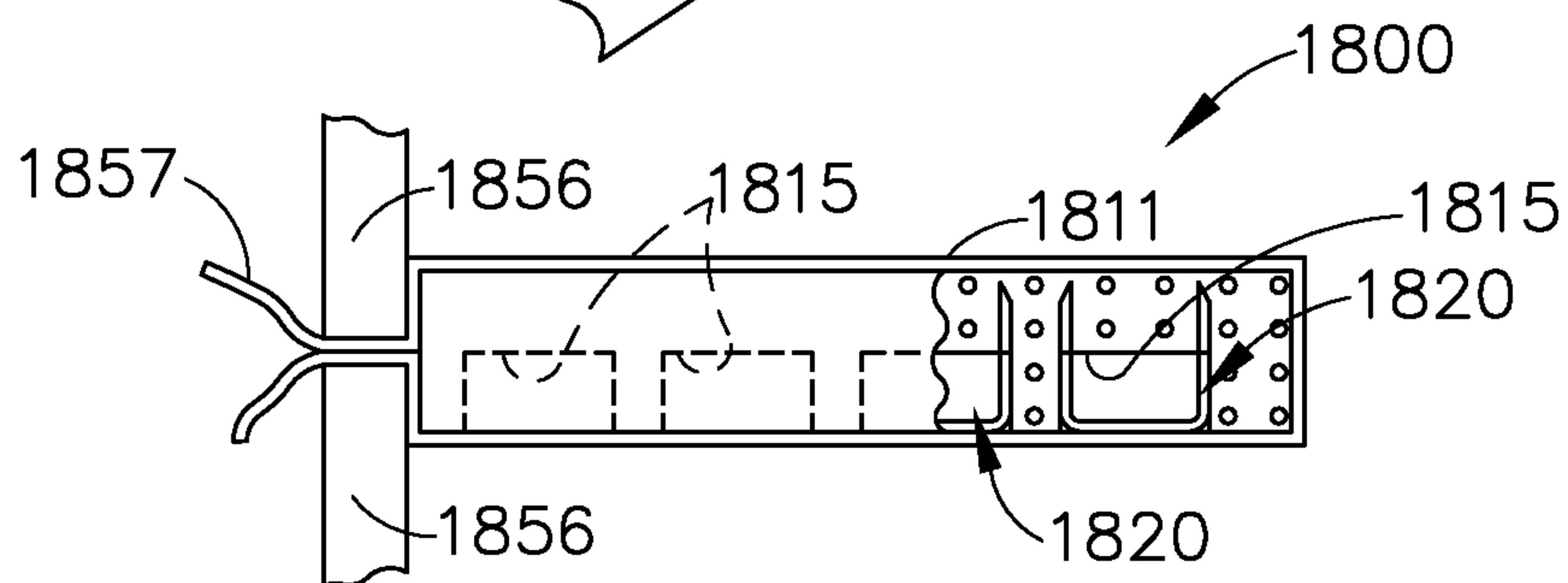


FIG. 39

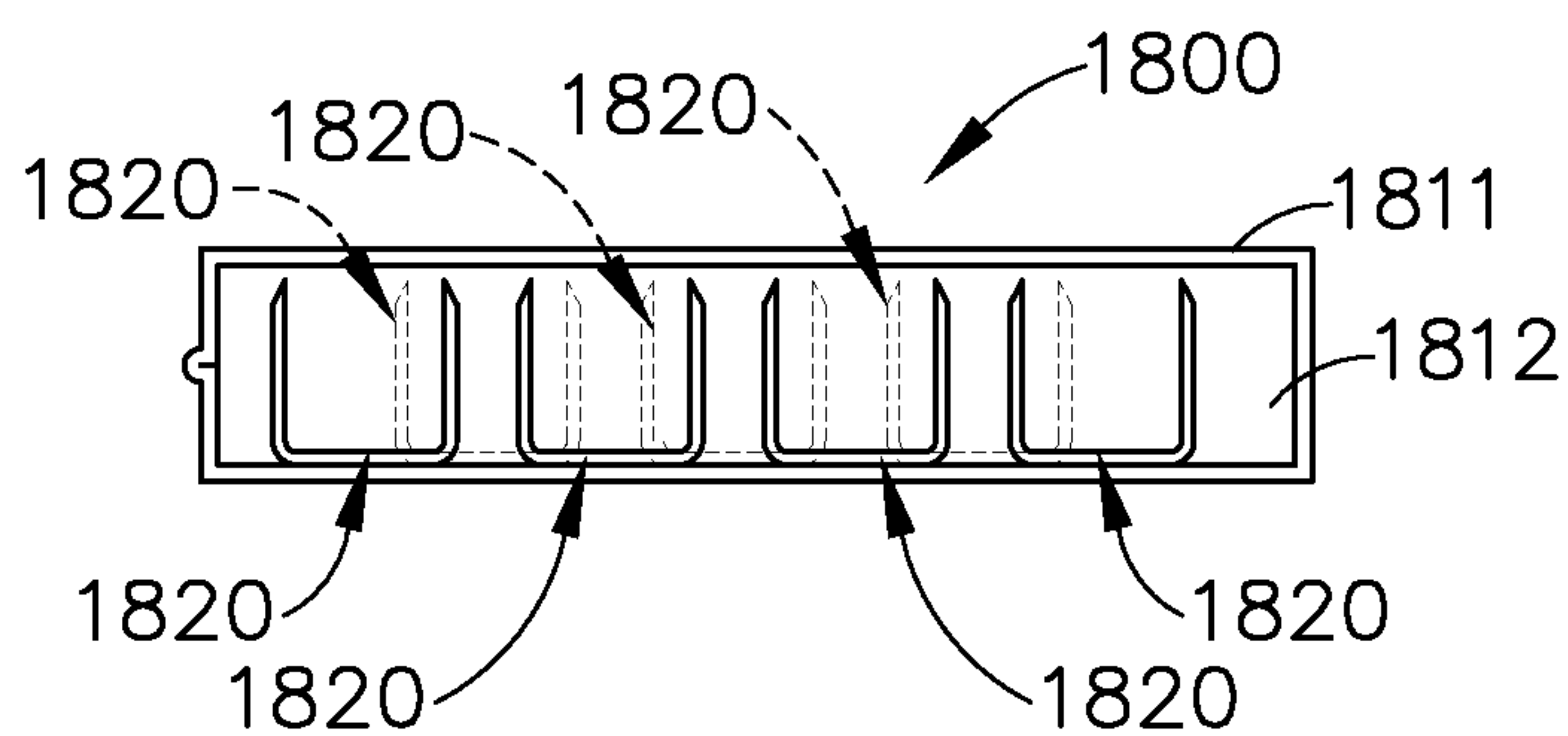


FIG. 40

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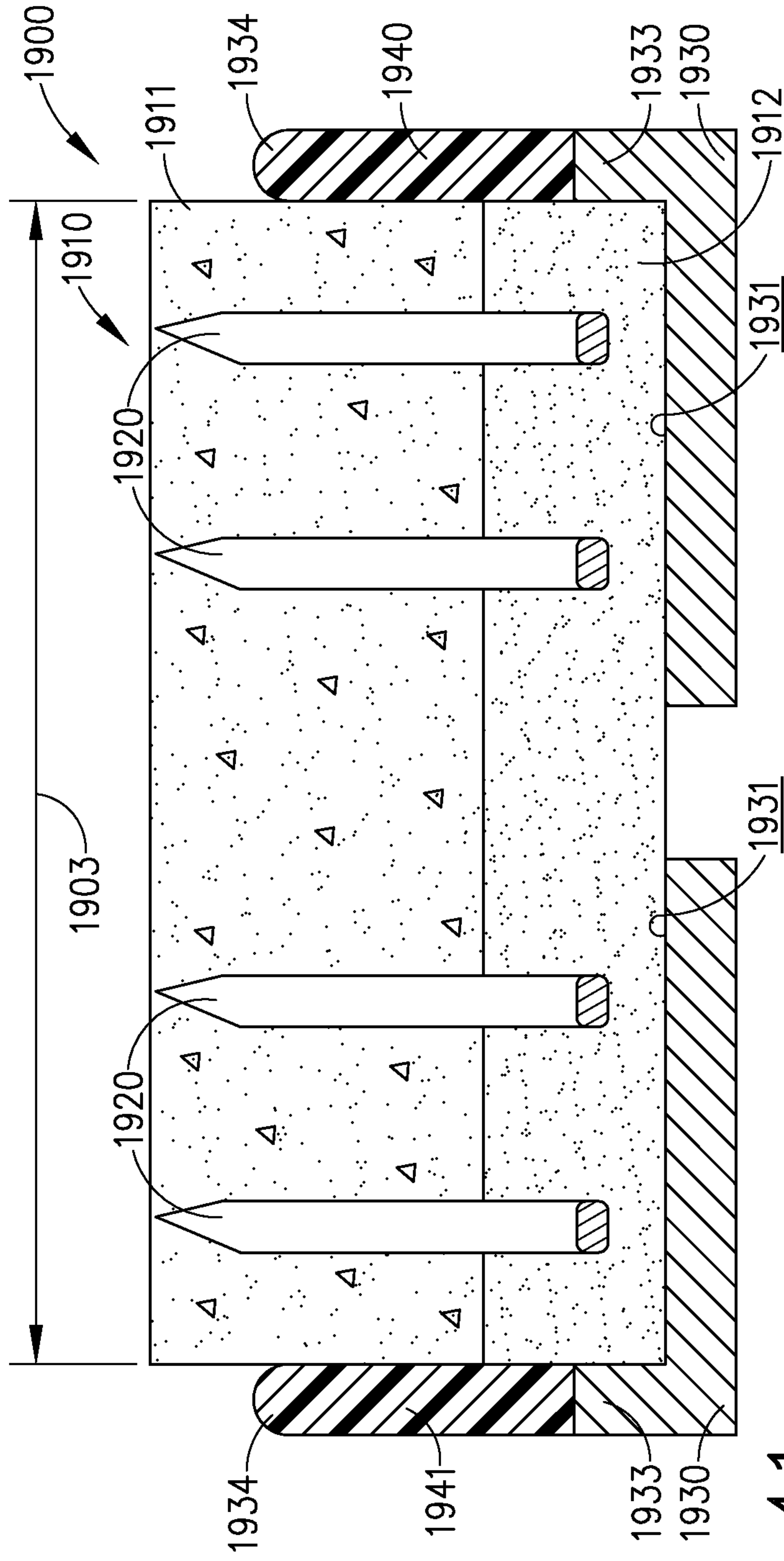


FIG. 41

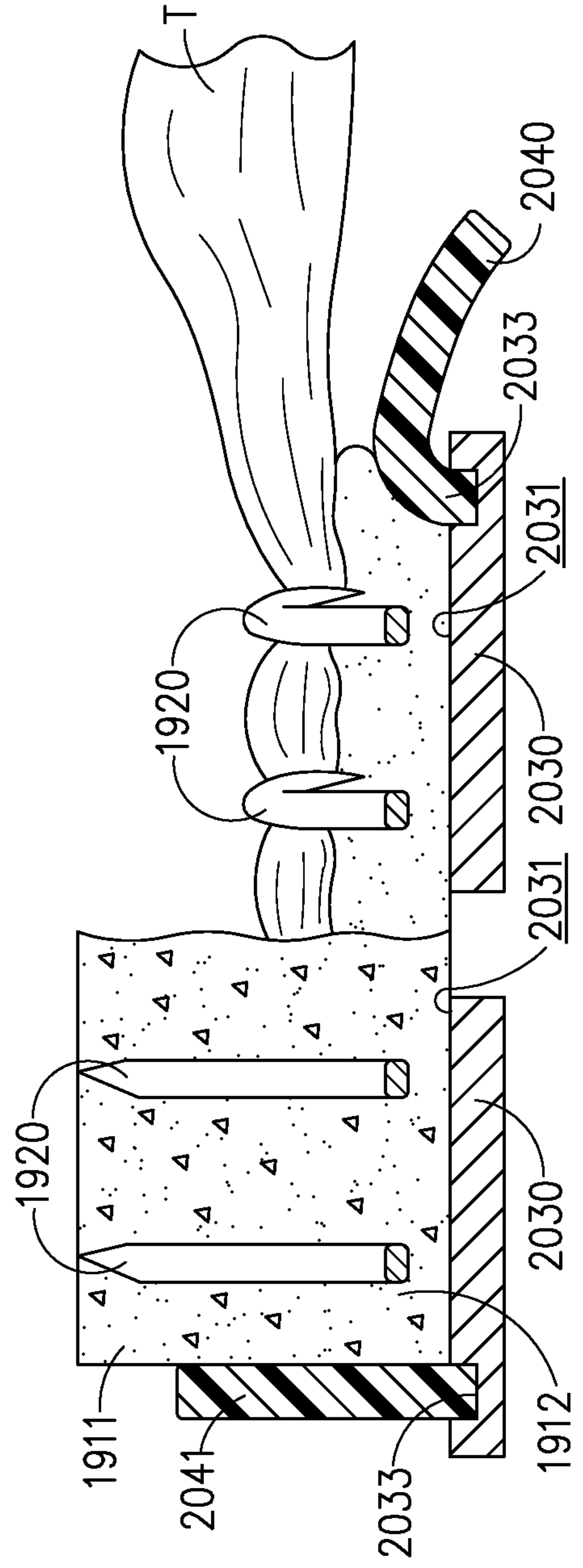


FIG. 42

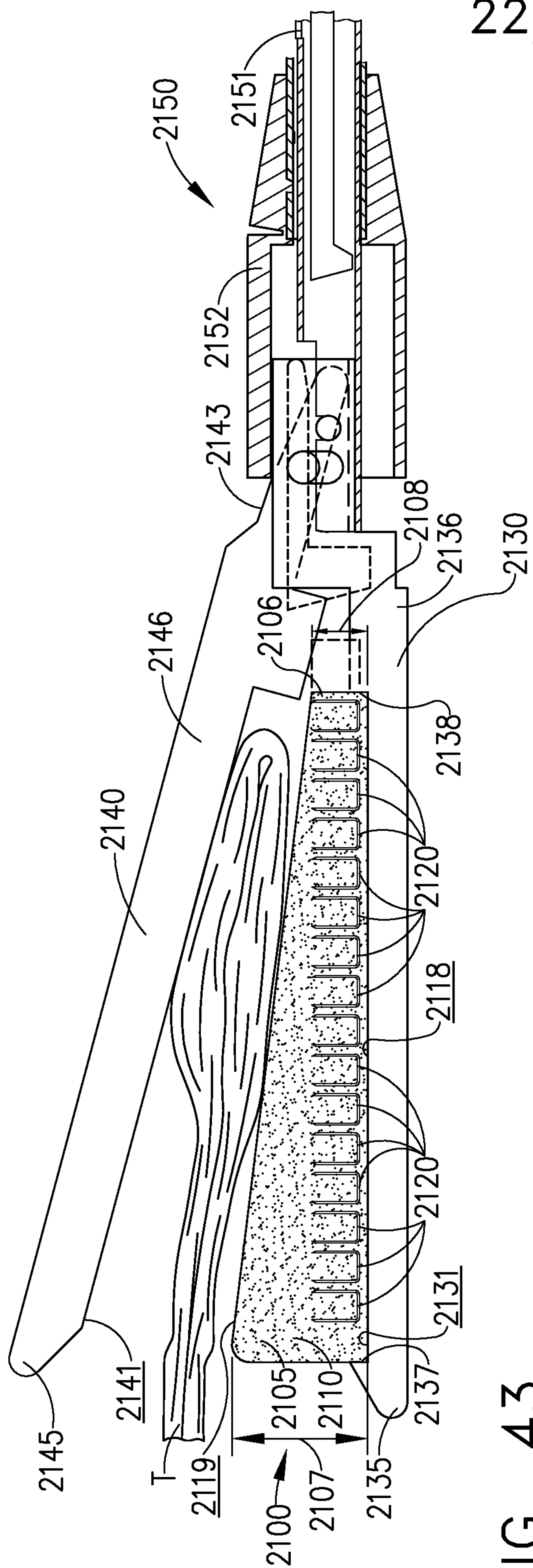


FIG. 43

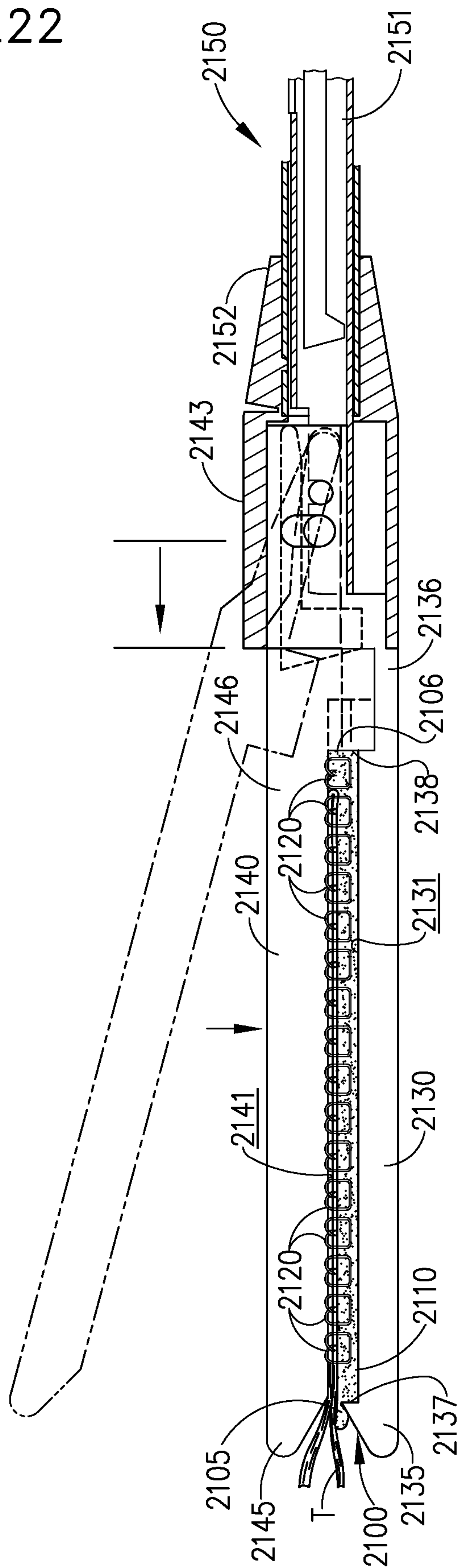


FIG. 44



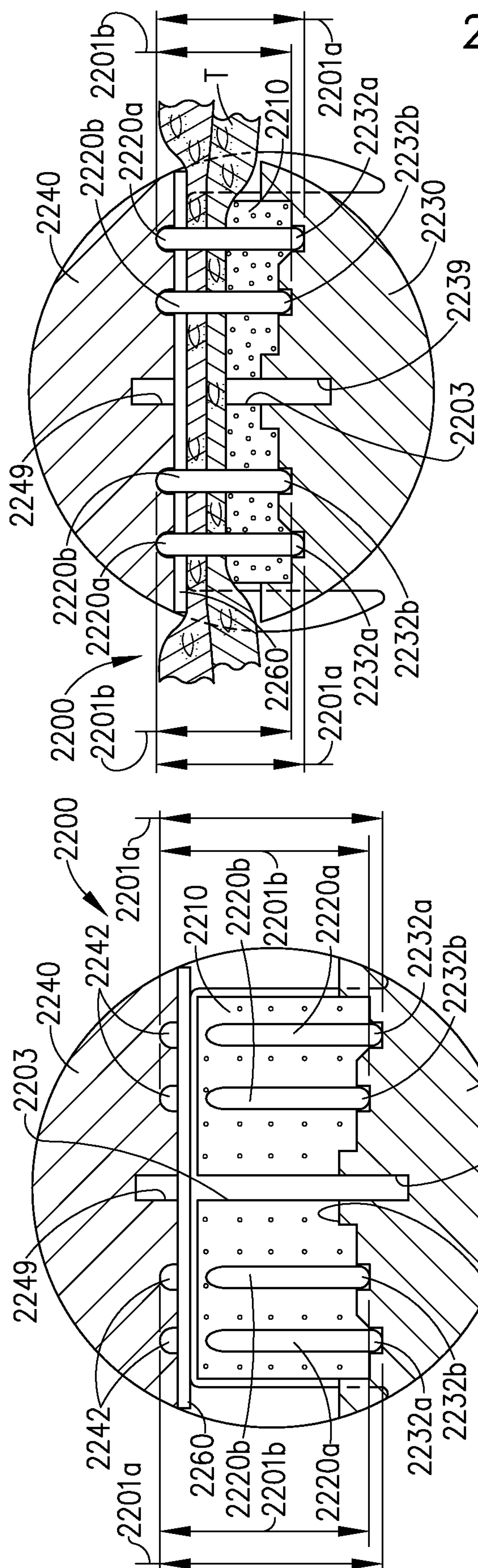


FIG. 46

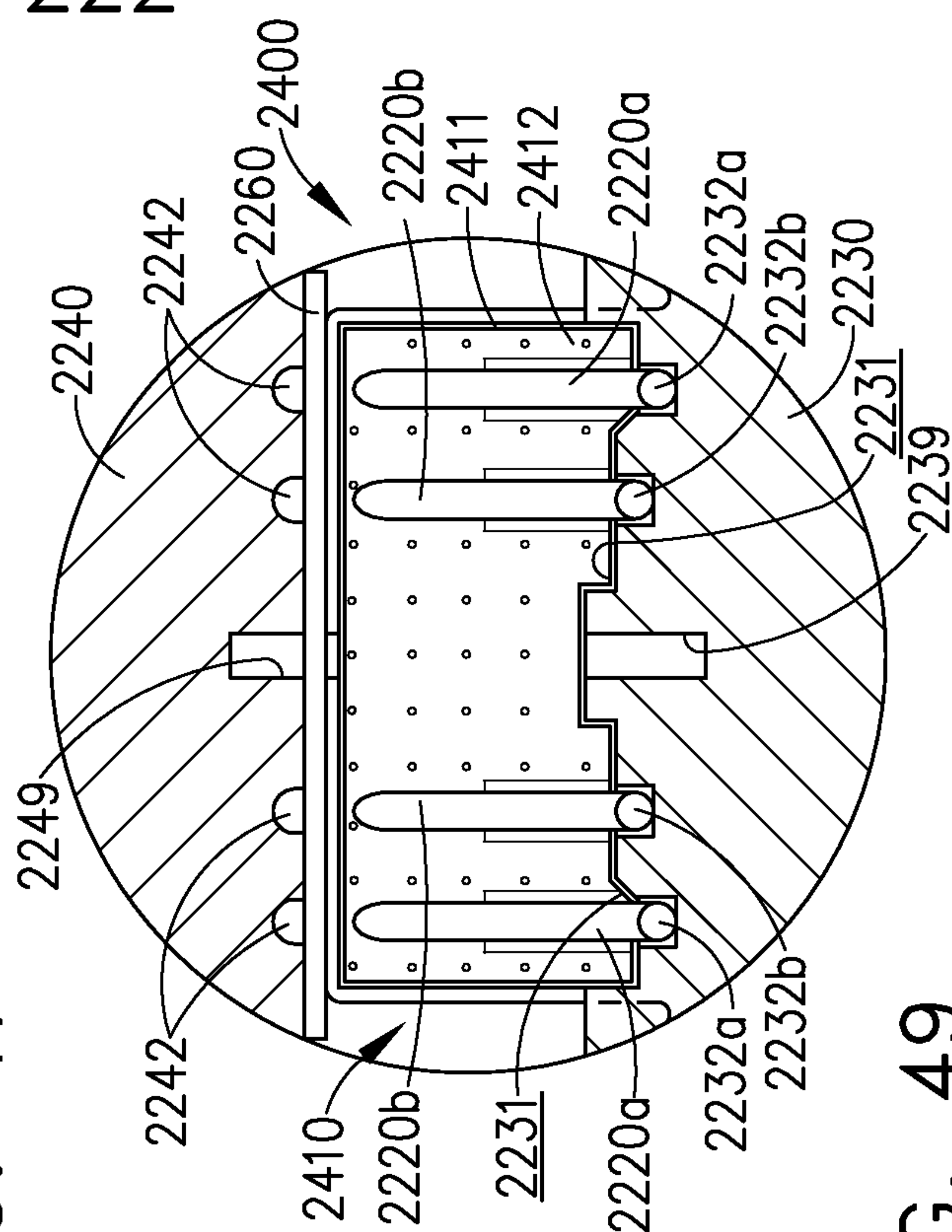
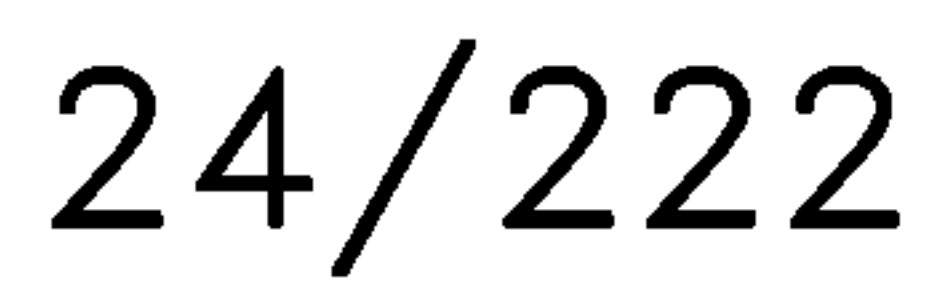


FIG. 49

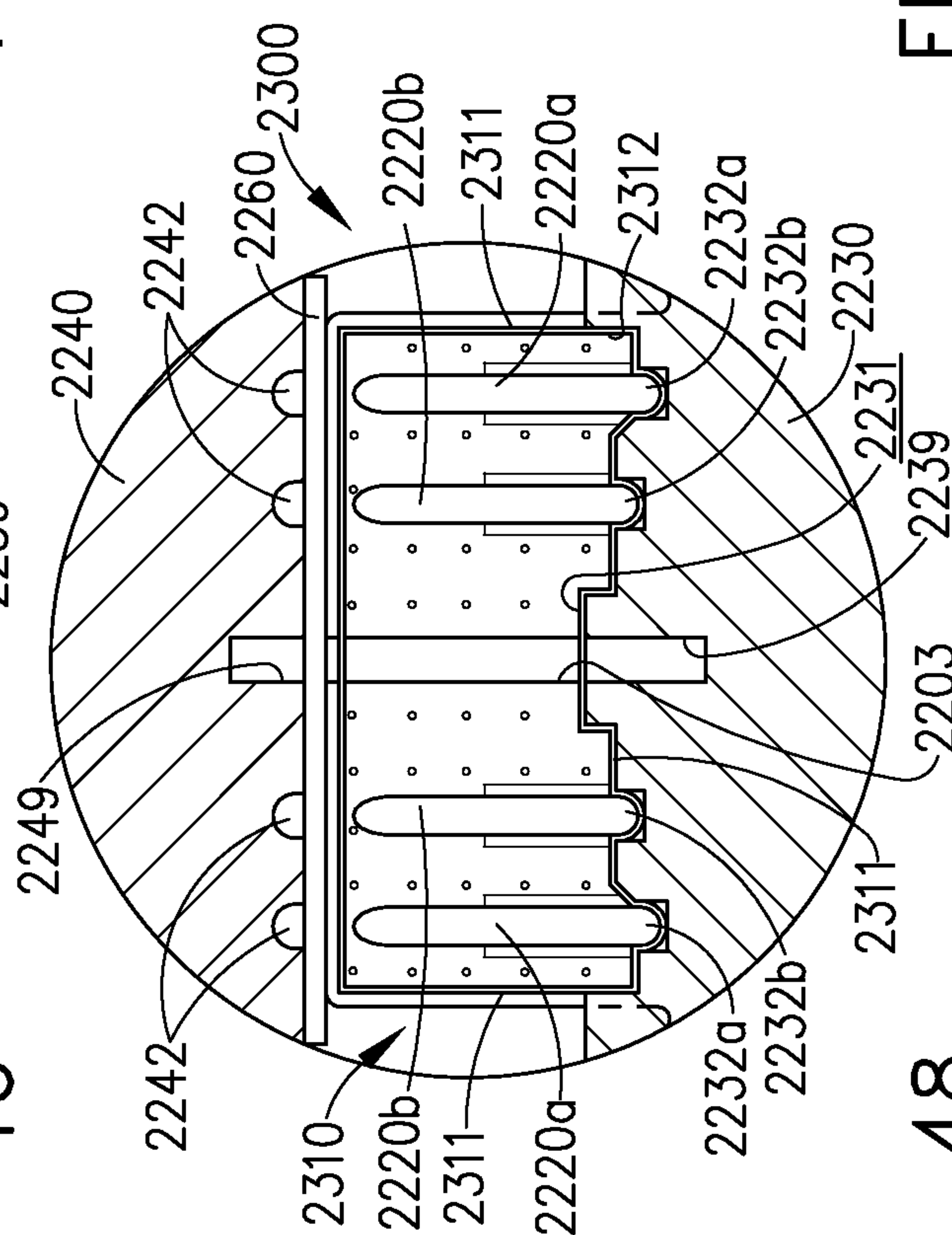


FIG. 48



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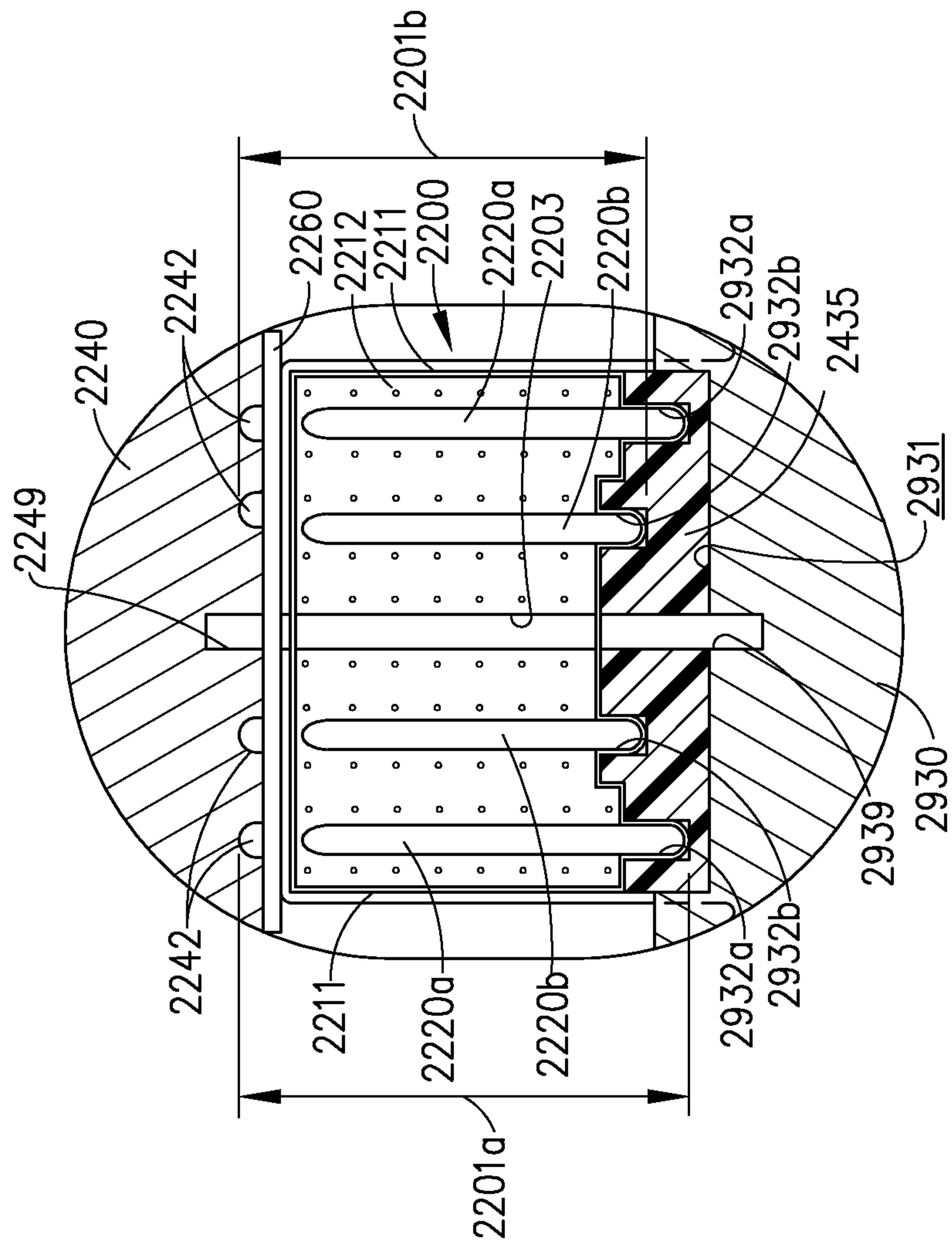


FIG. 54

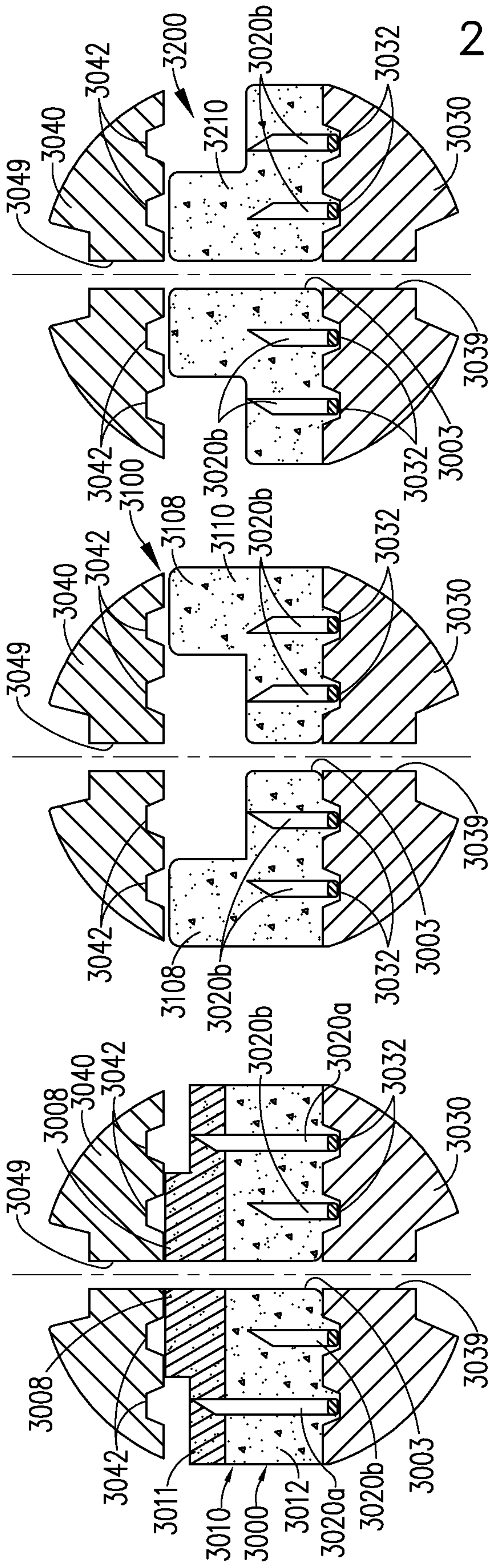


FIG. 55

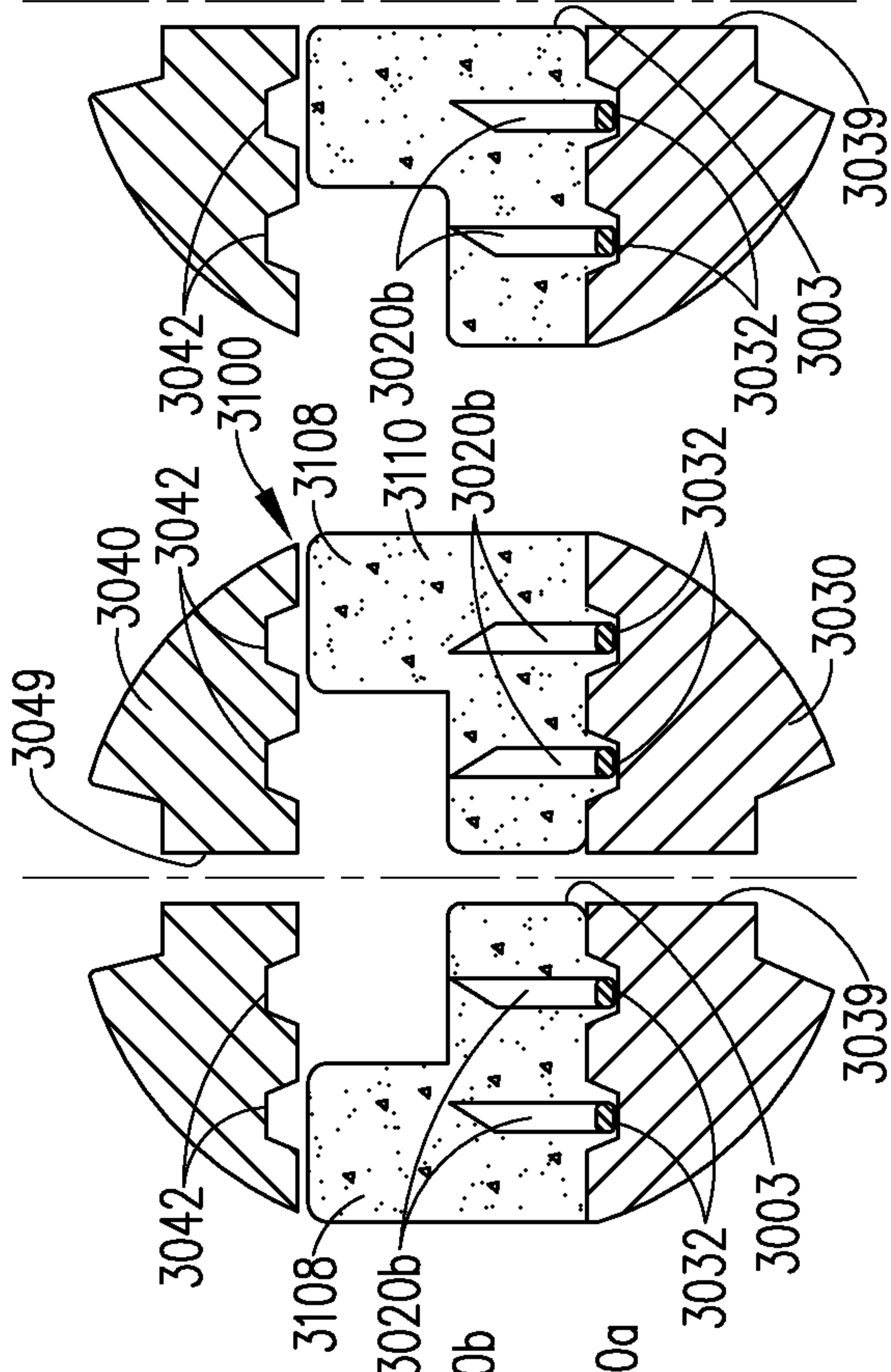


FIG. 56

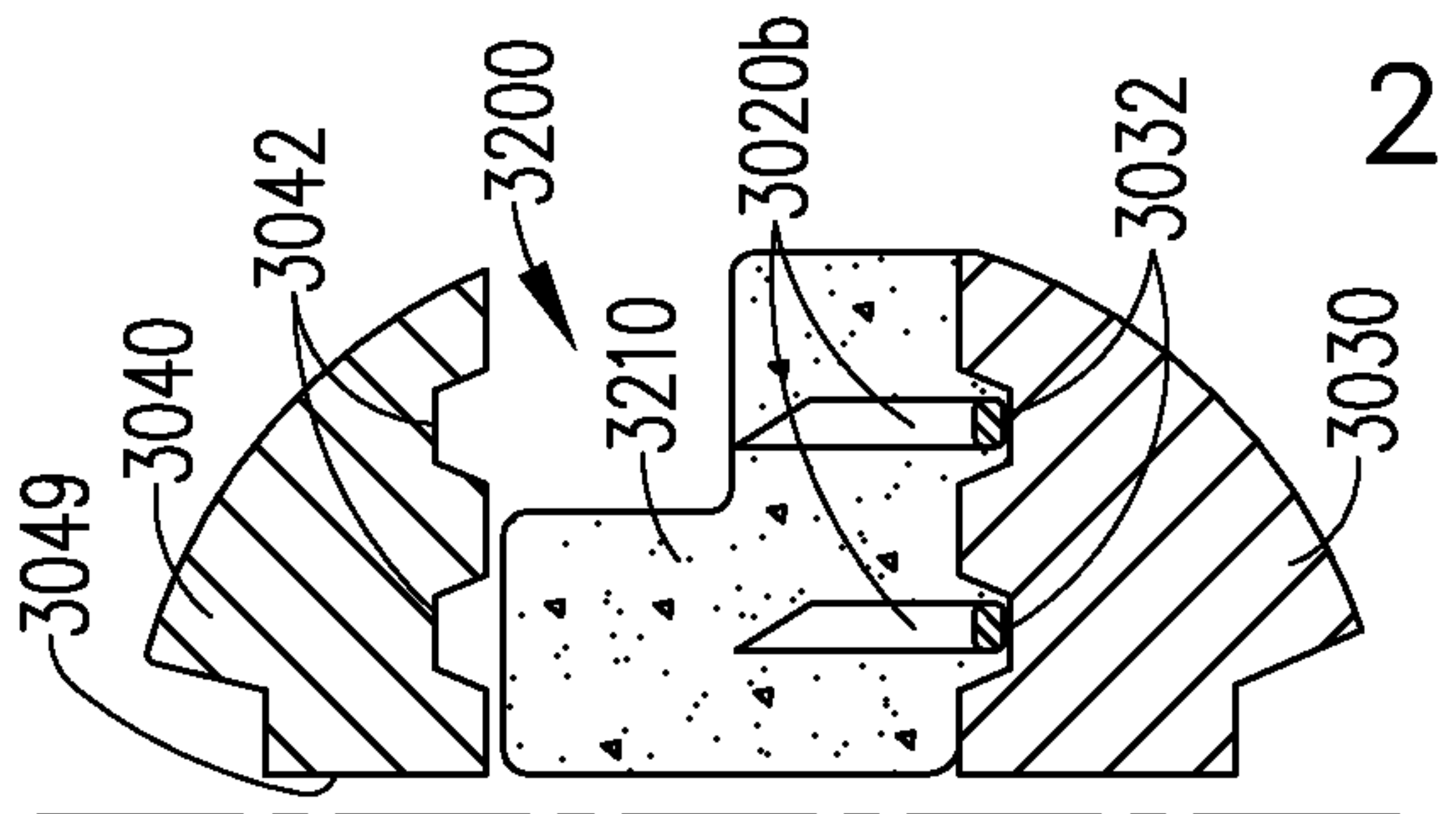


FIG. 57

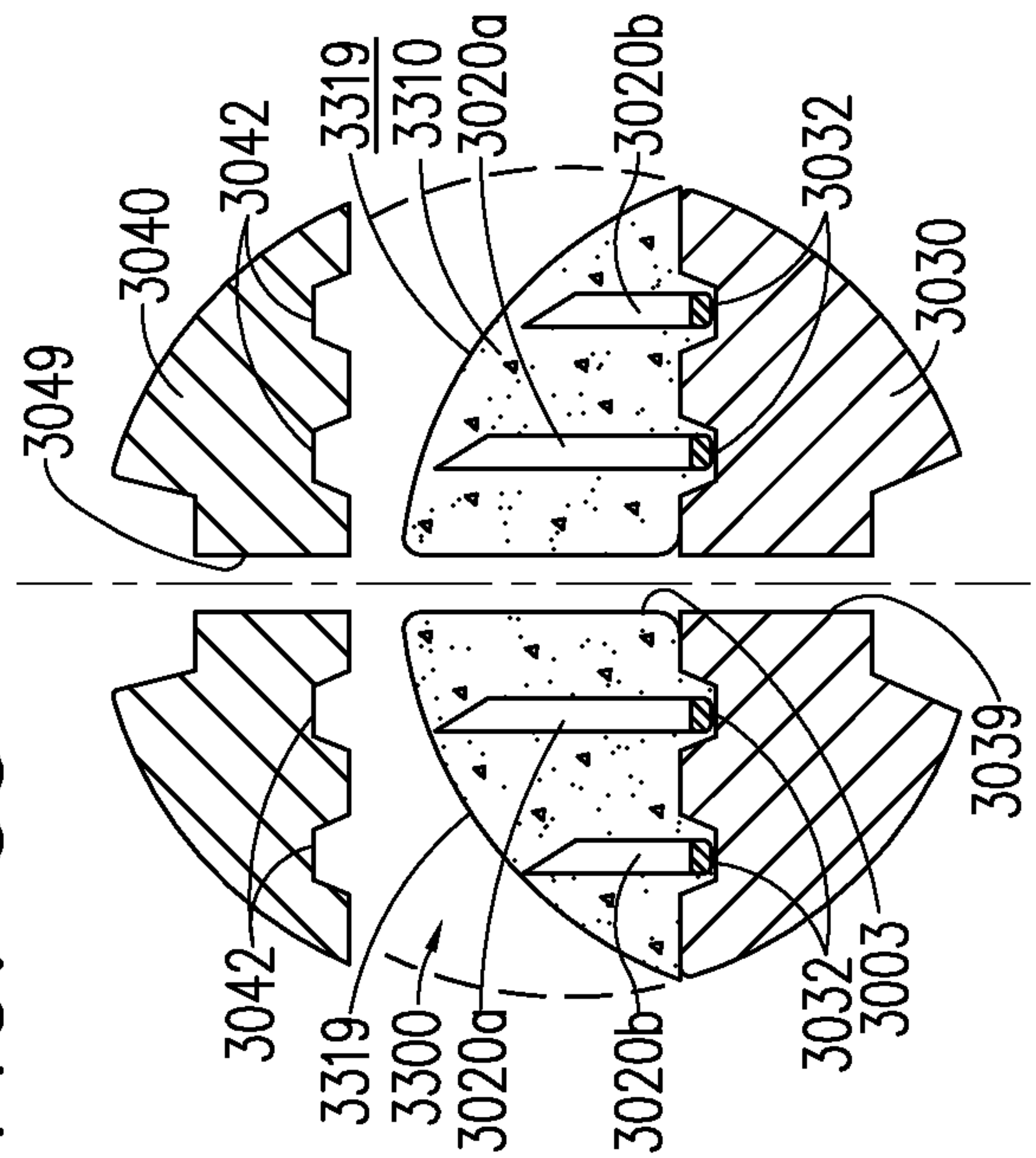


FIG. 58

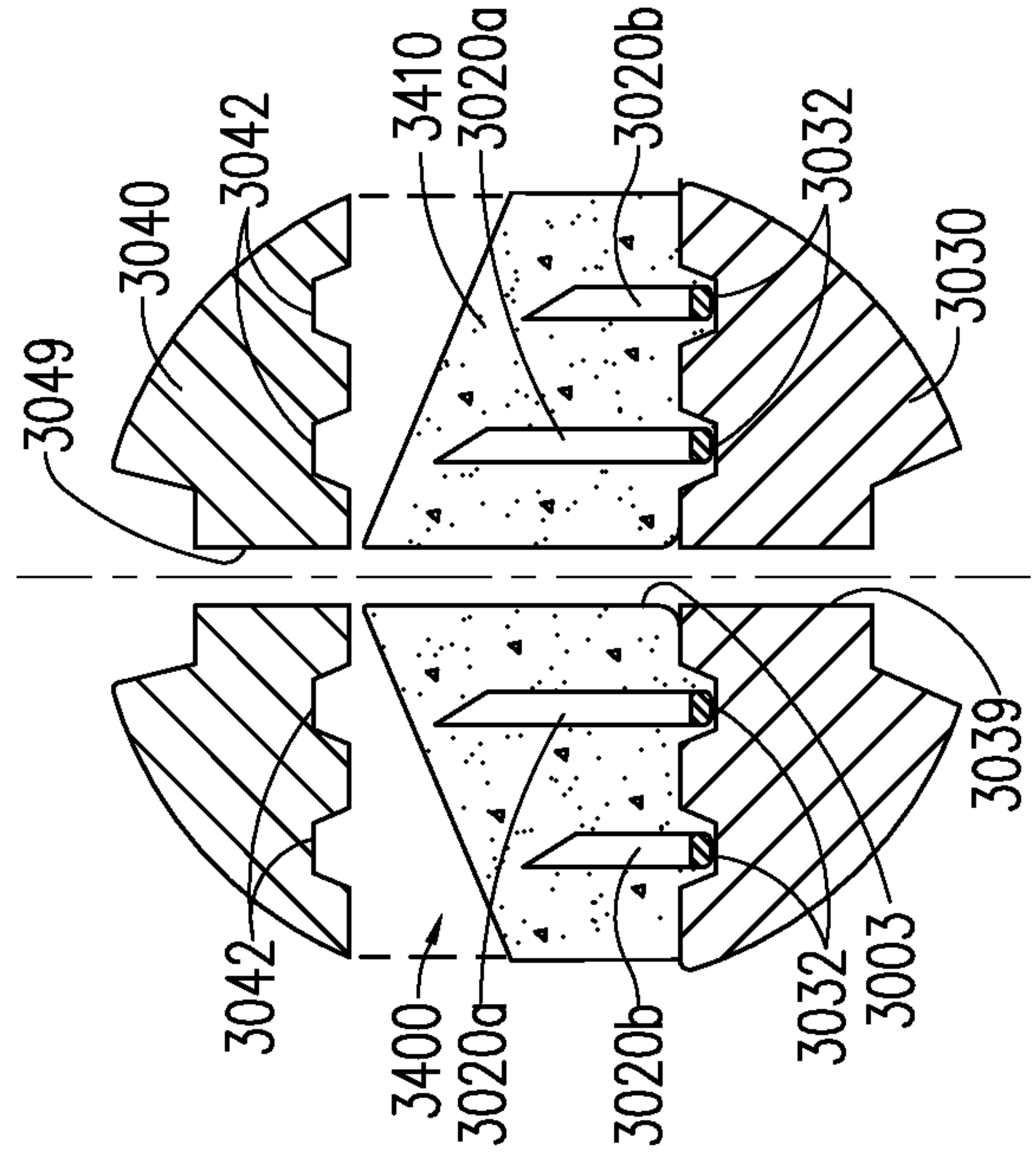
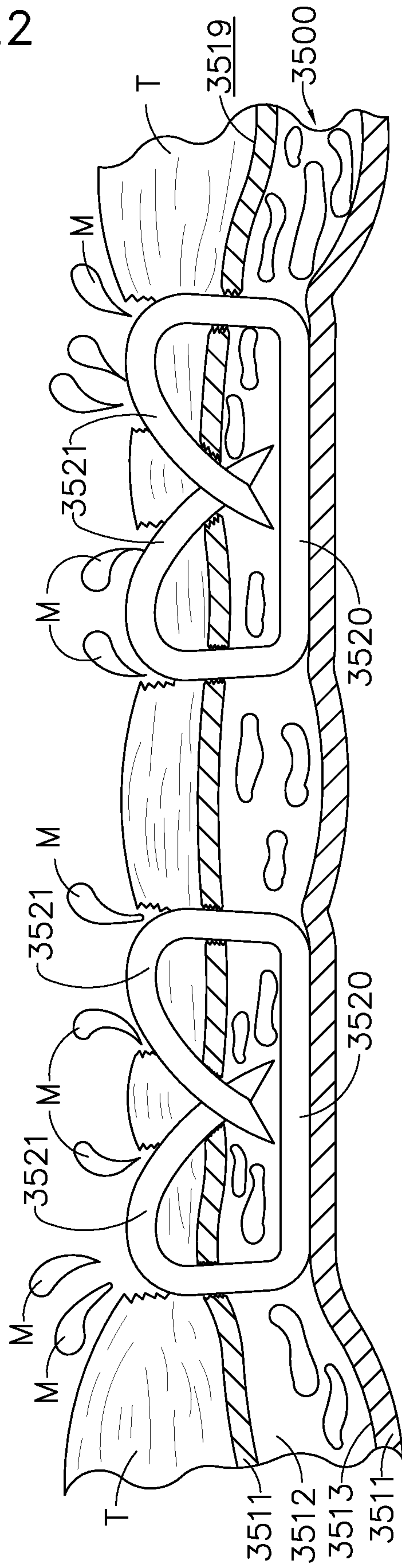
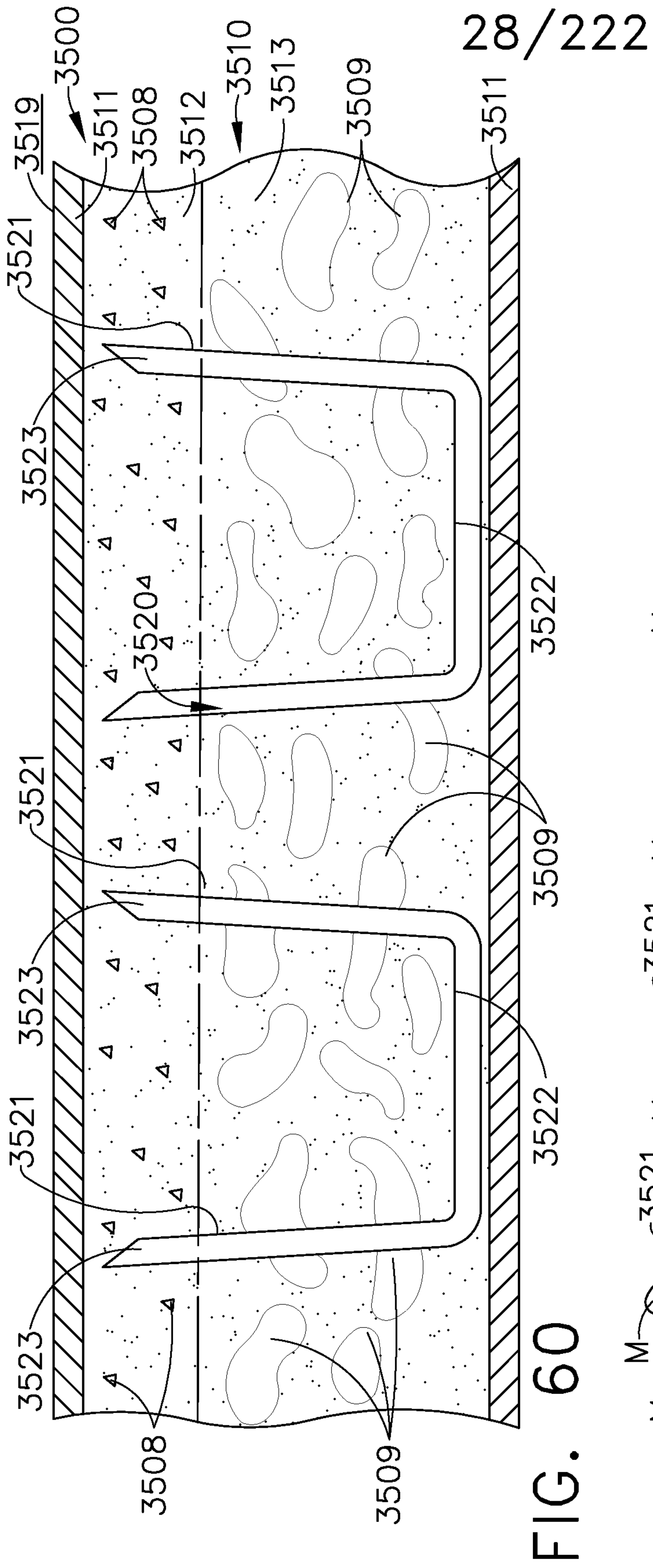
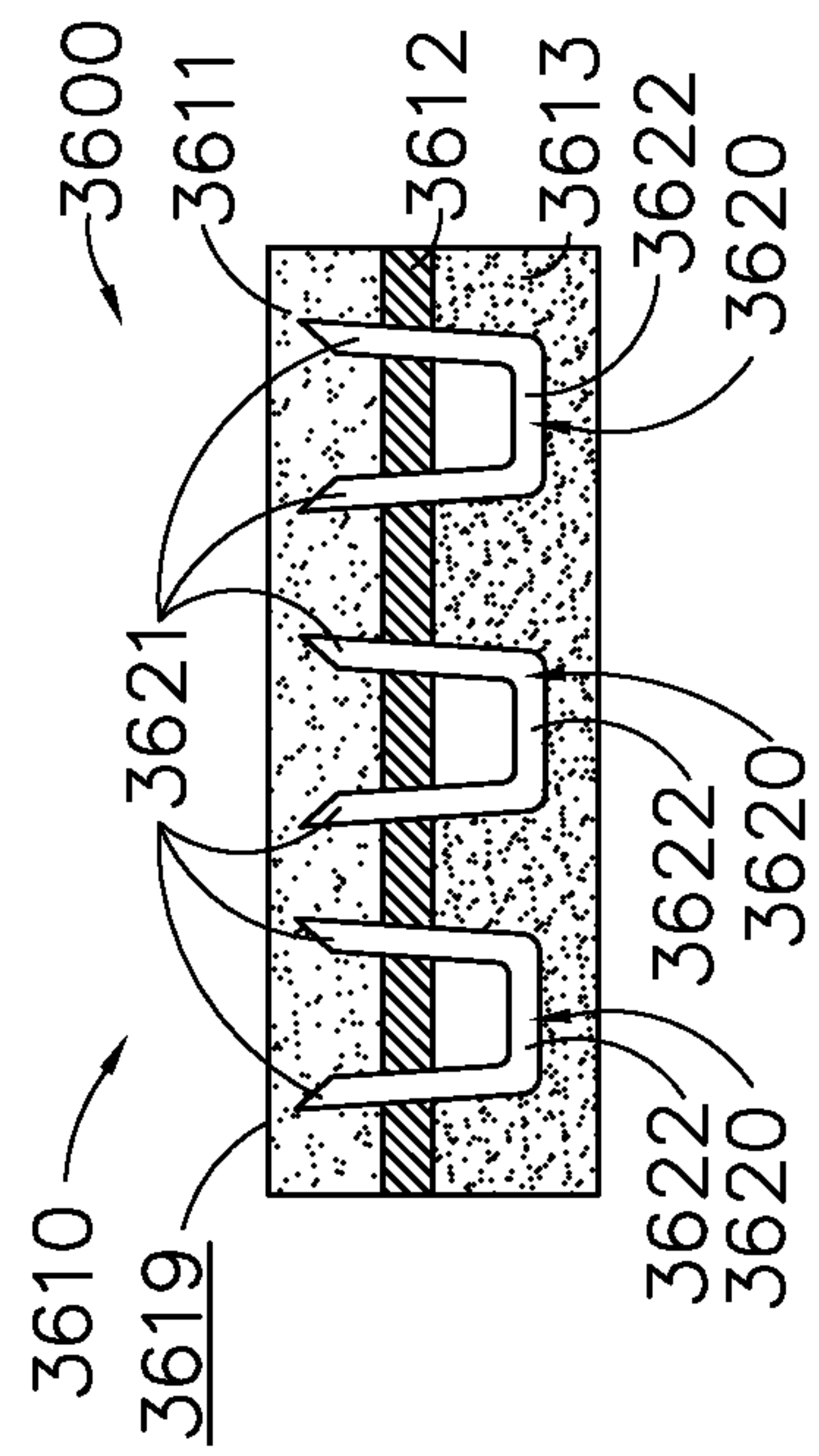
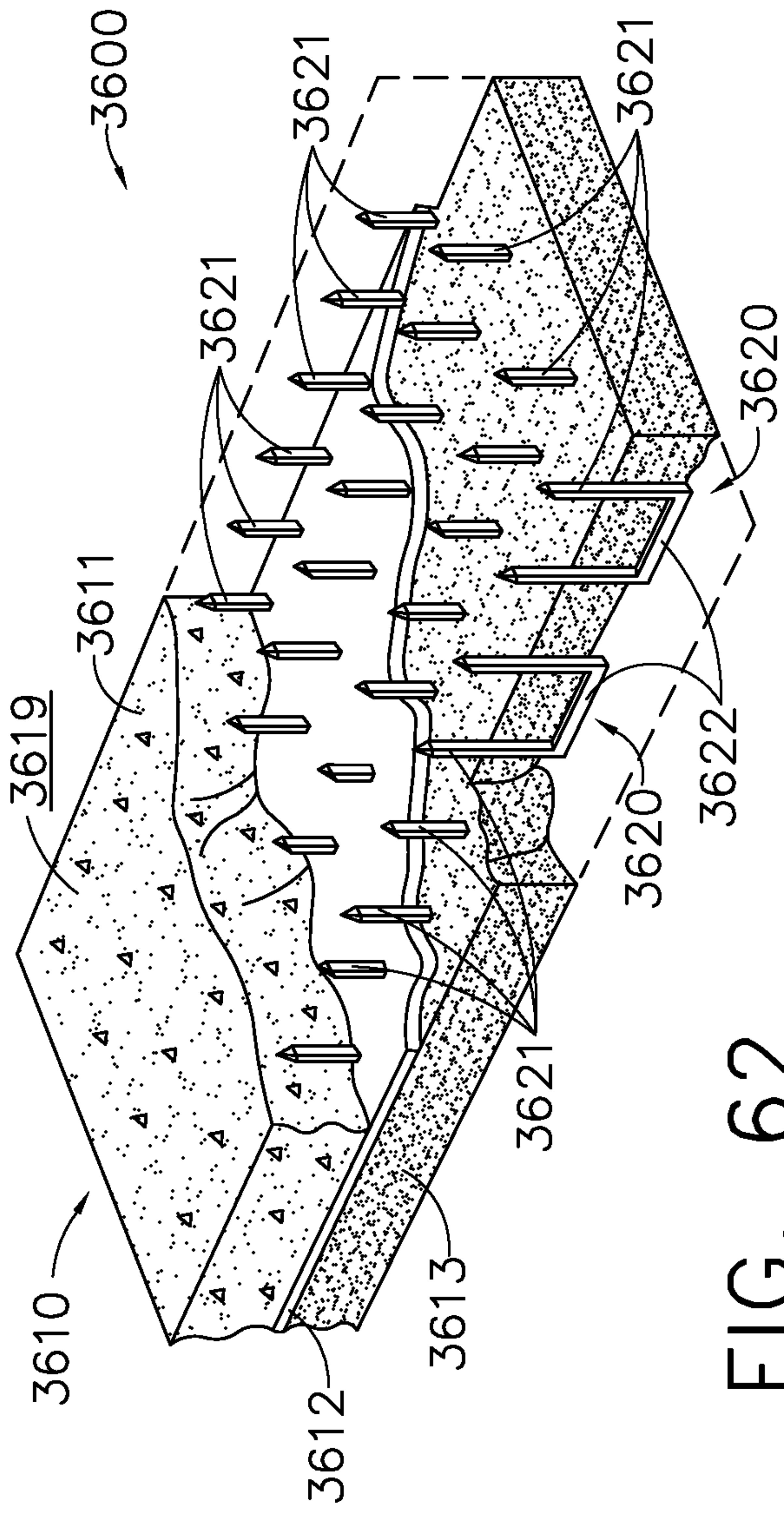
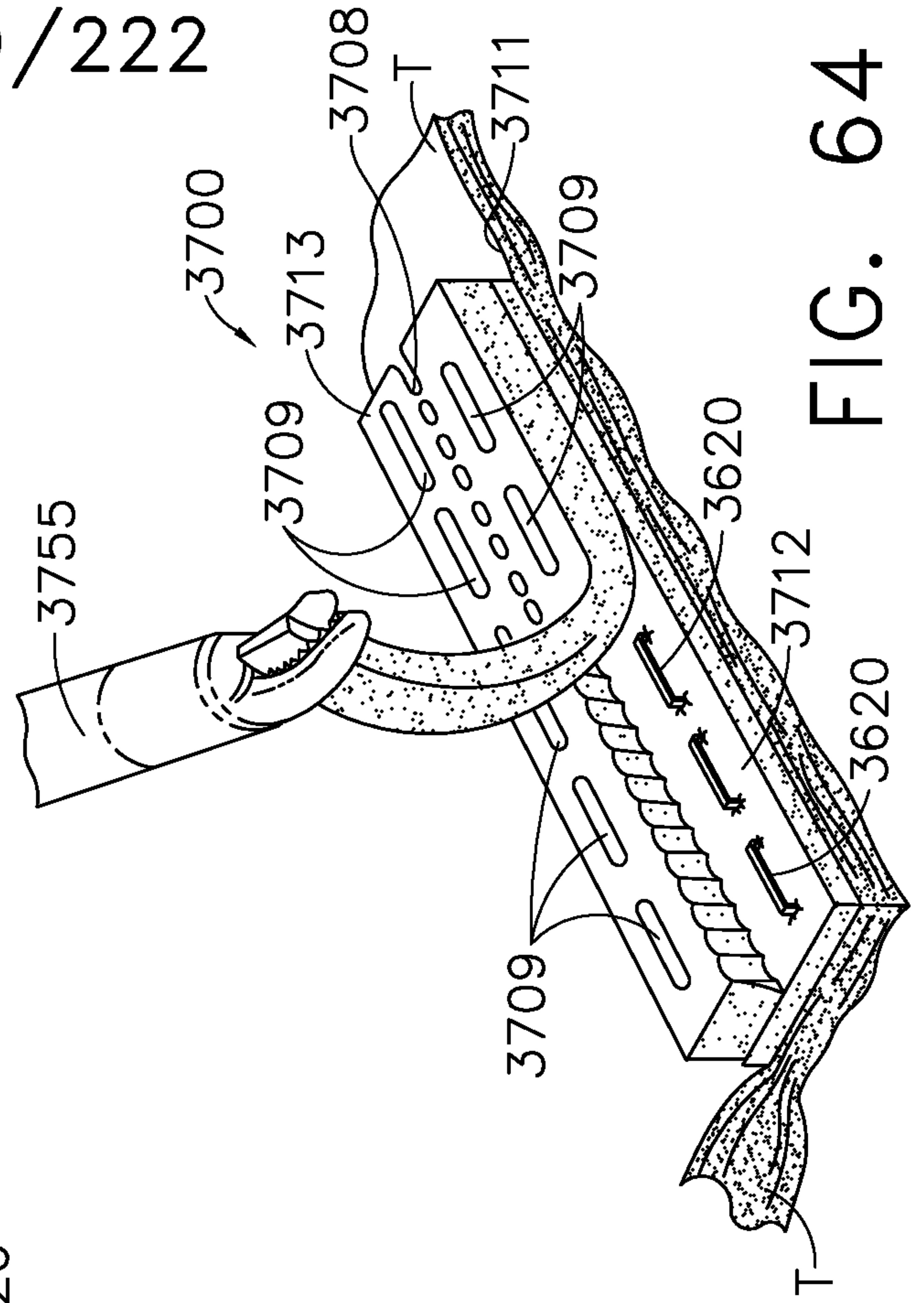


FIG. 59





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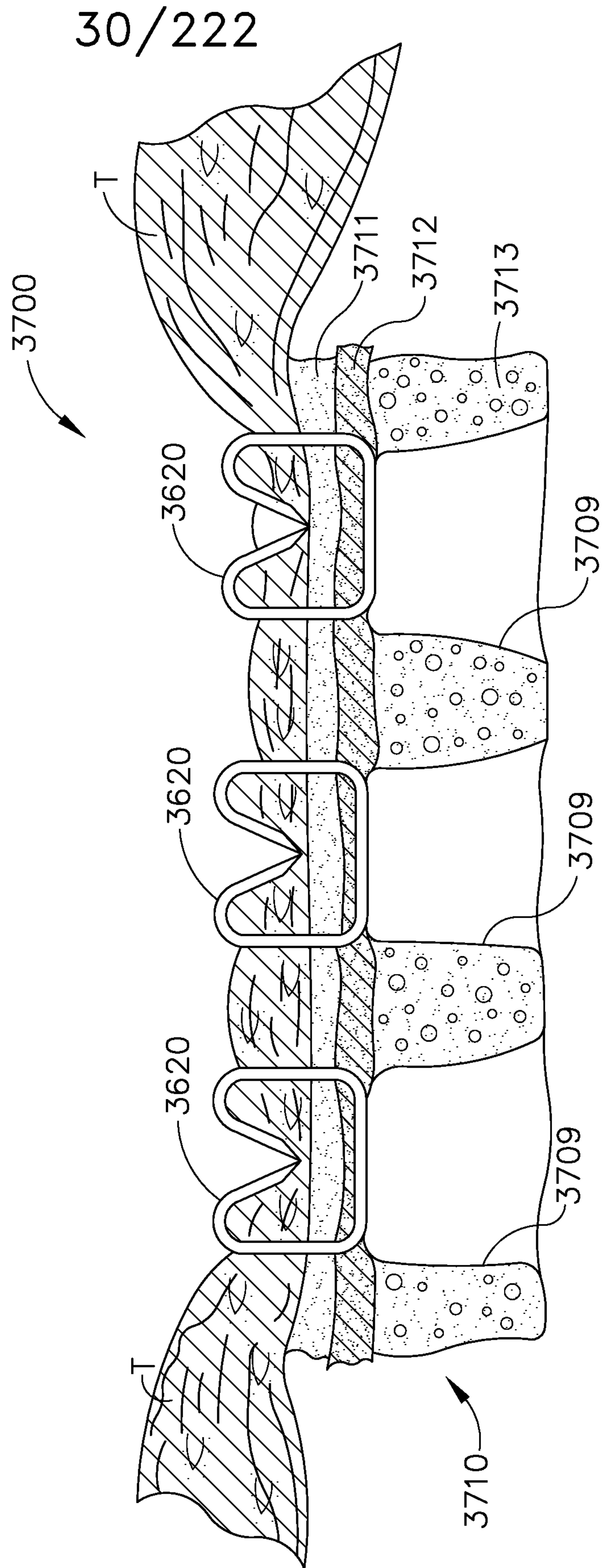


FIG. 65

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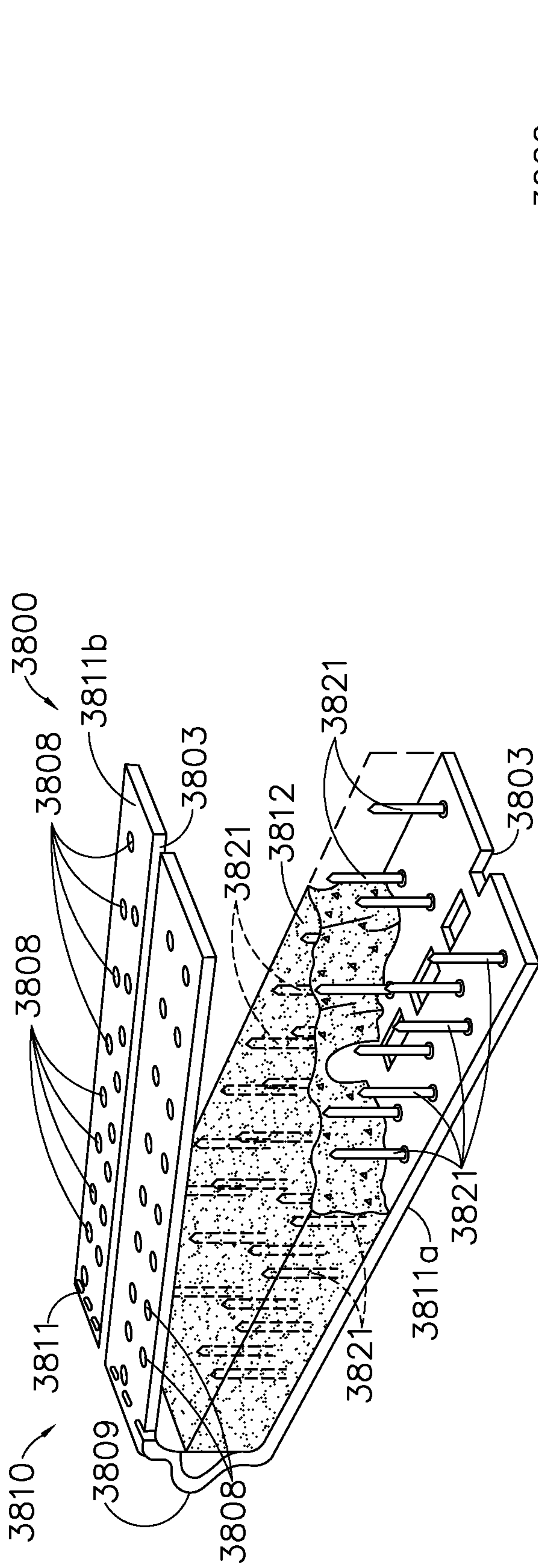


FIG. 66

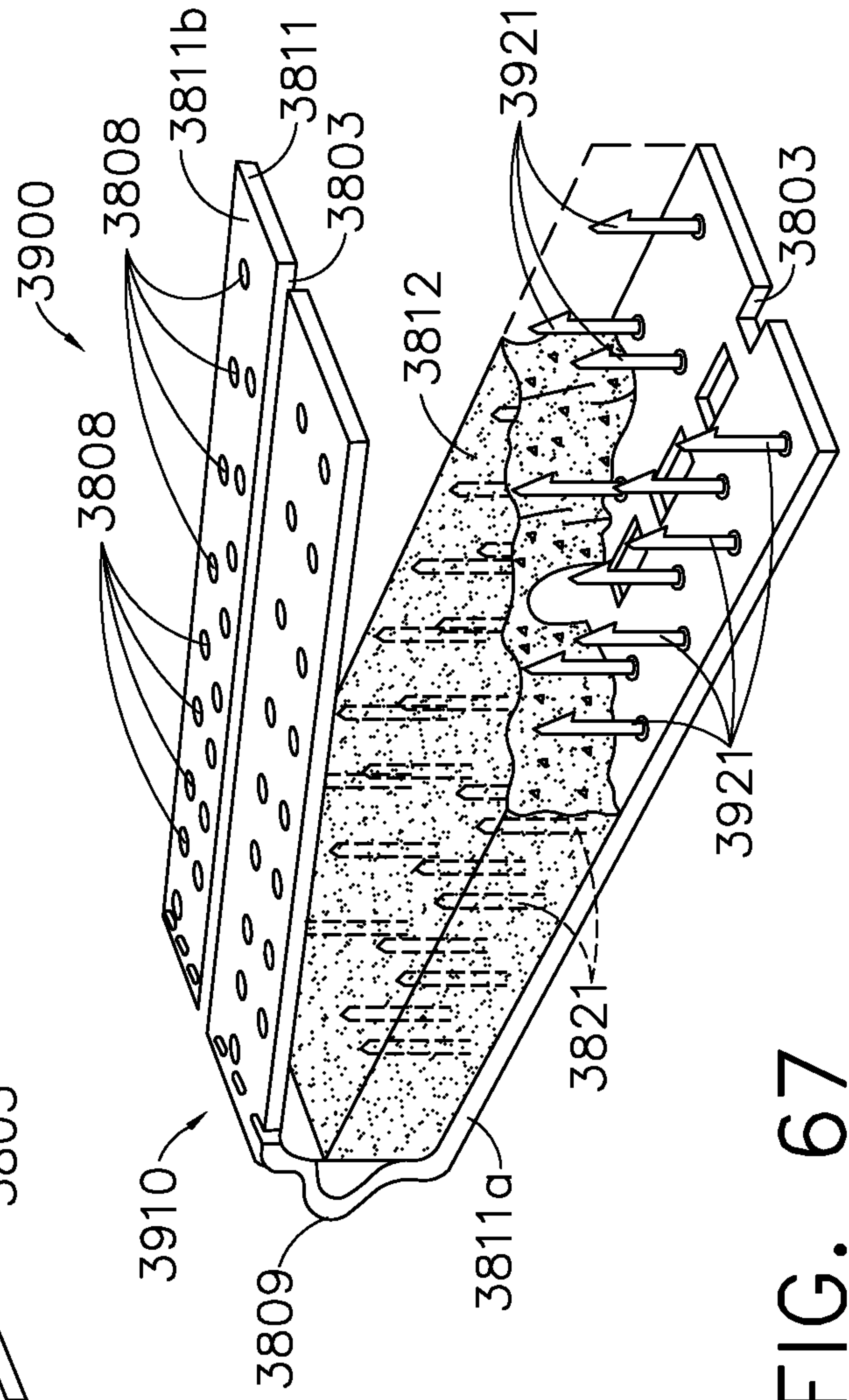


FIG. 67

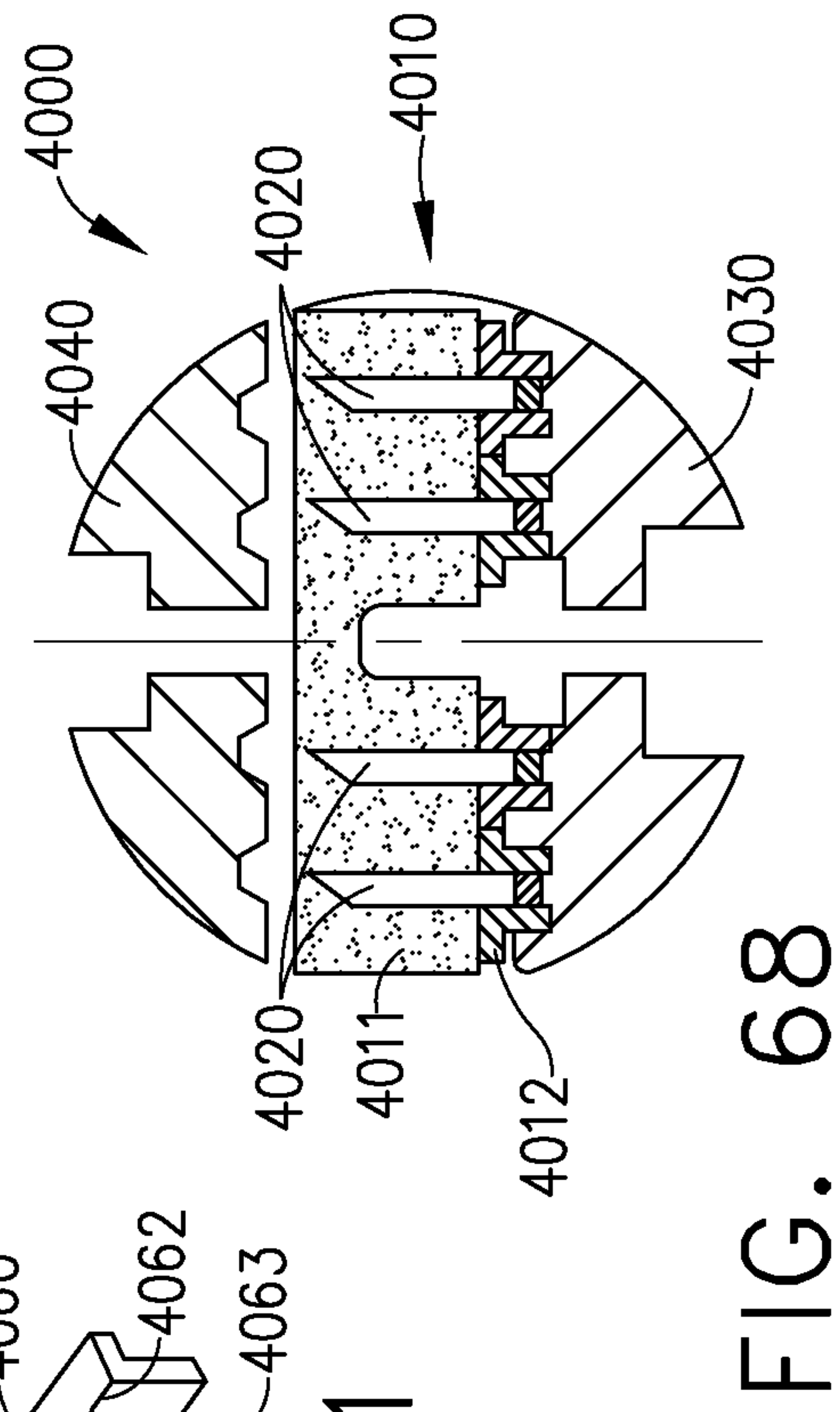
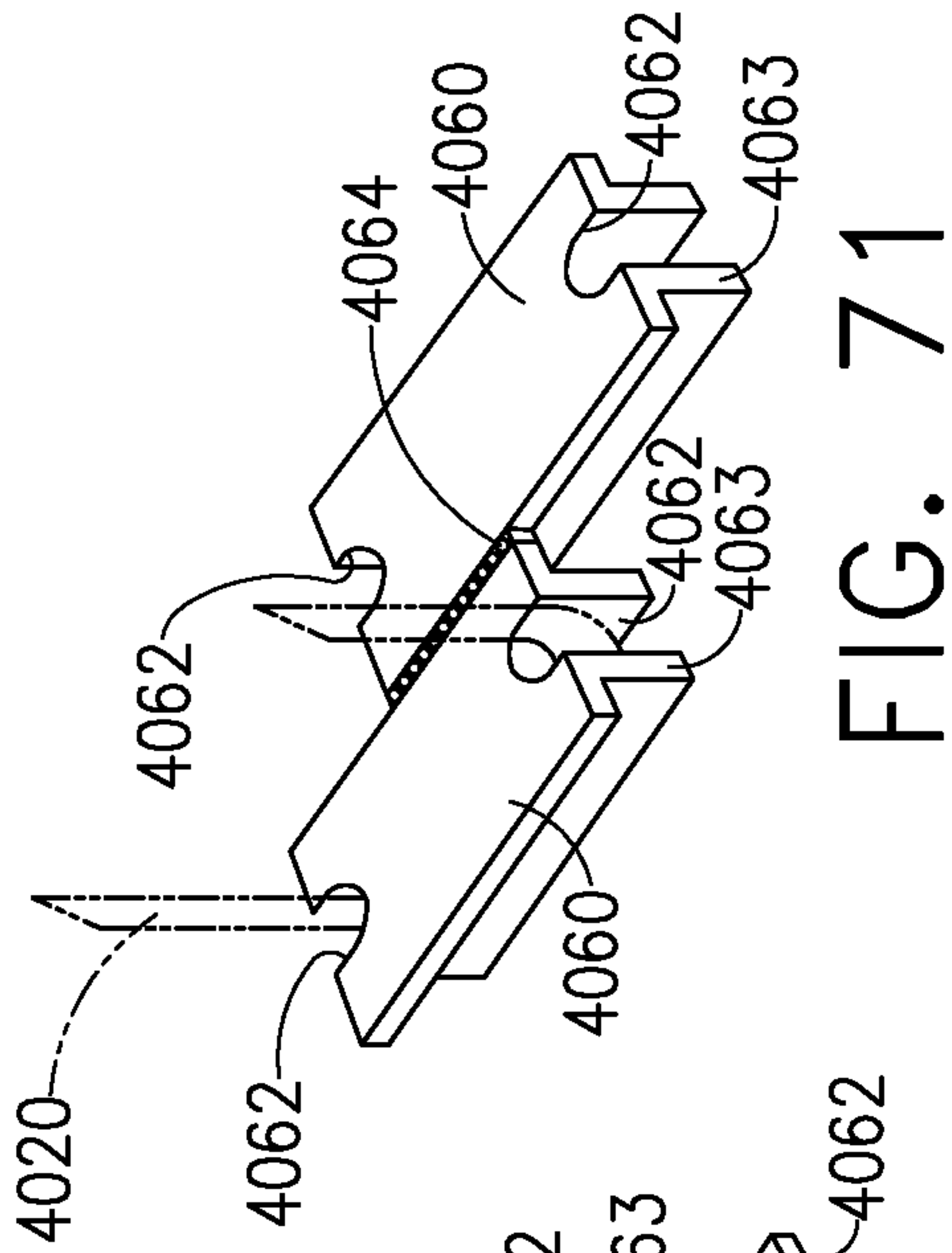
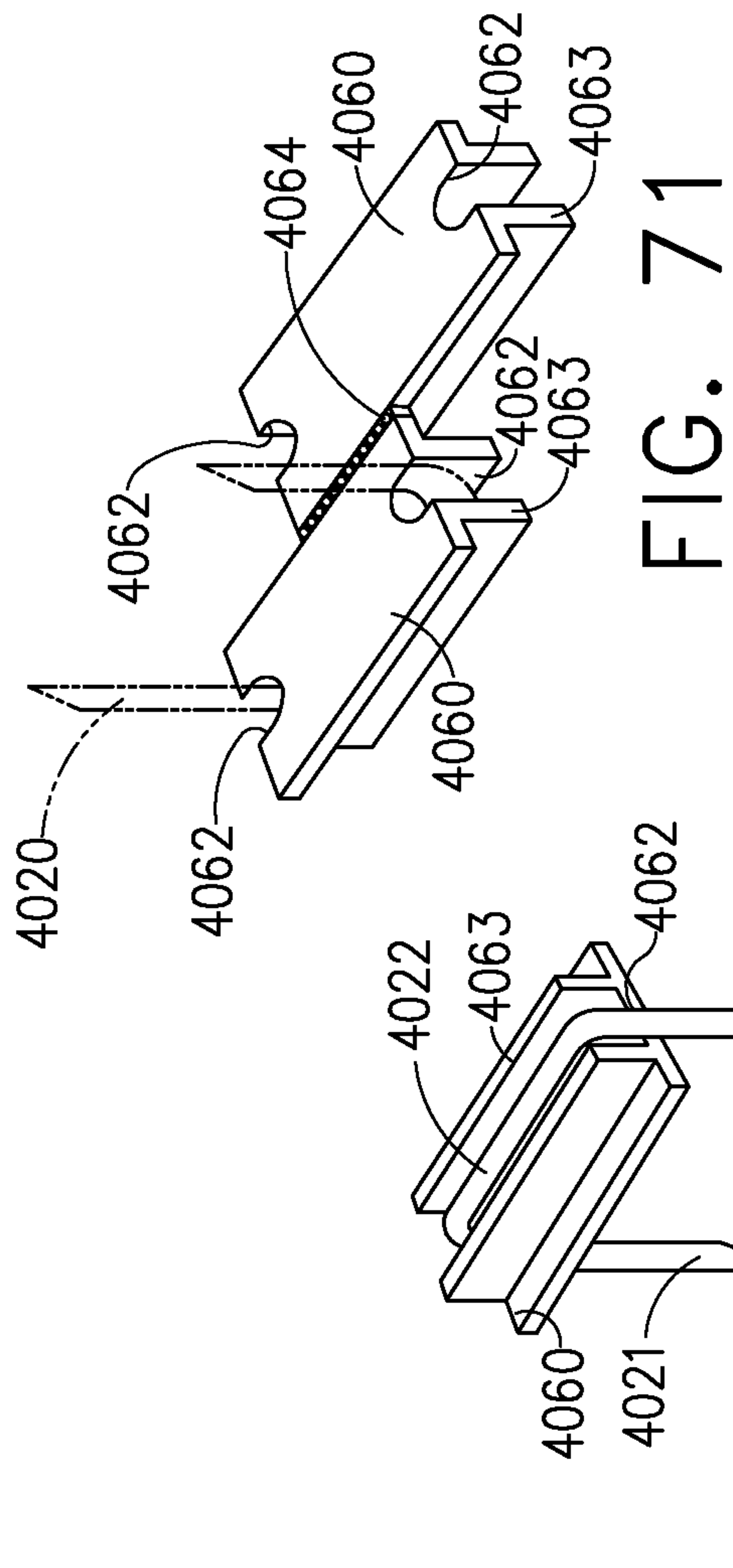
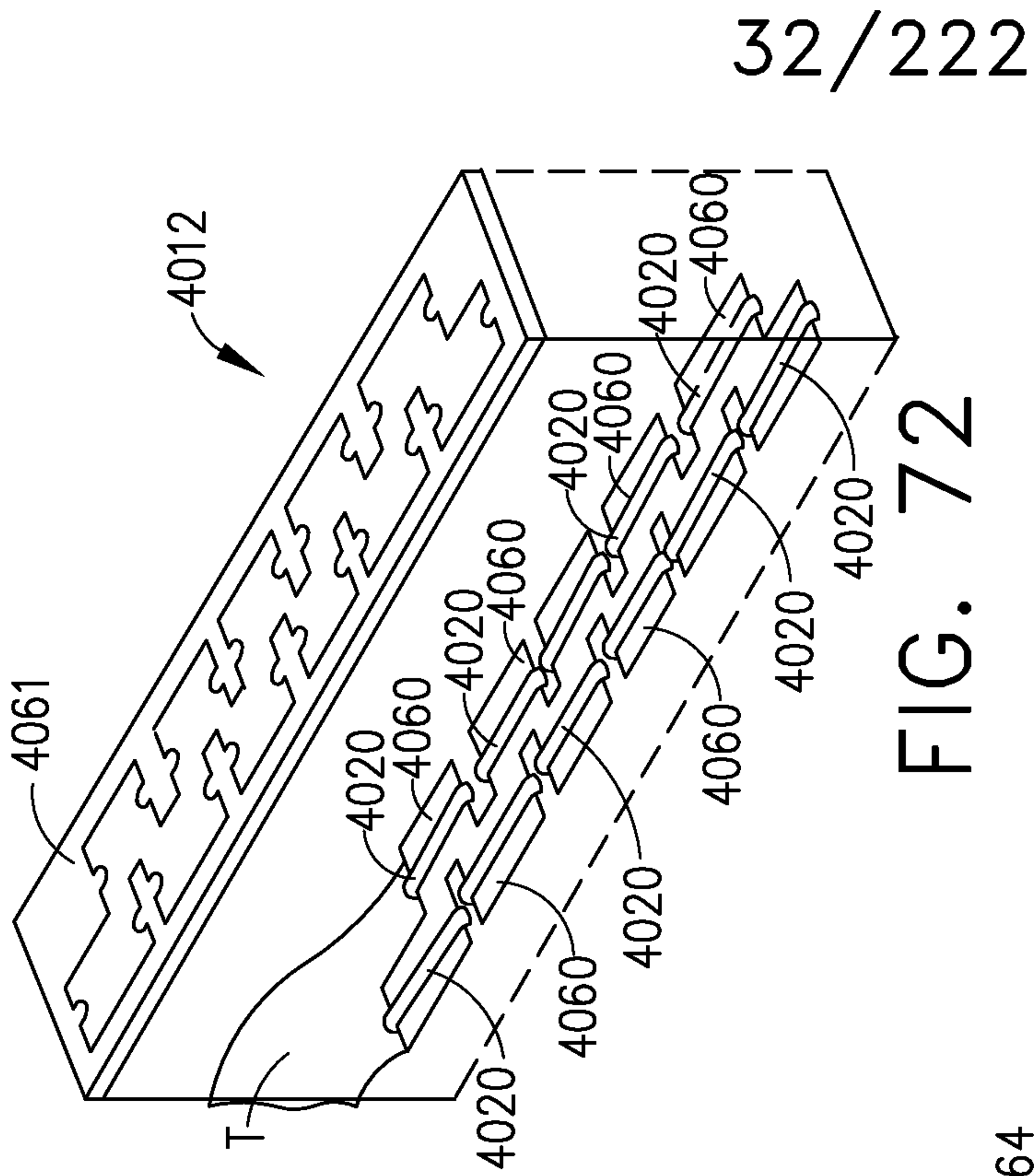
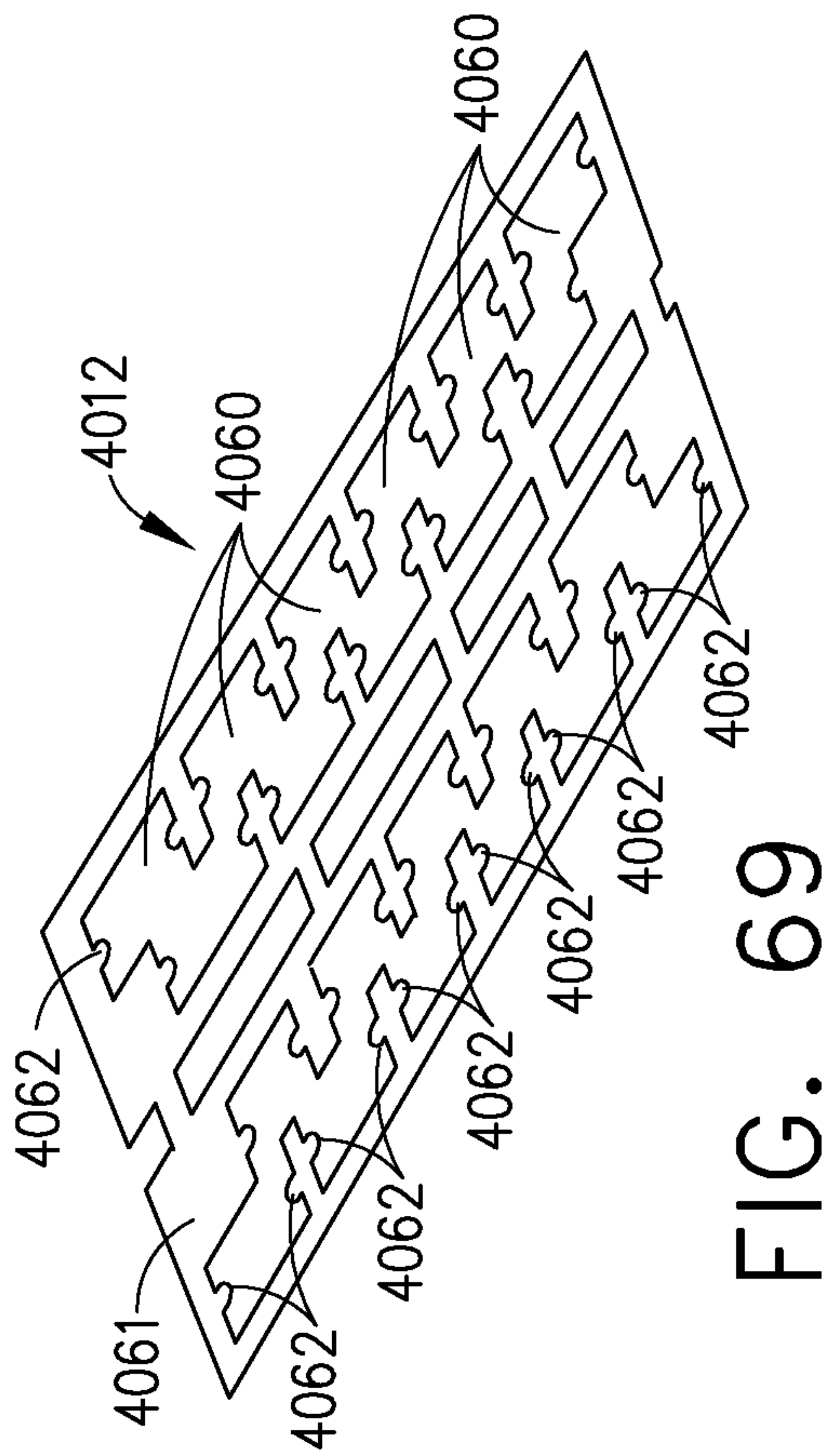


FIG. 69

FIG. 72

FIG. 71

FIG. 68

FIG. 70

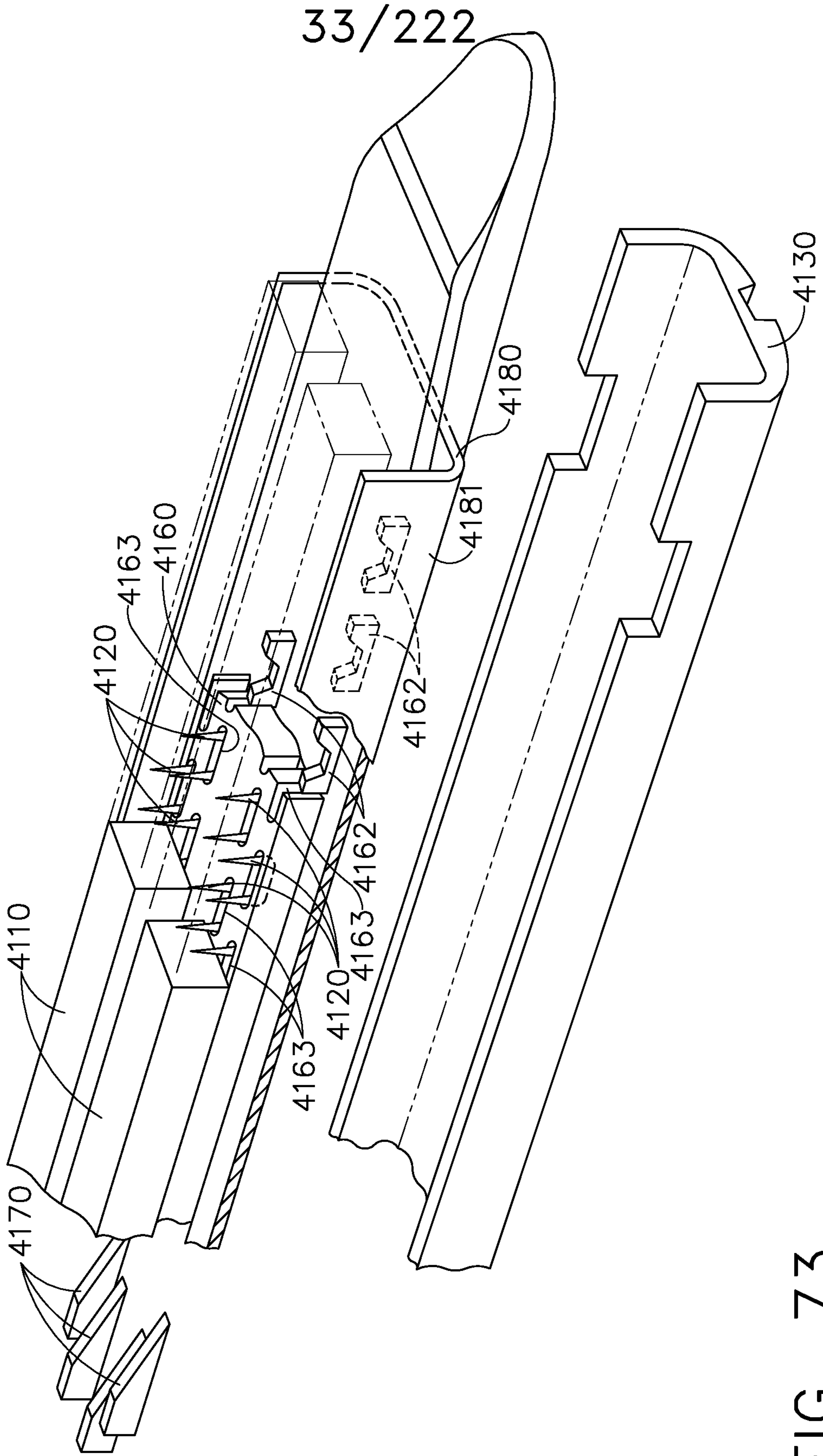


FIG. 73

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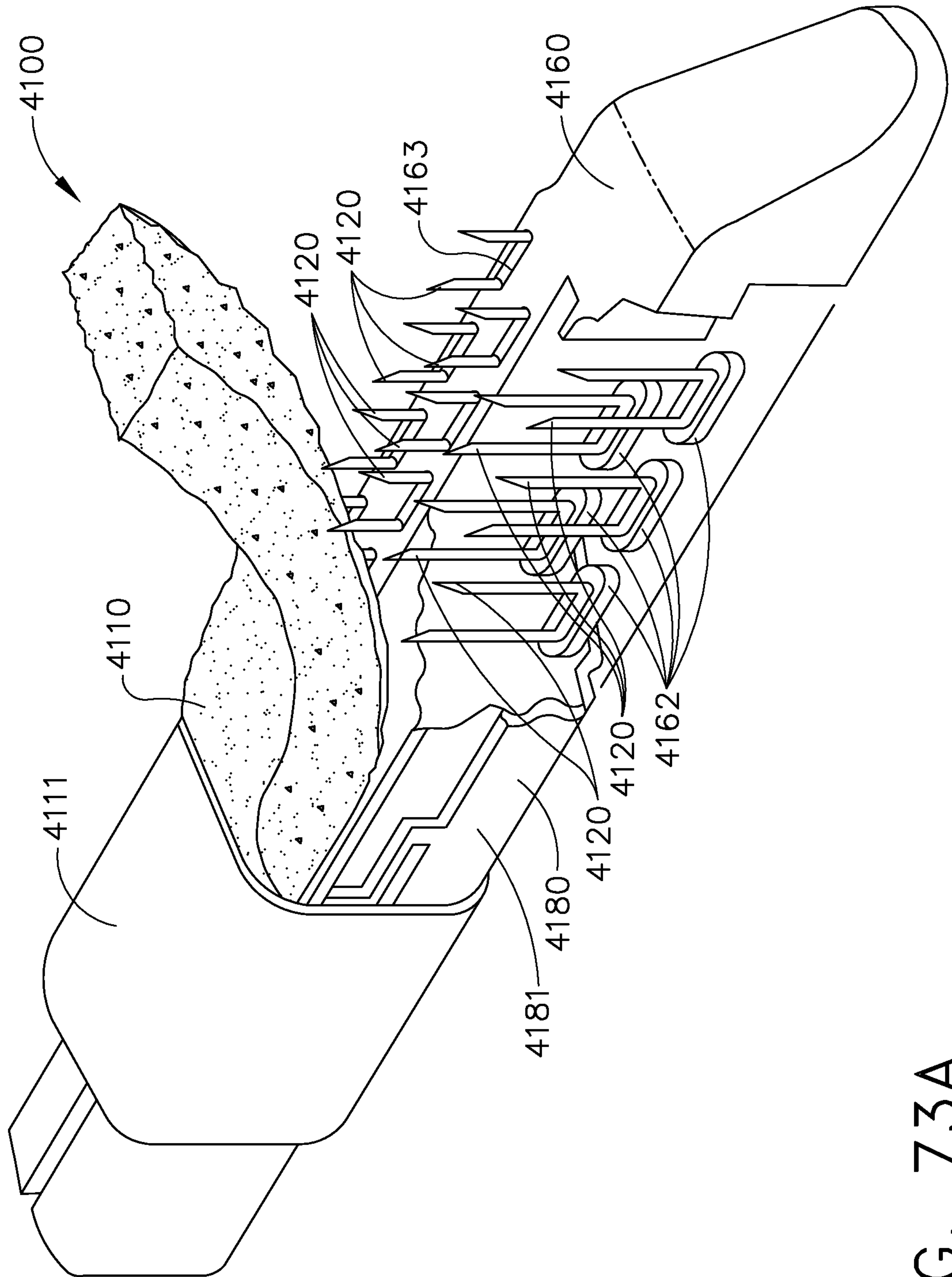


FIG. 73A

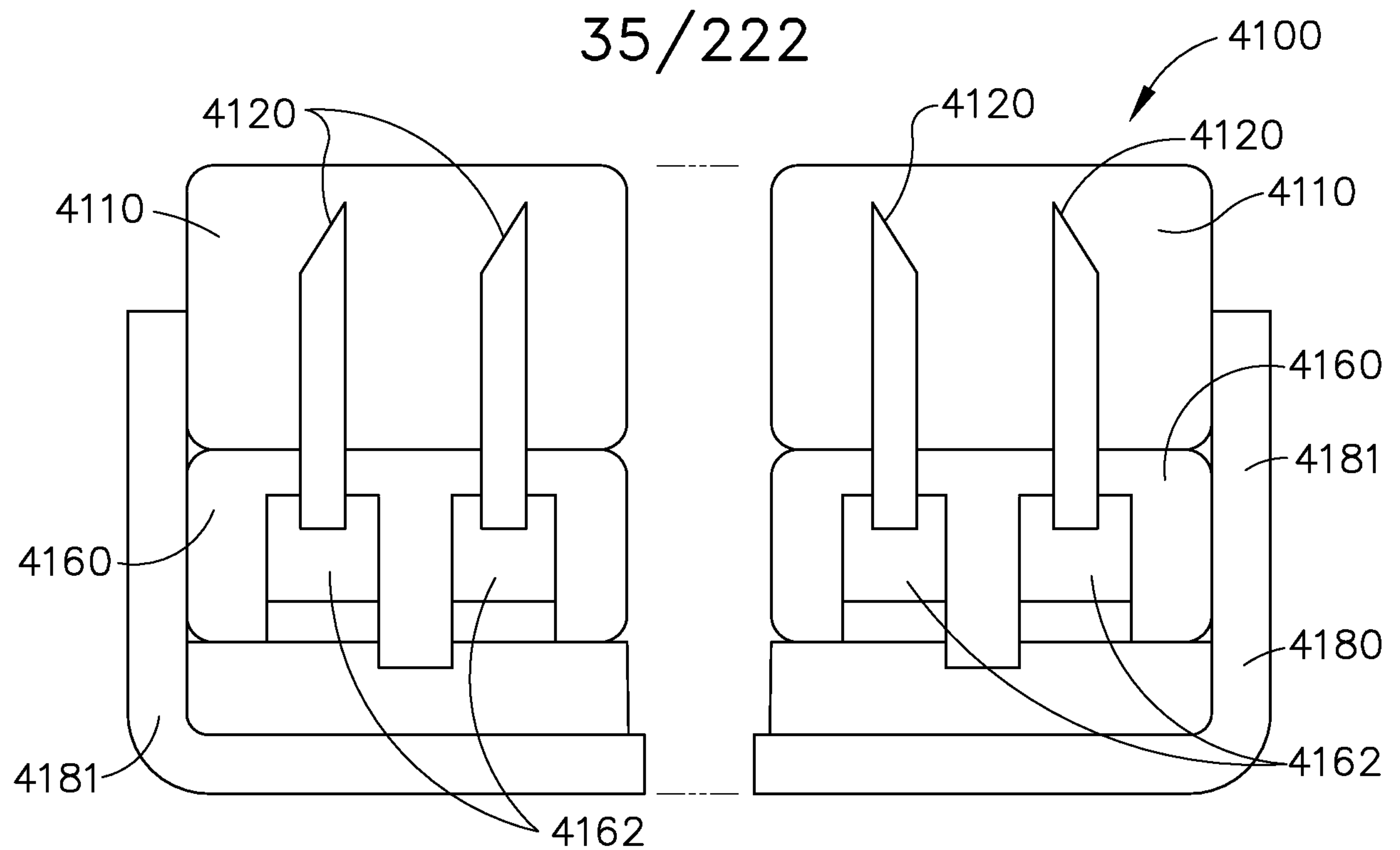


FIG. 74

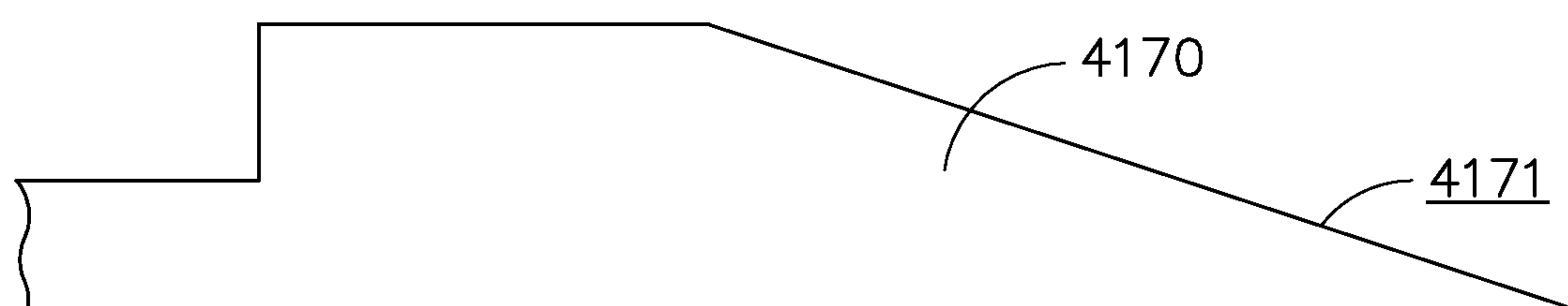


FIG. 75

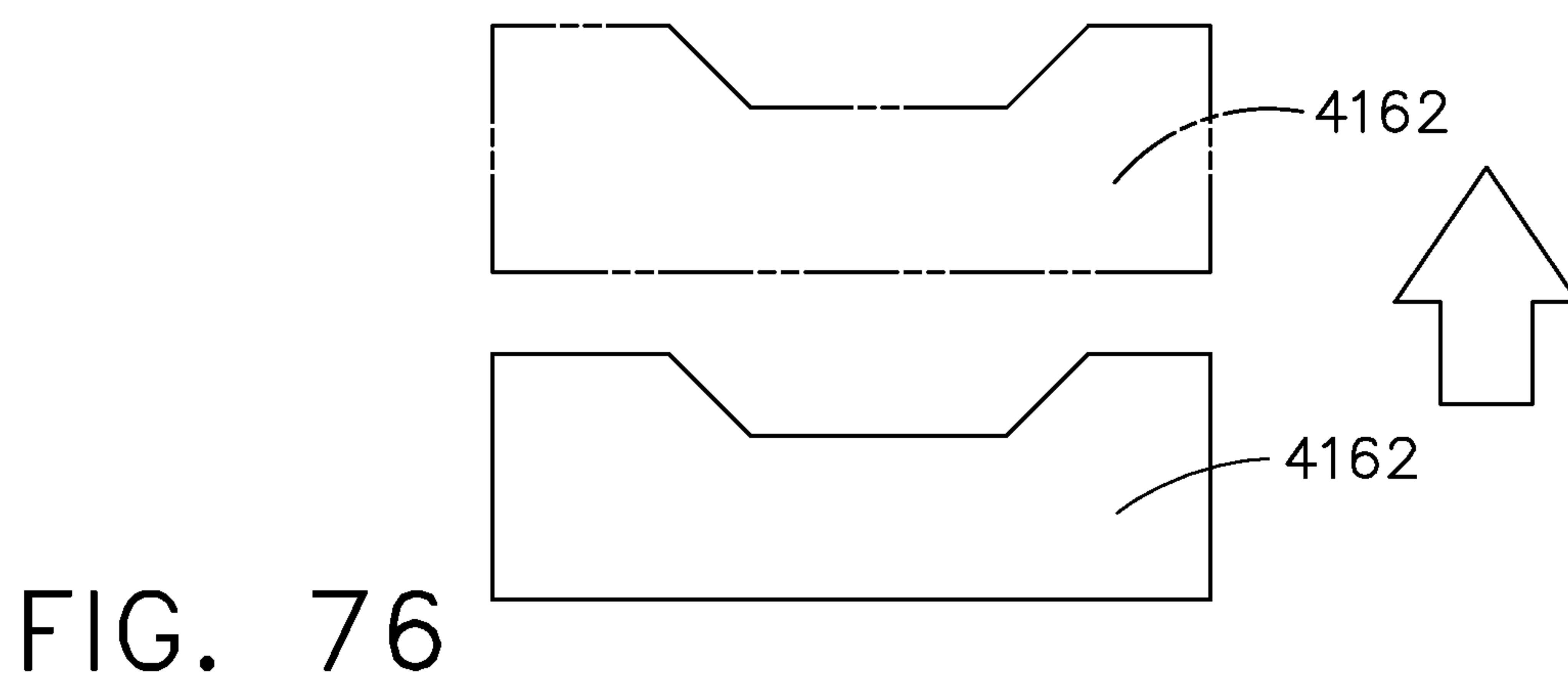


FIG. 76

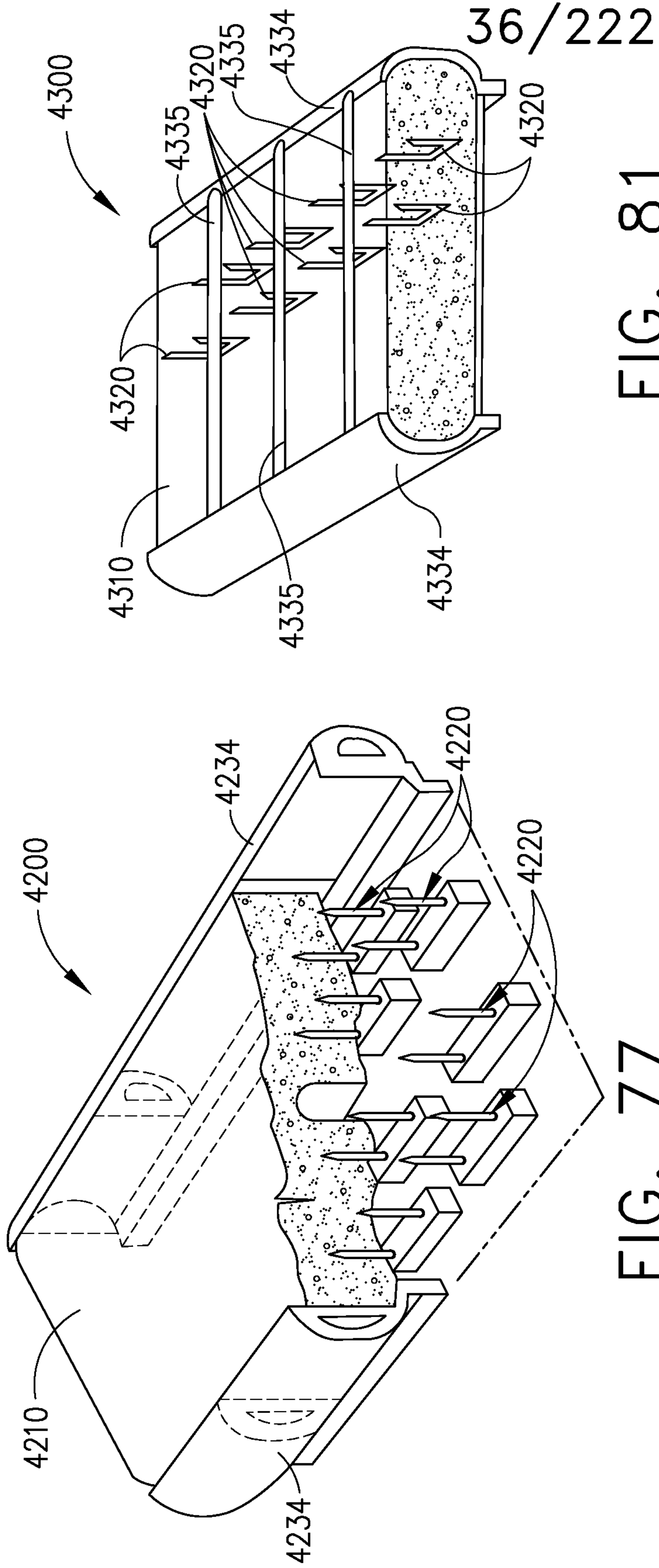


FIG. 77

FIG. 81

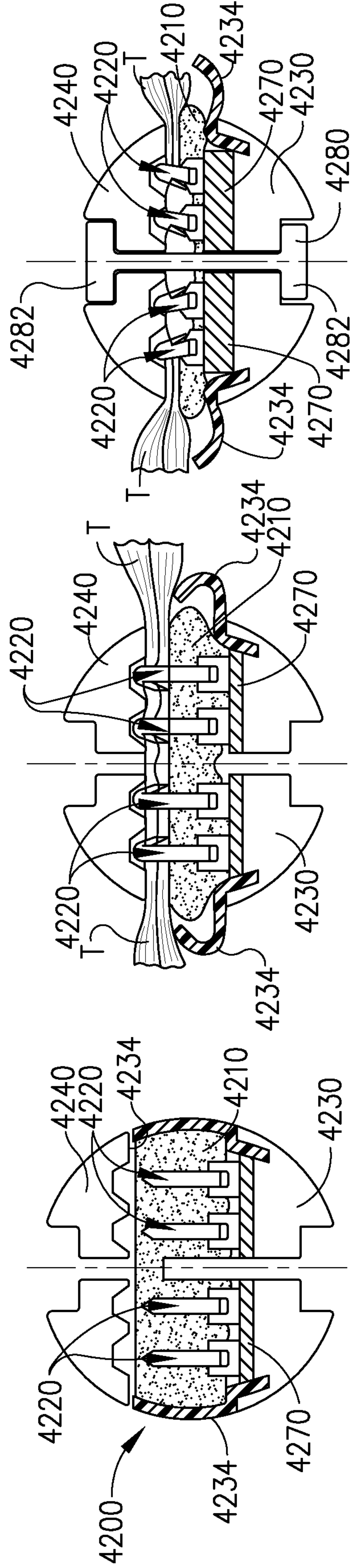


FIG. 78

FIG. 79

FIG. 80

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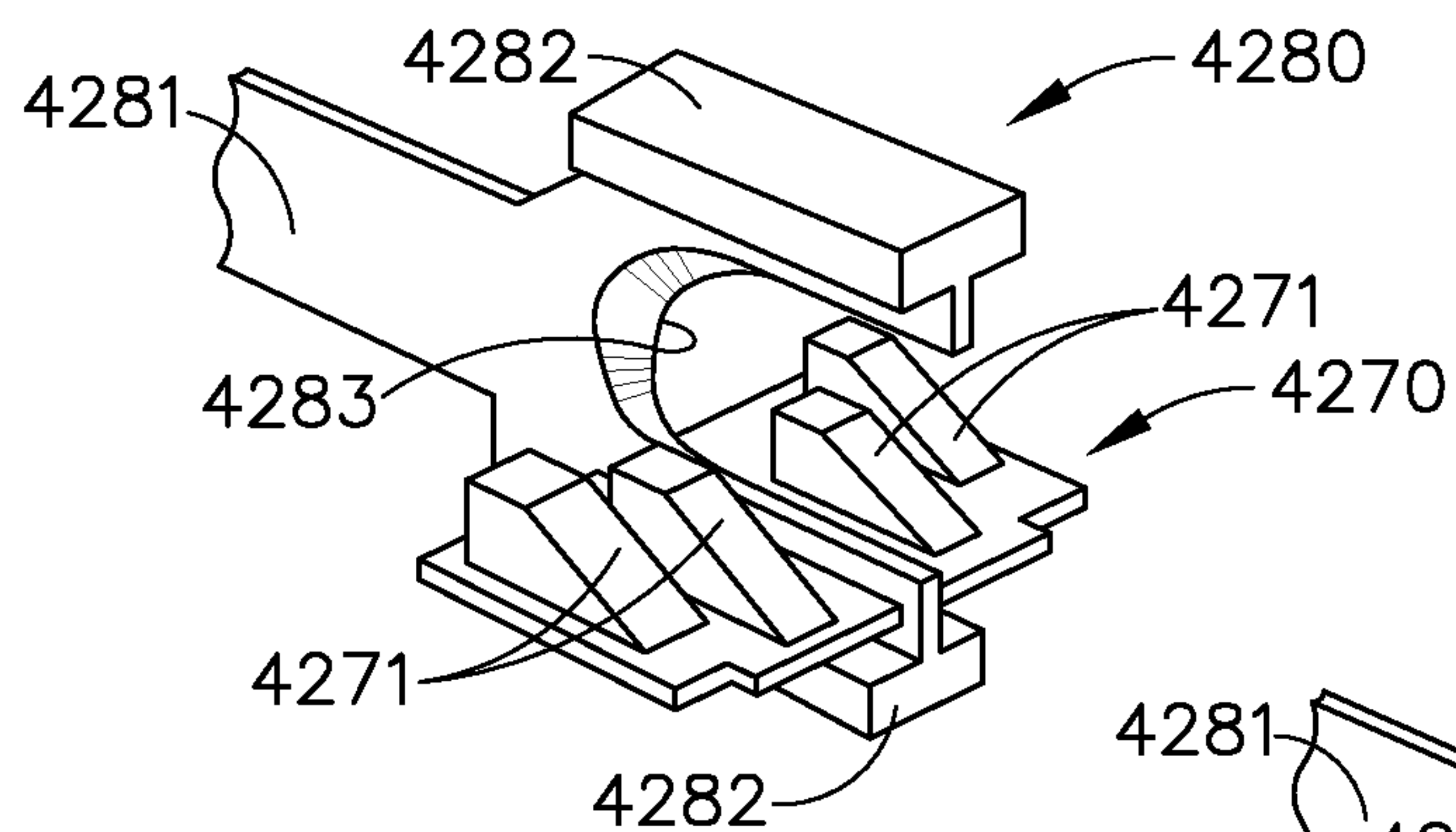


FIG. 82

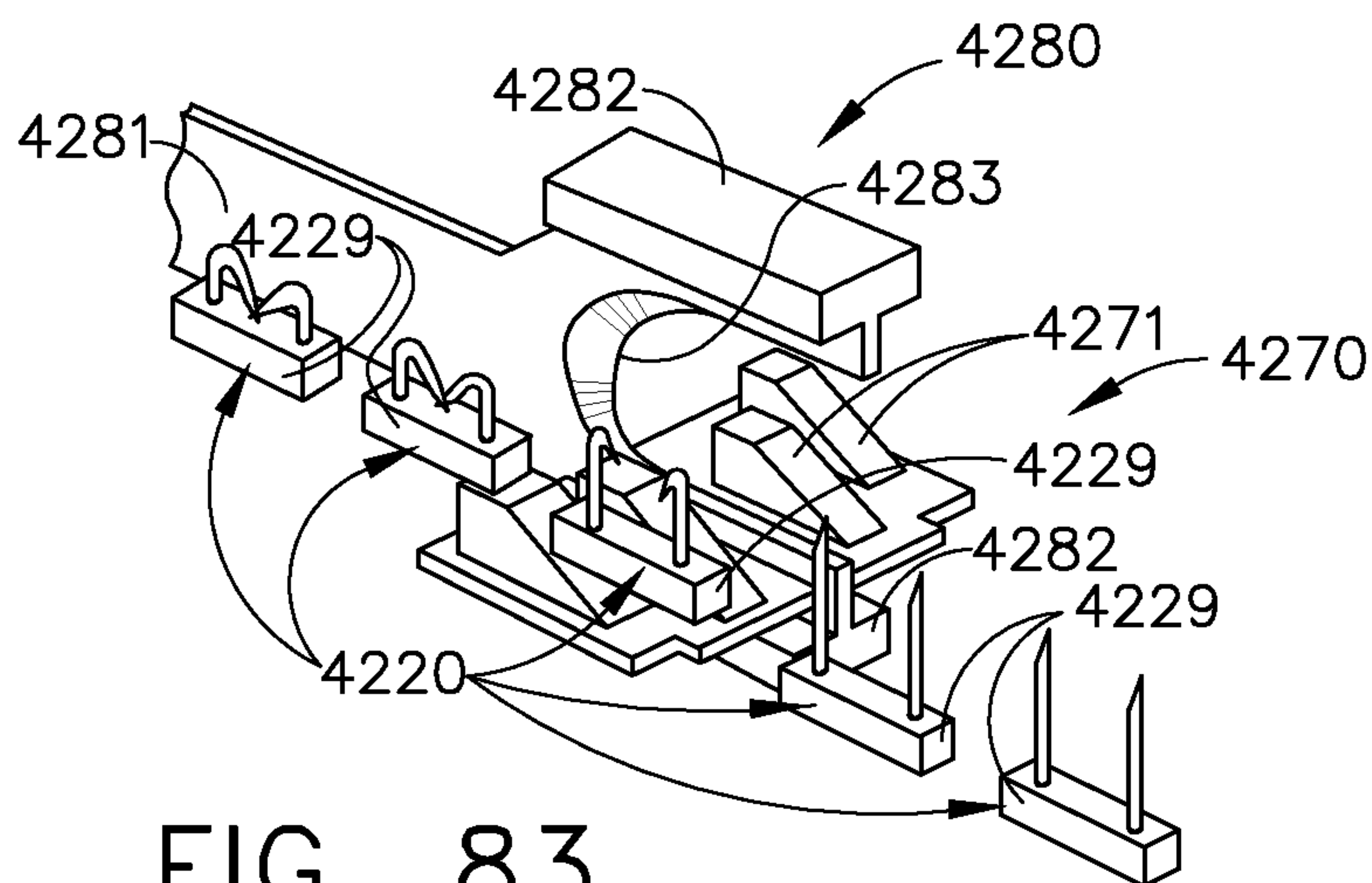


FIG. 83

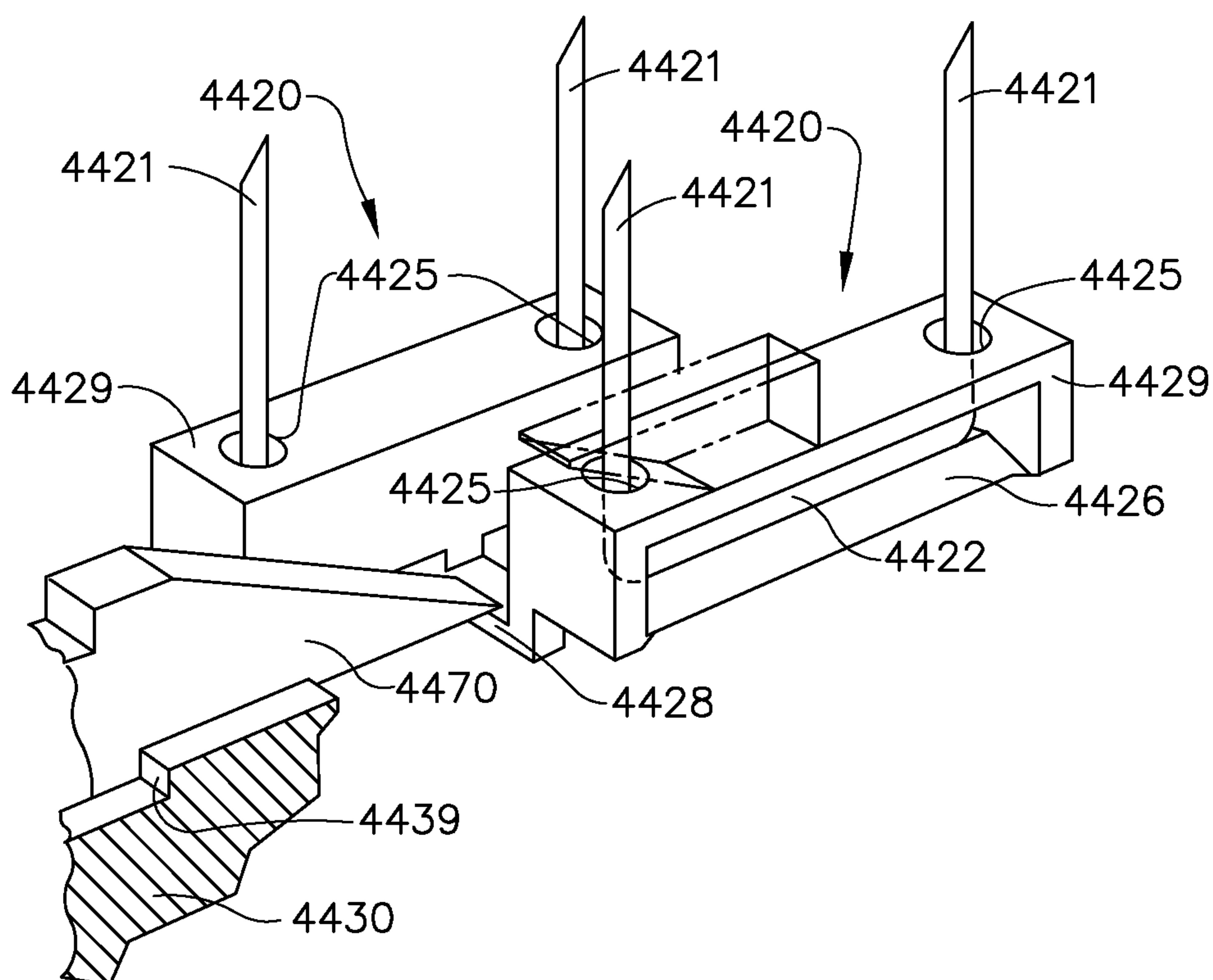
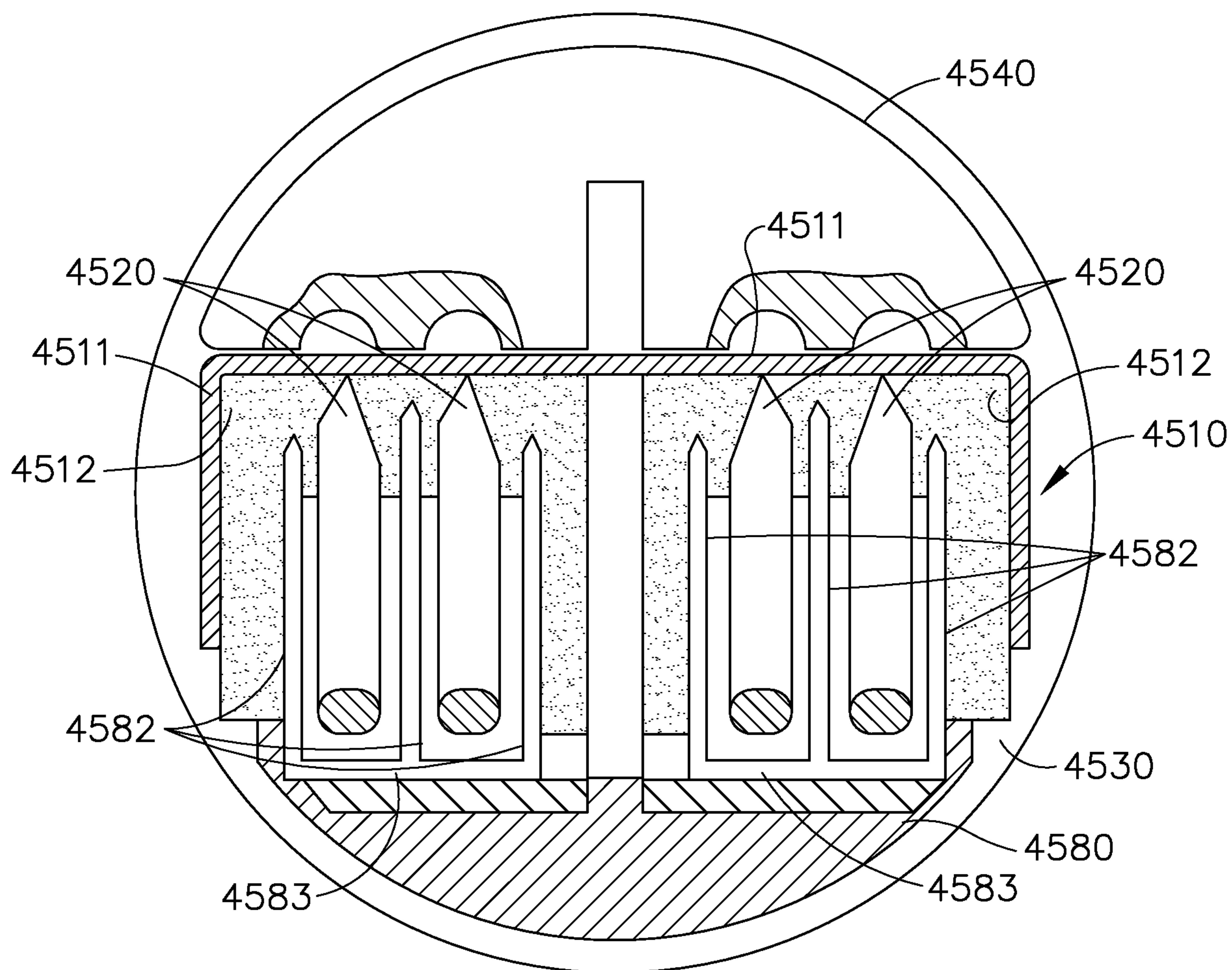
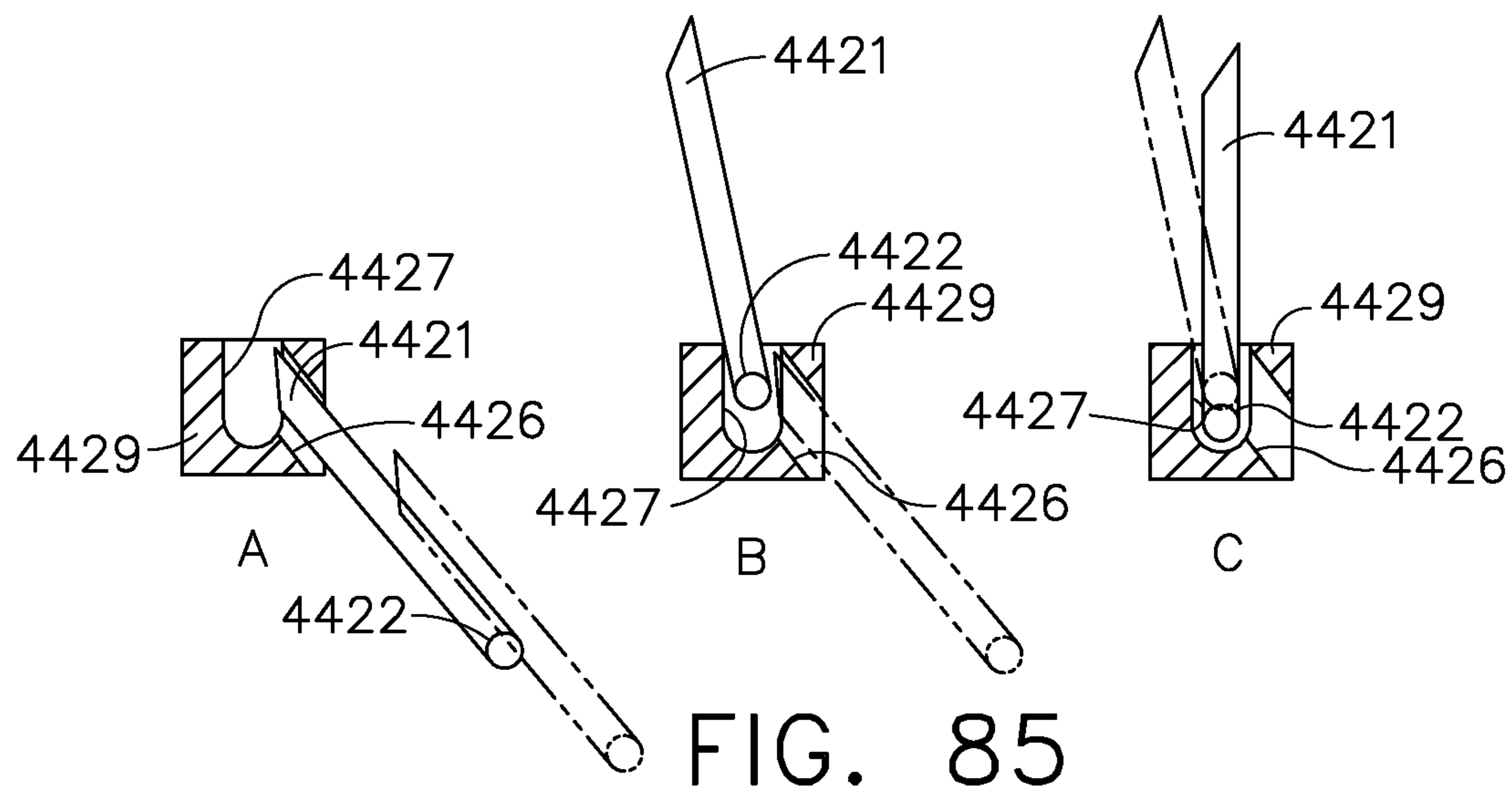


FIG. 84

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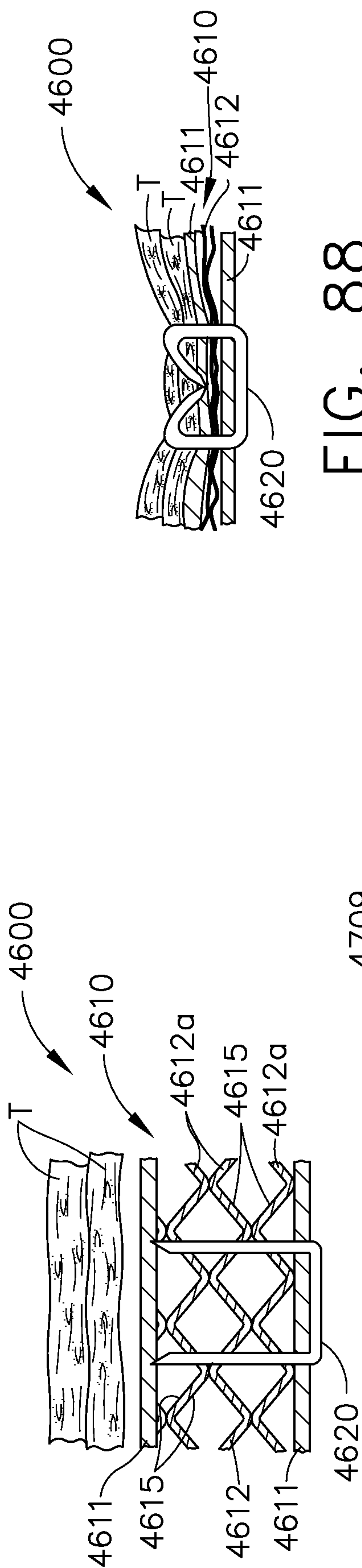


FIG. 8.

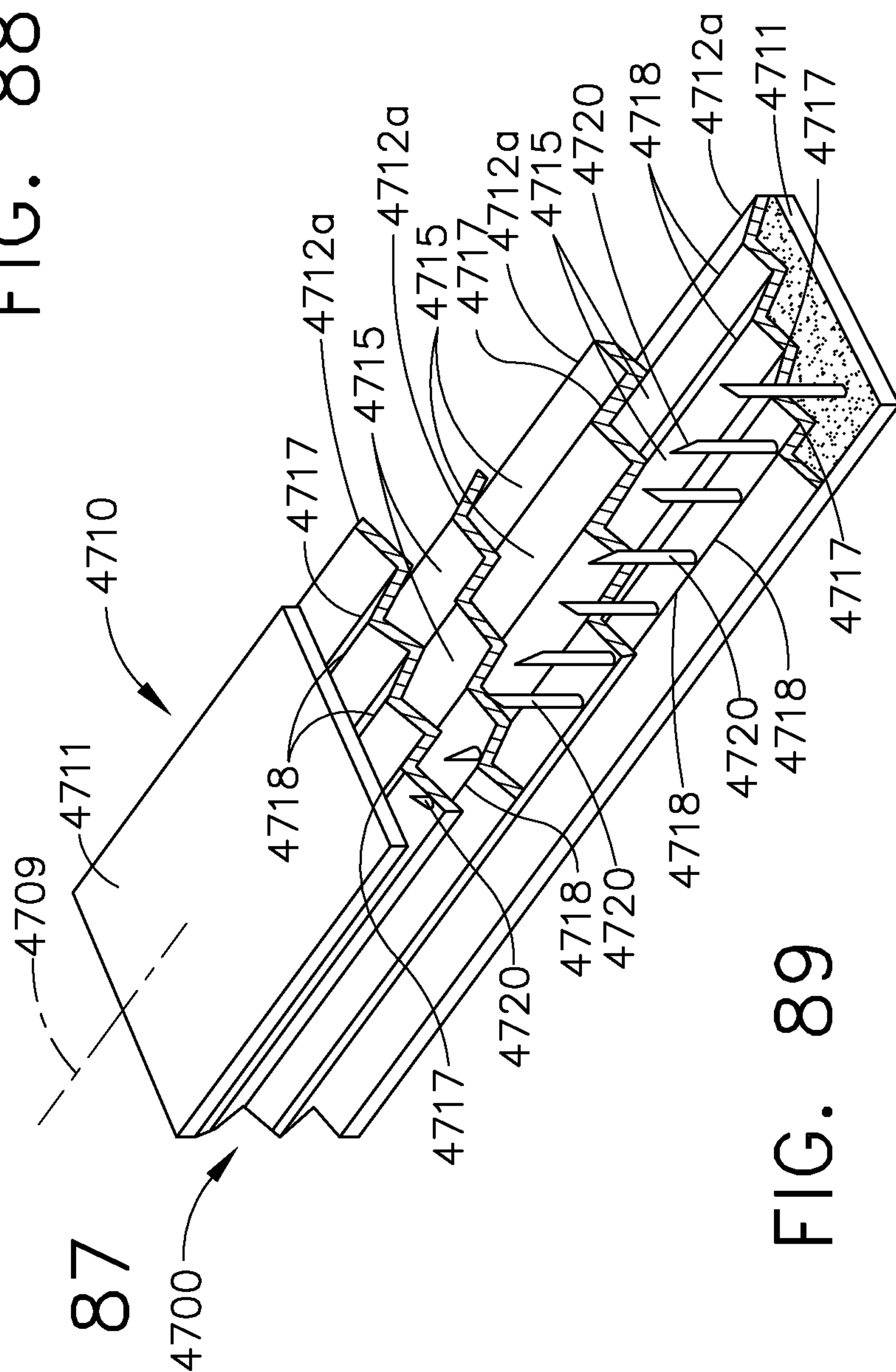


FIG. 8.

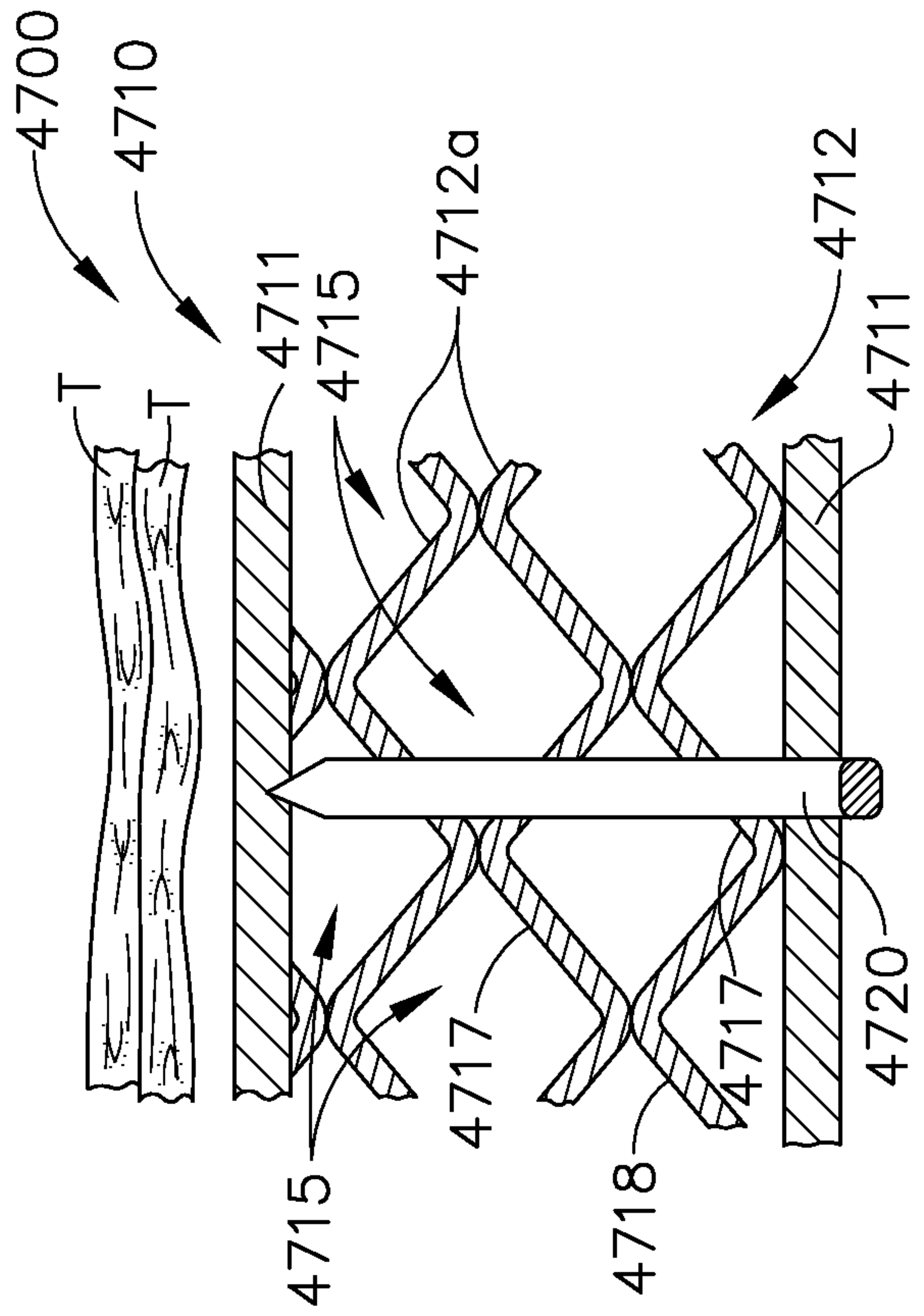


FIG. 90

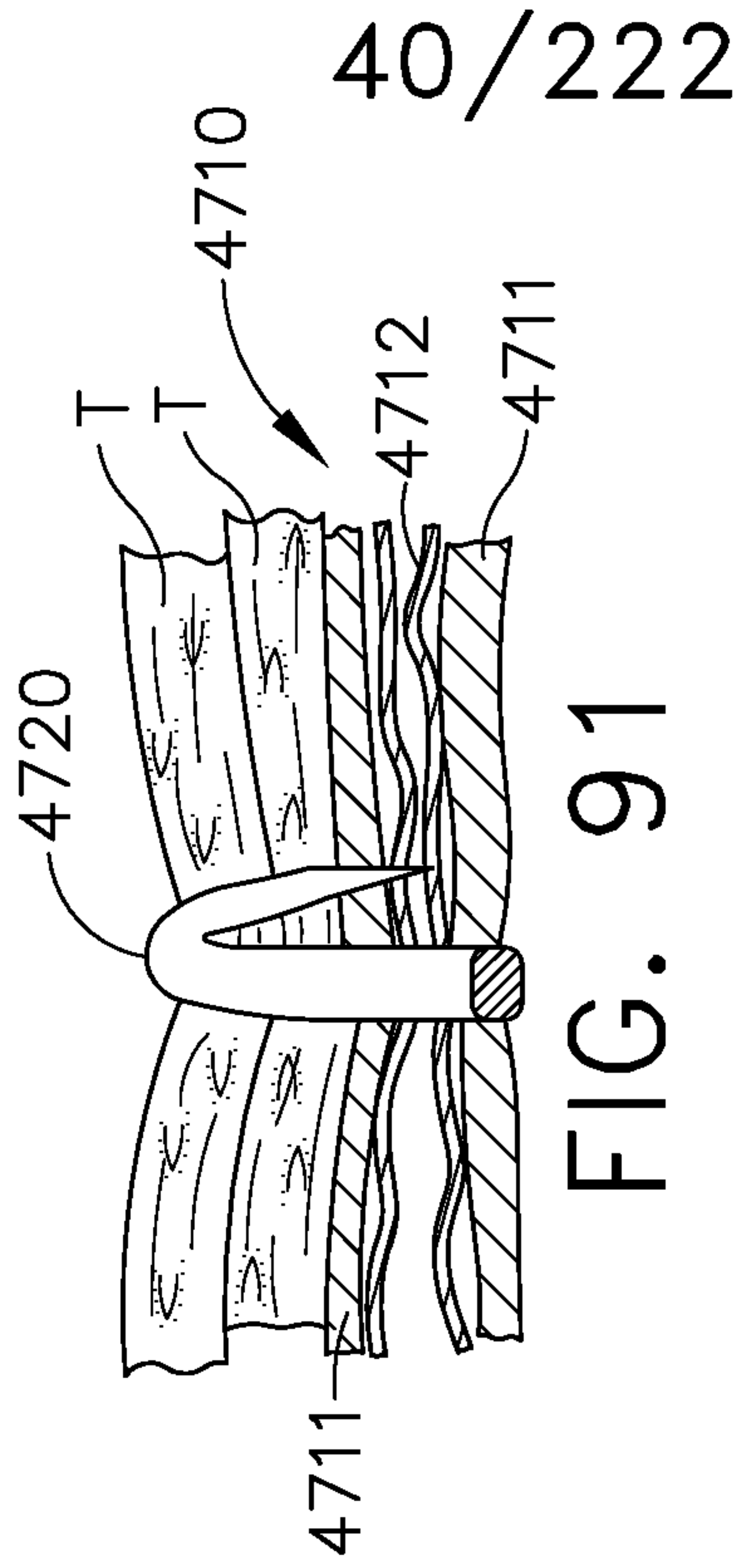


FIG. 91

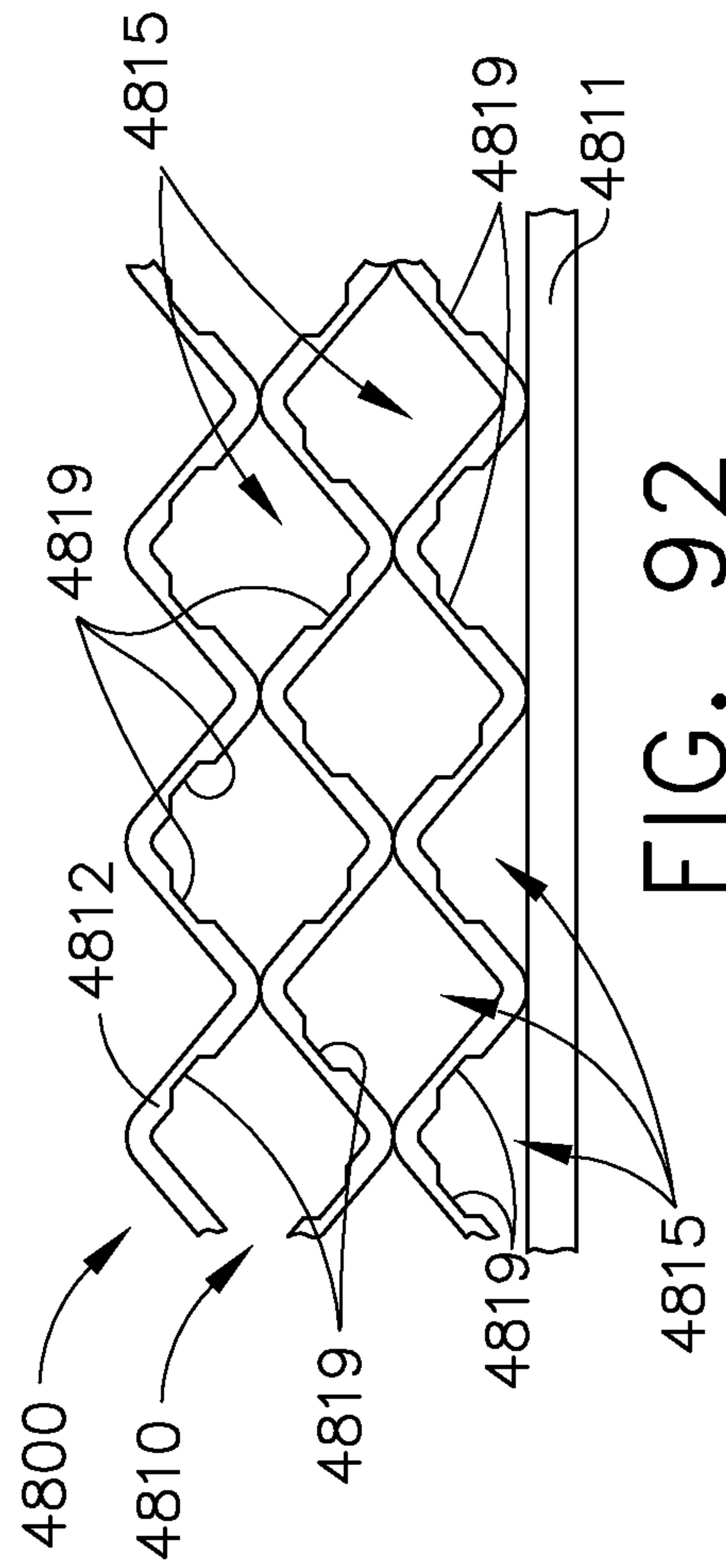


FIG. 92

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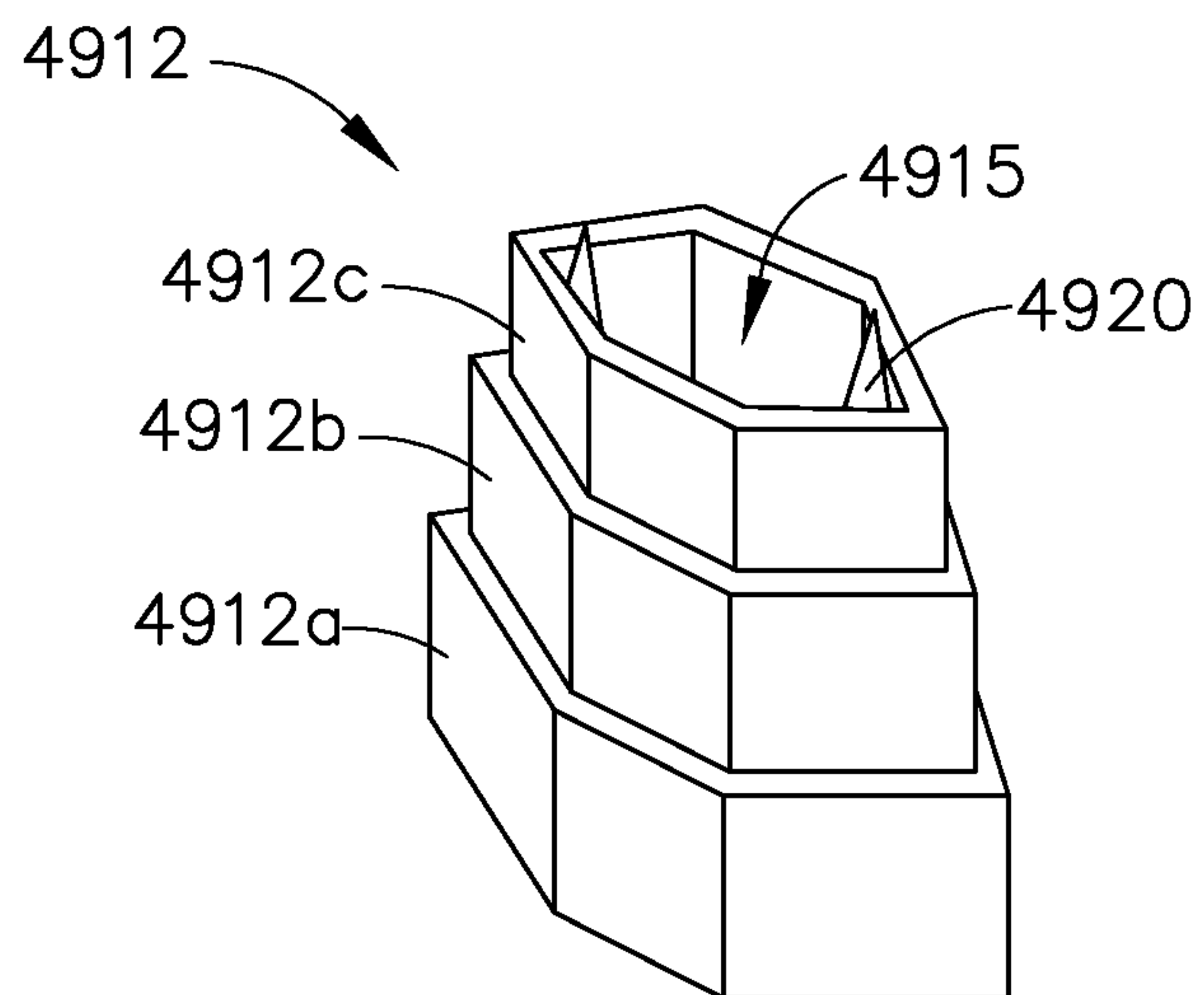


FIG. 94

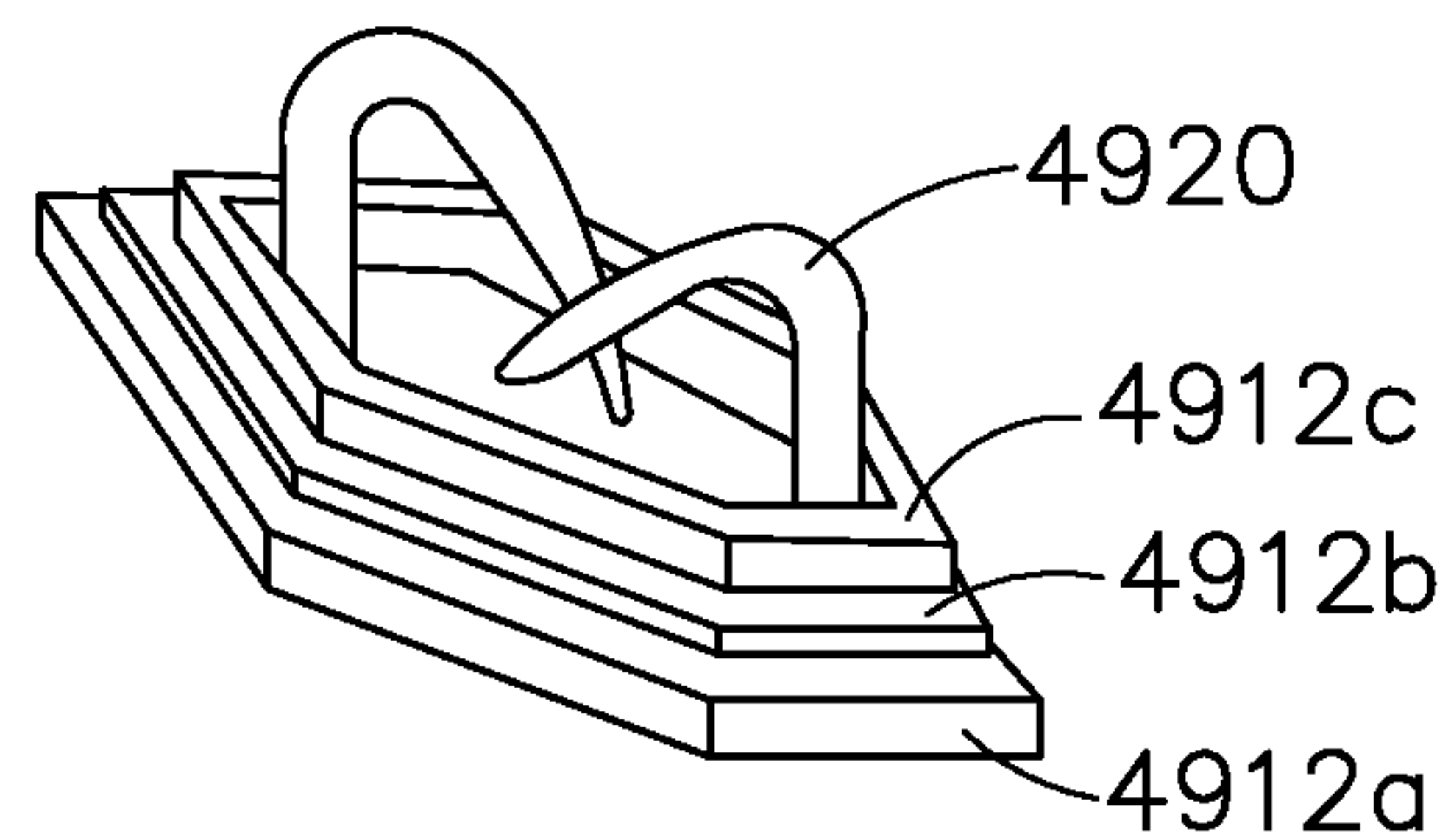


FIG. 95

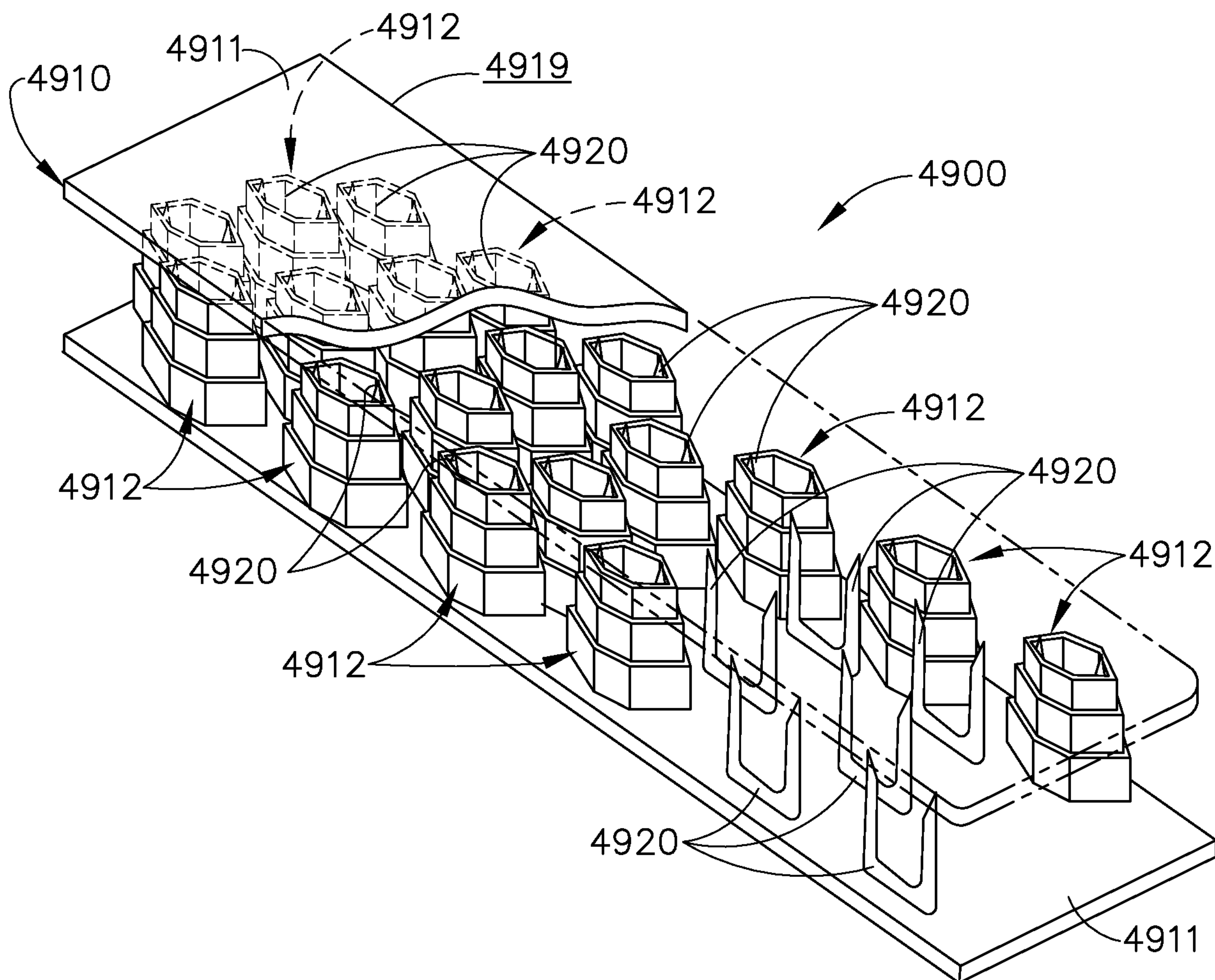


FIG. 93

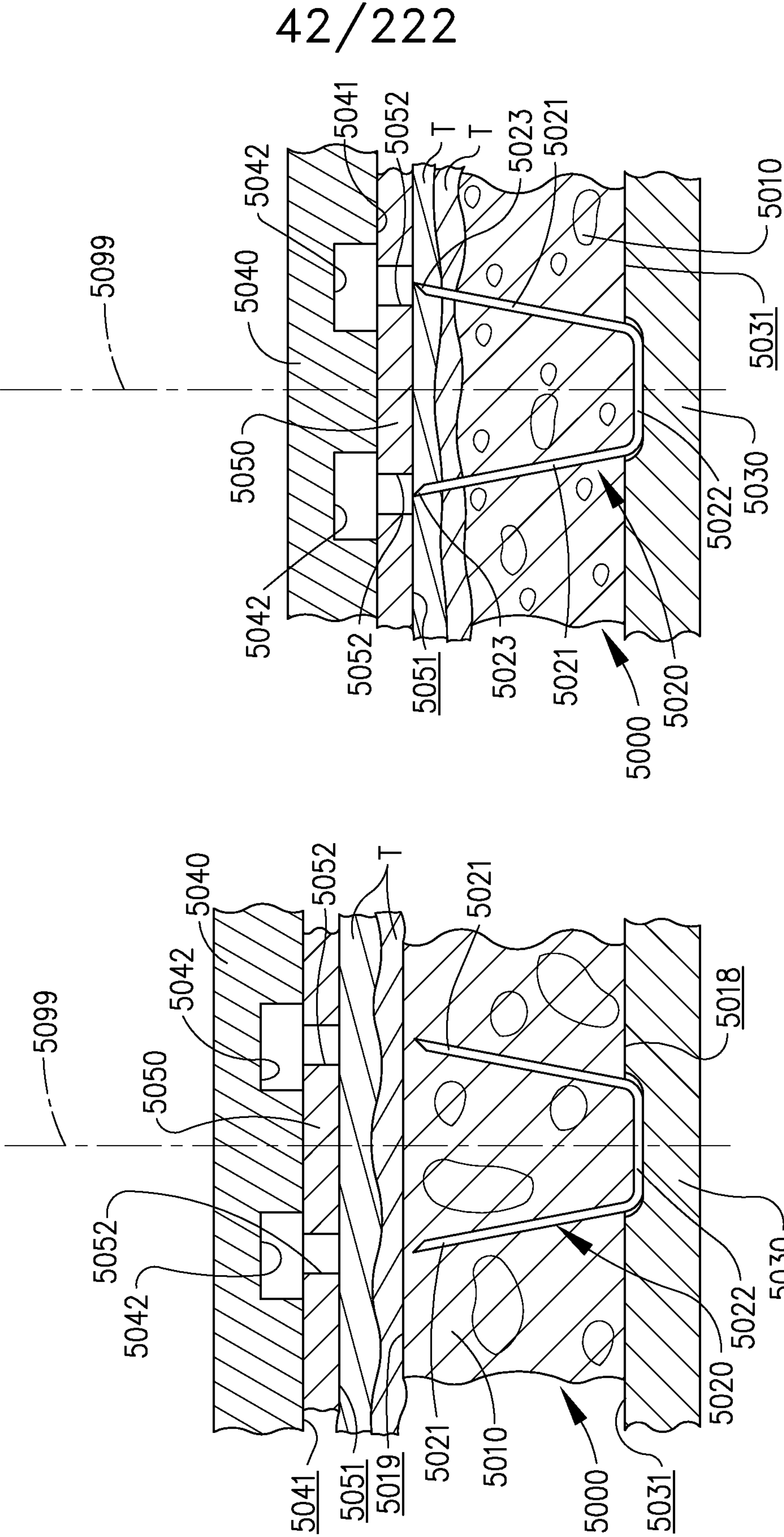


FIG. 96B

FIG. 96A

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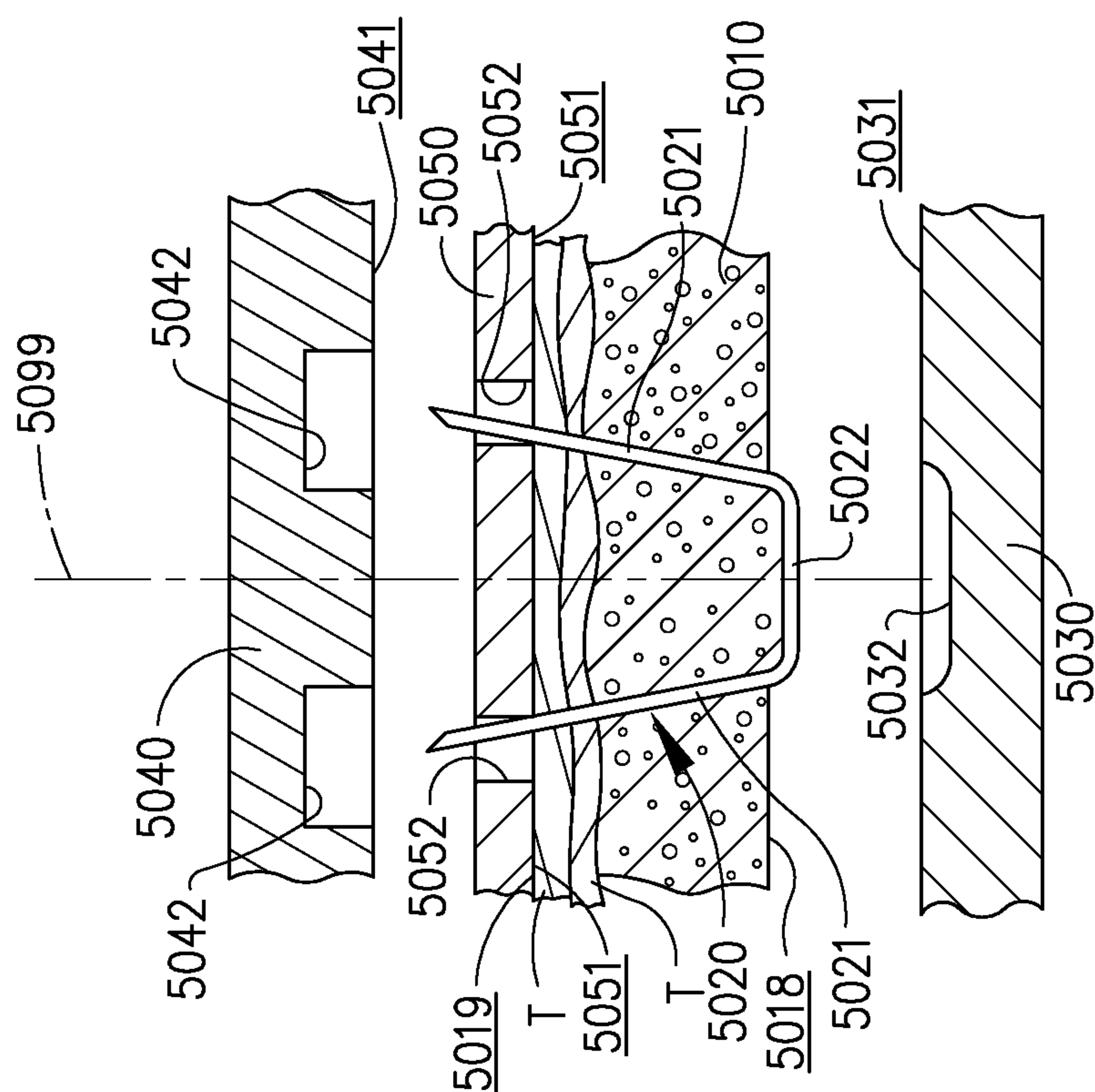


FIG. 96D

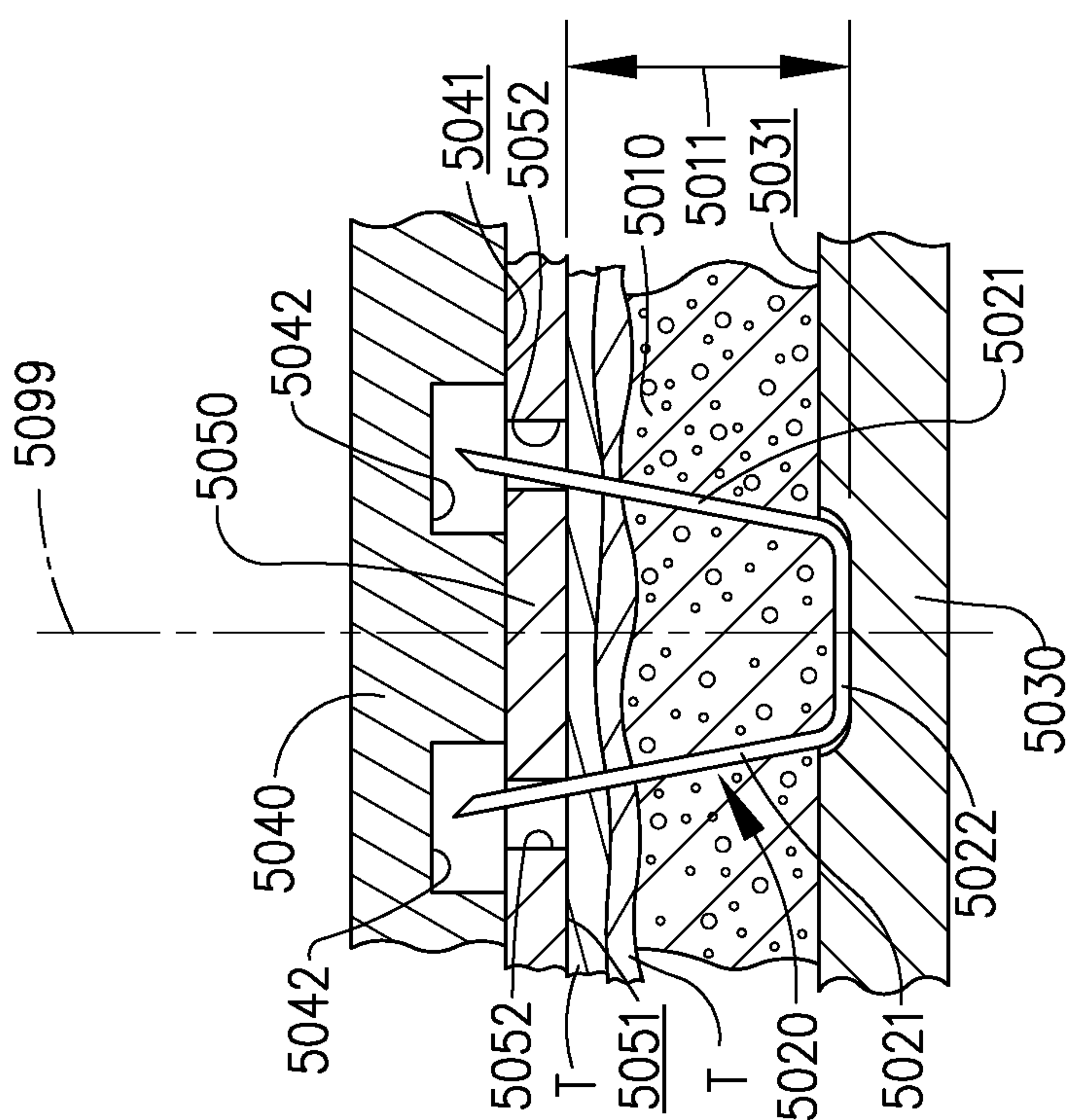


FIG. 96C

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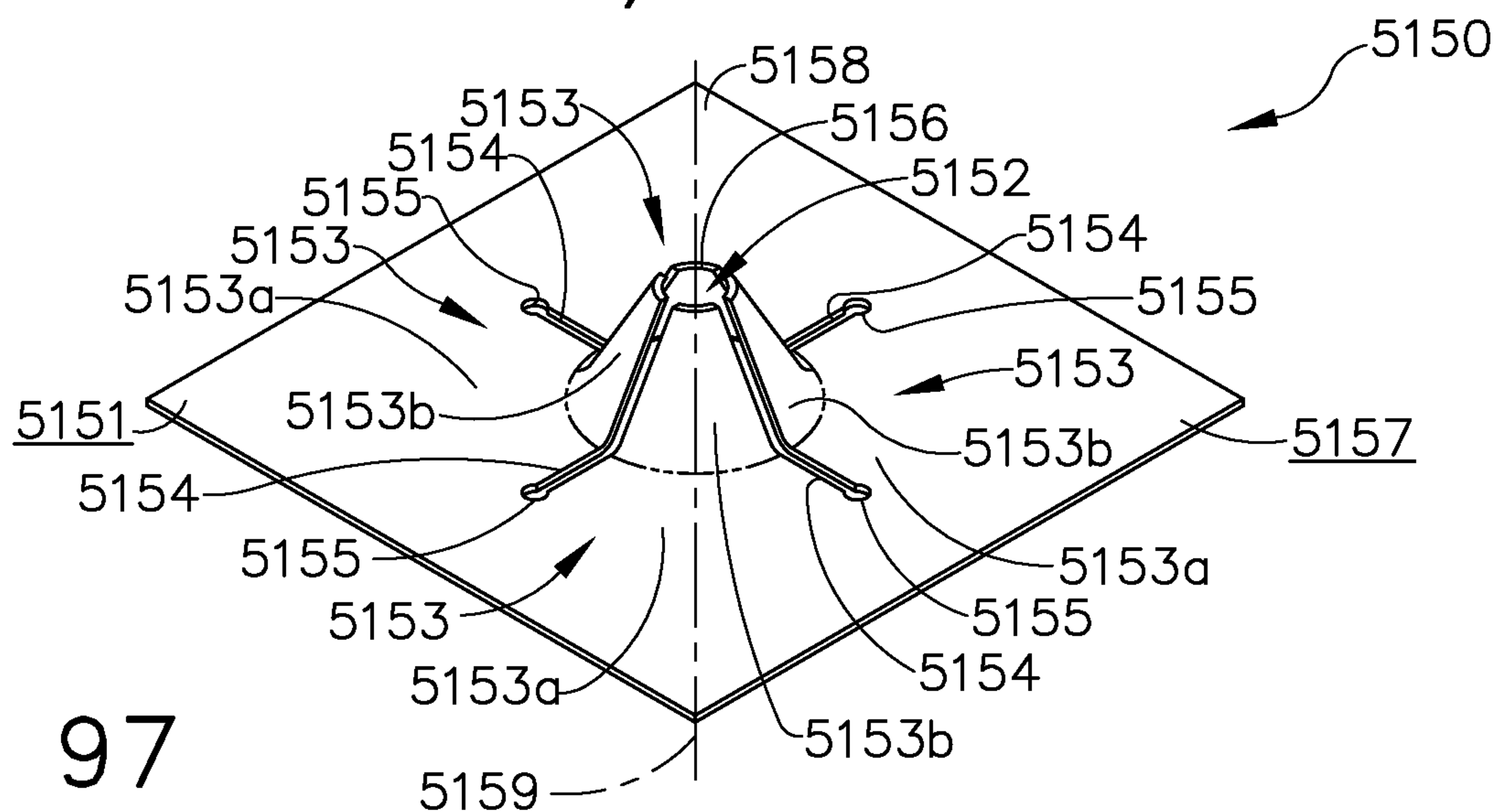


FIG. 97

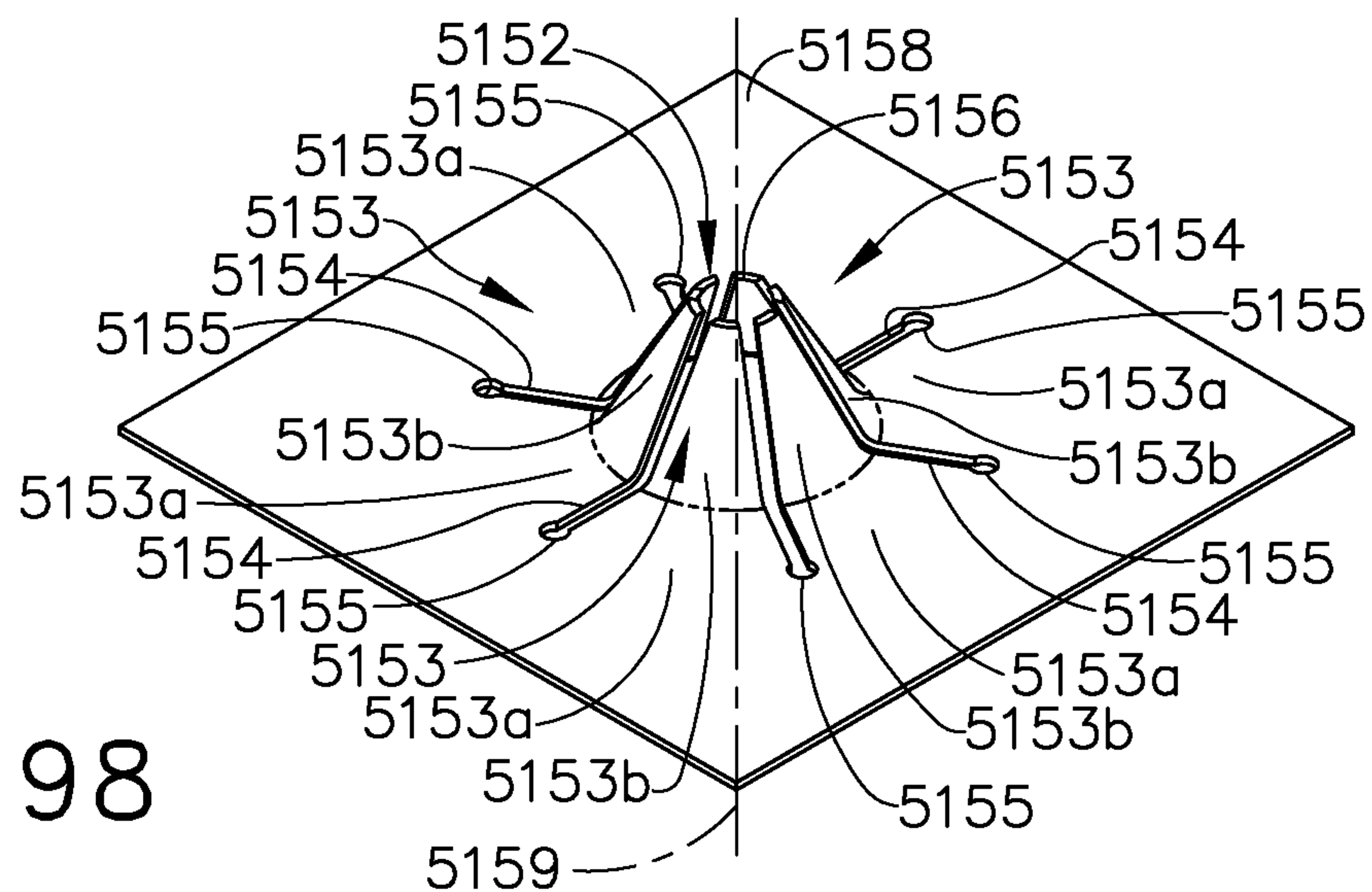


FIG. 98

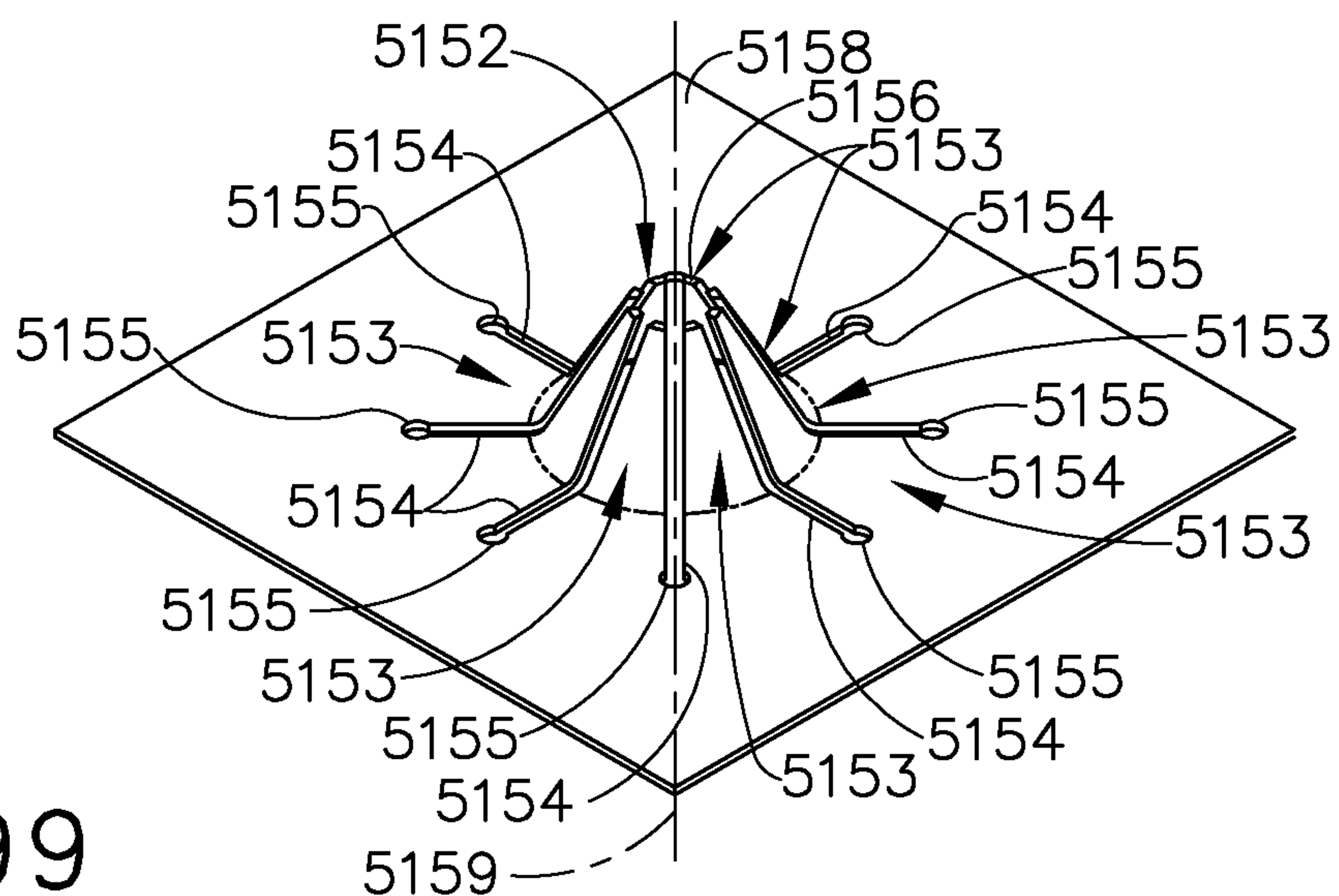


FIG. 99

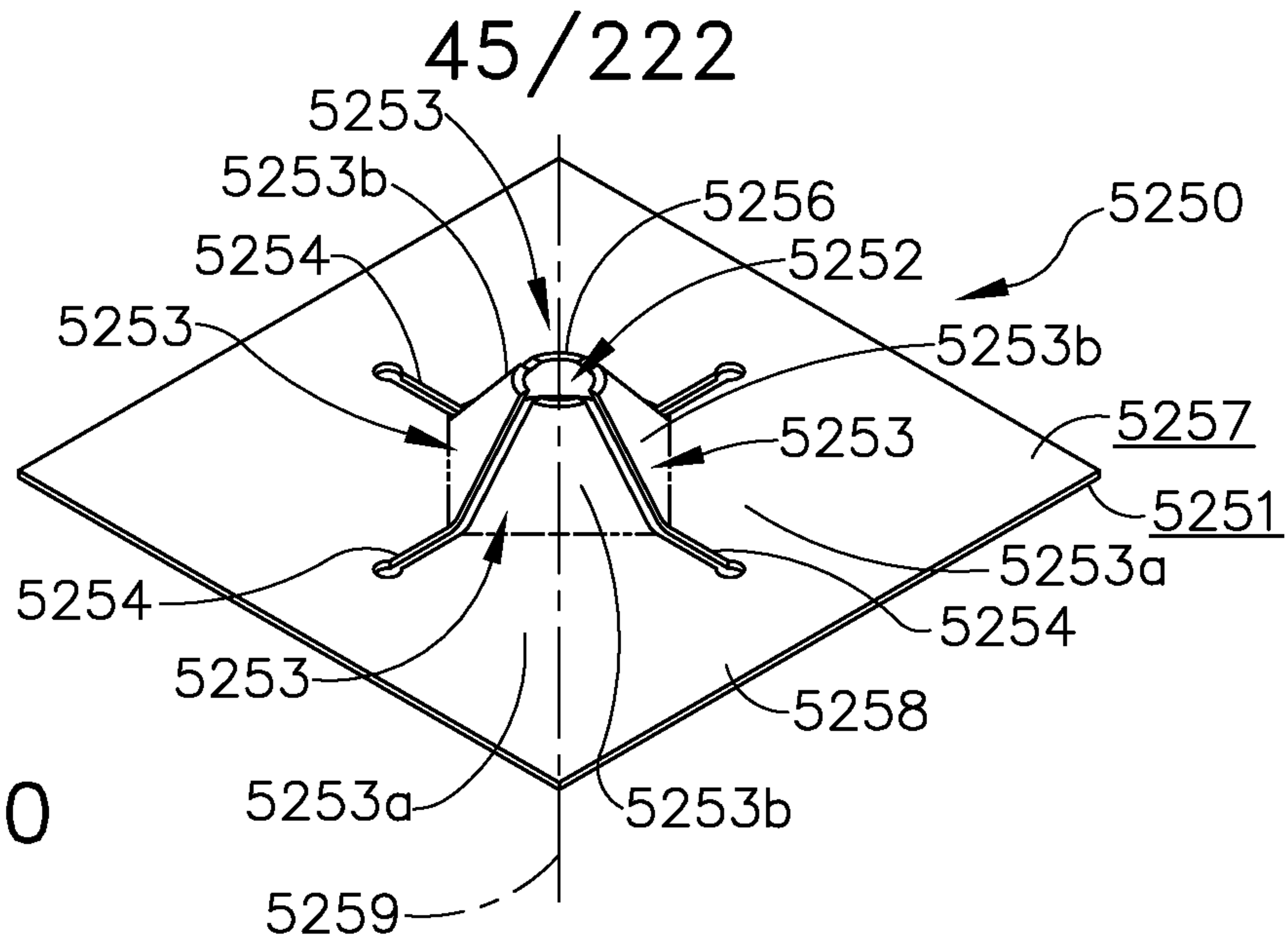


FIG. 100

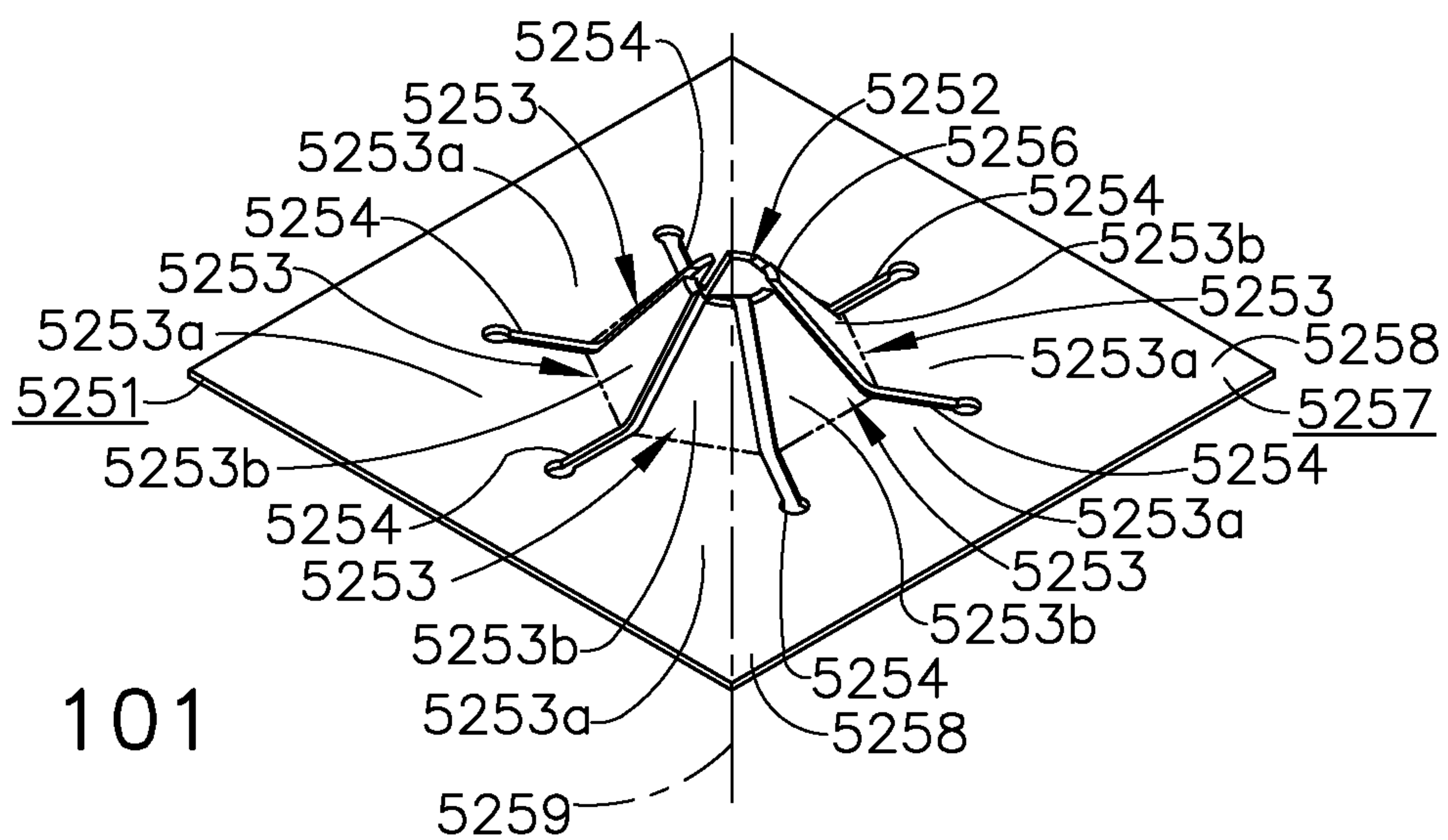


FIG. 101

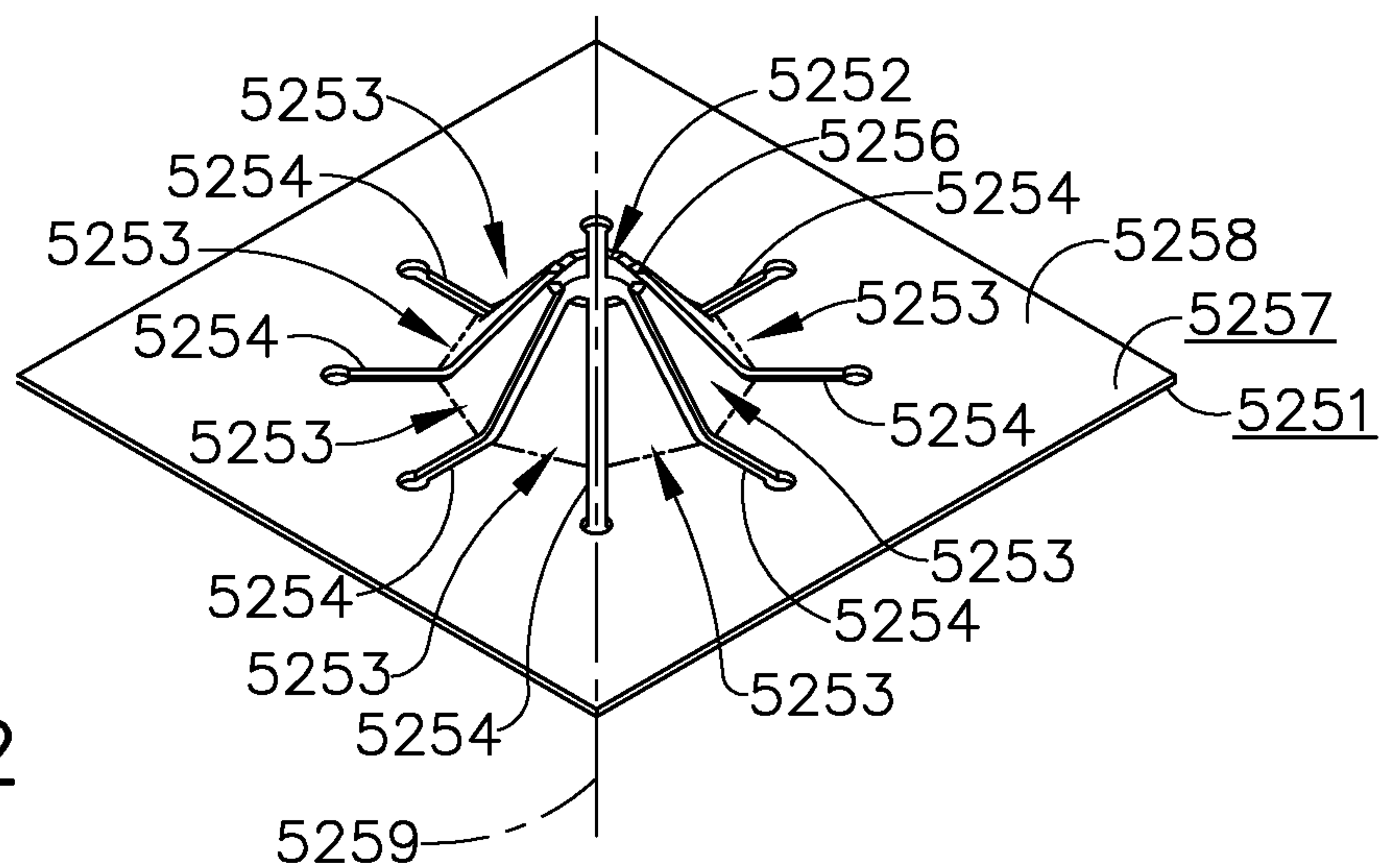


FIG. 102

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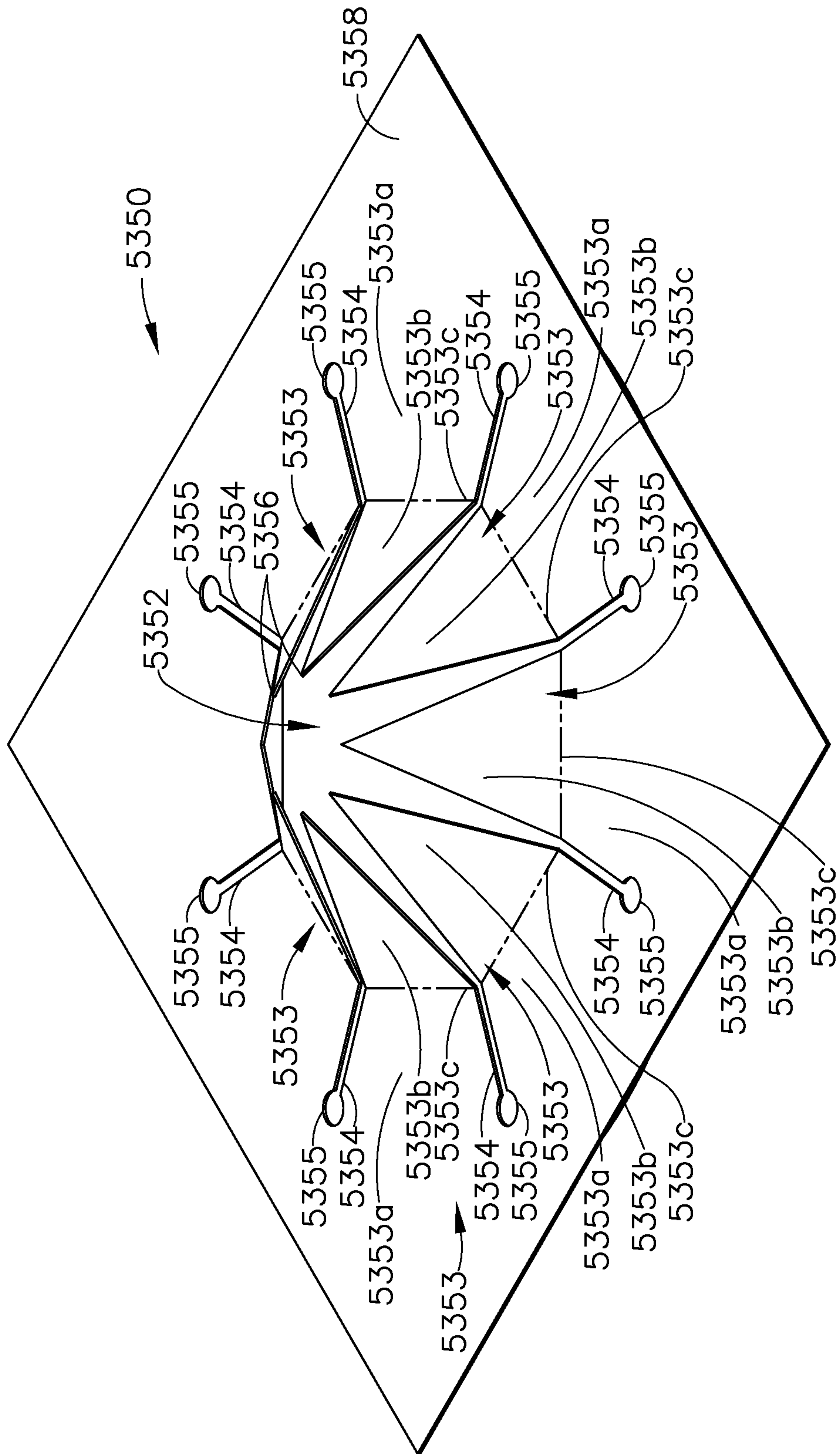


FIG. 103

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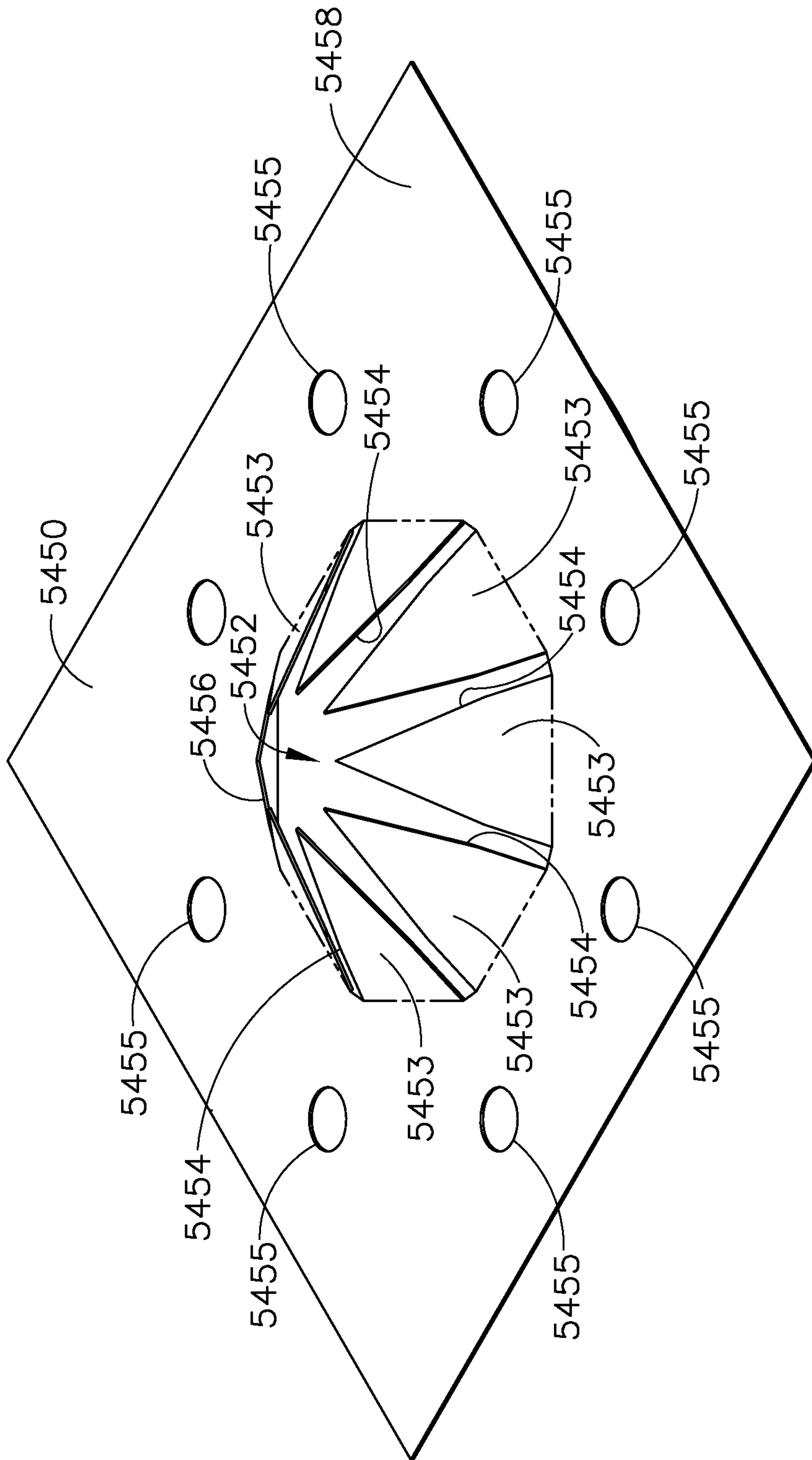


FIG. 104

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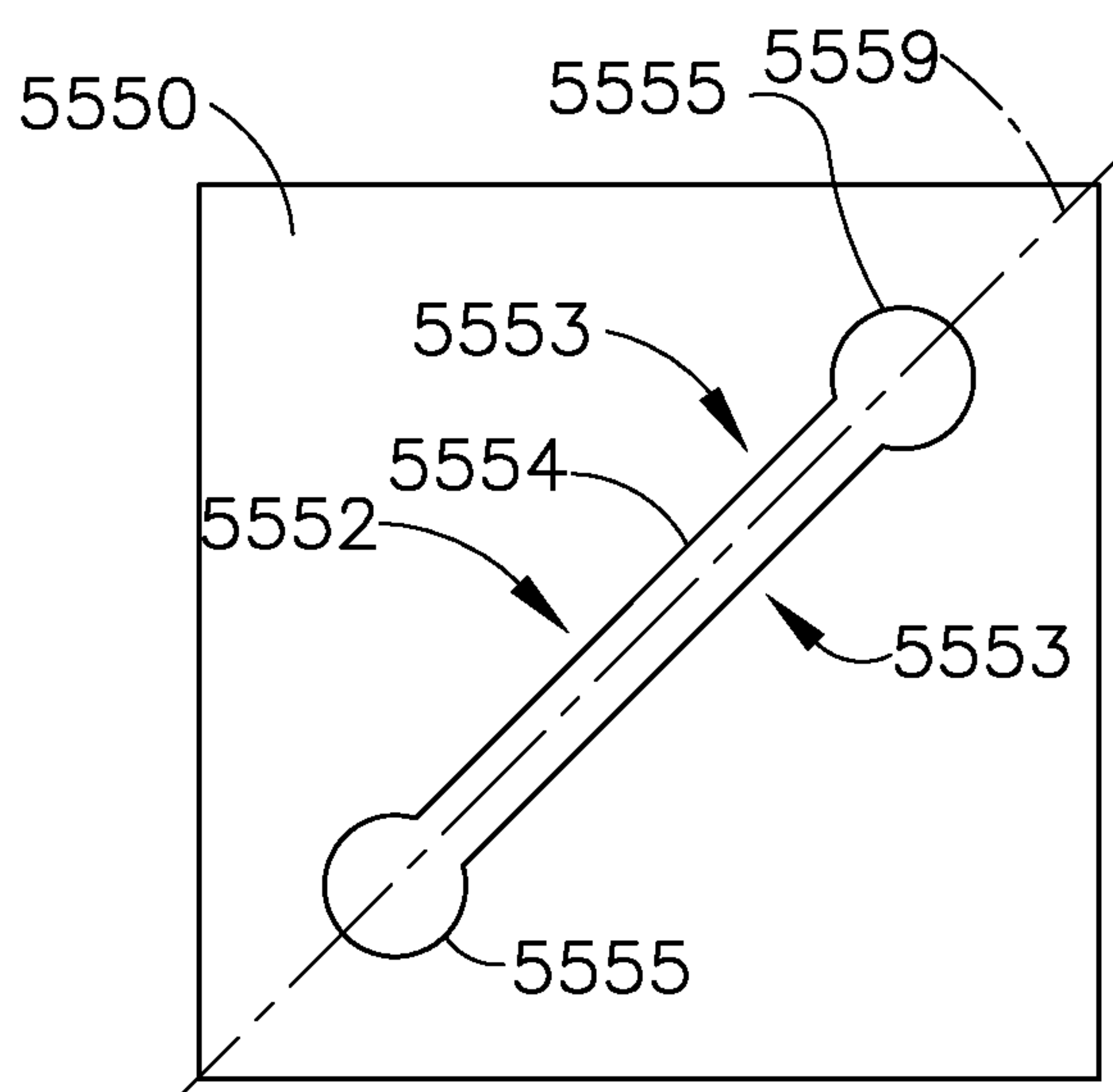


FIG. 105

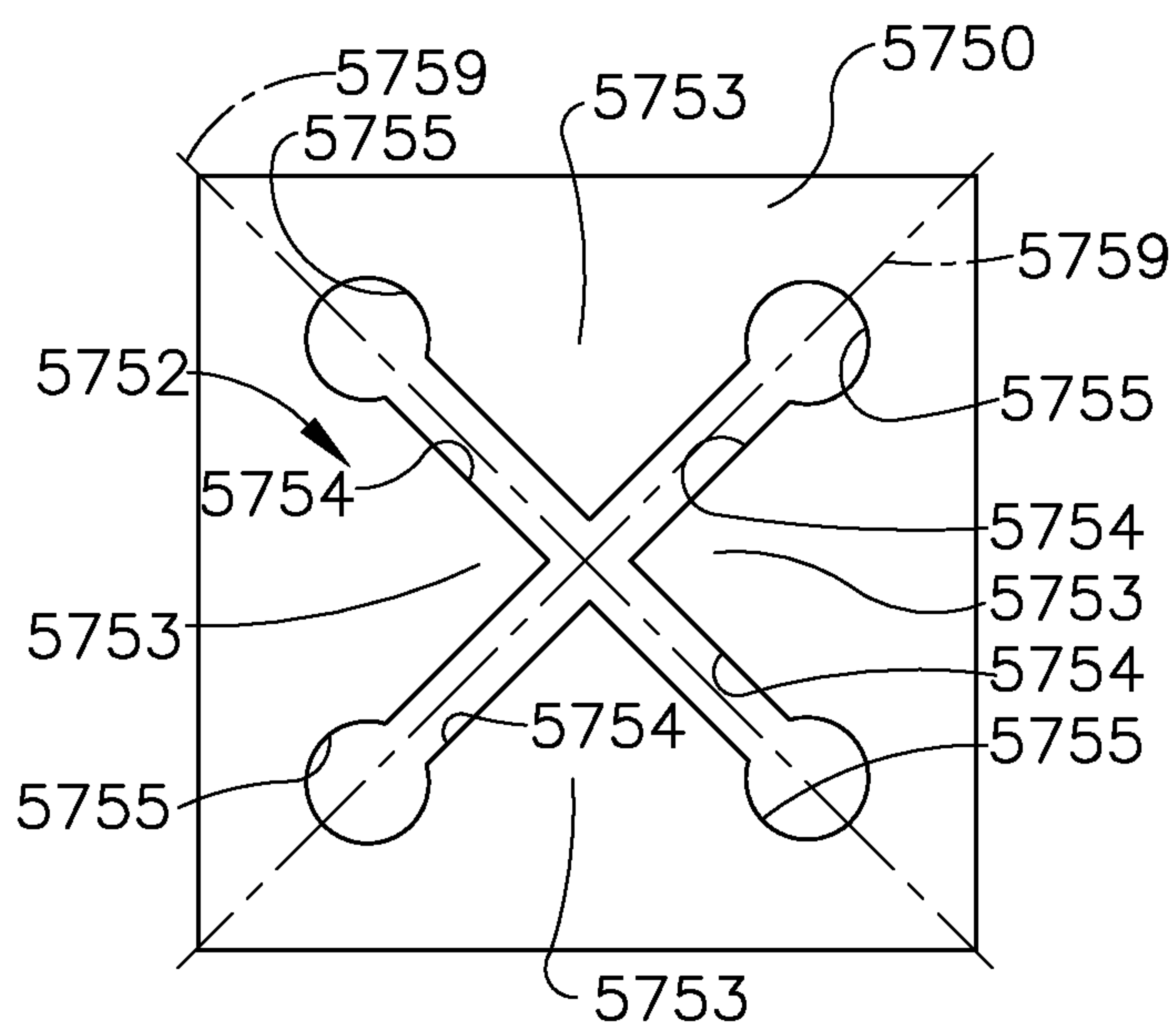


FIG. 107

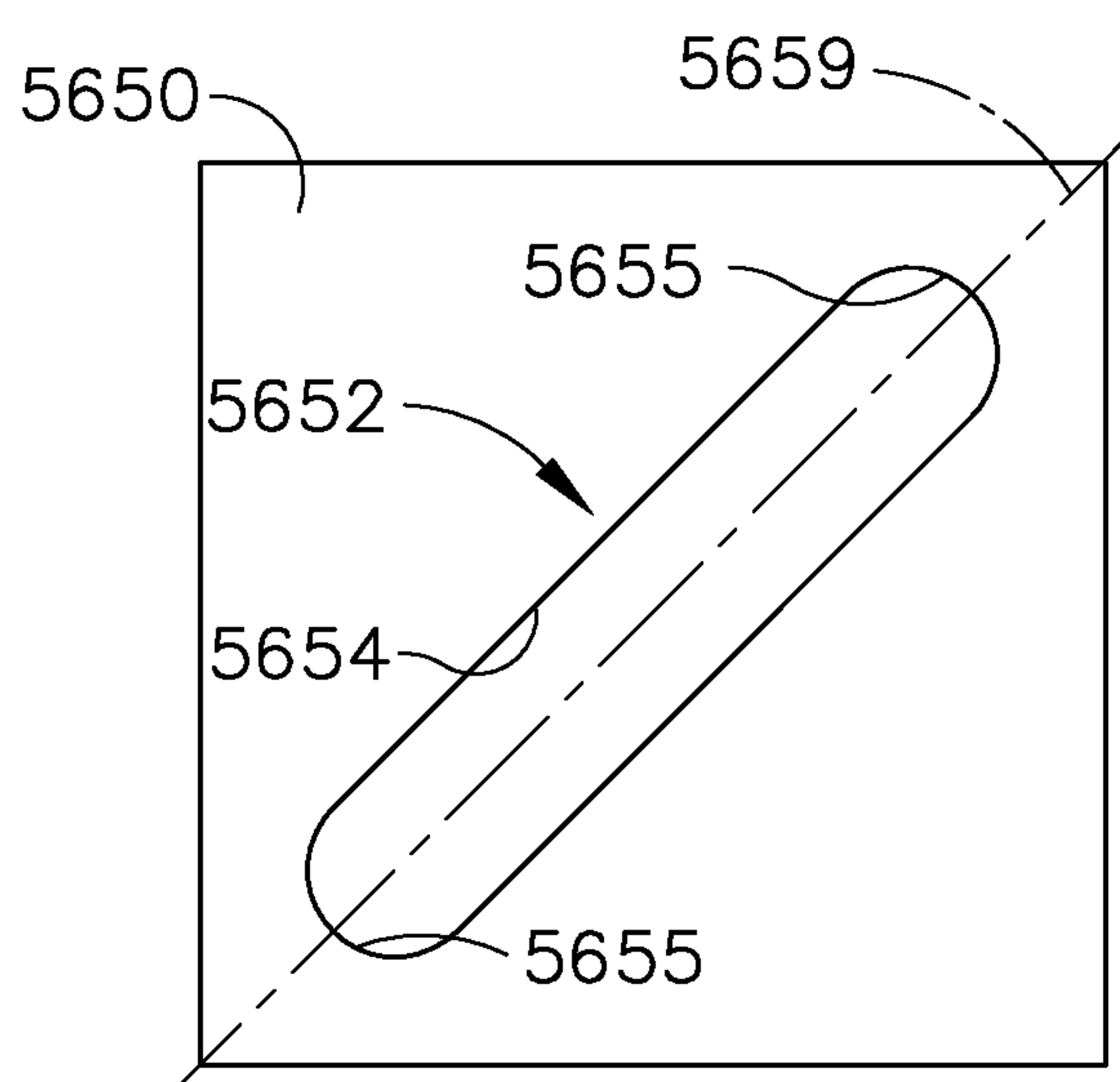


FIG. 106

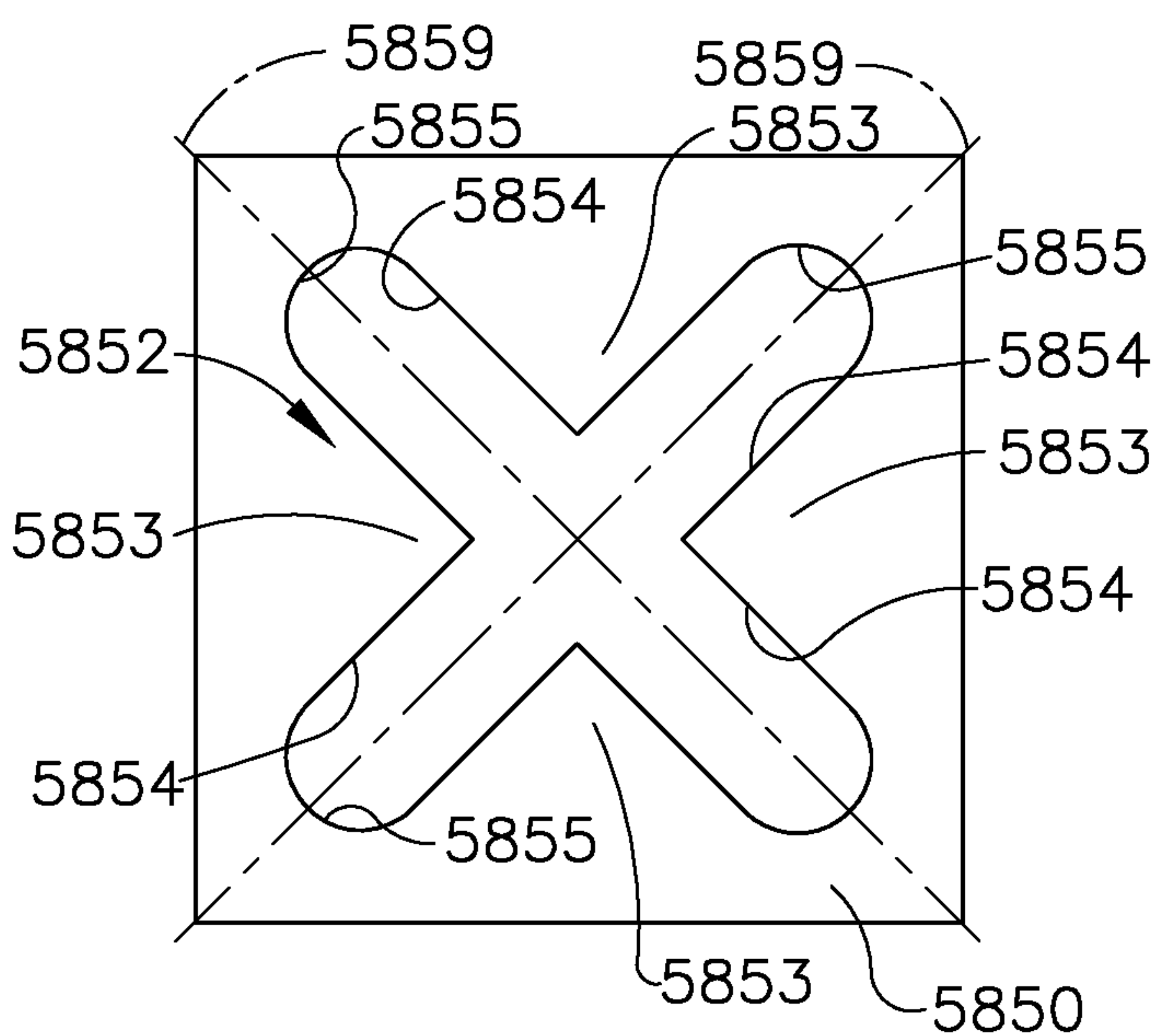


FIG. 108

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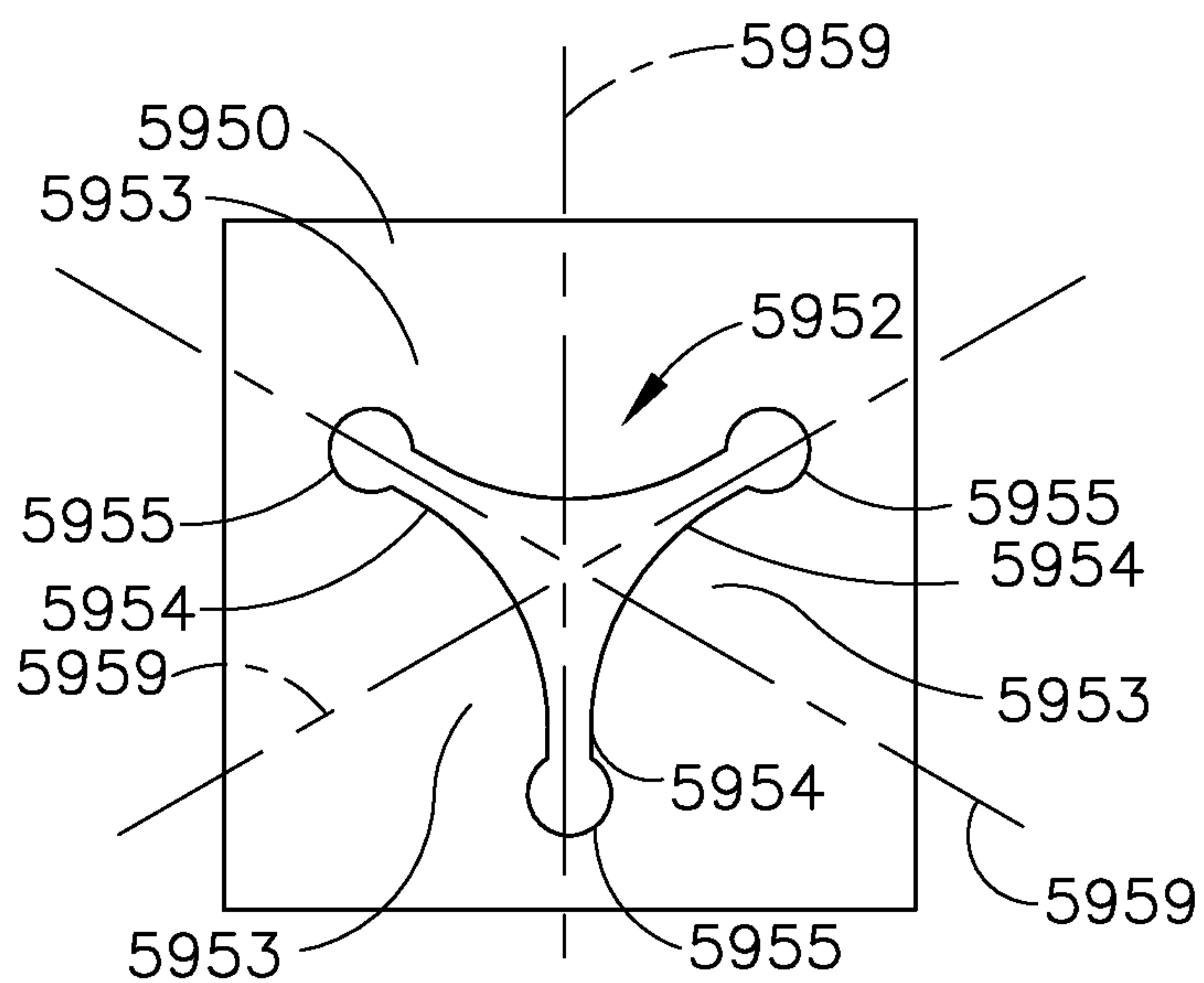


FIG. 109

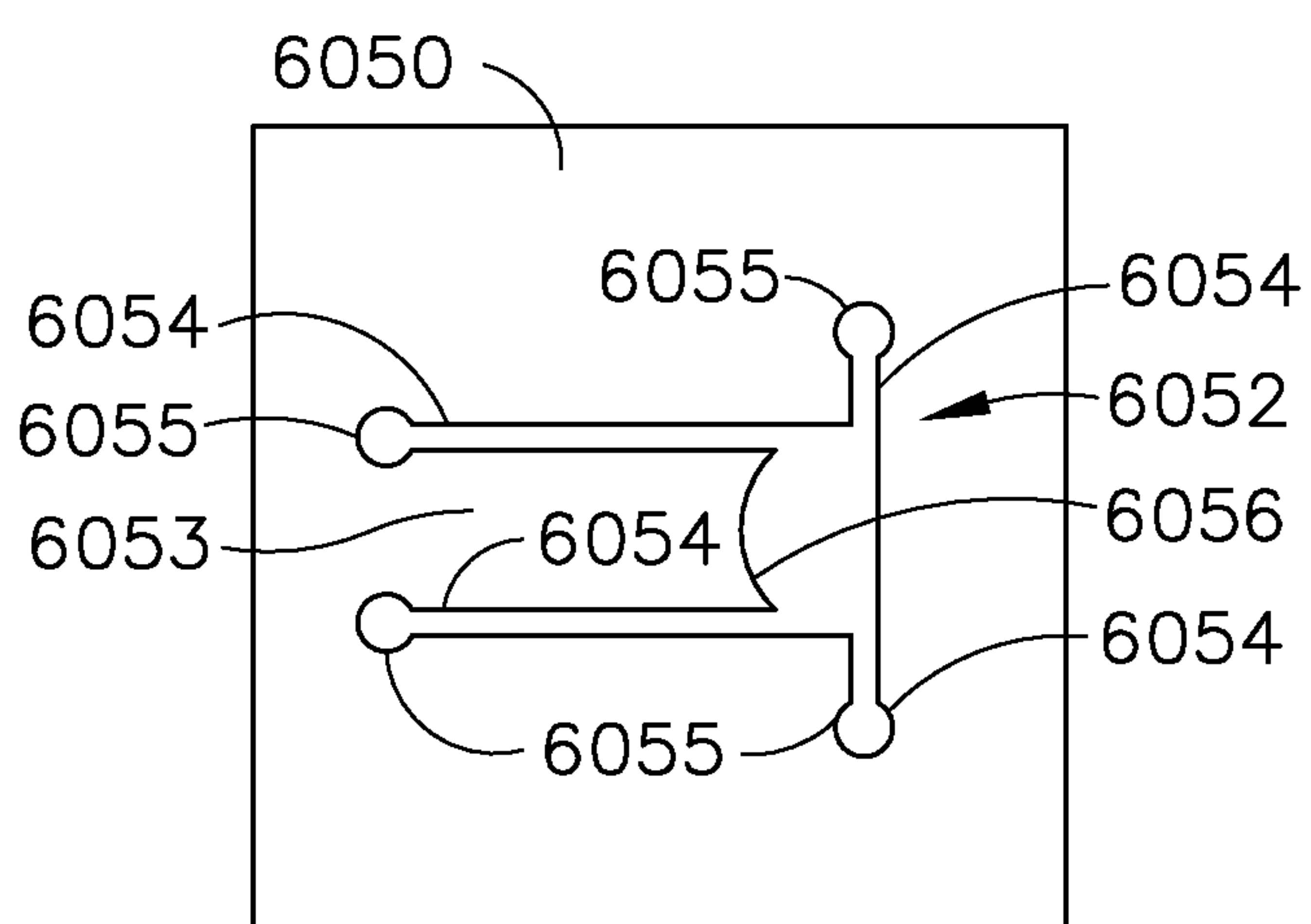


FIG. 110

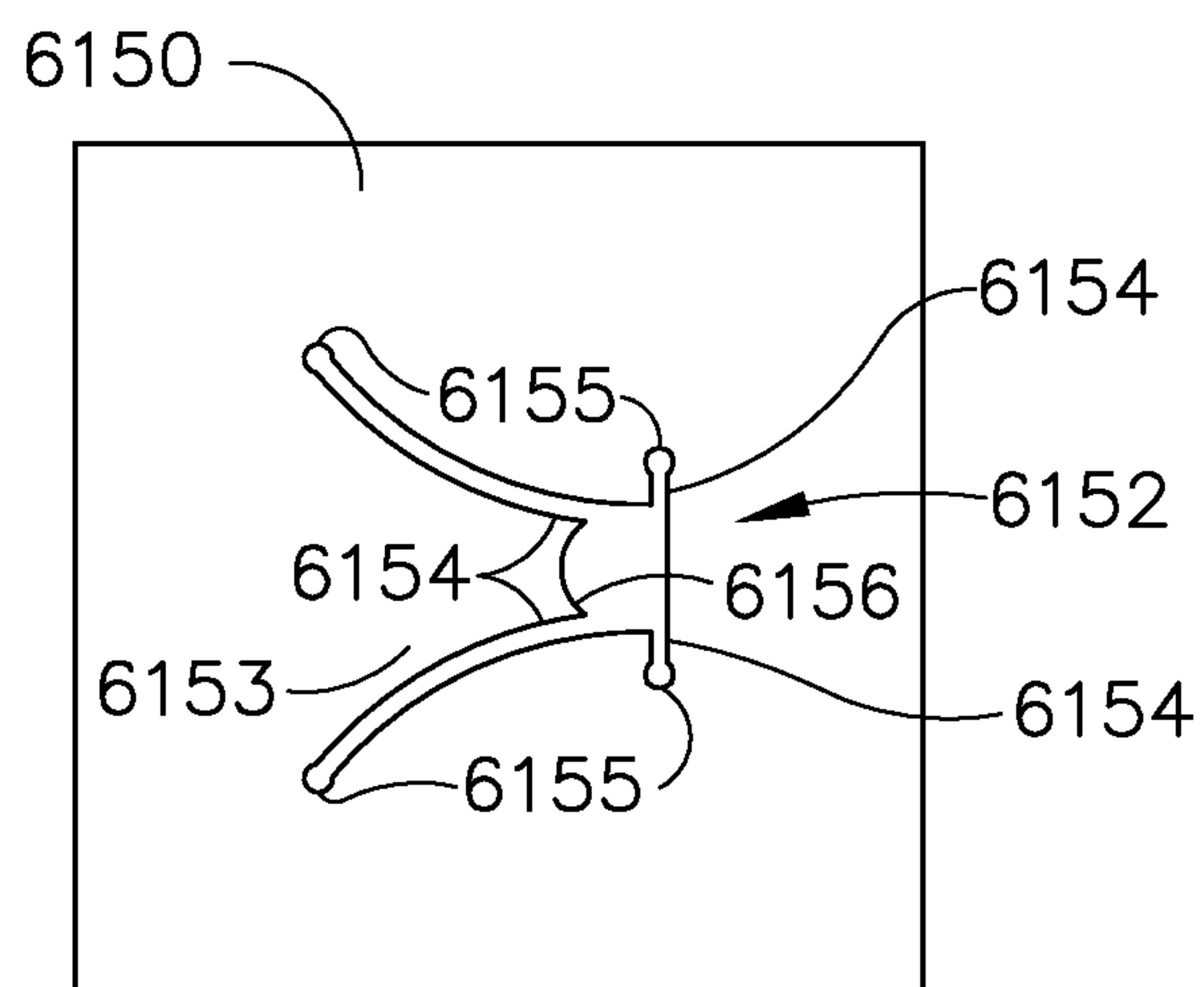
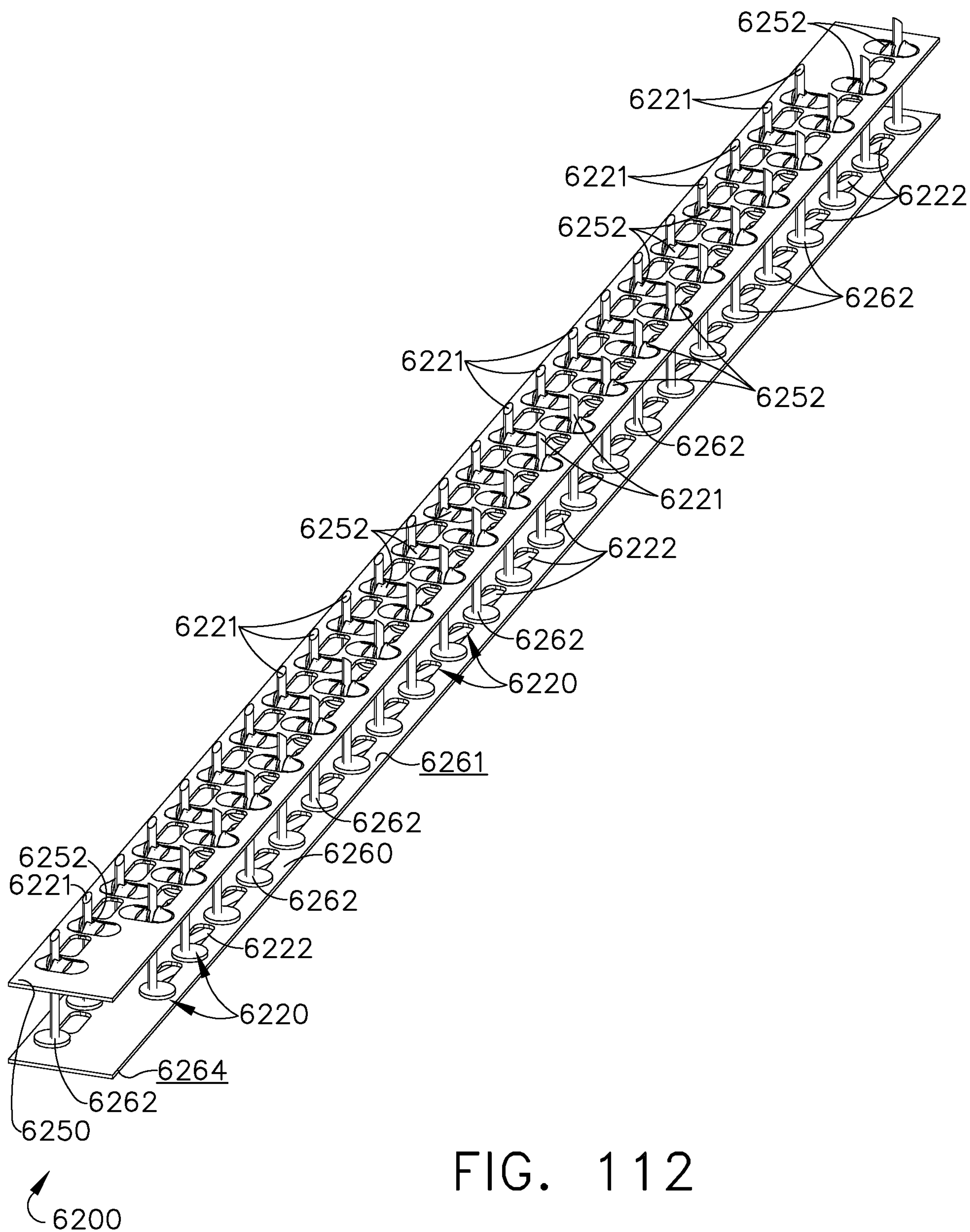


FIG. 111

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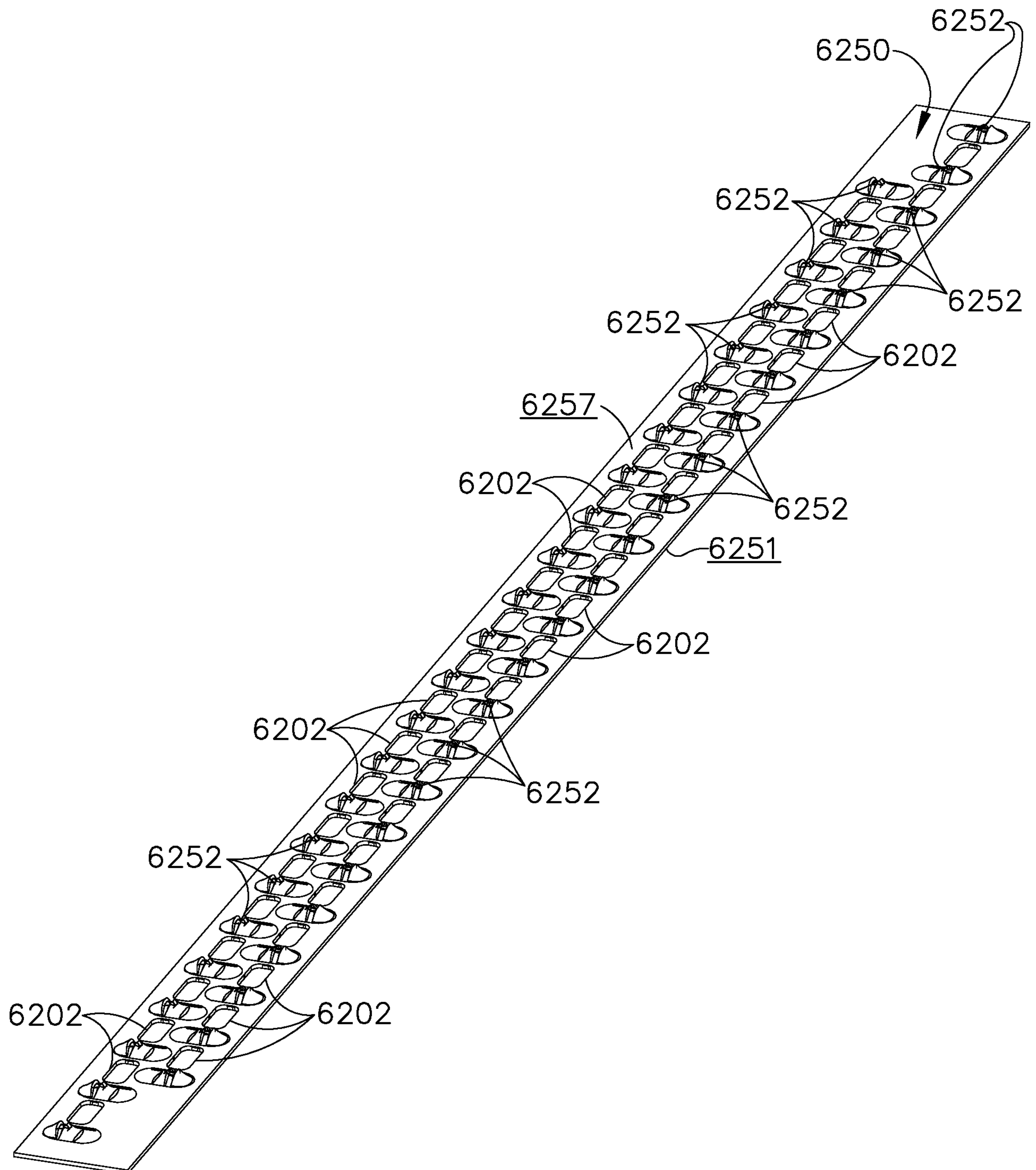


FIG. 113

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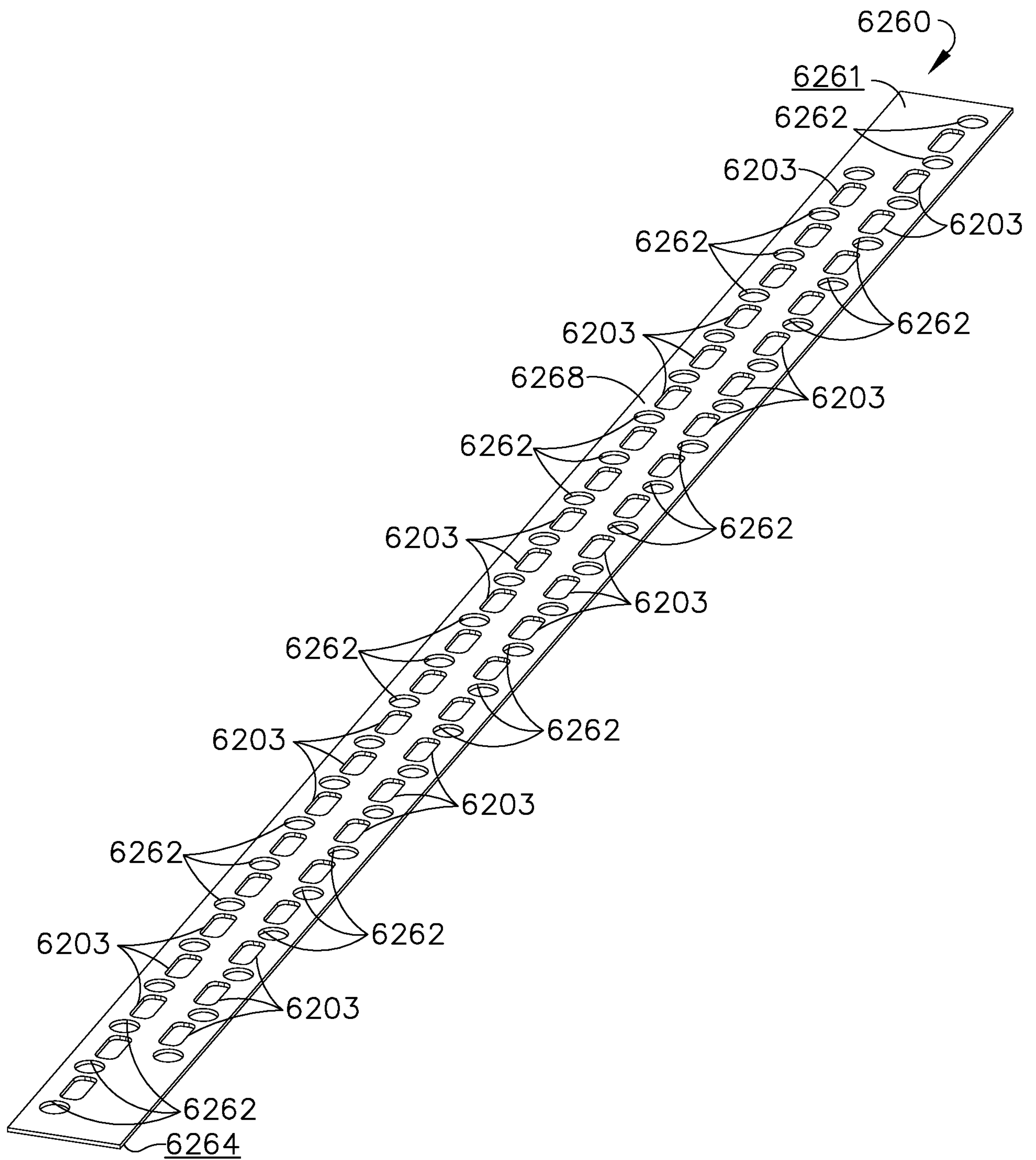


FIG. 114

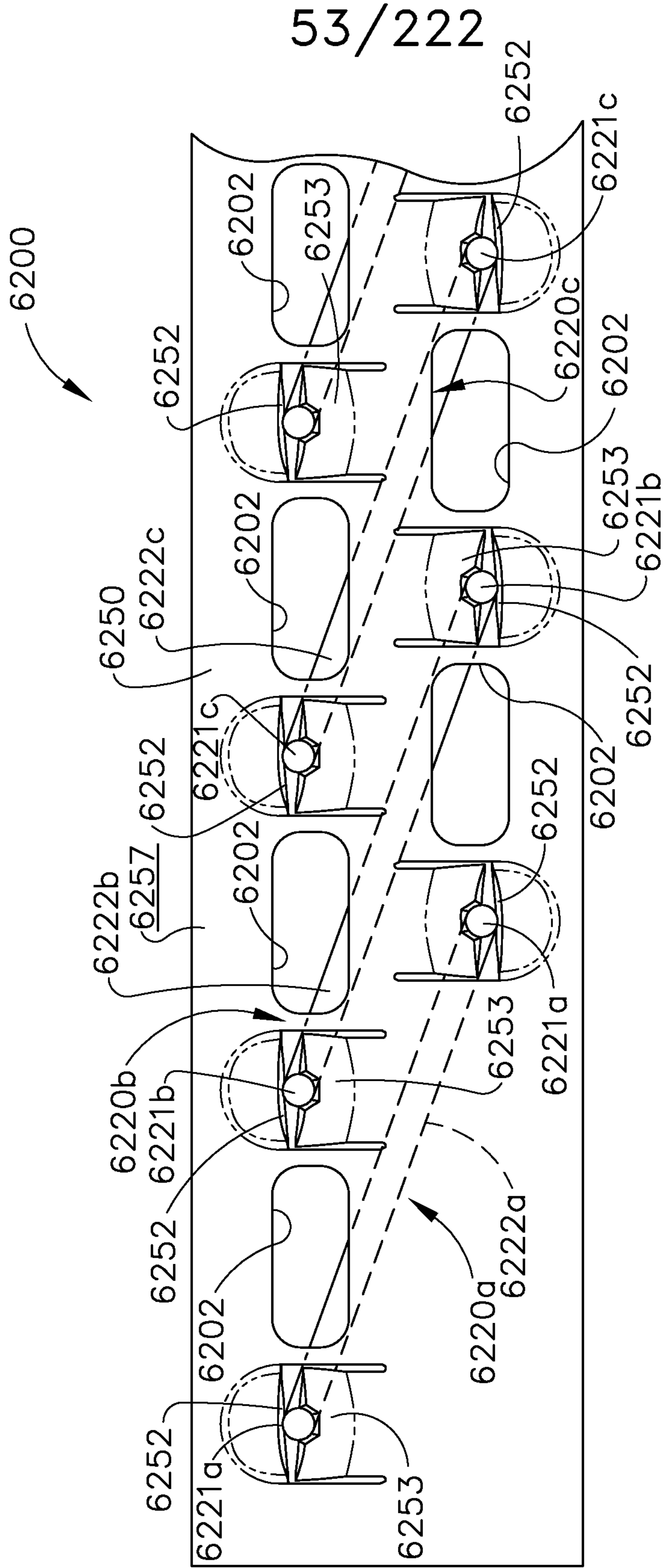


FIG. 115

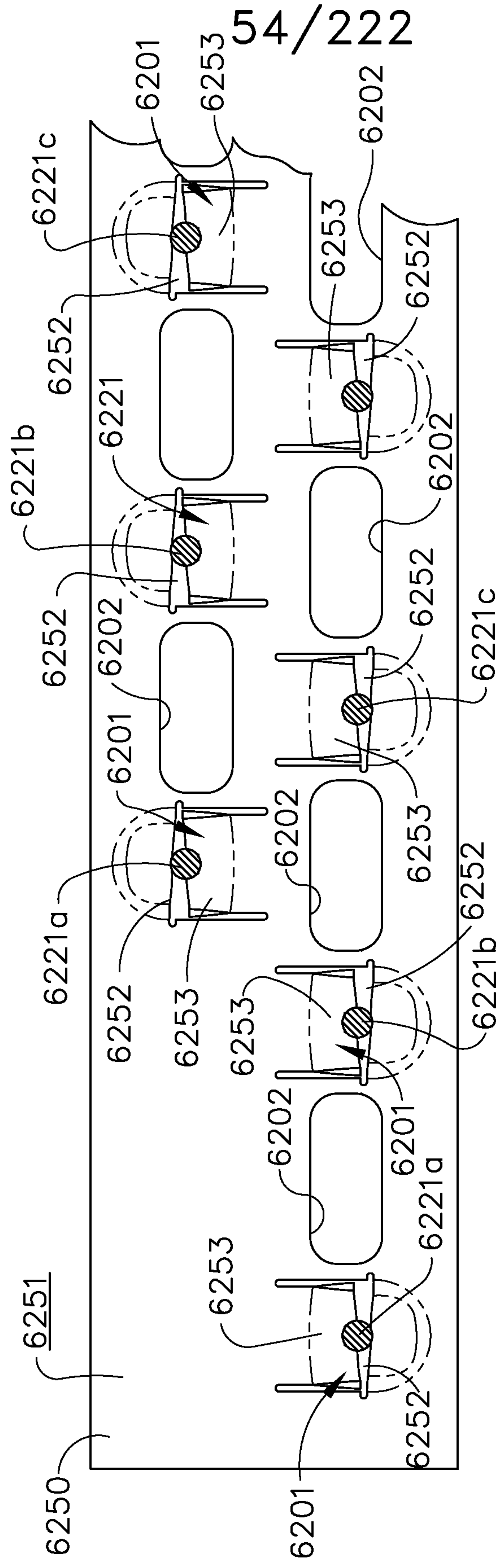


FIG. 116

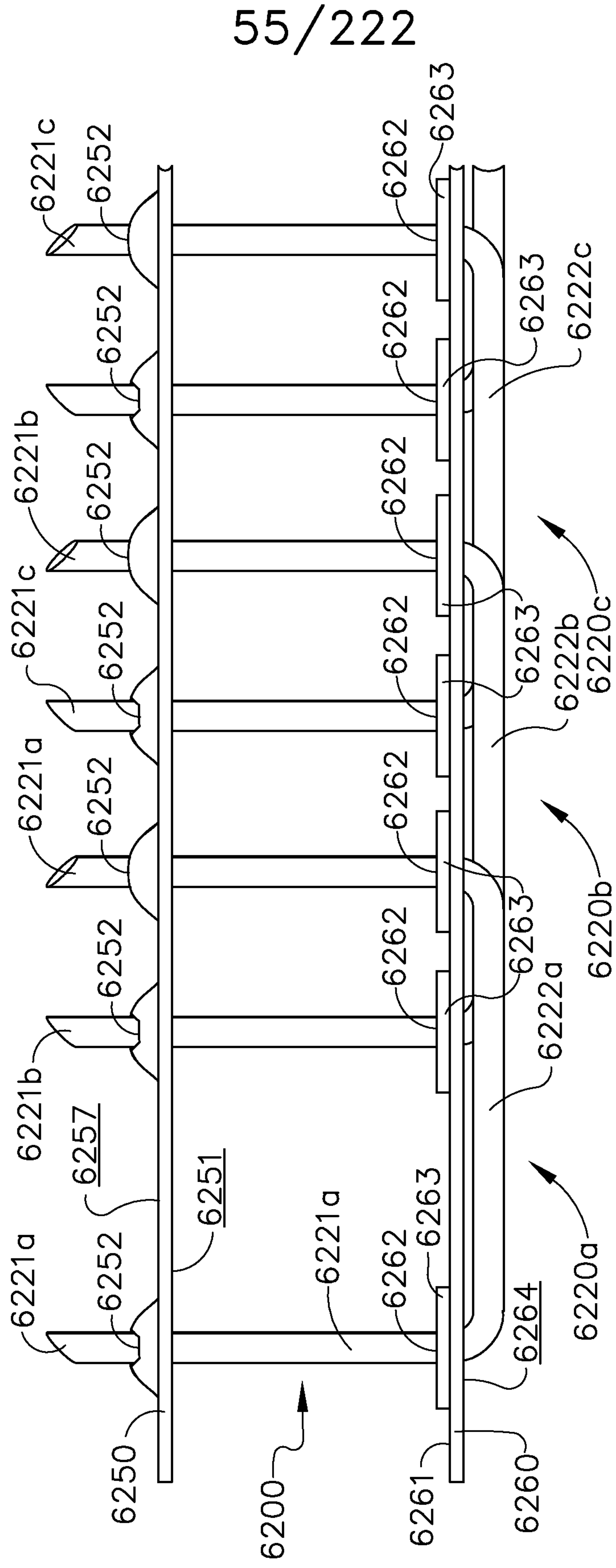


FIG. 117

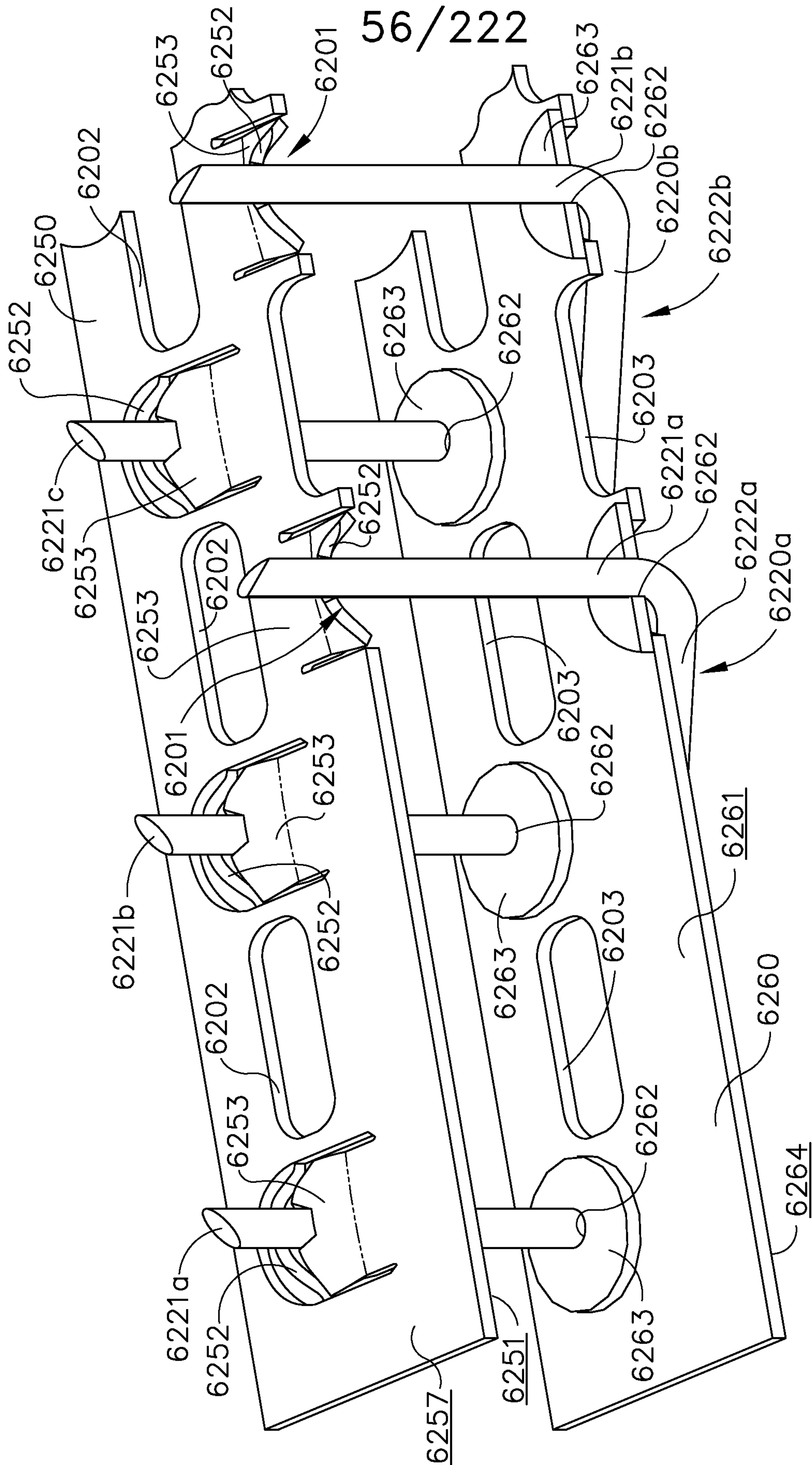


FIG. 118

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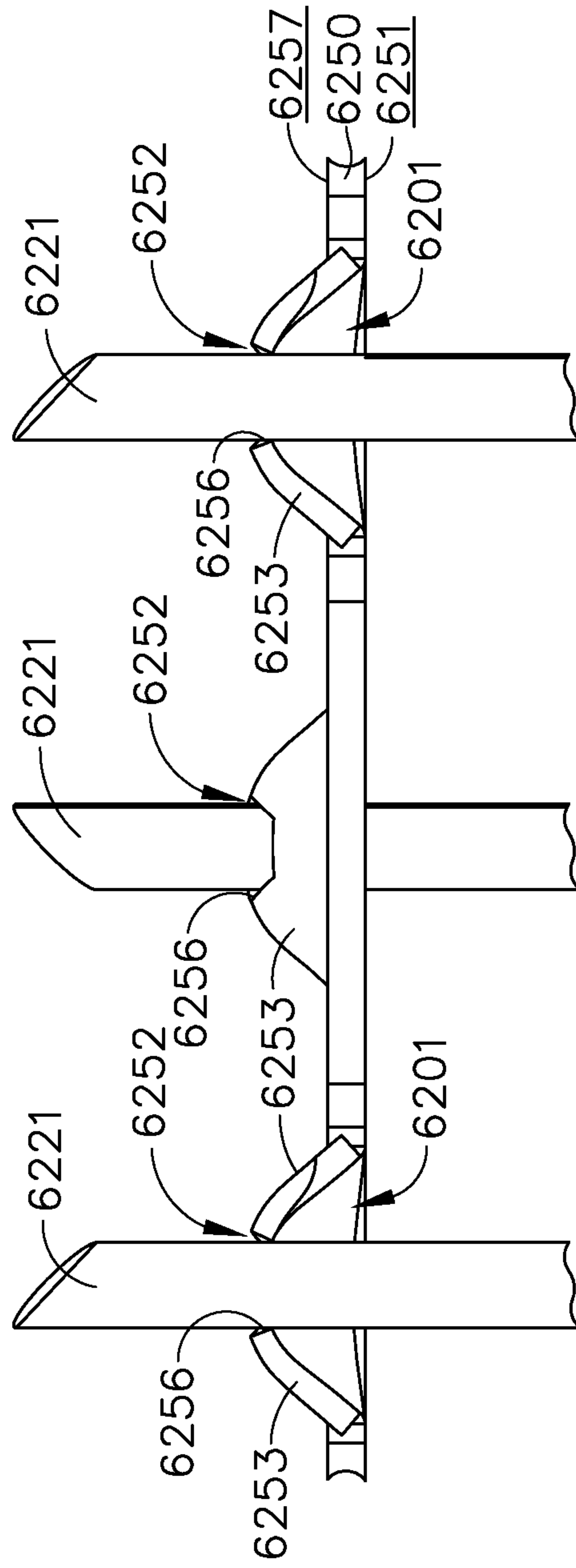


FIG. 119

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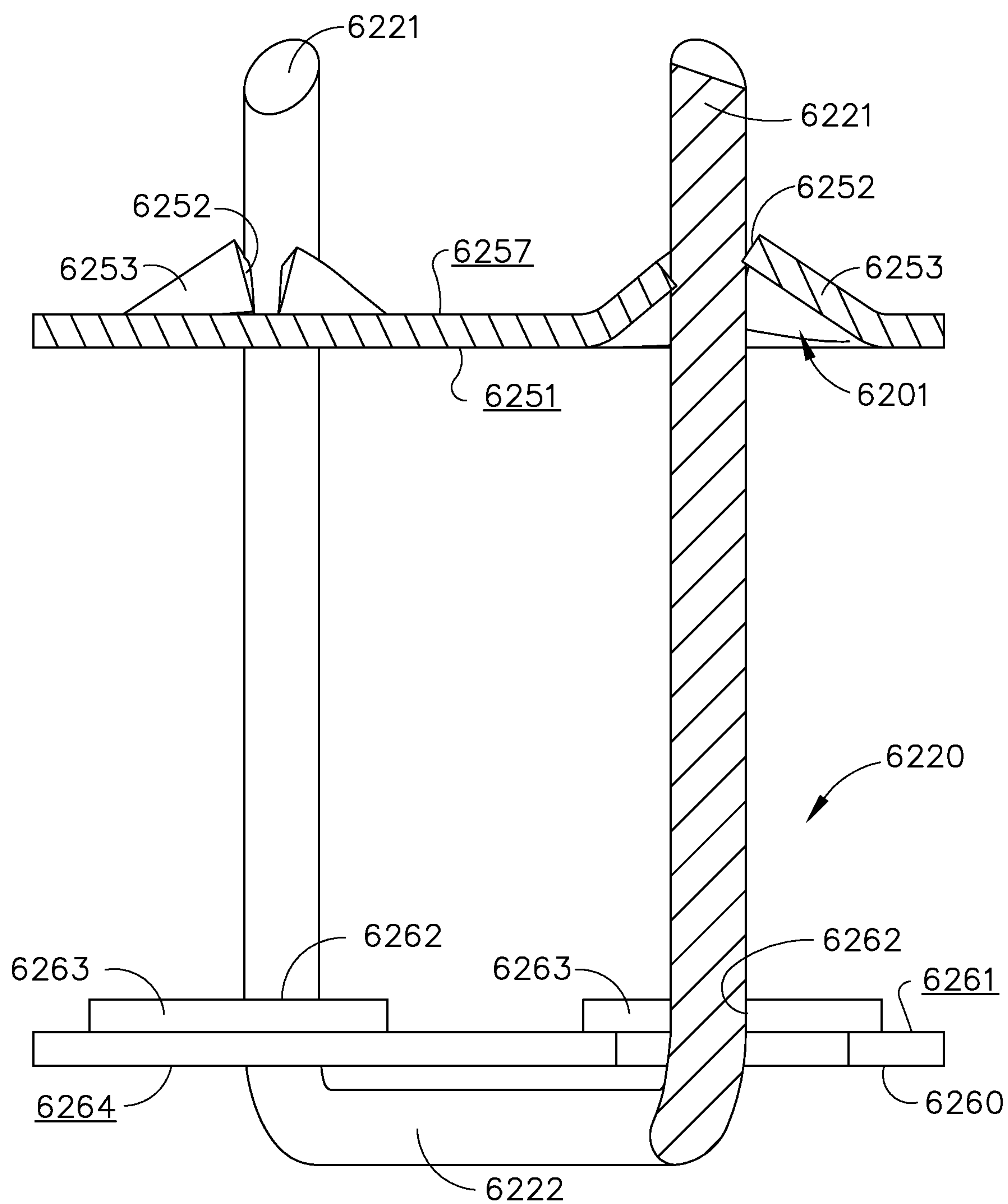


FIG. 120

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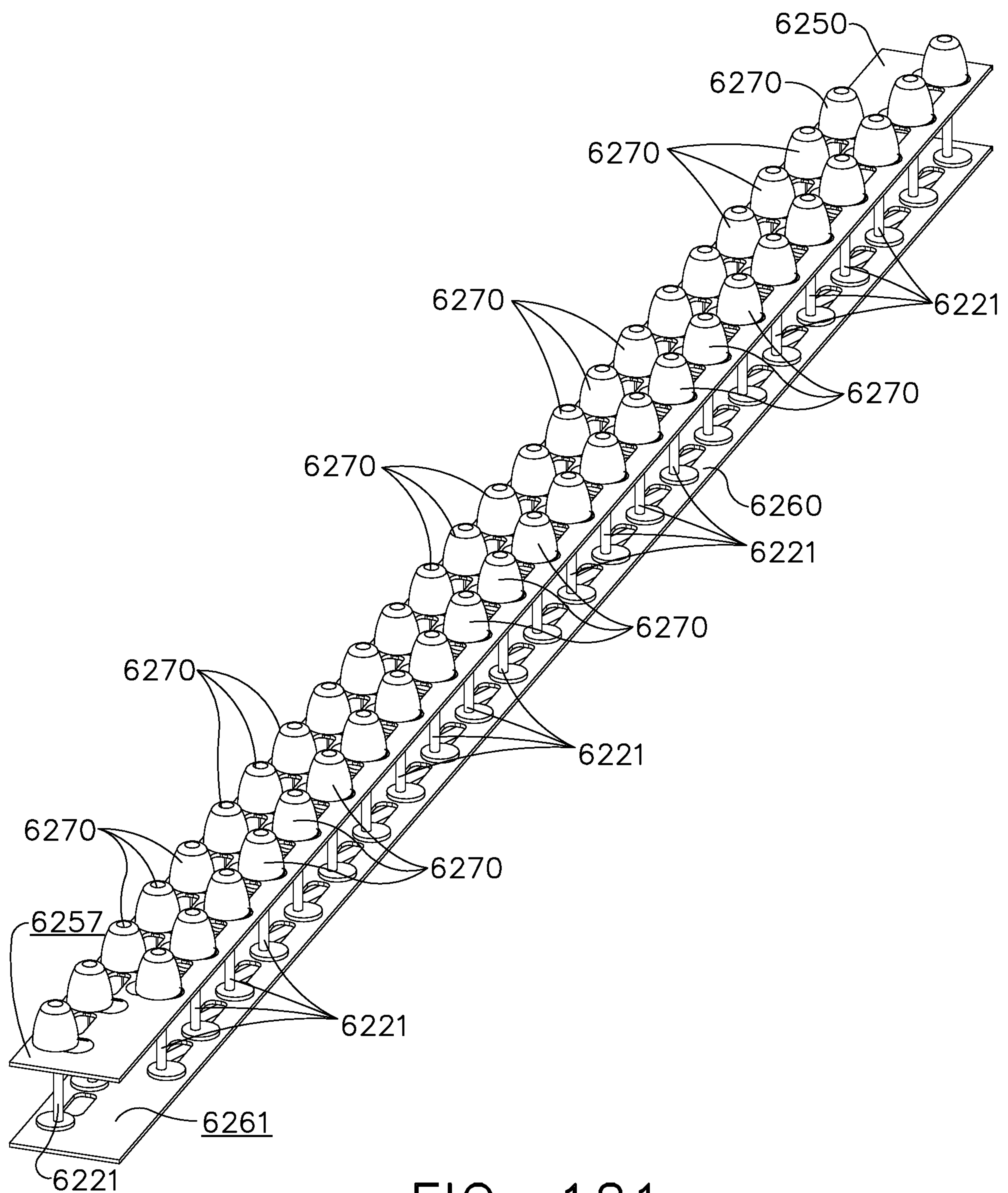
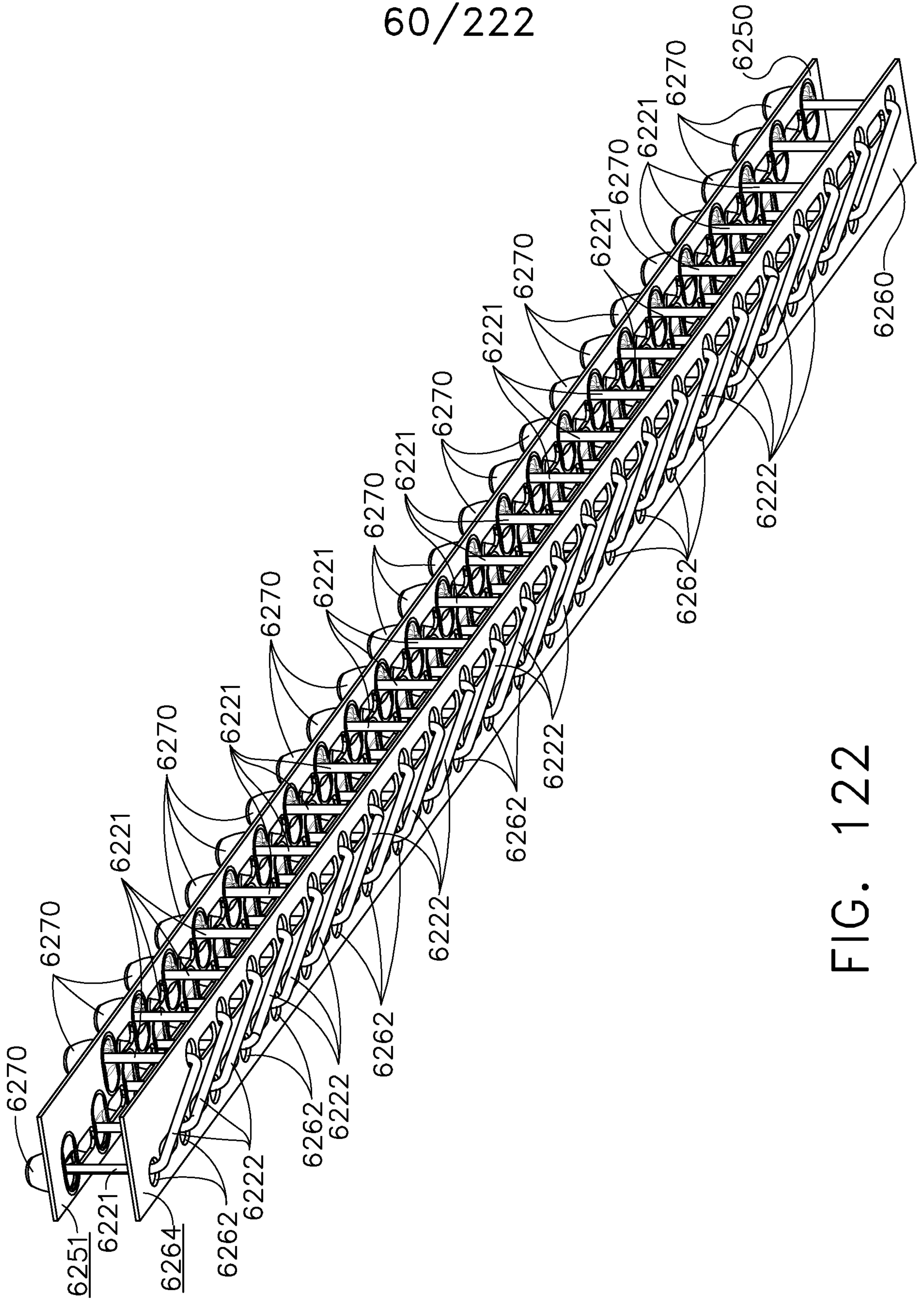


FIG. 121



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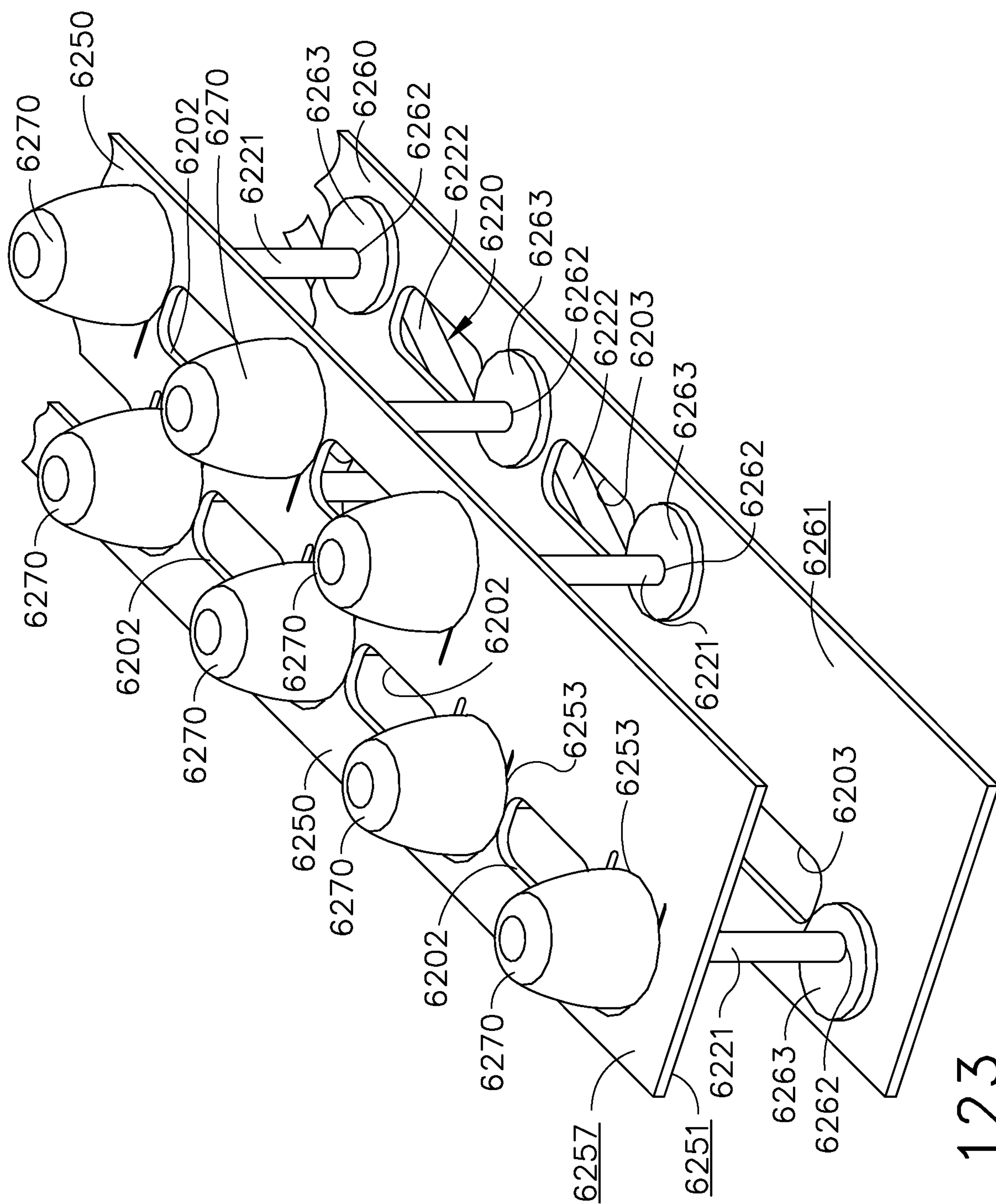


FIG. 123

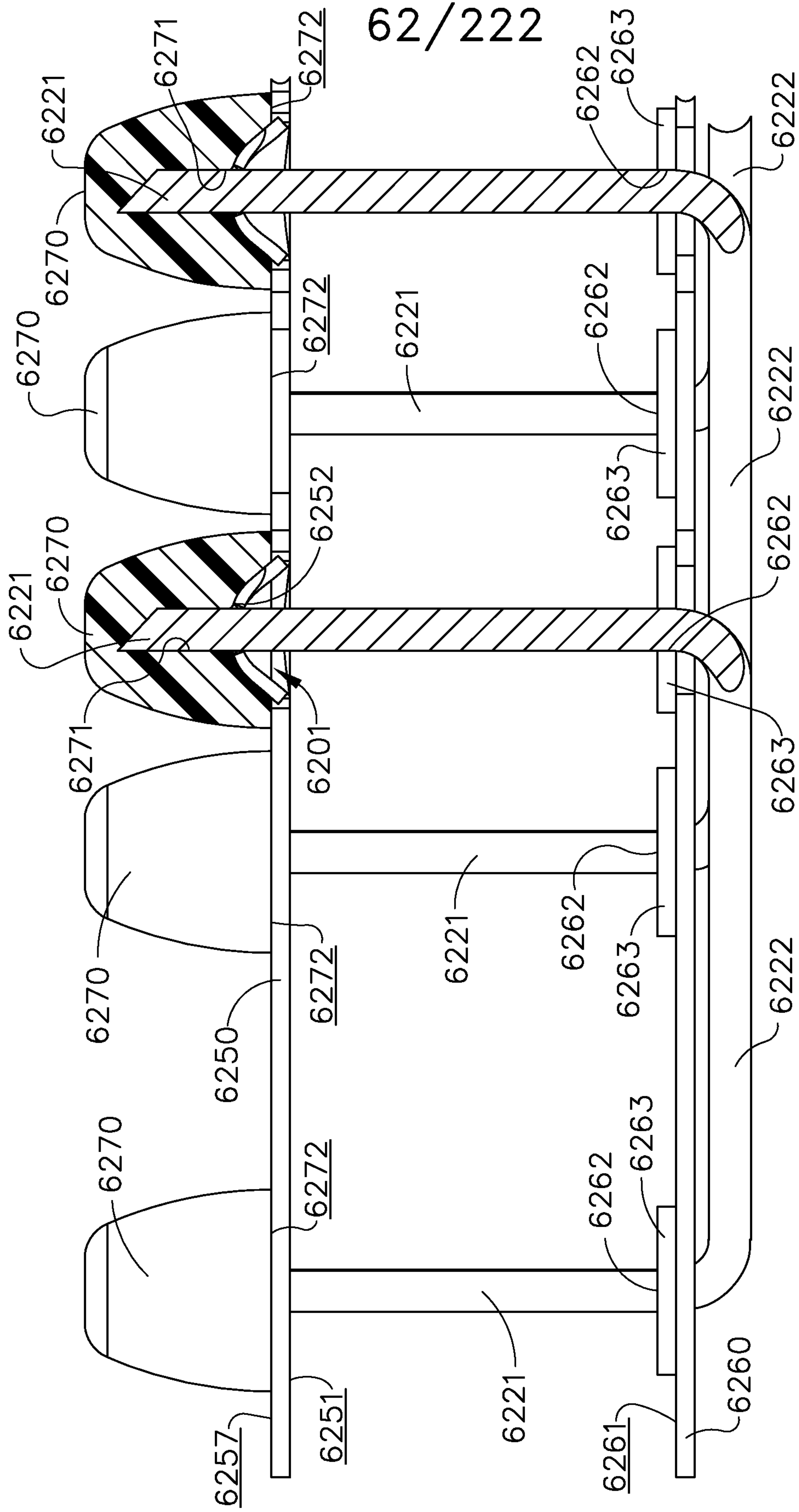
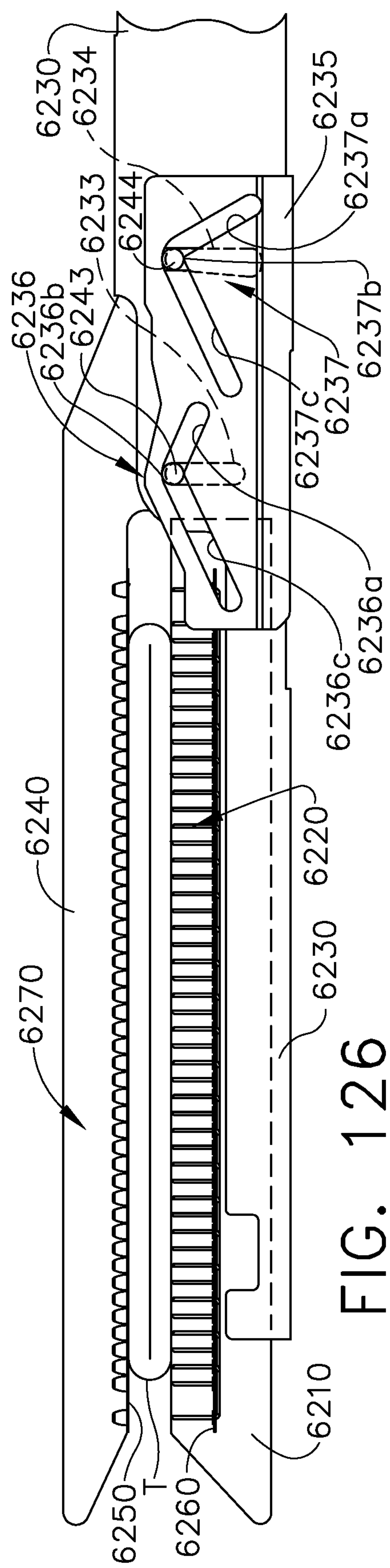
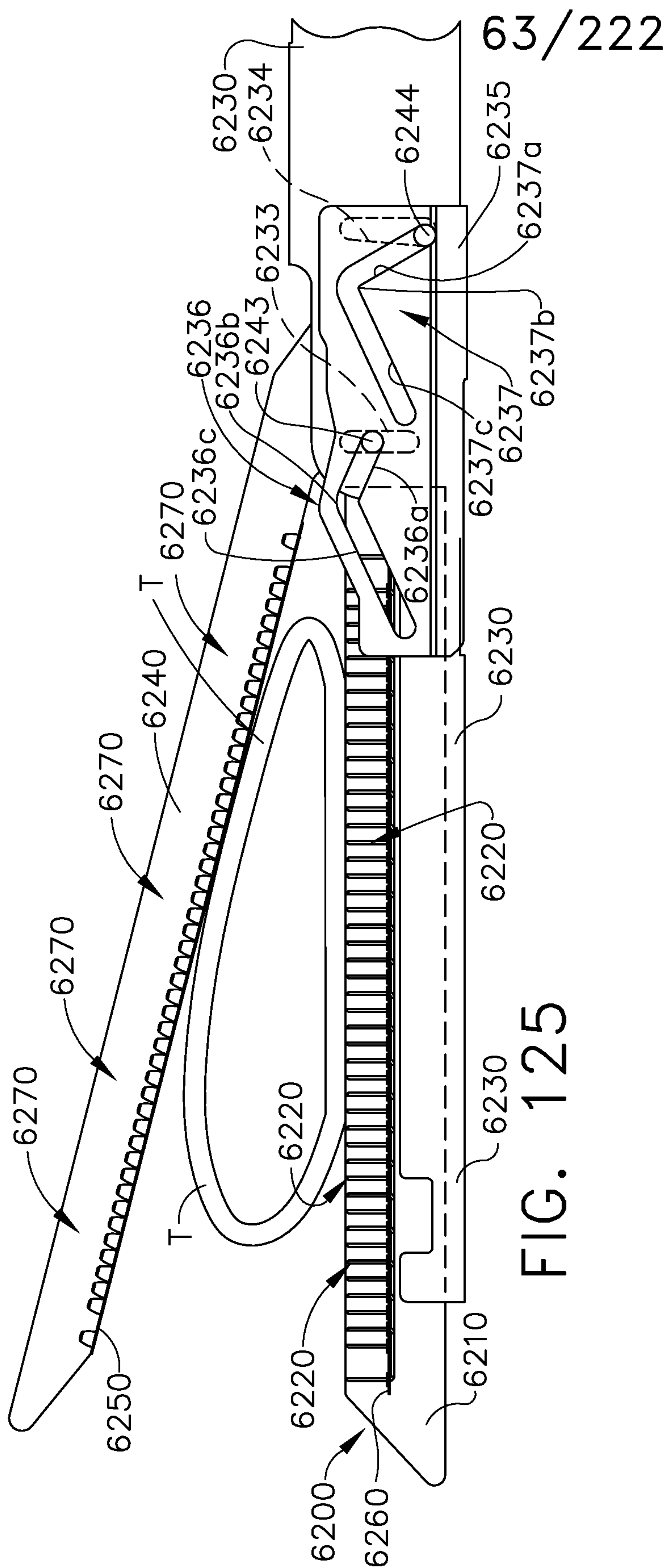


FIG. 124



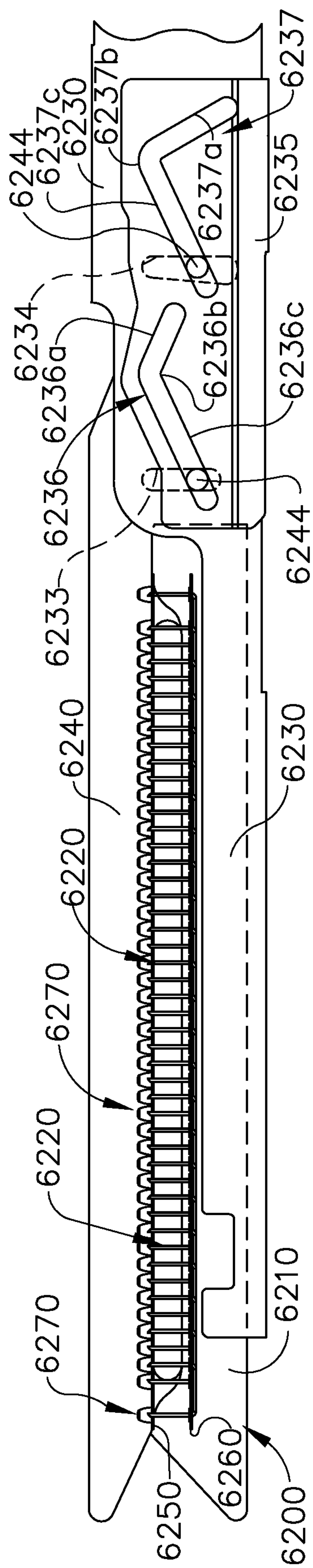


FIG. 127

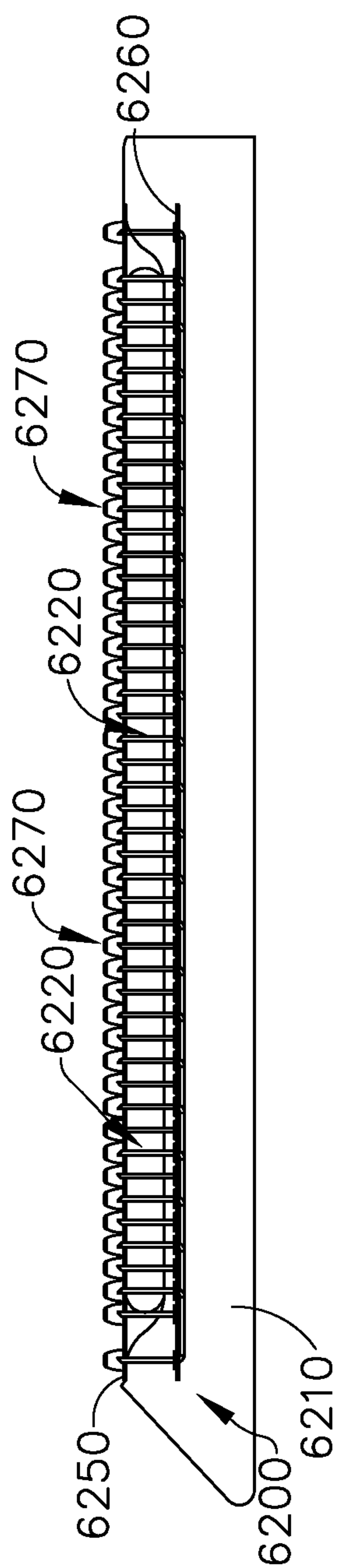


FIG. 128

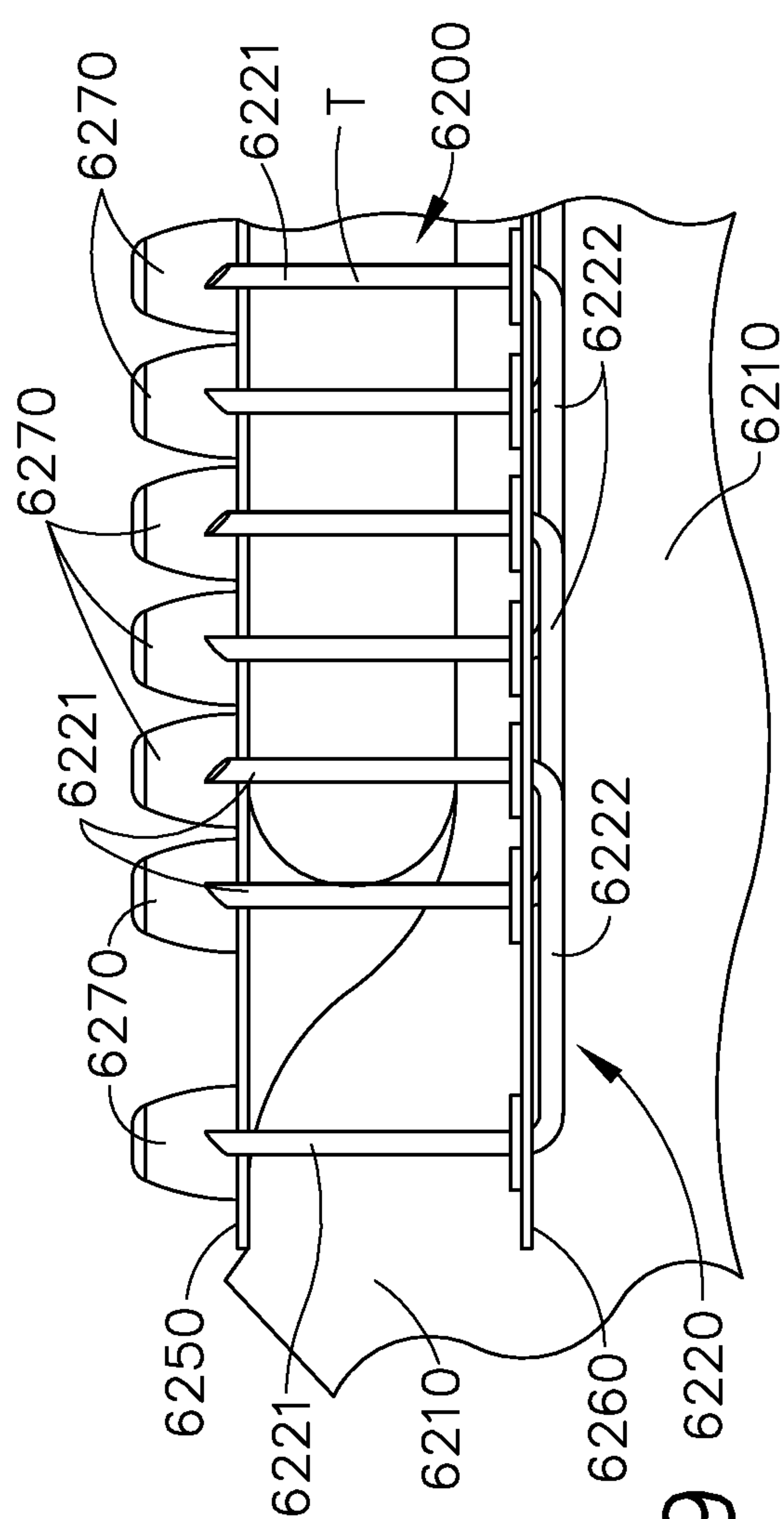
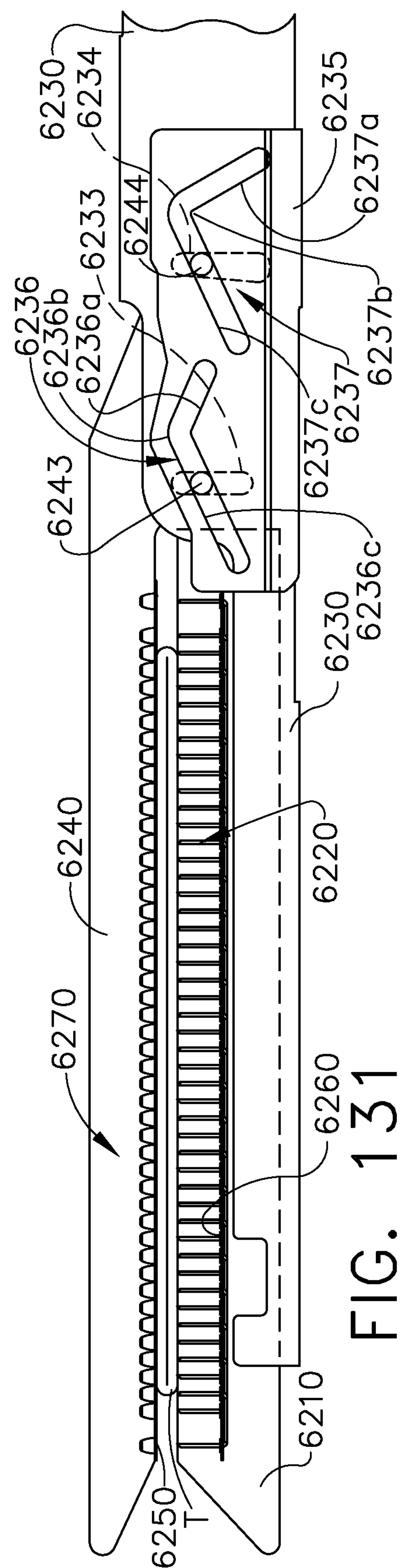
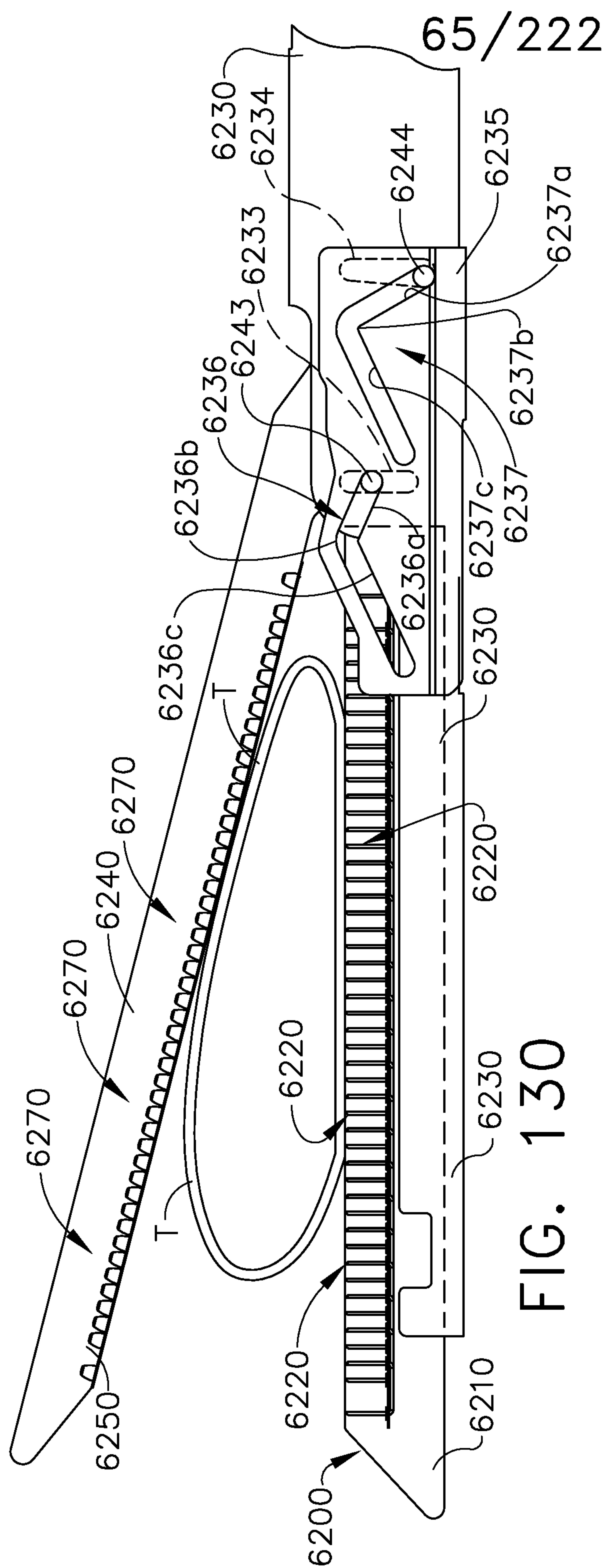


FIG. 129.



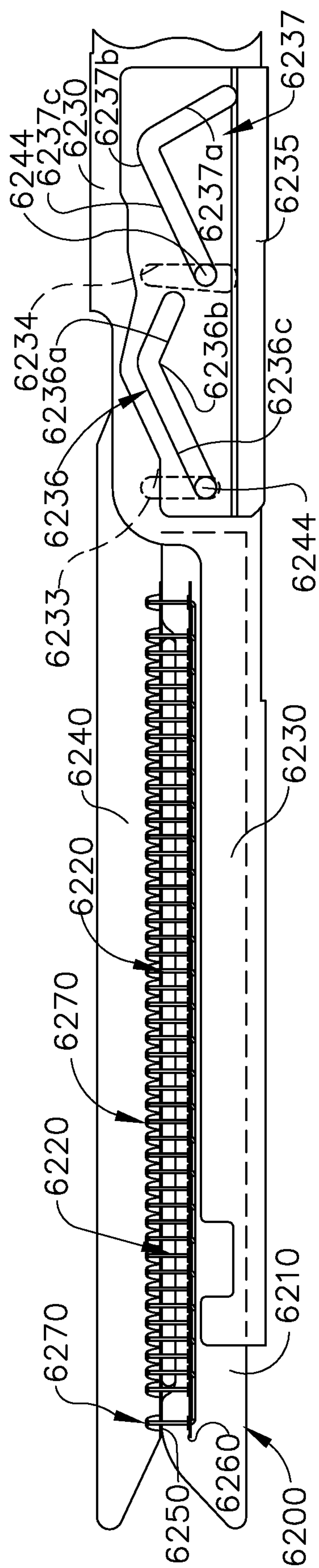


FIG. 132

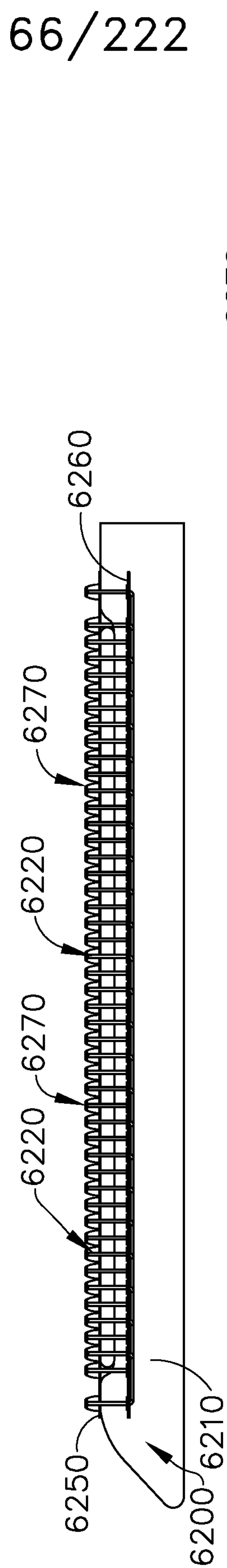


FIG. 133

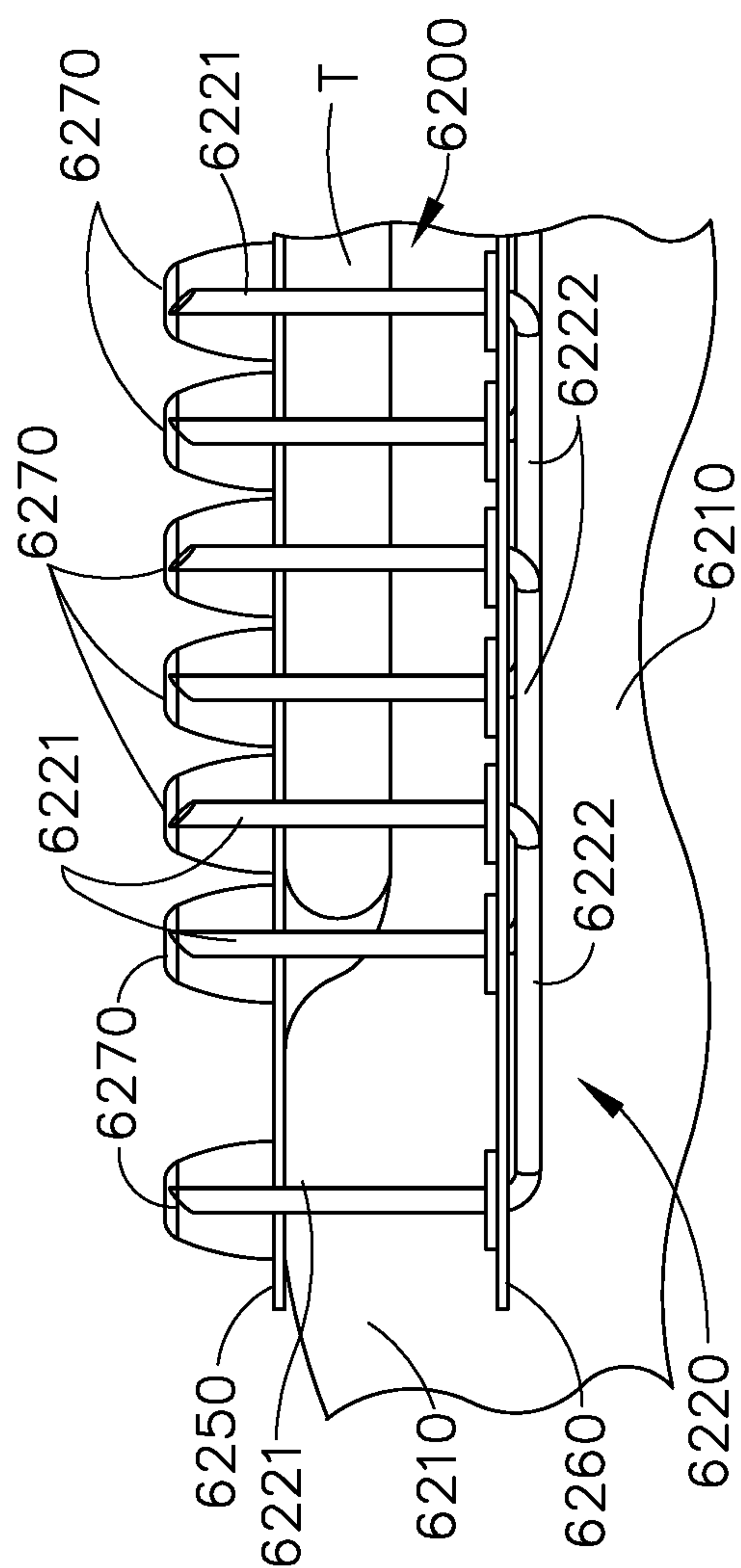


FIG. 134.

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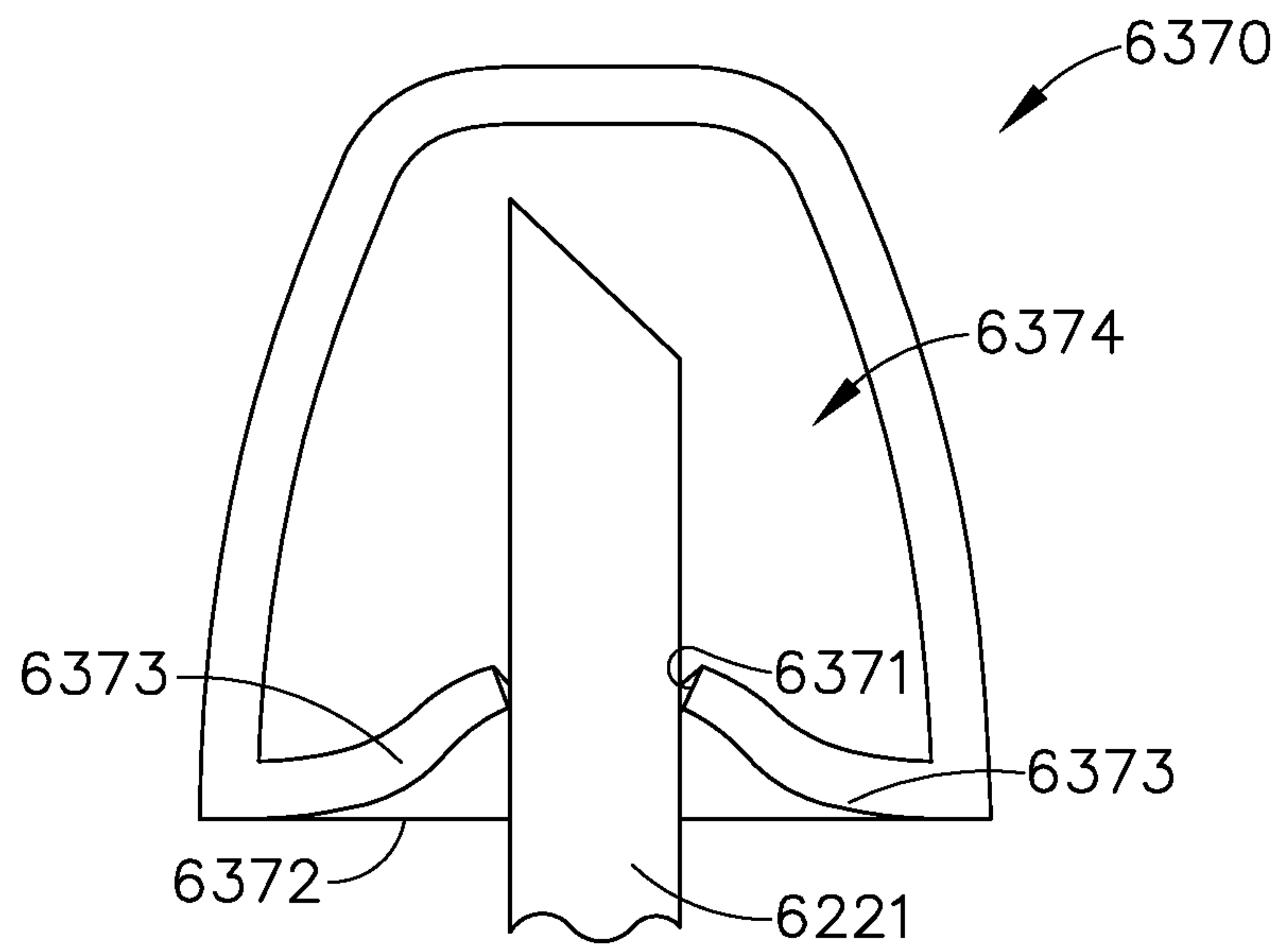


FIG. 135

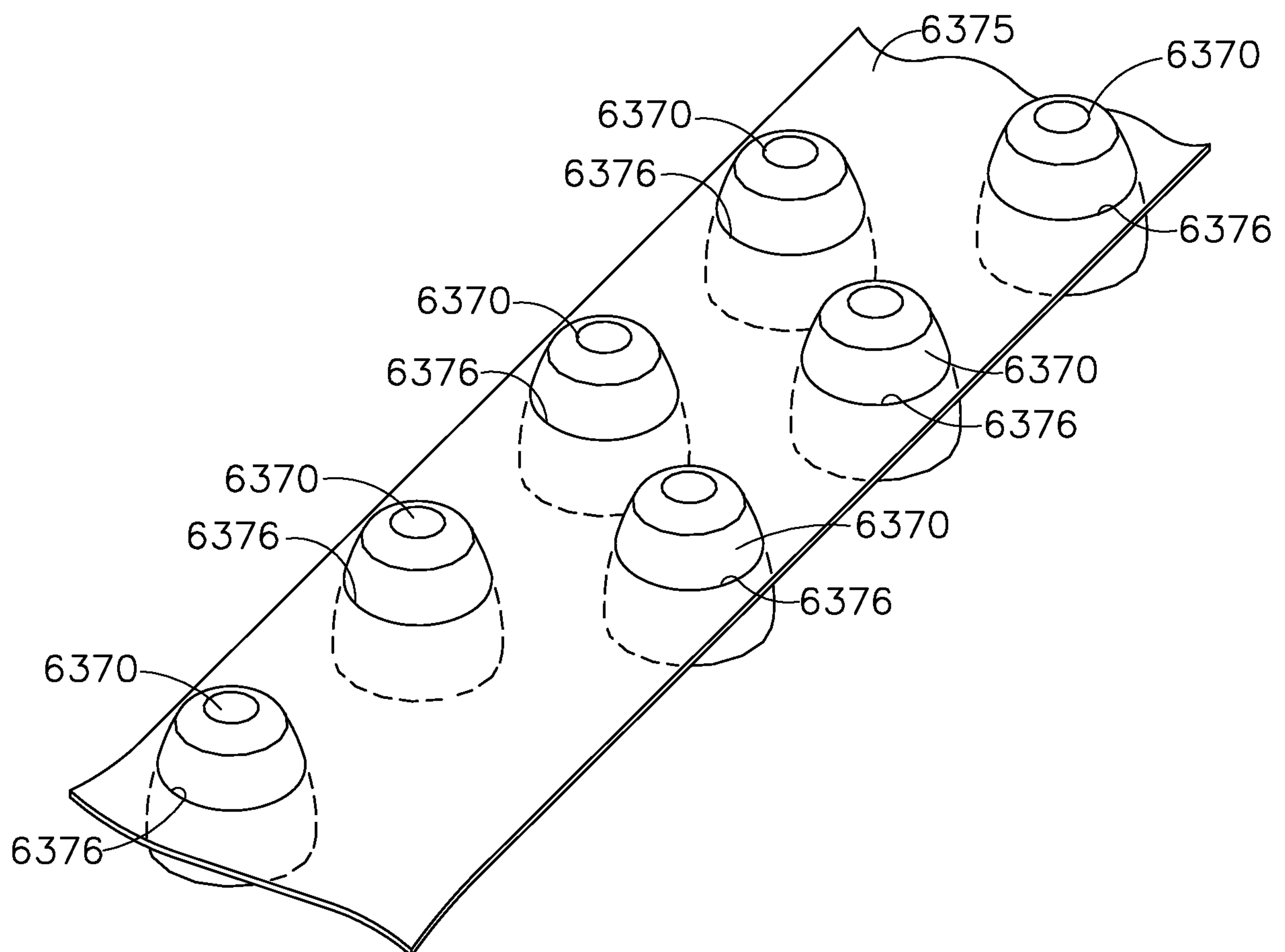


FIG. 136

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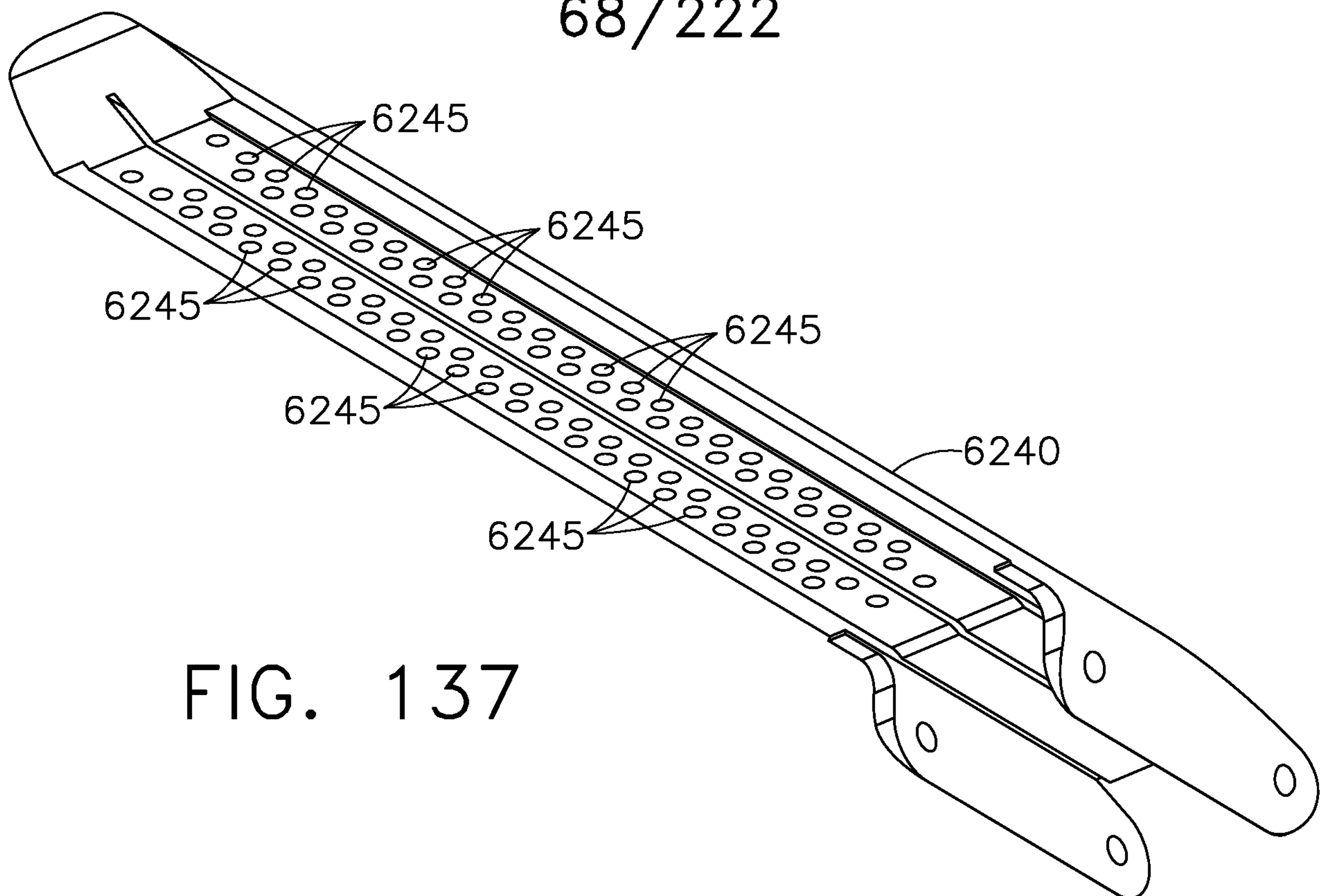


FIG. 137

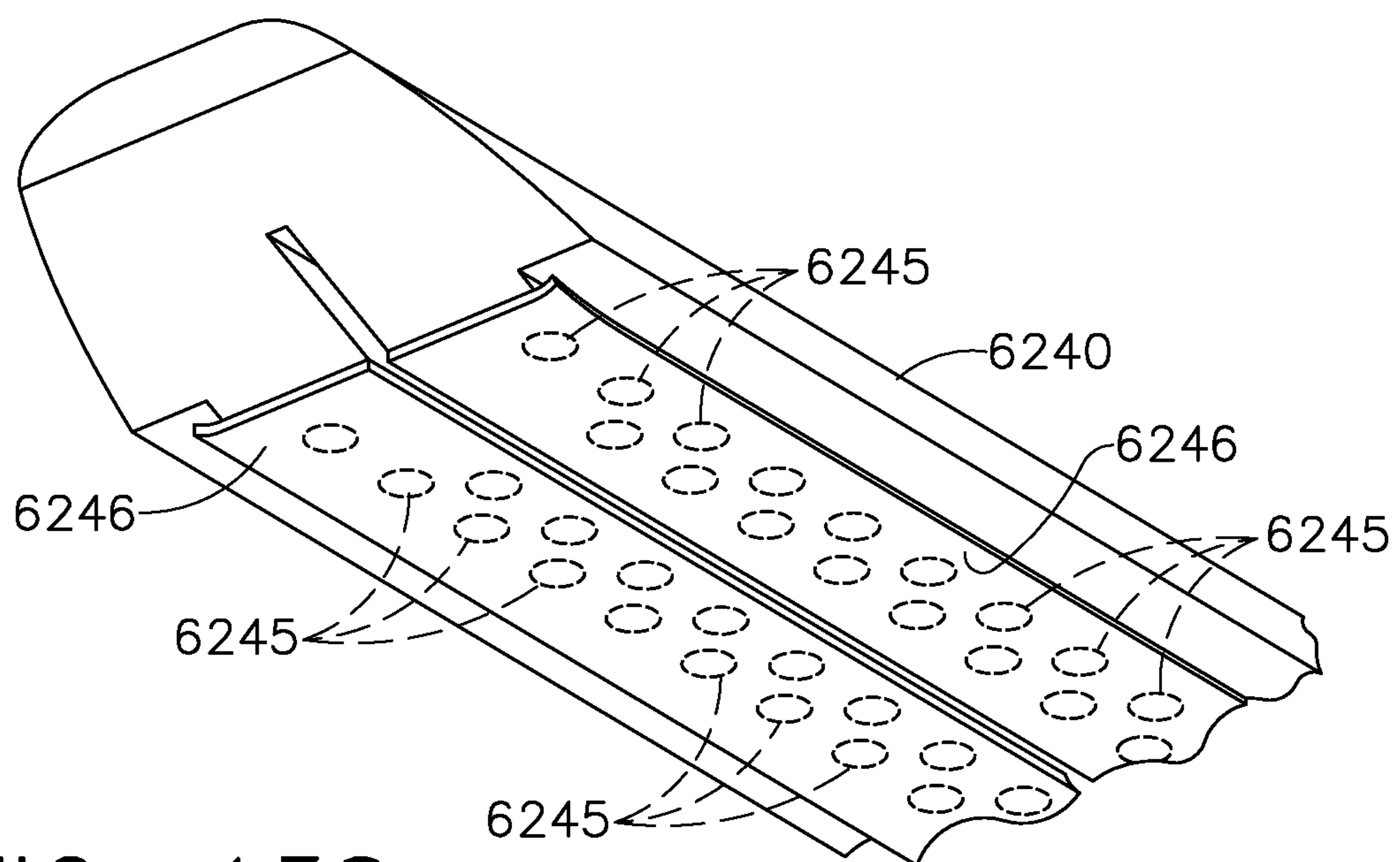


FIG. 138

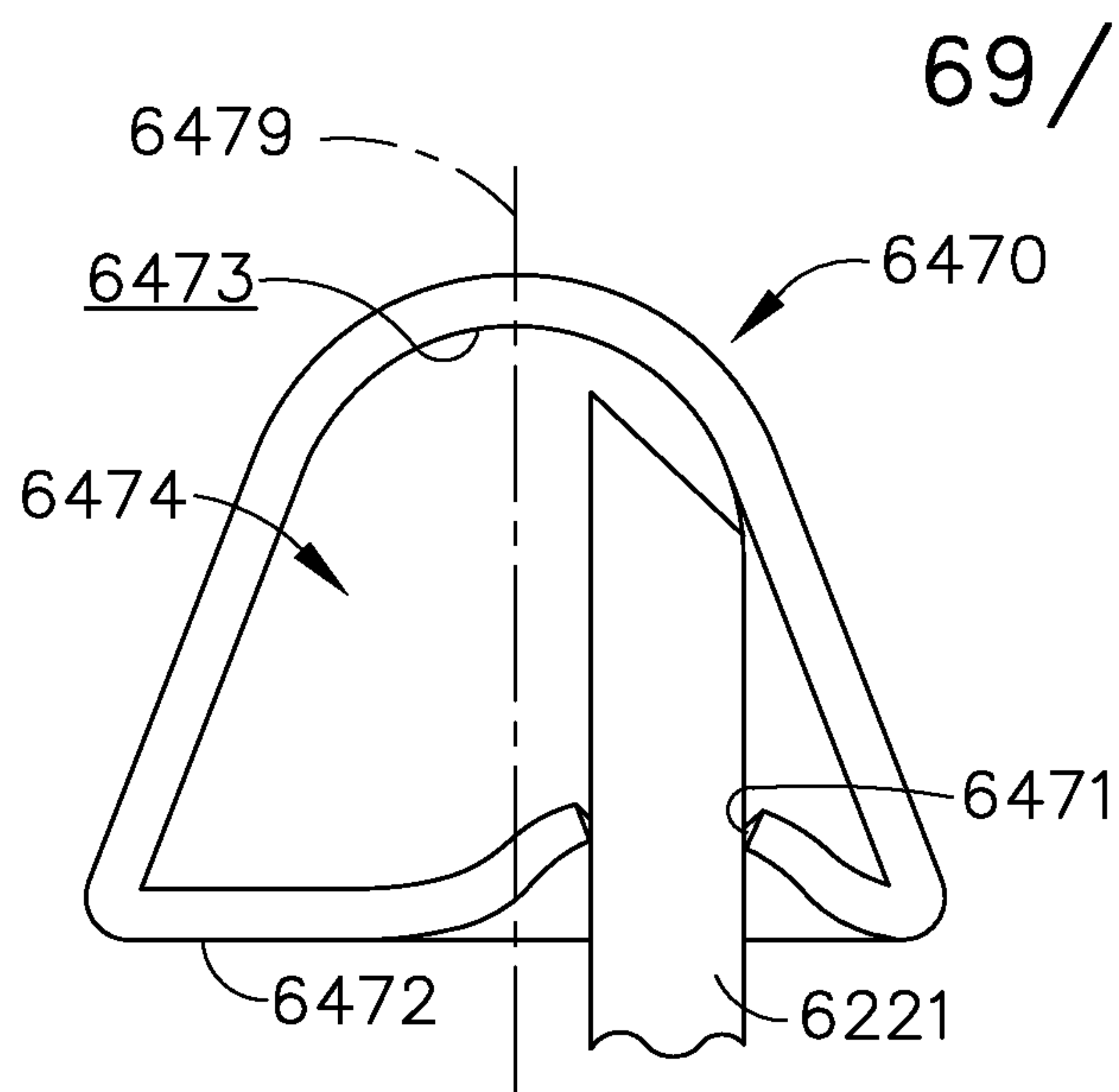


FIG. 139

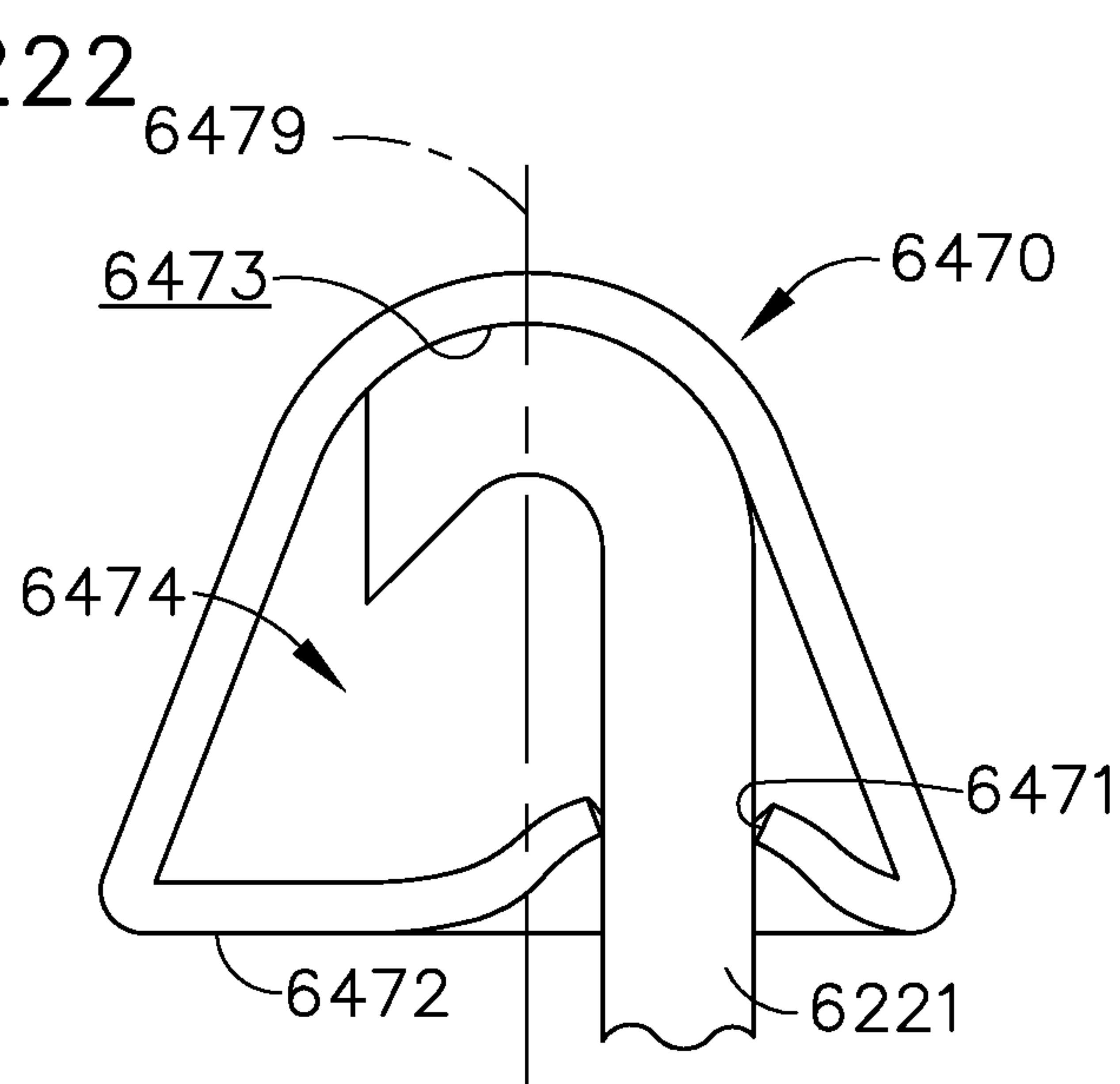


FIG. 140

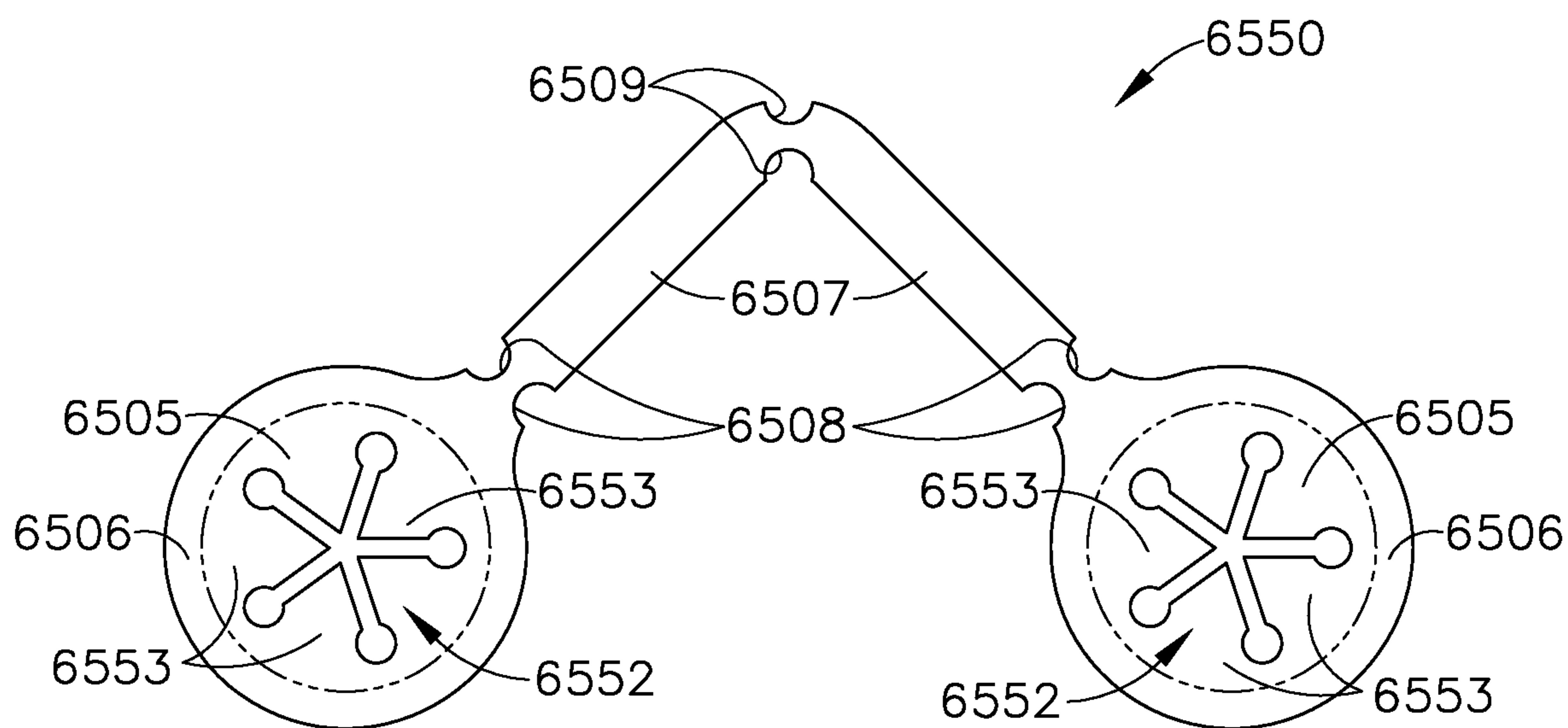


FIG. 141

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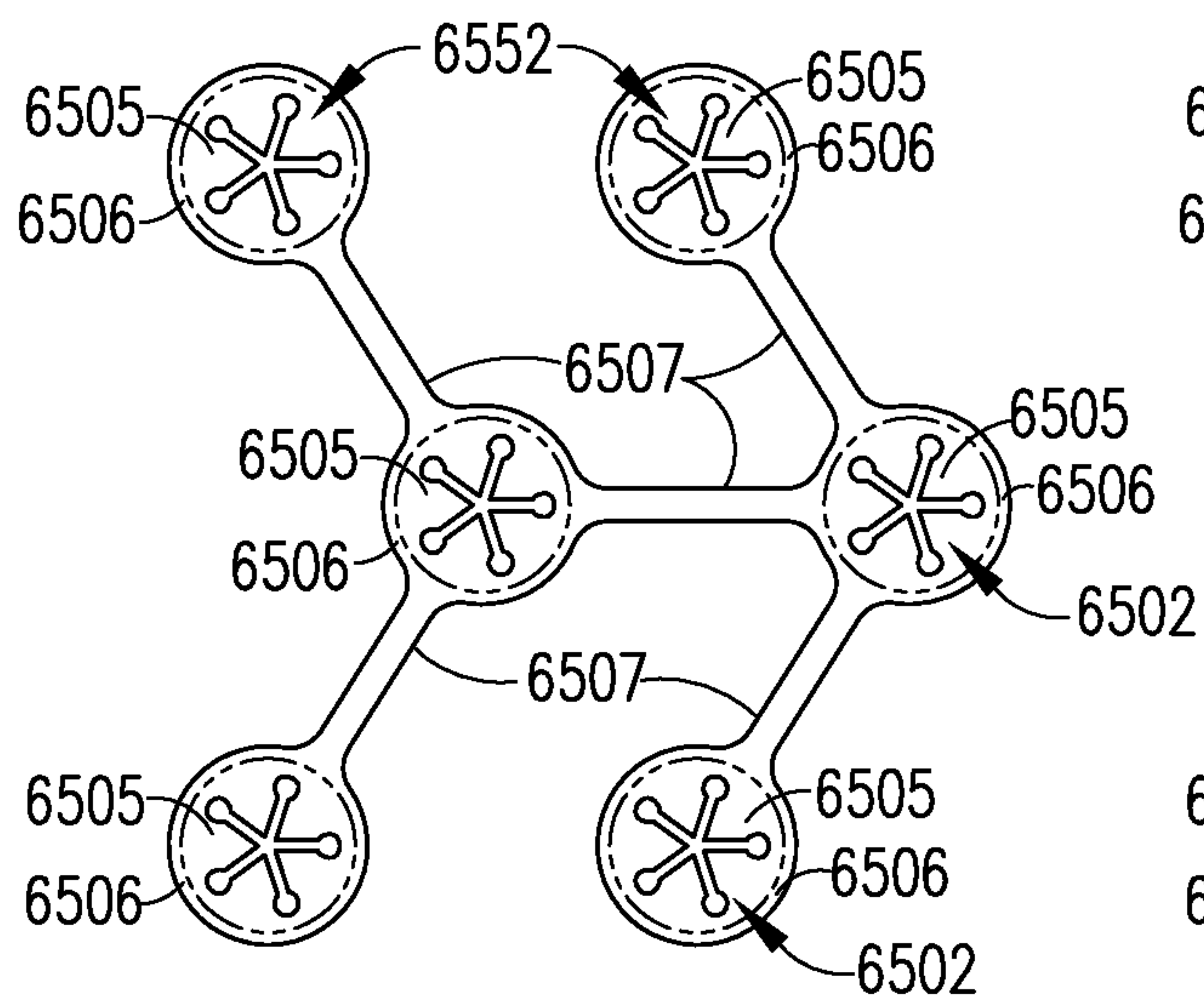


FIG. 142

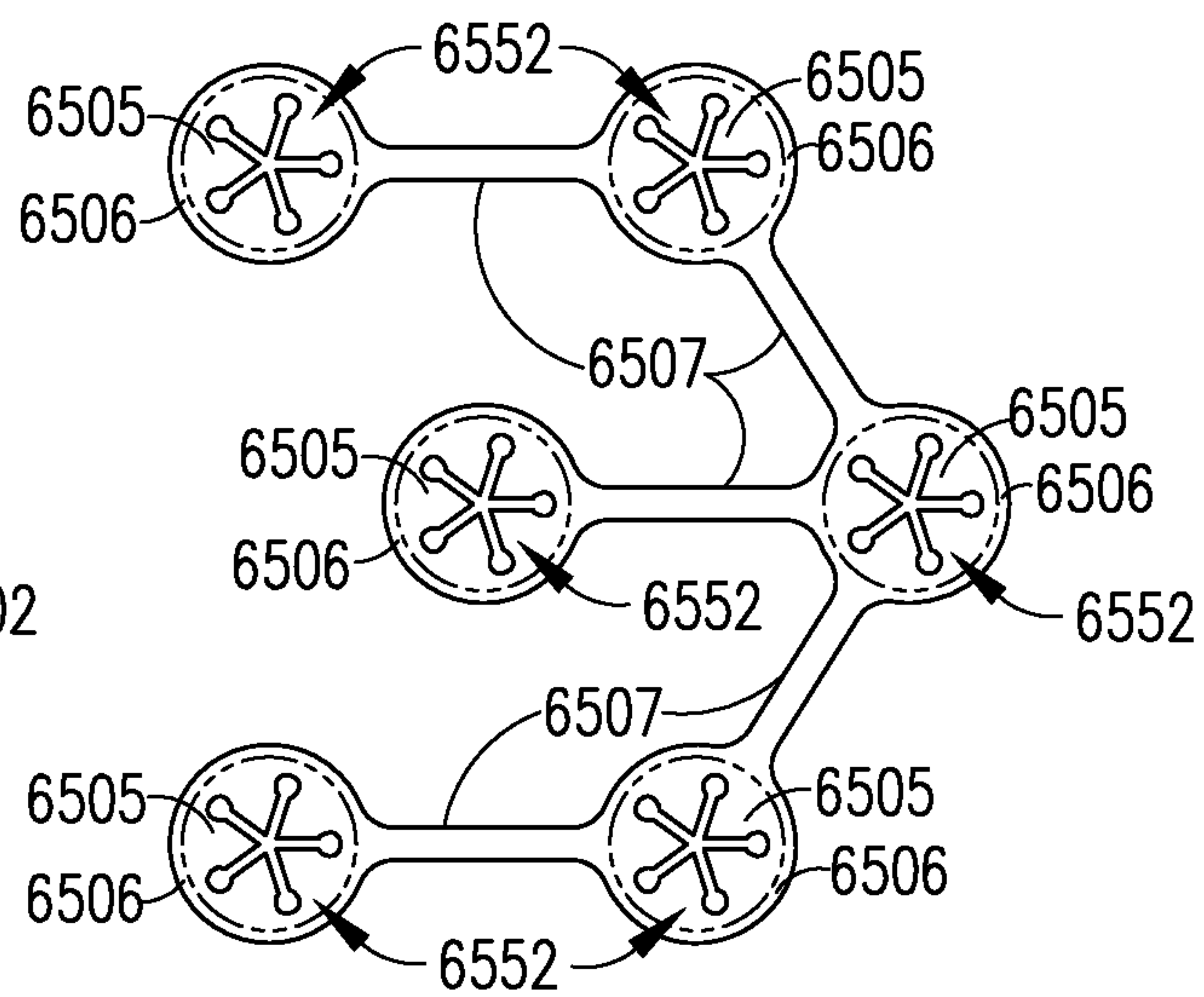


FIG. 143

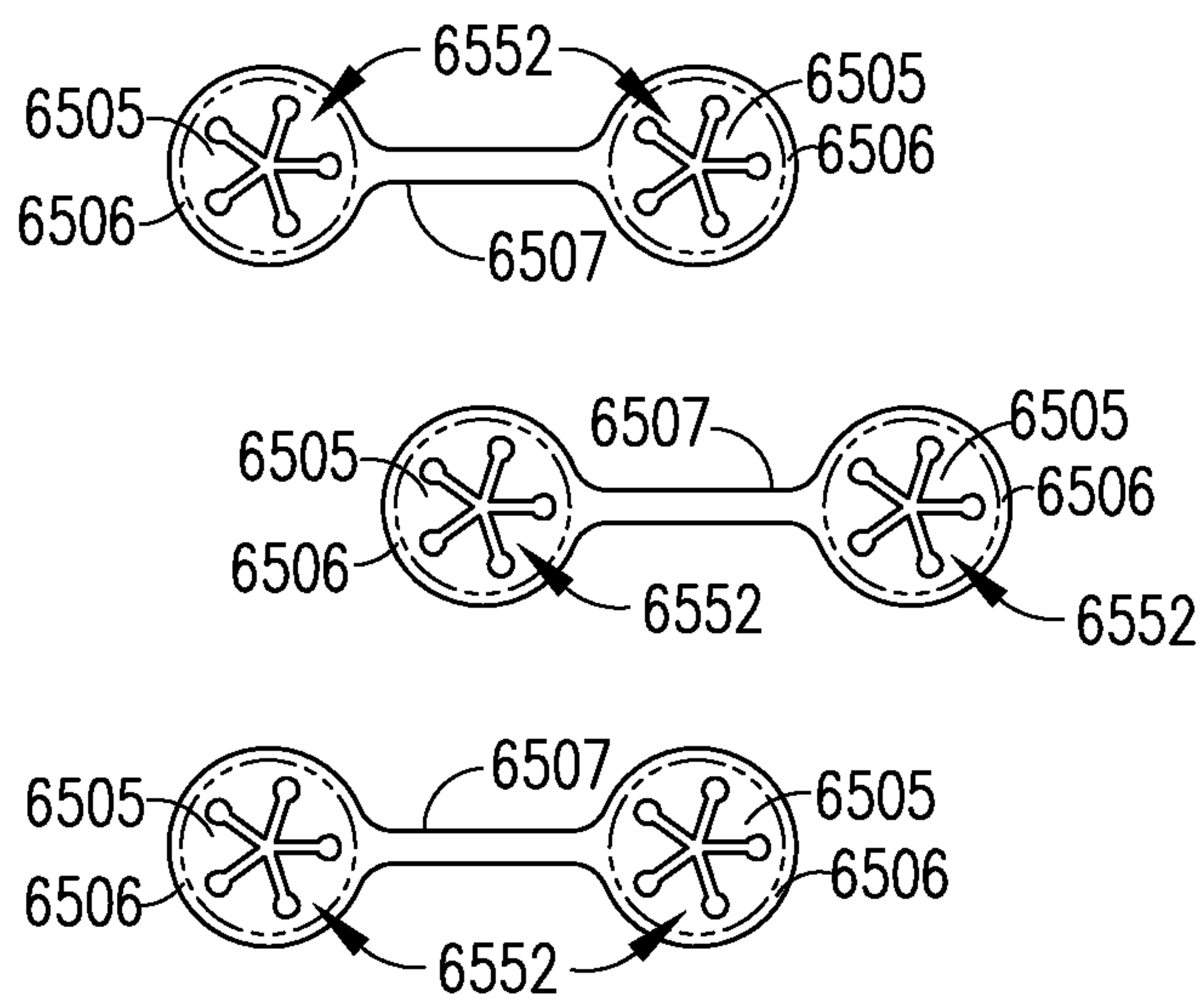


FIG. 144

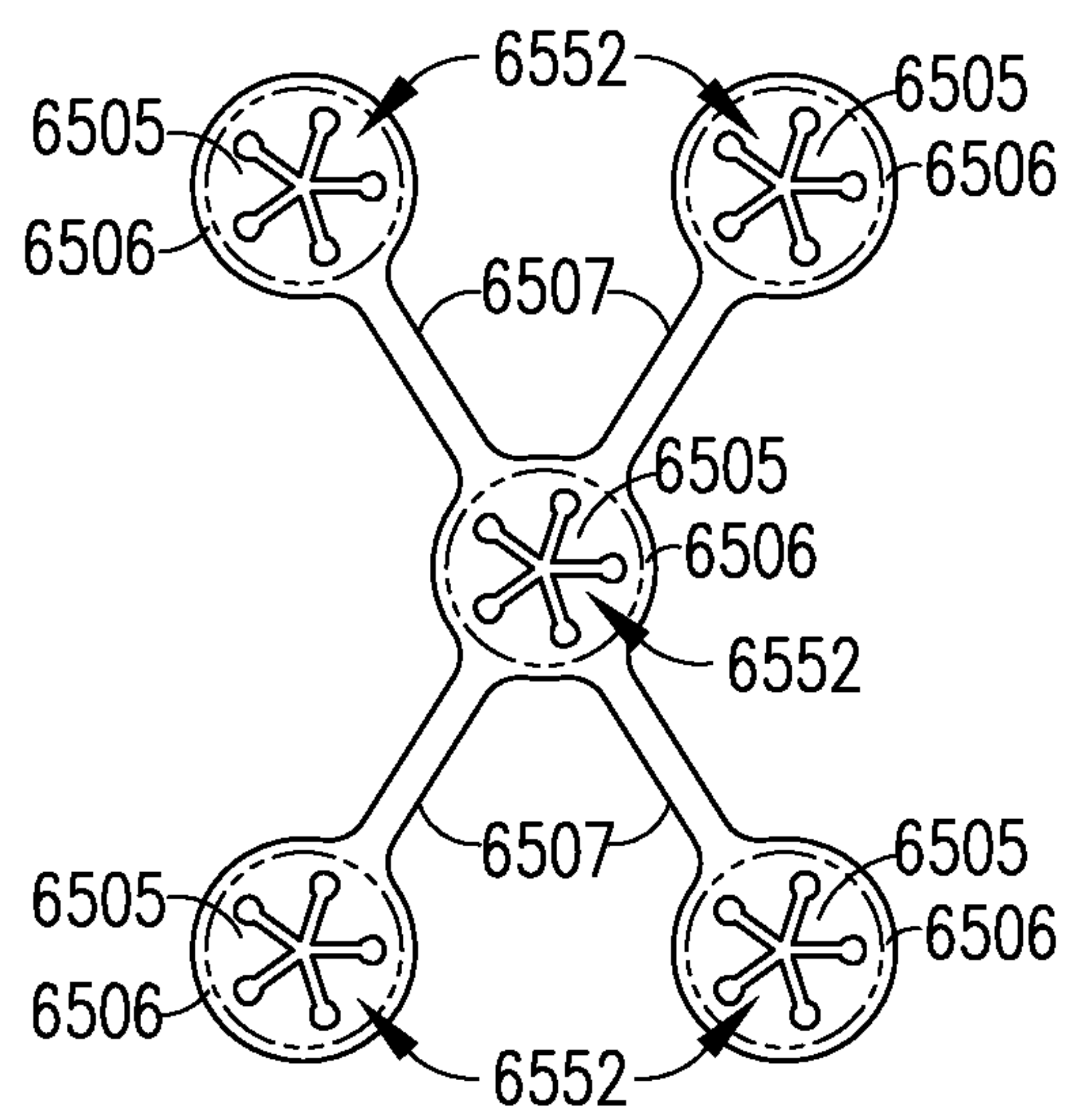
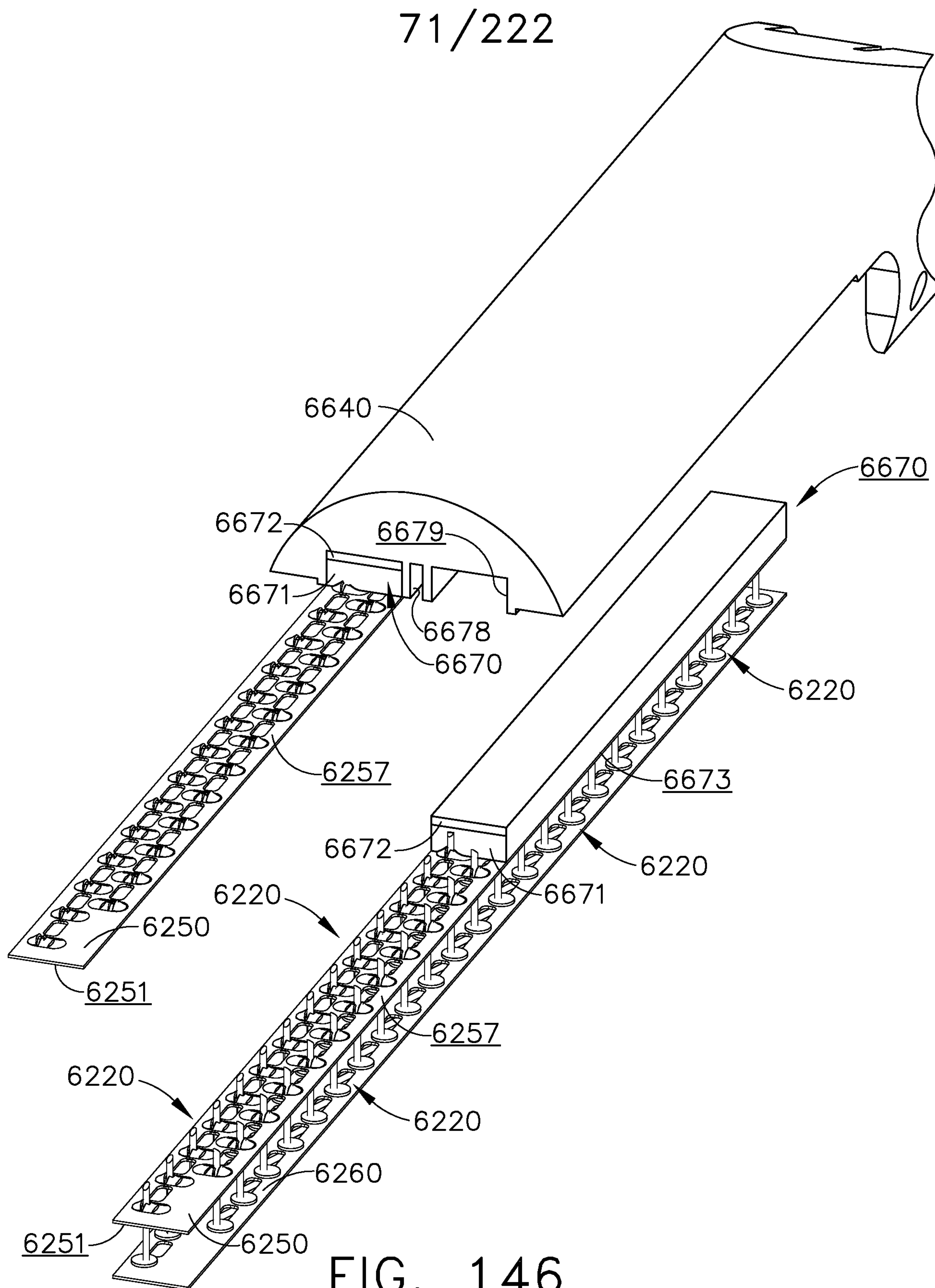


FIG. 145



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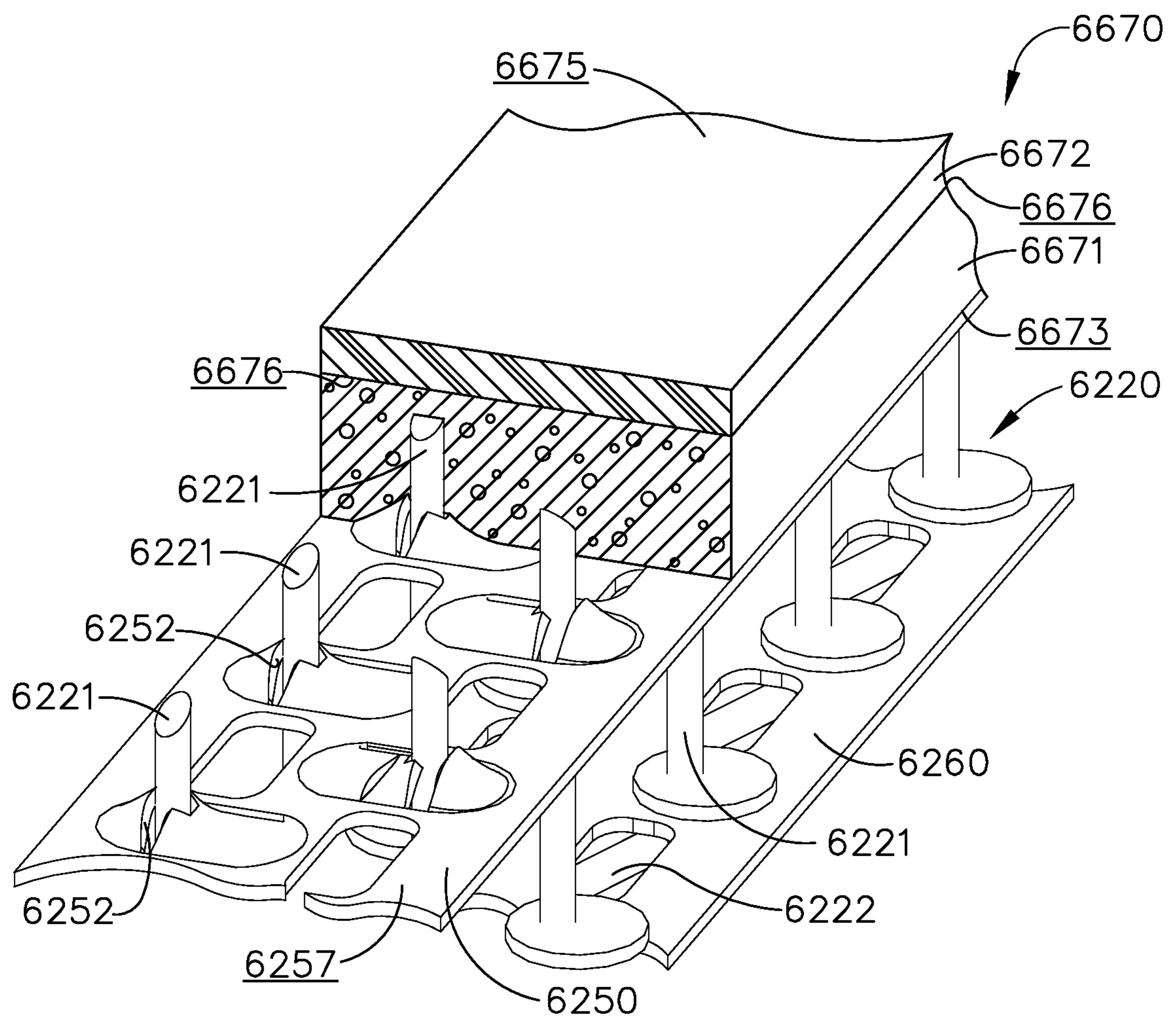
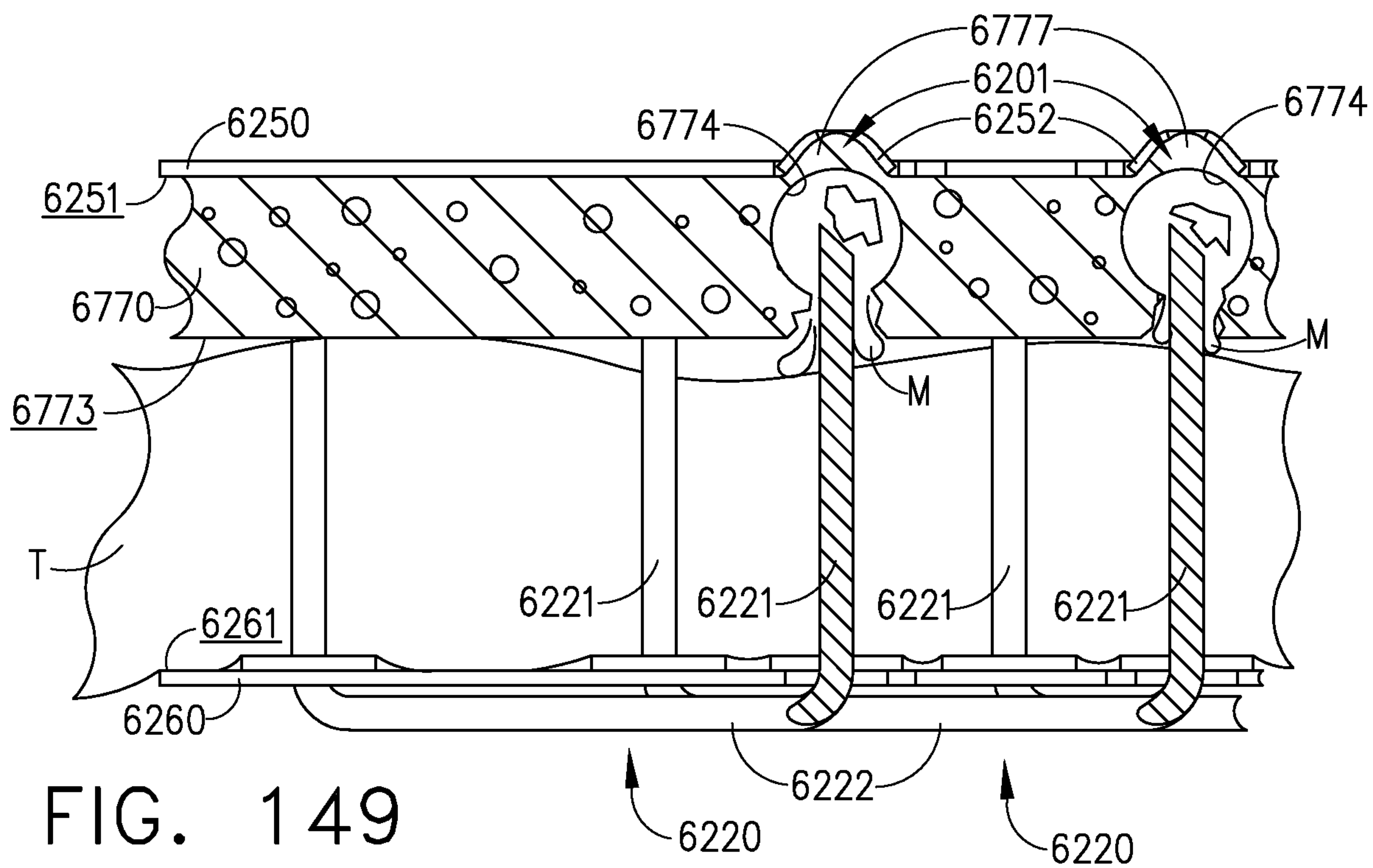
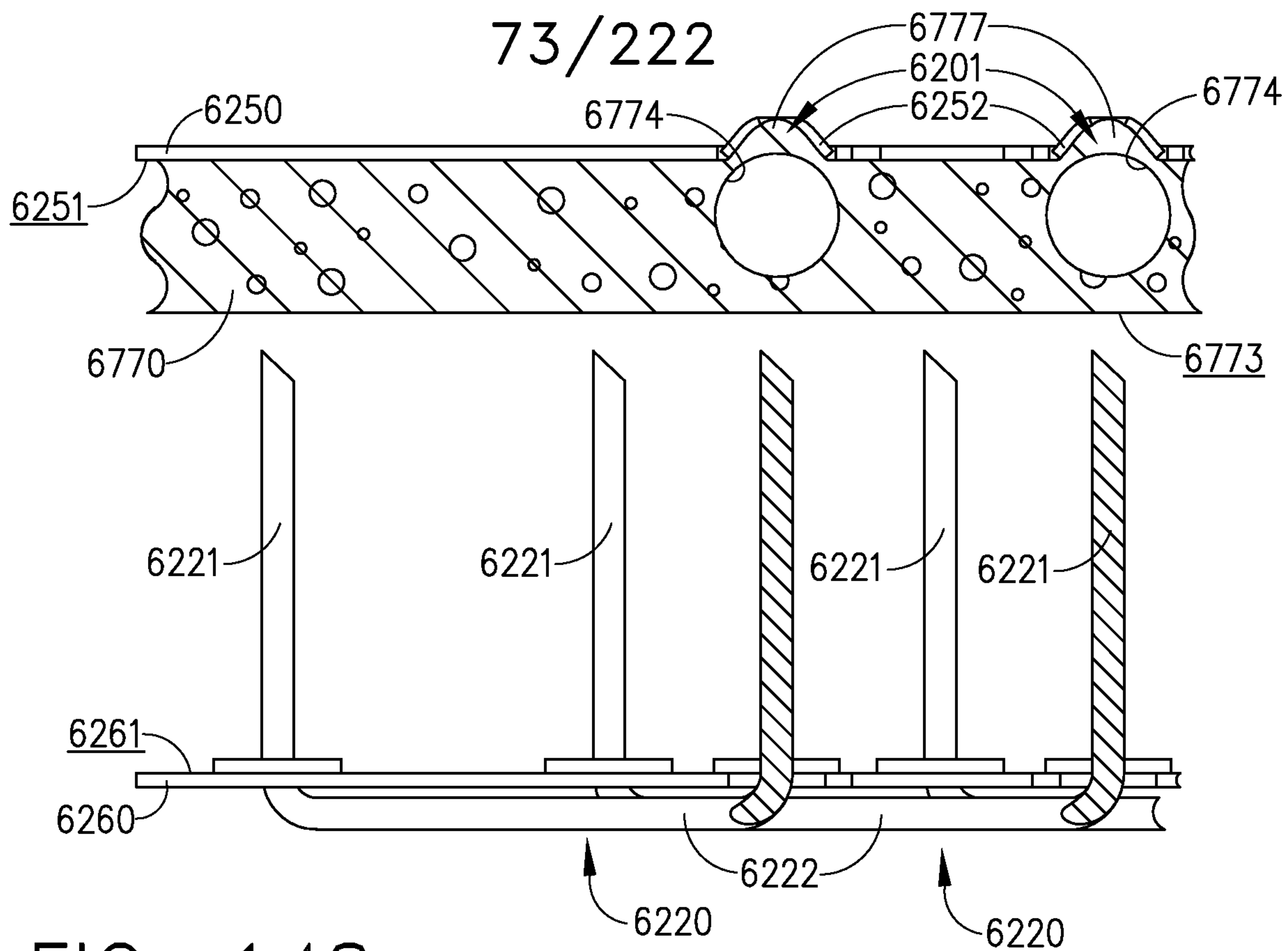


FIG. 147



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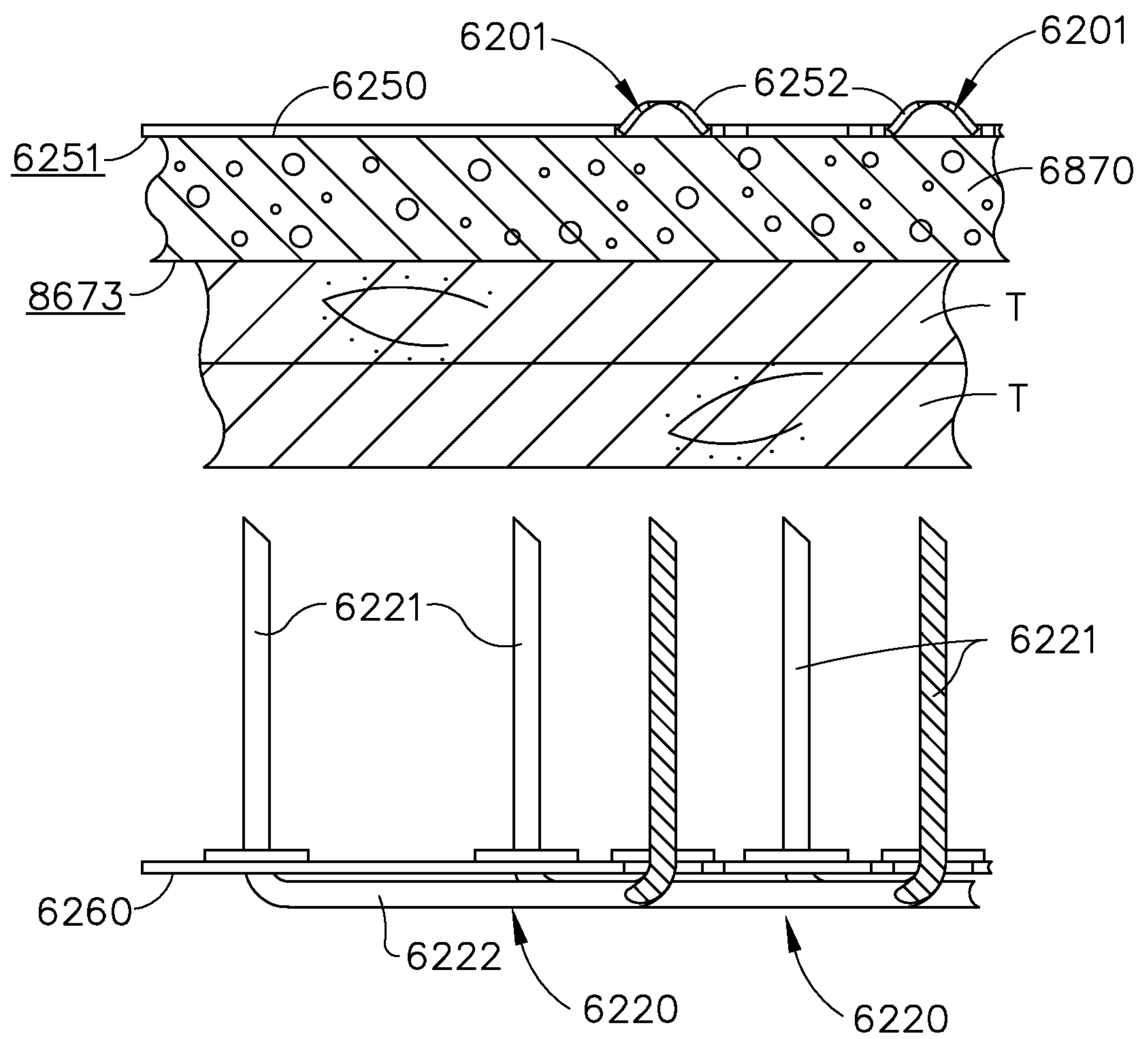


FIG. 150

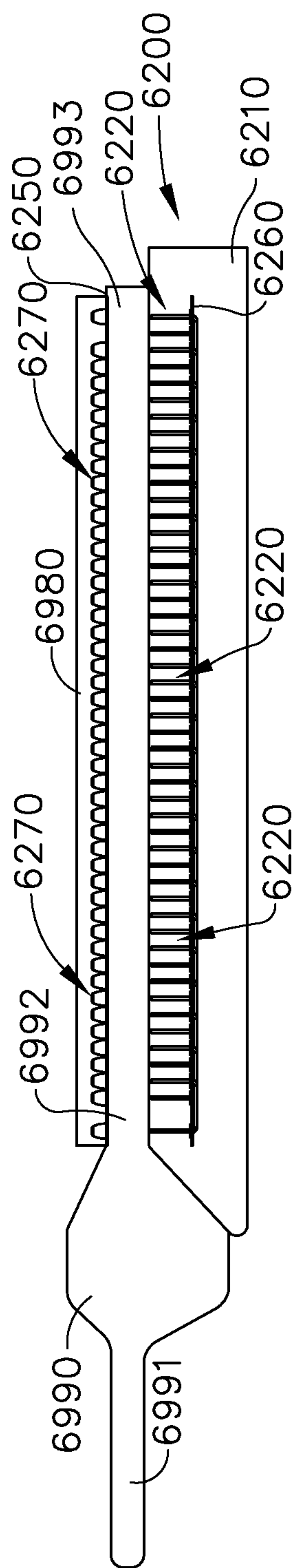


FIG. 151

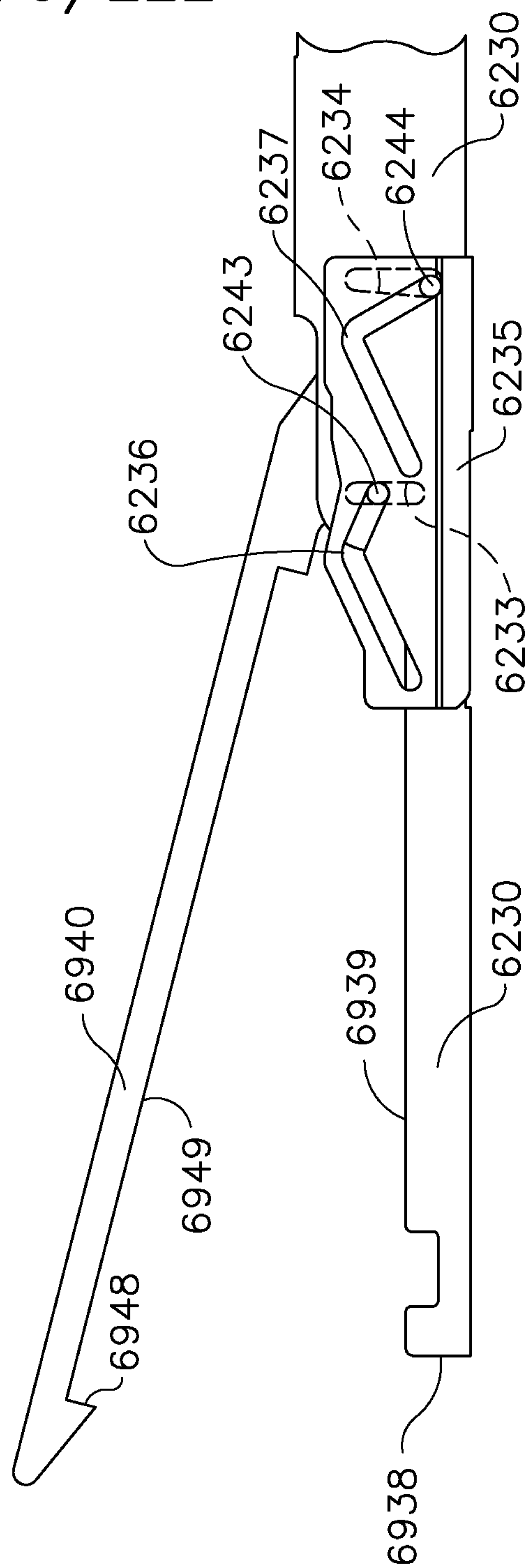


FIG. 152

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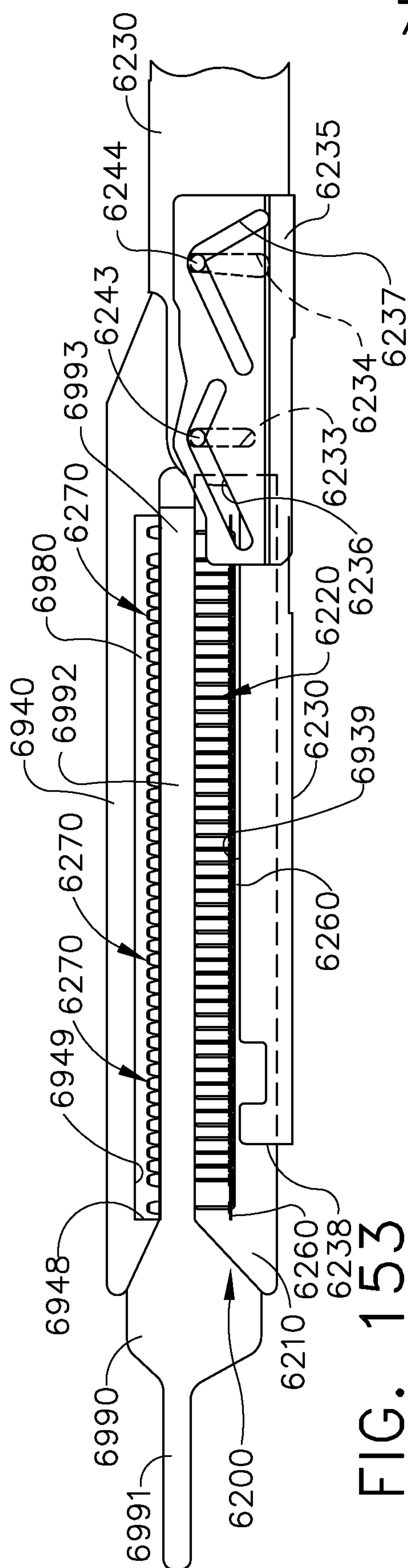


FIG. 153

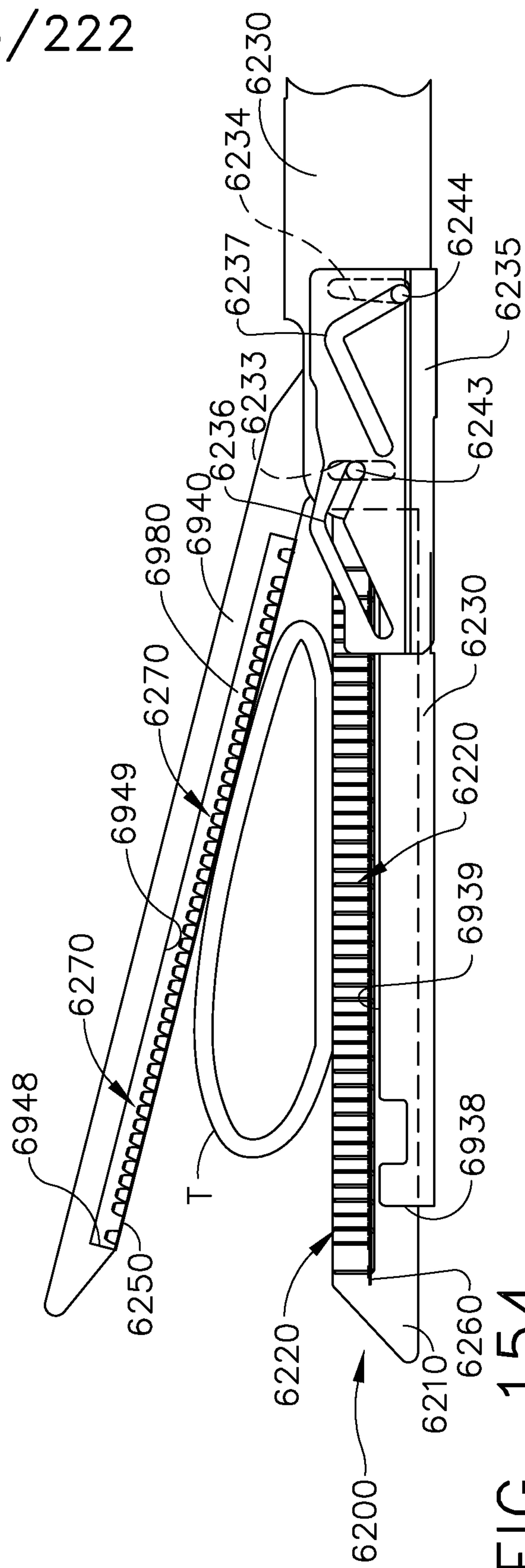
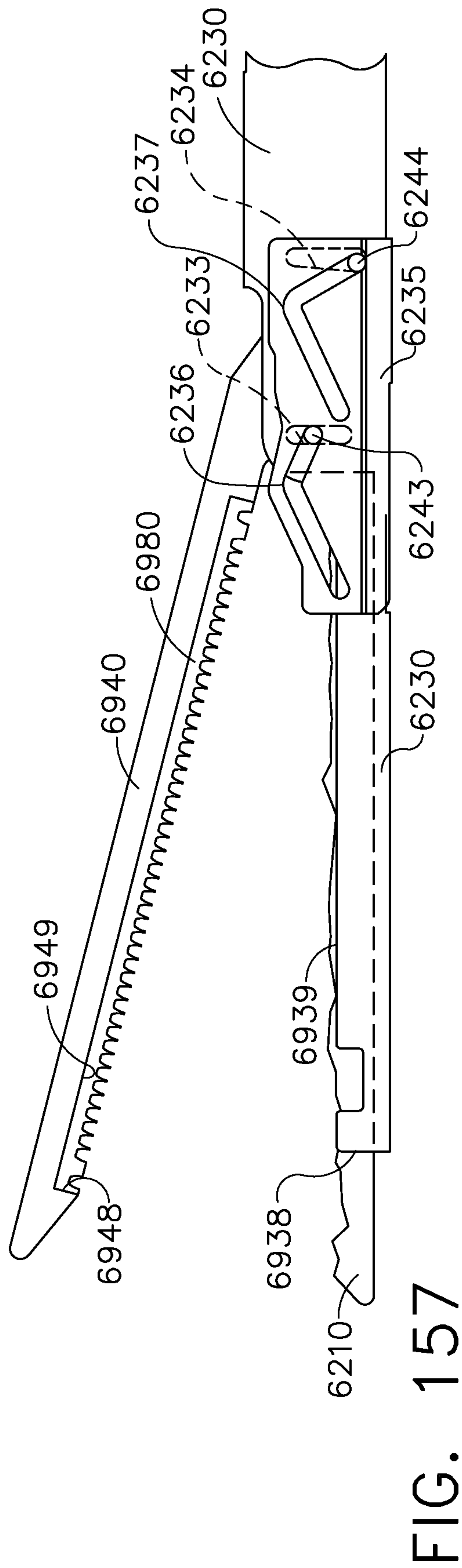
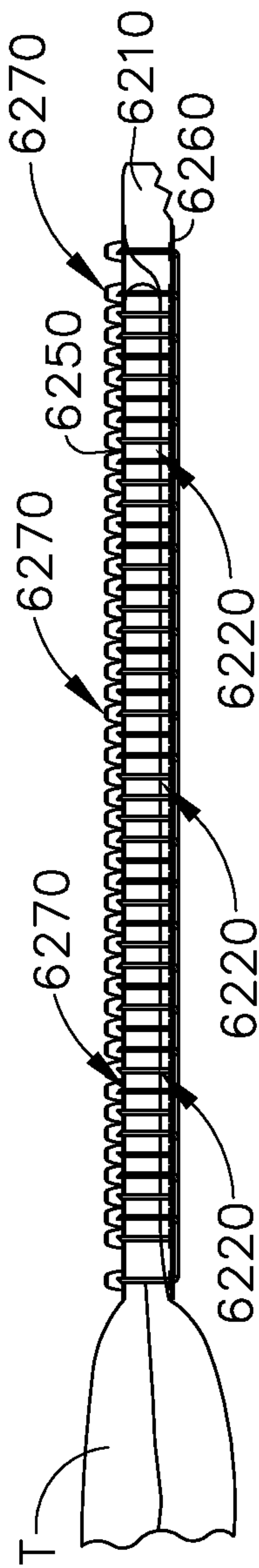
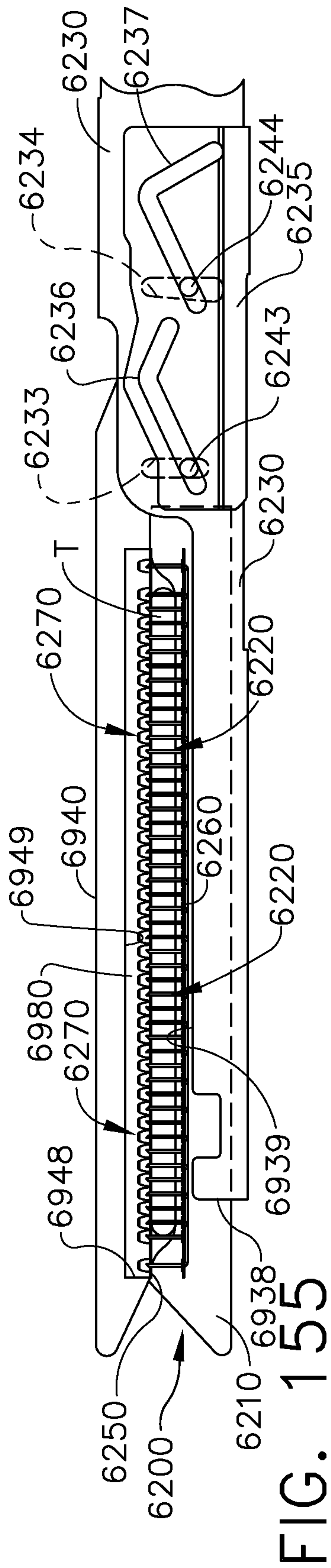


FIG. 154.



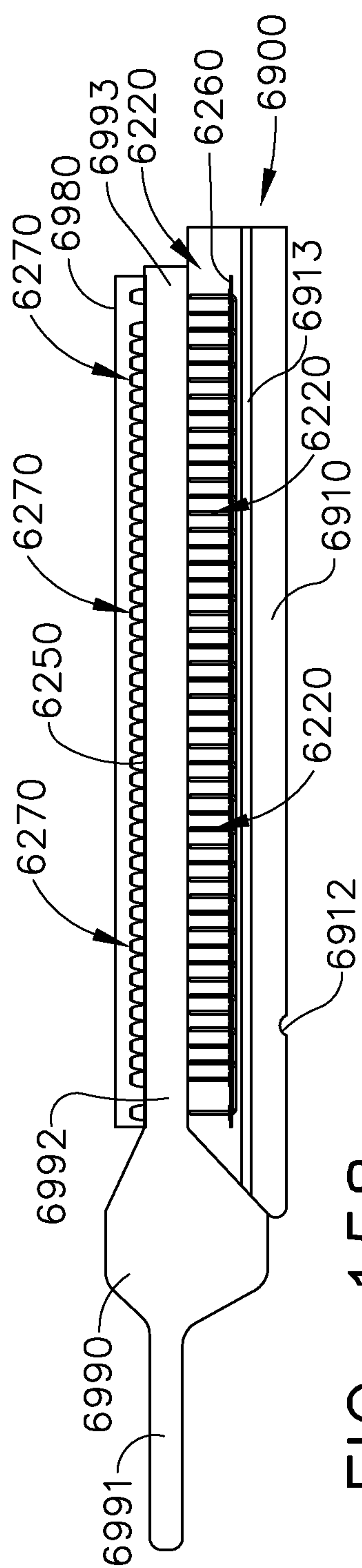


FIG. 158

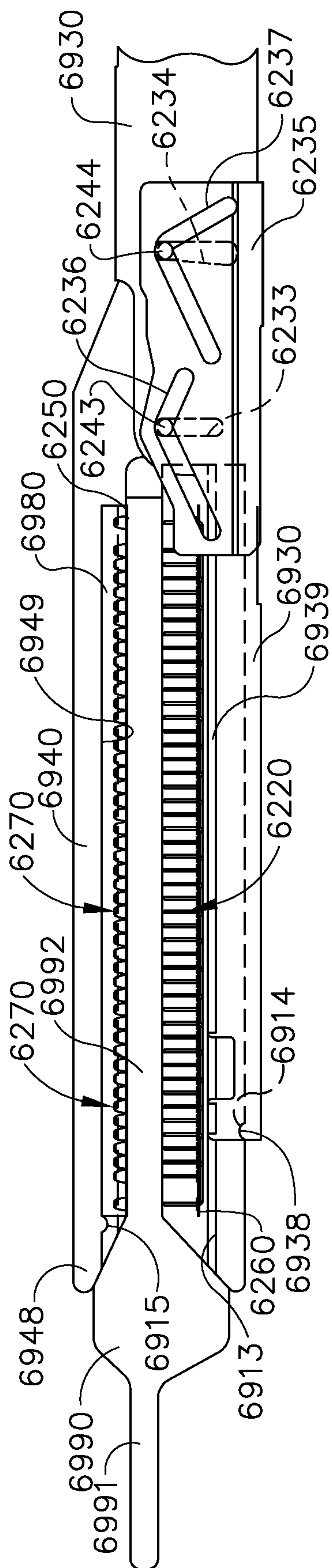


FIG. 159

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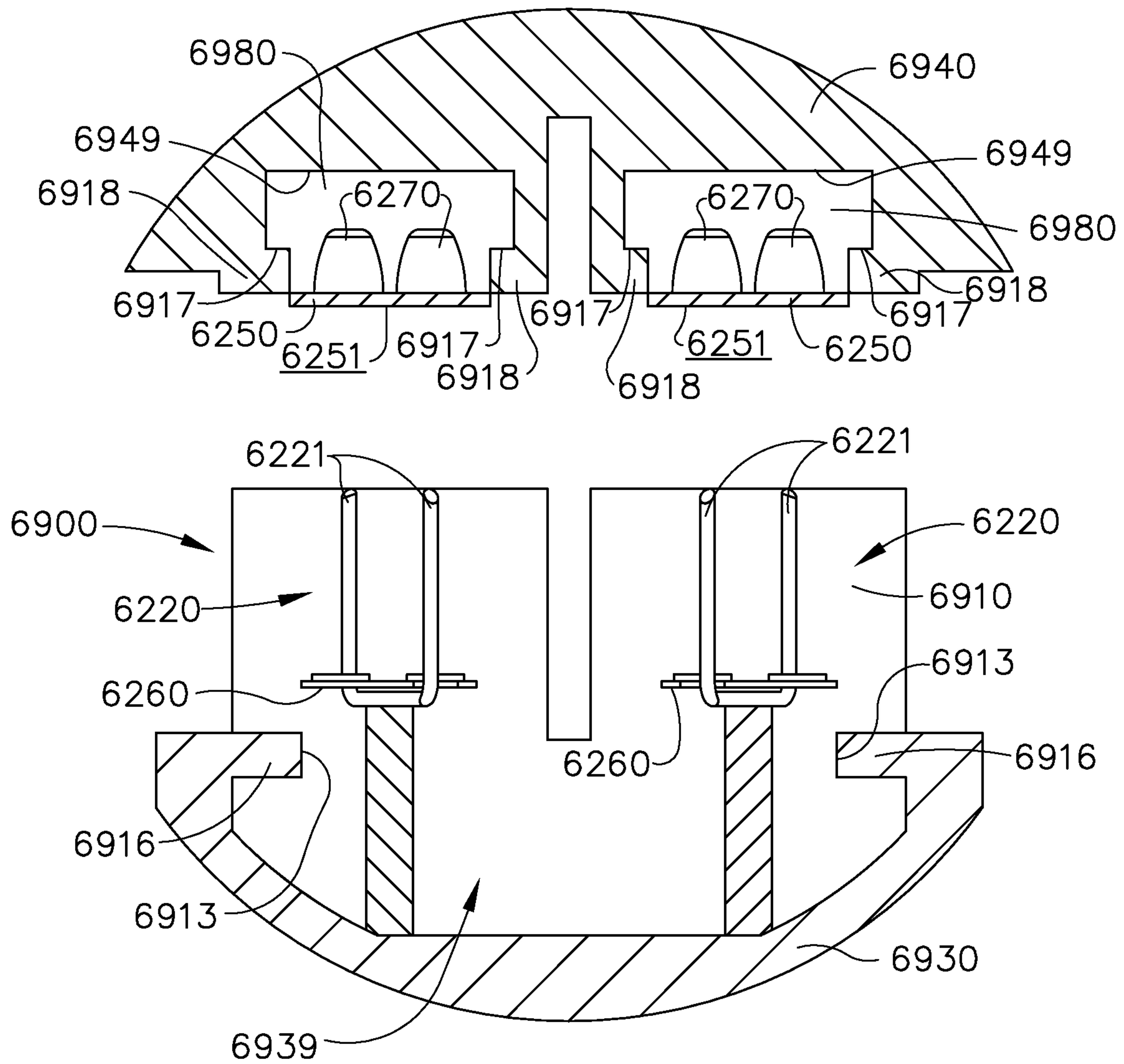
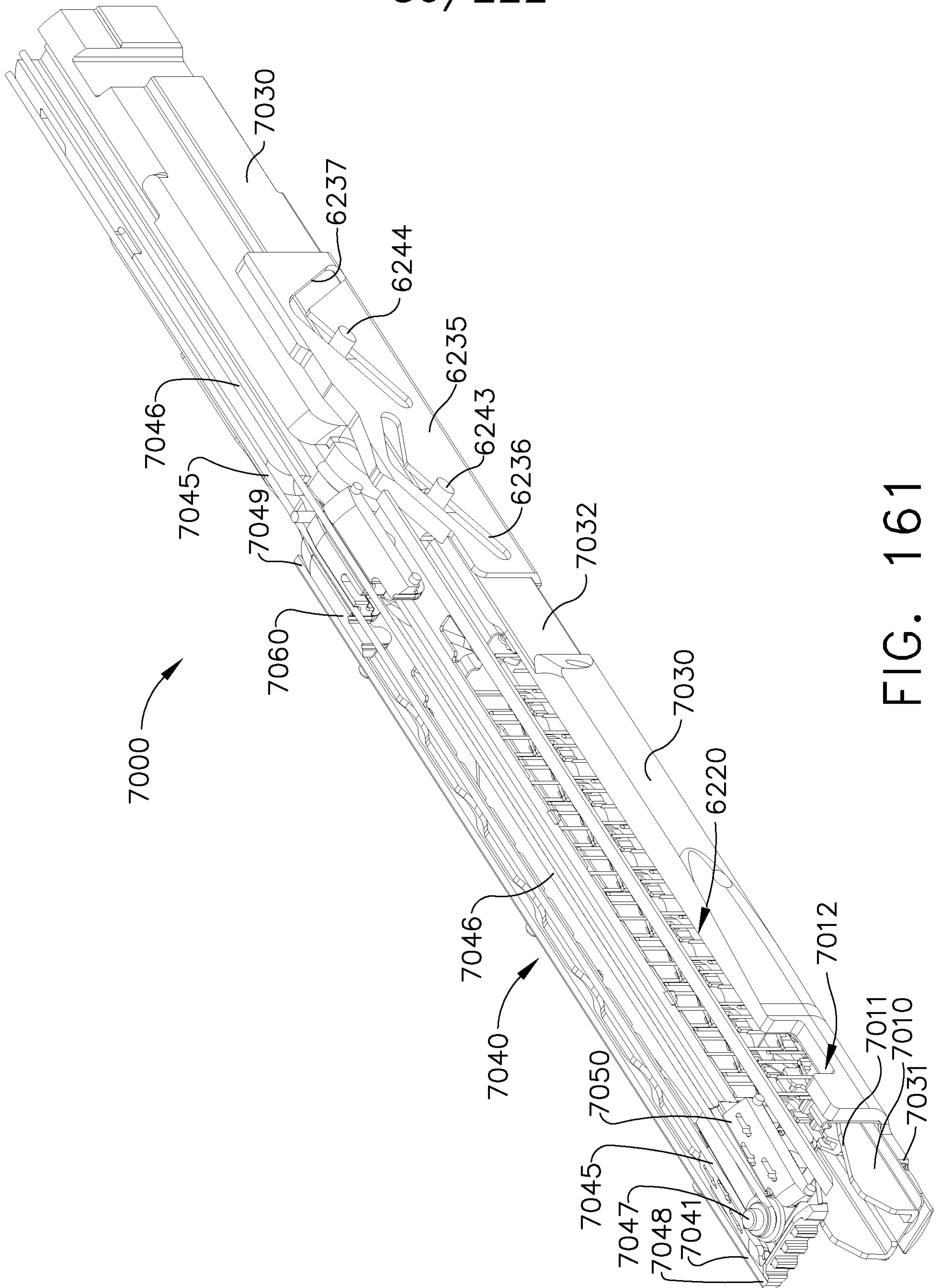
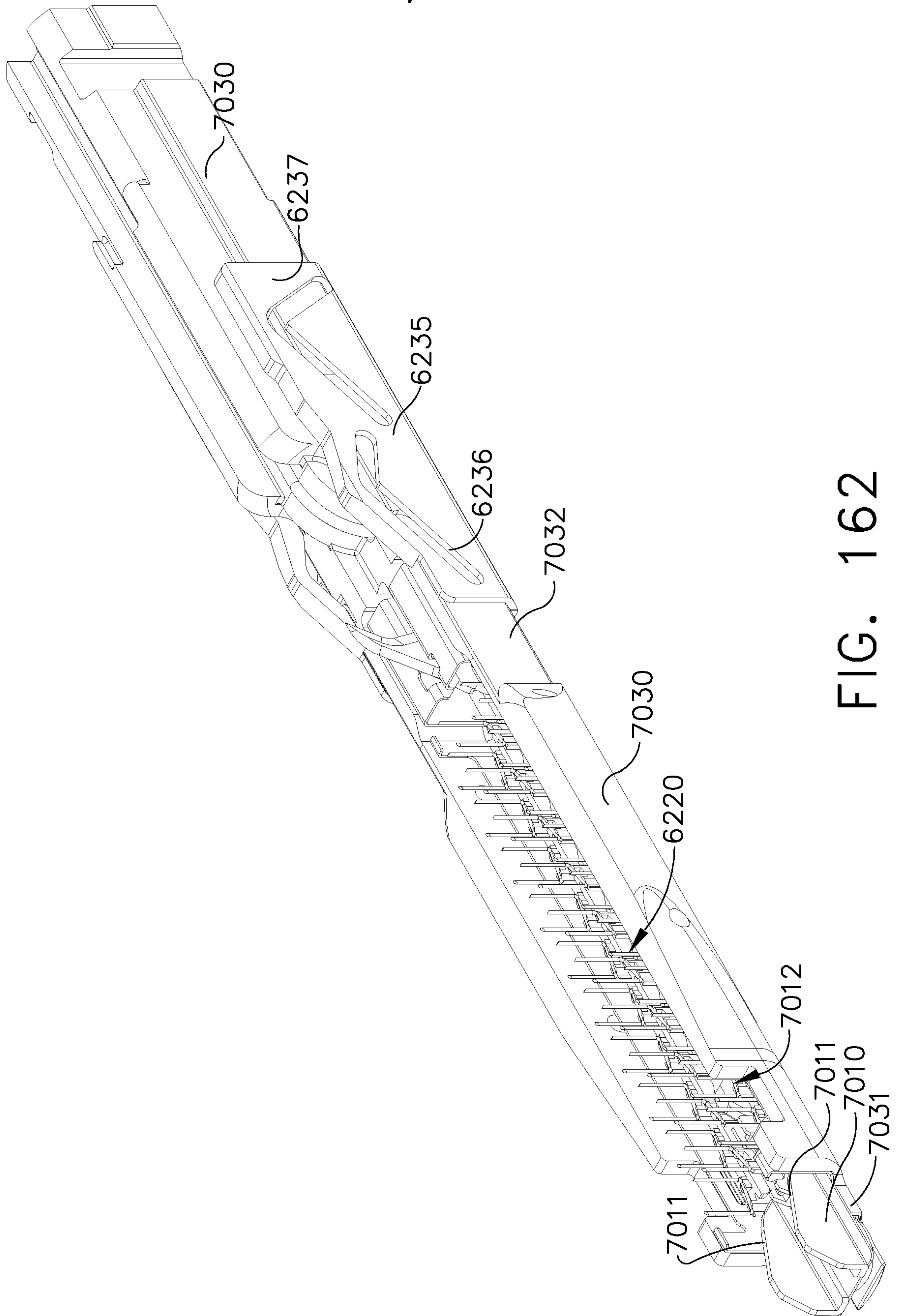


FIG. 160

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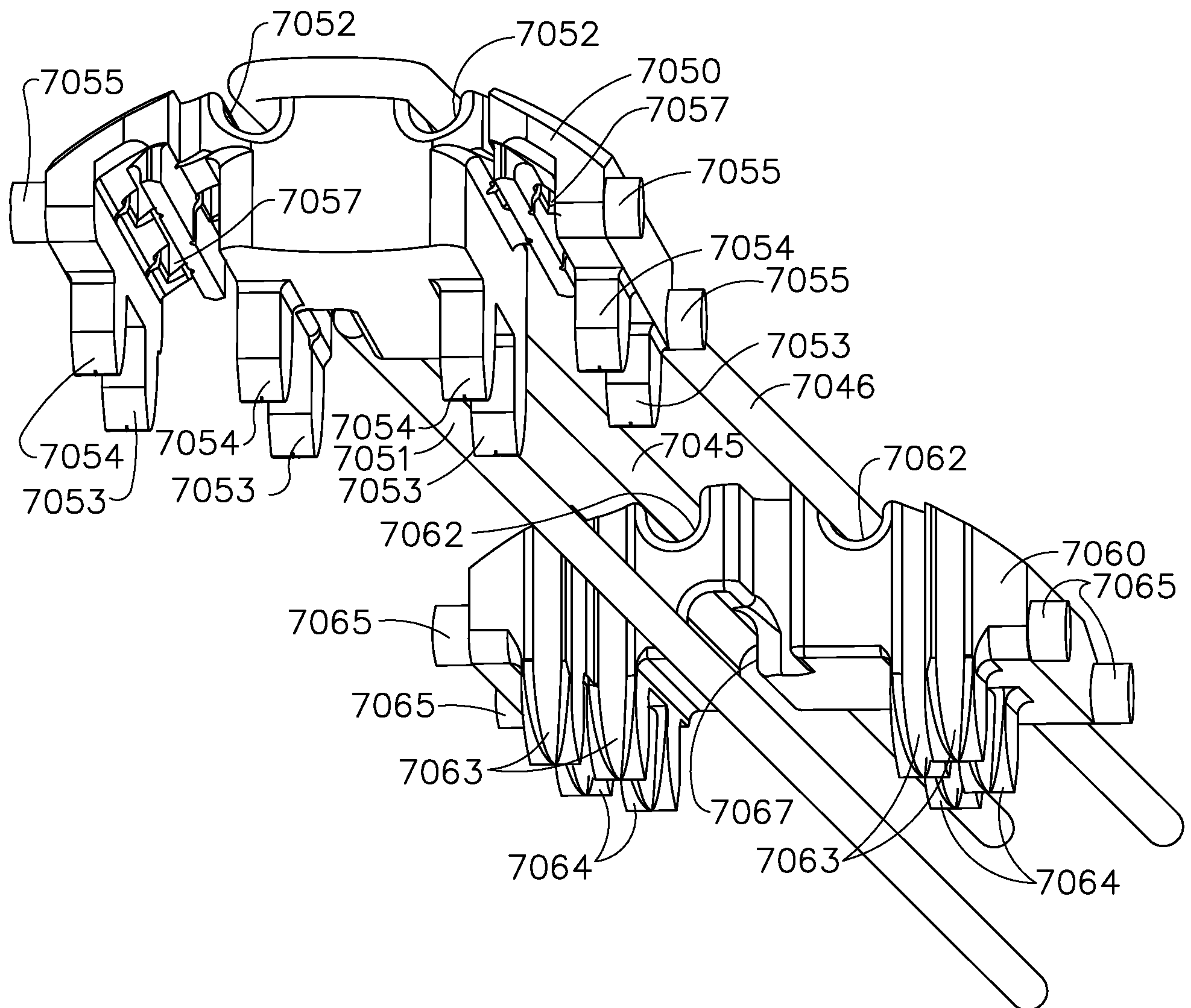


FIG. 163

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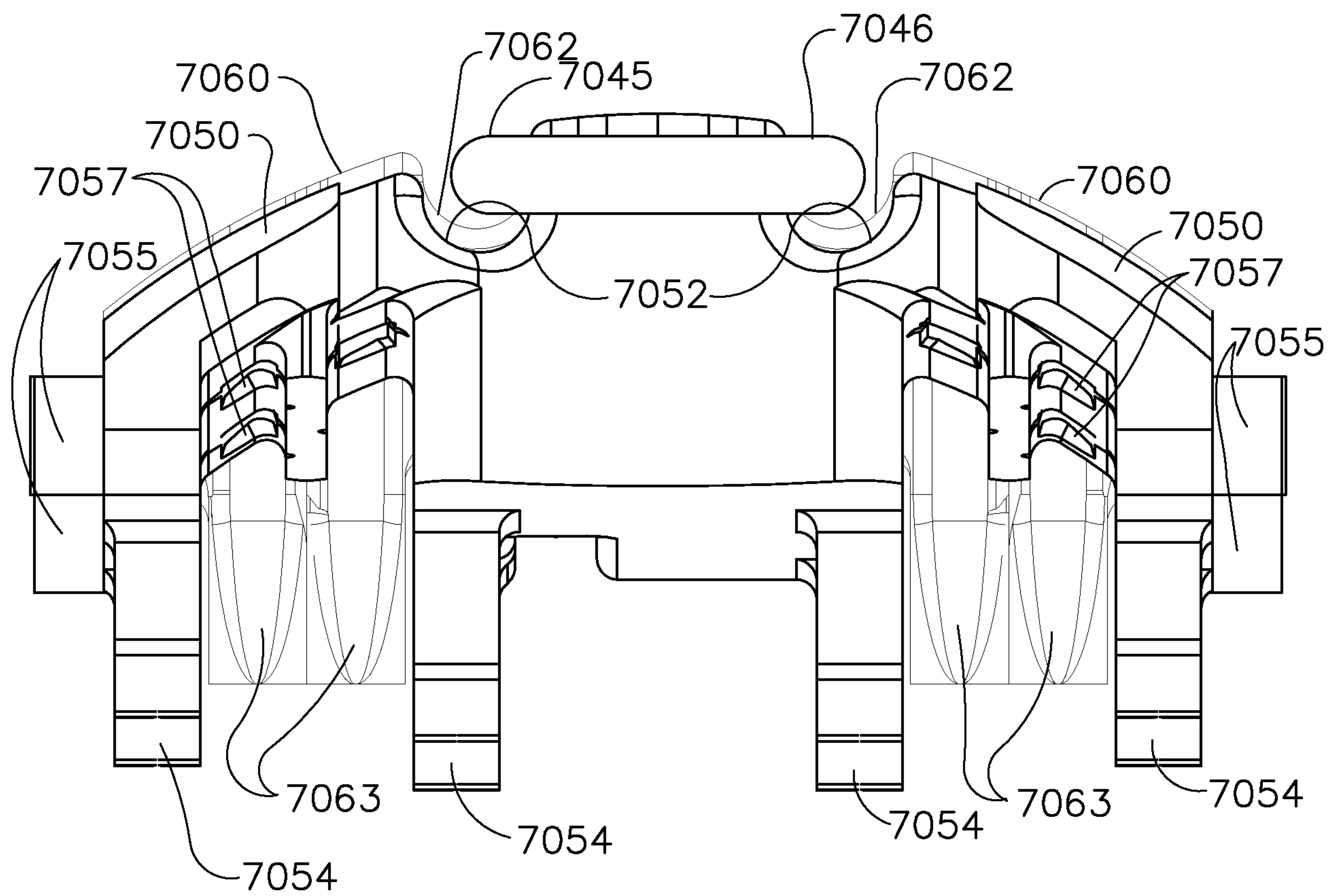


FIG. 164

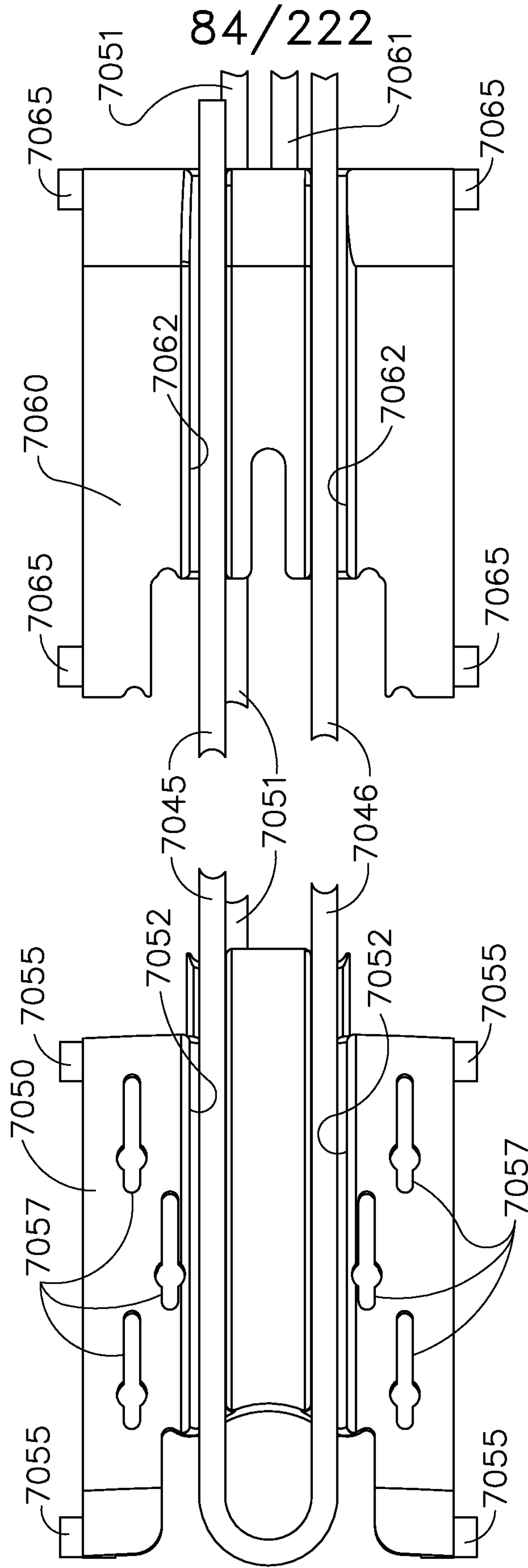
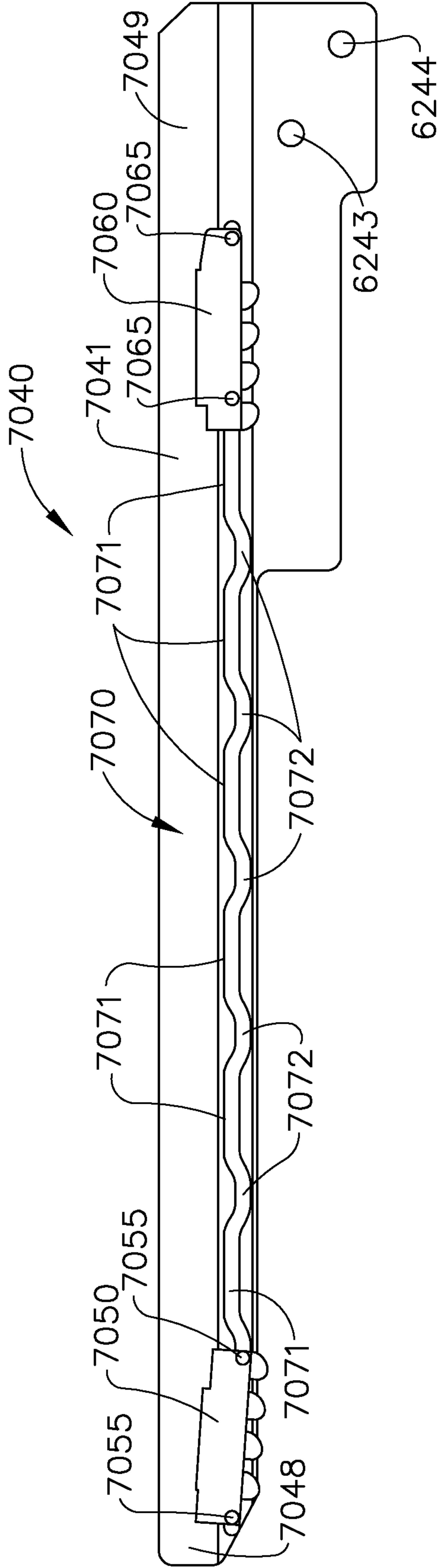


FIG. 165



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FIG. 166

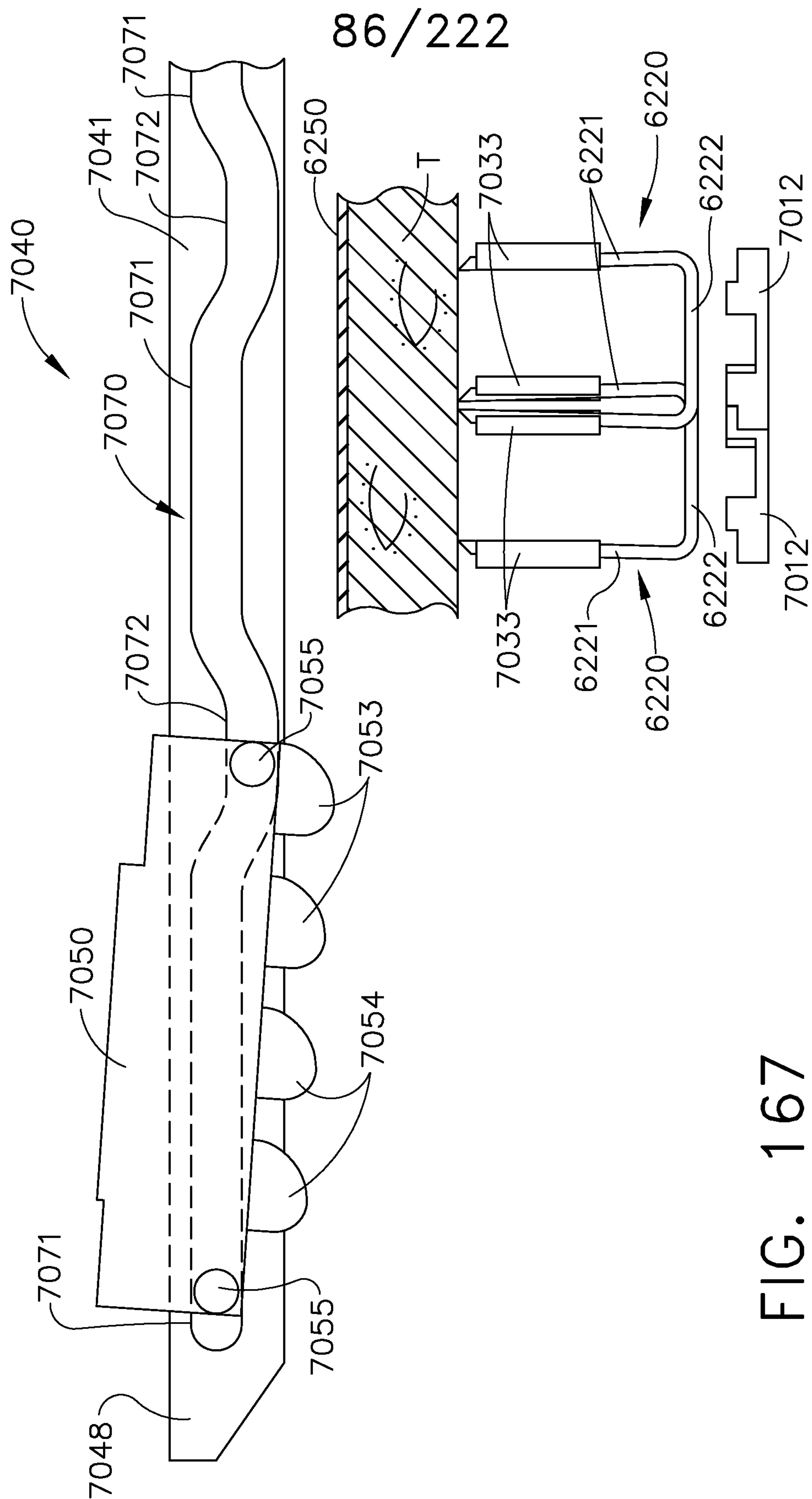


FIG. 167

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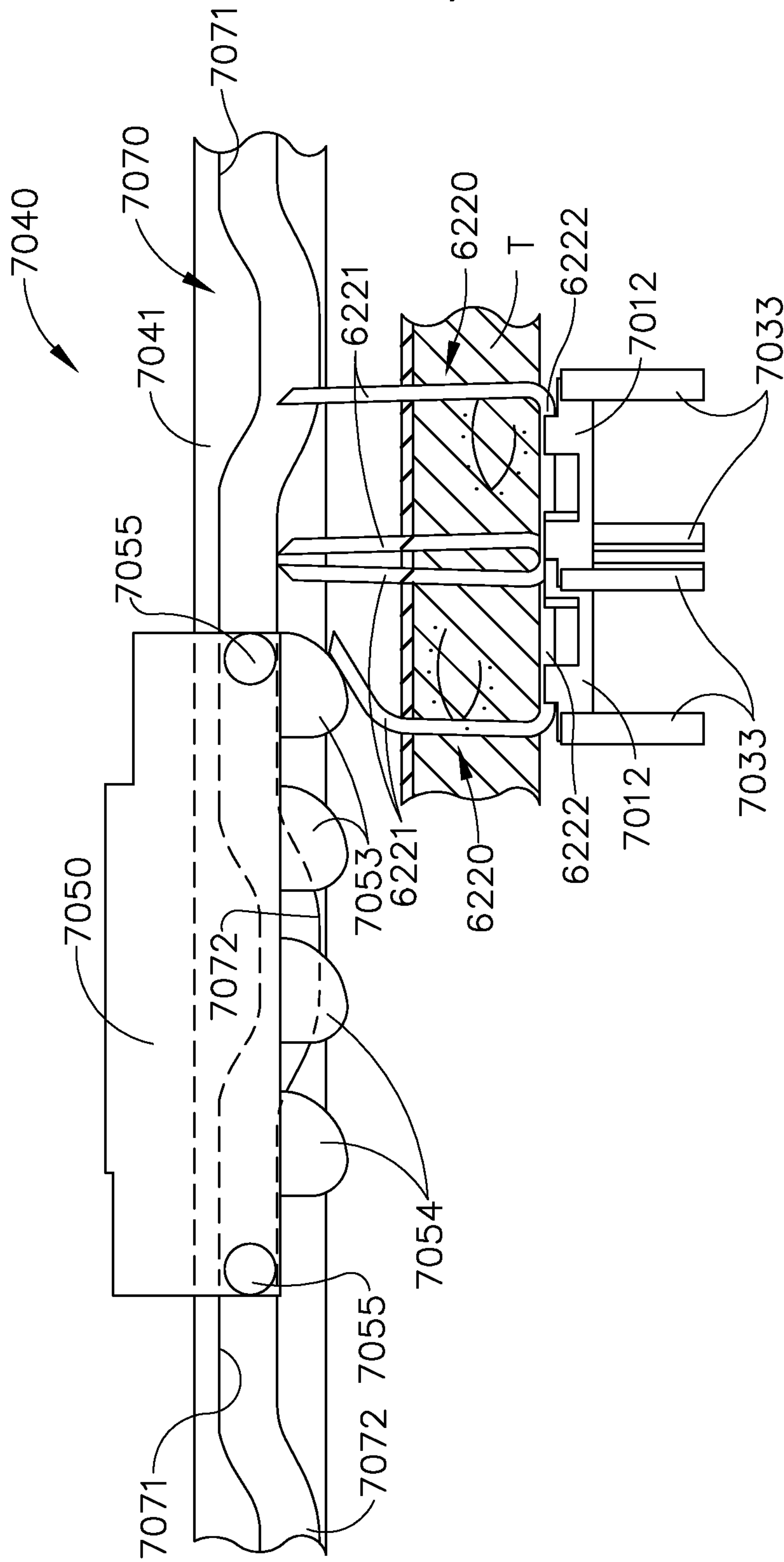


FIG. 168

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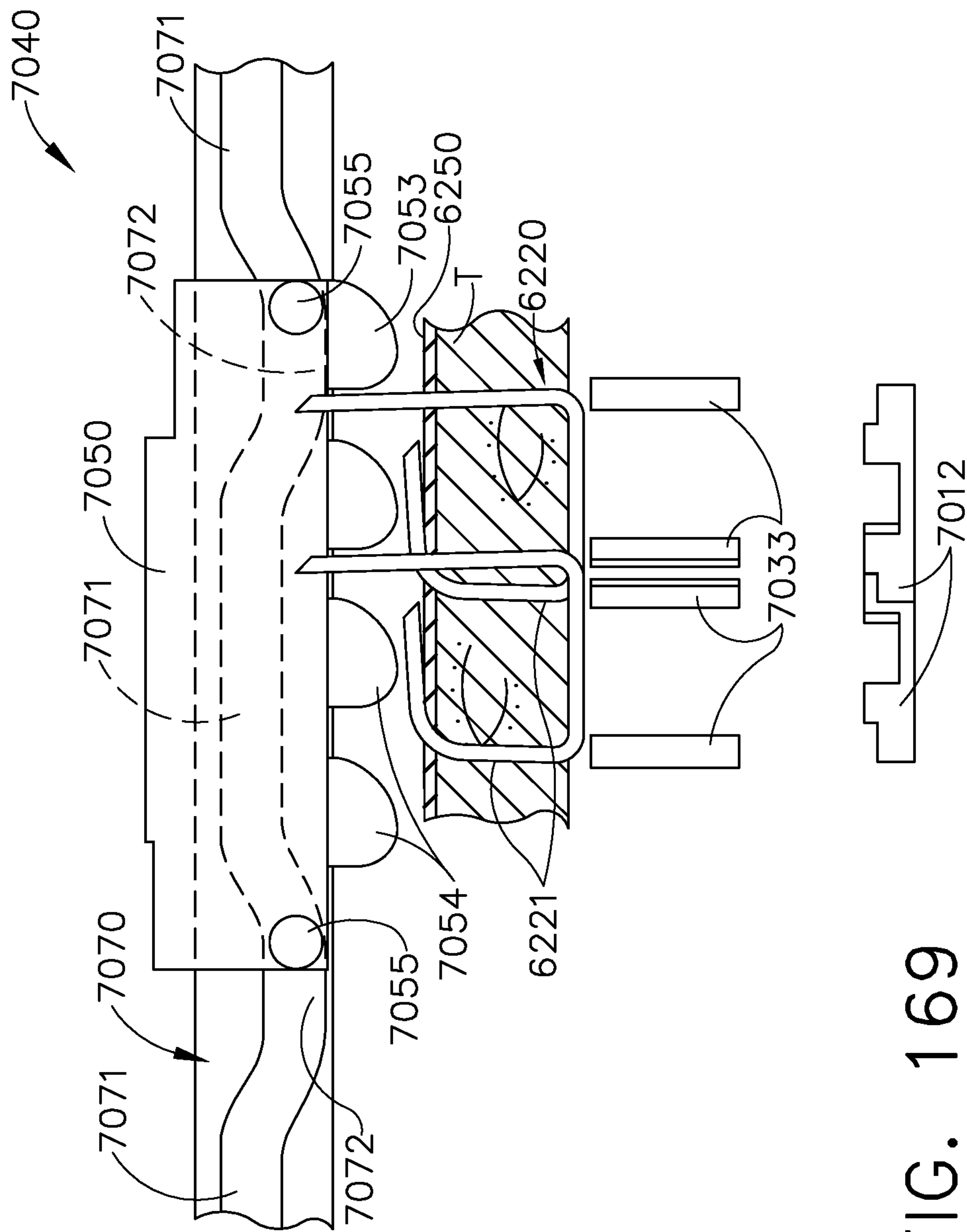


FIG. 169

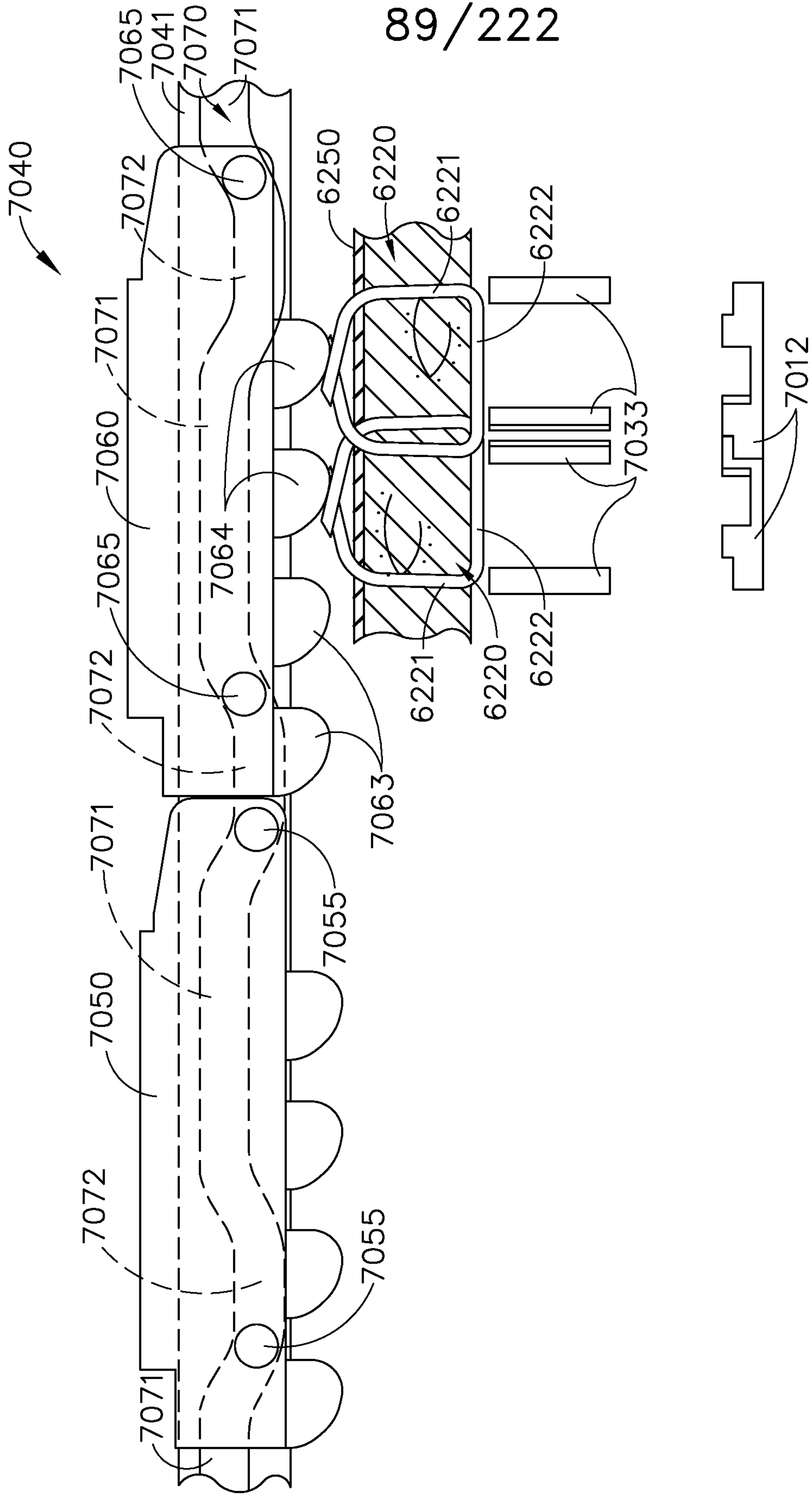


FIG. 170

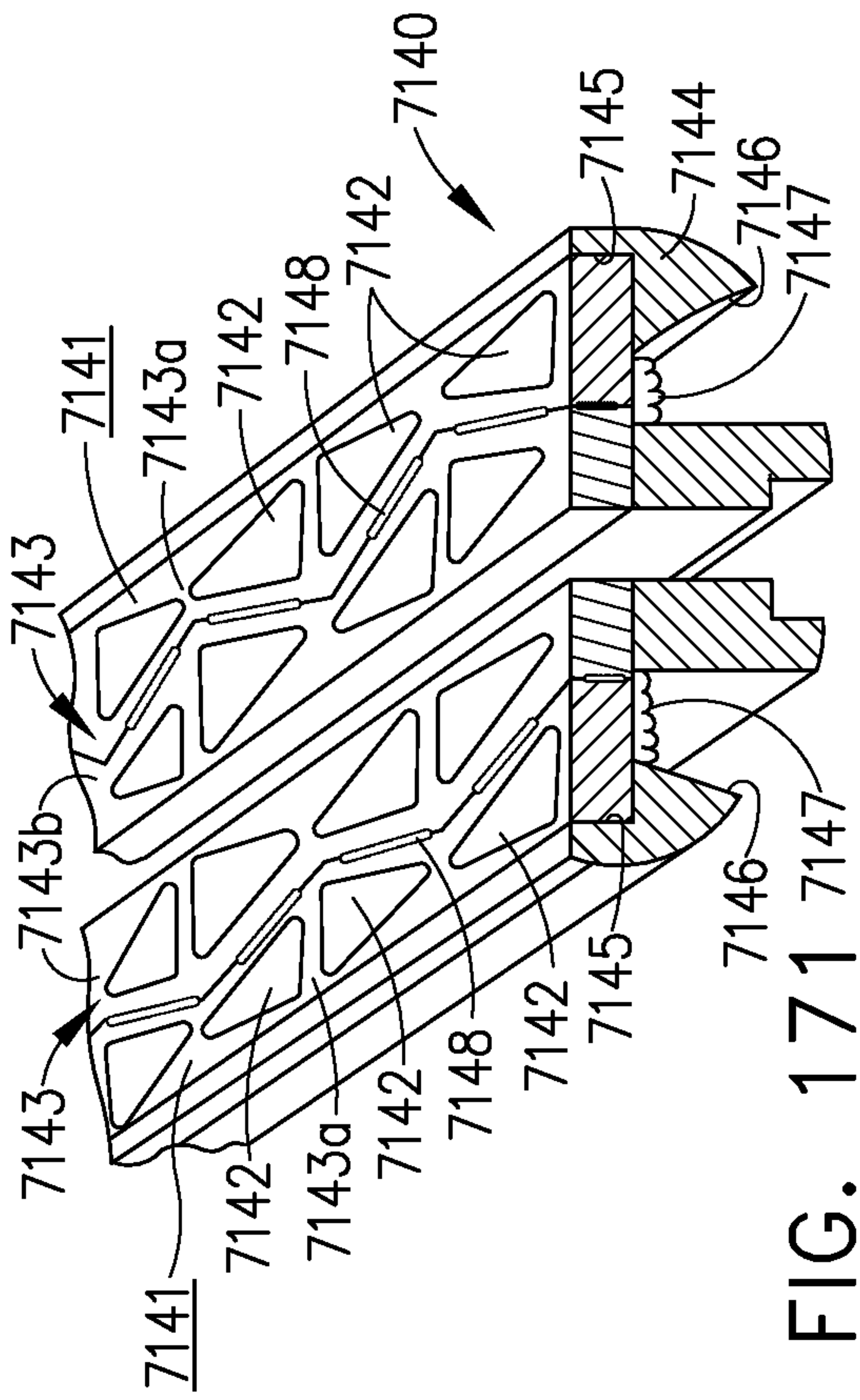


FIG. 171

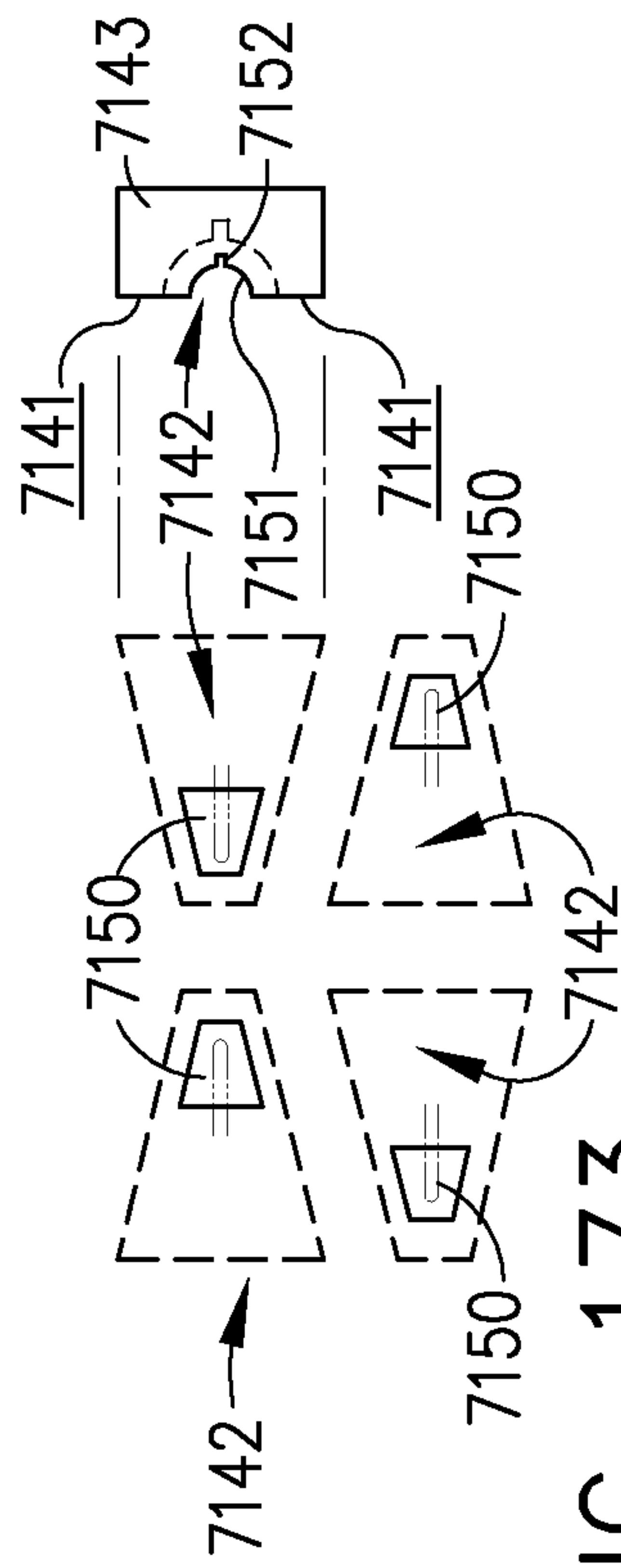


FIG. 173

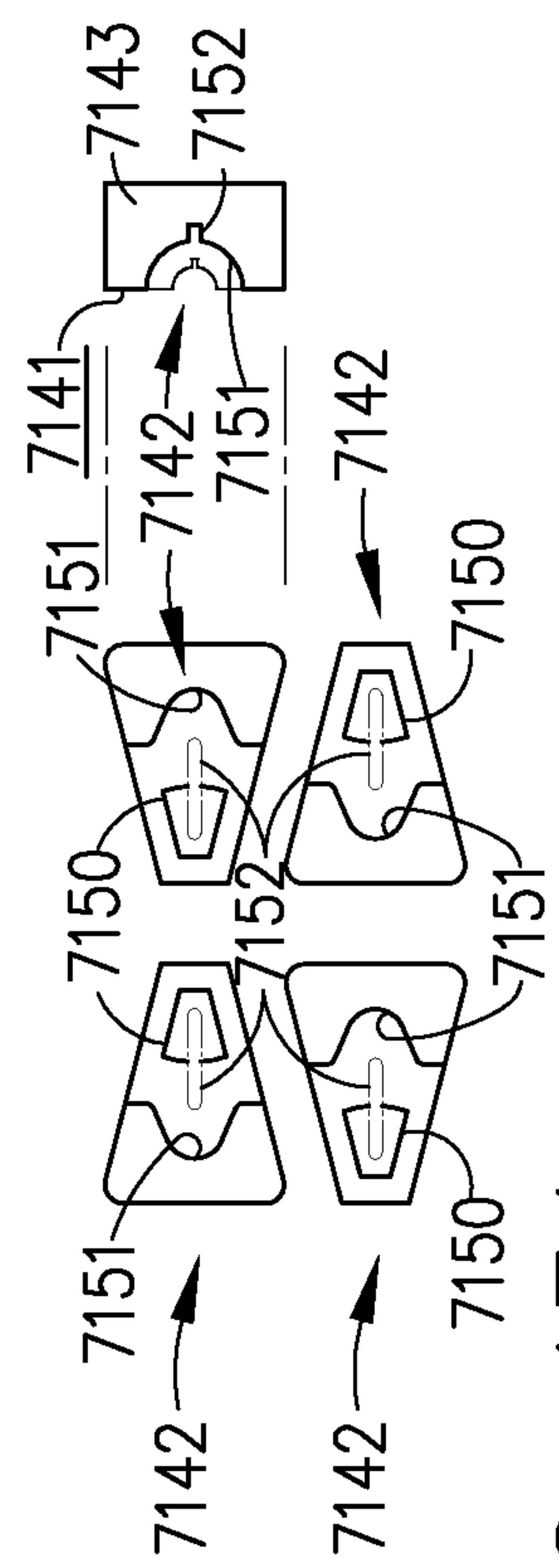


FIG. 174

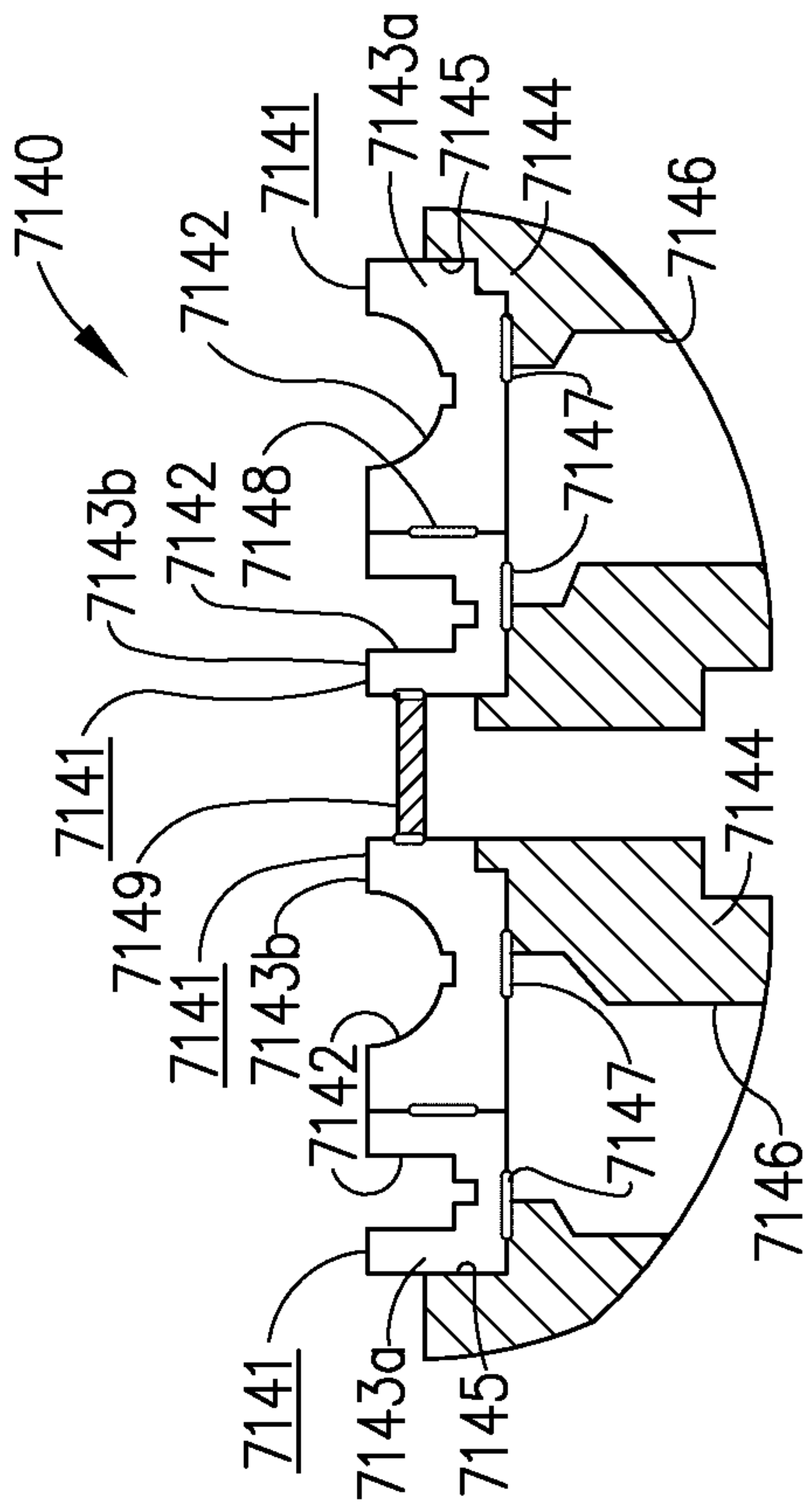


FIG. 172

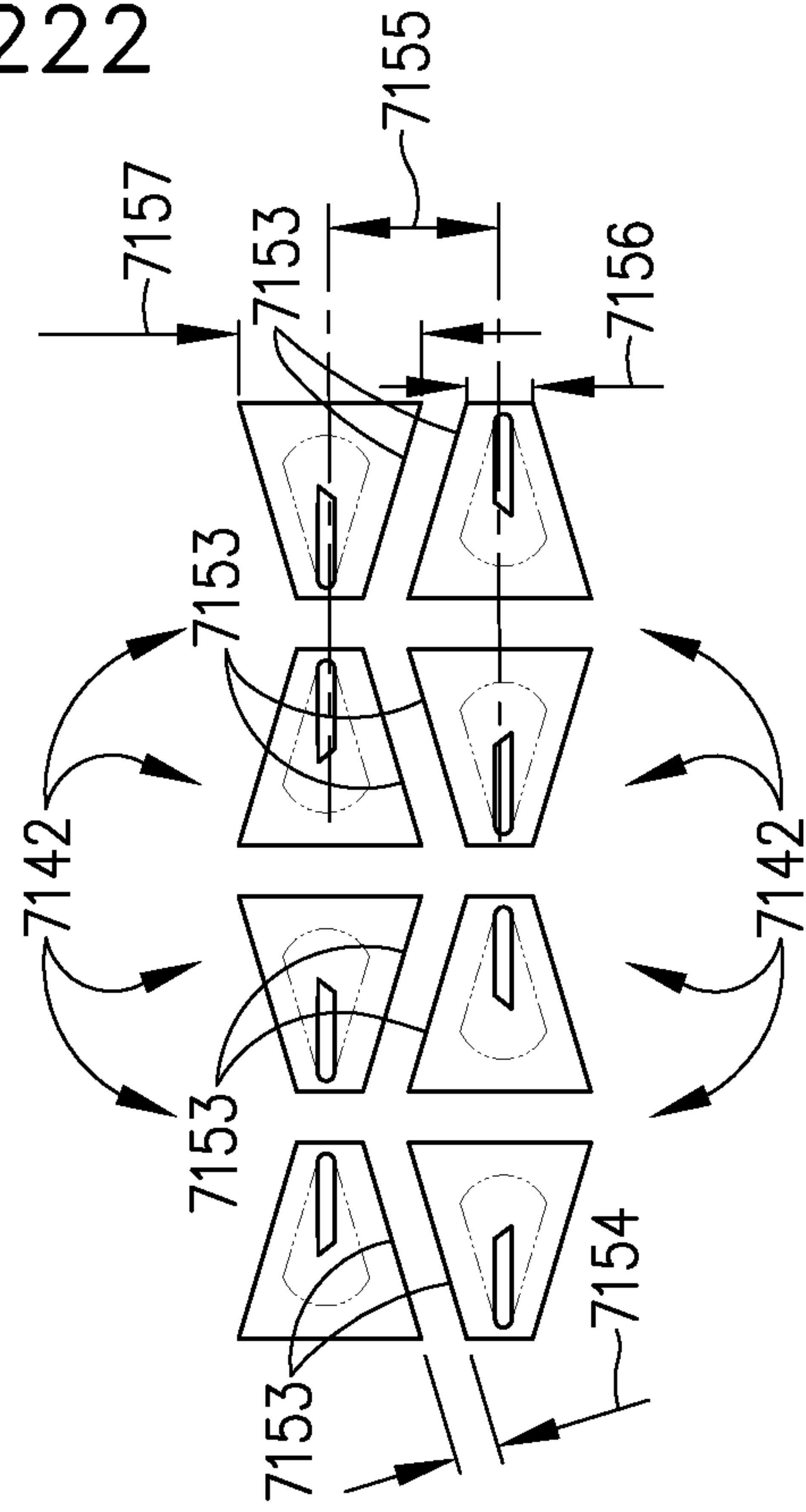


FIG. 175

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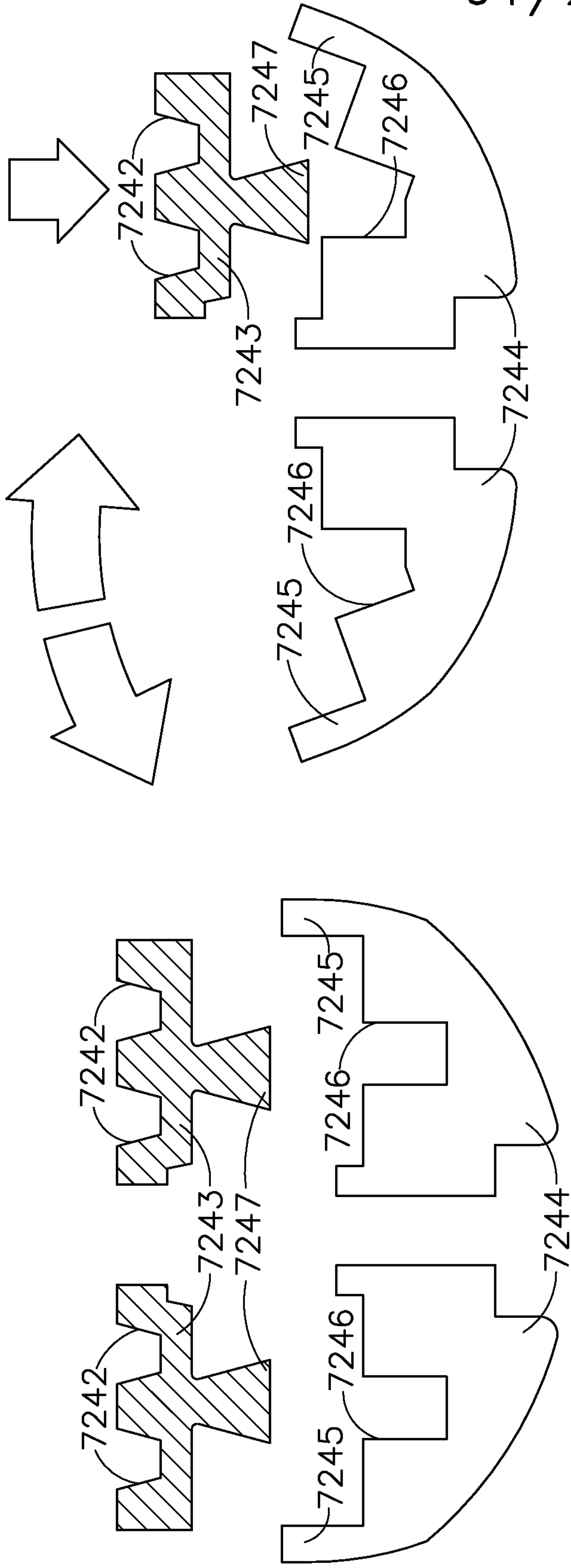


FIG. 176

FIG. 177

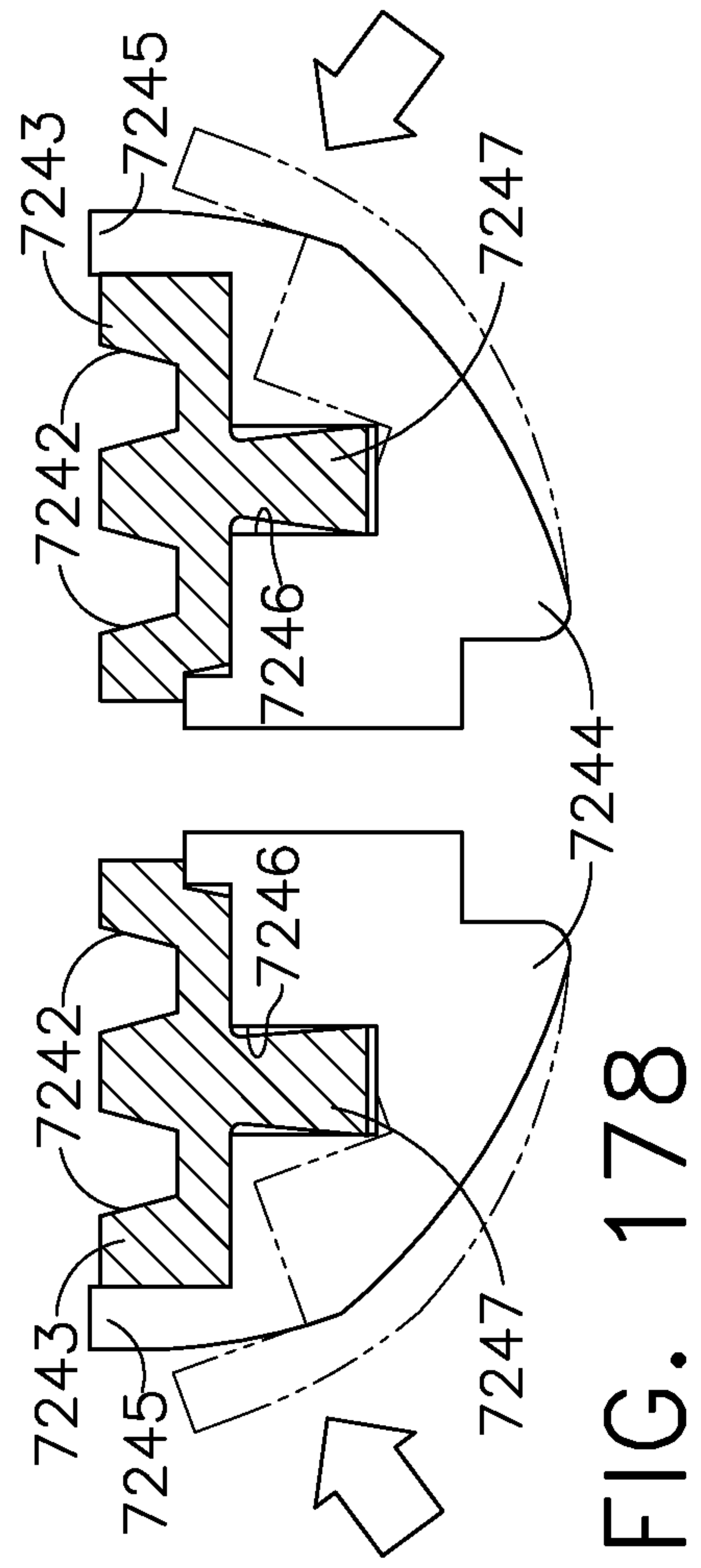


FIG. 178

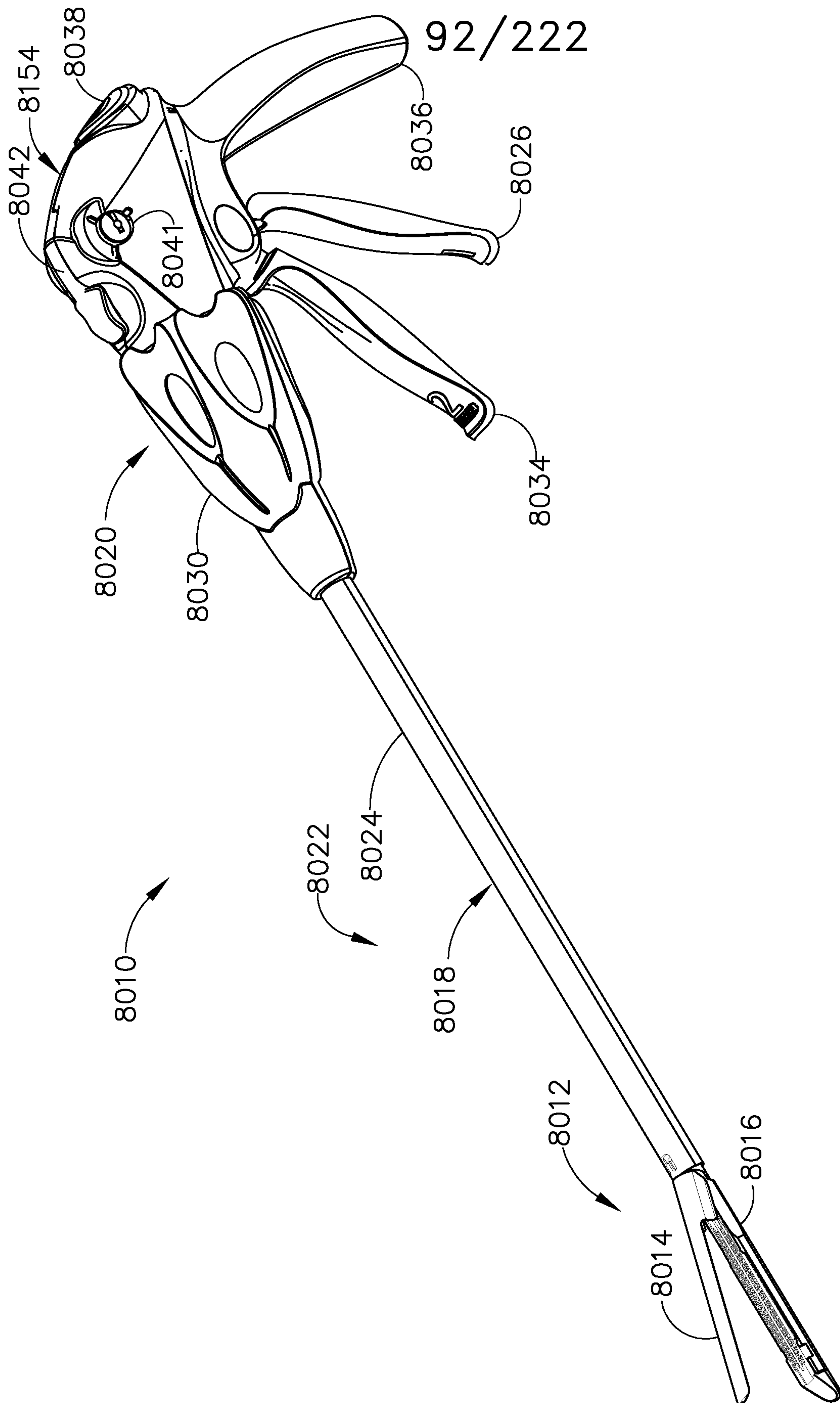


FIG. 179

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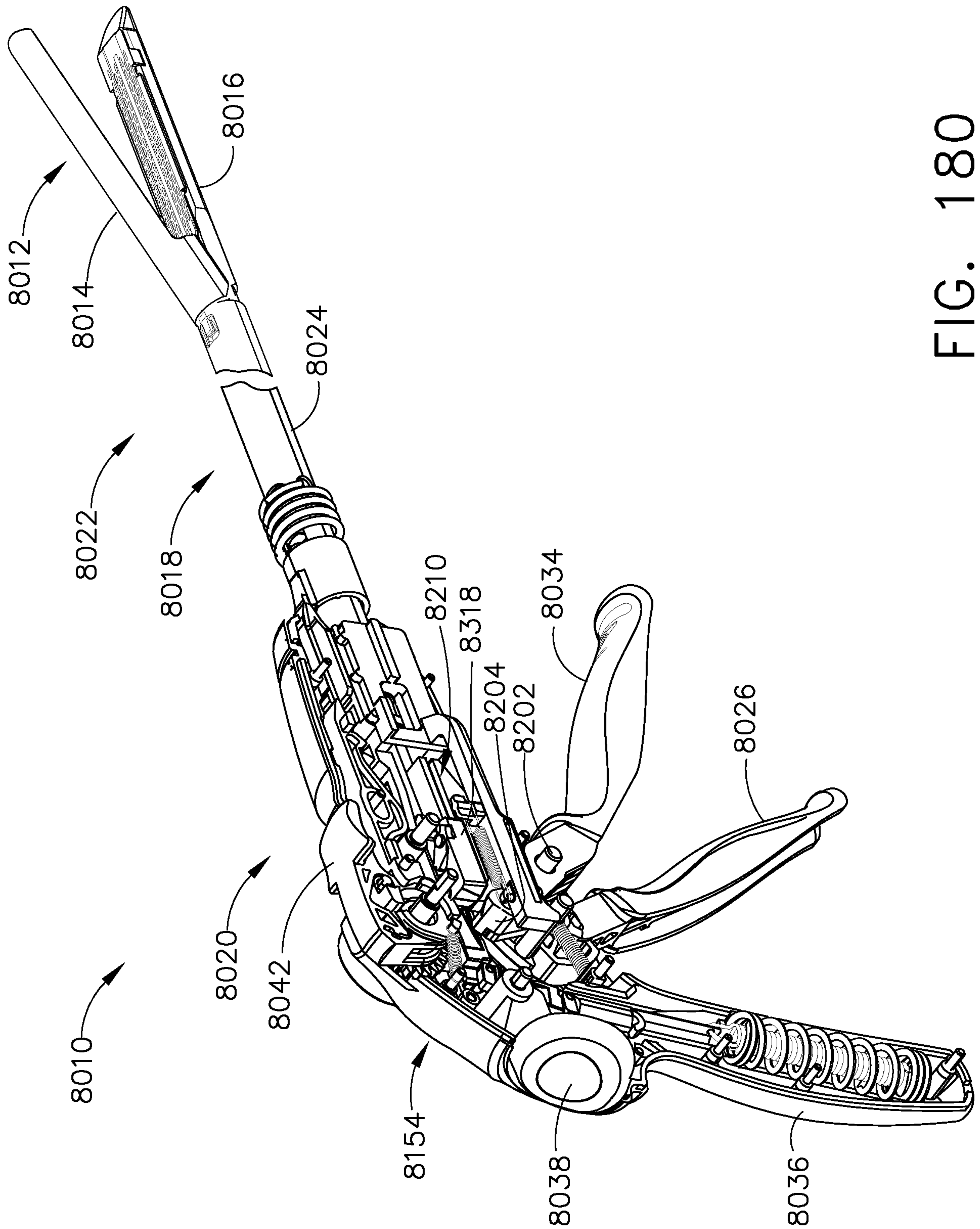
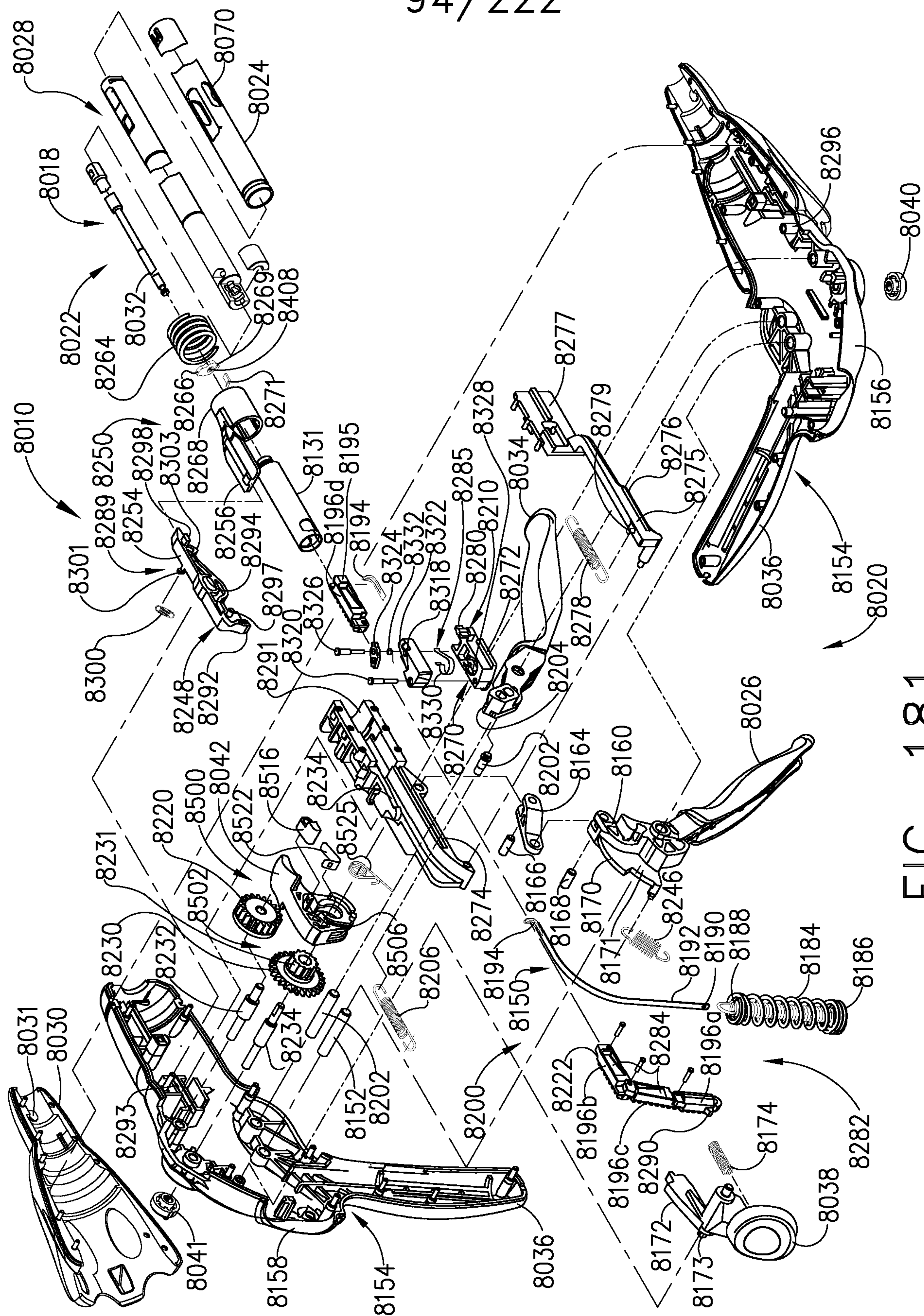
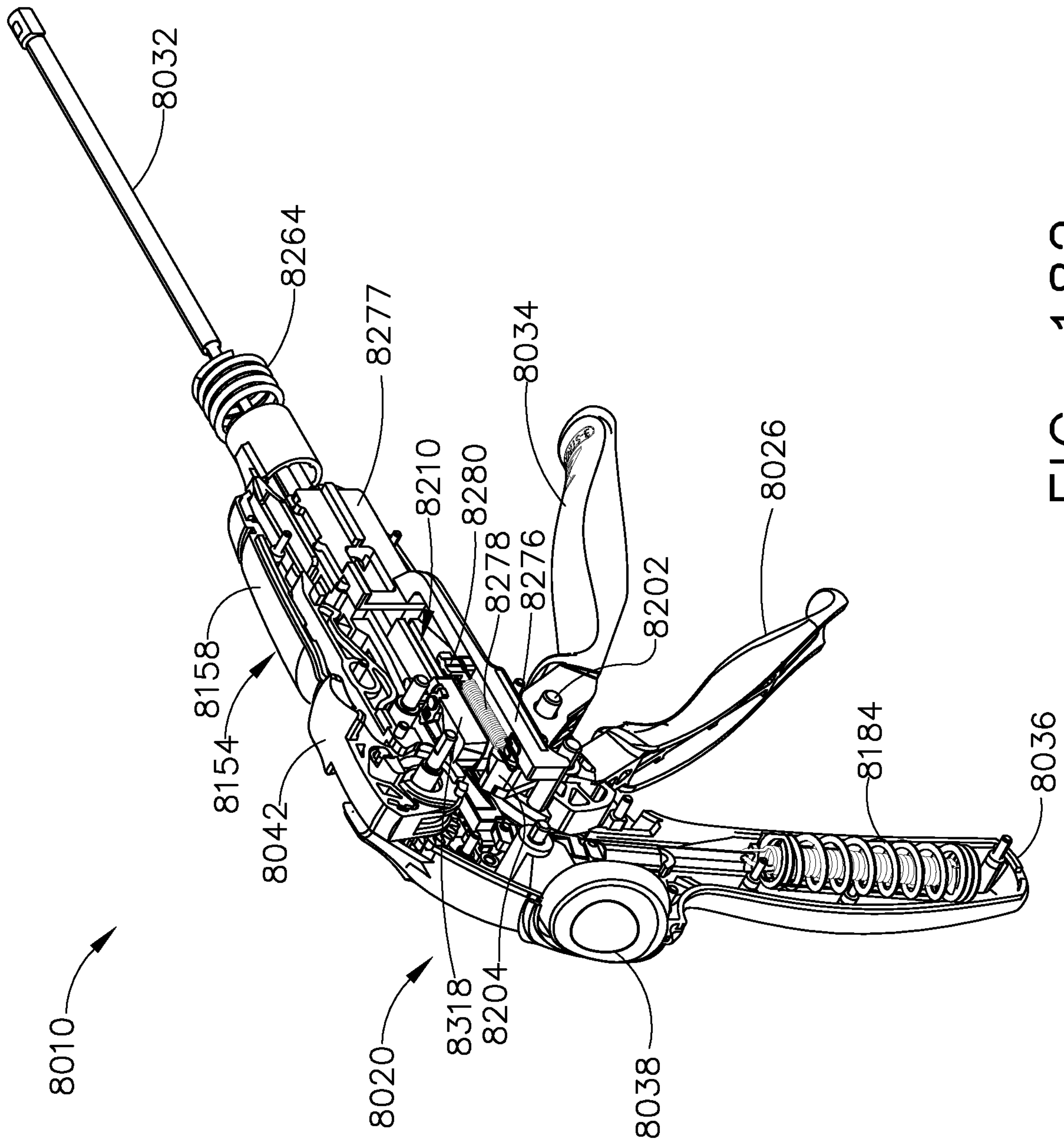


FIG. 180



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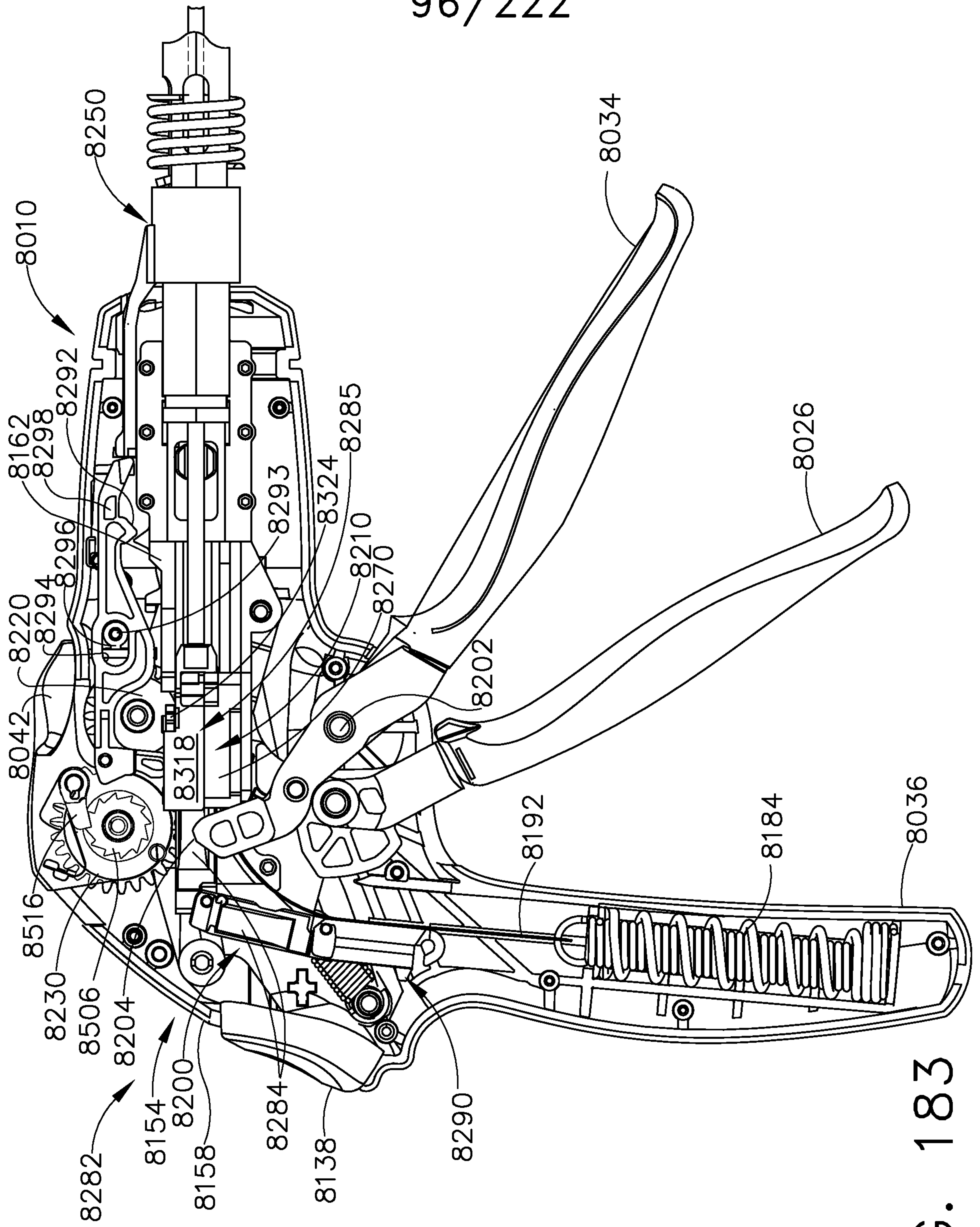


FIG. 183



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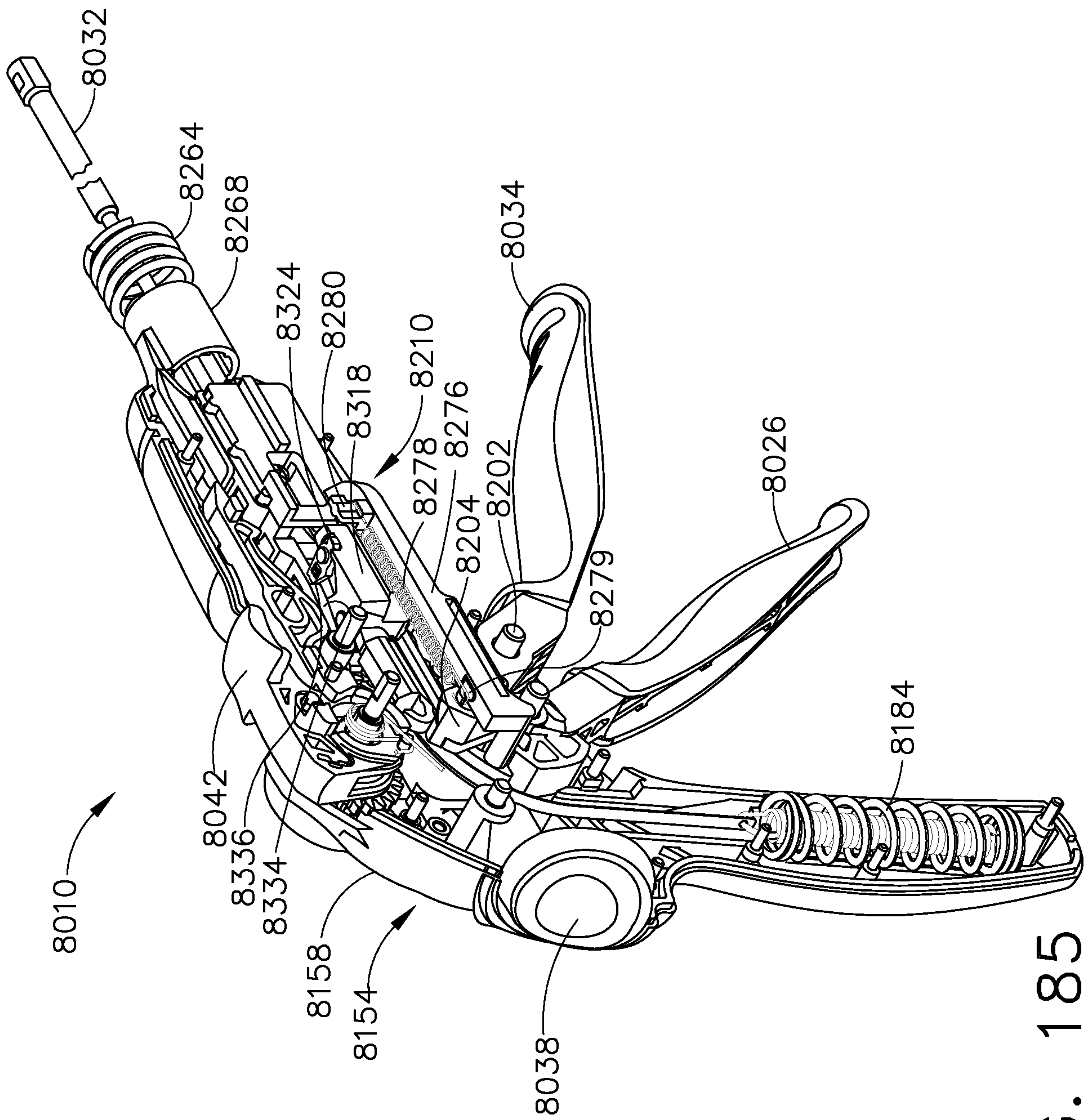


FIG. 185

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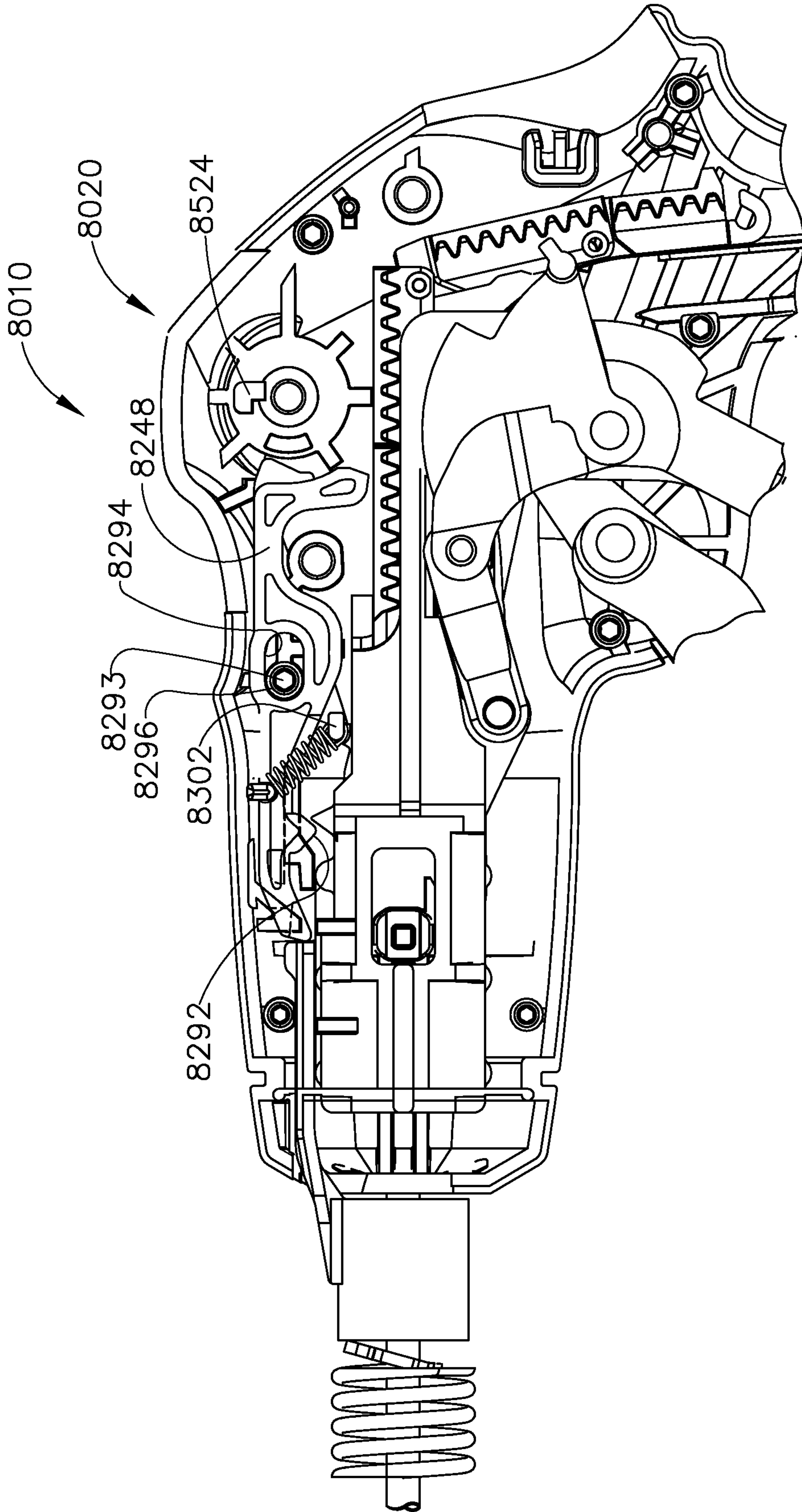
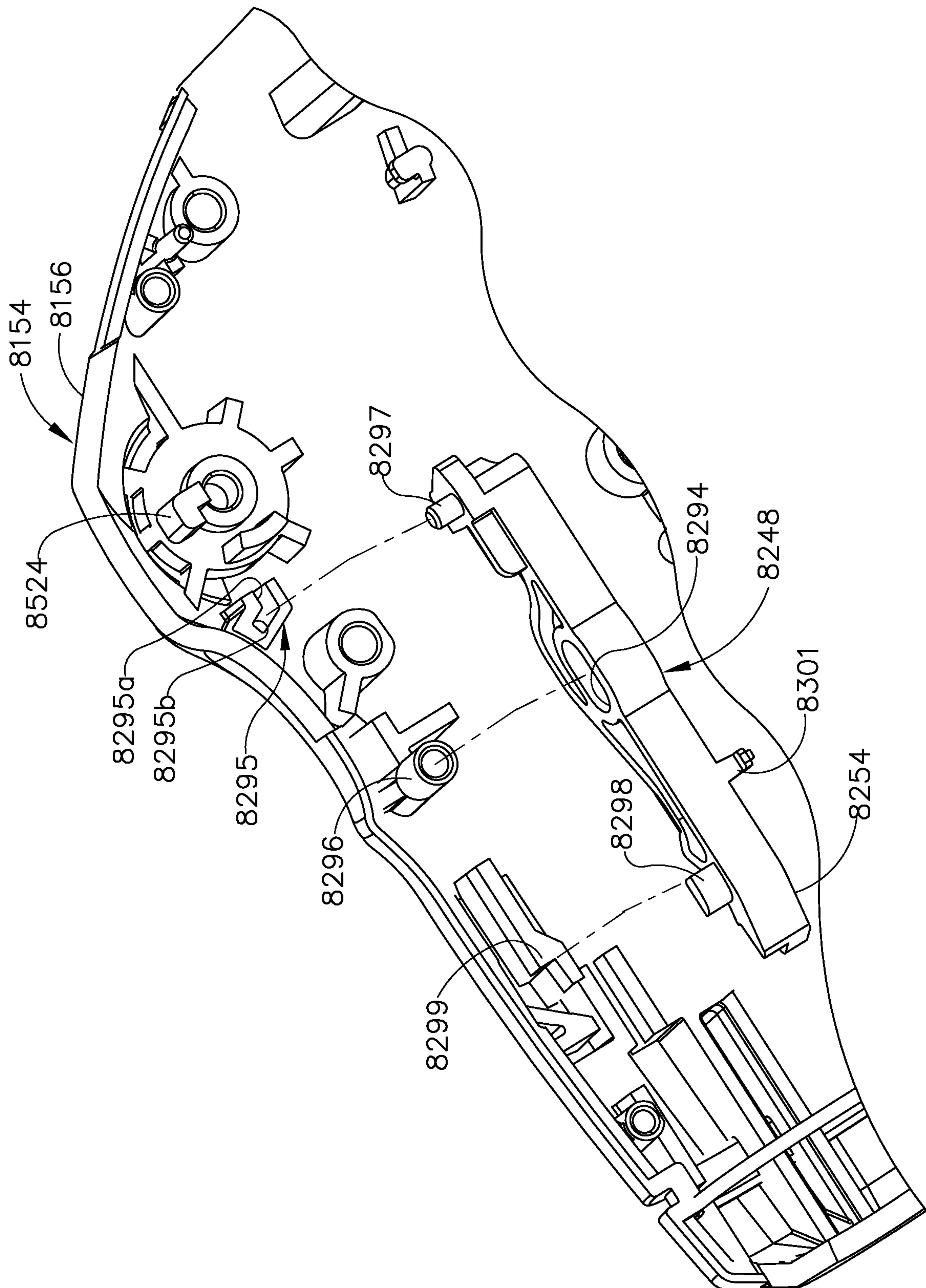


FIG. 186

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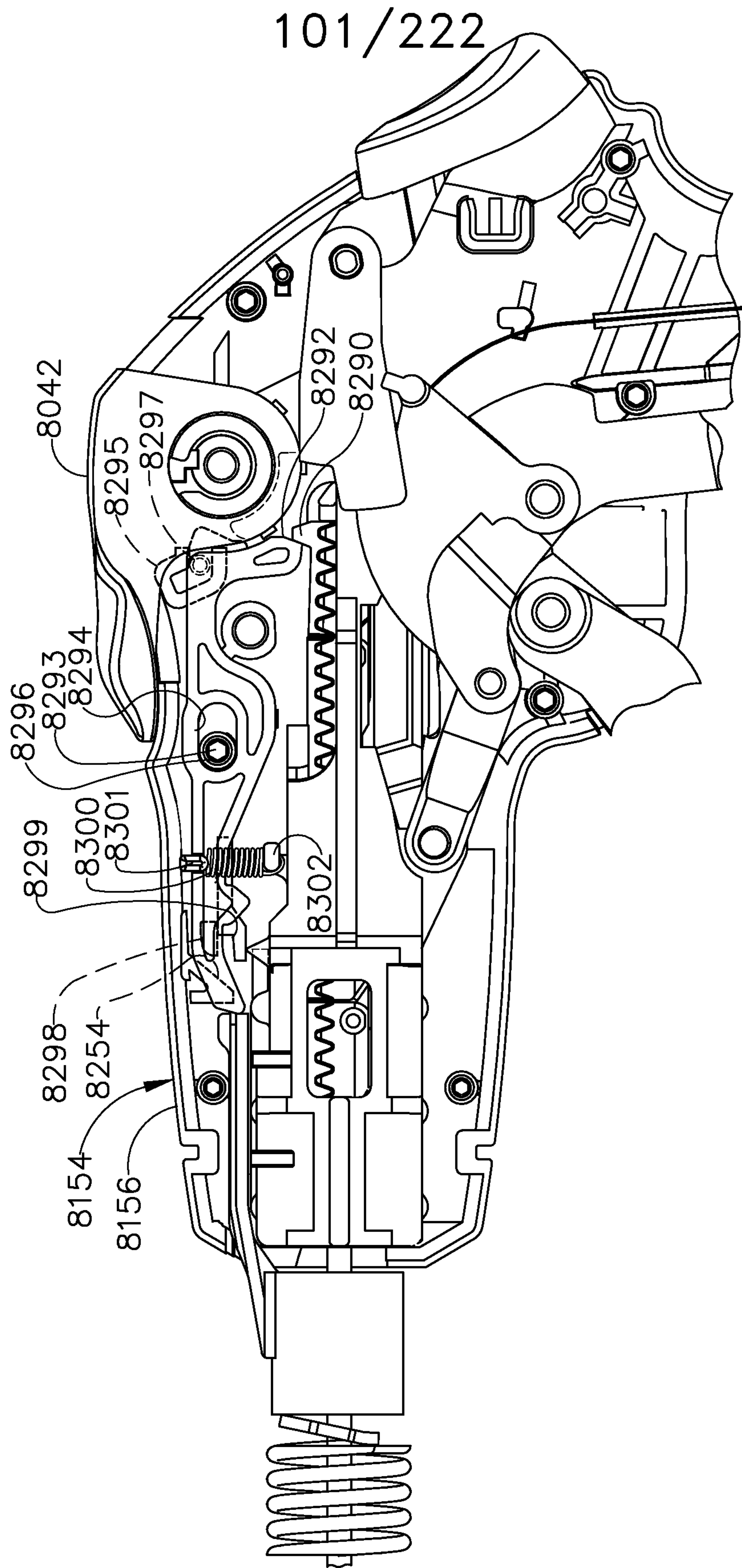


FIG. 188

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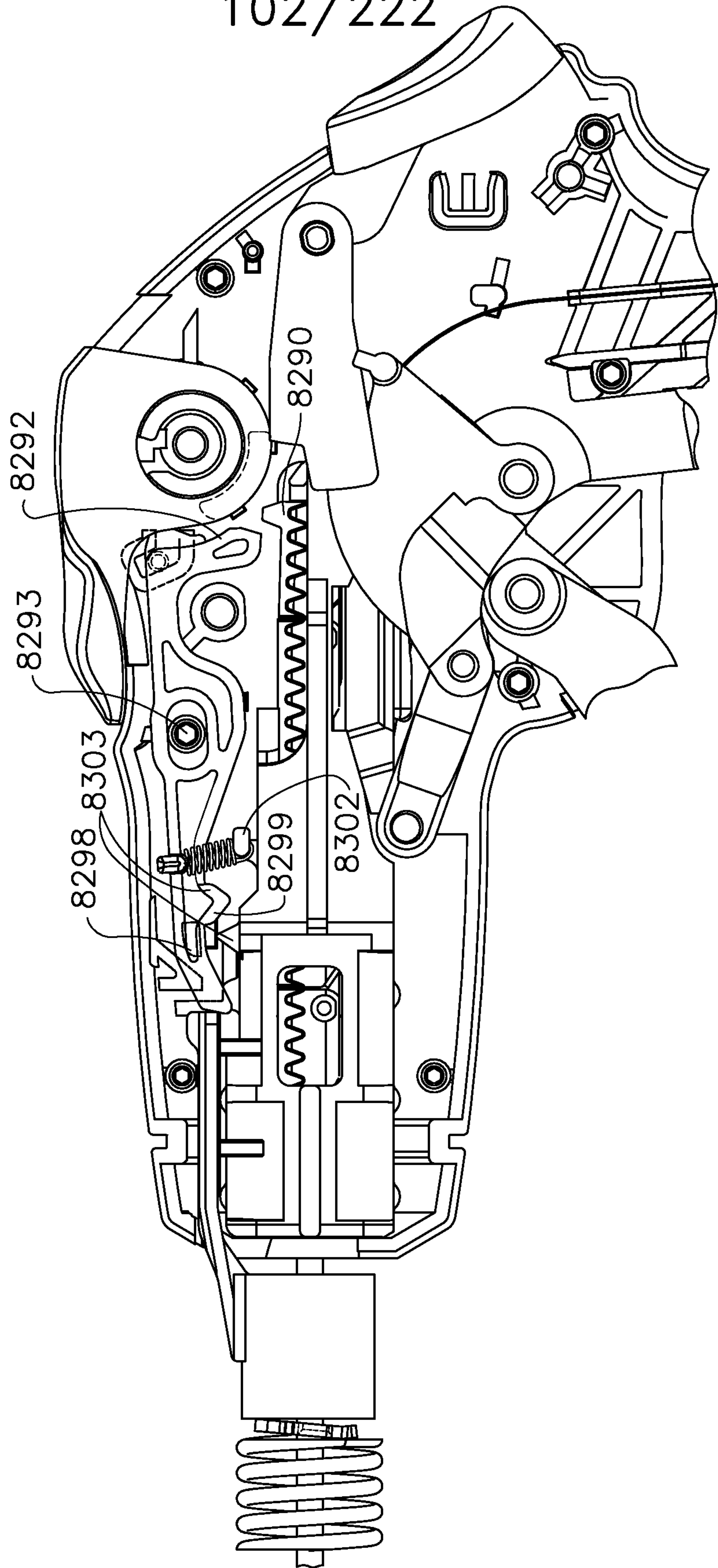


FIG. 189

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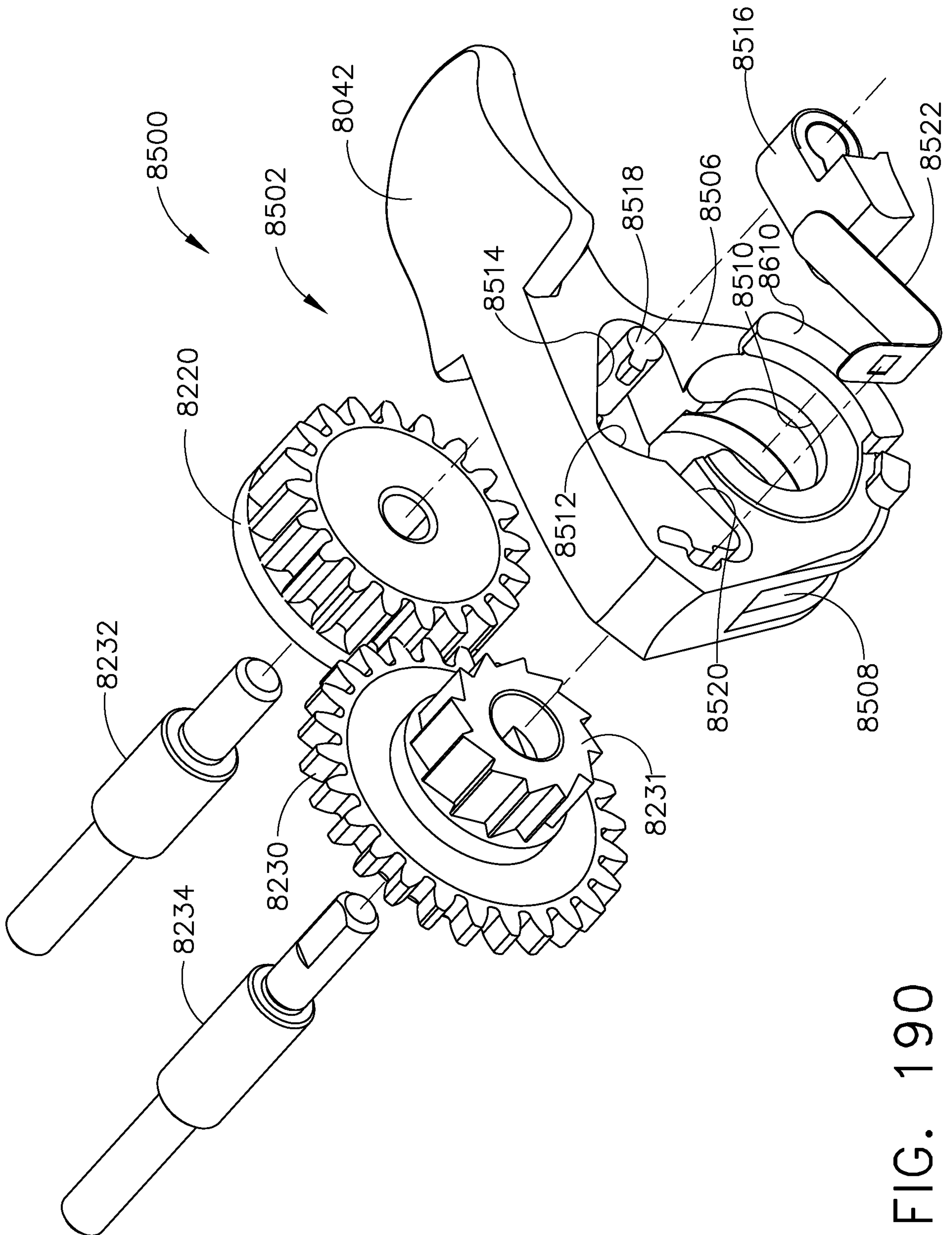


FIG. 190

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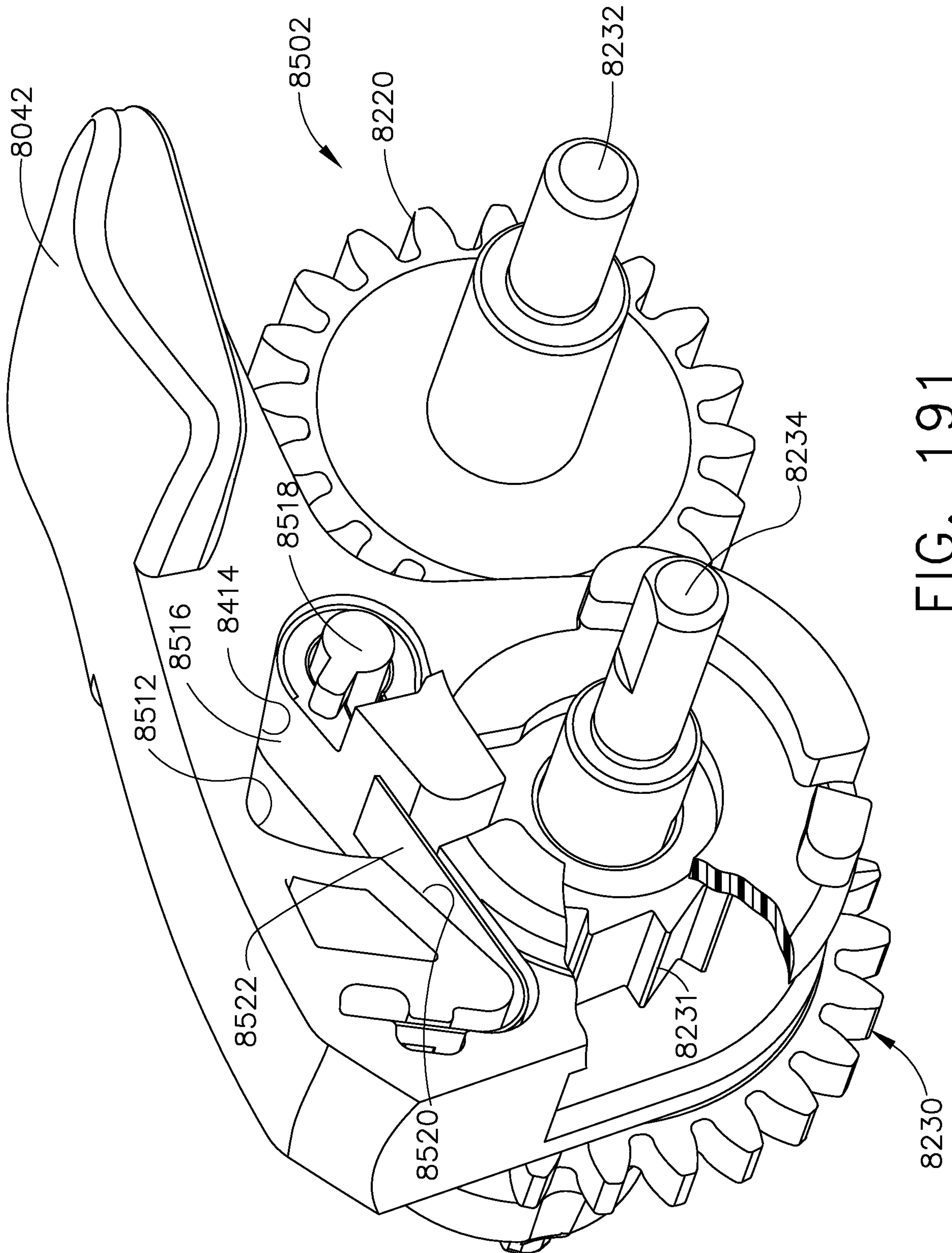


FIG. 191

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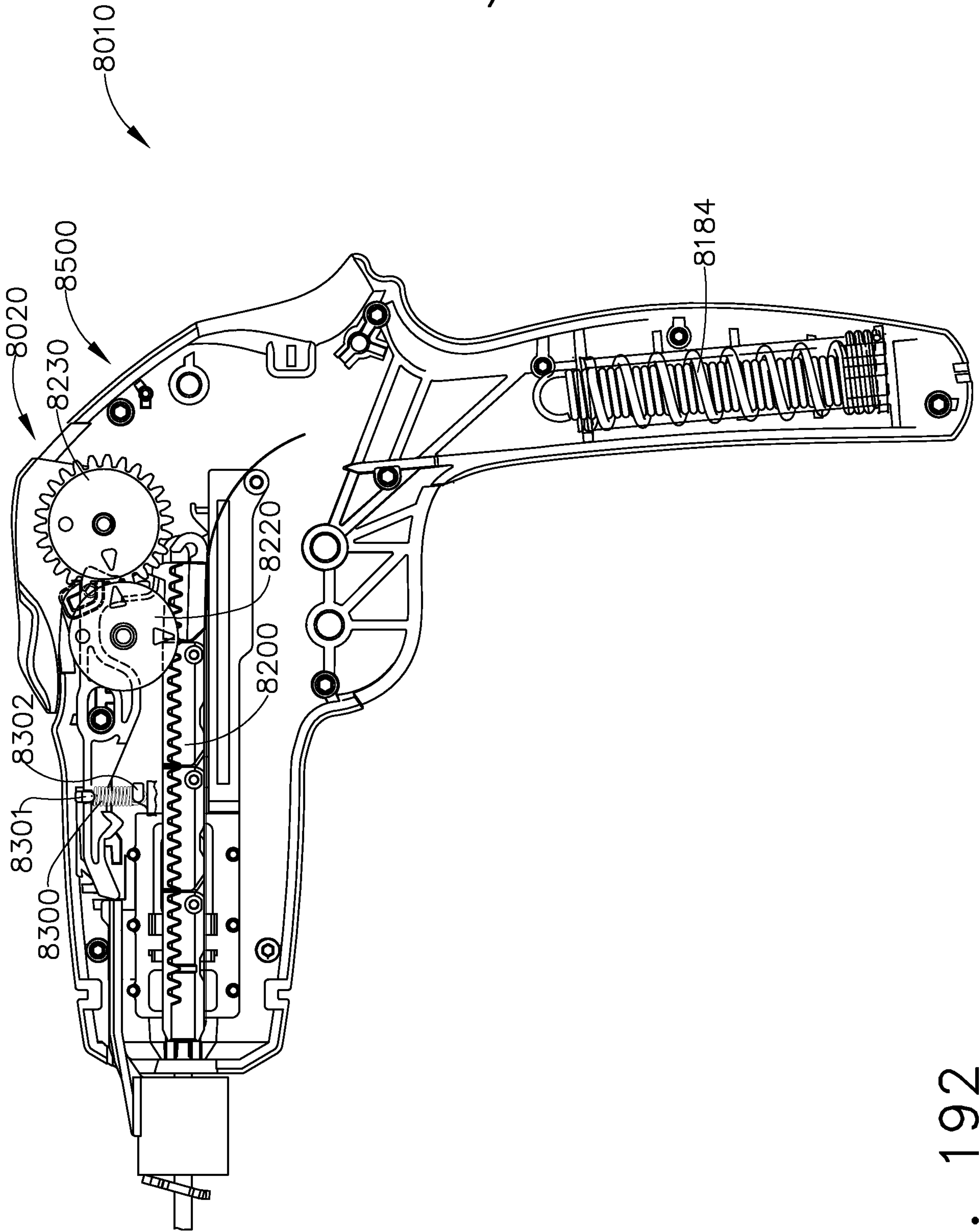


FIG. 192

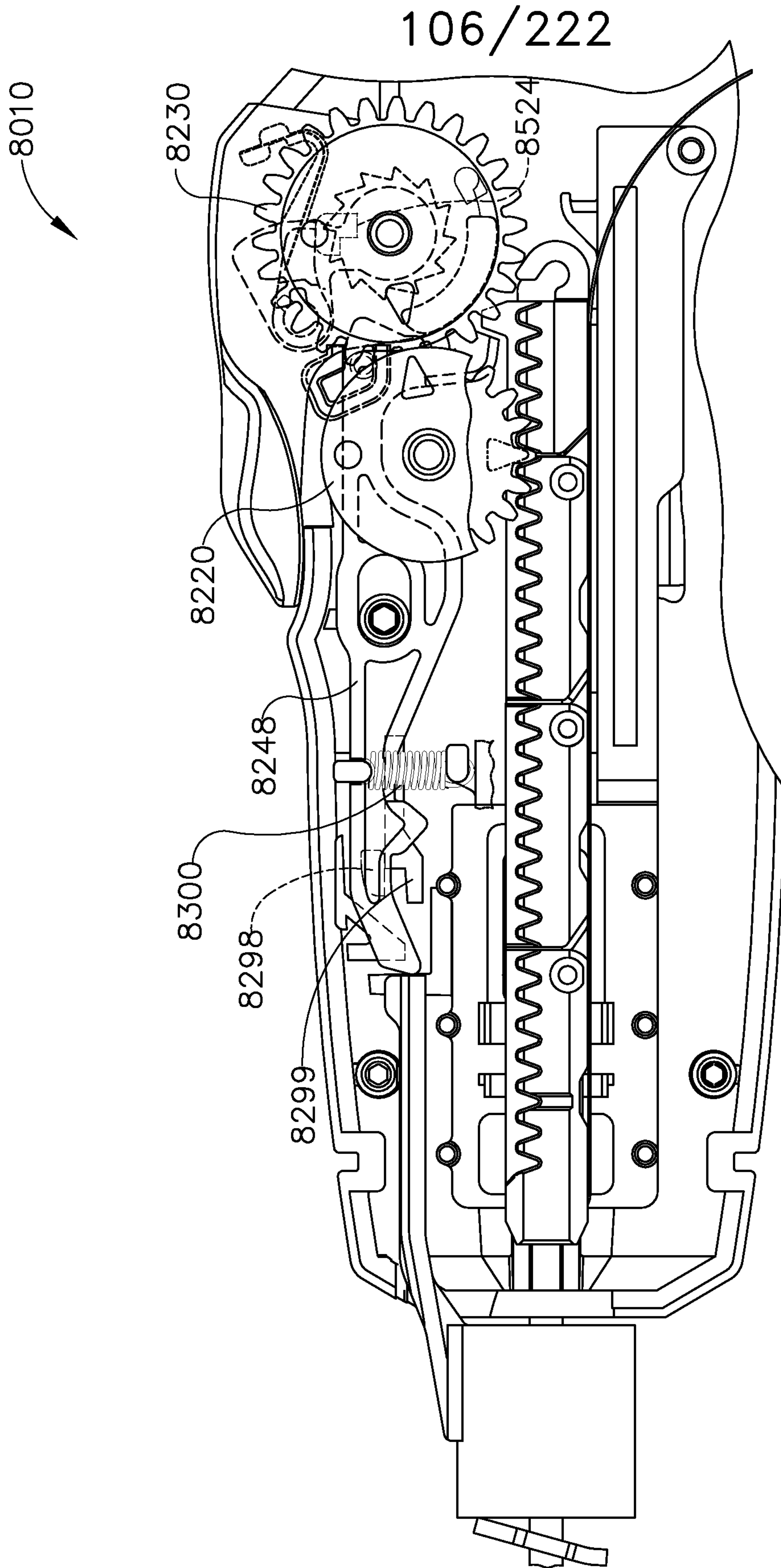


FIG. 193

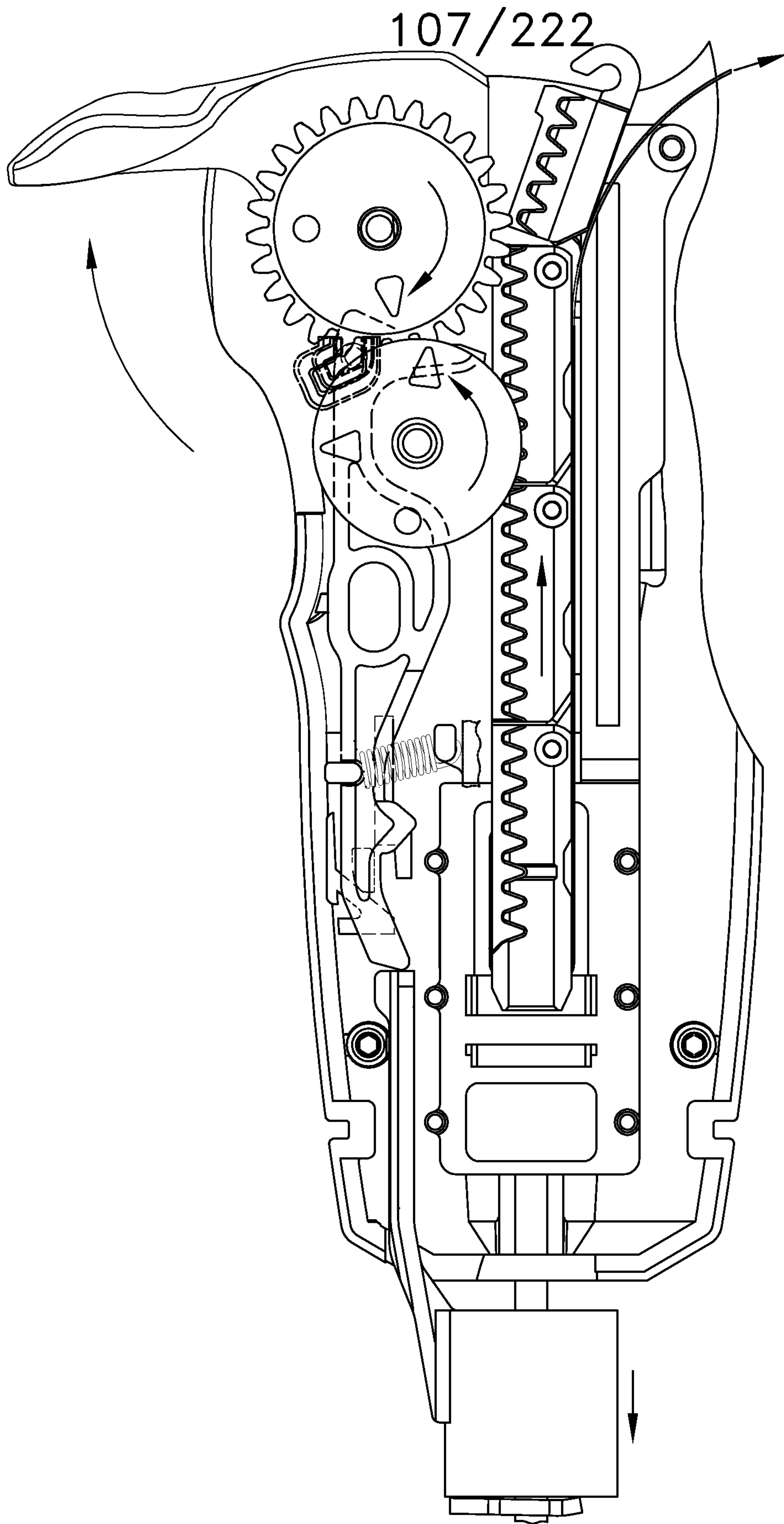


FIG. 194

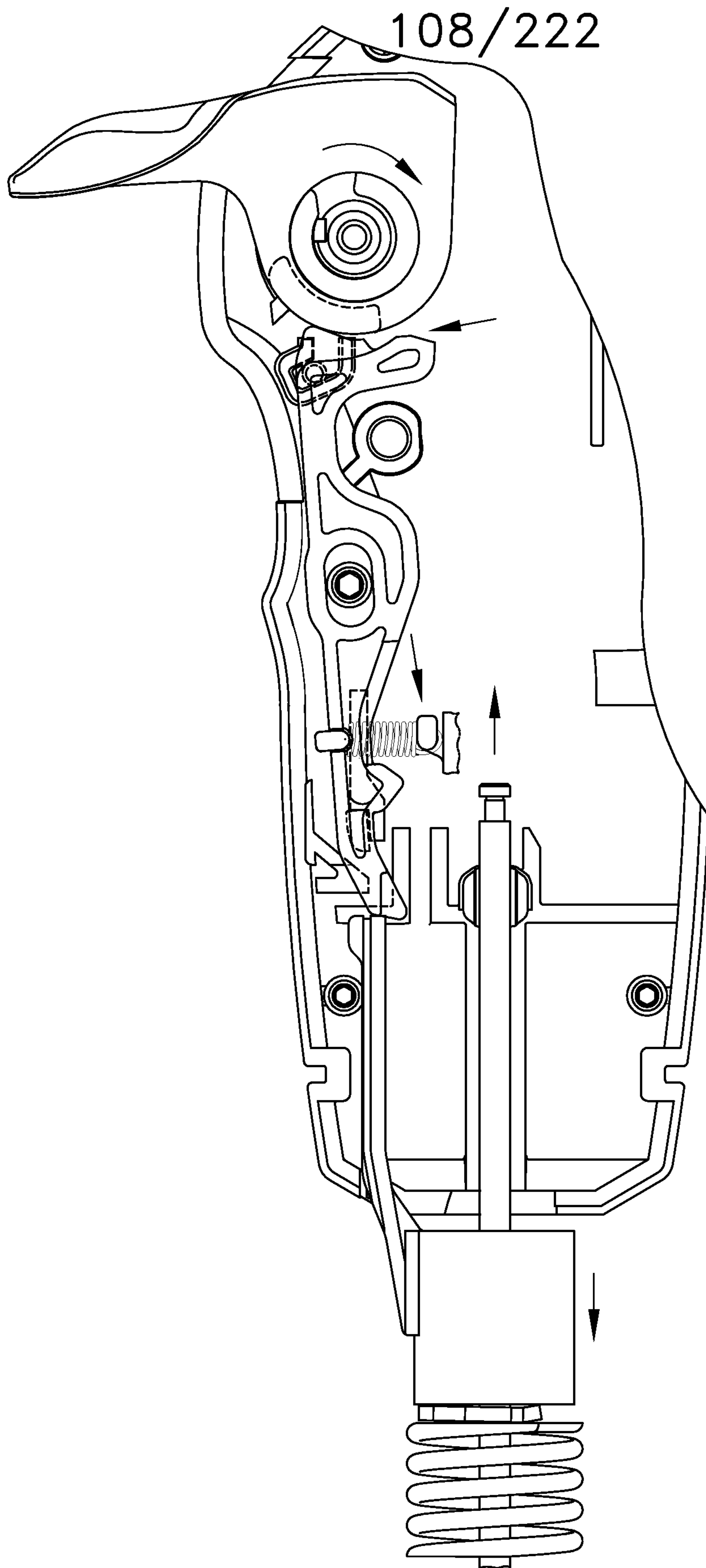


FIG. 195

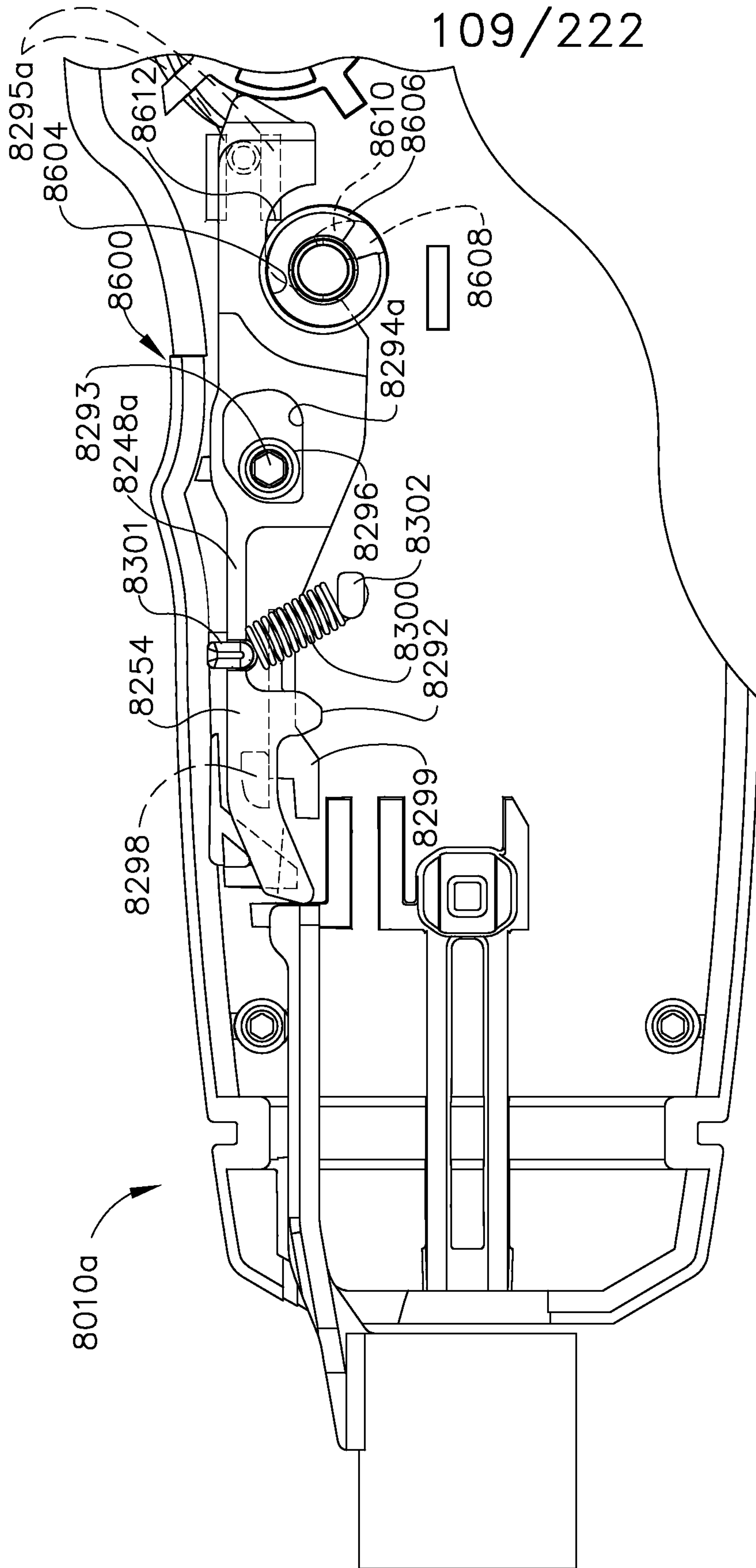


FIG. 196

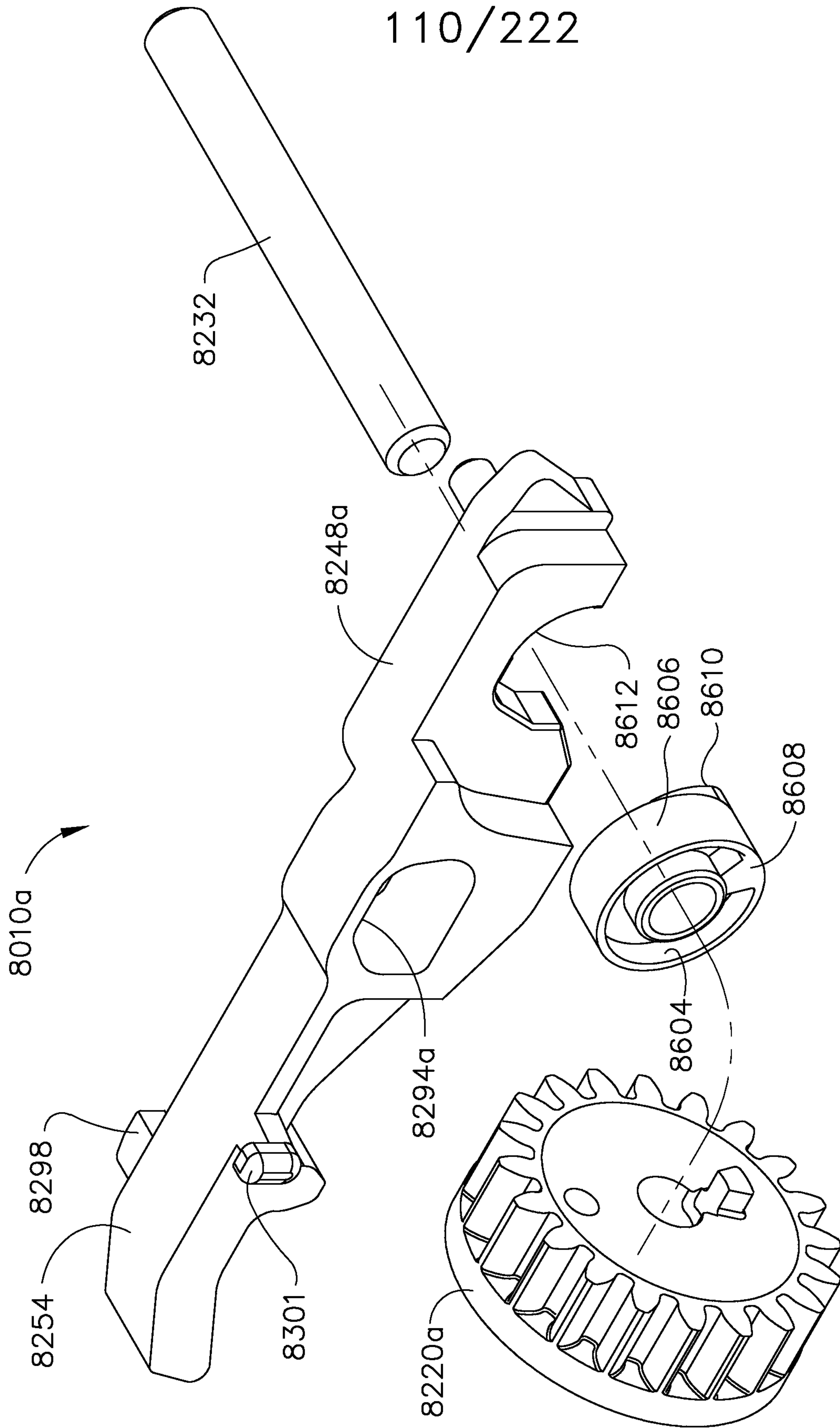
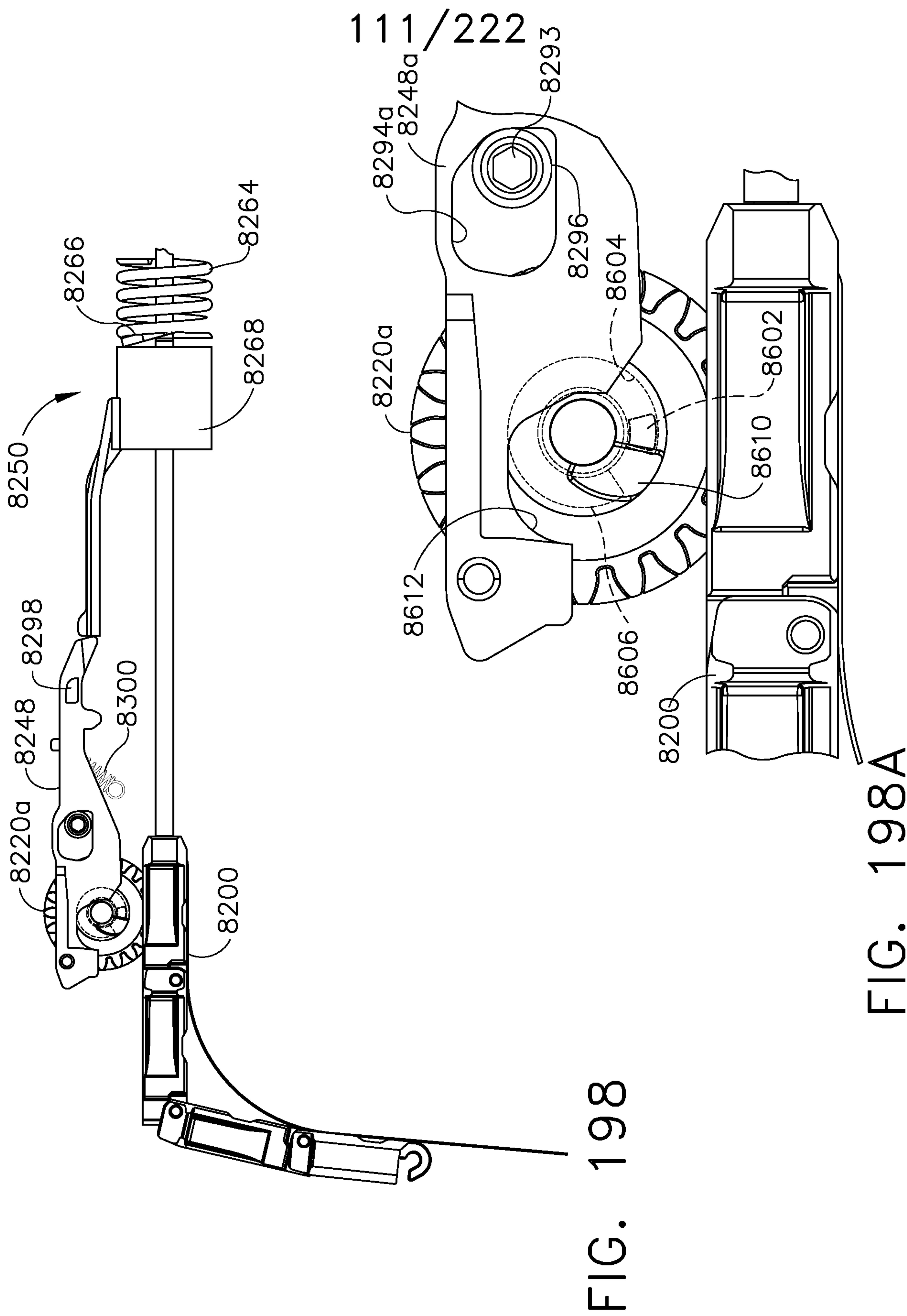


FIG. 197



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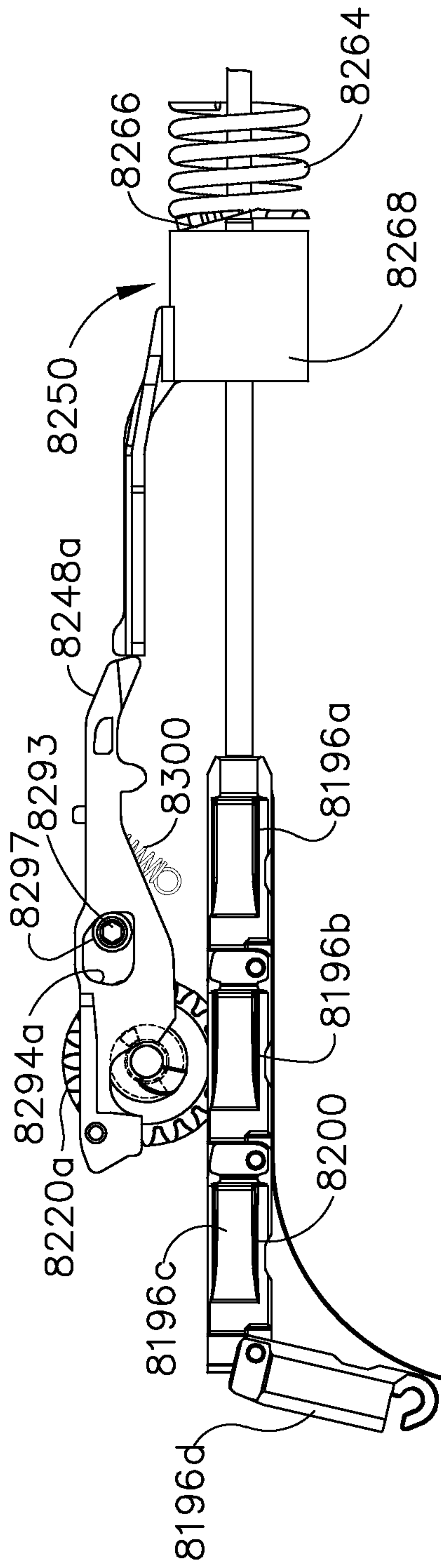


FIG. 199

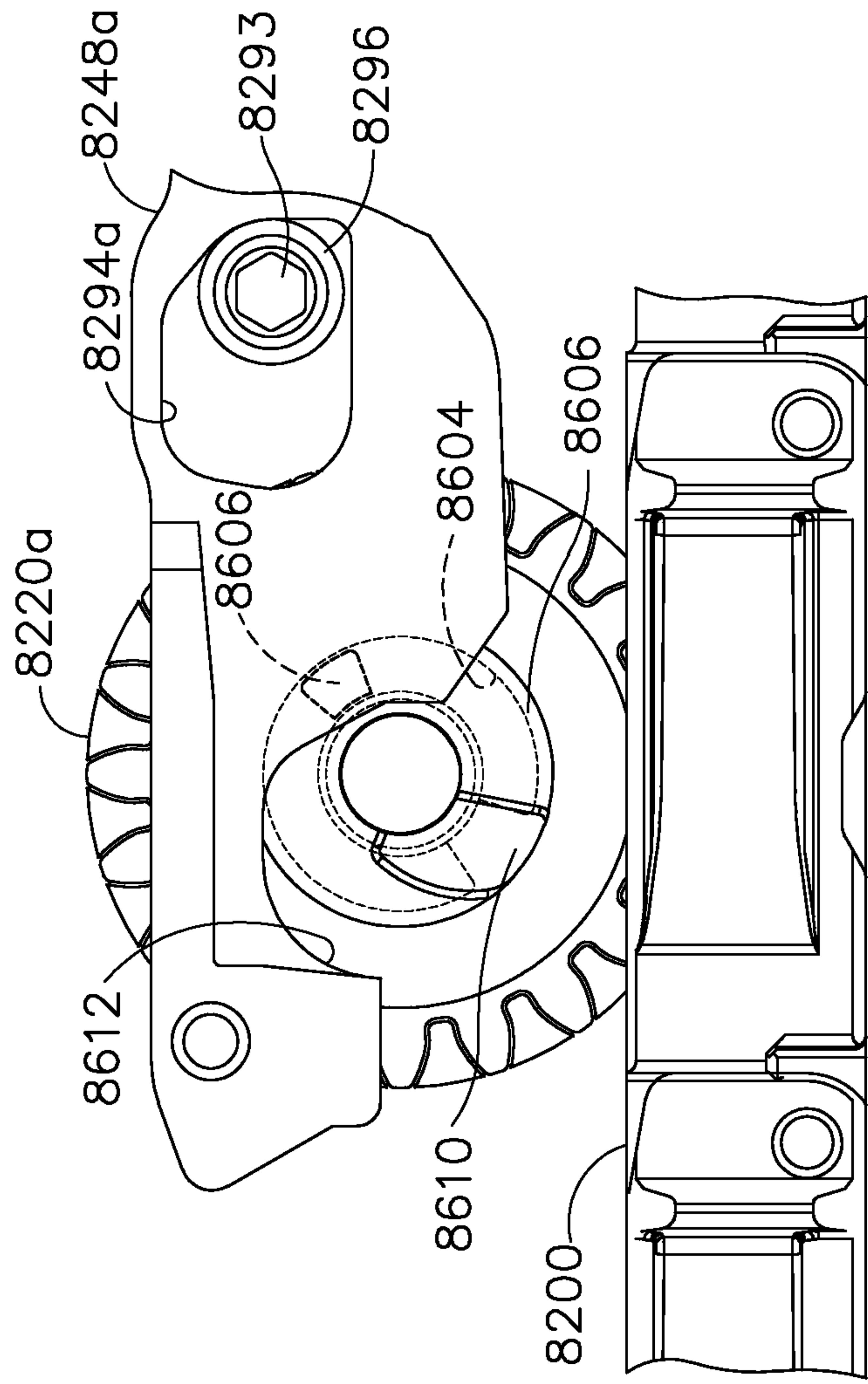


FIG. 199A

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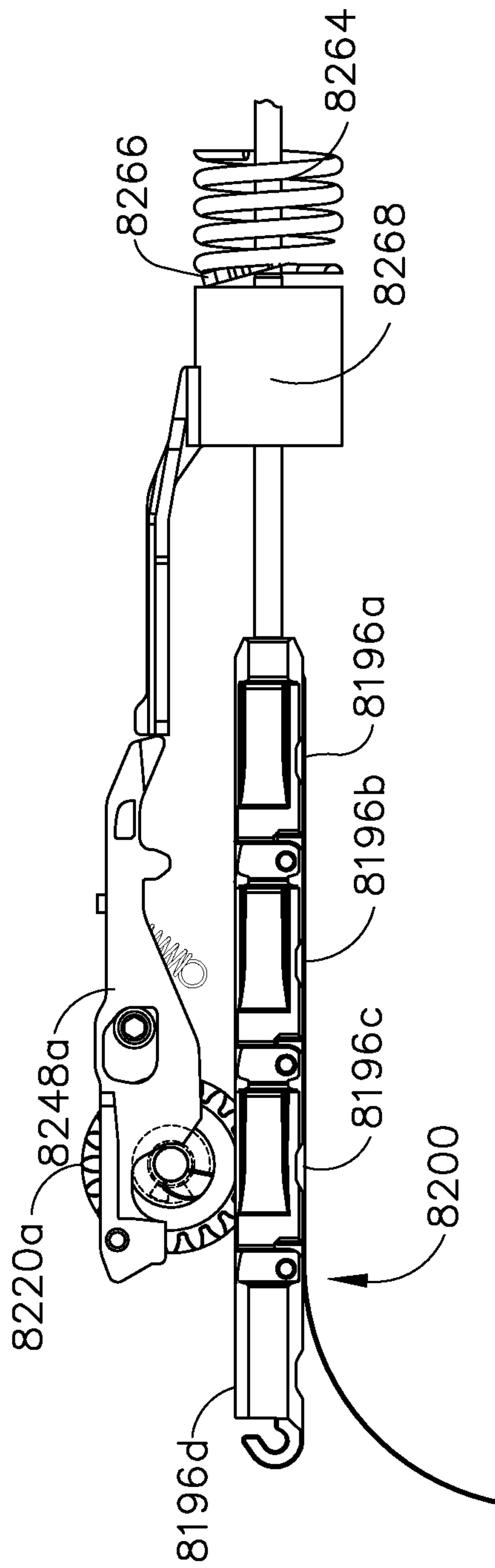


FIG. 200

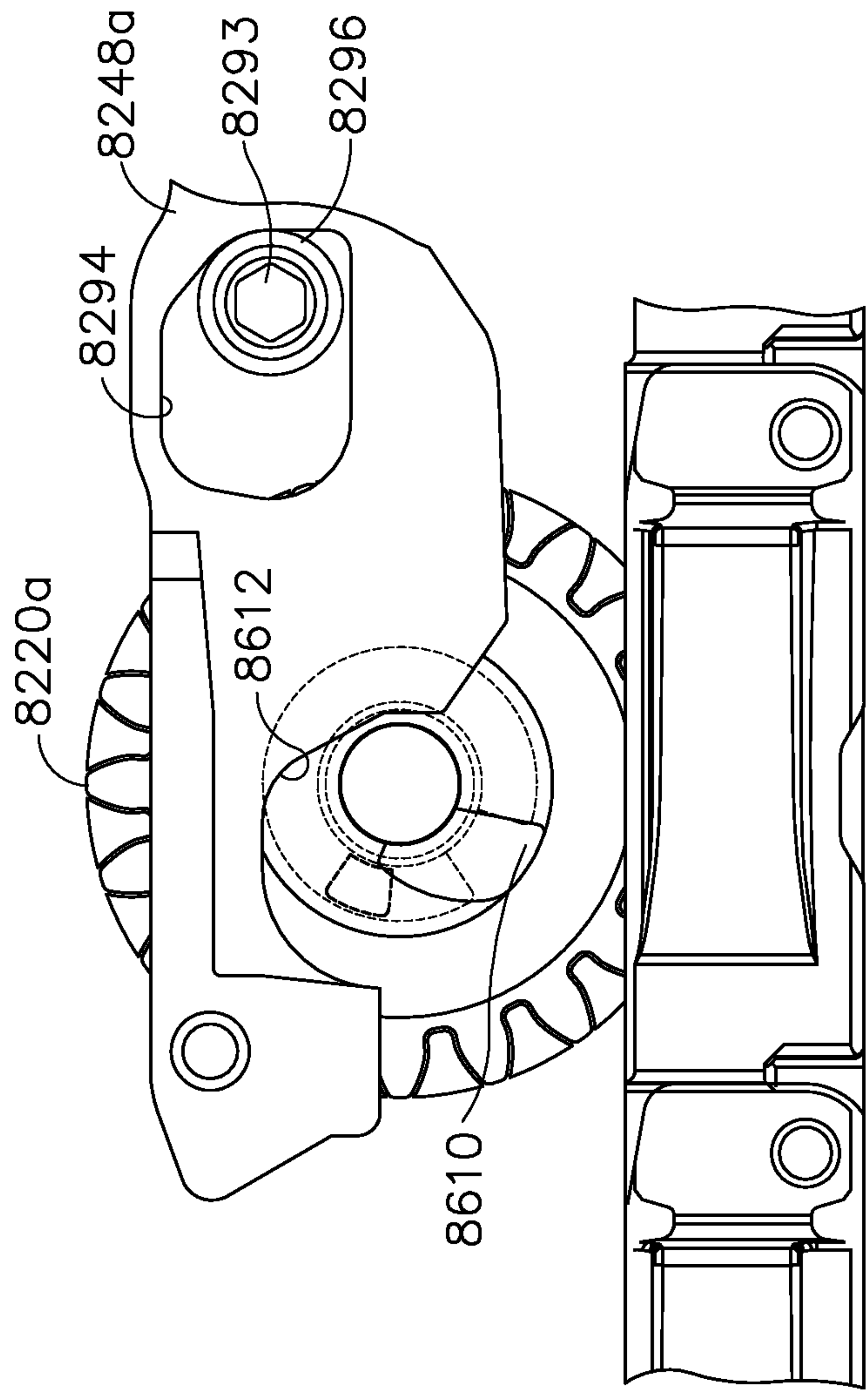


FIG. 200A

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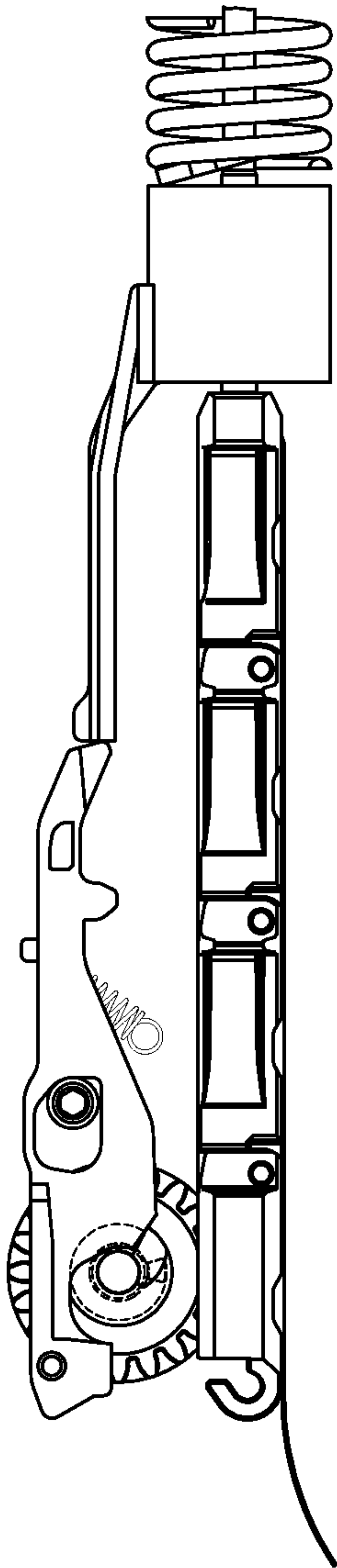


FIG. 201

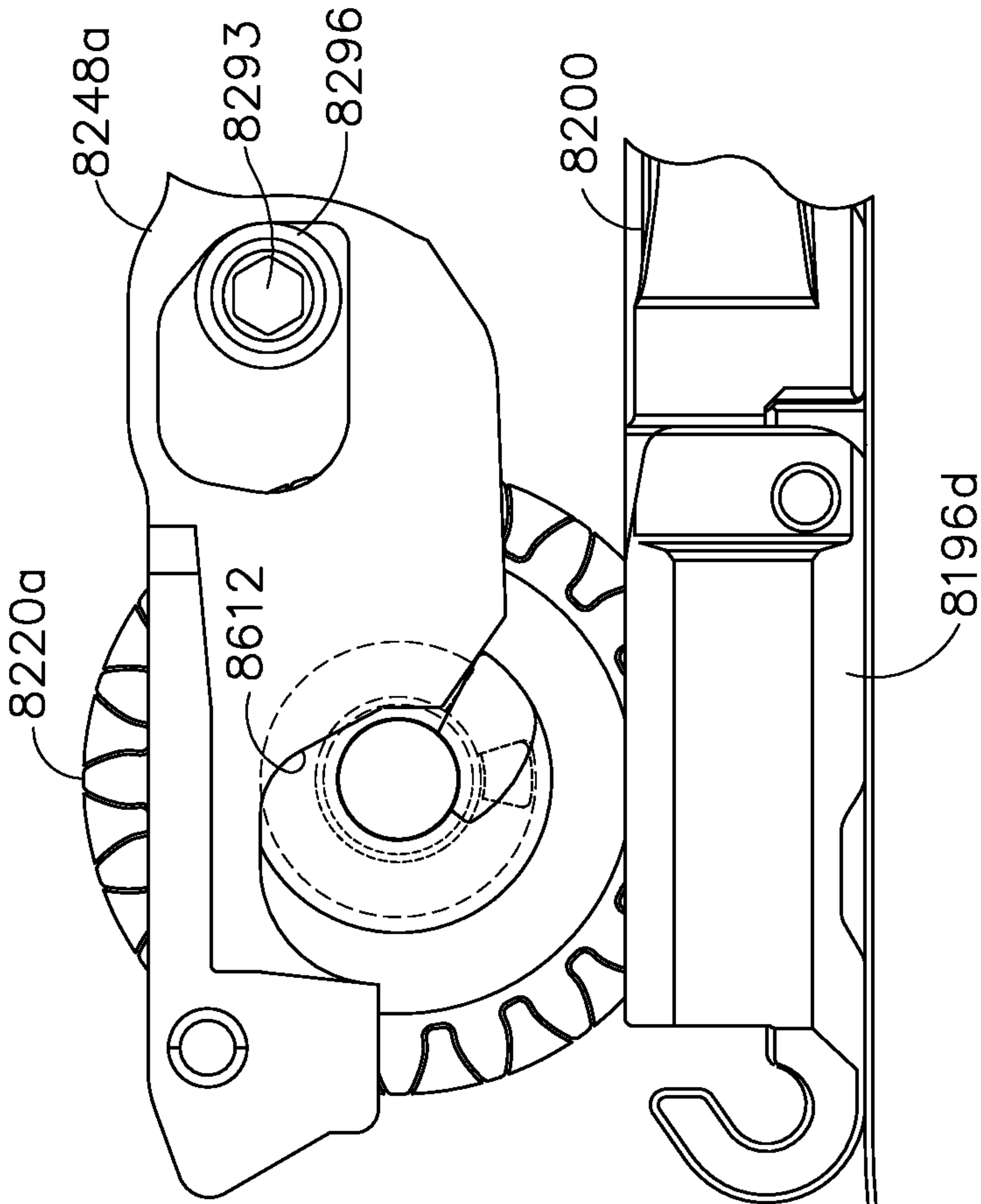


FIG. 201A

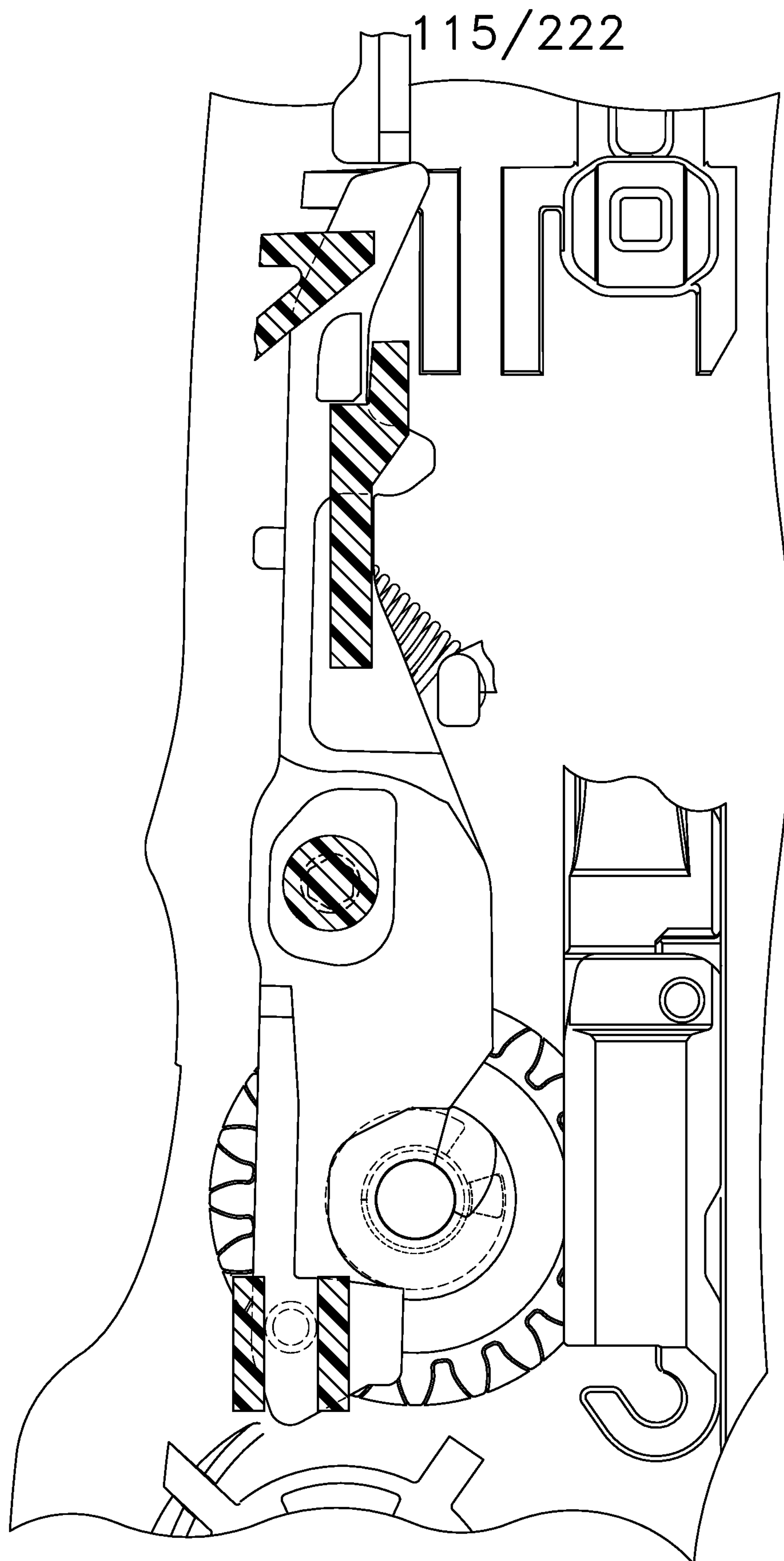
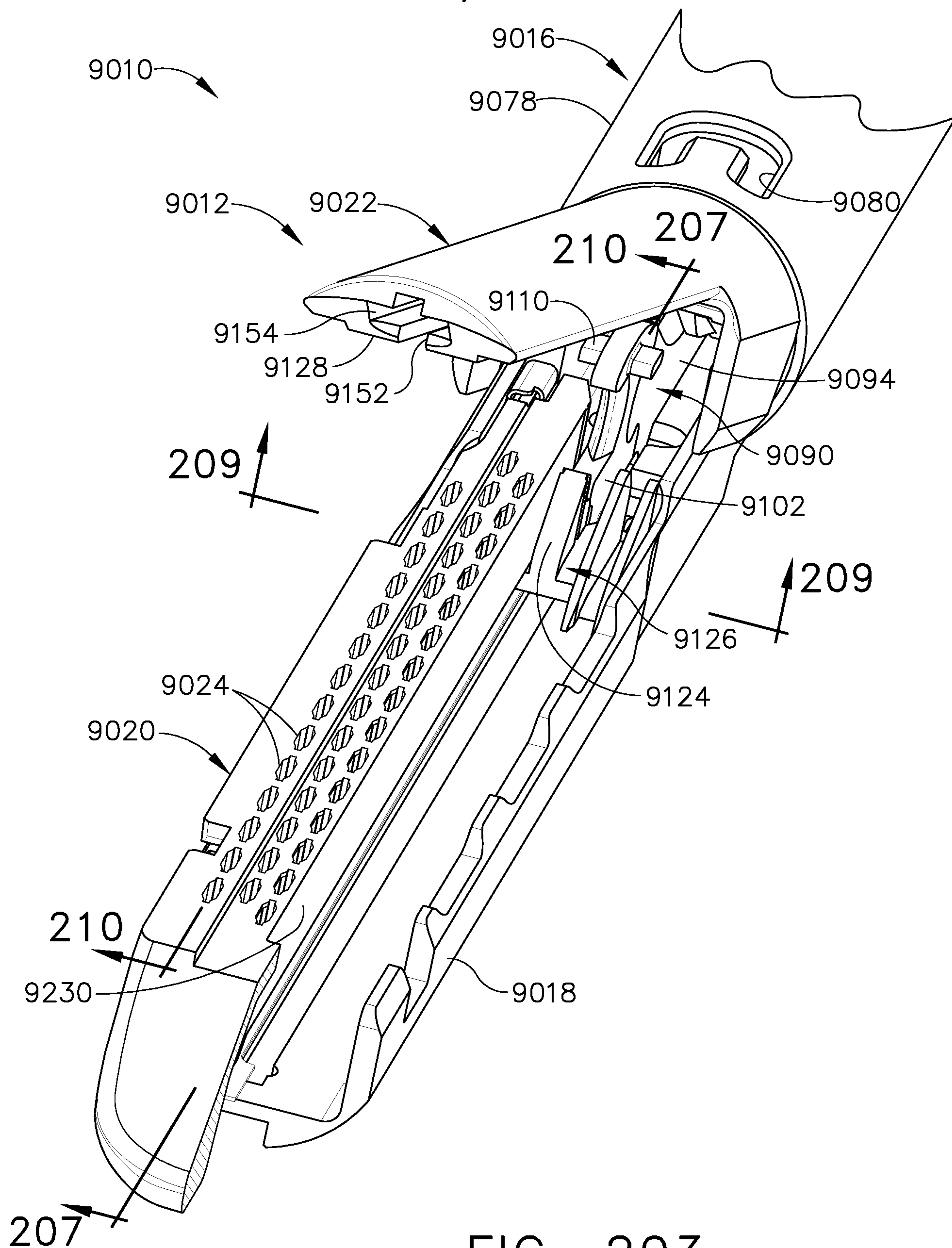
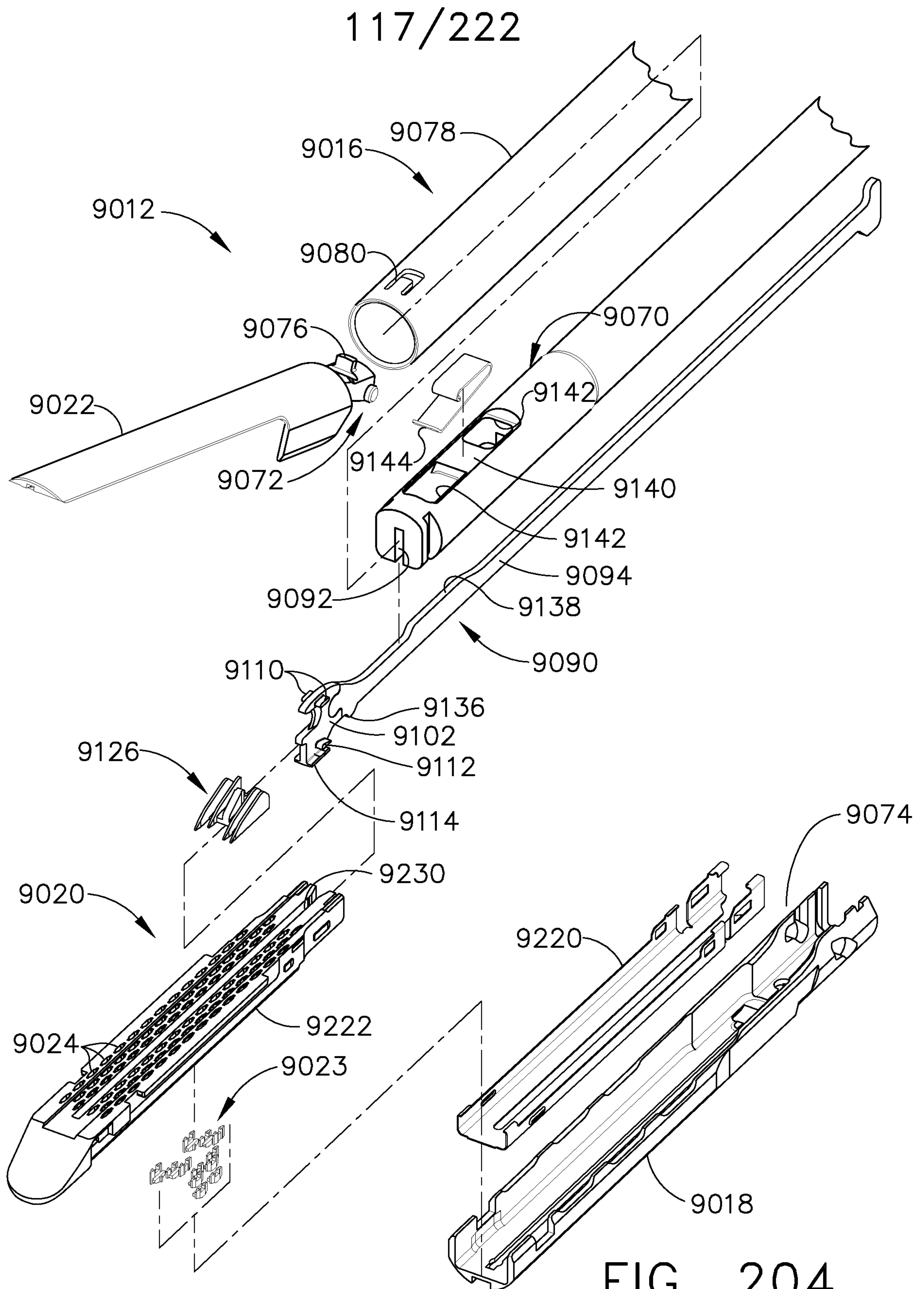


FIG. 202

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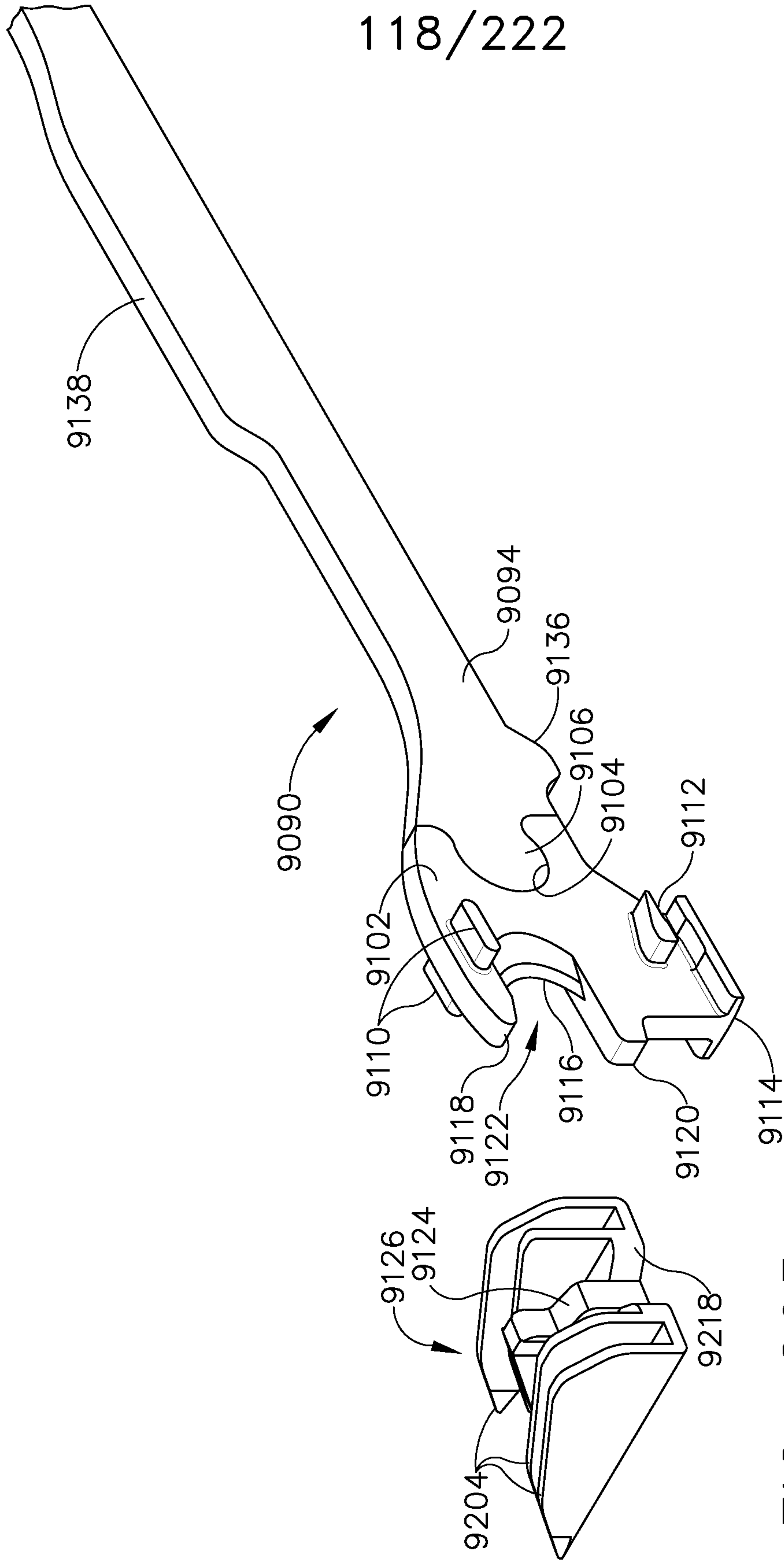


FIG. 206

FIG. 205

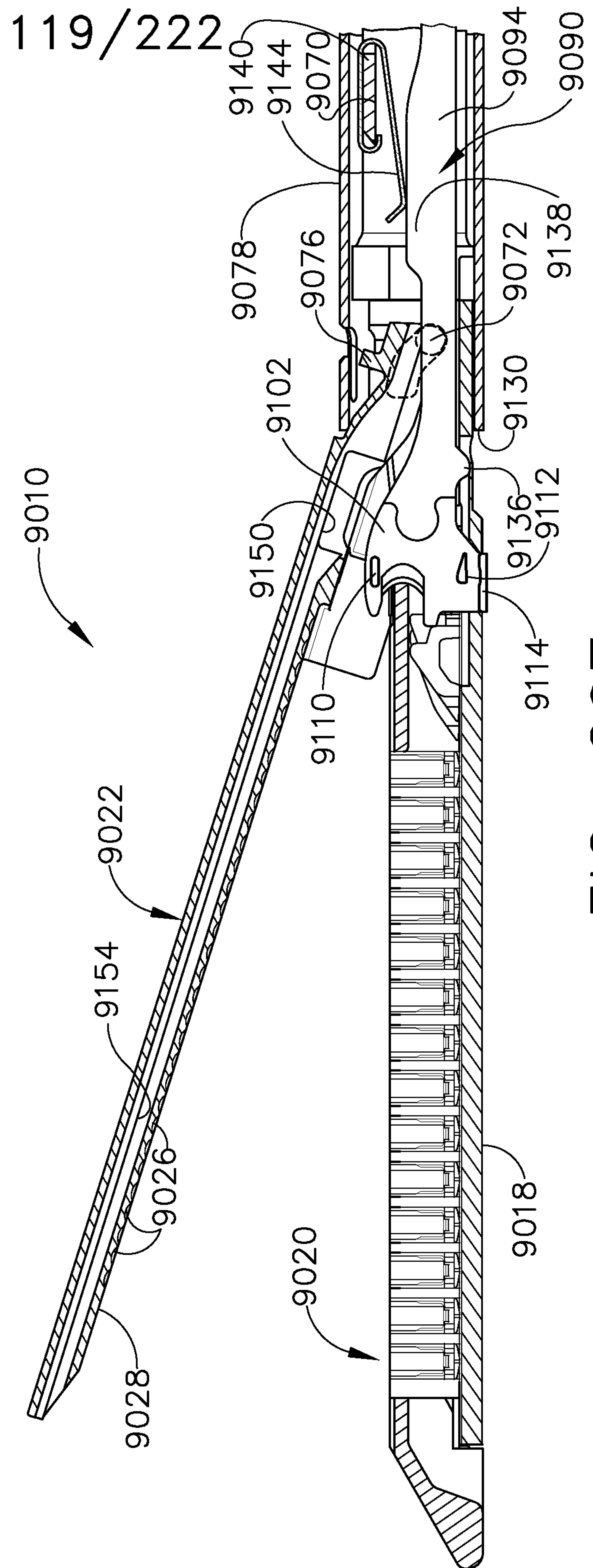


FIG. 207



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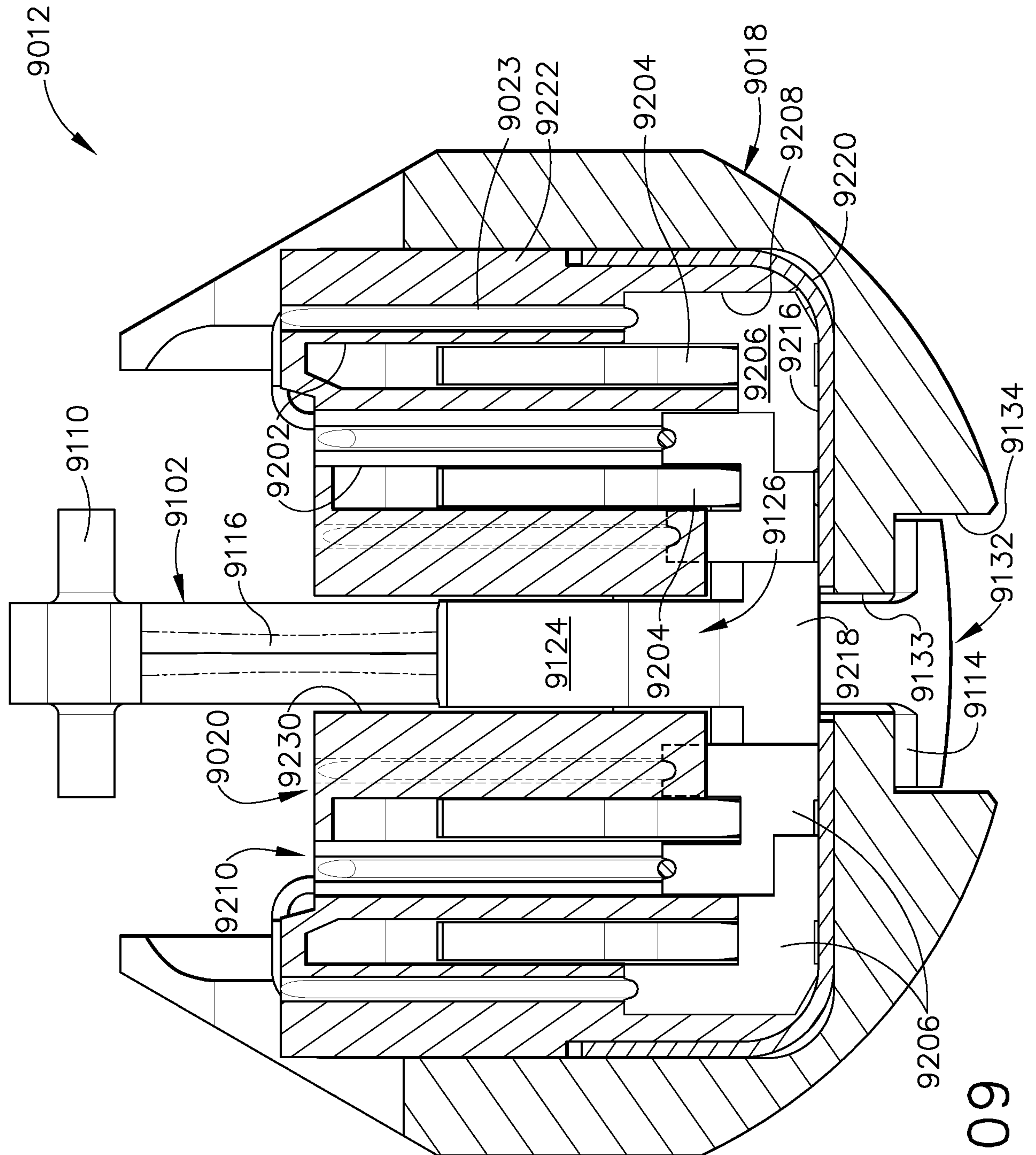


FIG. 209

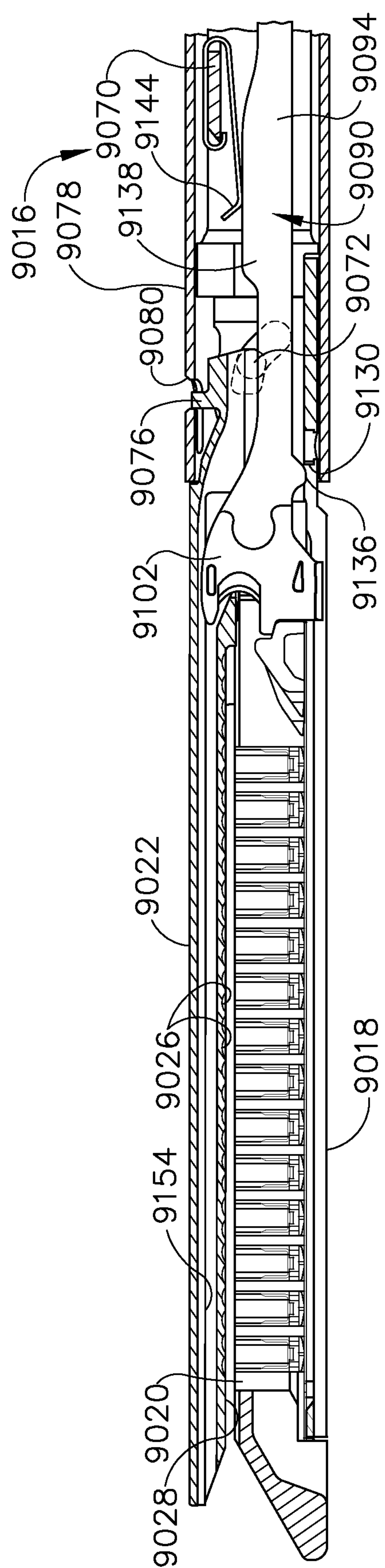


FIG. 210

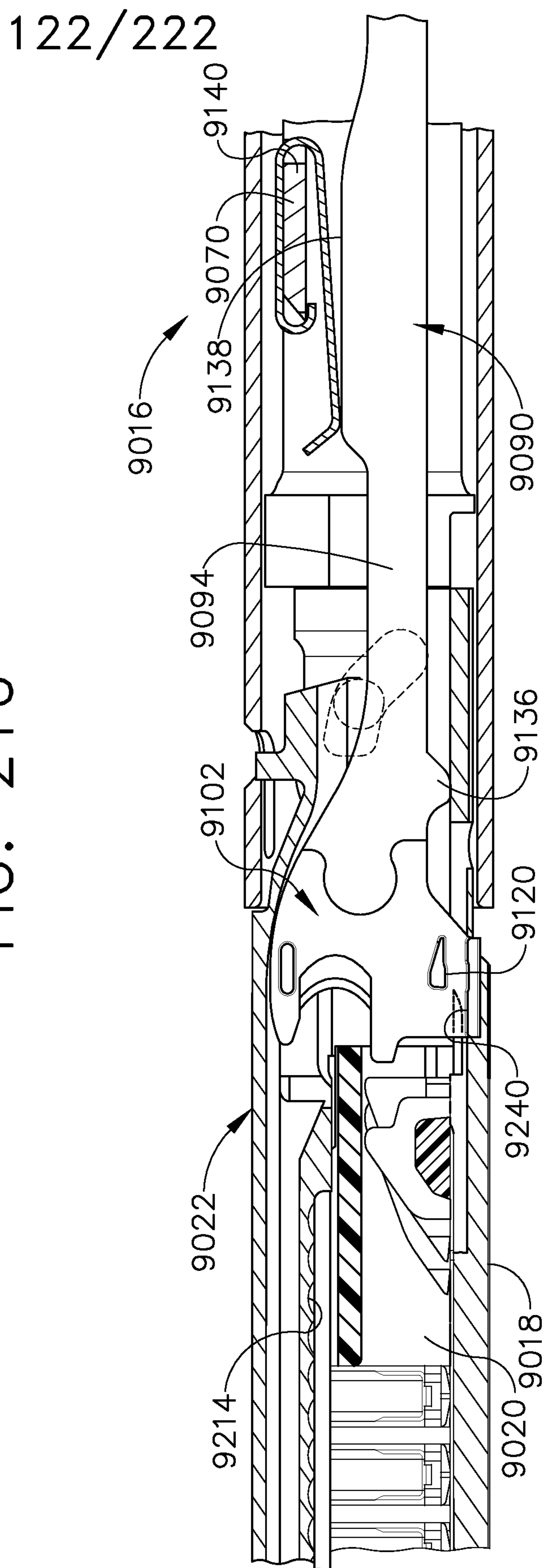


FIG. 211

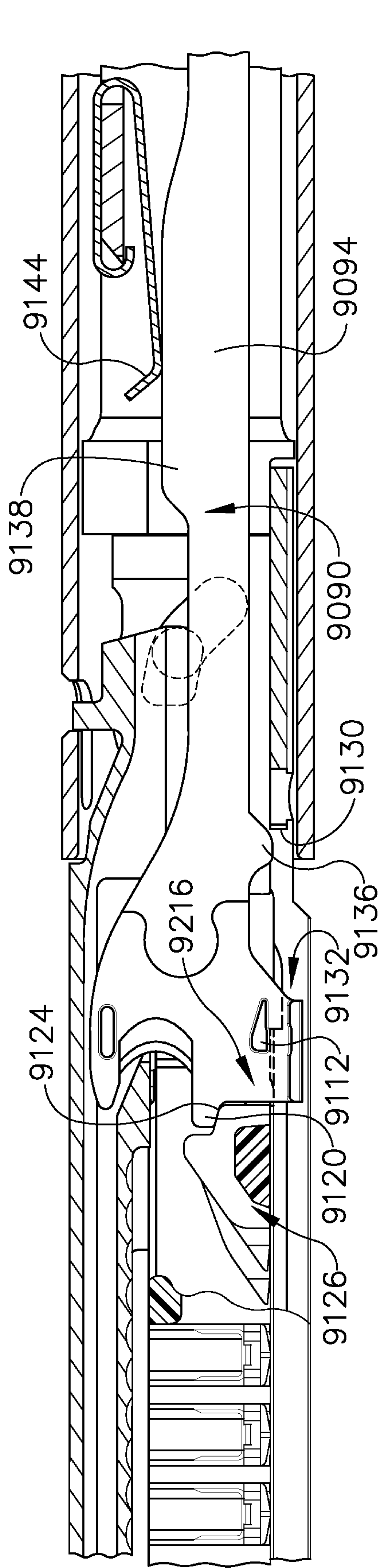


FIG. 212

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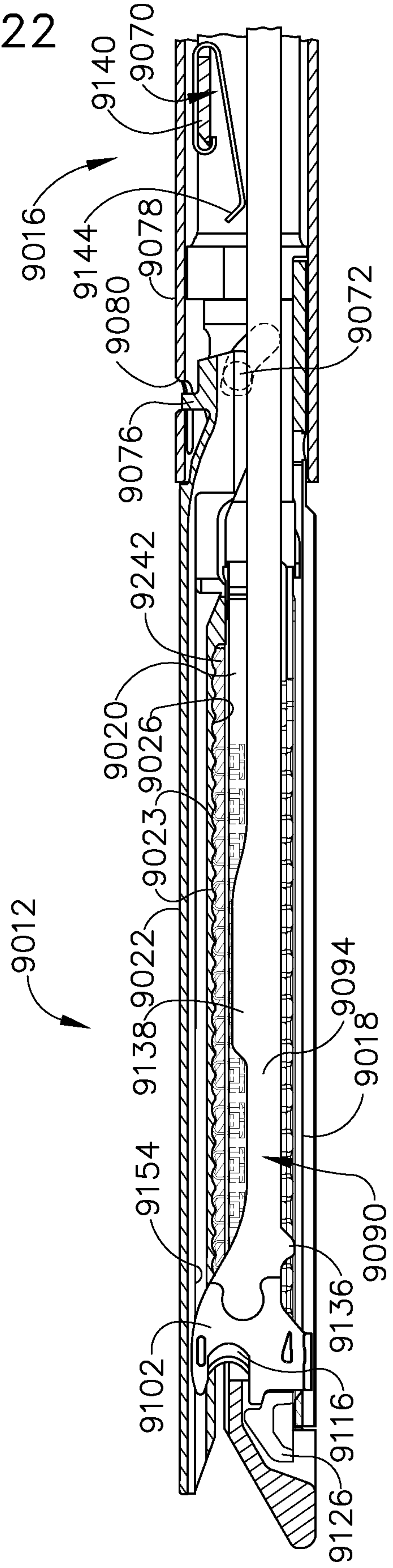
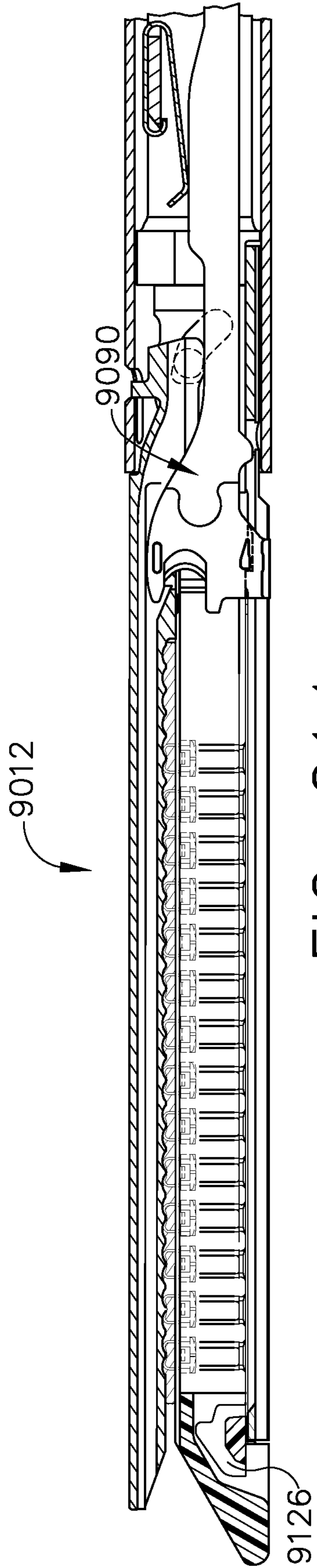
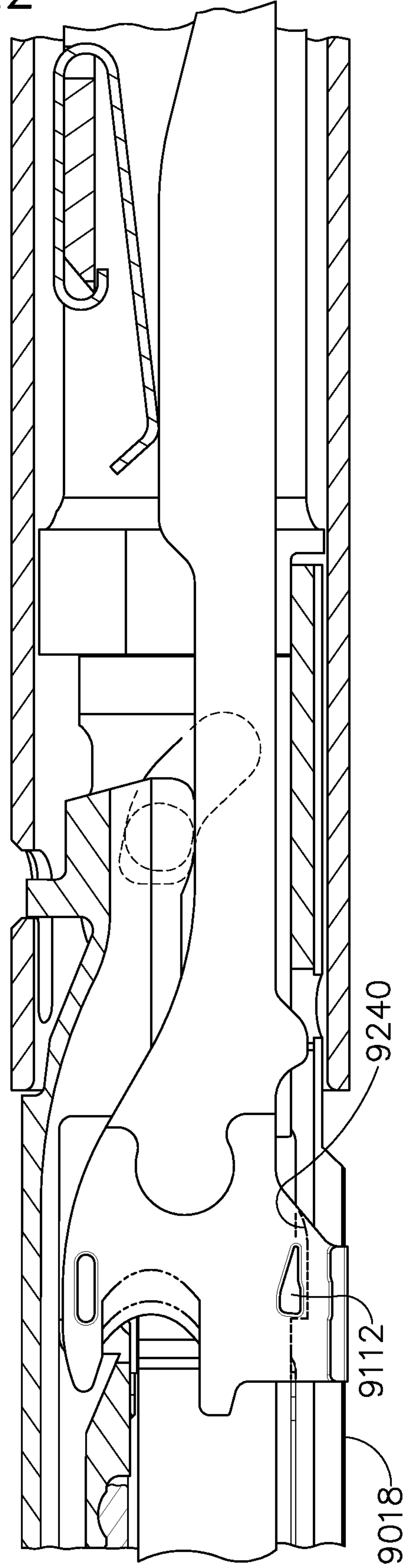


FIG. 213



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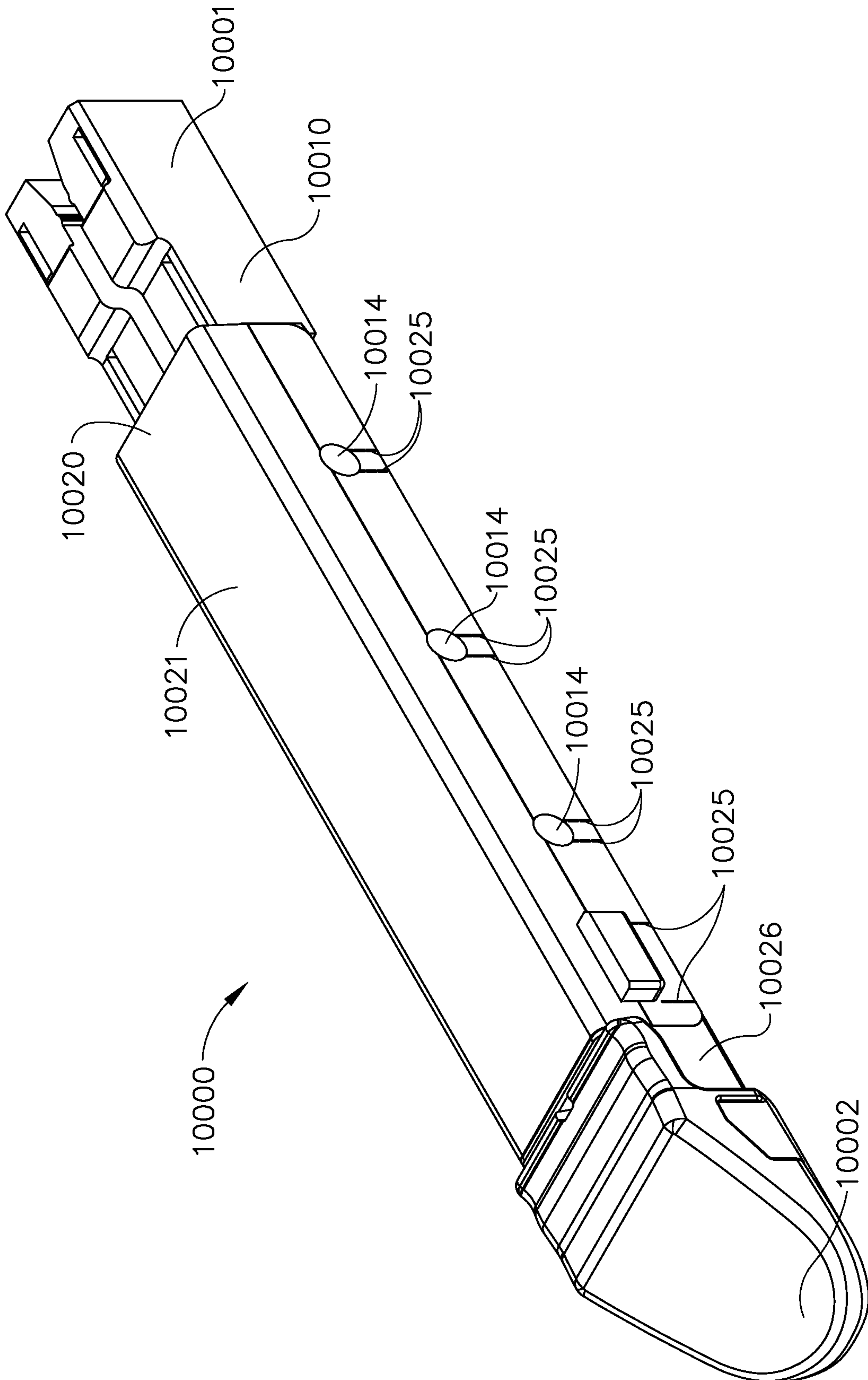


FIG. 216

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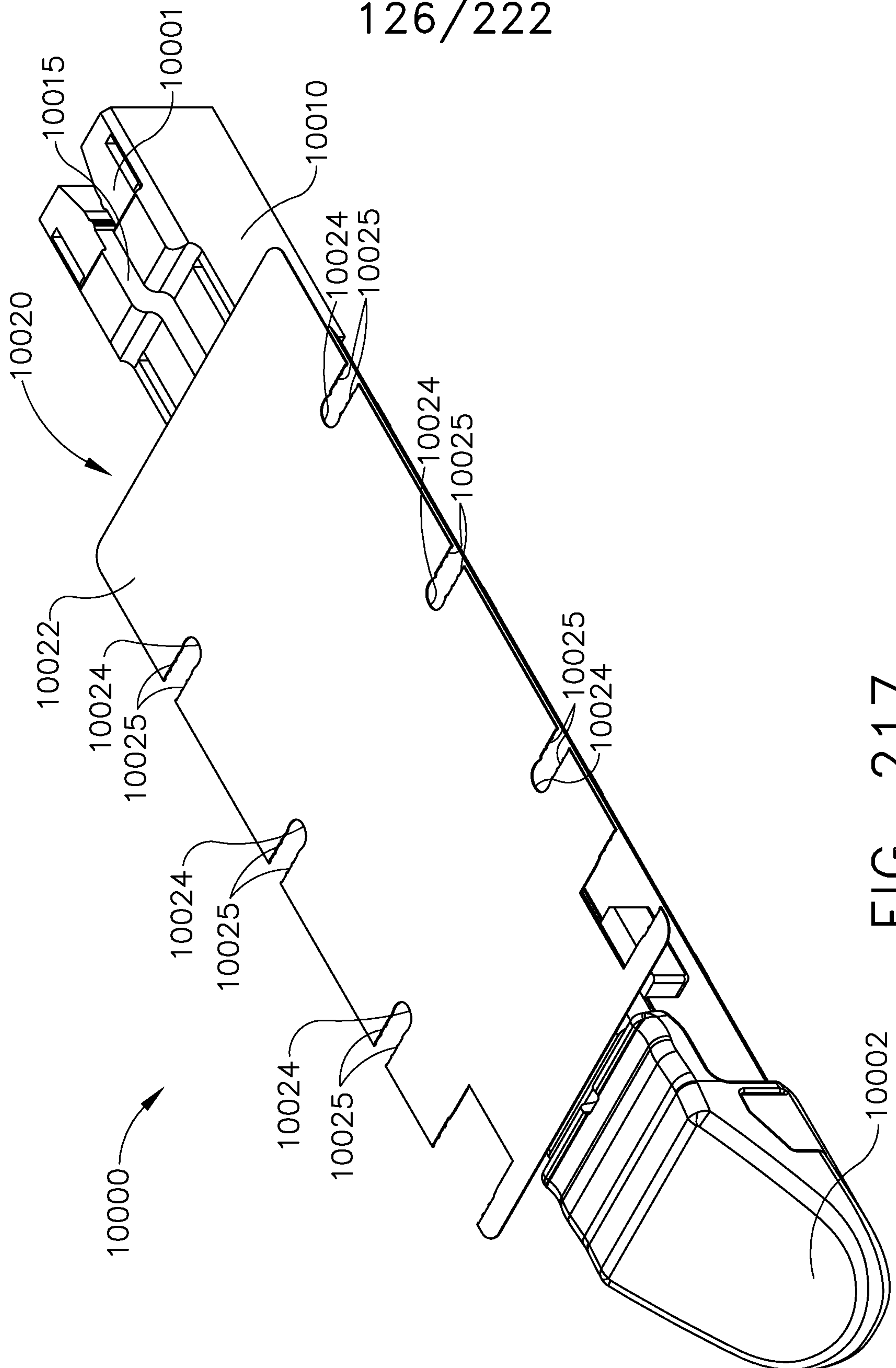


FIG. 217

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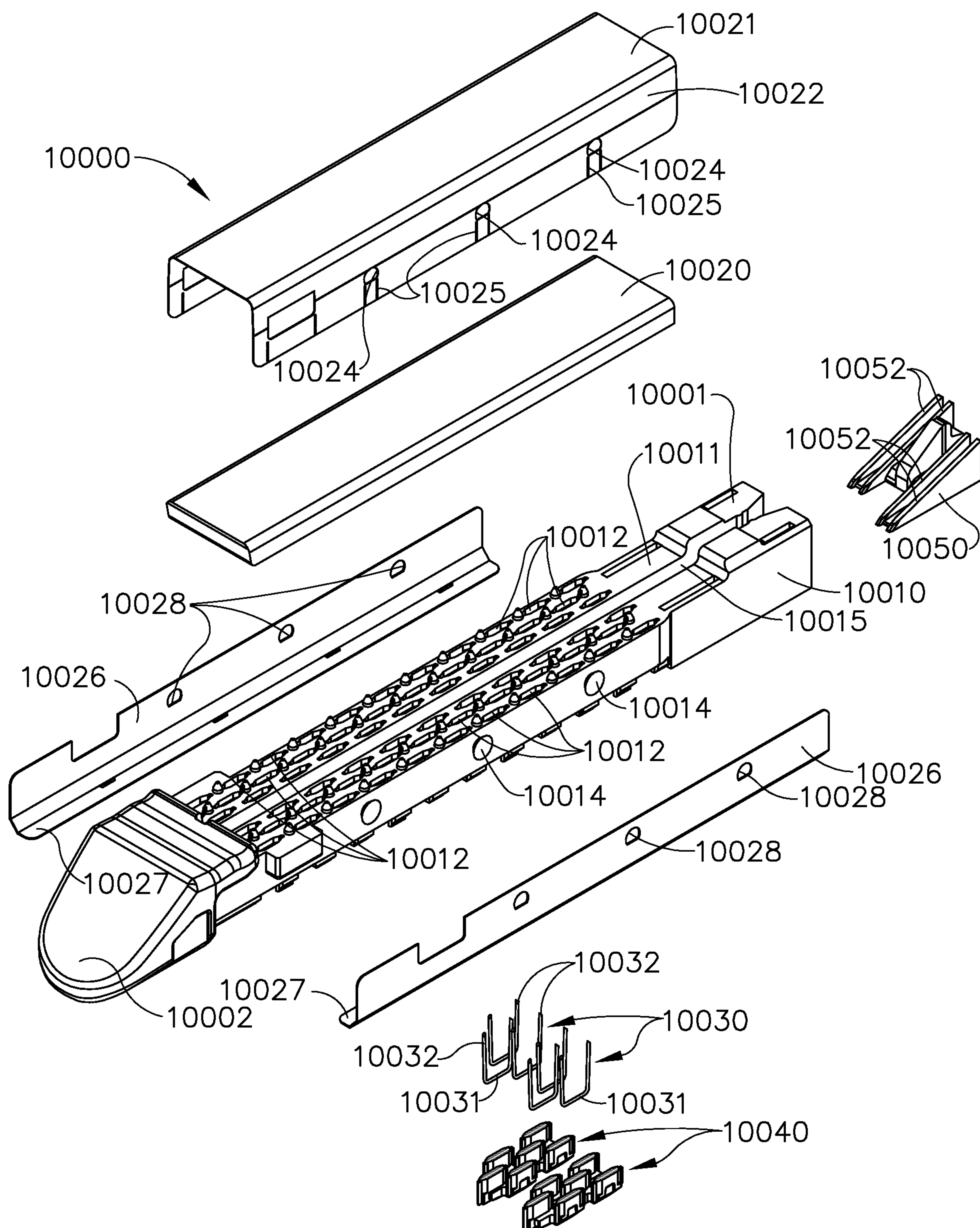


FIG. 218

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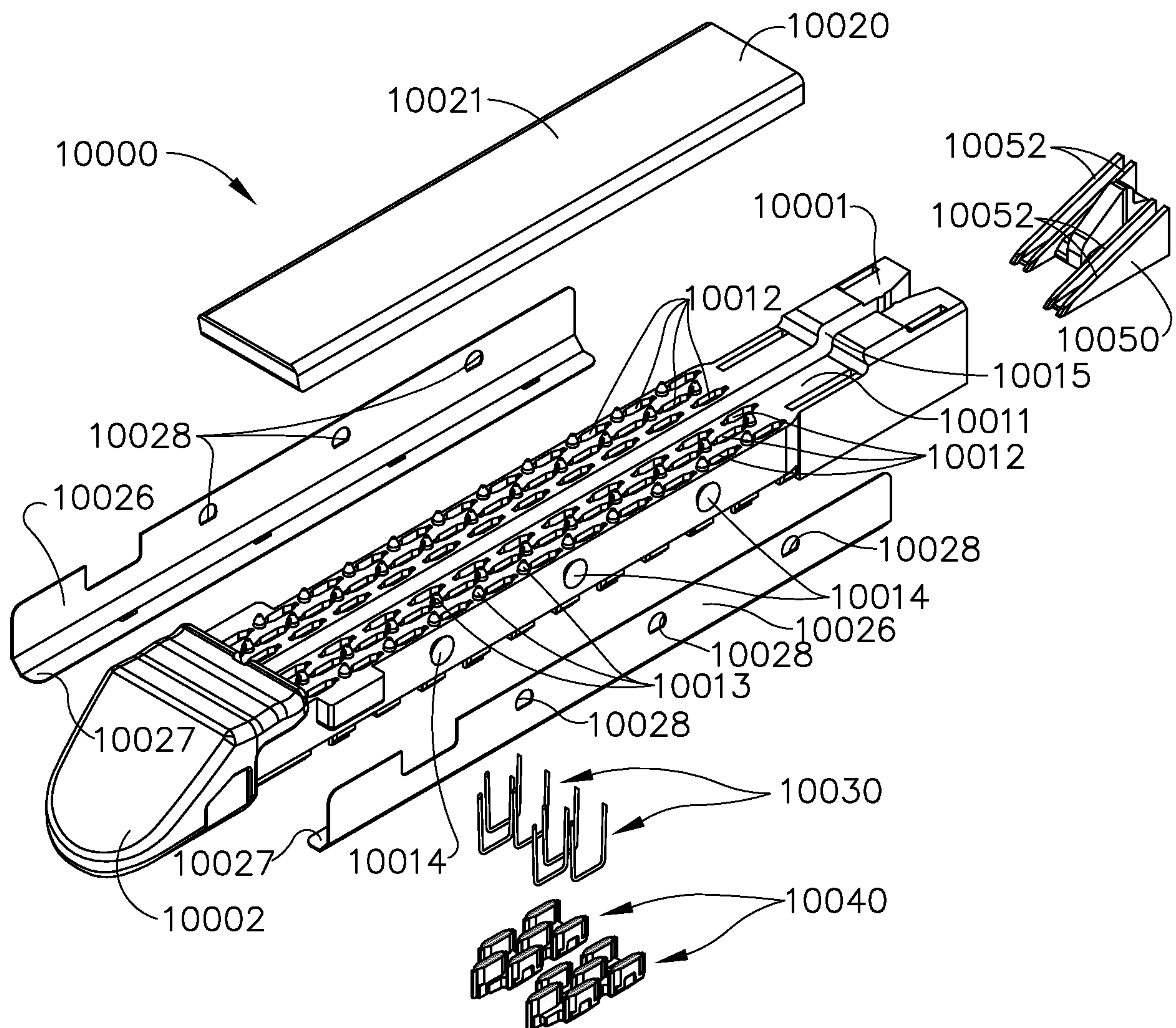


FIG. 219

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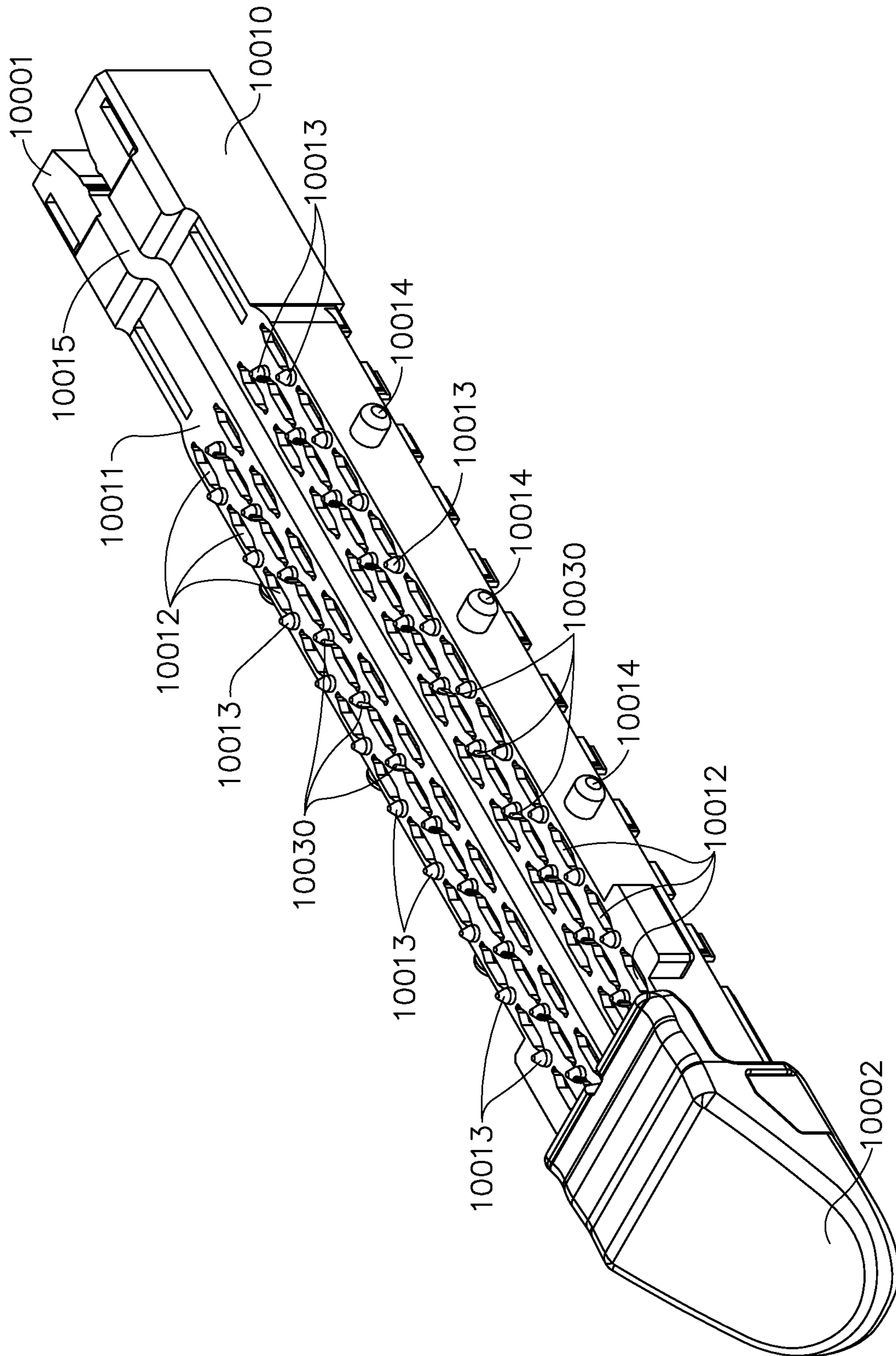


FIG. 220

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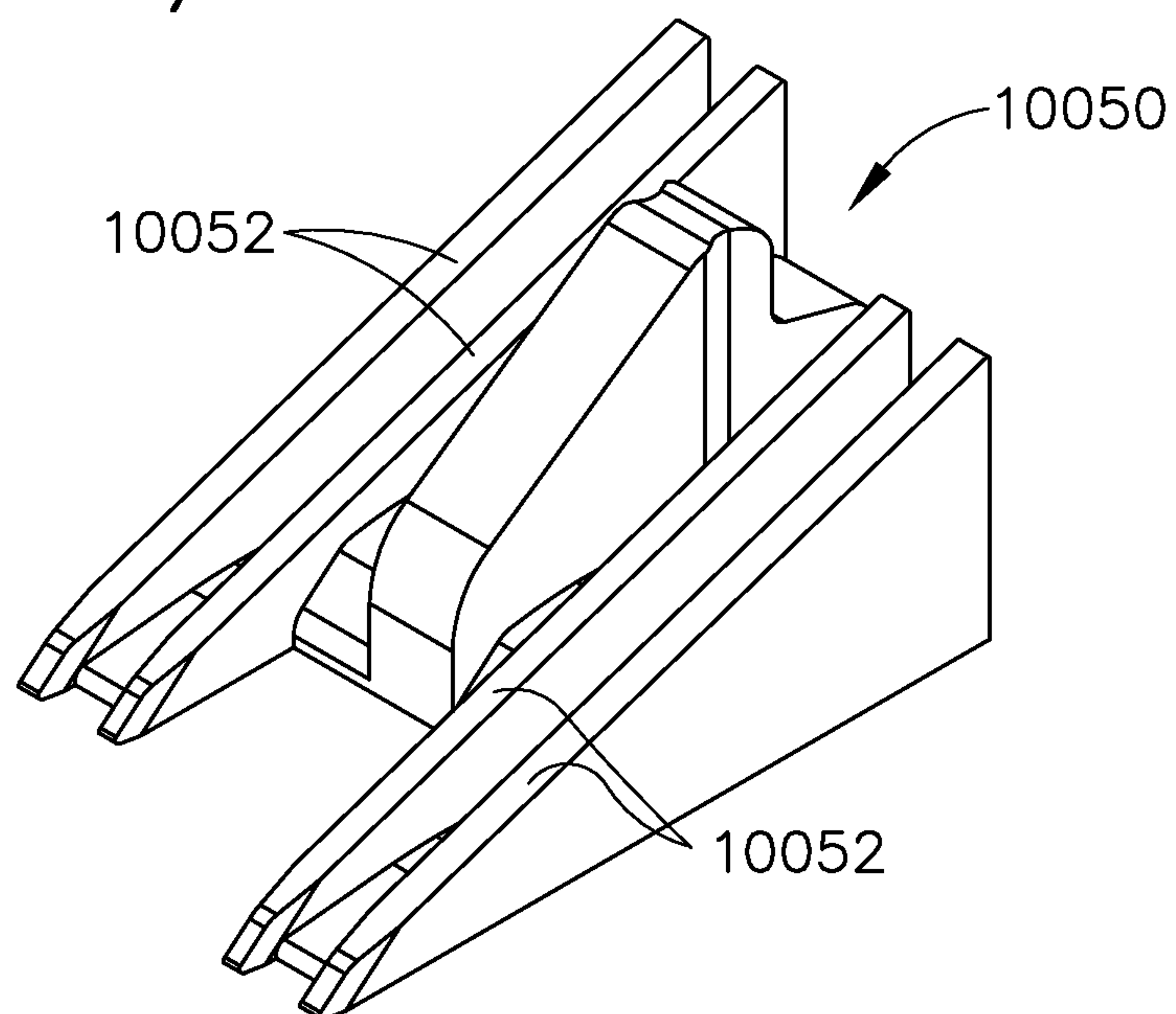


FIG. 221

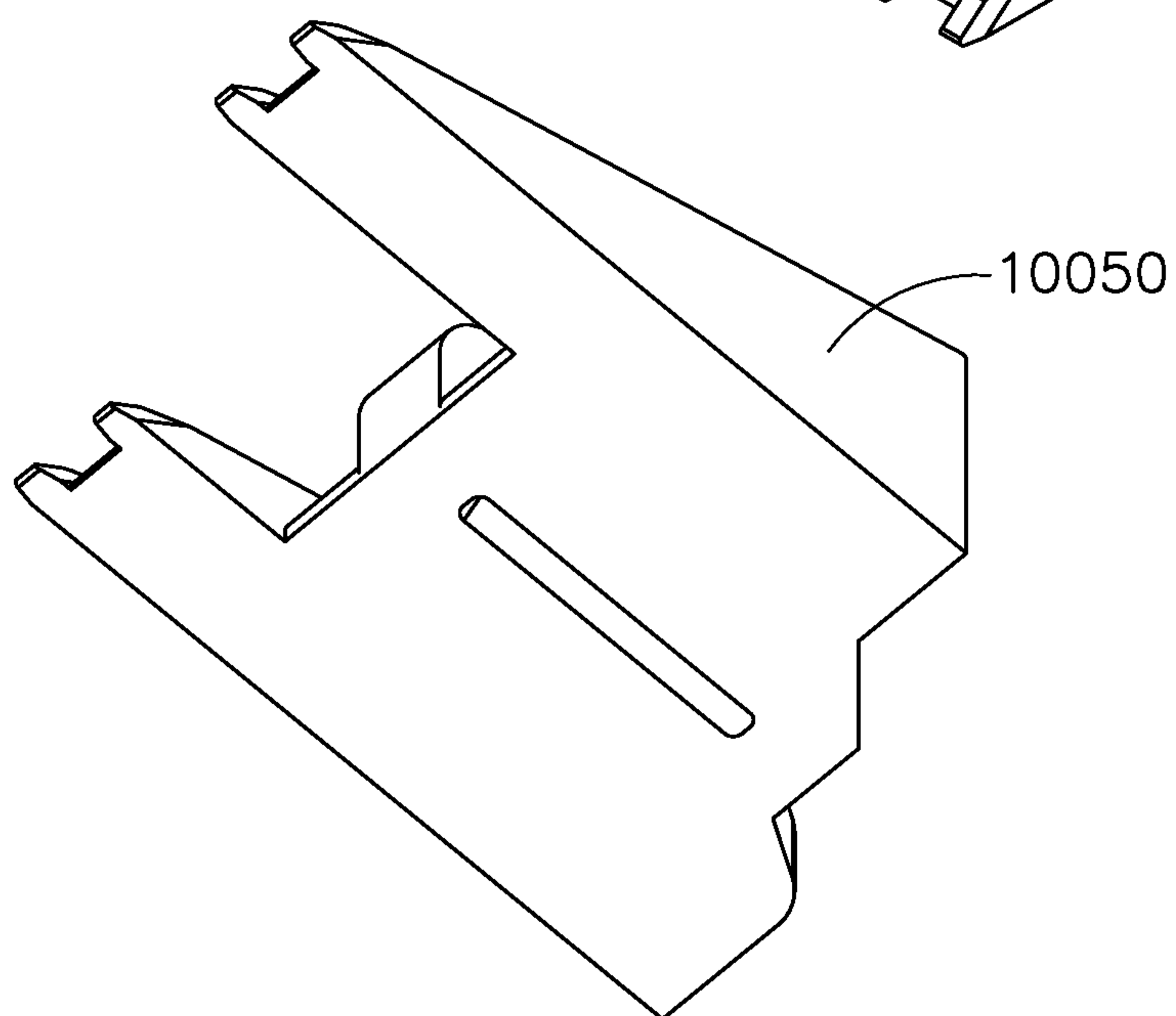


FIG. 222

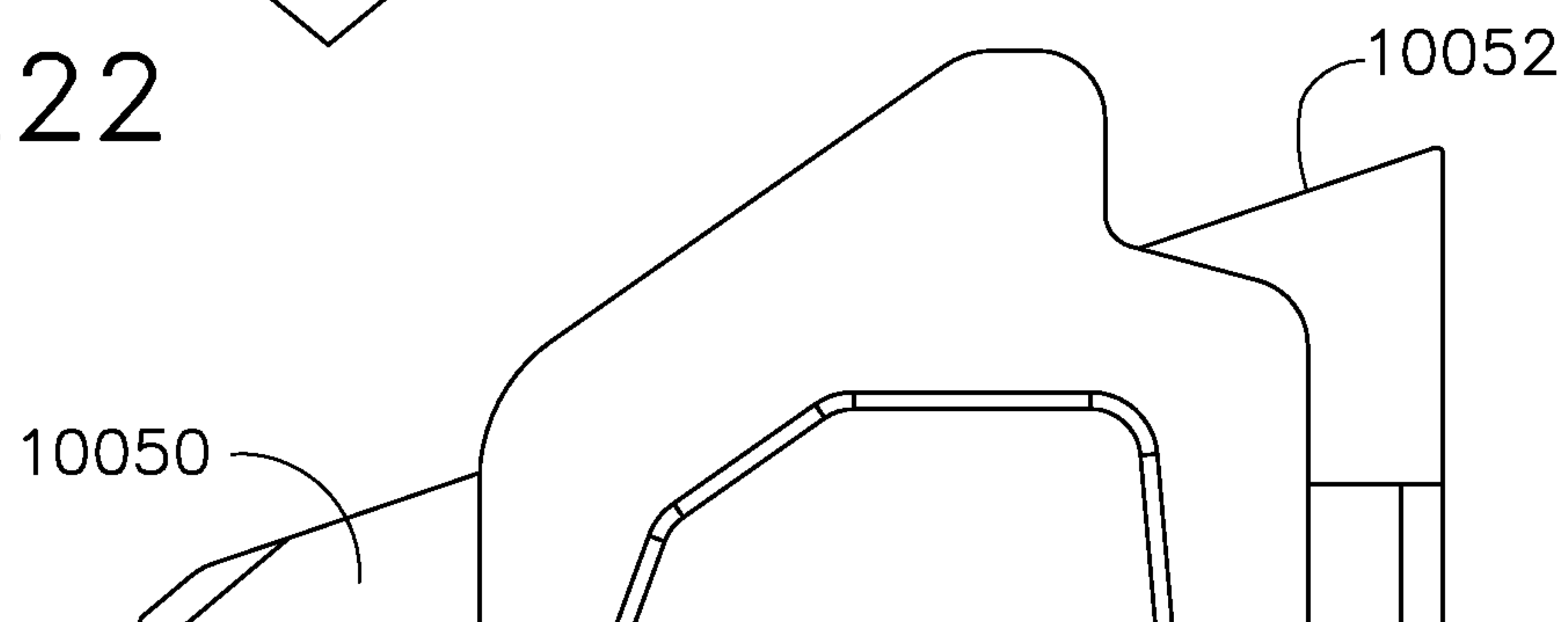


FIG. 223

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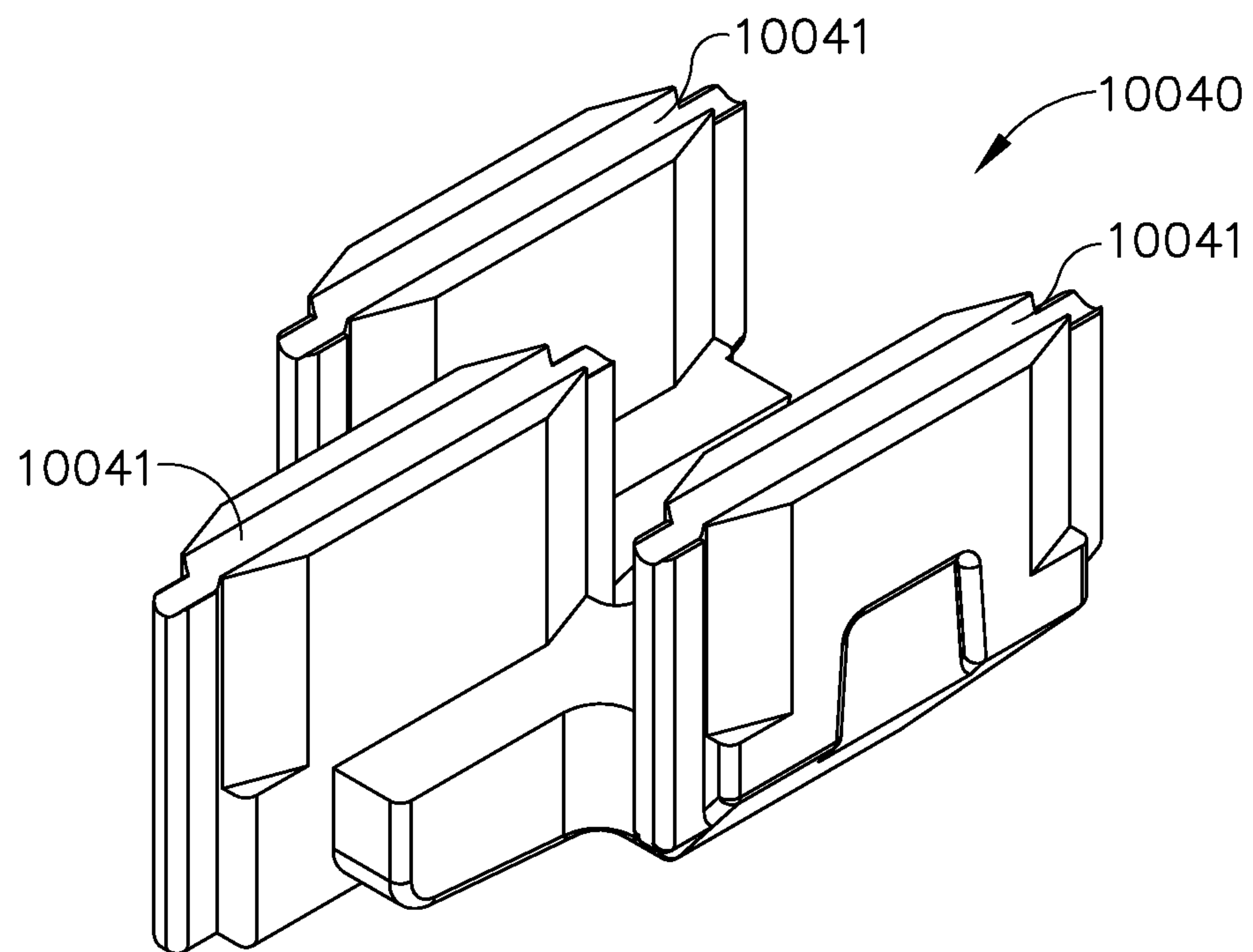


FIG. 224

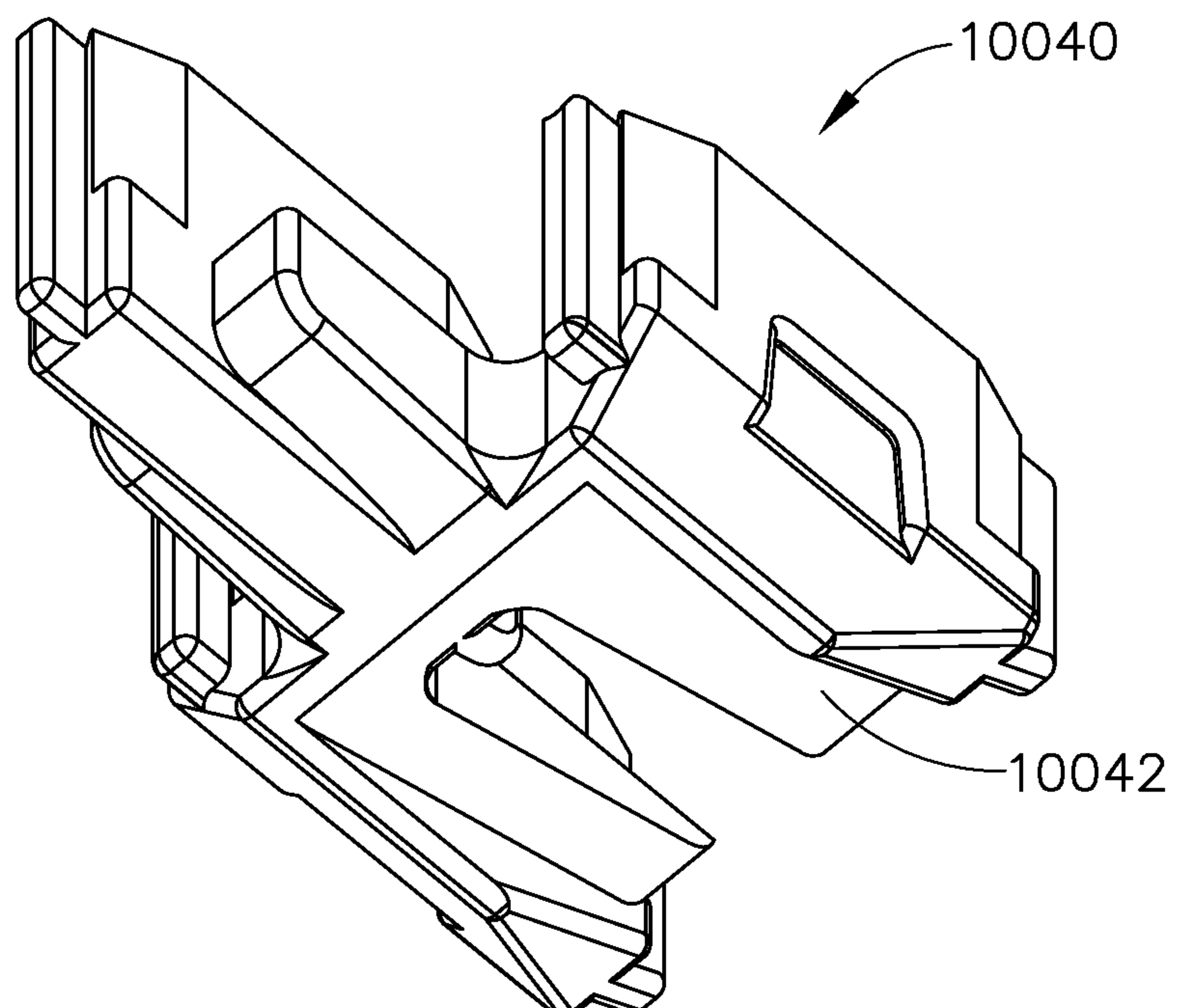


FIG. 225

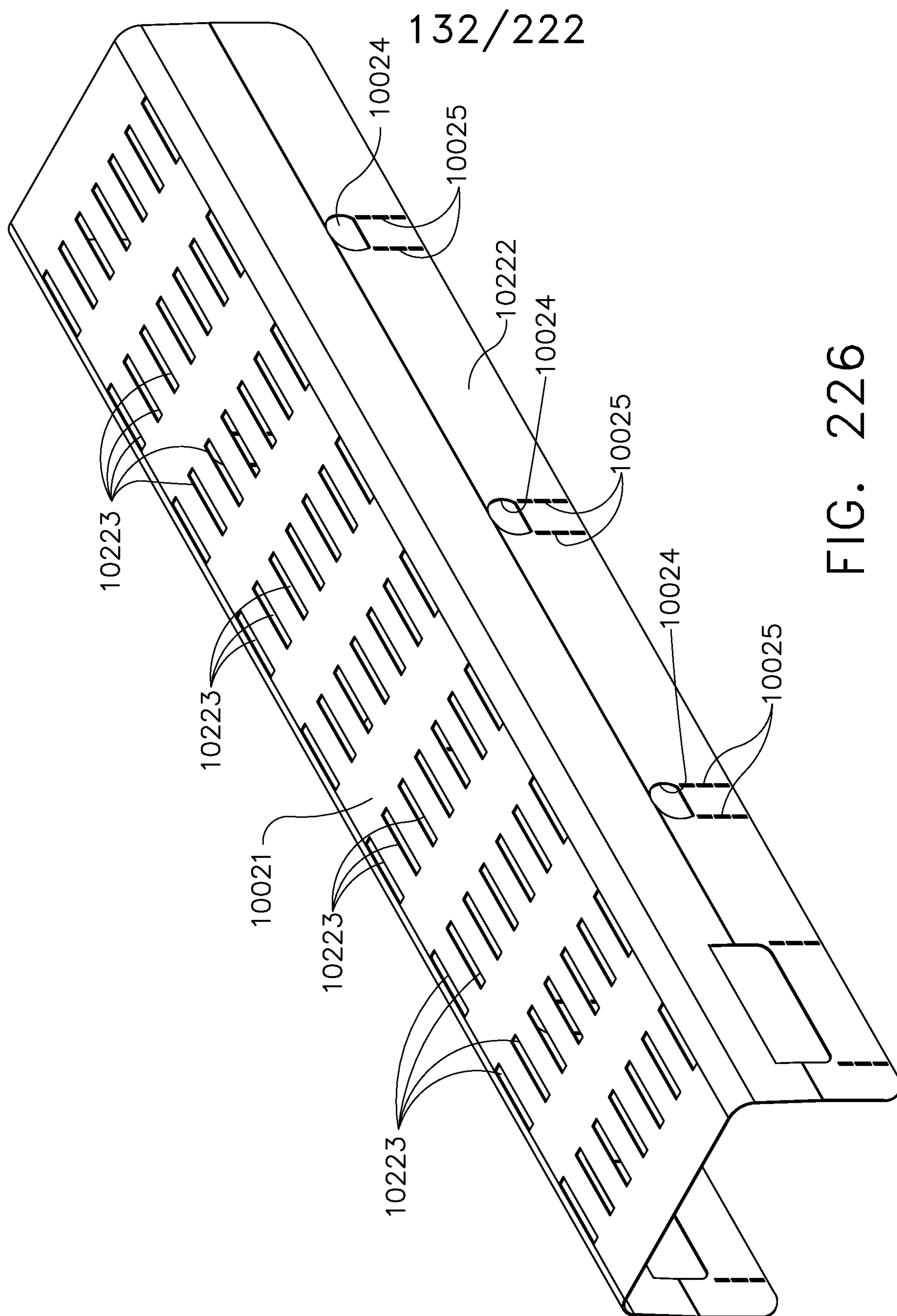


FIG. 226

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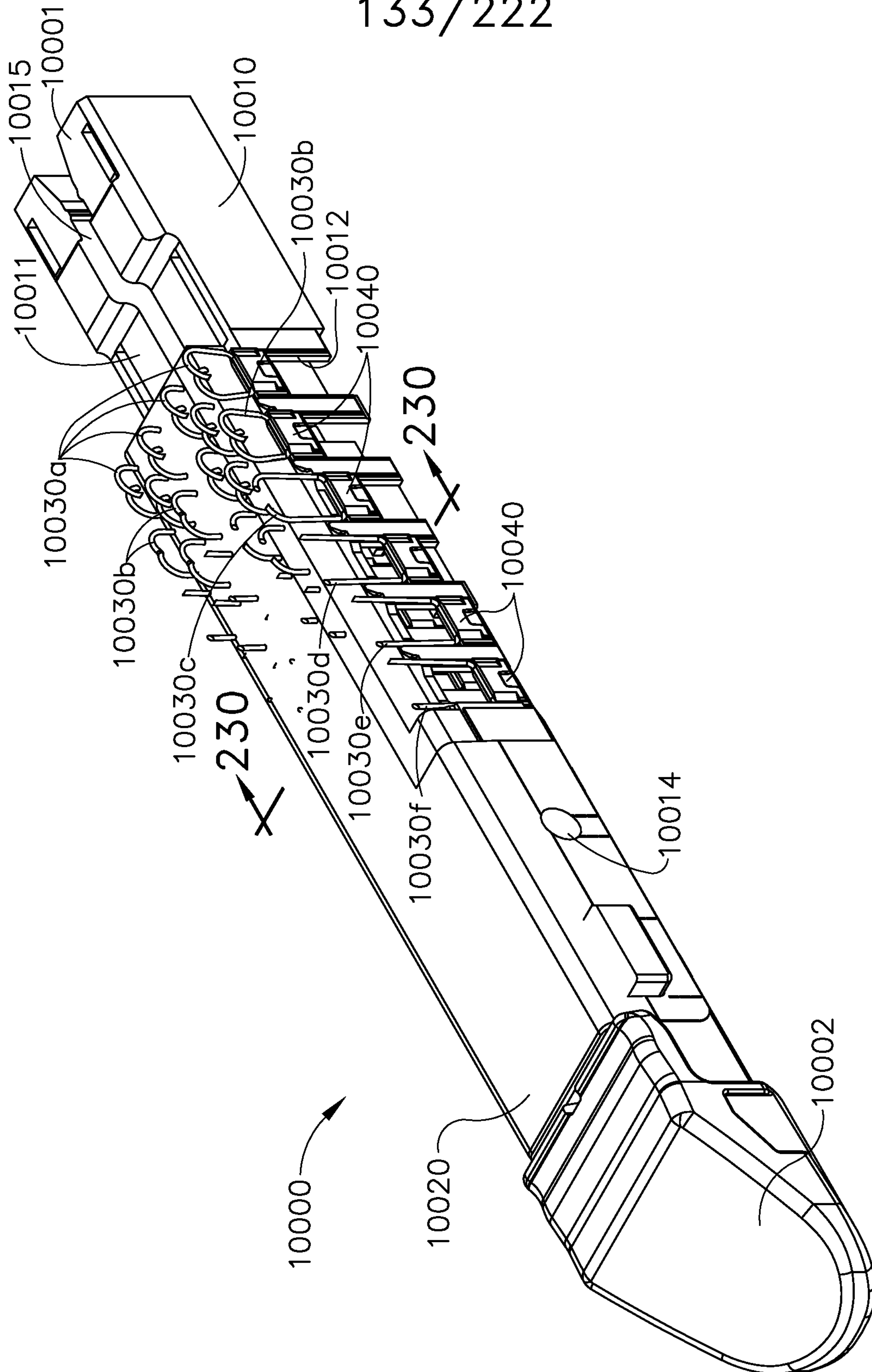


FIG. 227

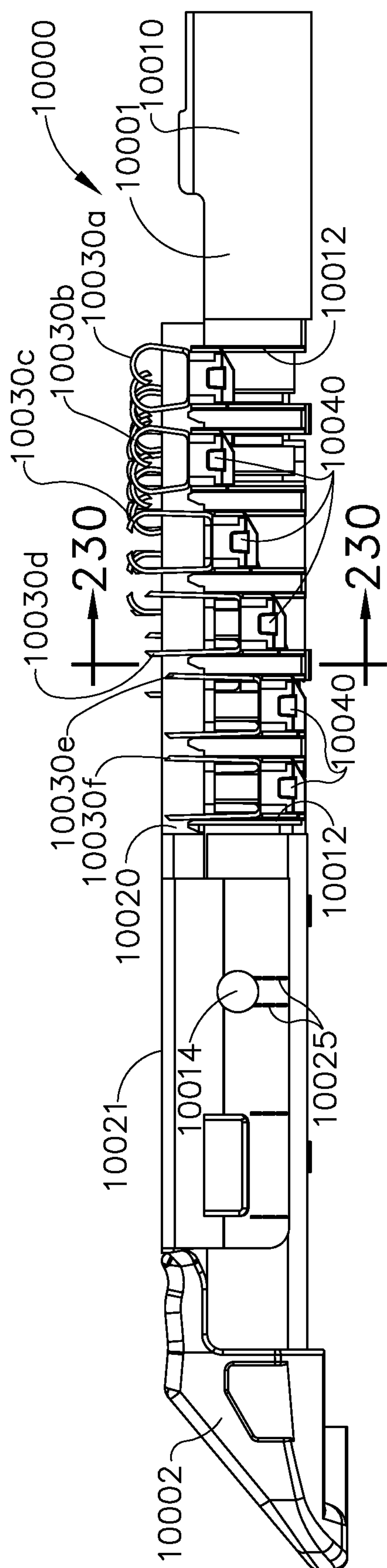


FIG. 228

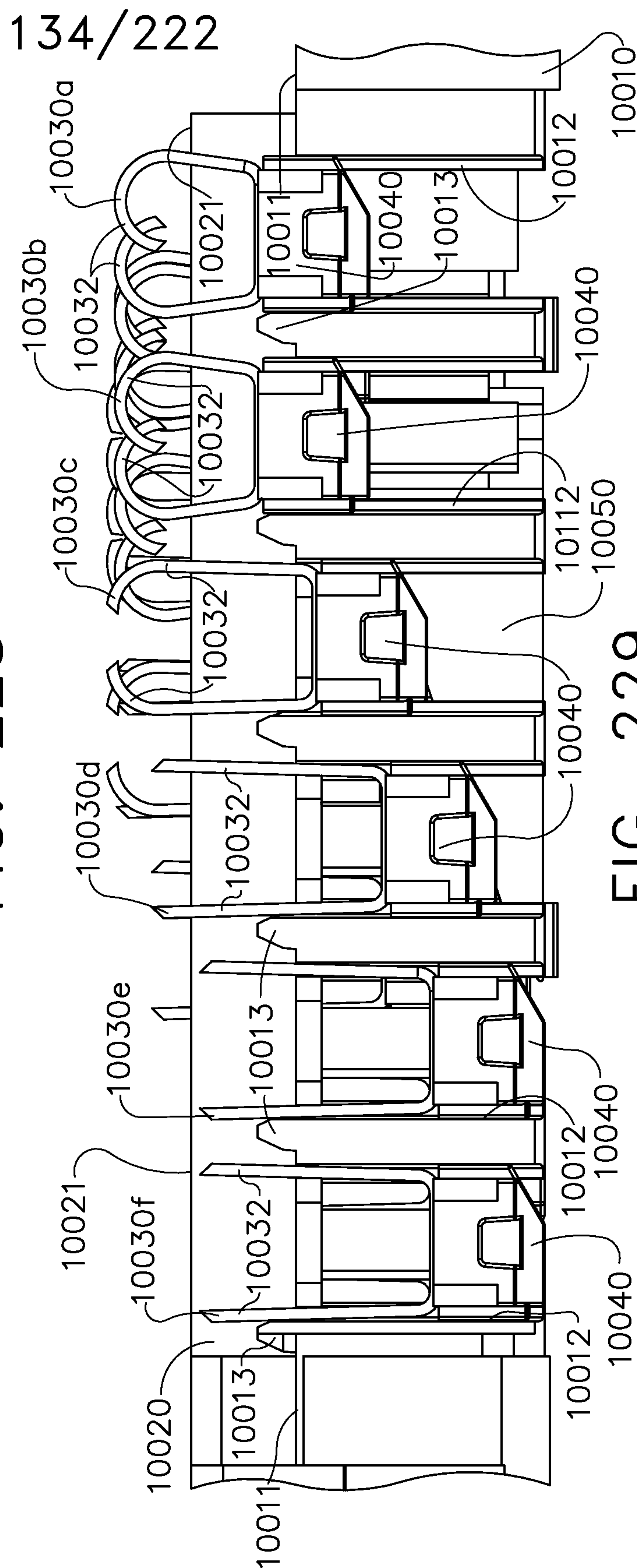
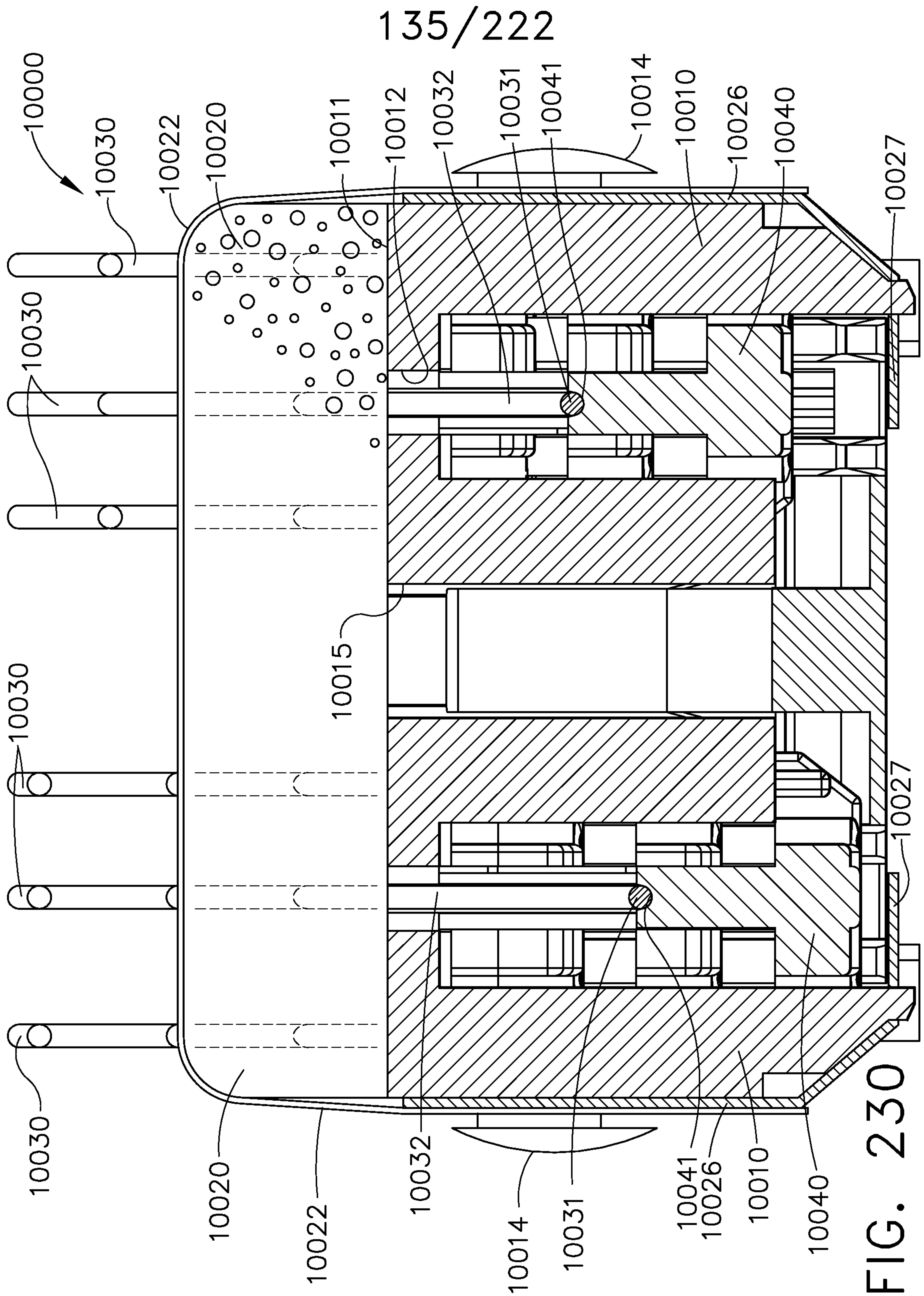


FIG. 229



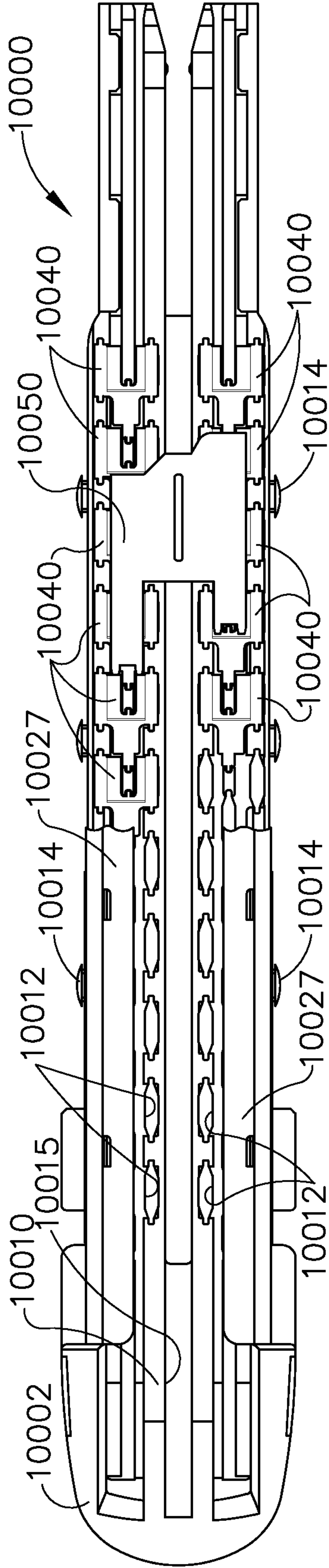


FIG. 231

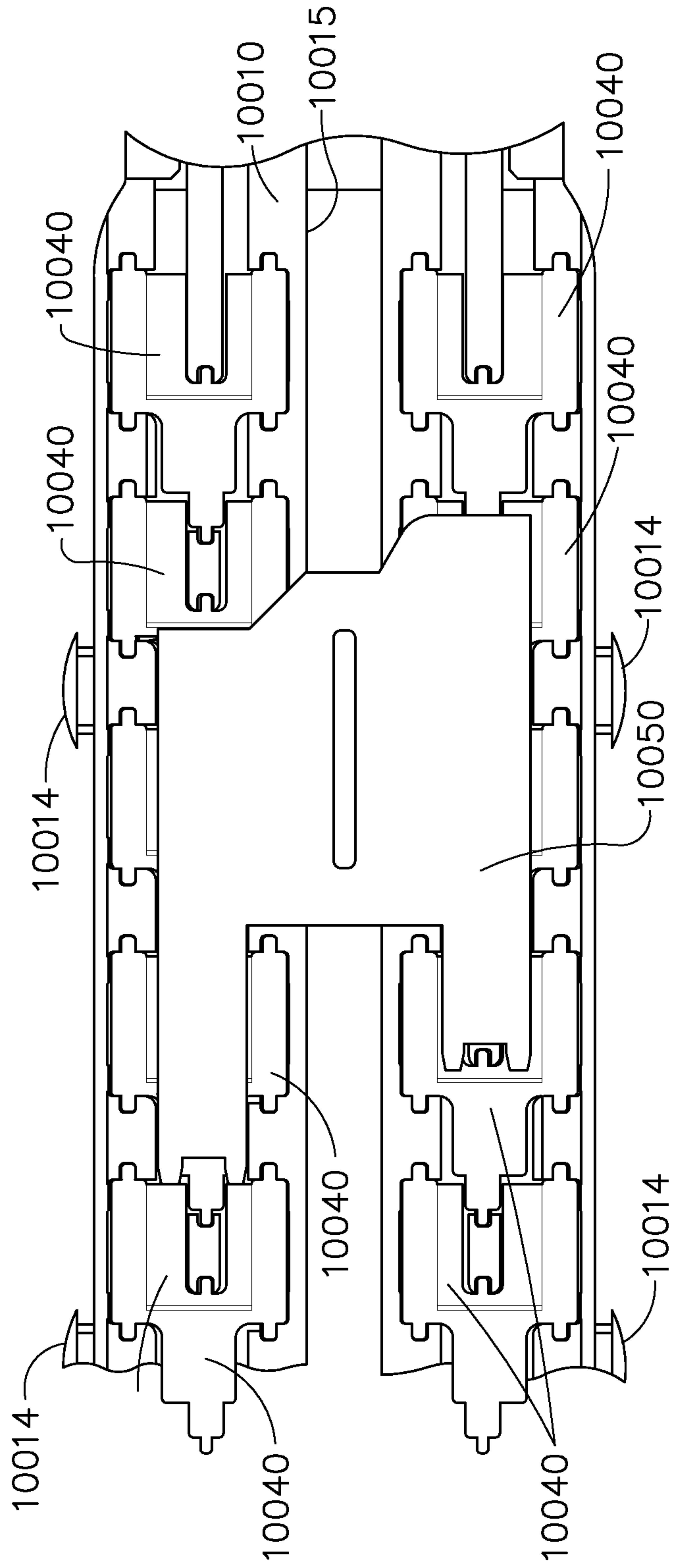
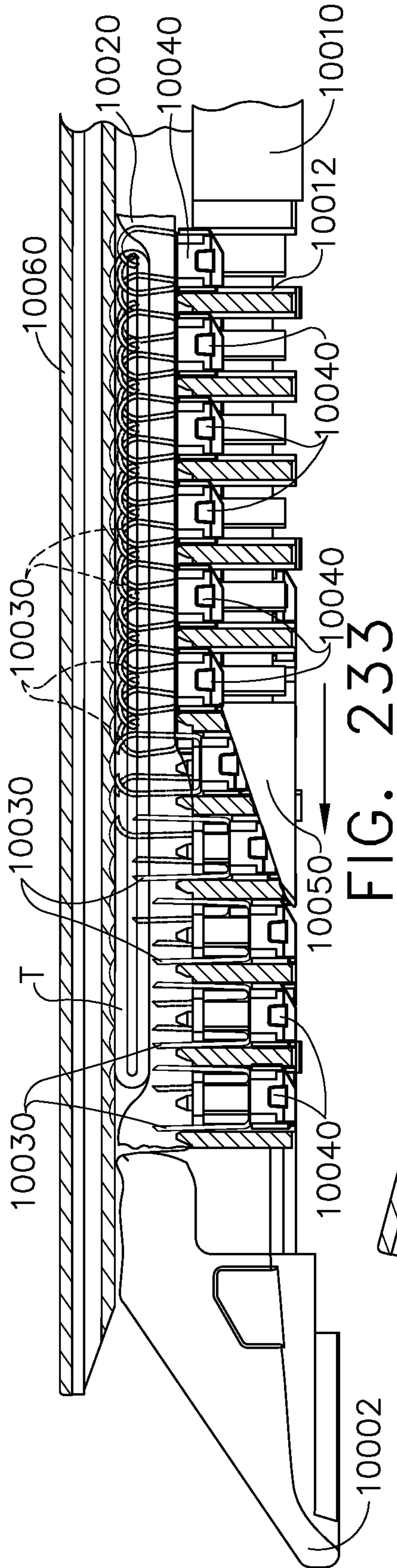
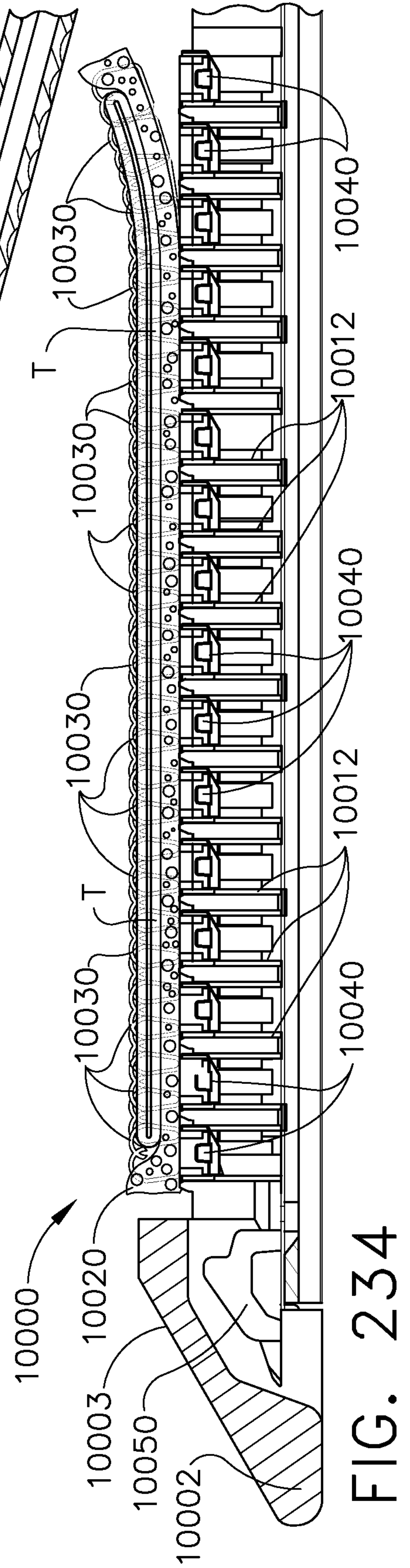
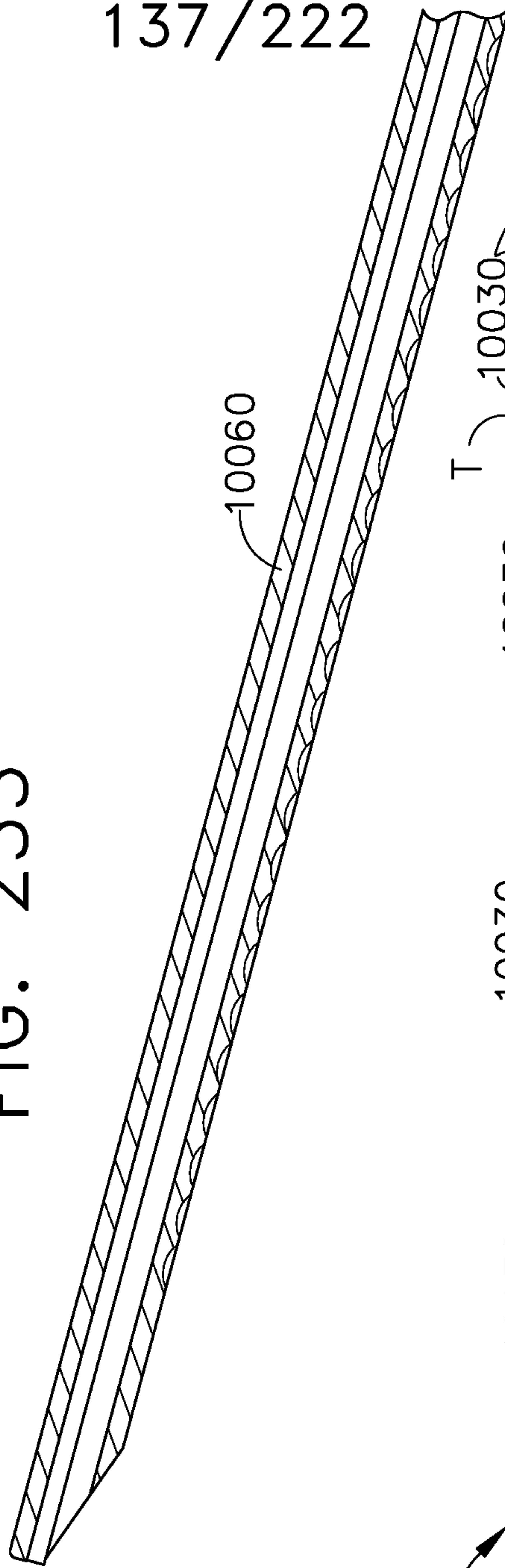


FIG. 232



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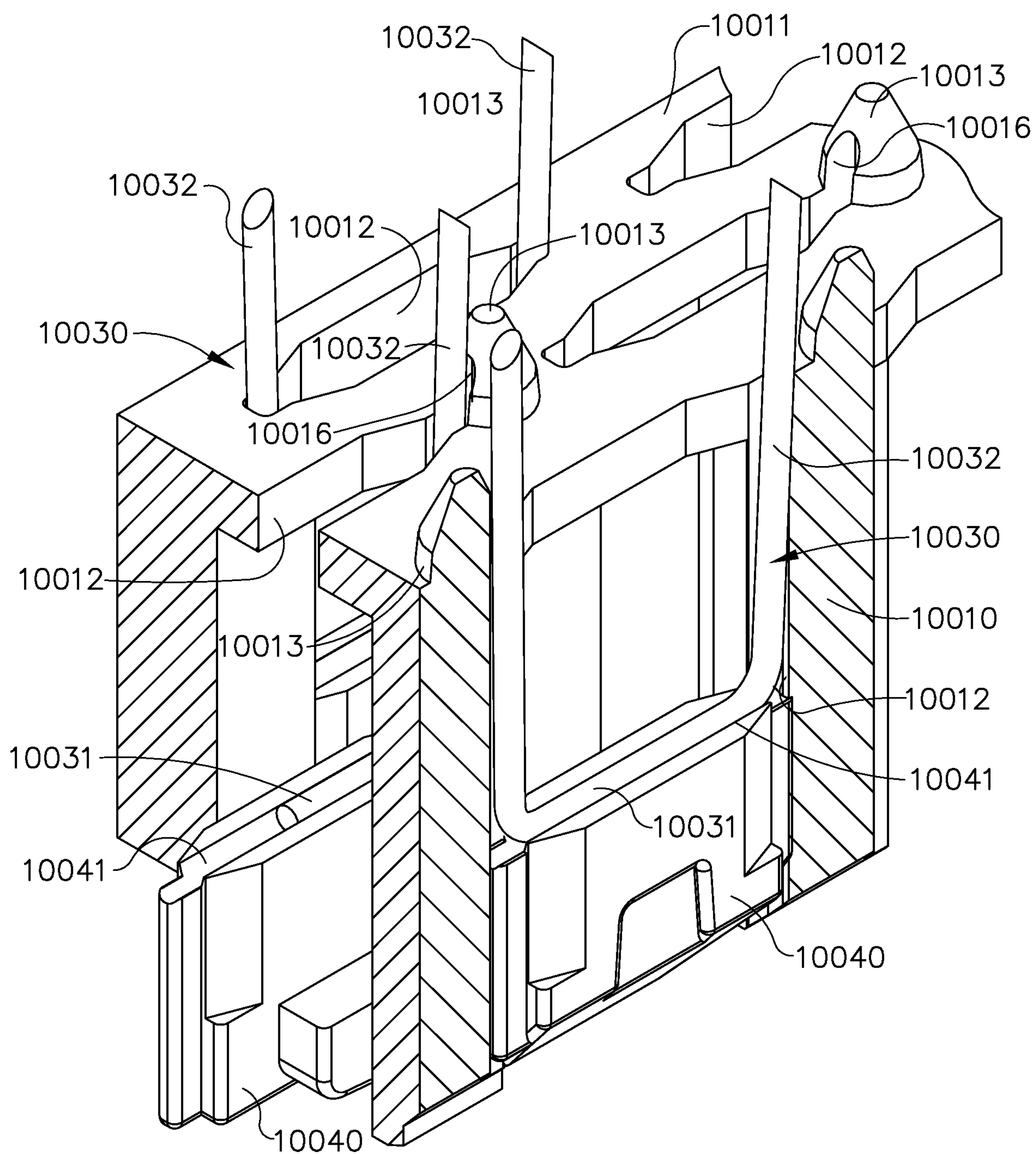


FIG. 235

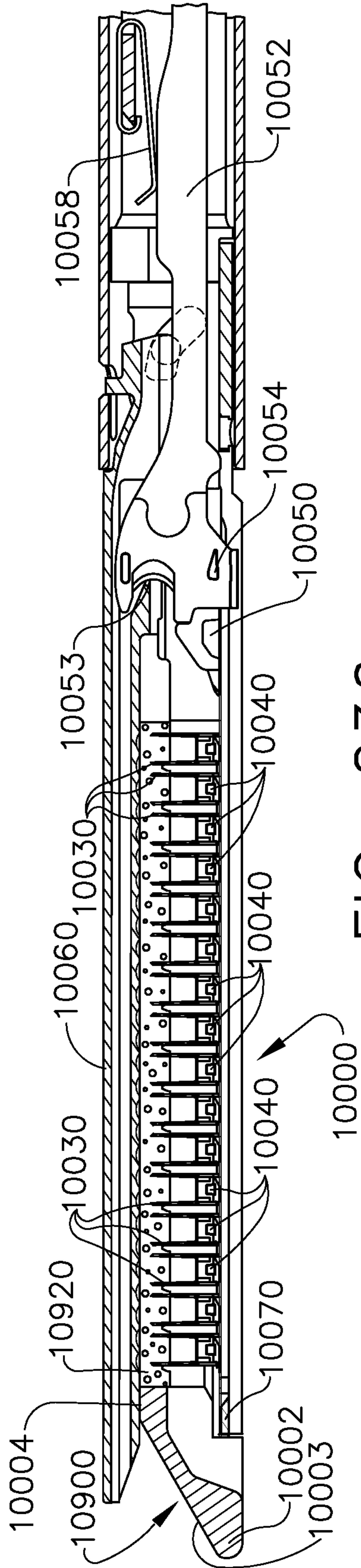


FIG. 236

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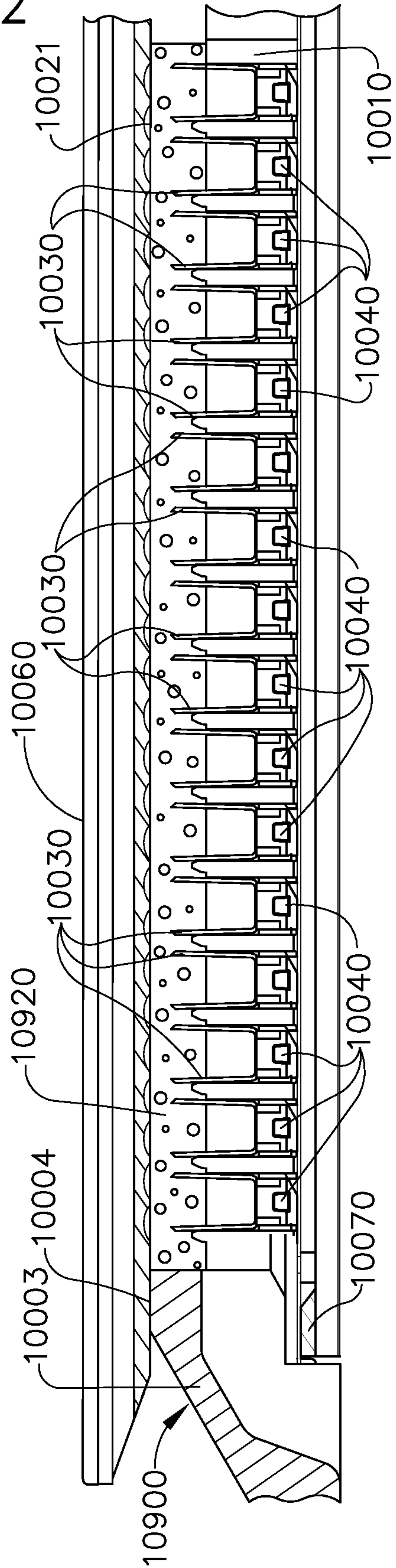


FIG. 237

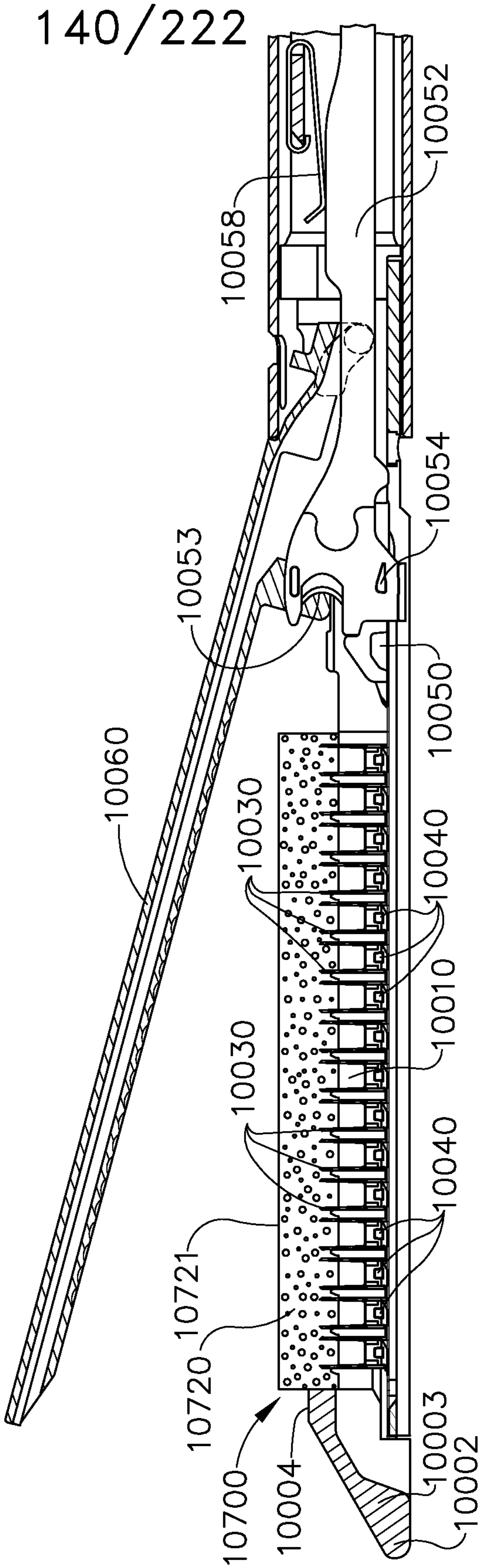


FIG. 238

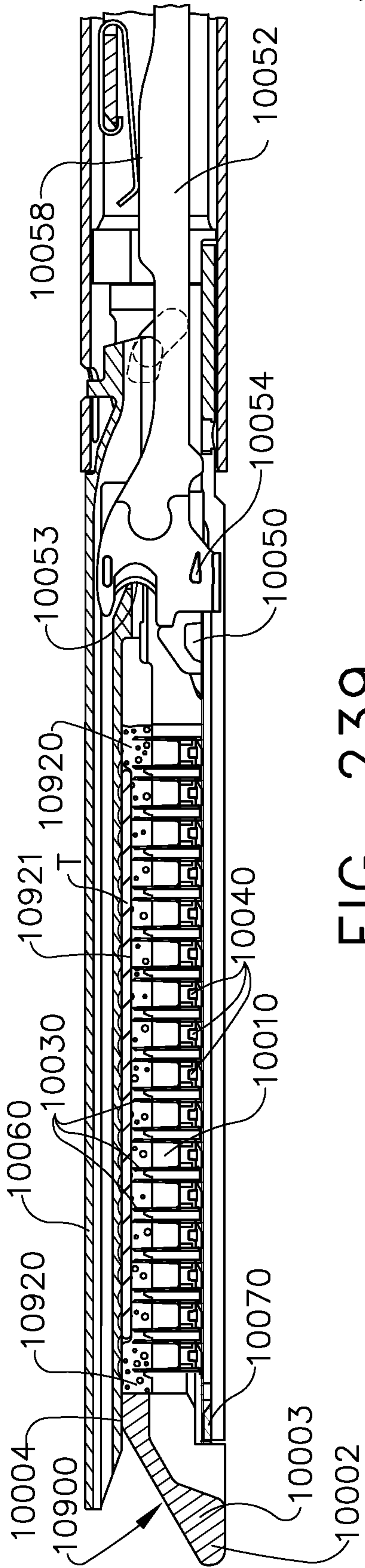


FIG. 239

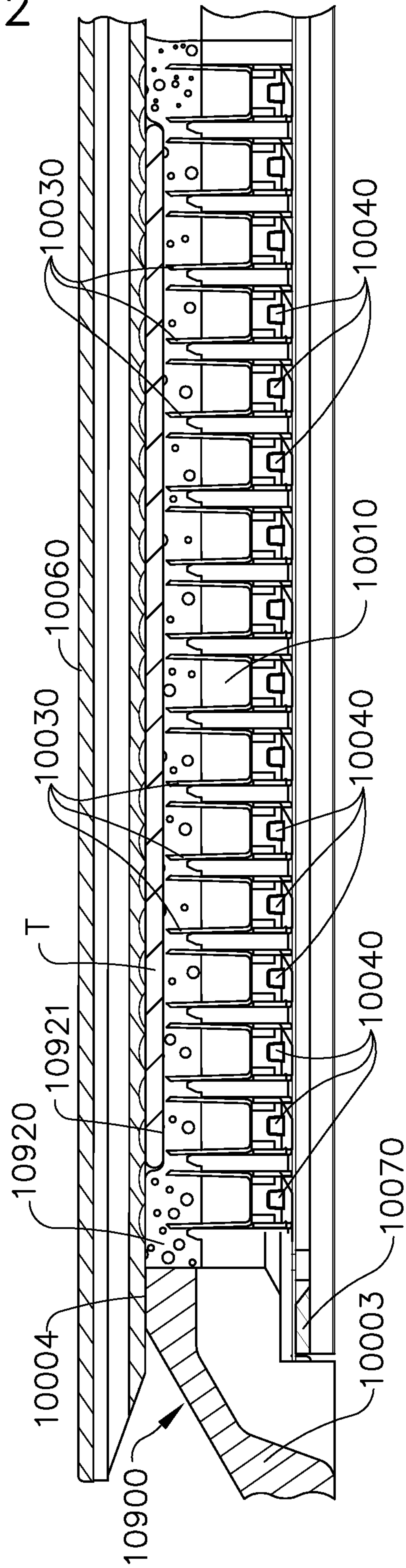


FIG. 240

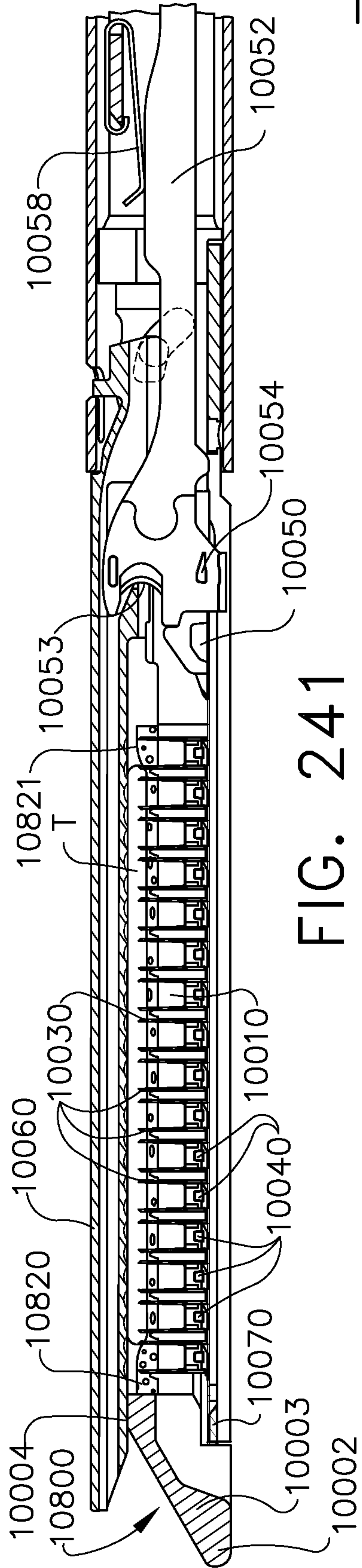


FIG. 241

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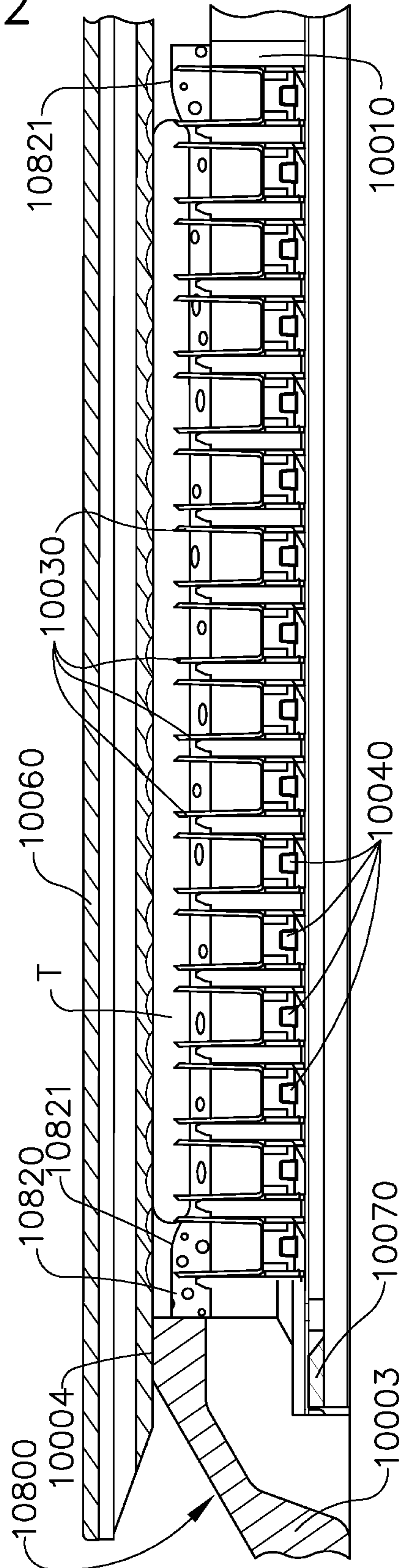


FIG. 242

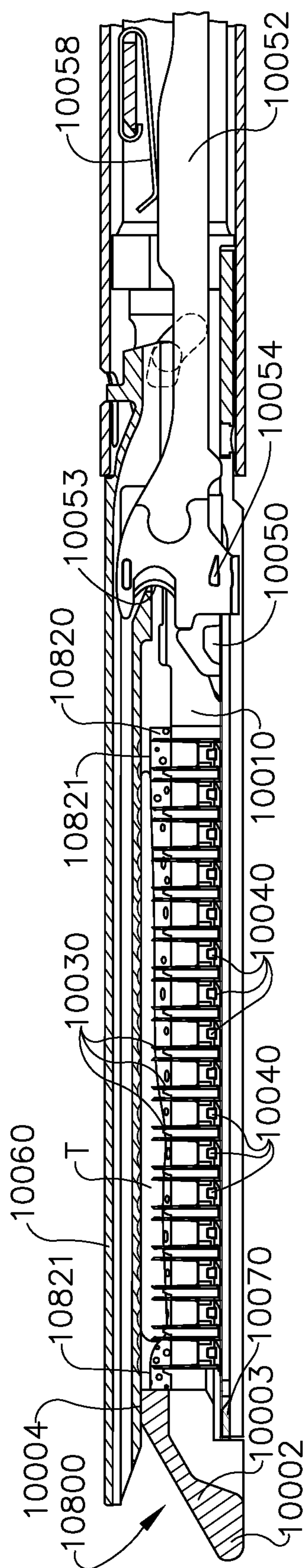


FIG. 243

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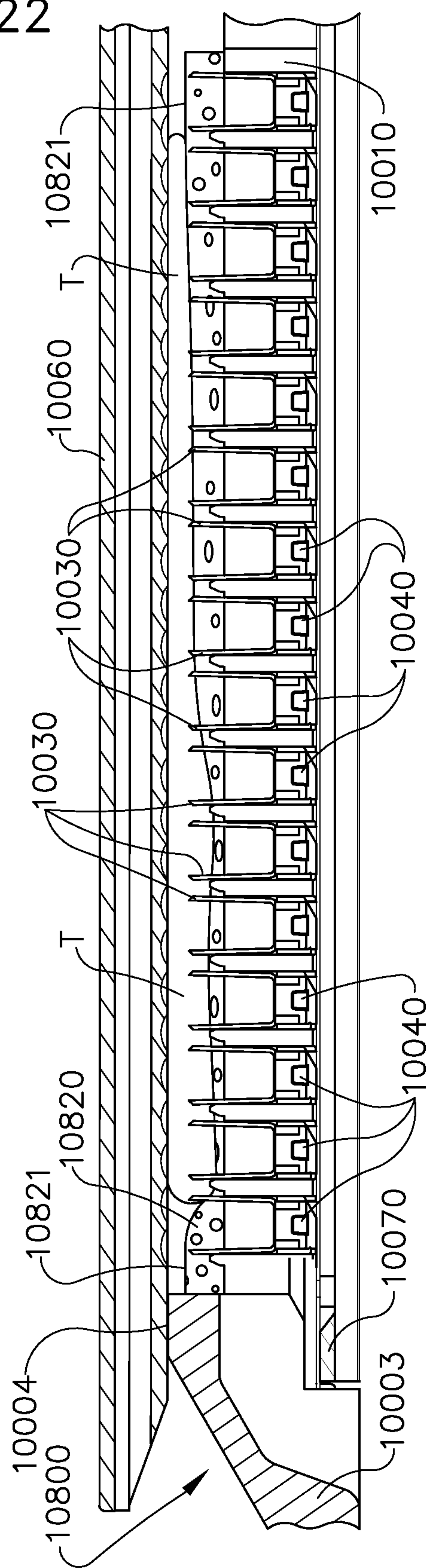


FIG. 244

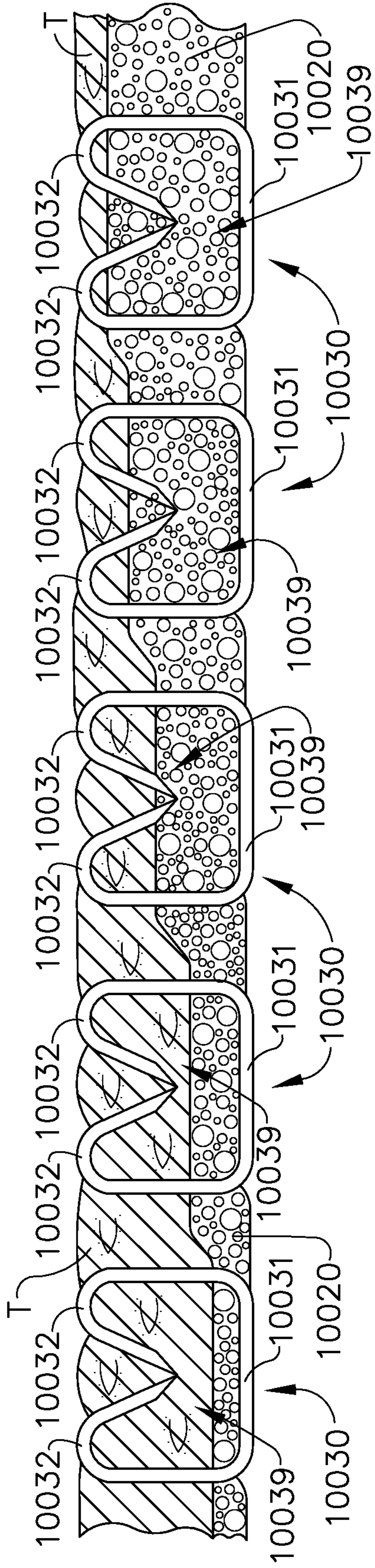


FIG. 245

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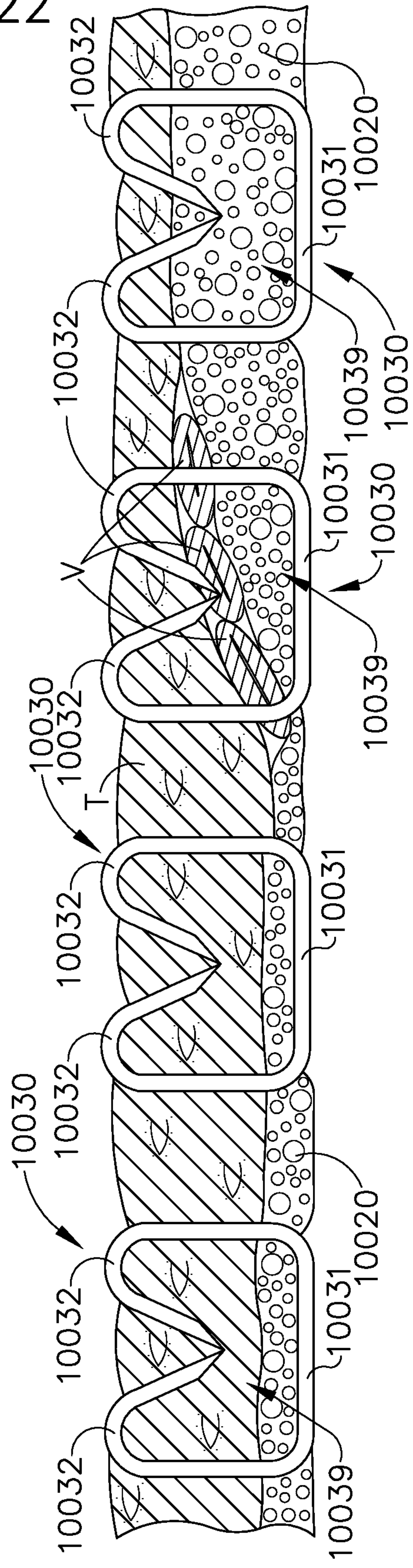
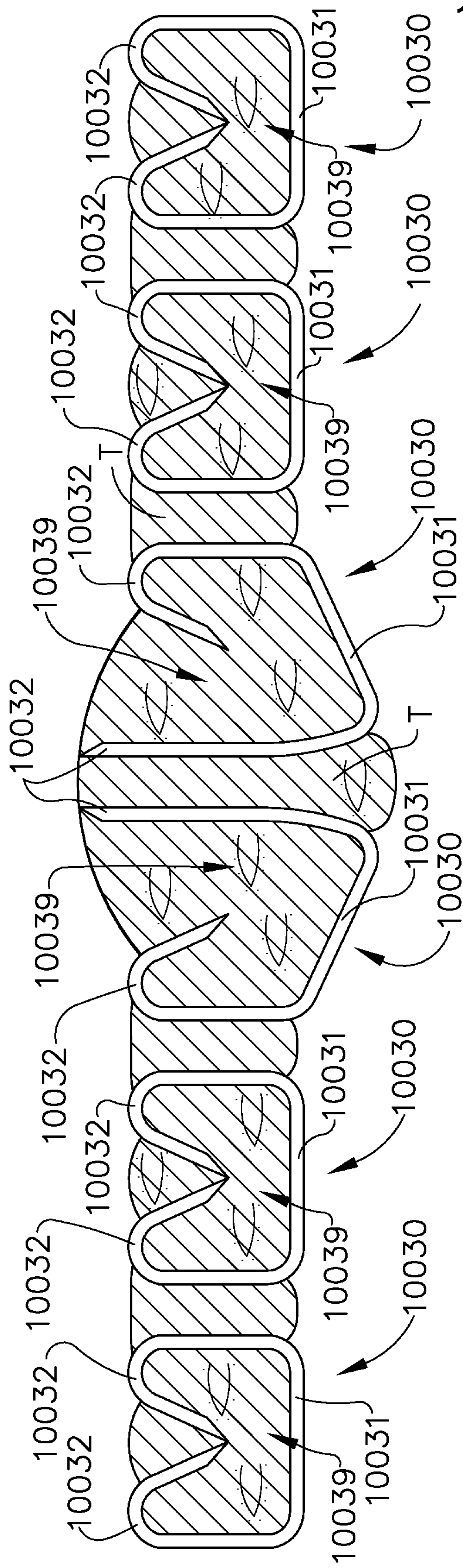


FIG. 246



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FIG. 247

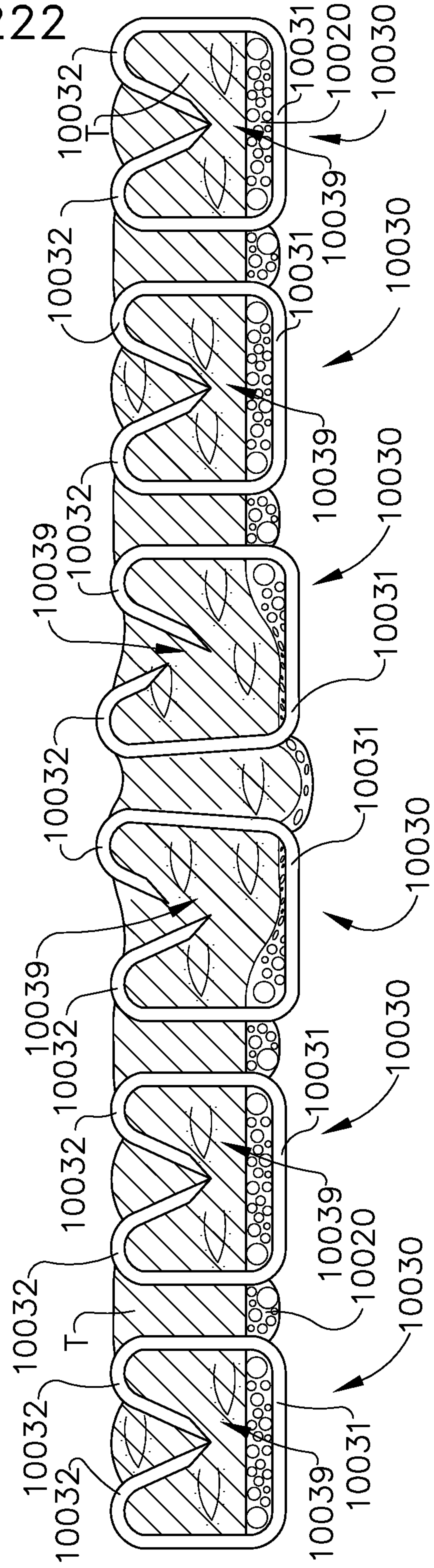


FIG. 248

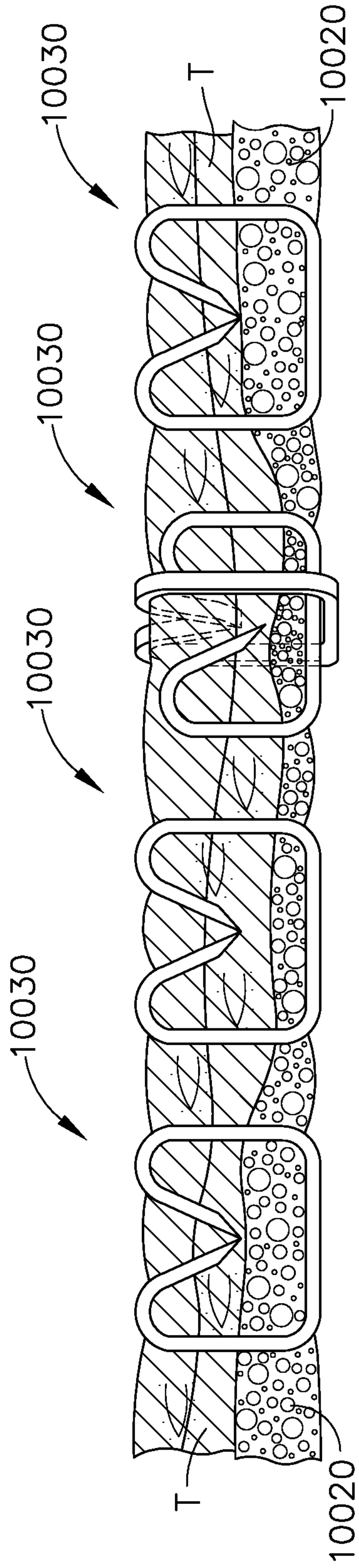


FIG. 249

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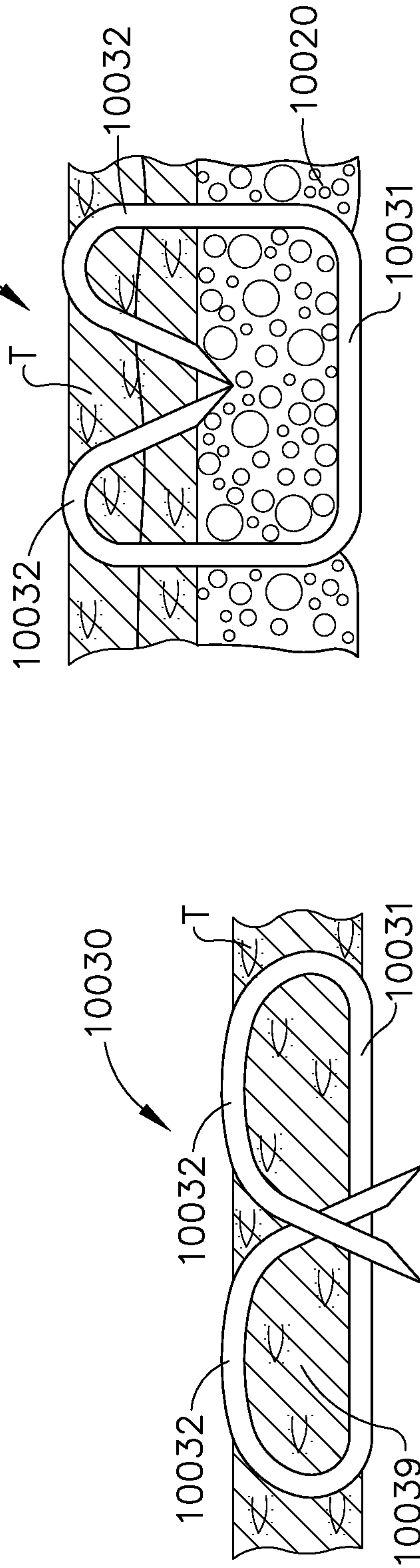


FIG. 250

FIG. 251

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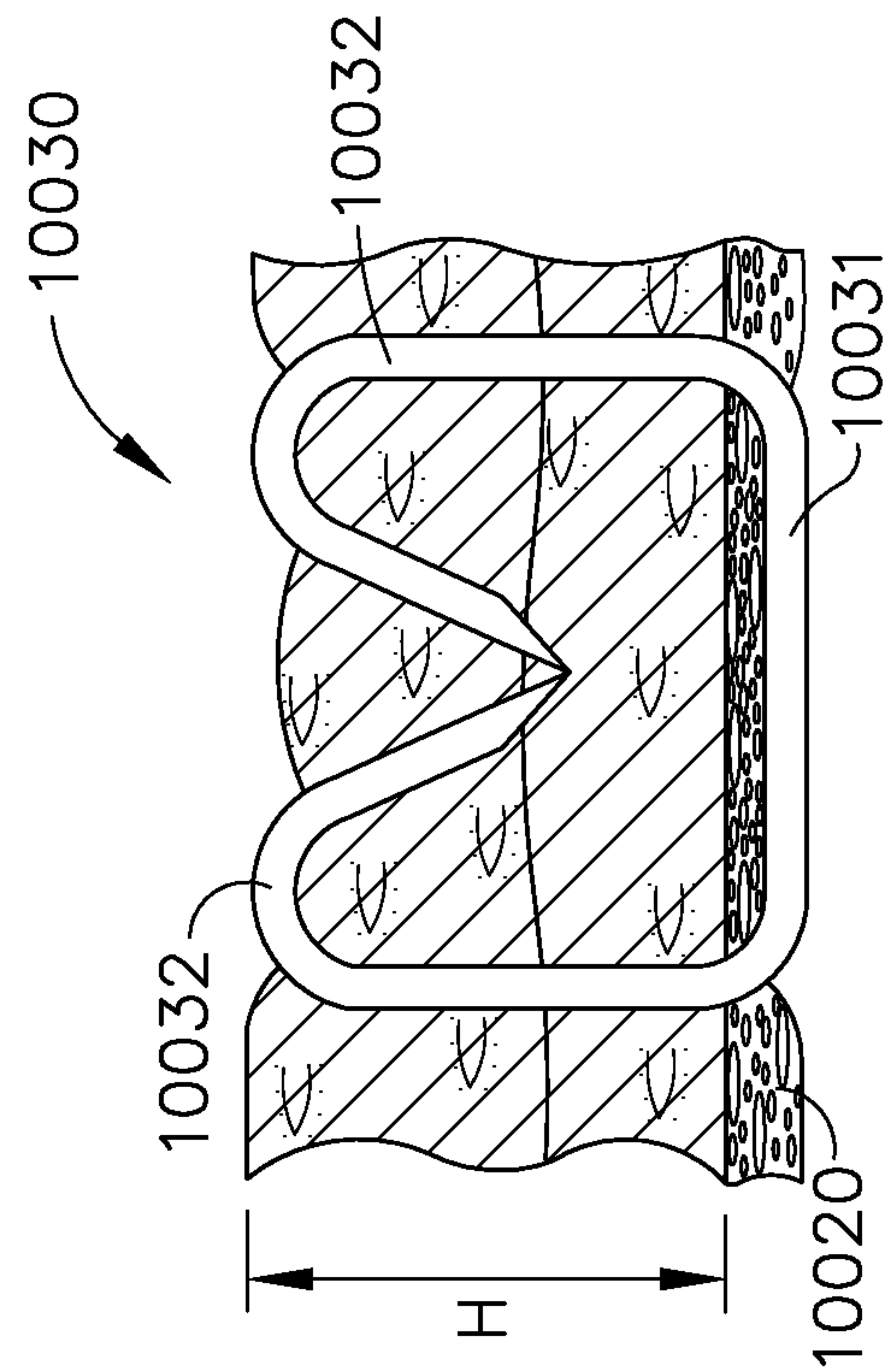


FIG. 253

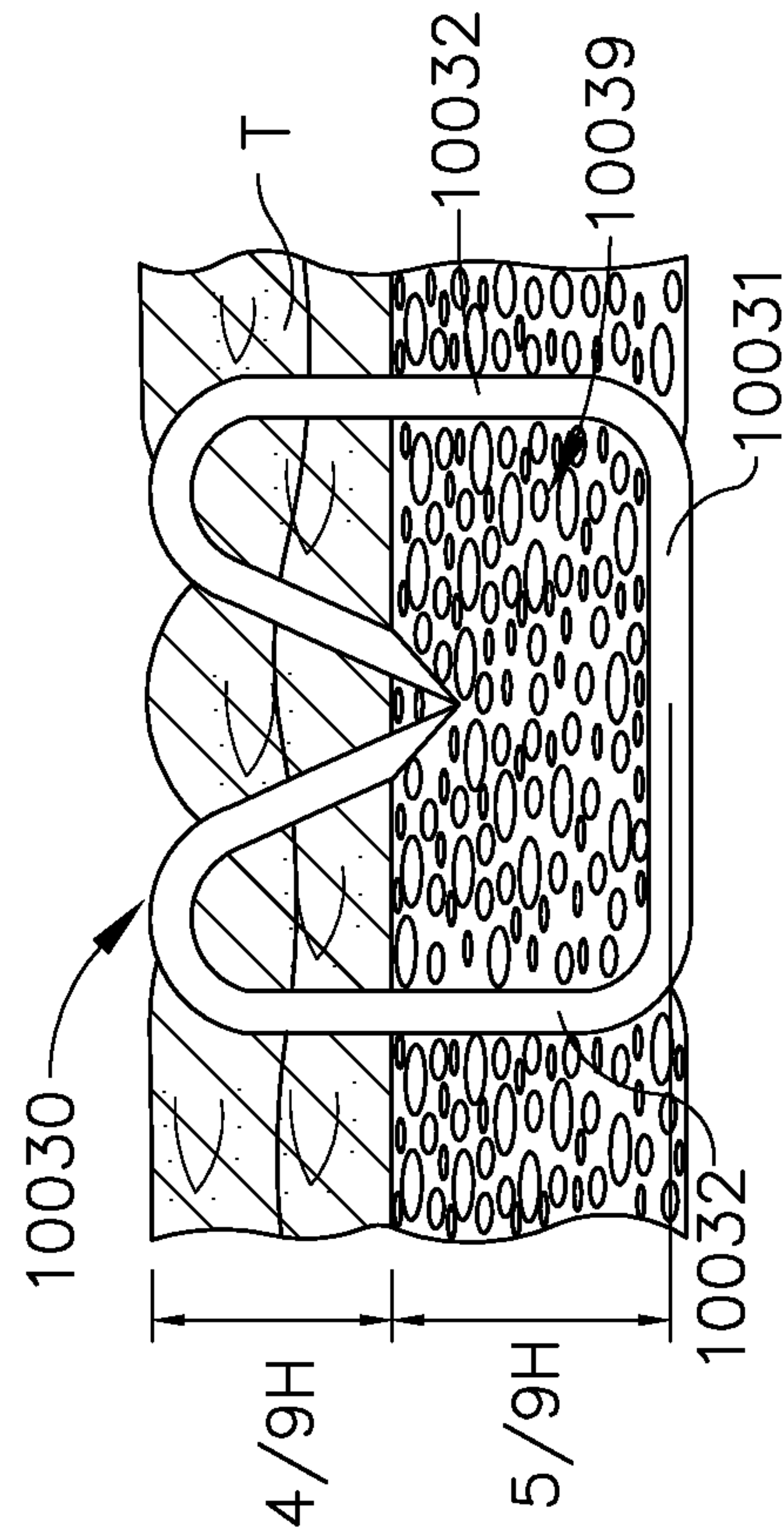


FIG. 255

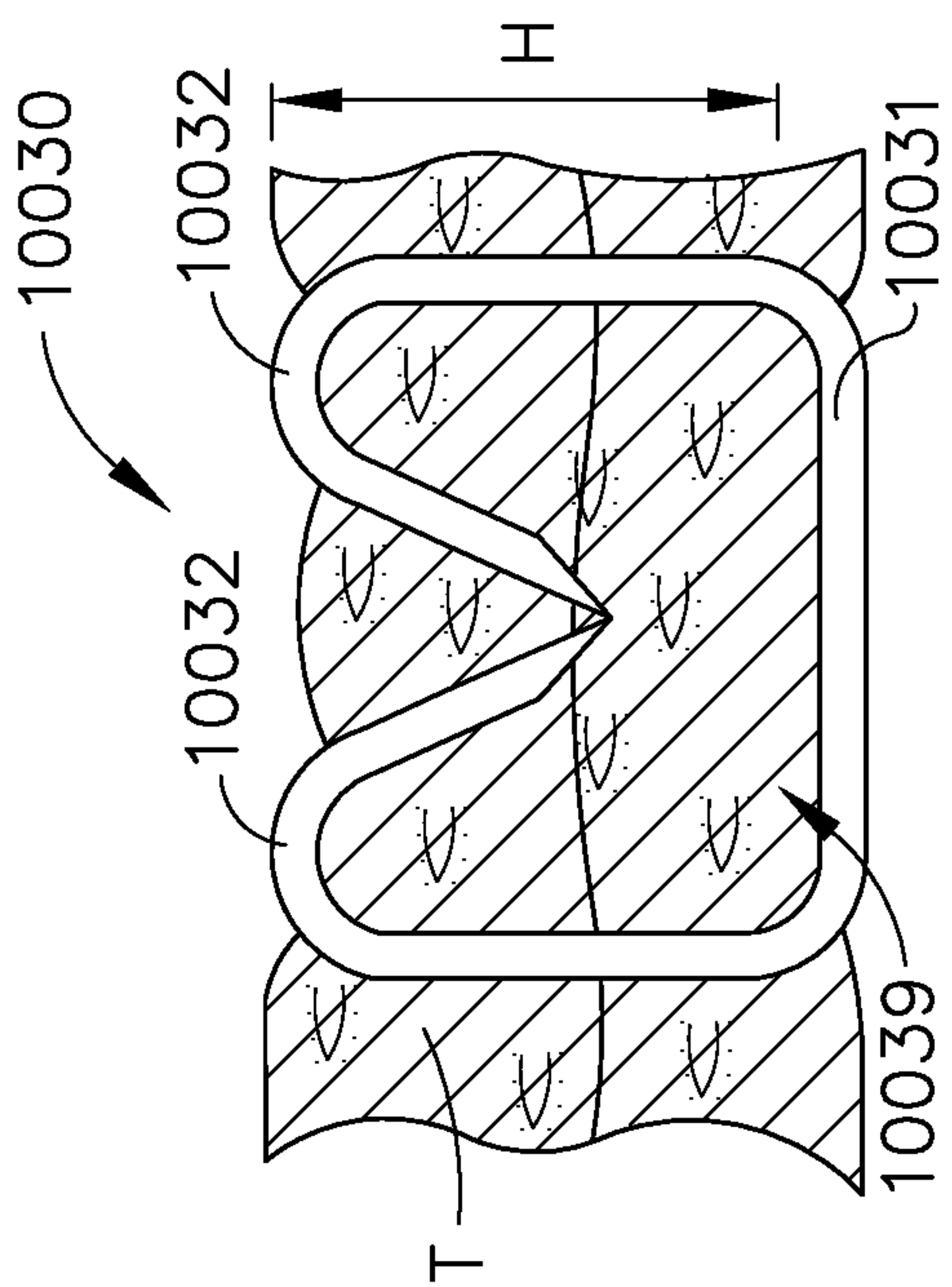


FIG. 252

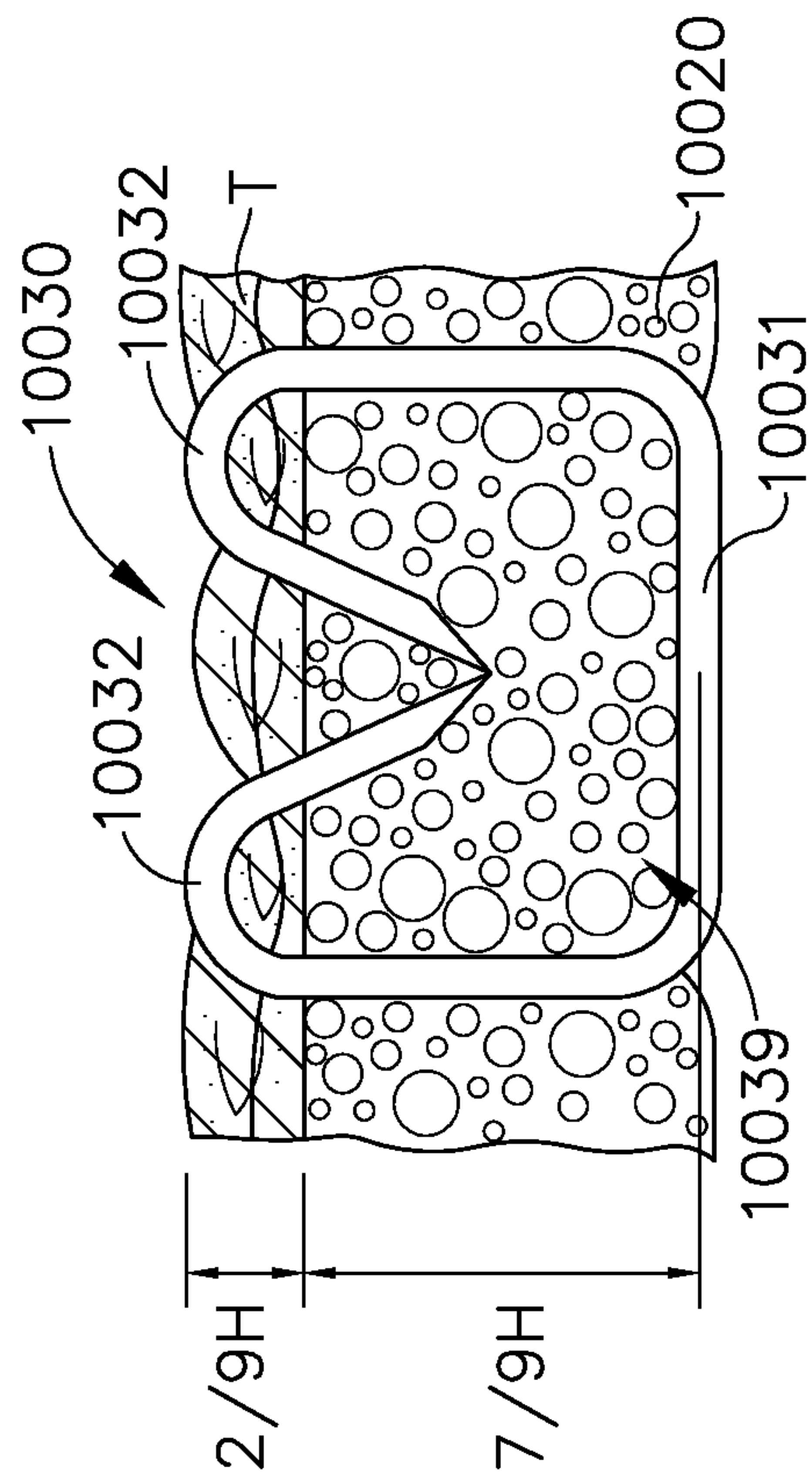


FIG. 254

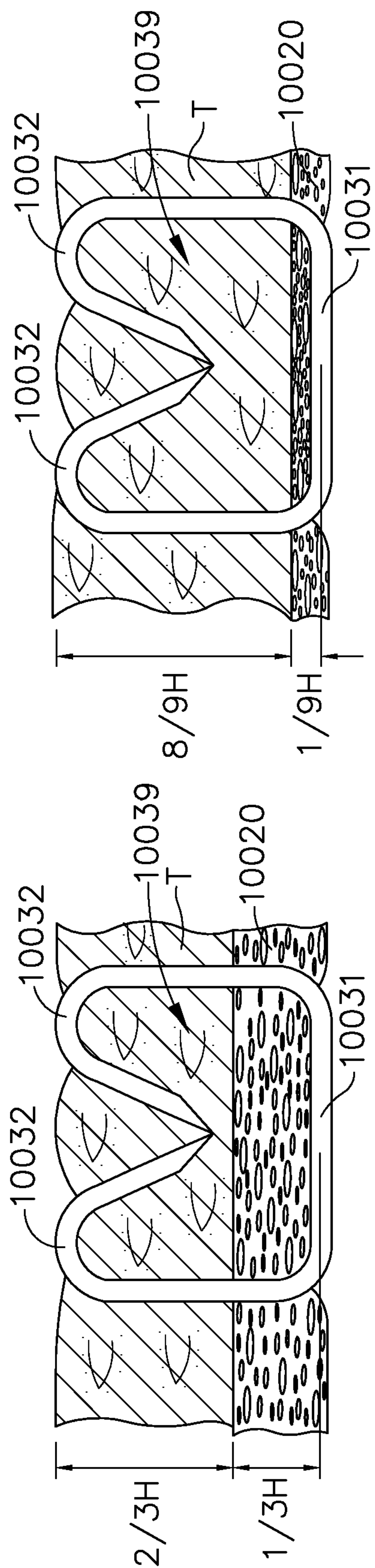


FIG. 256

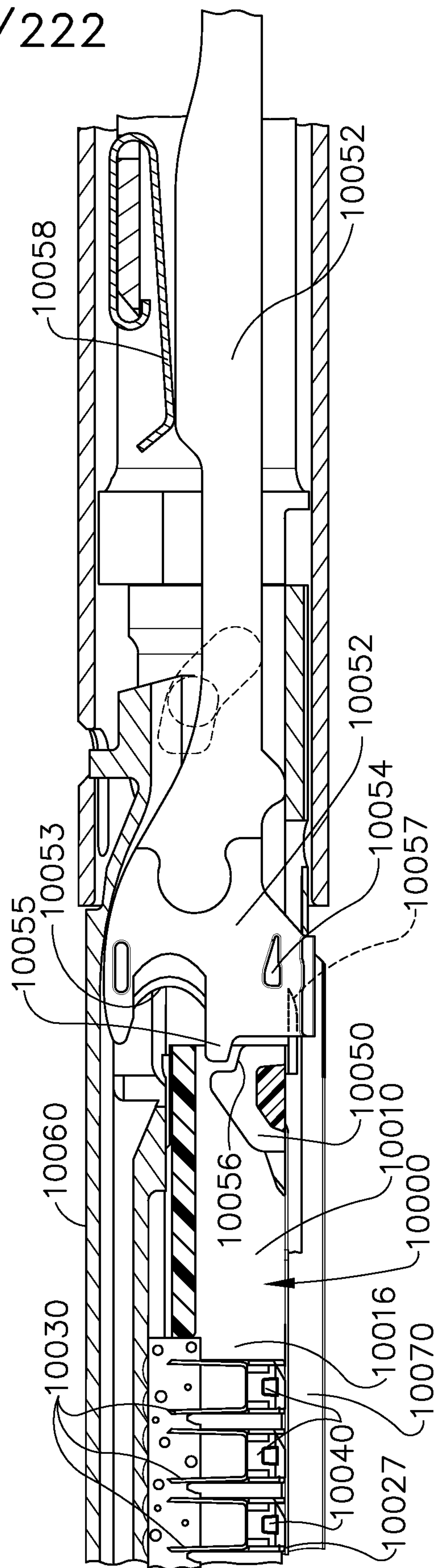
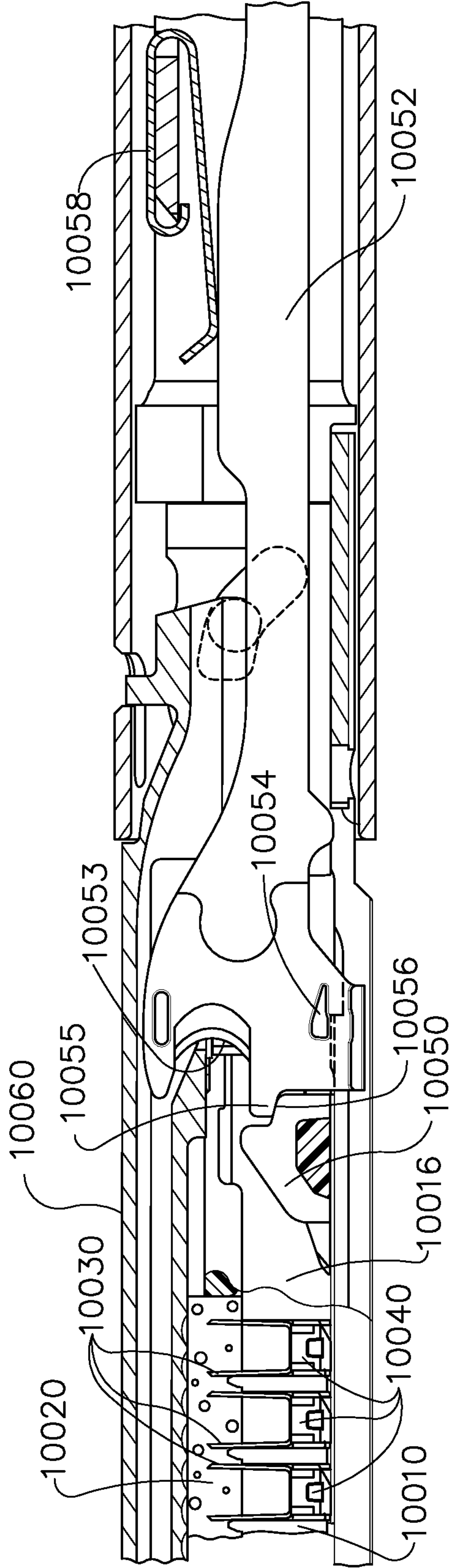


FIG. 258



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FIG. 259

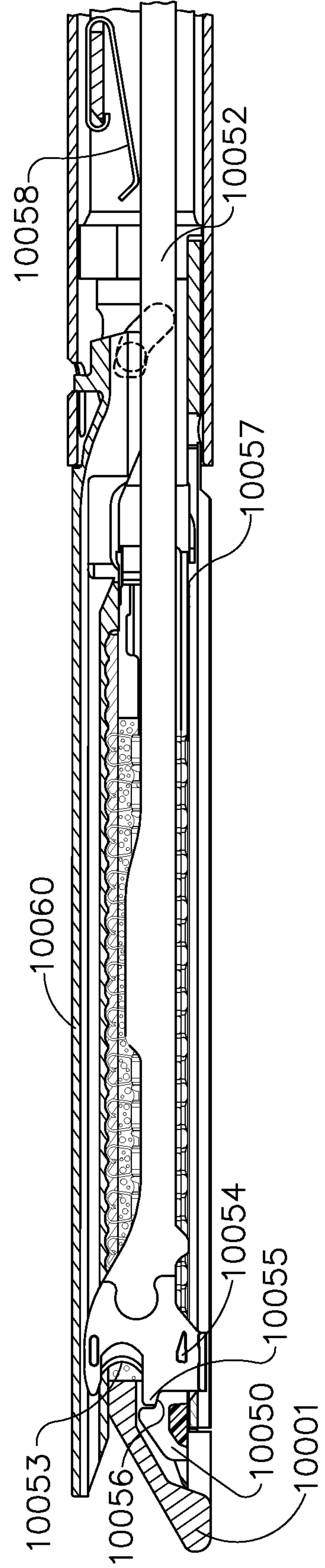


FIG. 260

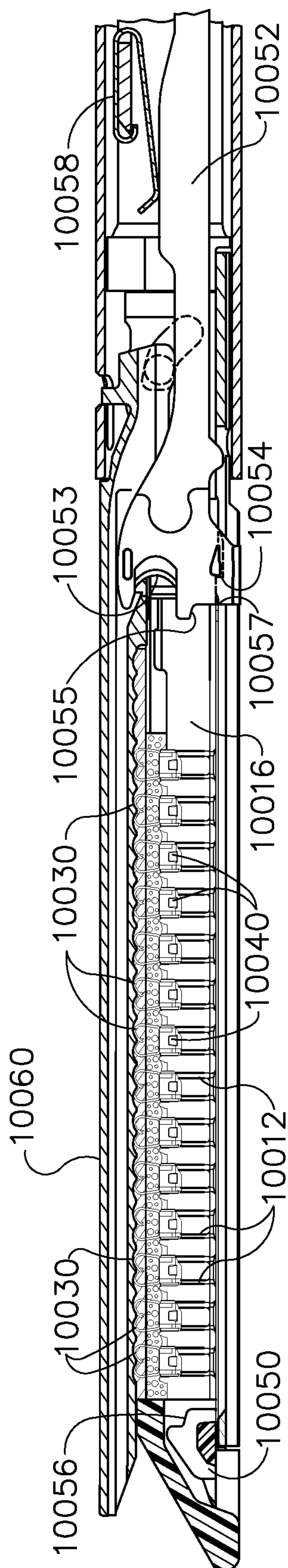


FIG. 261

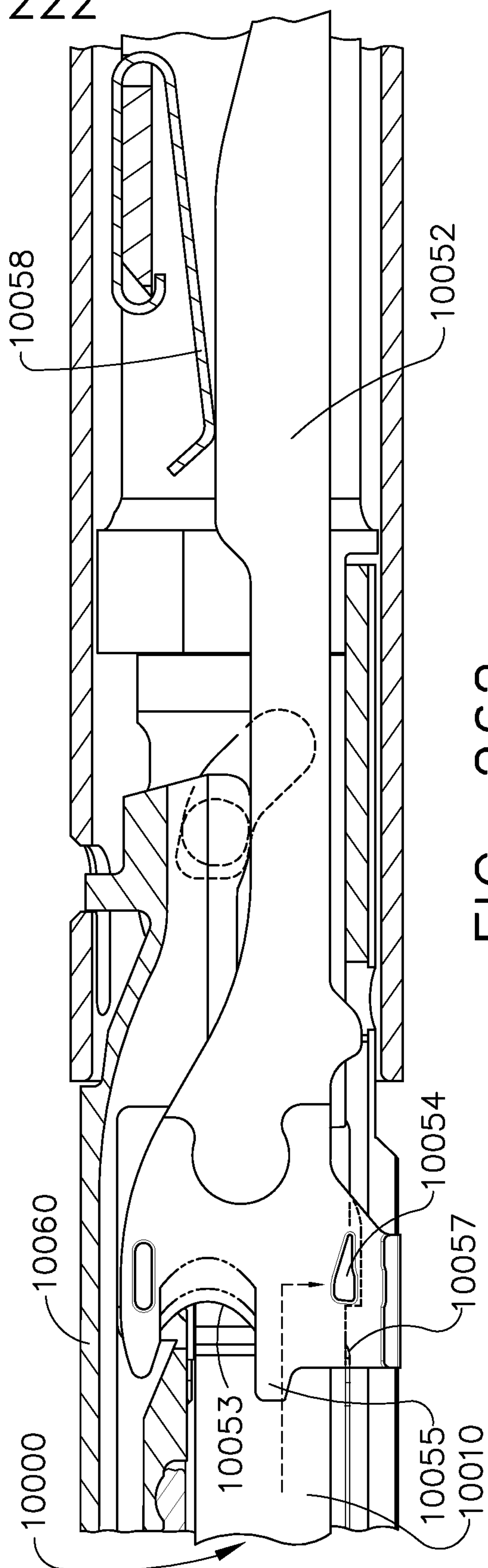
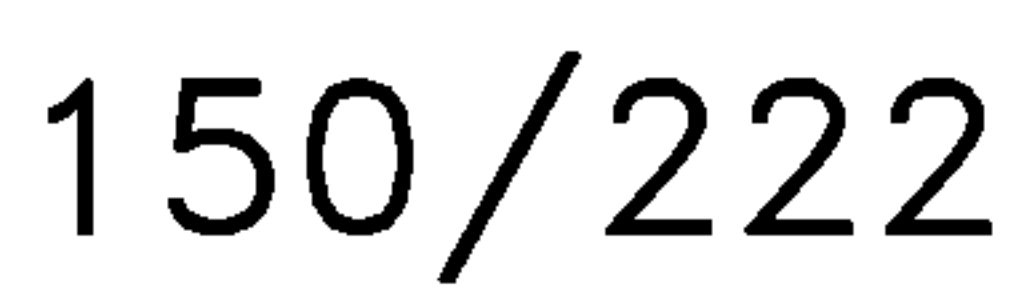


FIG. 262

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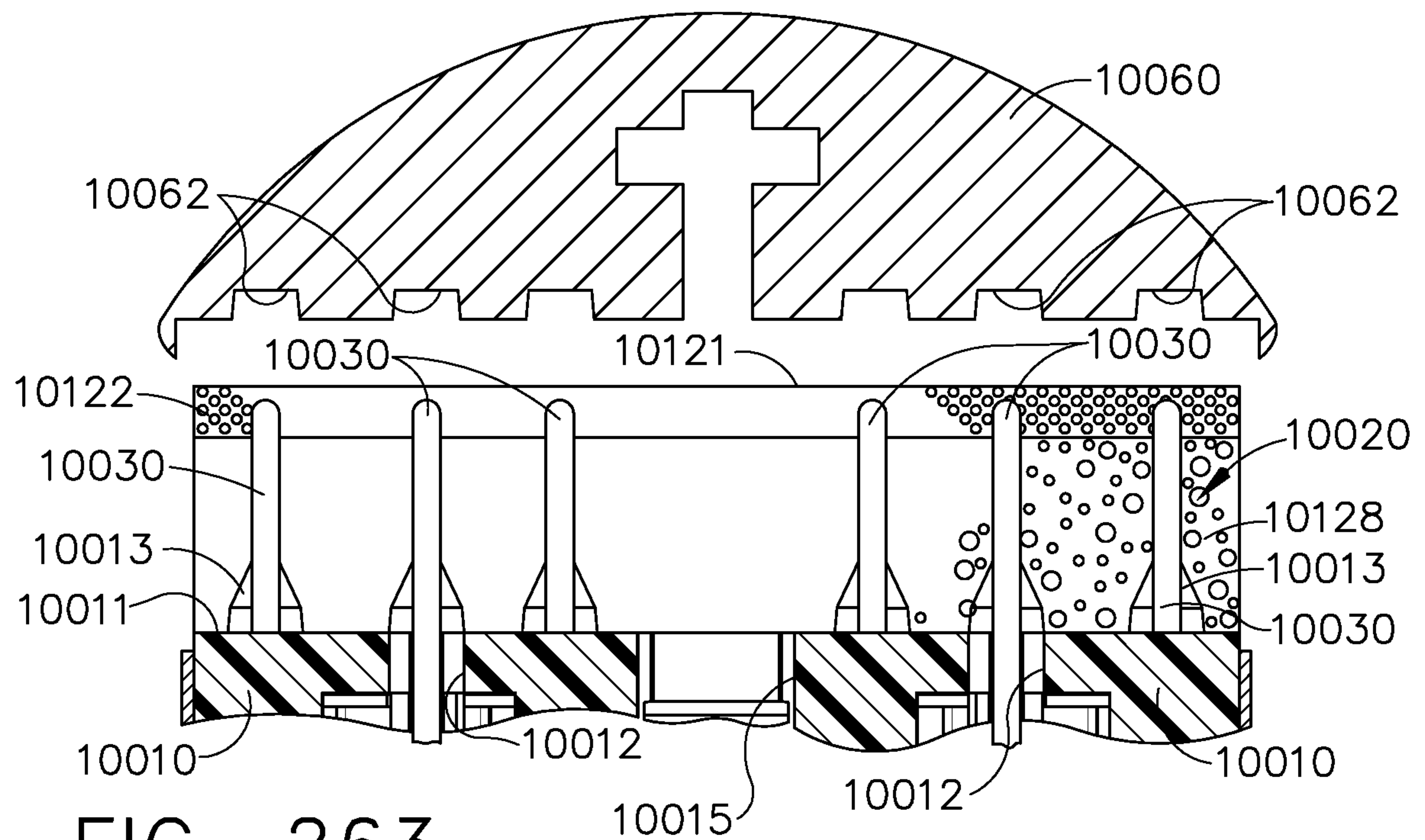


FIG. 263

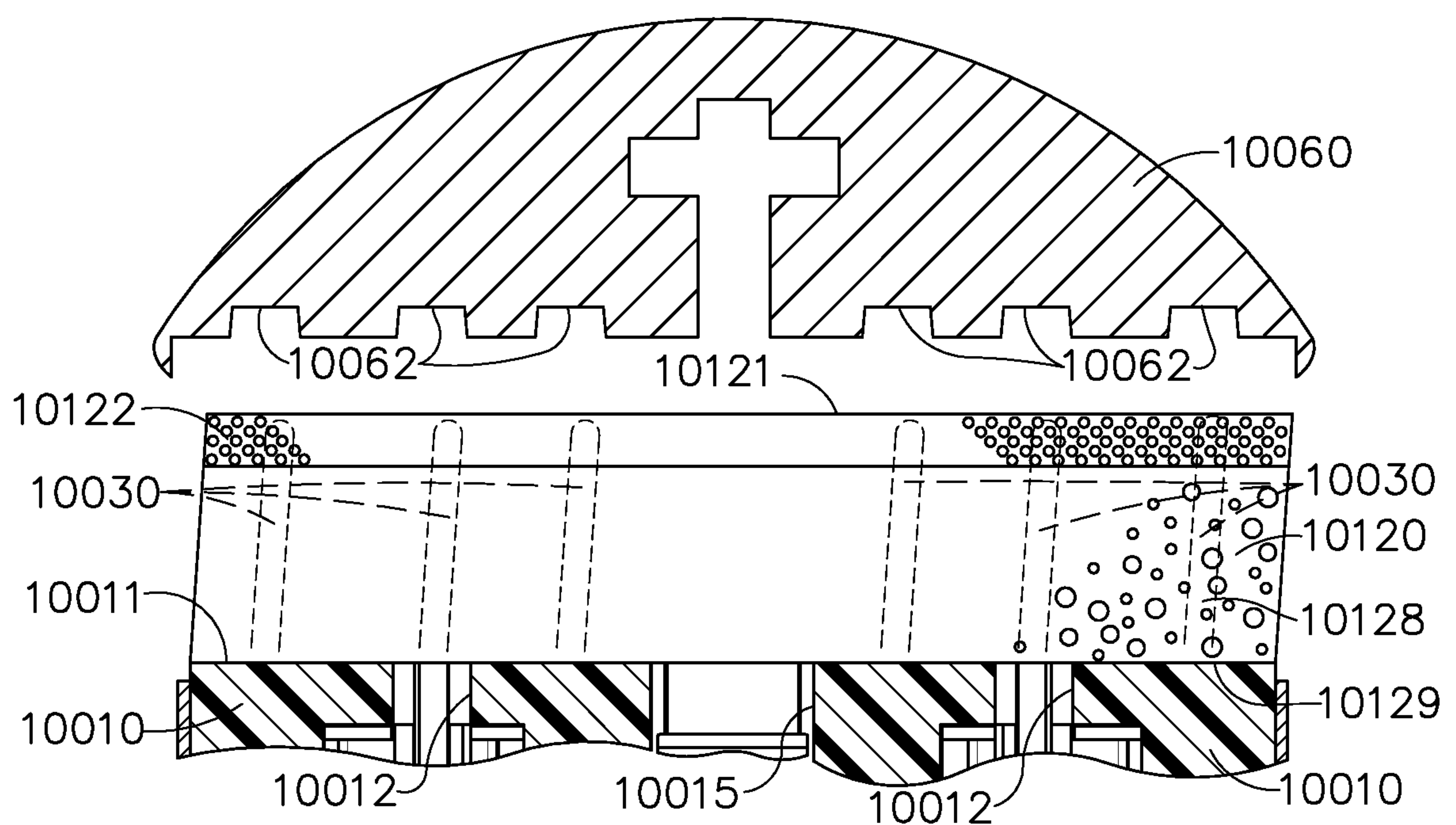


FIG. 264

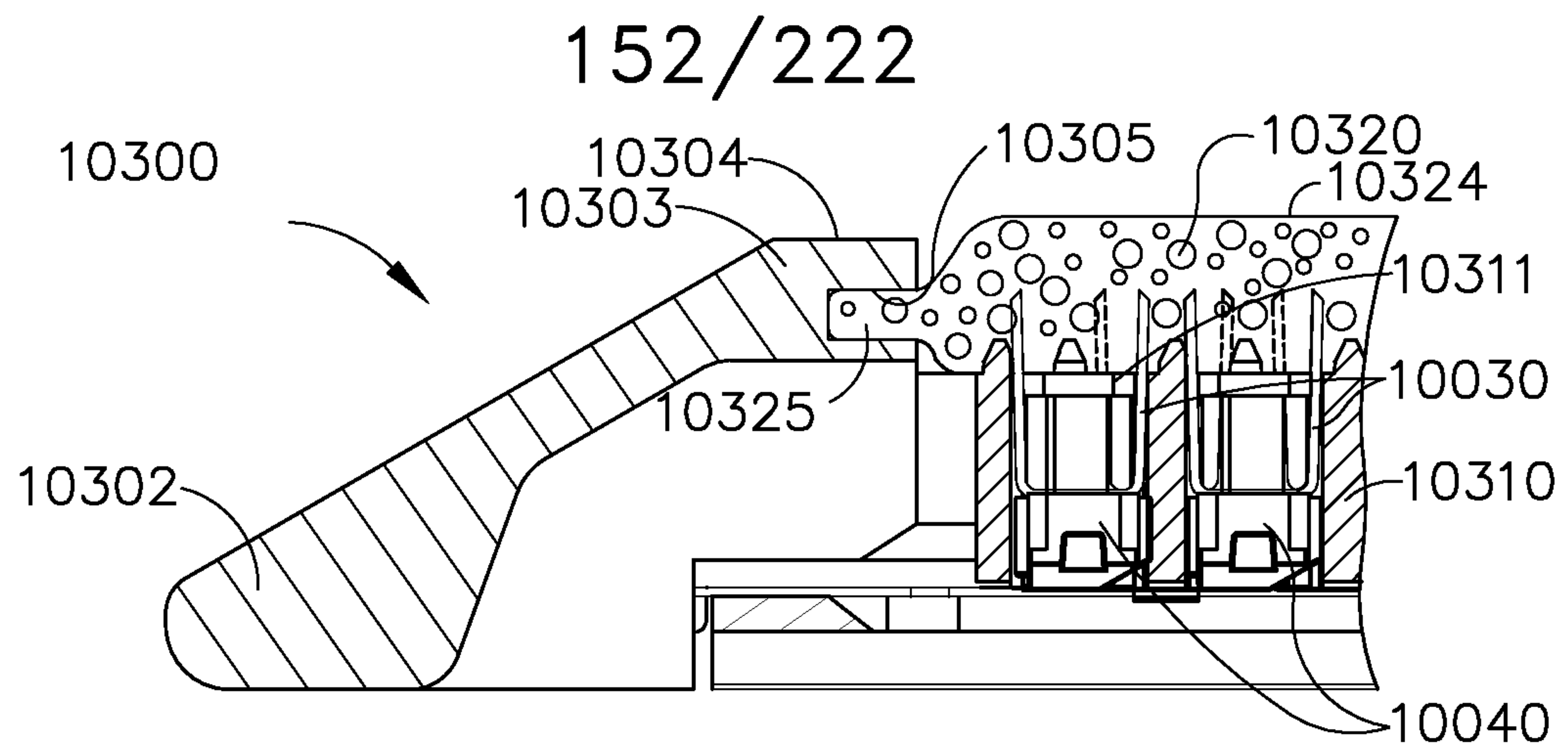


FIG. 265

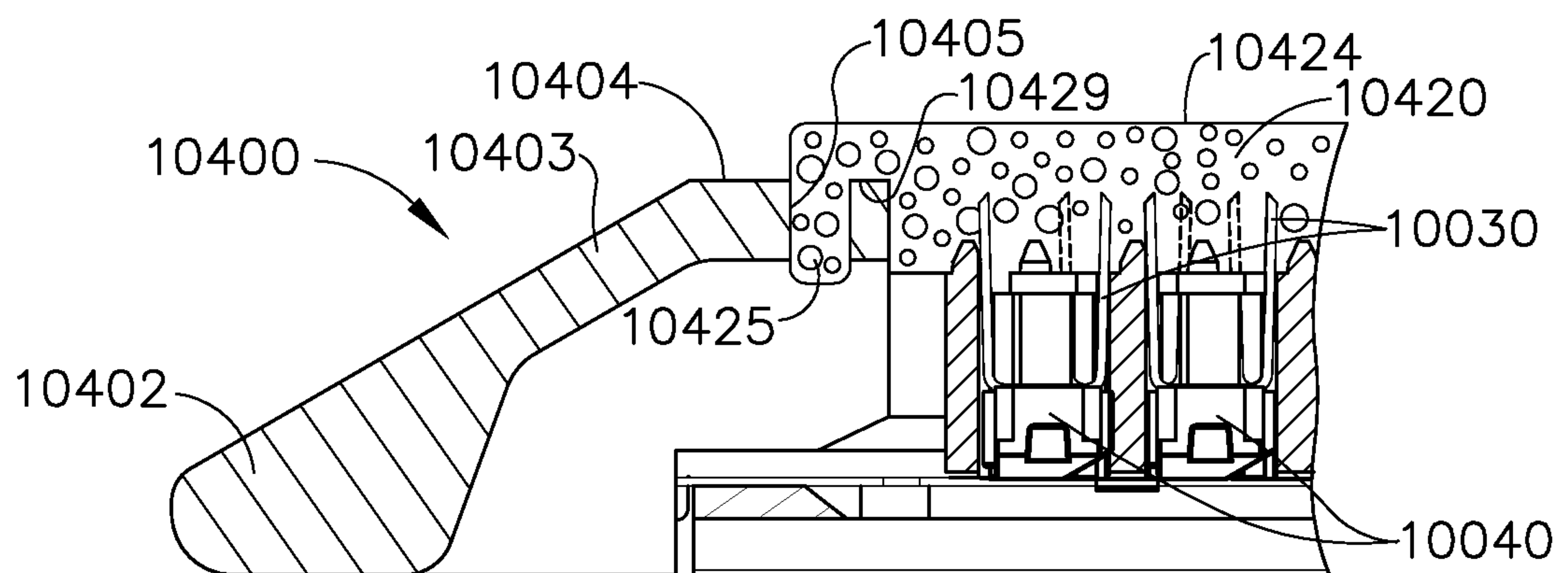


FIG. 266

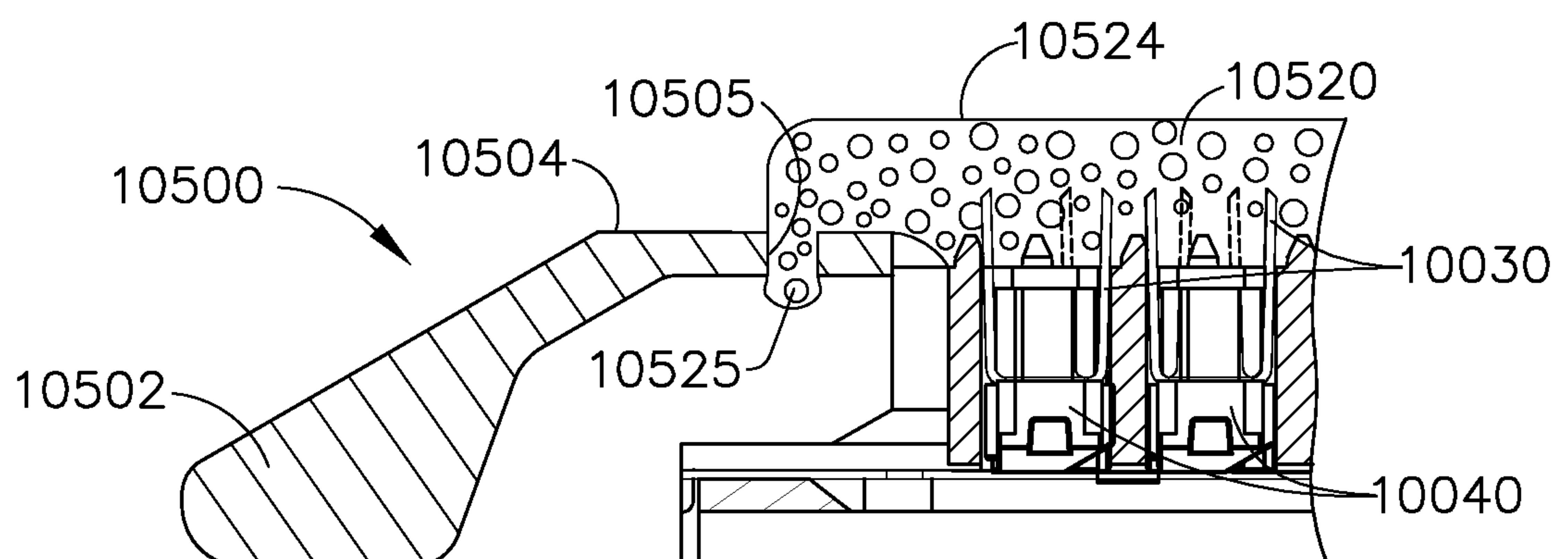


FIG. 267

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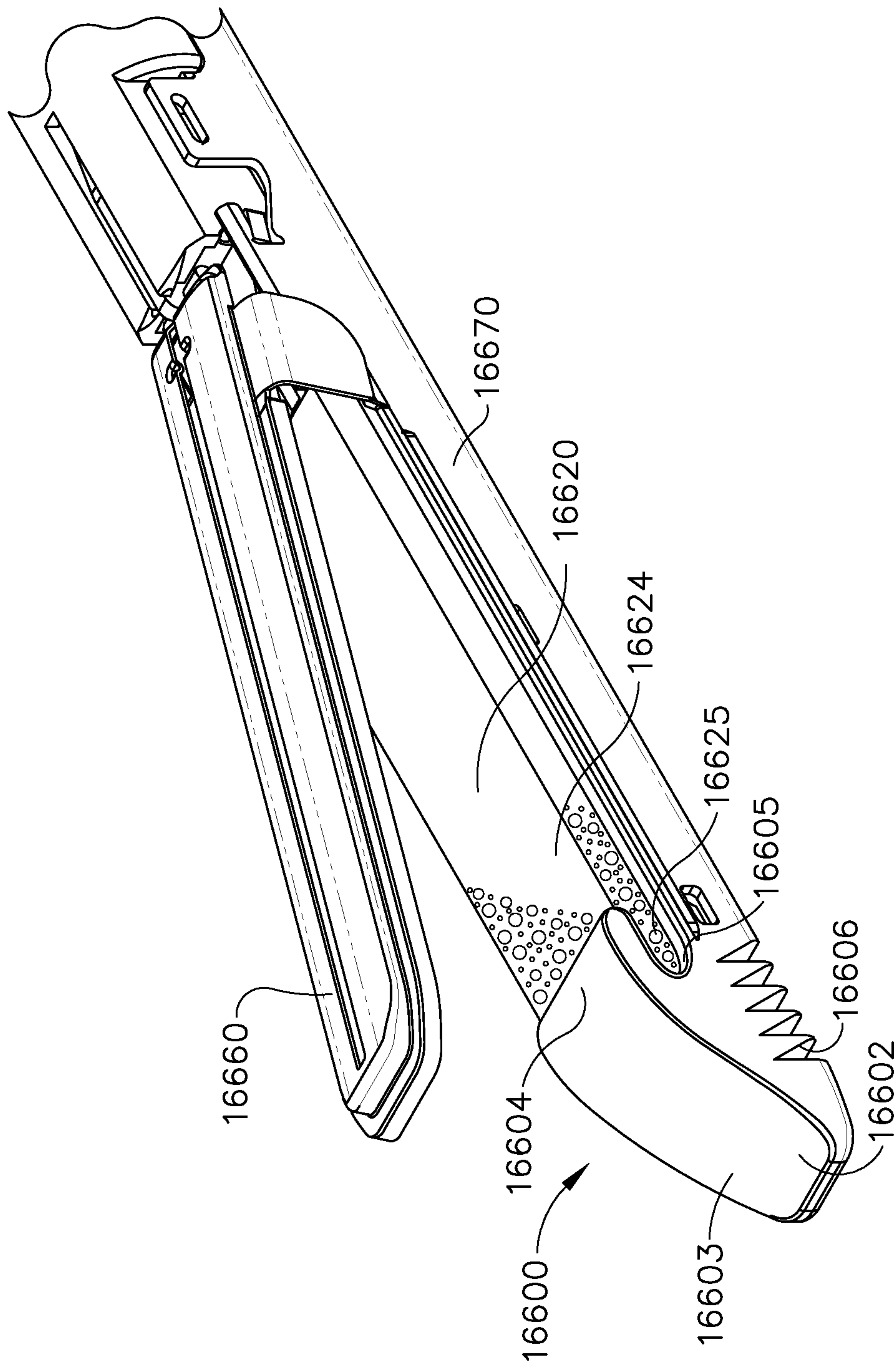


FIG. 268

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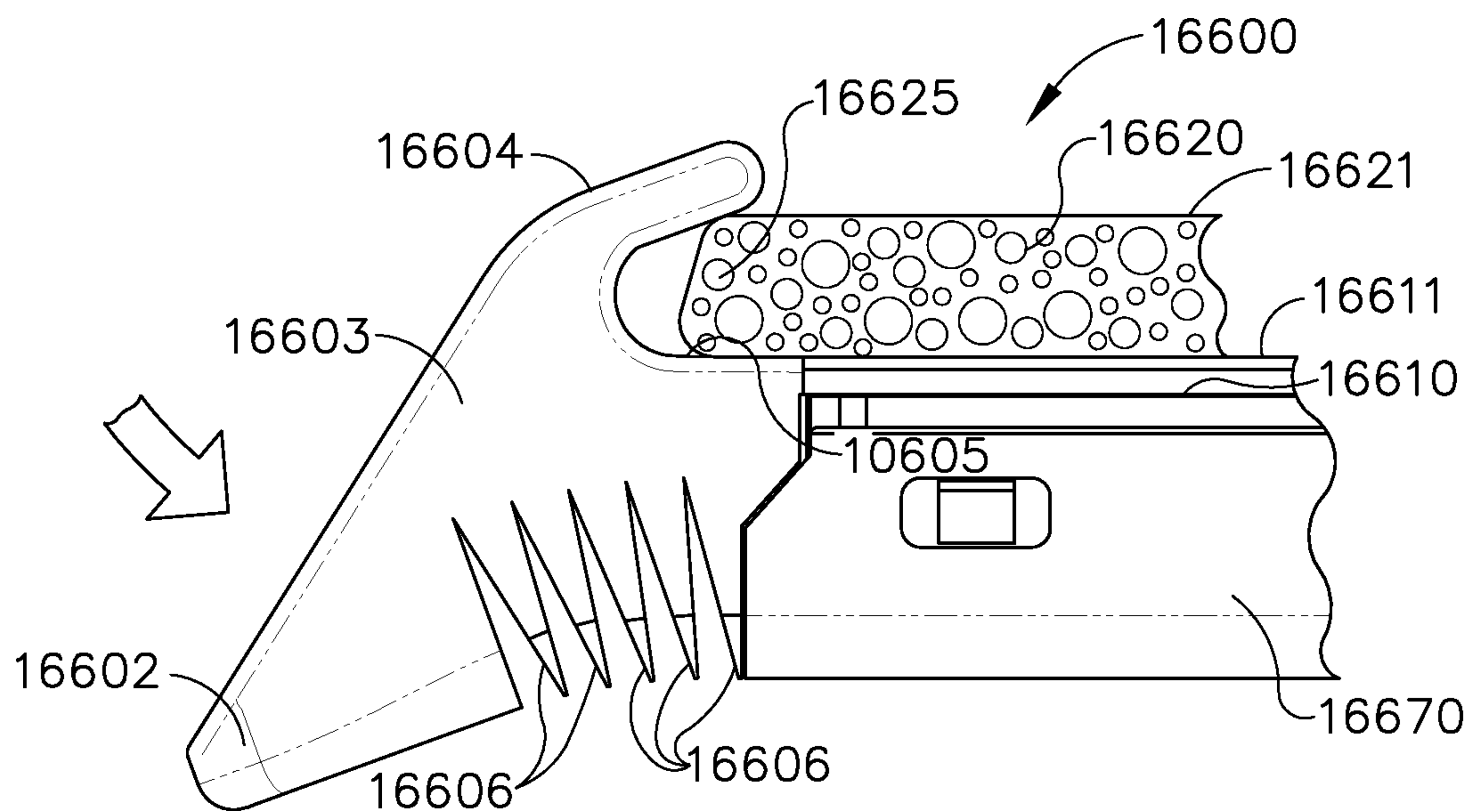


FIG. 269

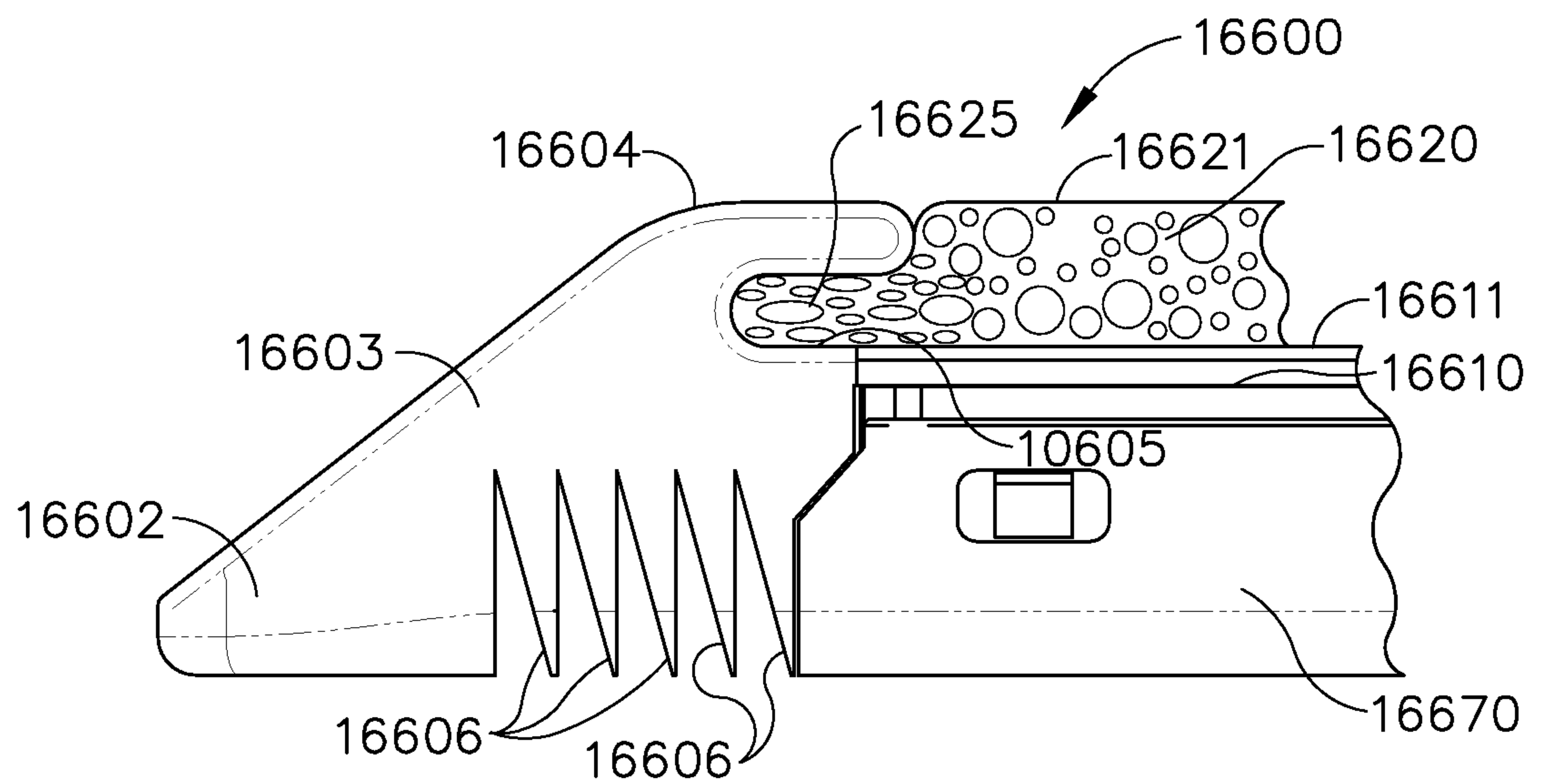


FIG. 270

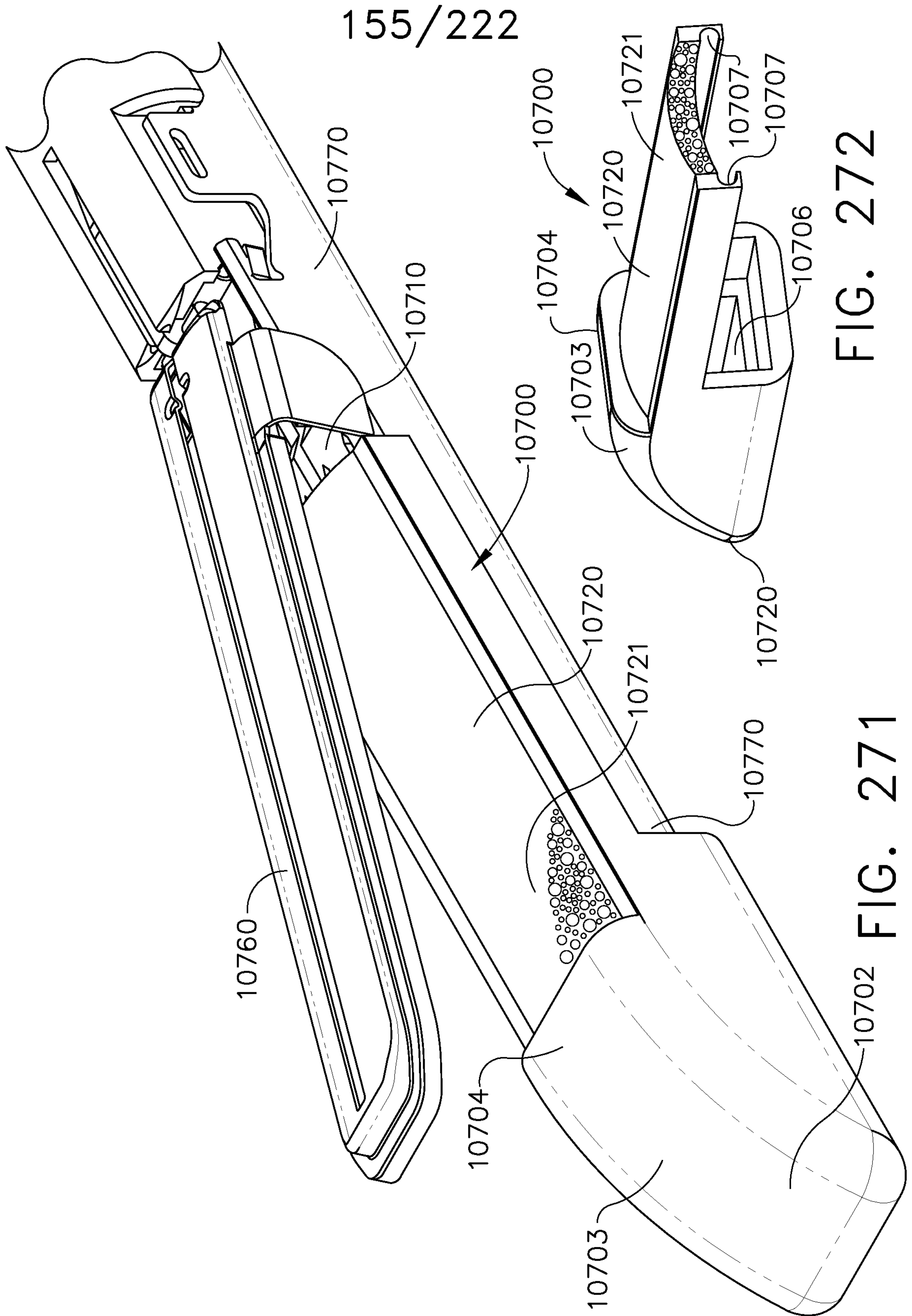


FIG. 272

FIG. 271

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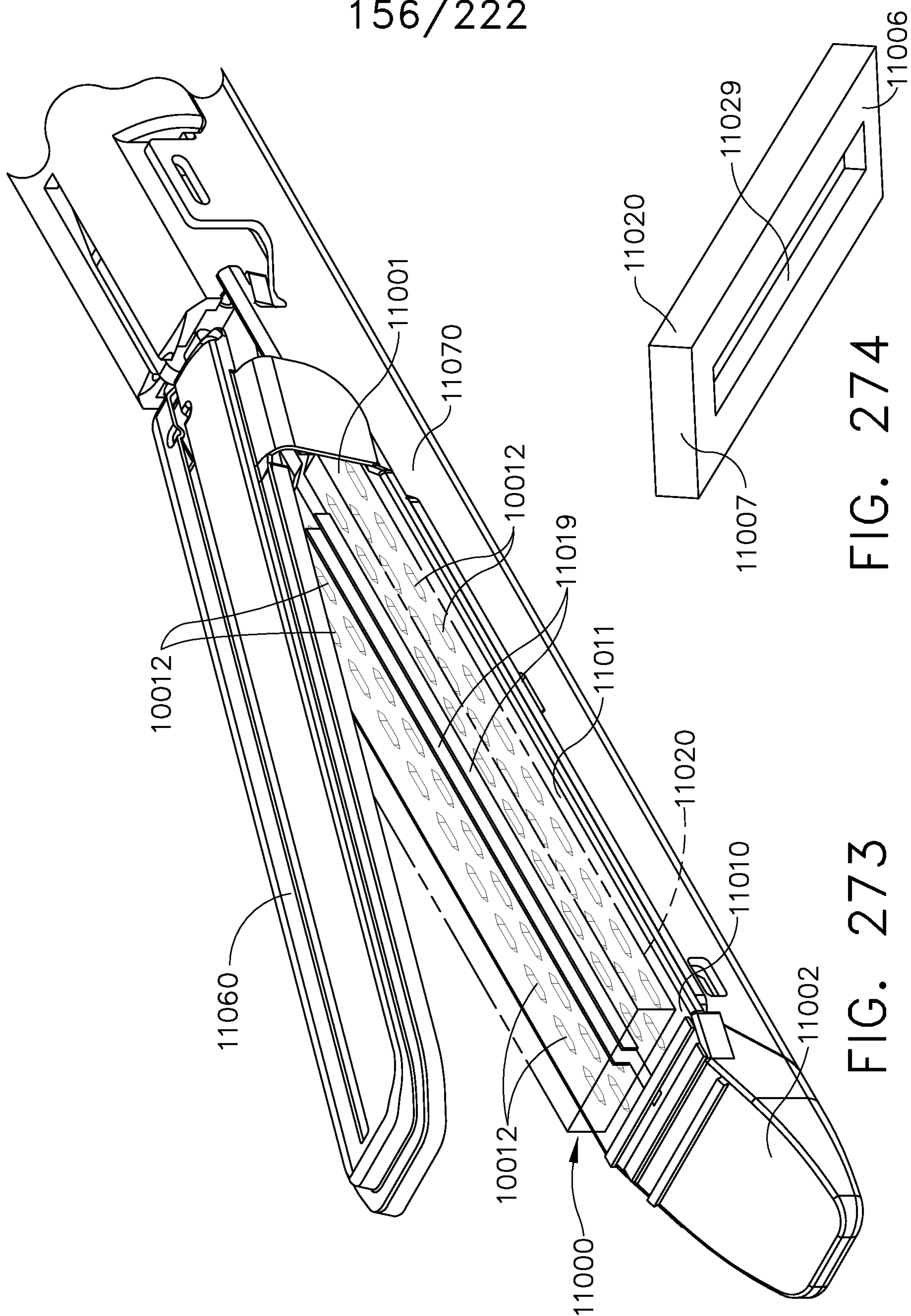


FIG. 274

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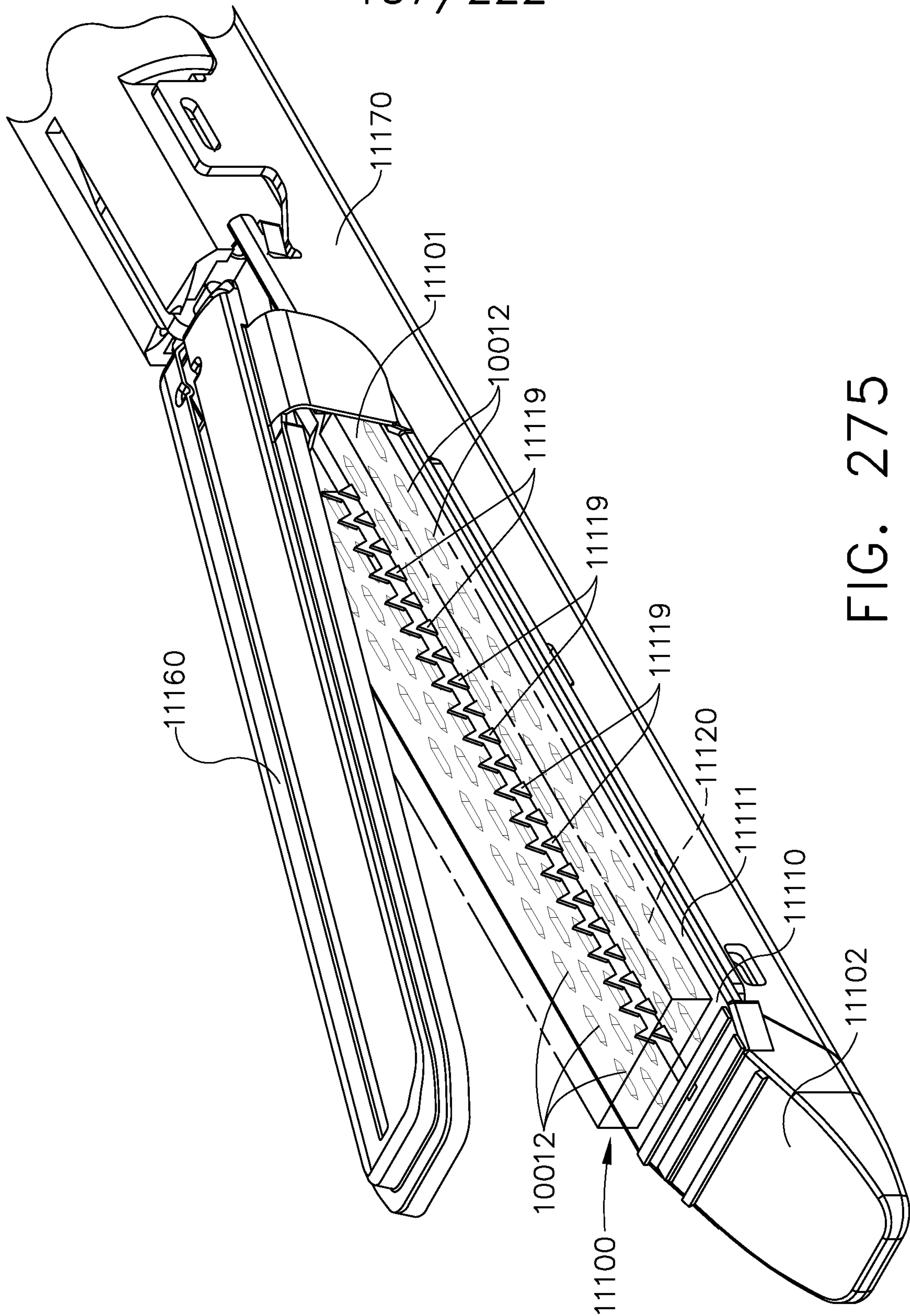
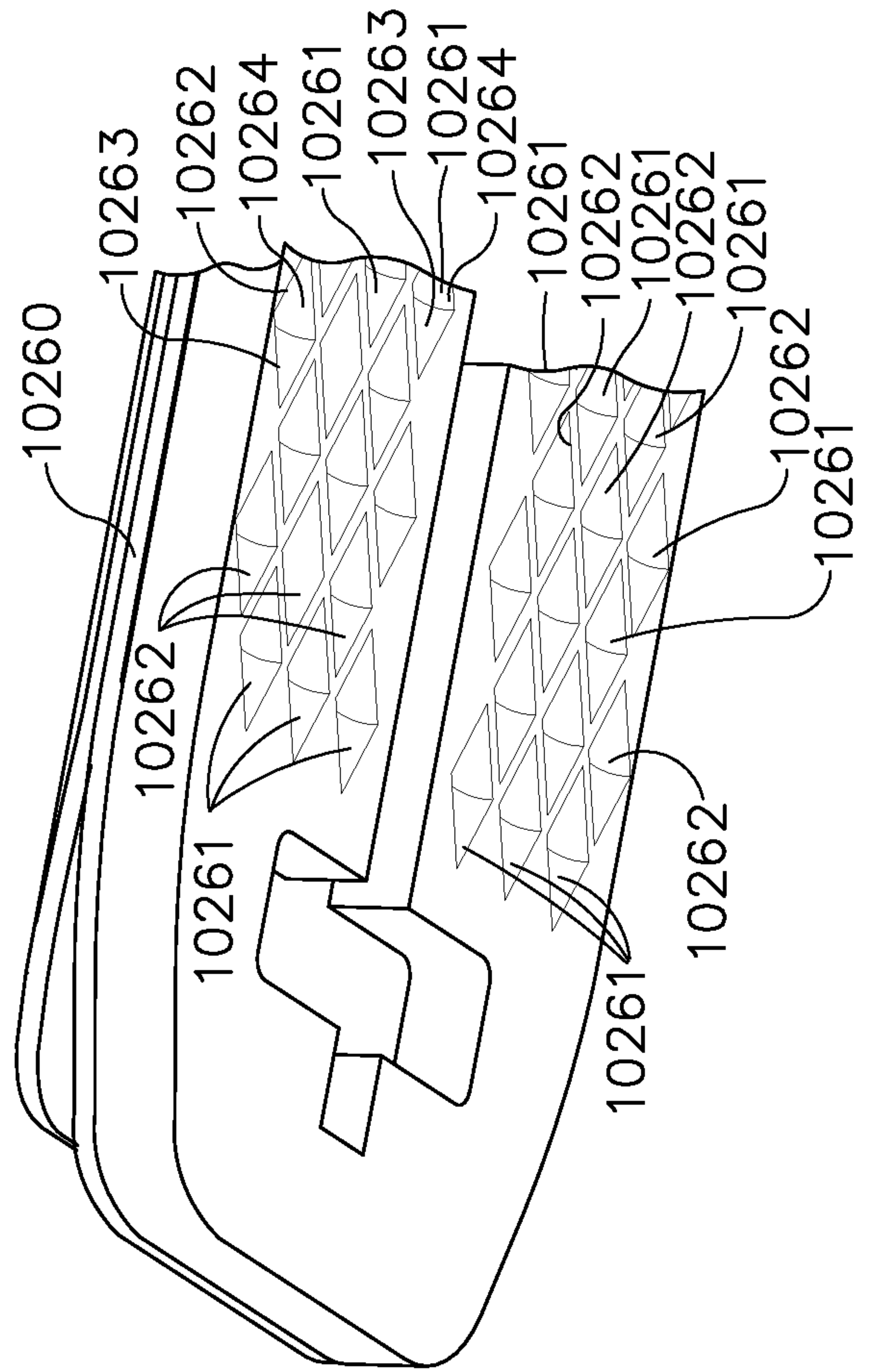
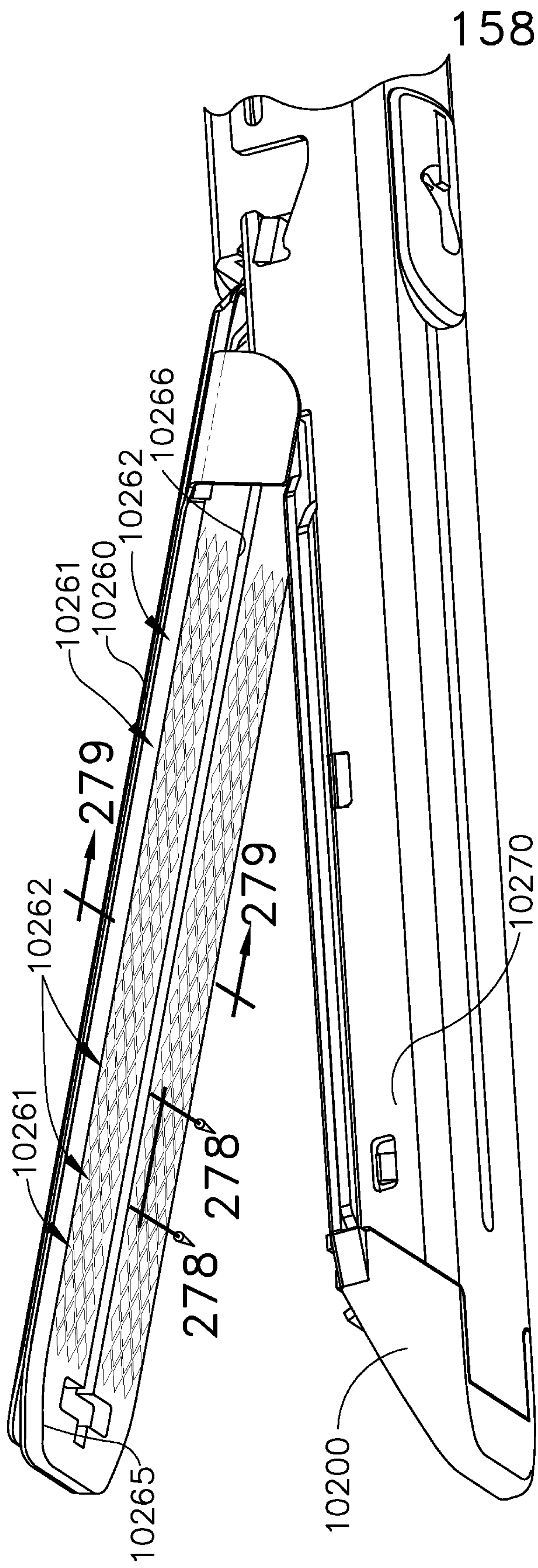


FIG. 275



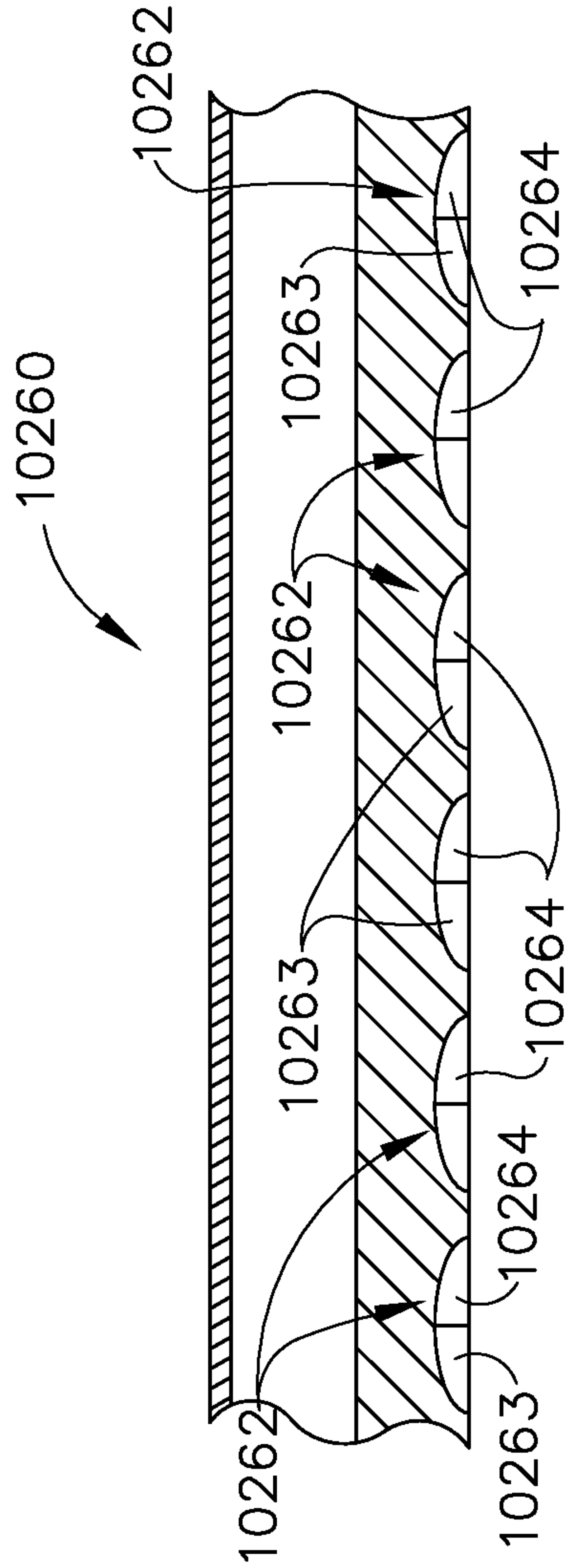


FIG. 278

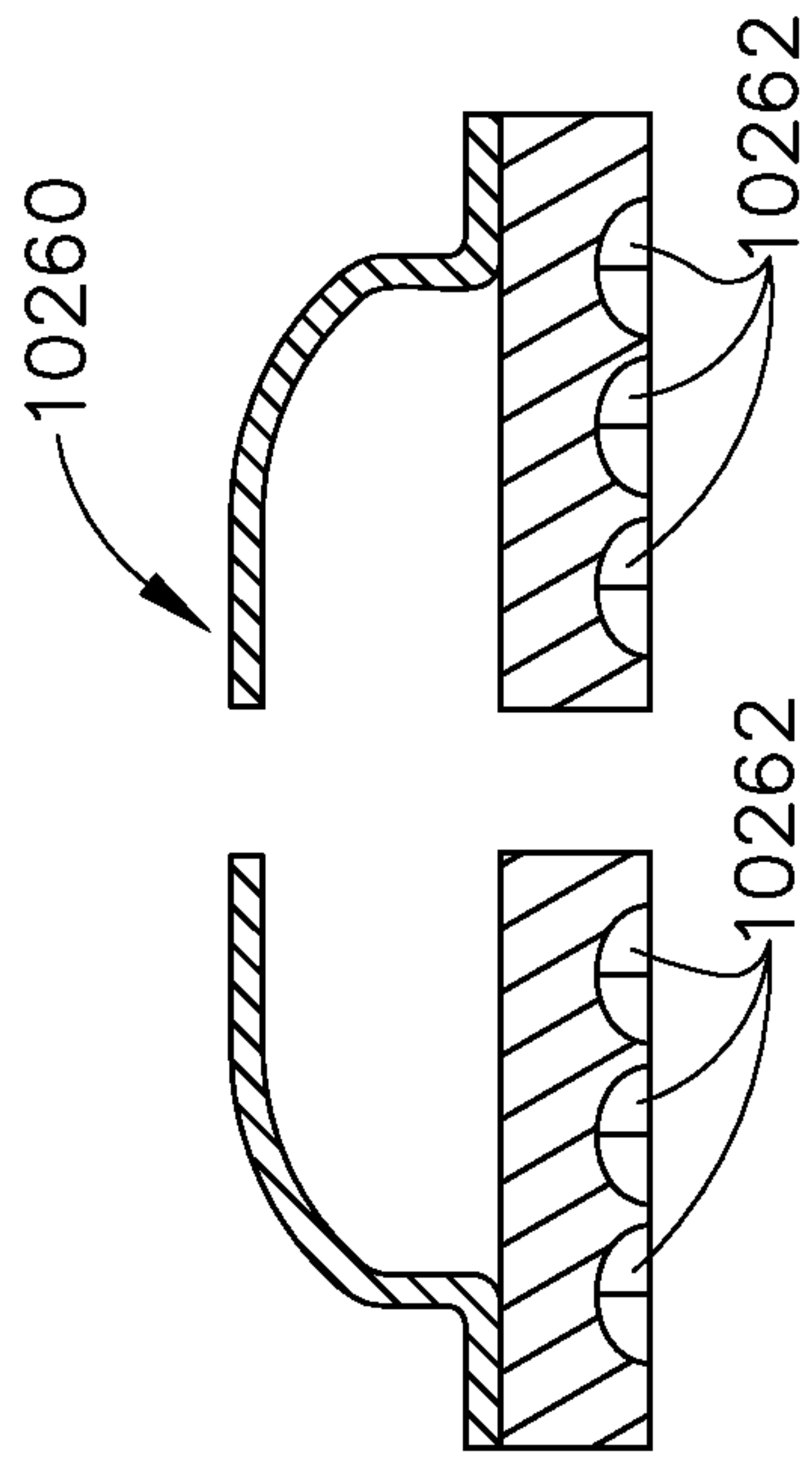


FIG. 279

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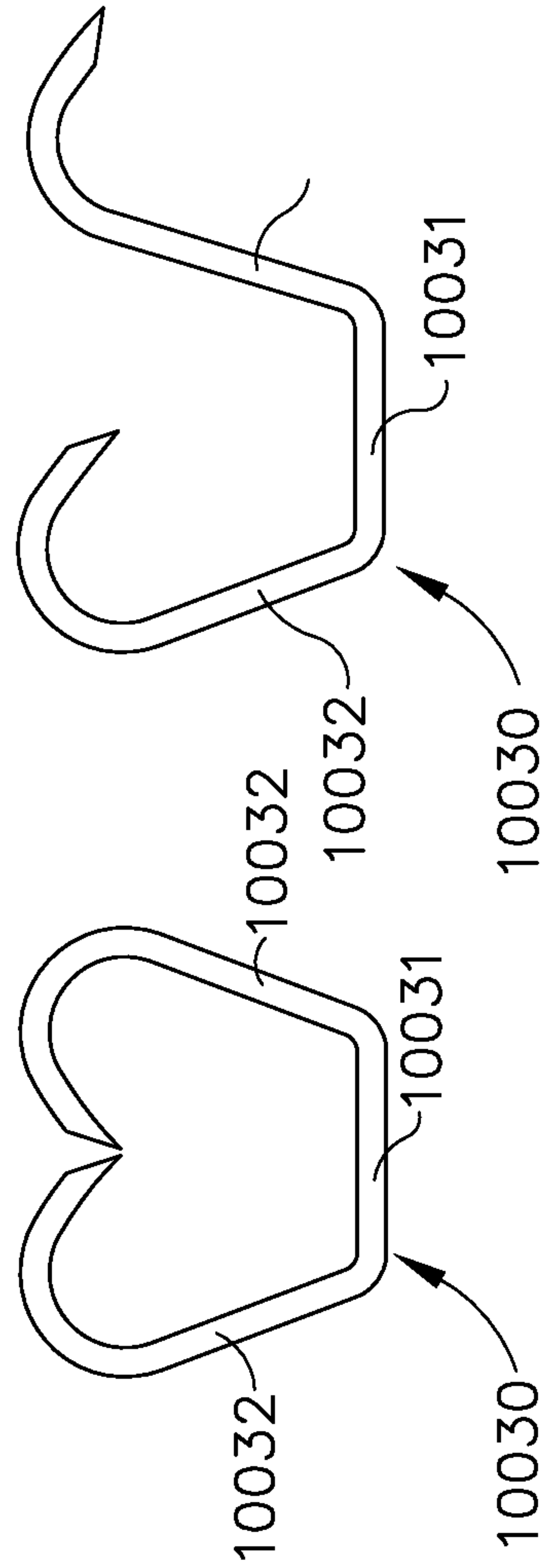


FIG. 280

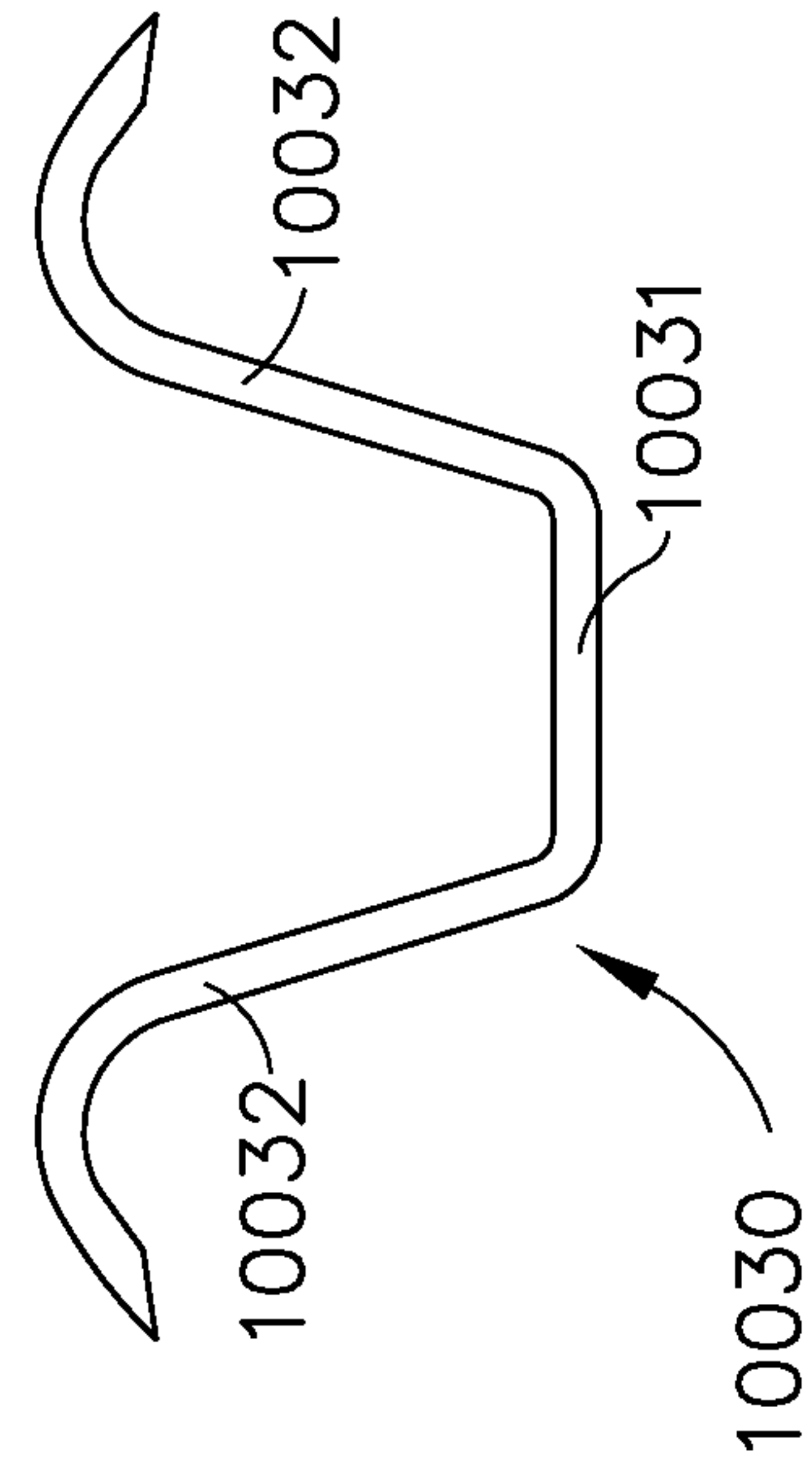


FIG. 281

FIG. 282

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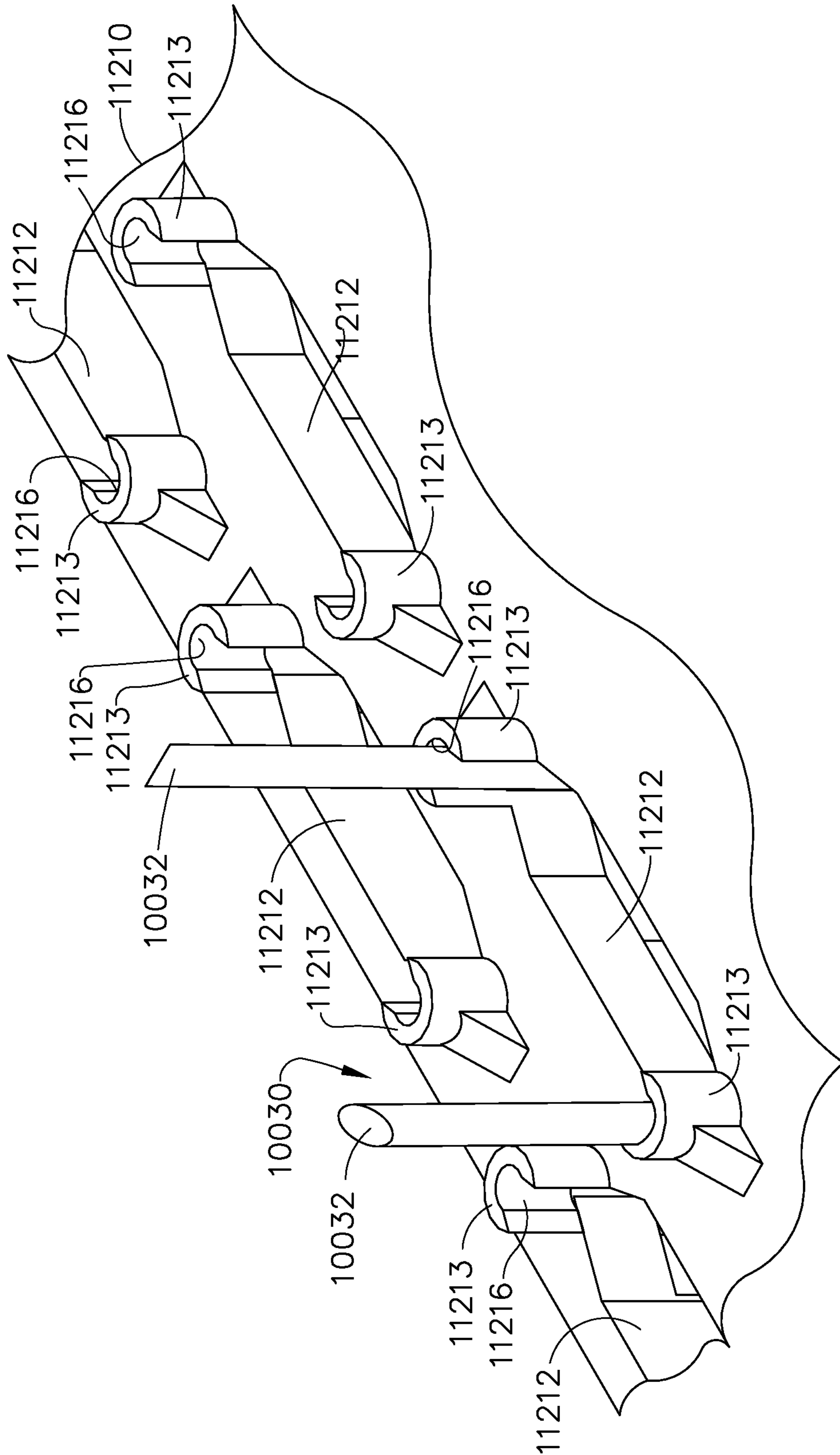


FIG. 283

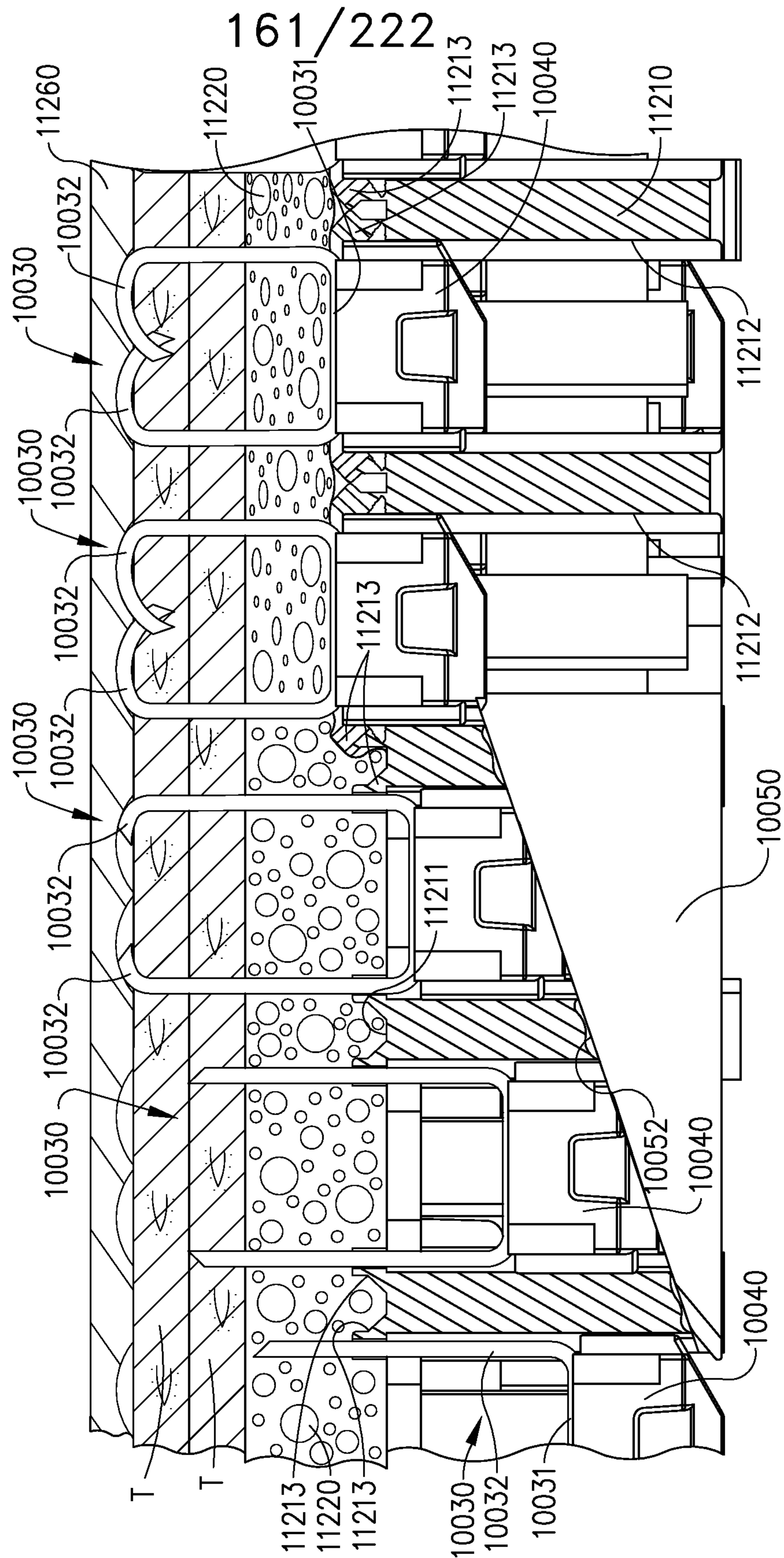


FIG. 284

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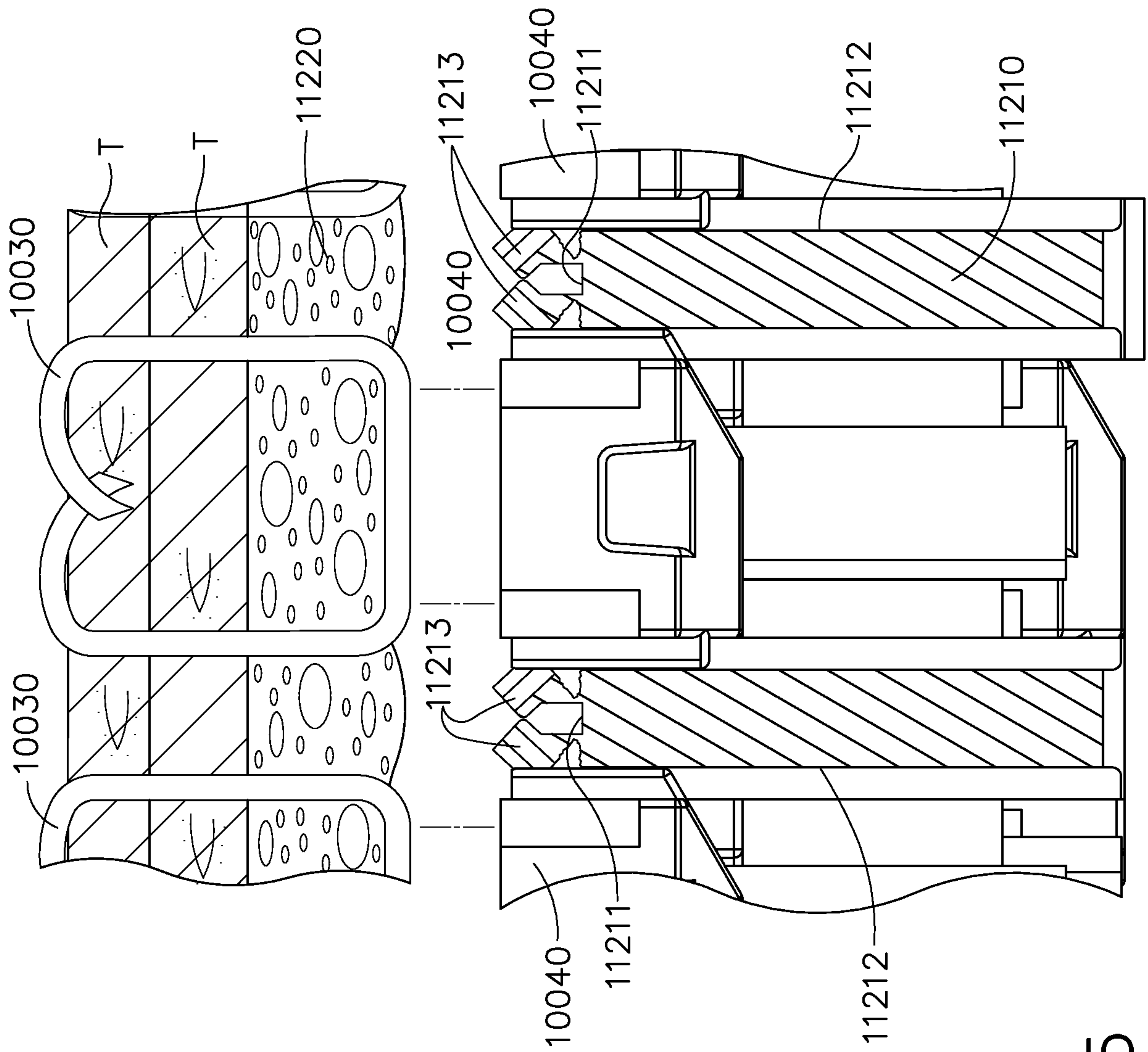
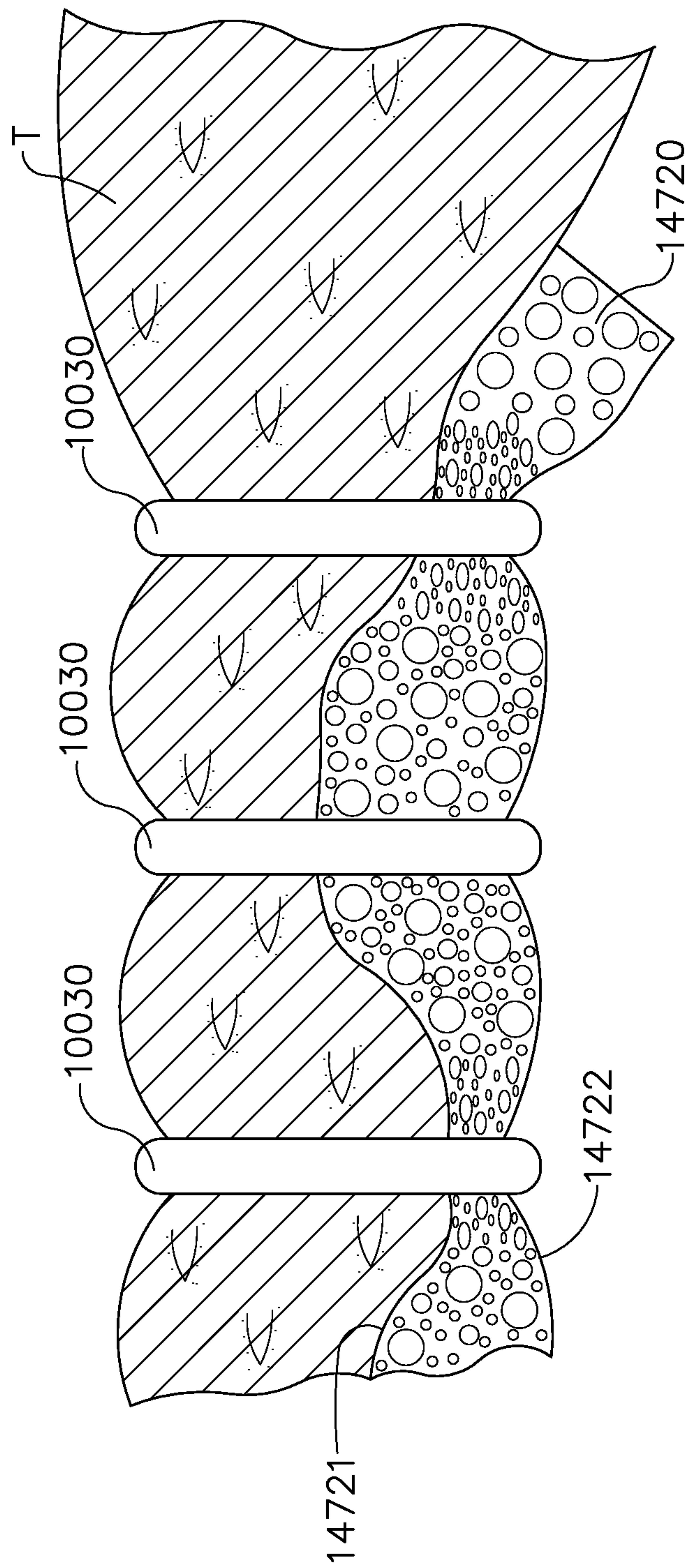


FIG. 285



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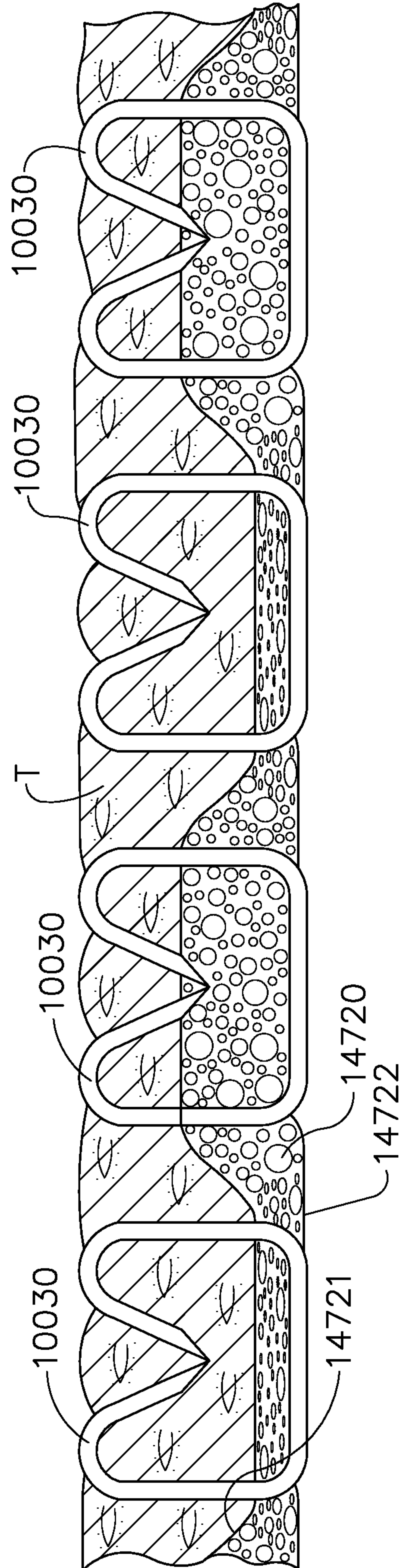


FIG. 288

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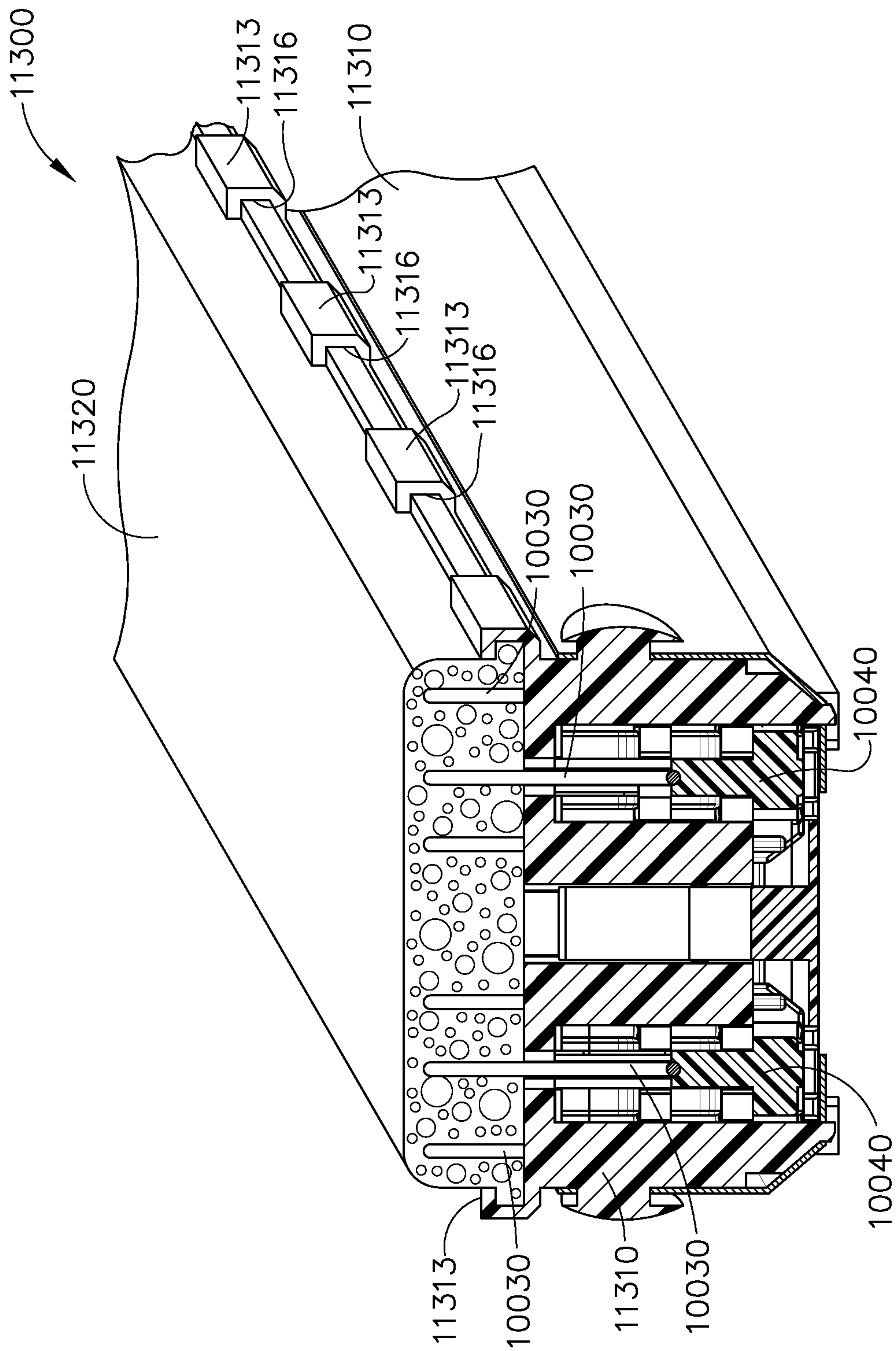


FIG. 289

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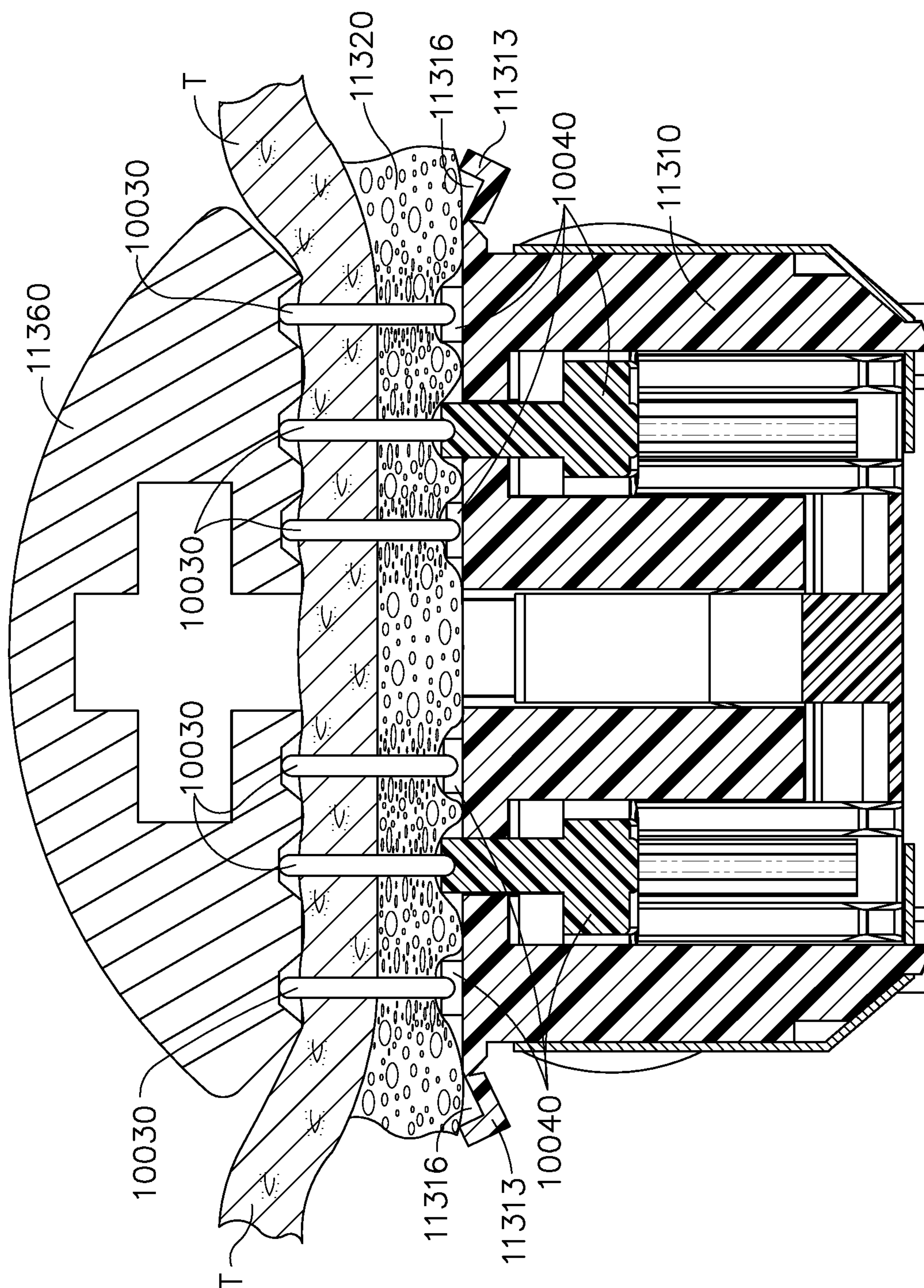
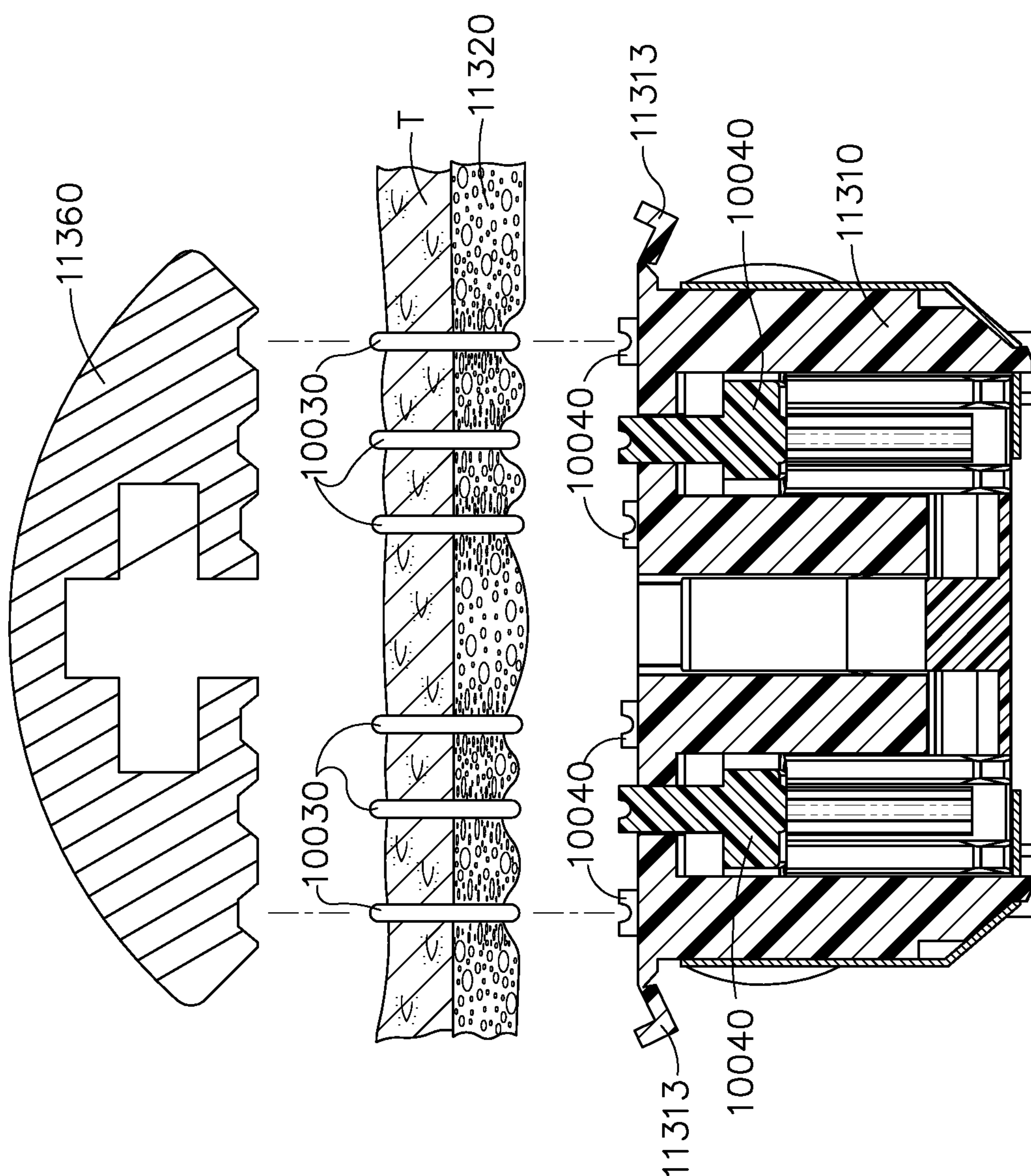


FIG. 290

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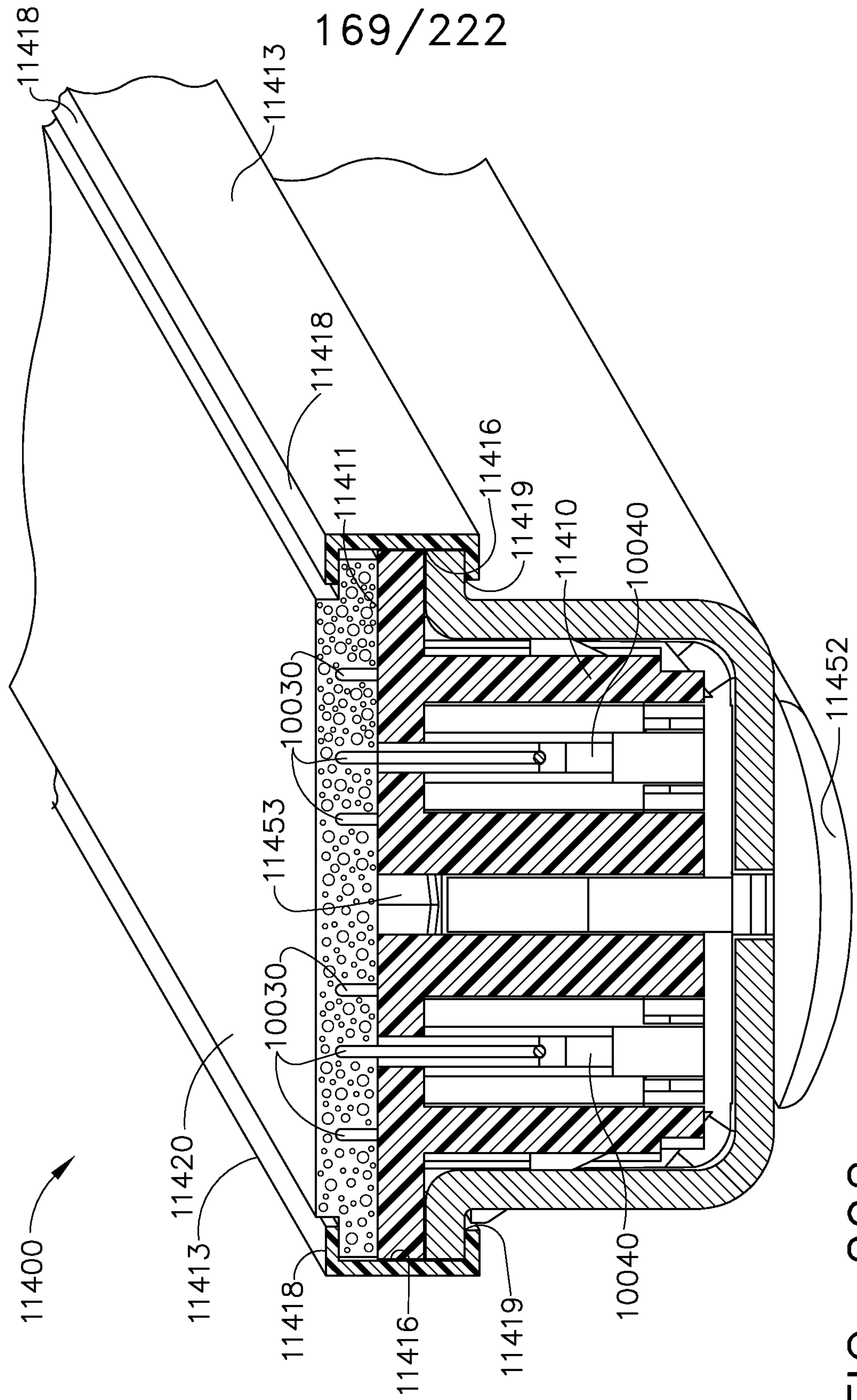


FIG. 292

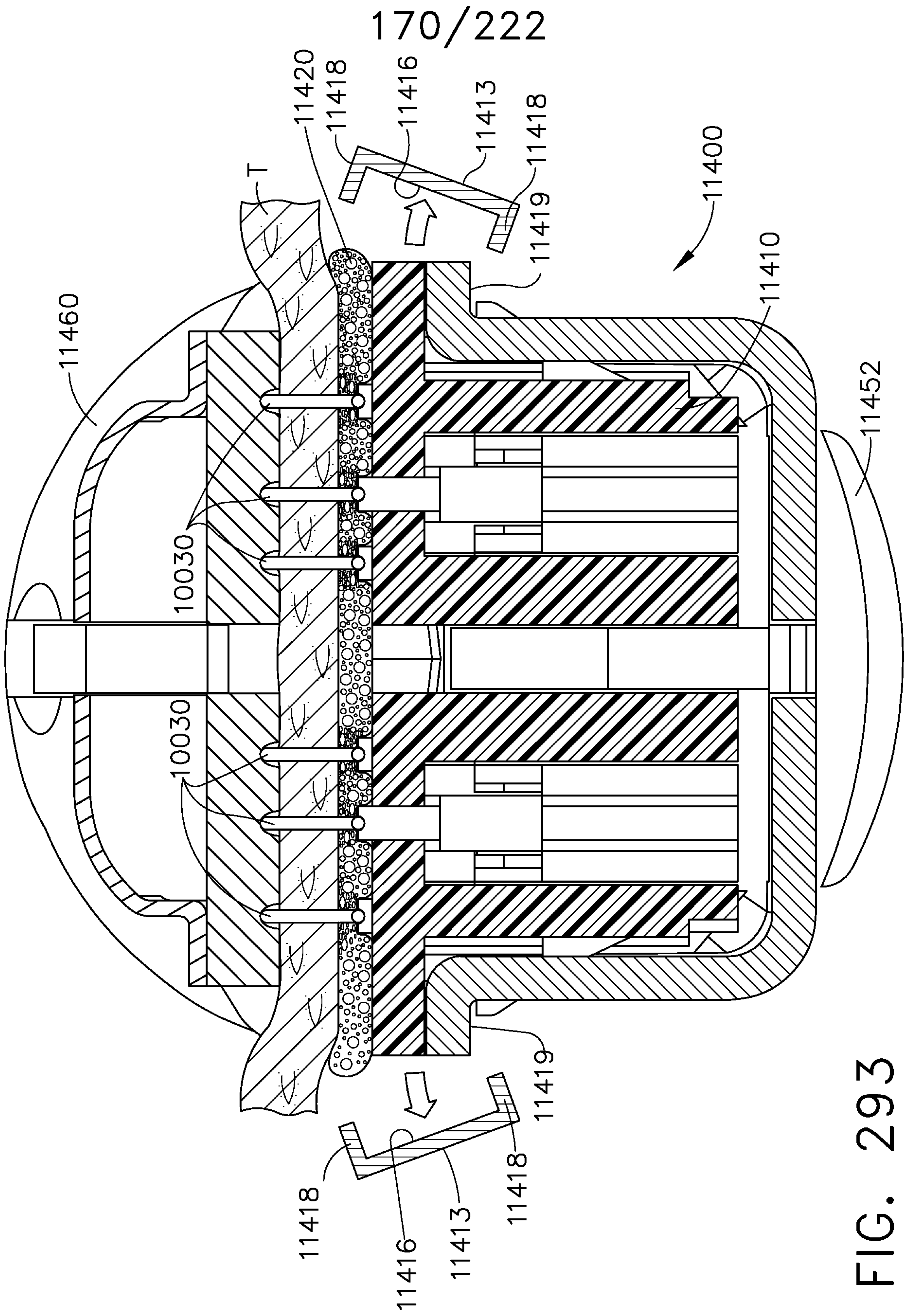


FIG. 293

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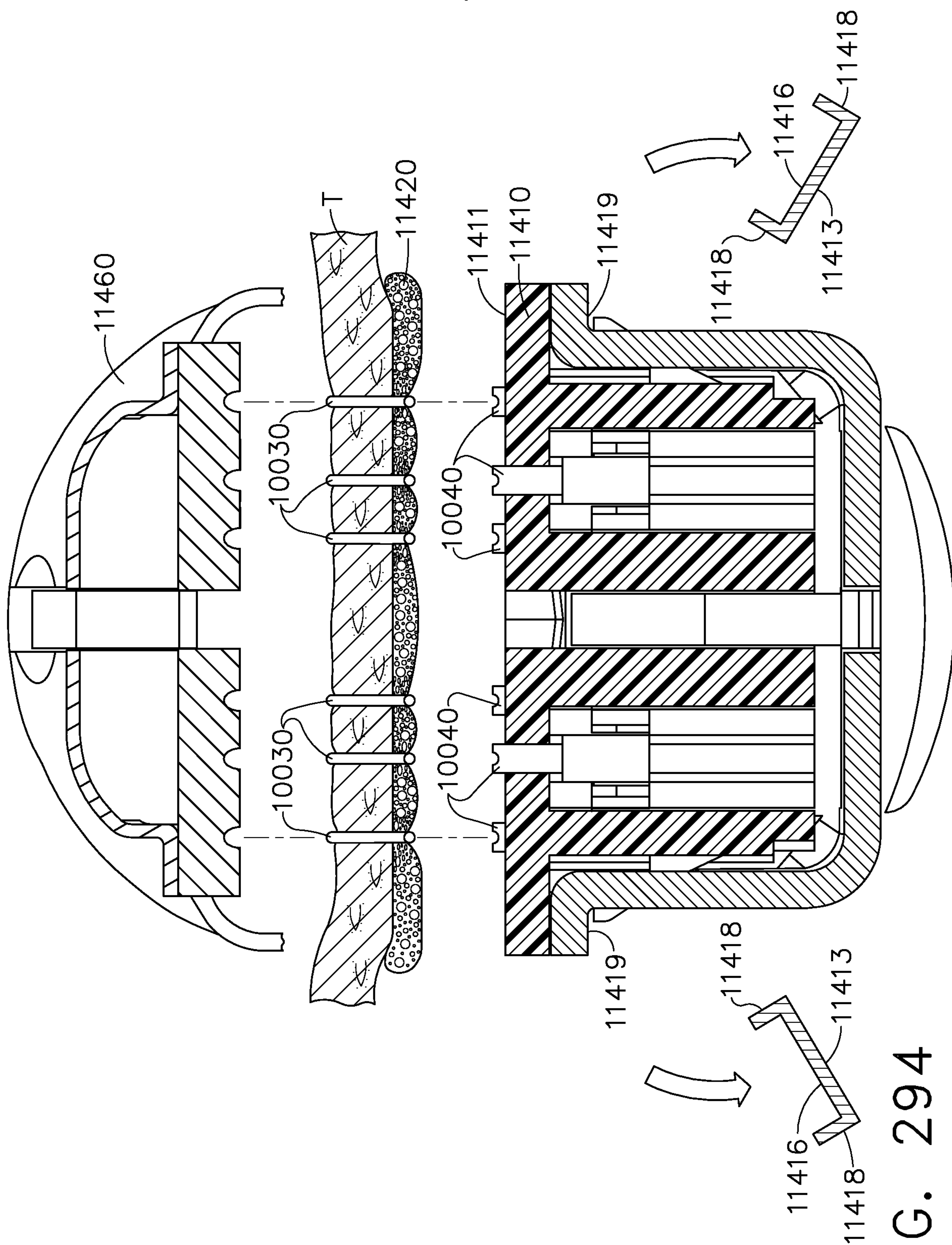


FIG. 294

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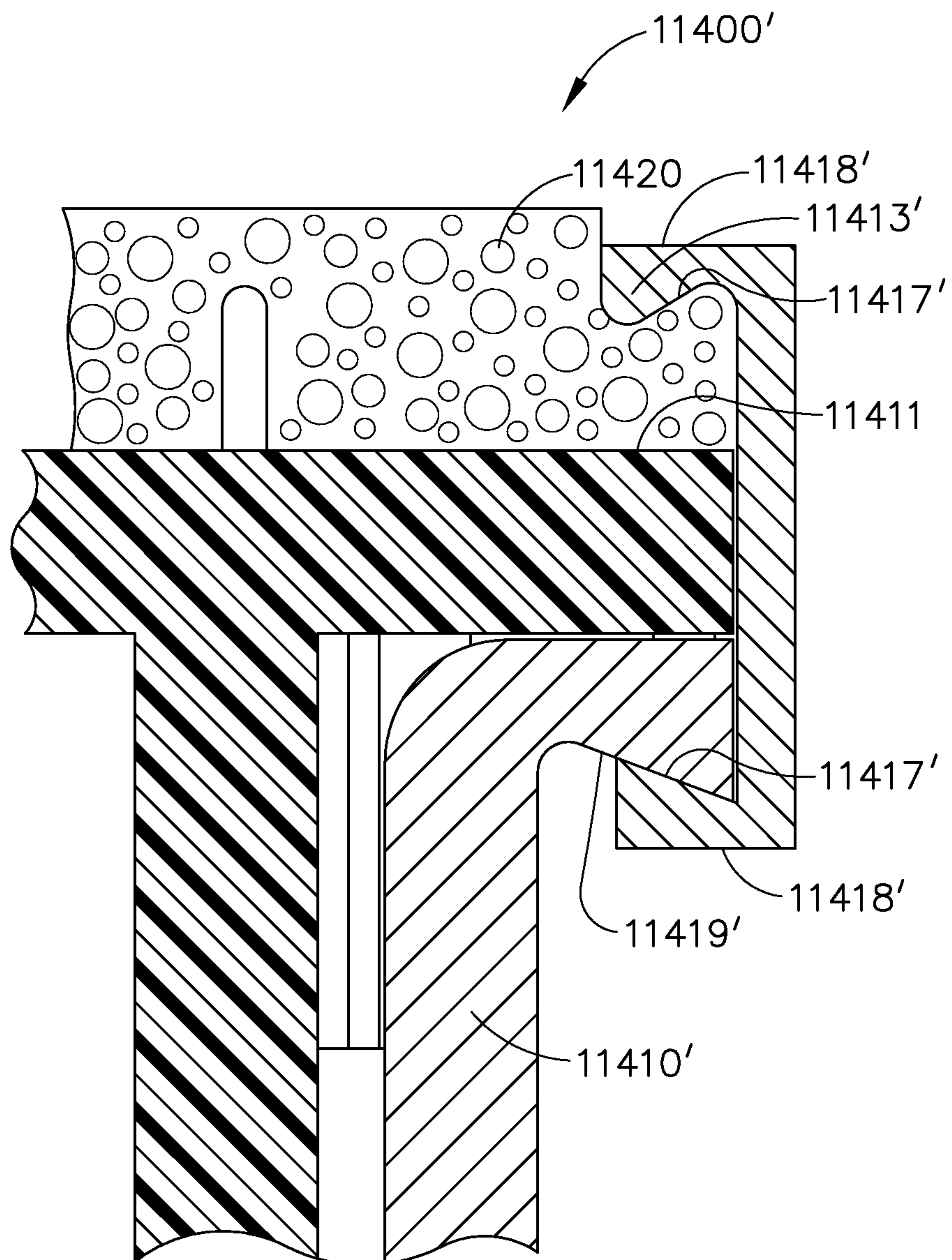
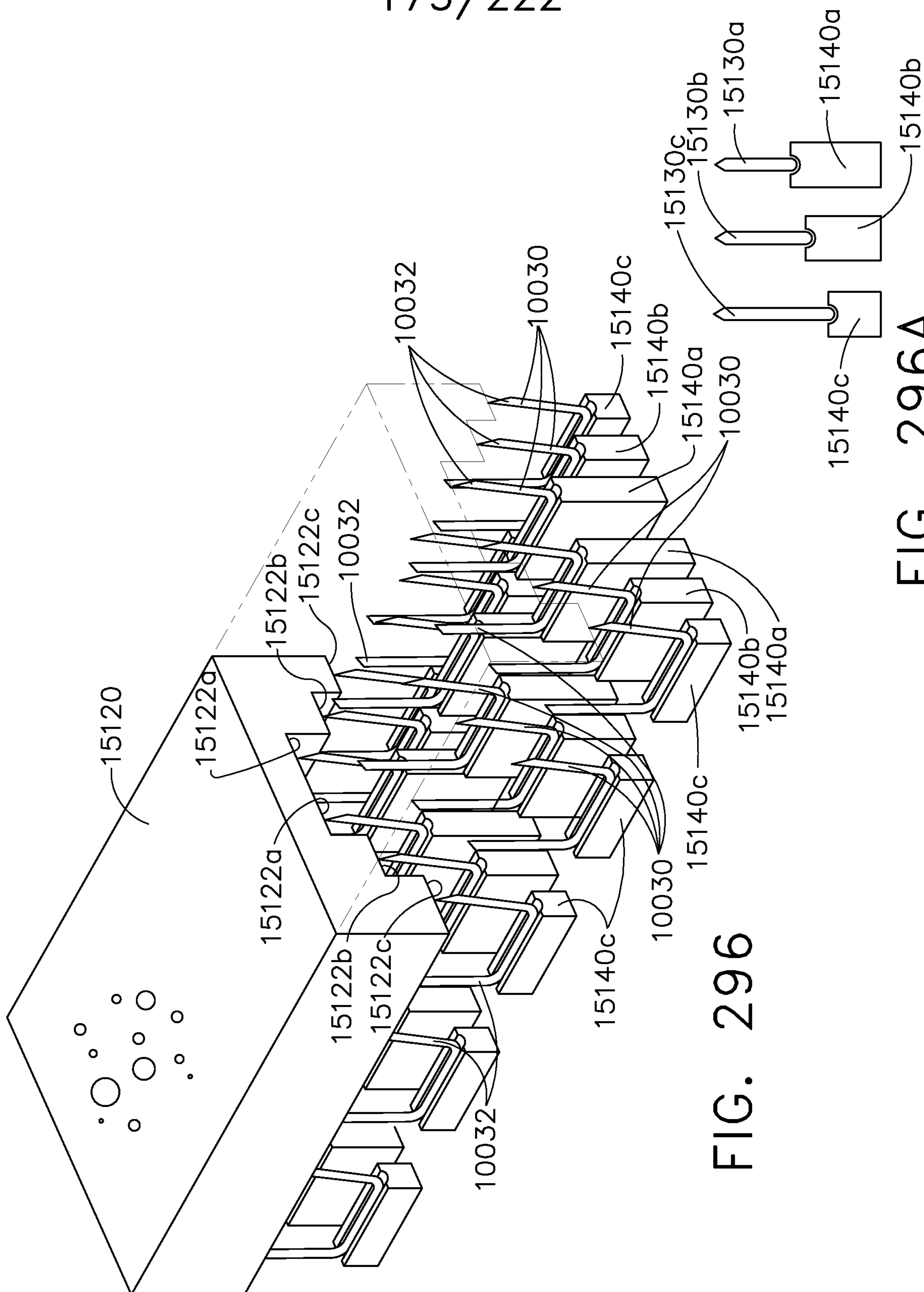


FIG. 295

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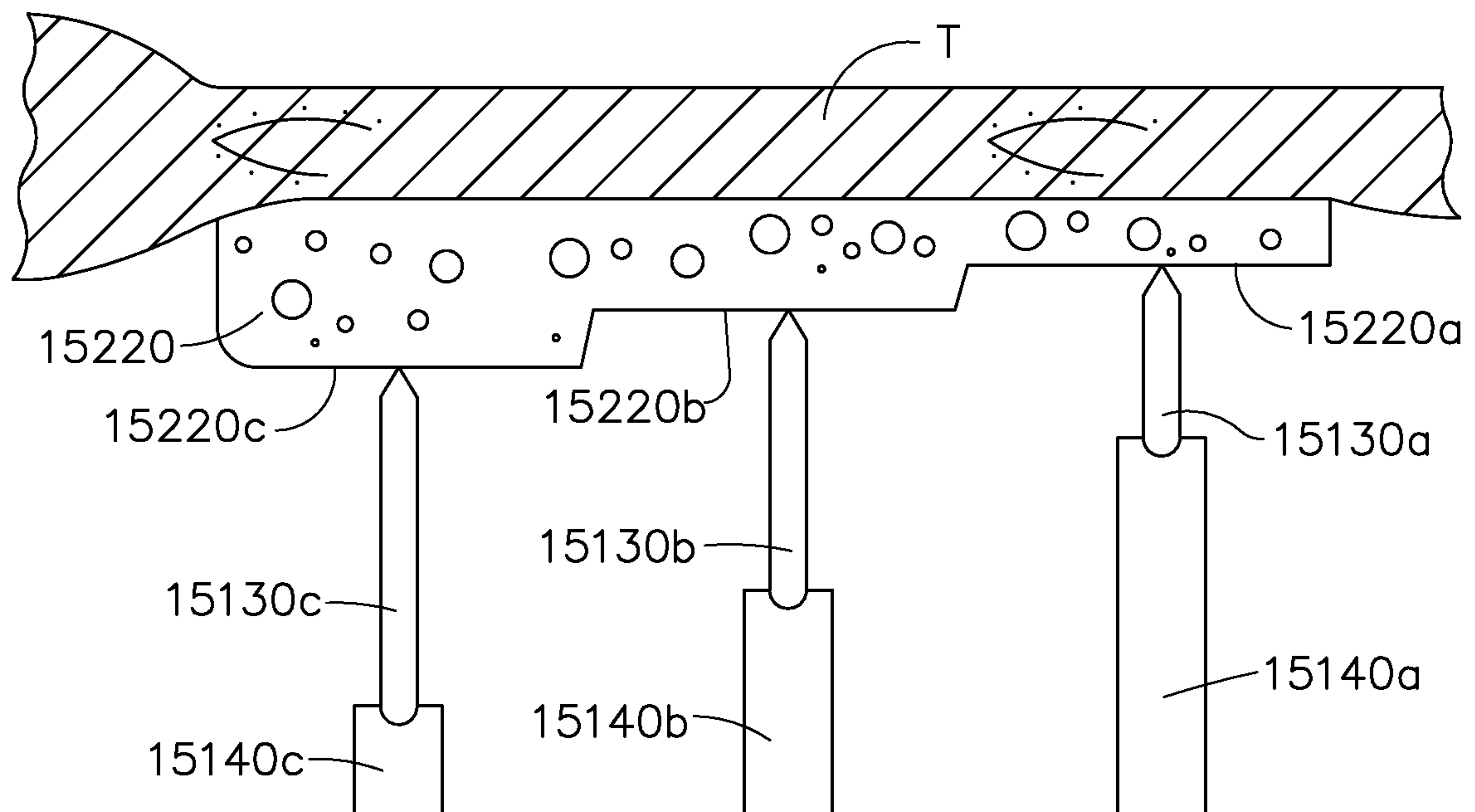


FIG. 297

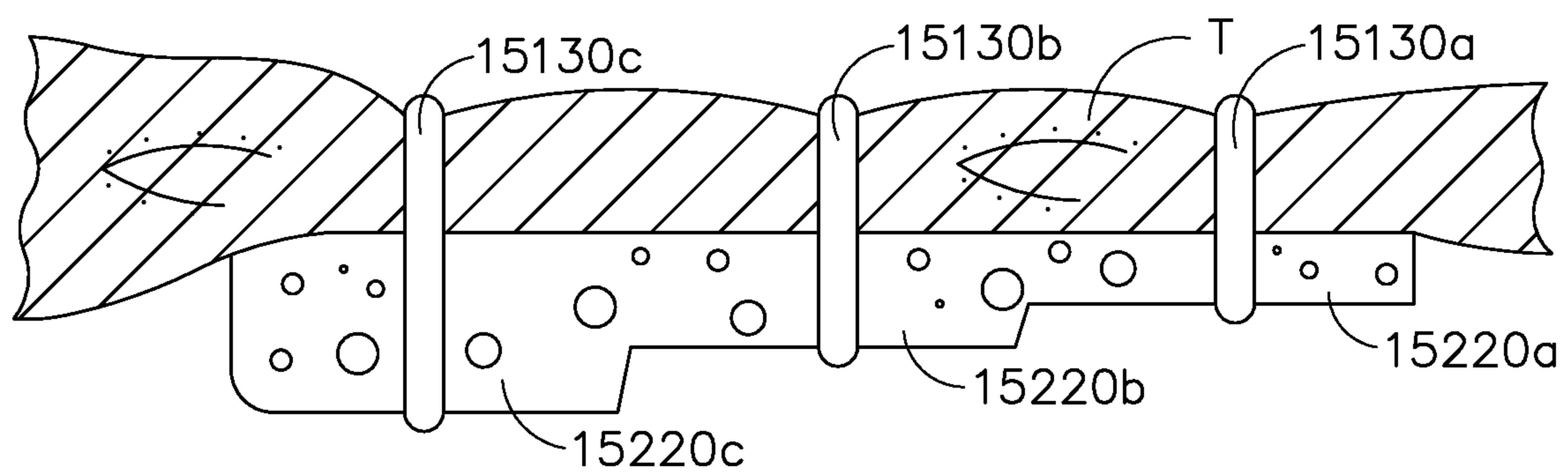


FIG. 298

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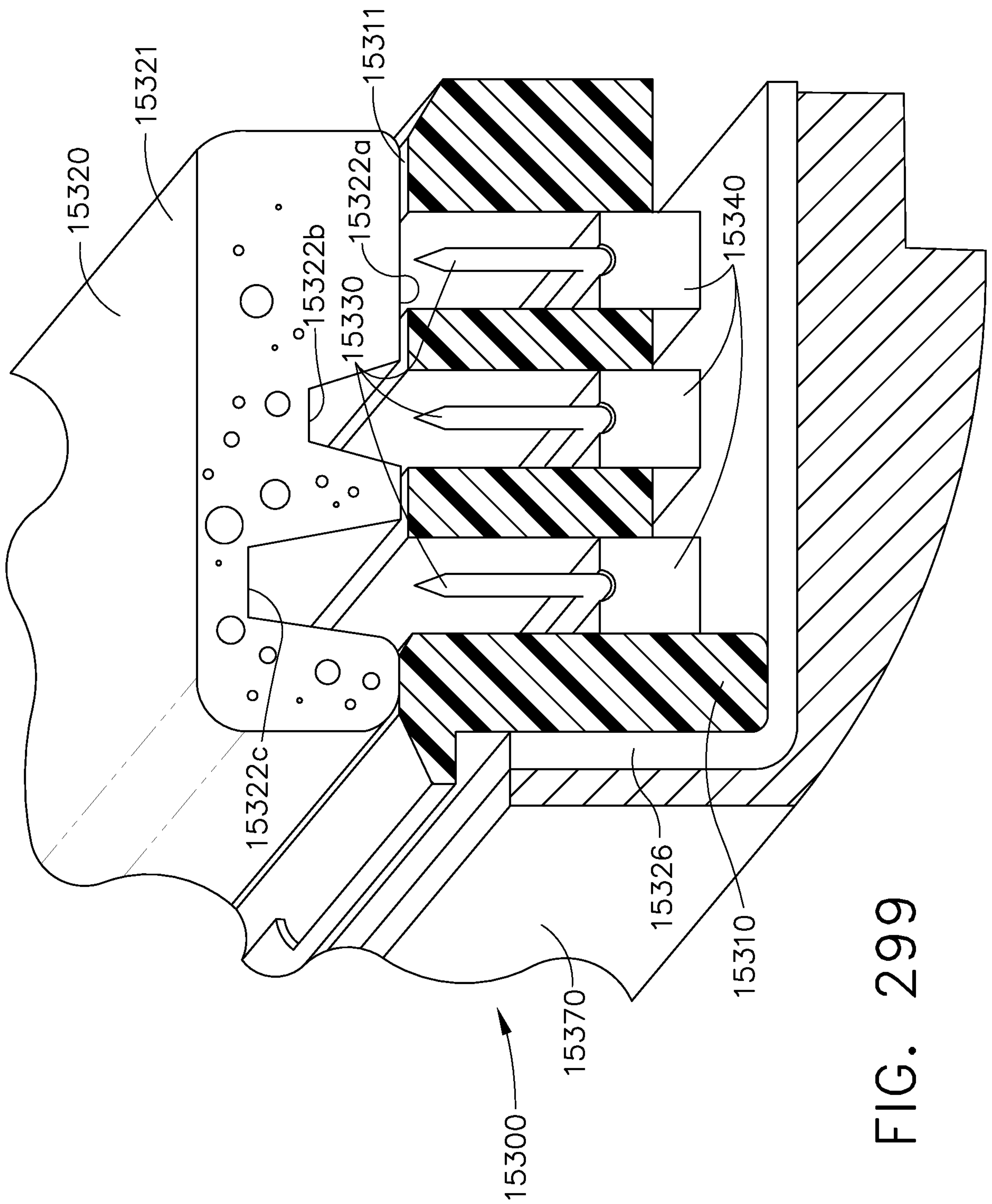


FIG. 299

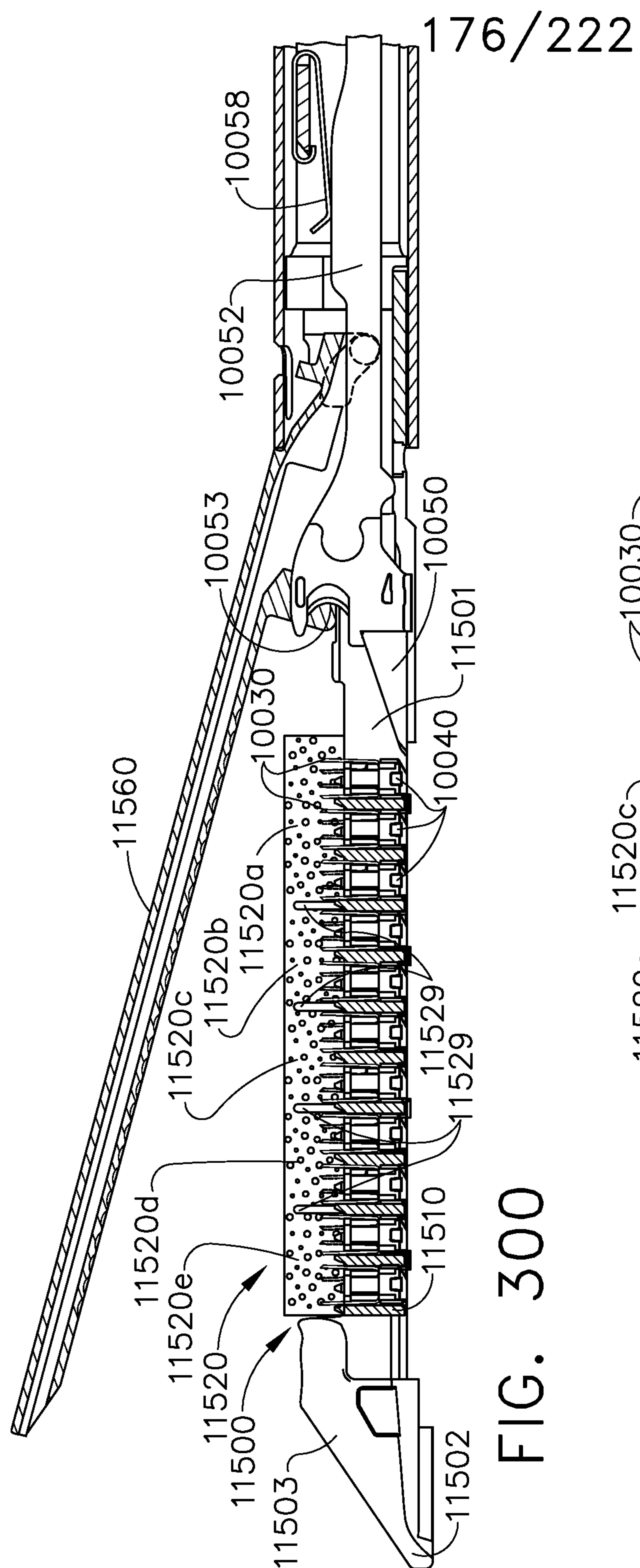


FIG. 300

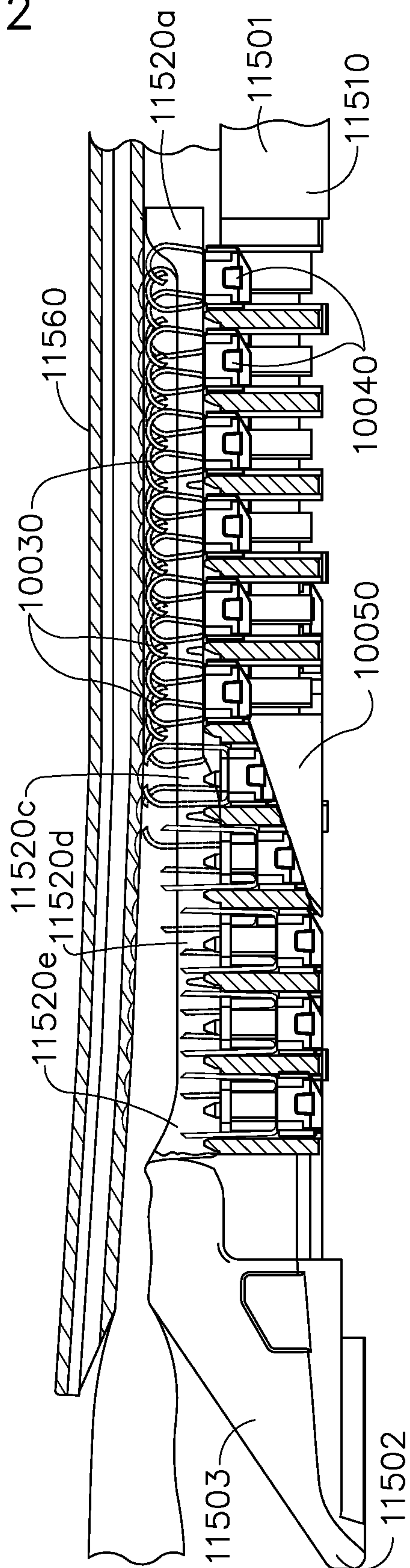


FIG. 301

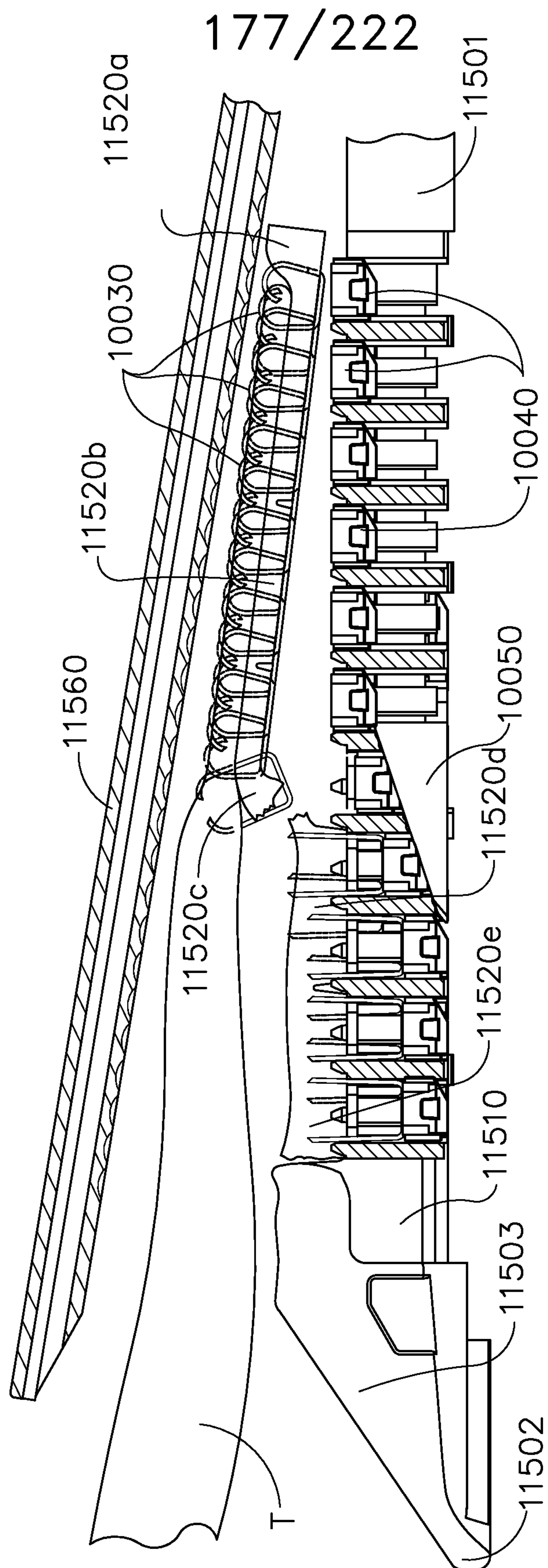


FIG. 302

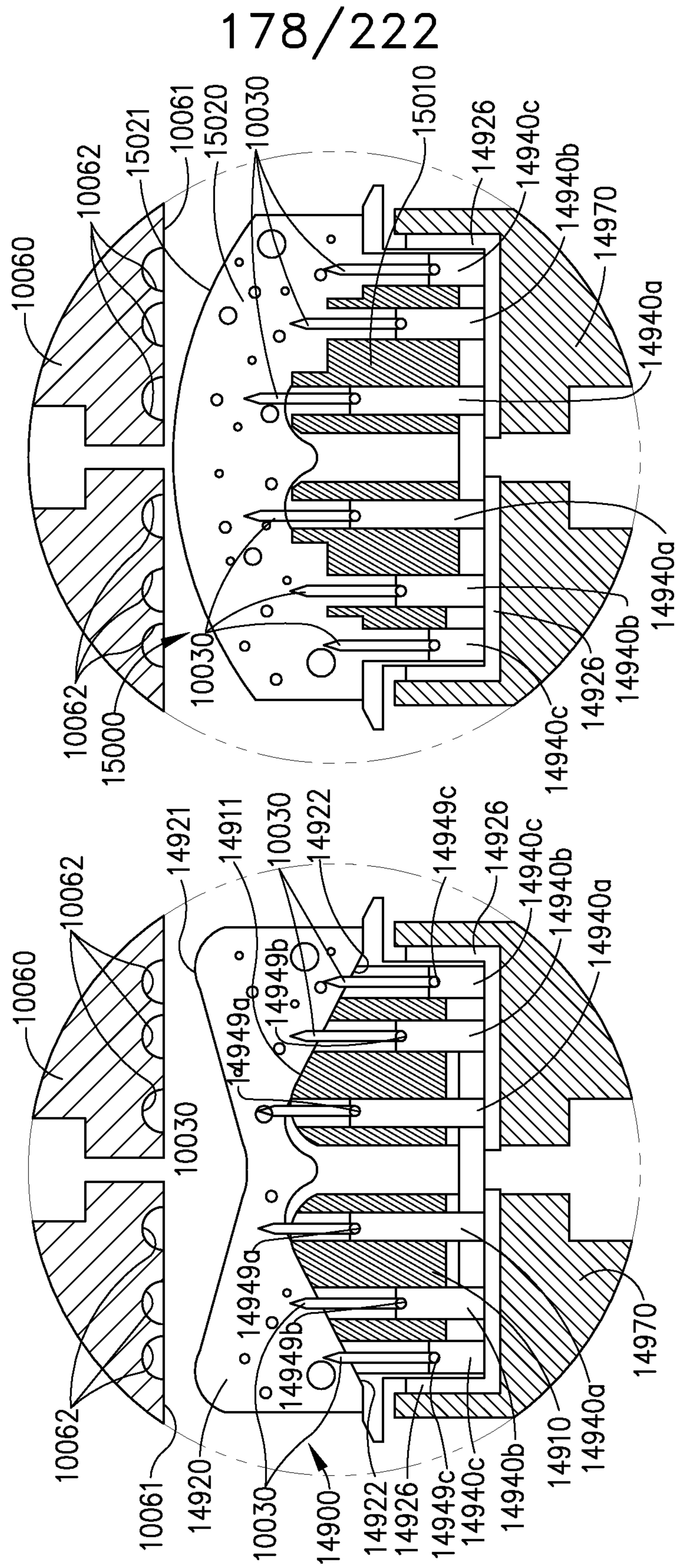
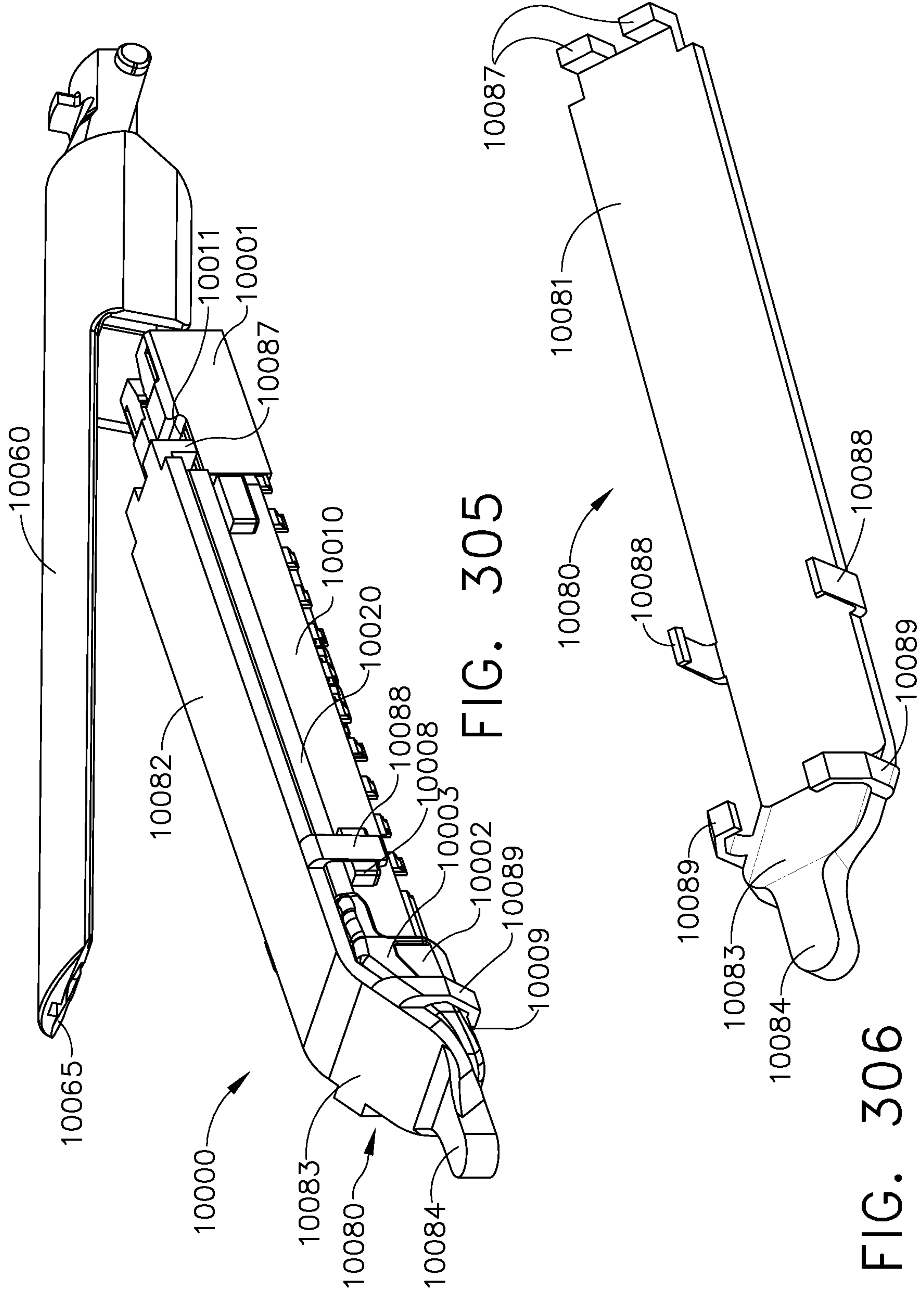


FIG. 303

FIG. 304

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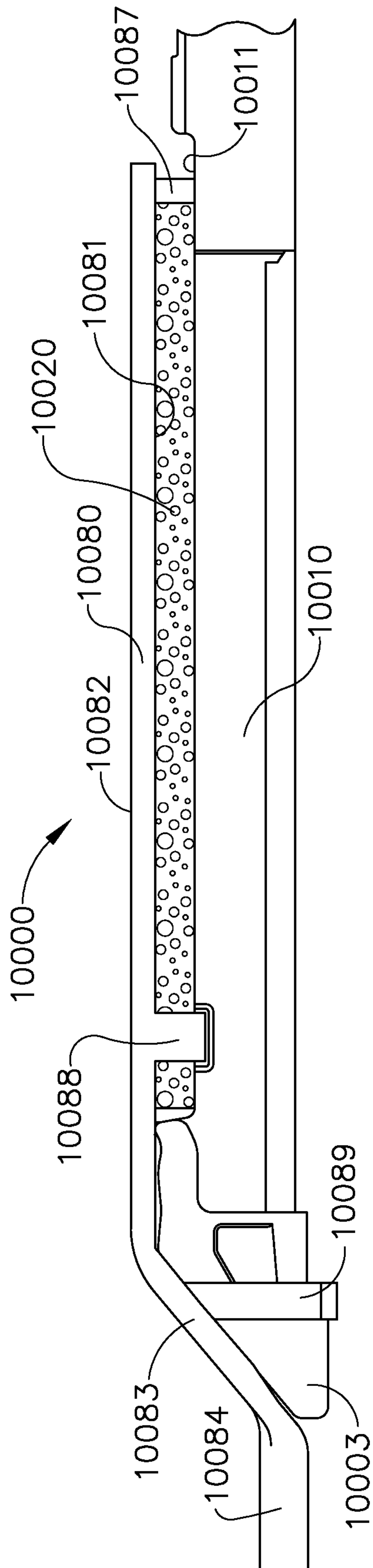


FIG. 307

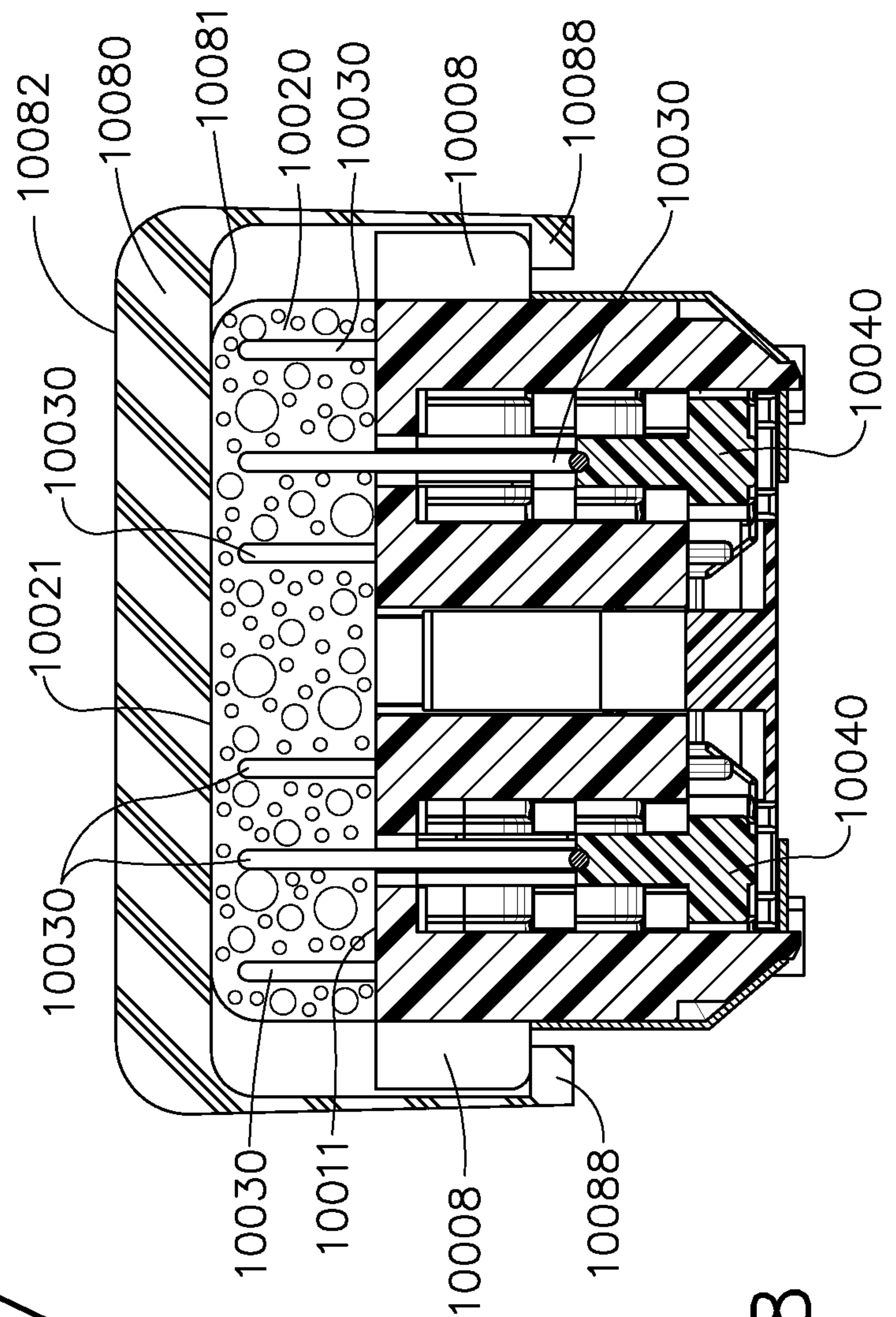
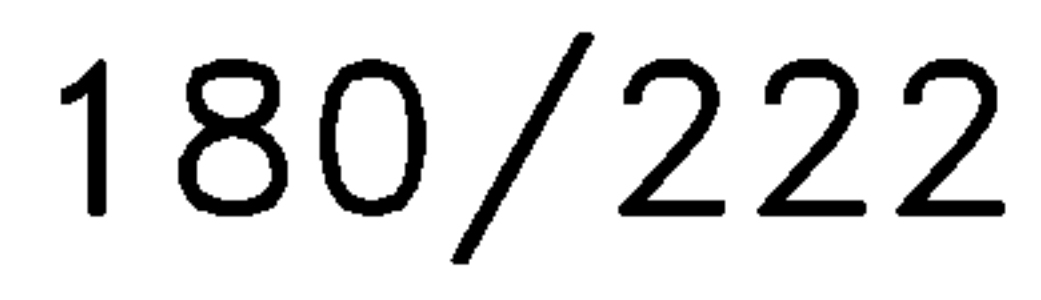


FIG. 308

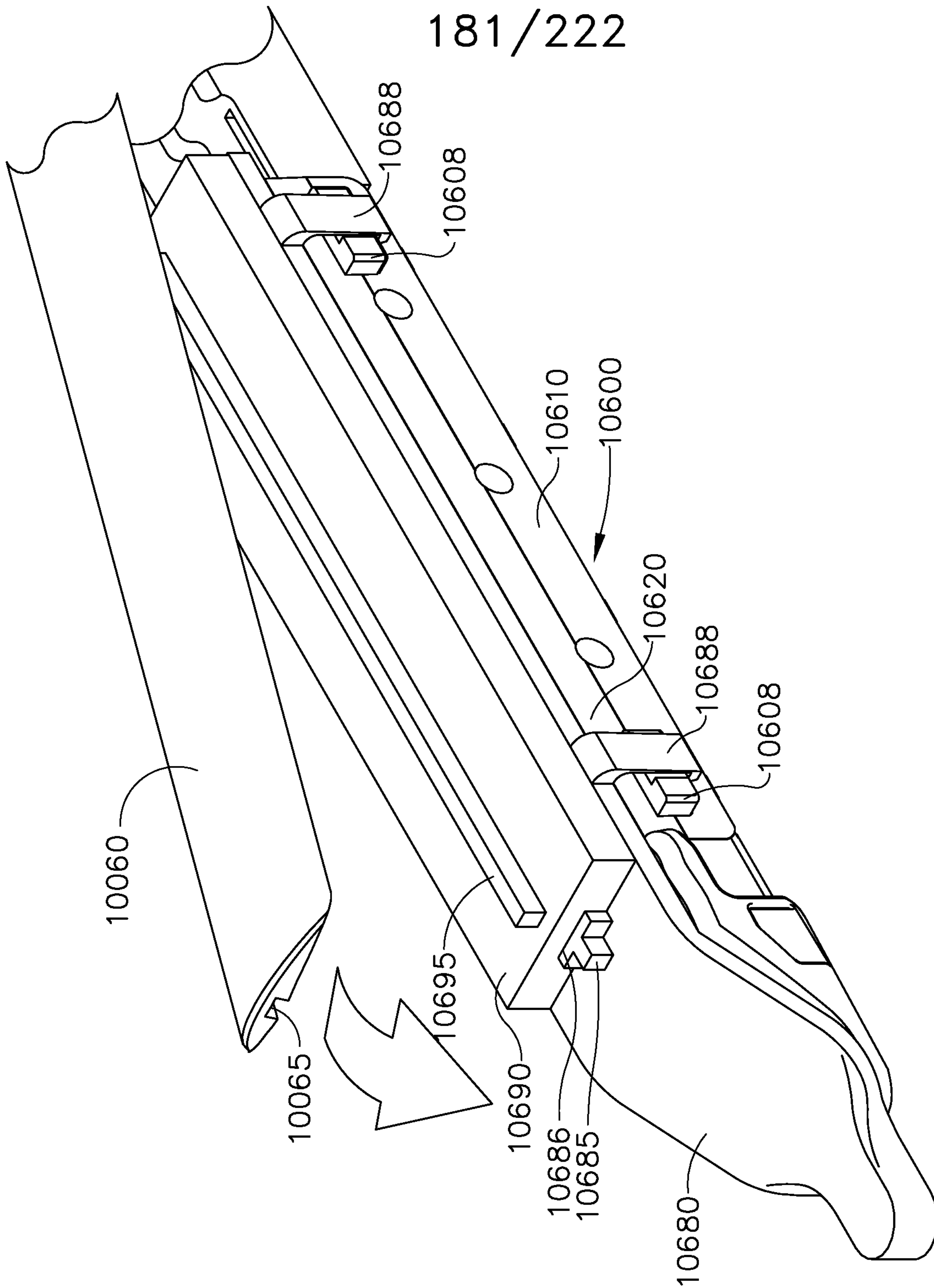


FIG. 309

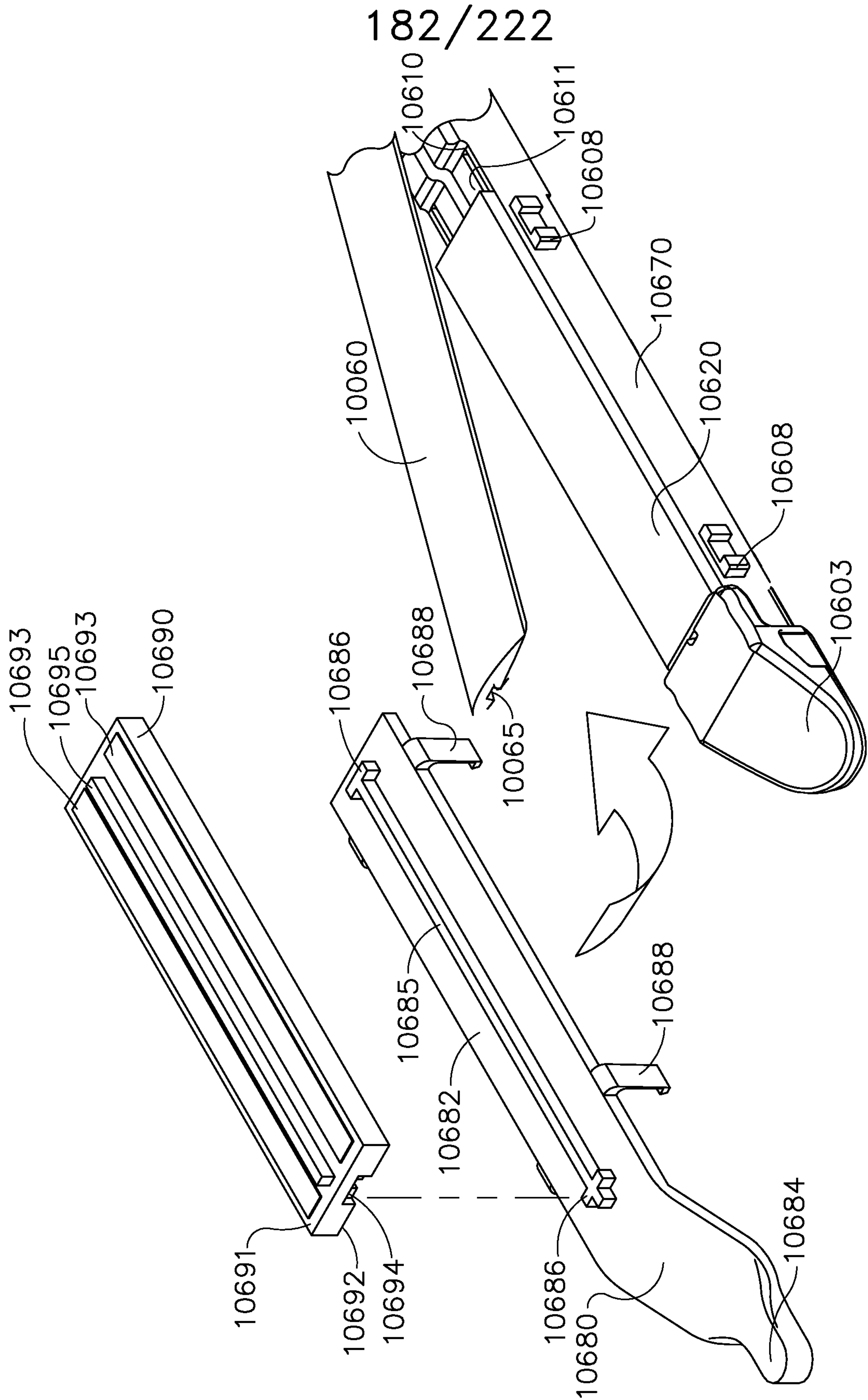


FIG. 310

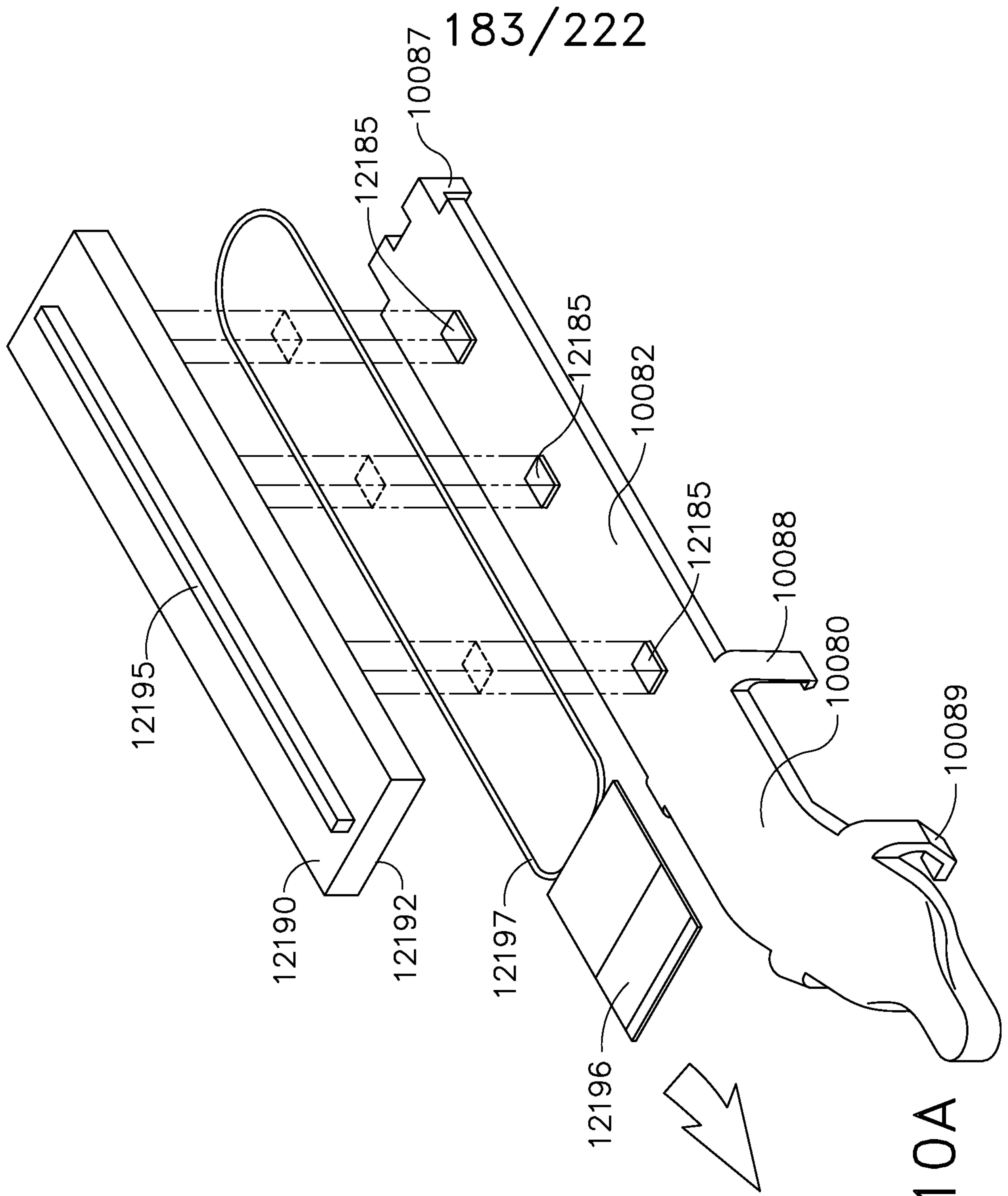


FIG. 310A

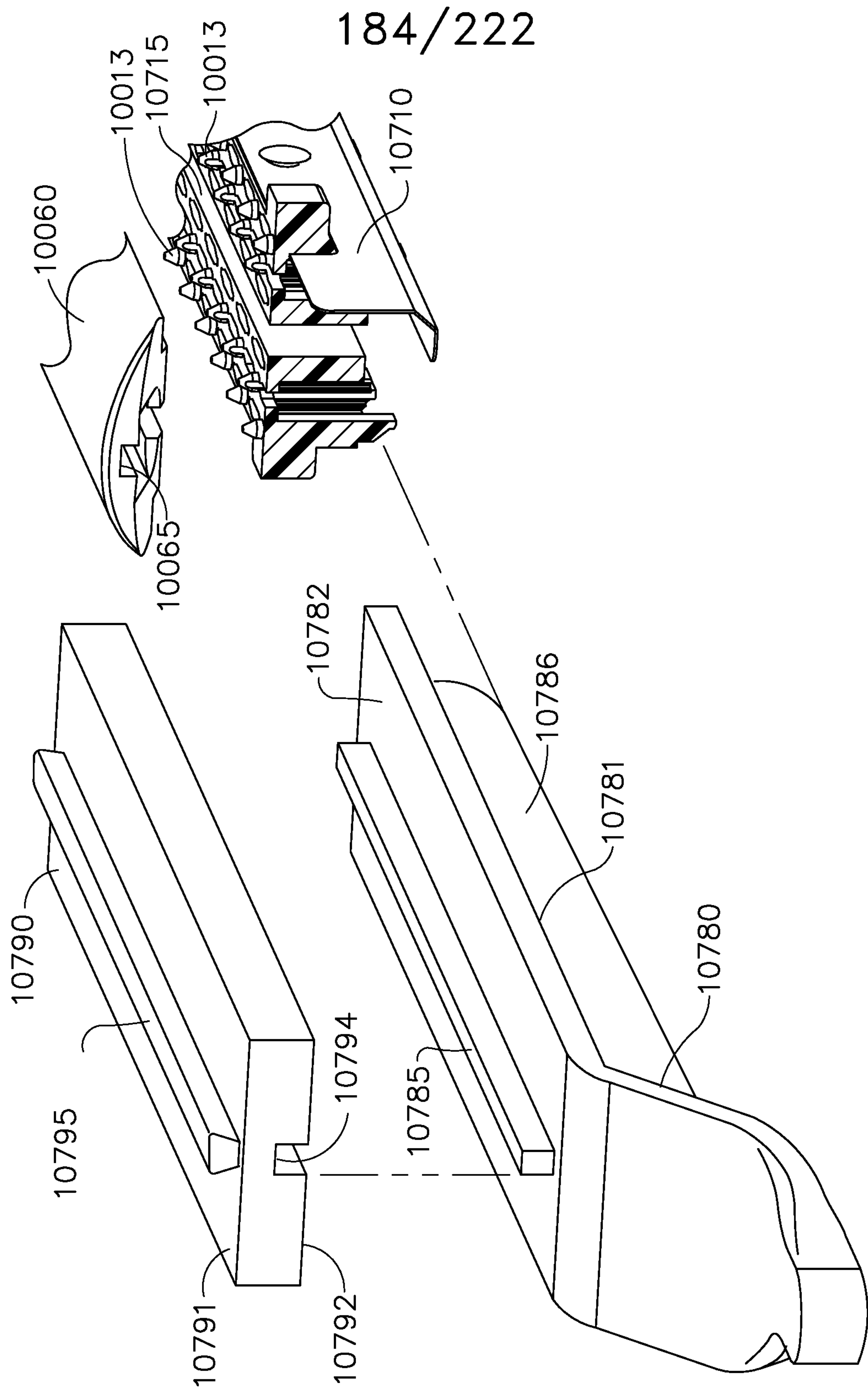
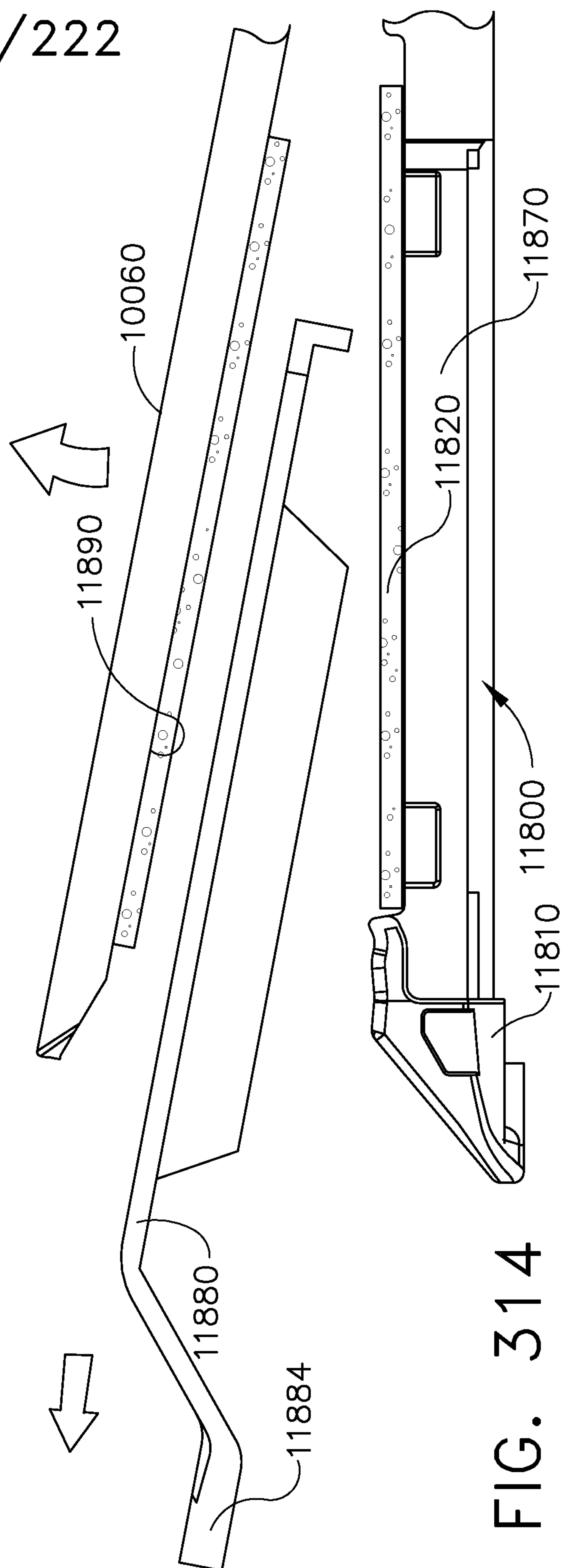
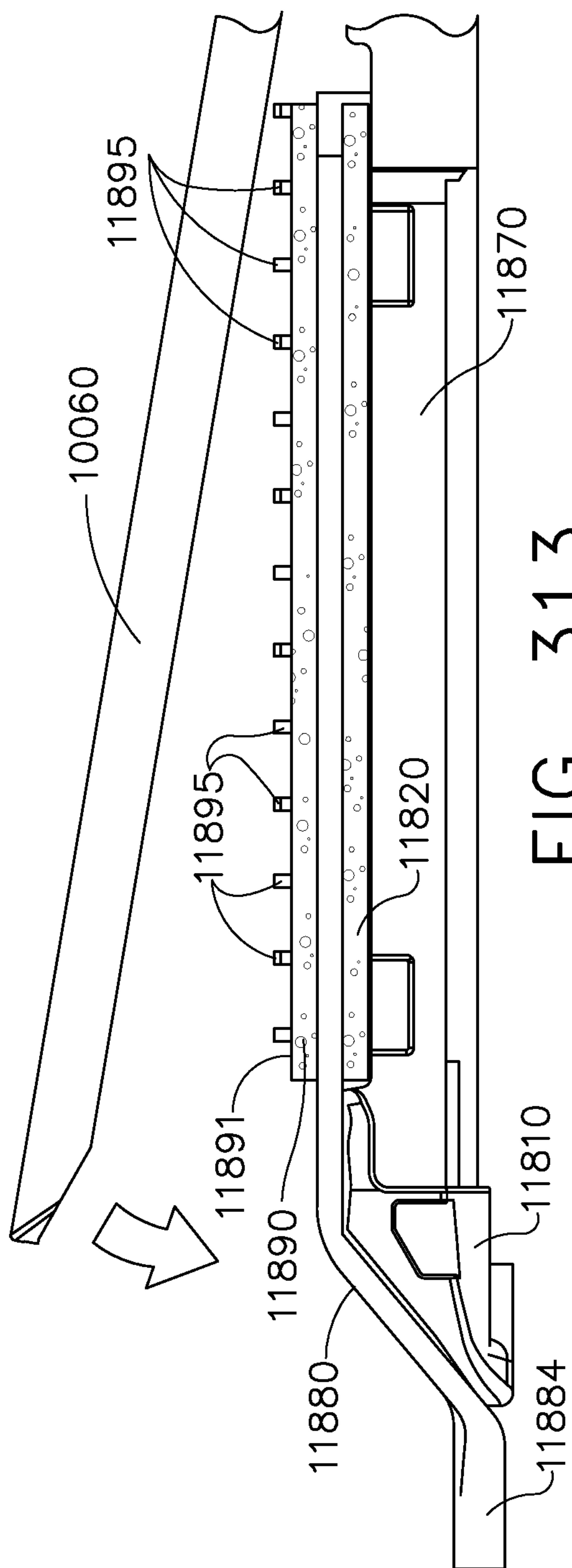


FIG. 311



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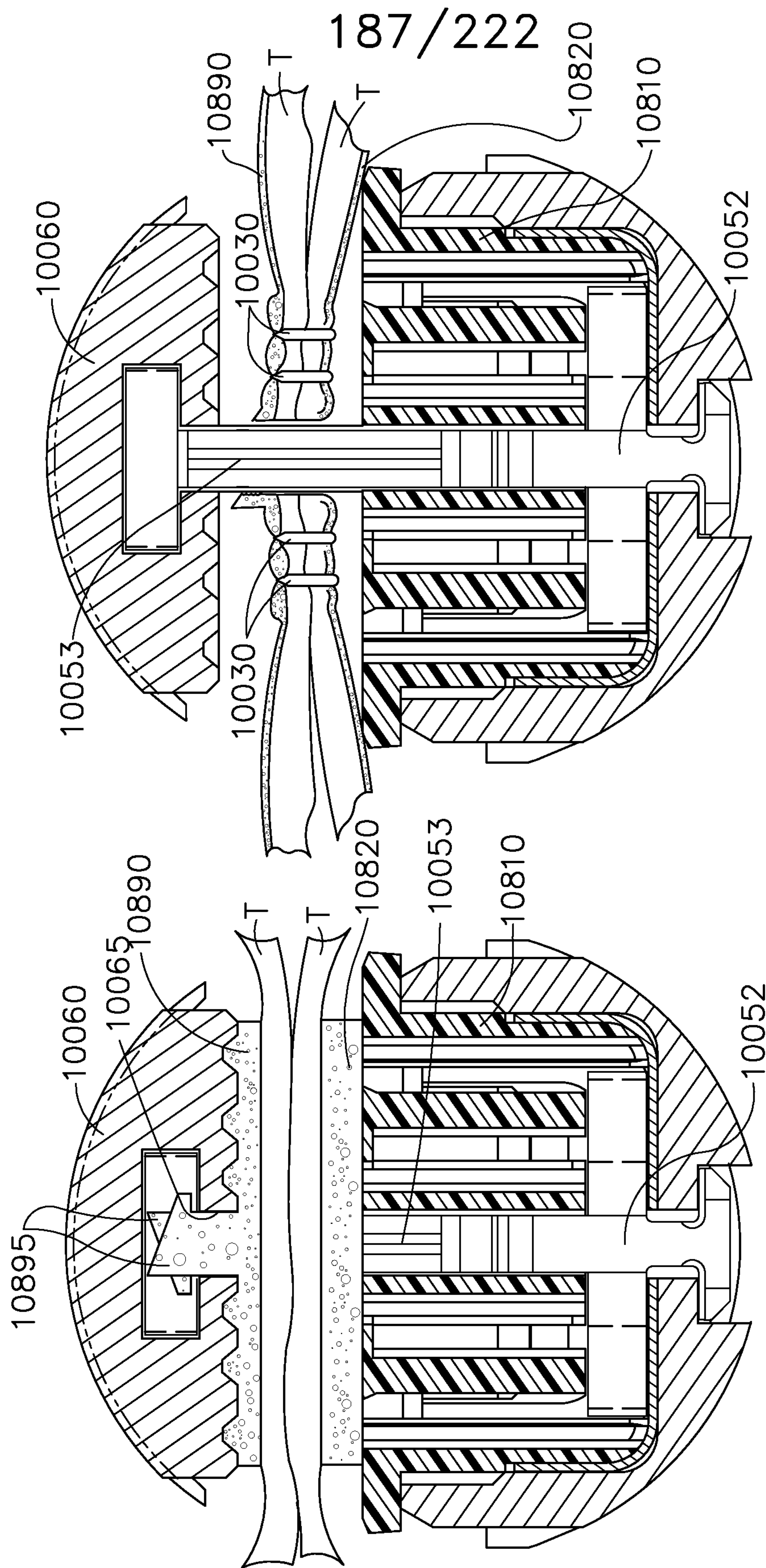


FIG. 314A

FIG. 314B

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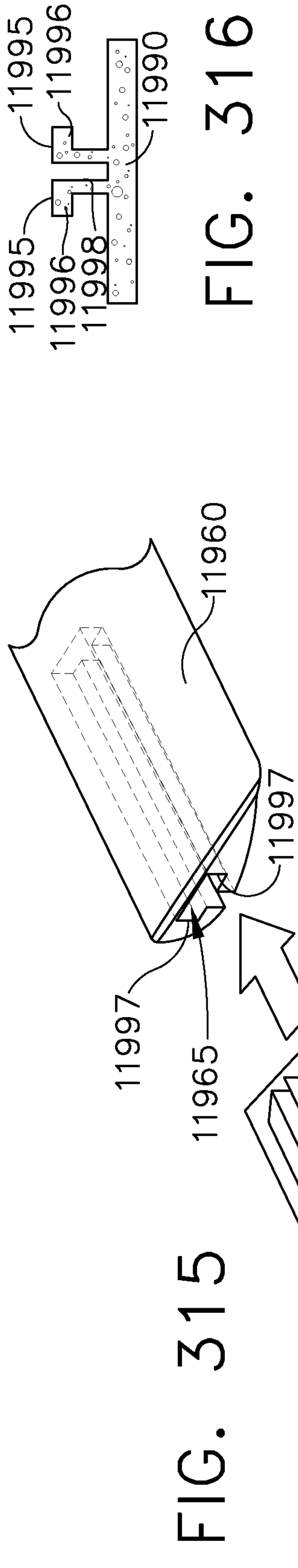


FIG. 316

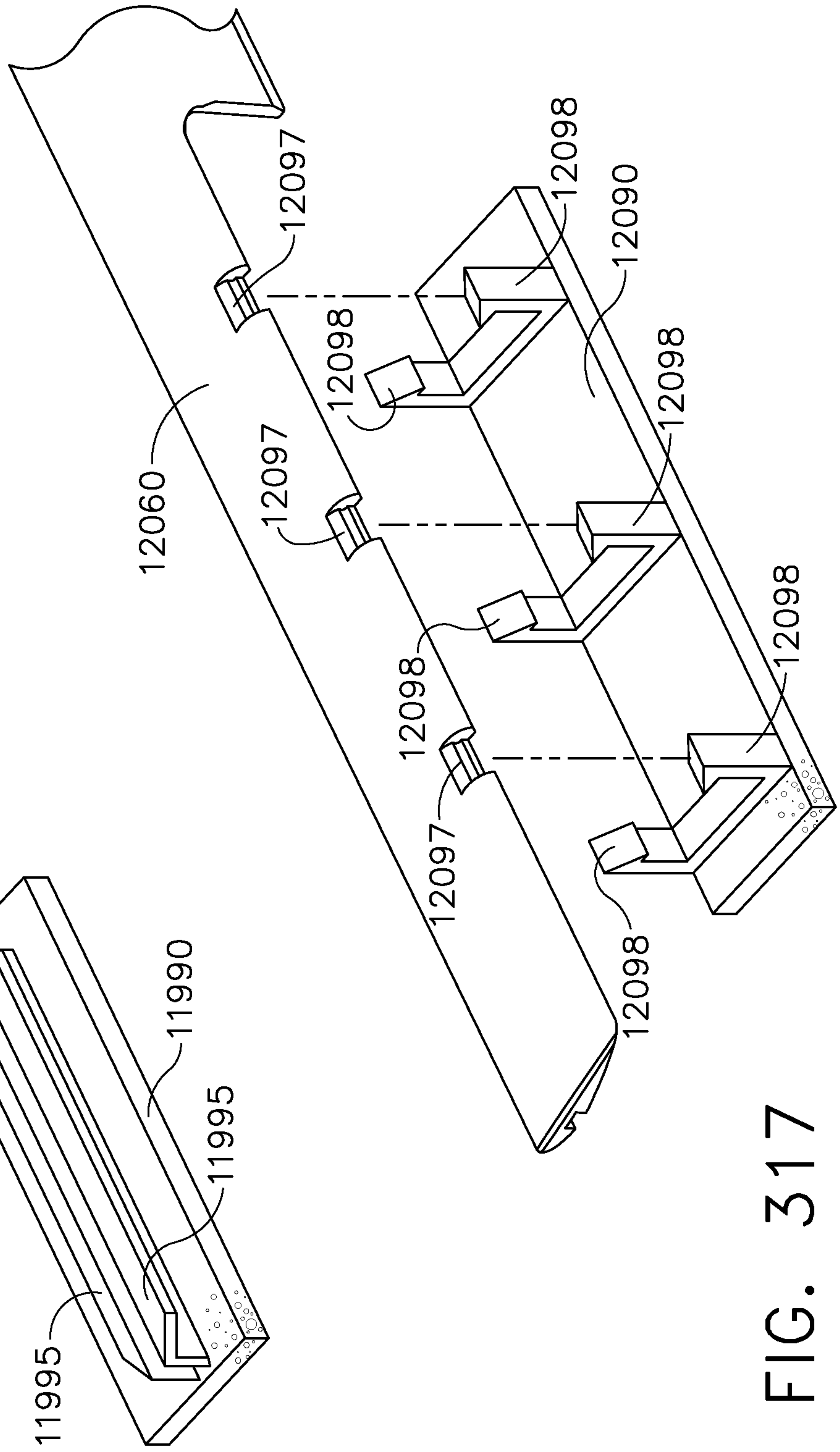
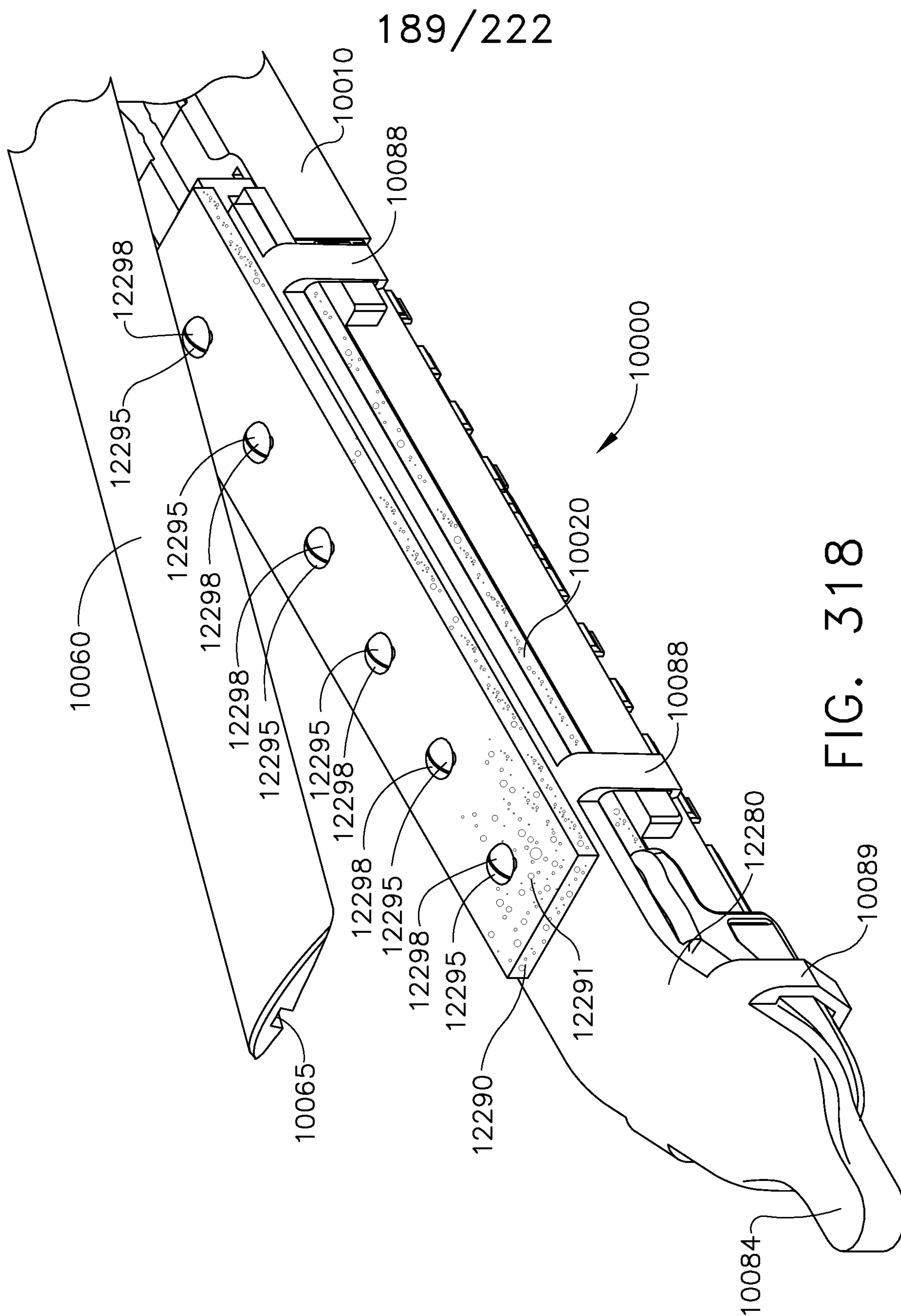
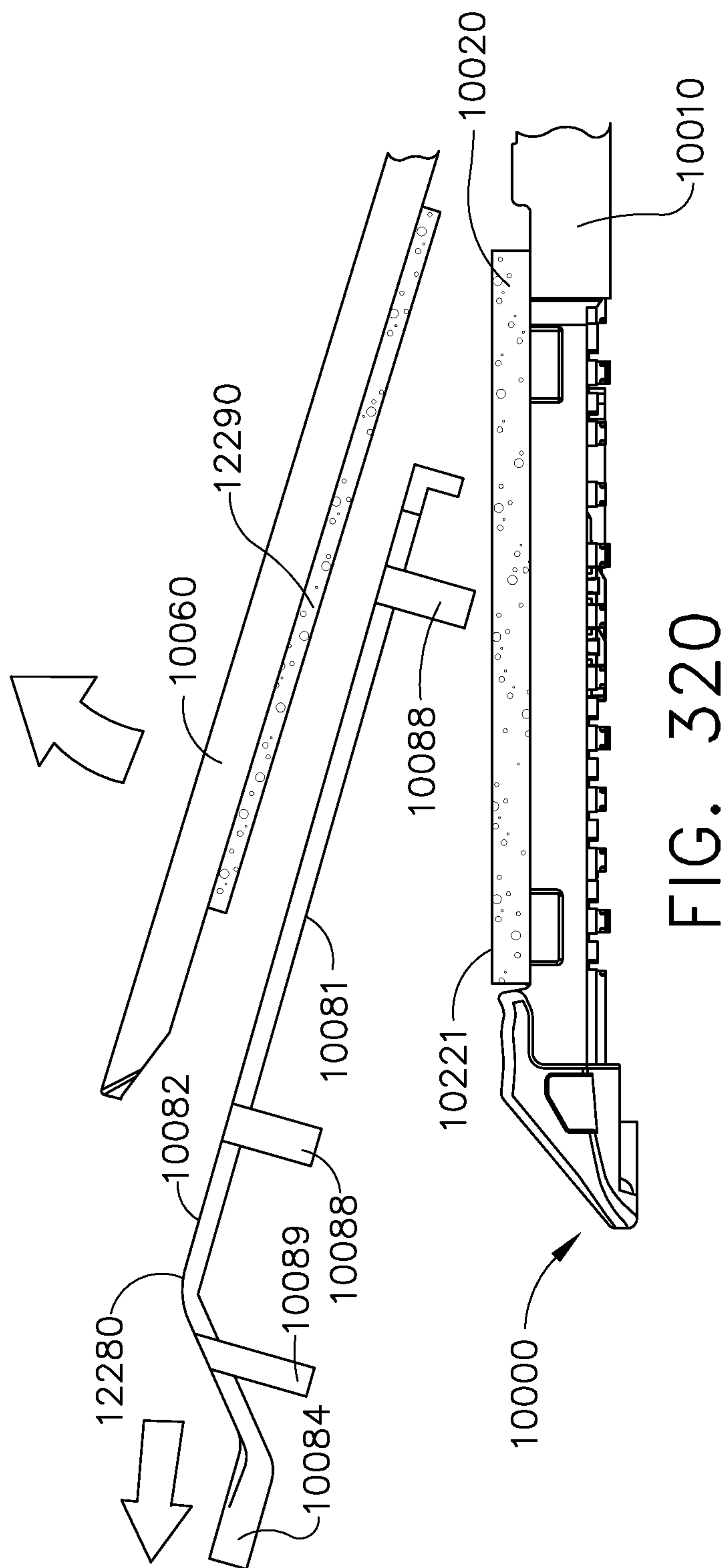
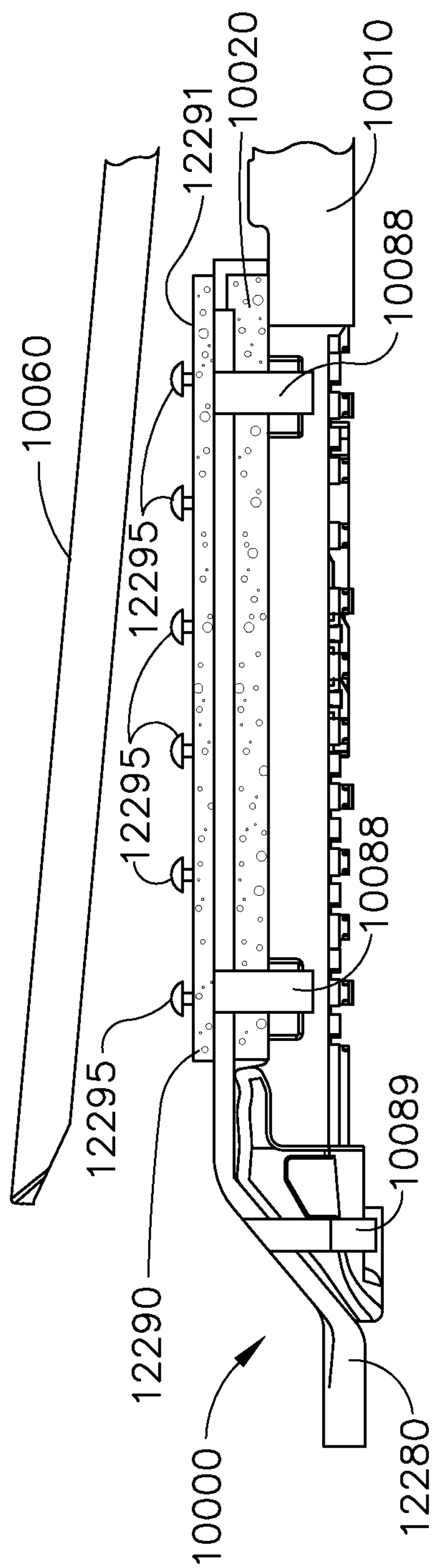


FIG. 317



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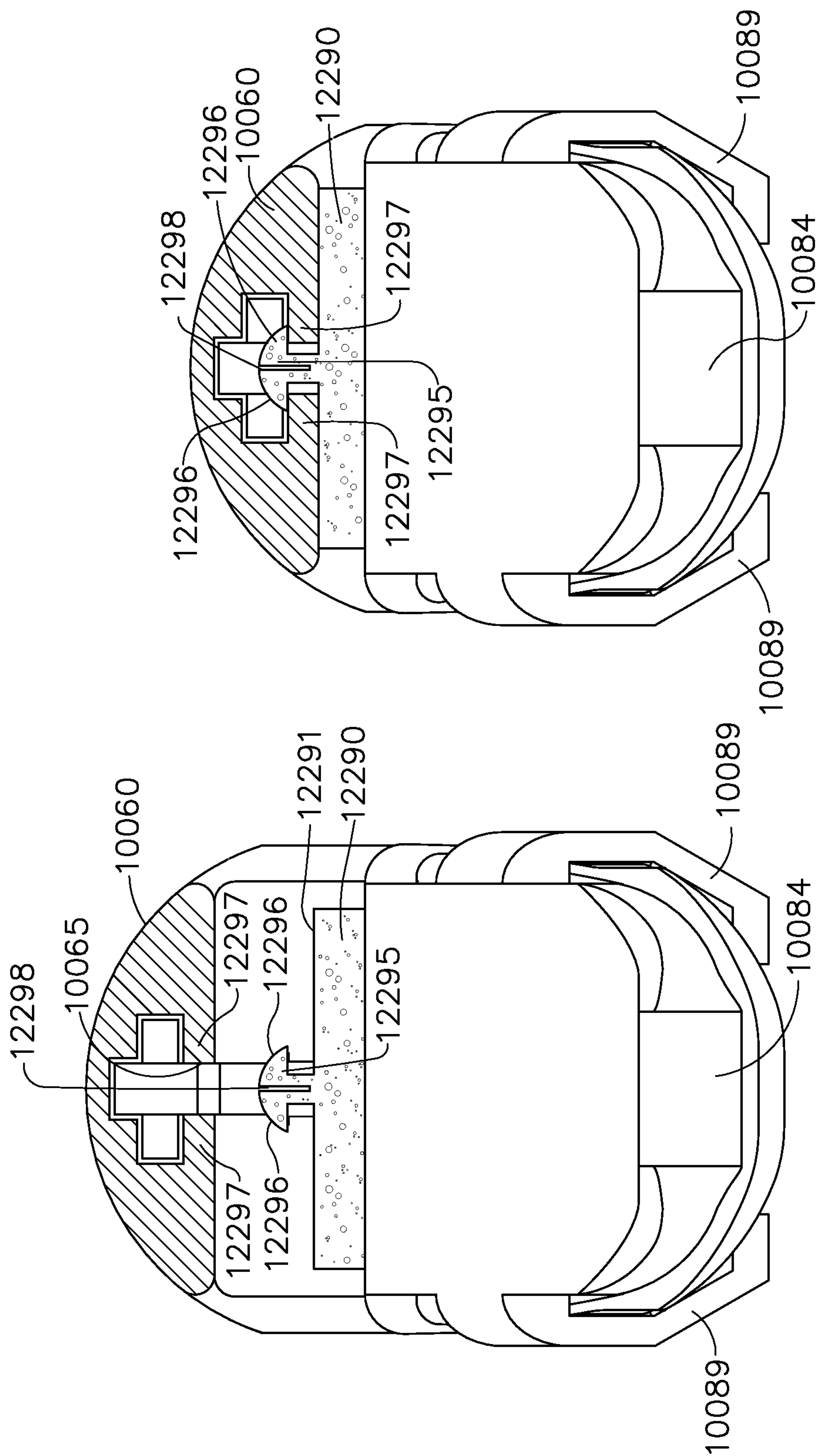
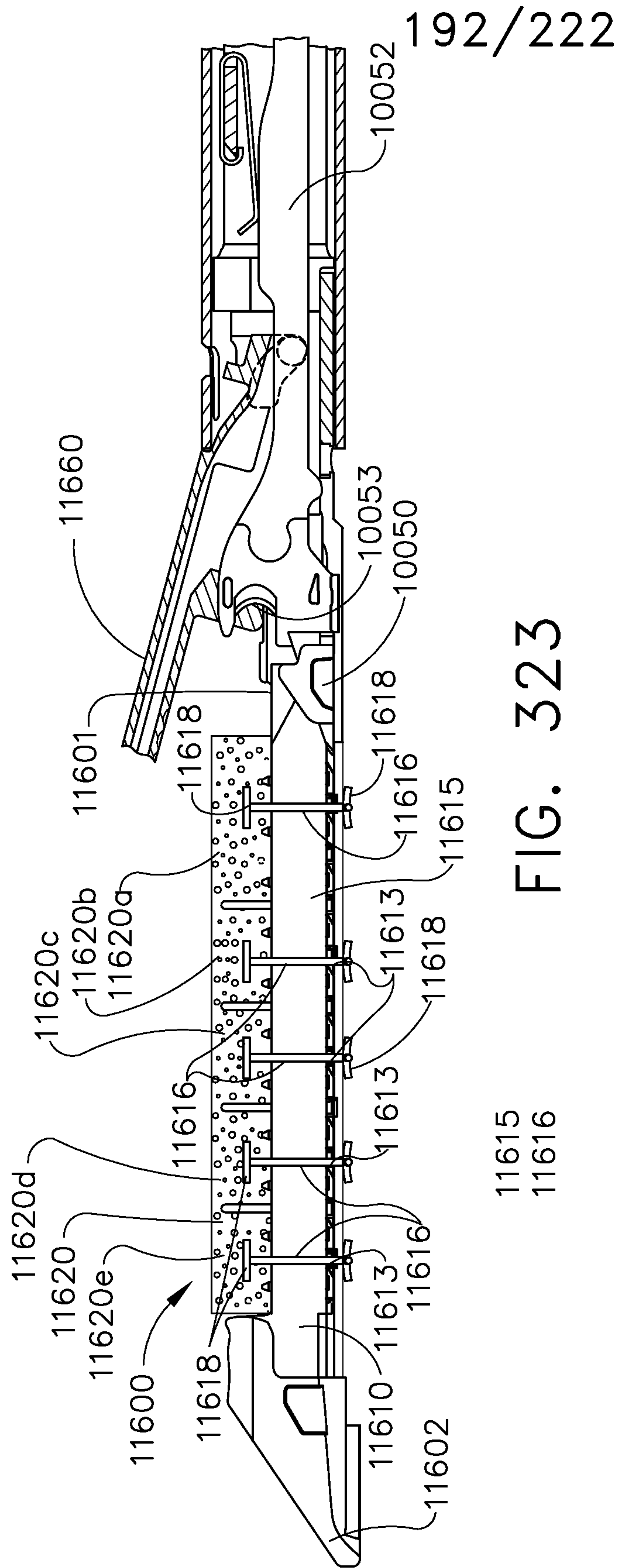


FIG. 321

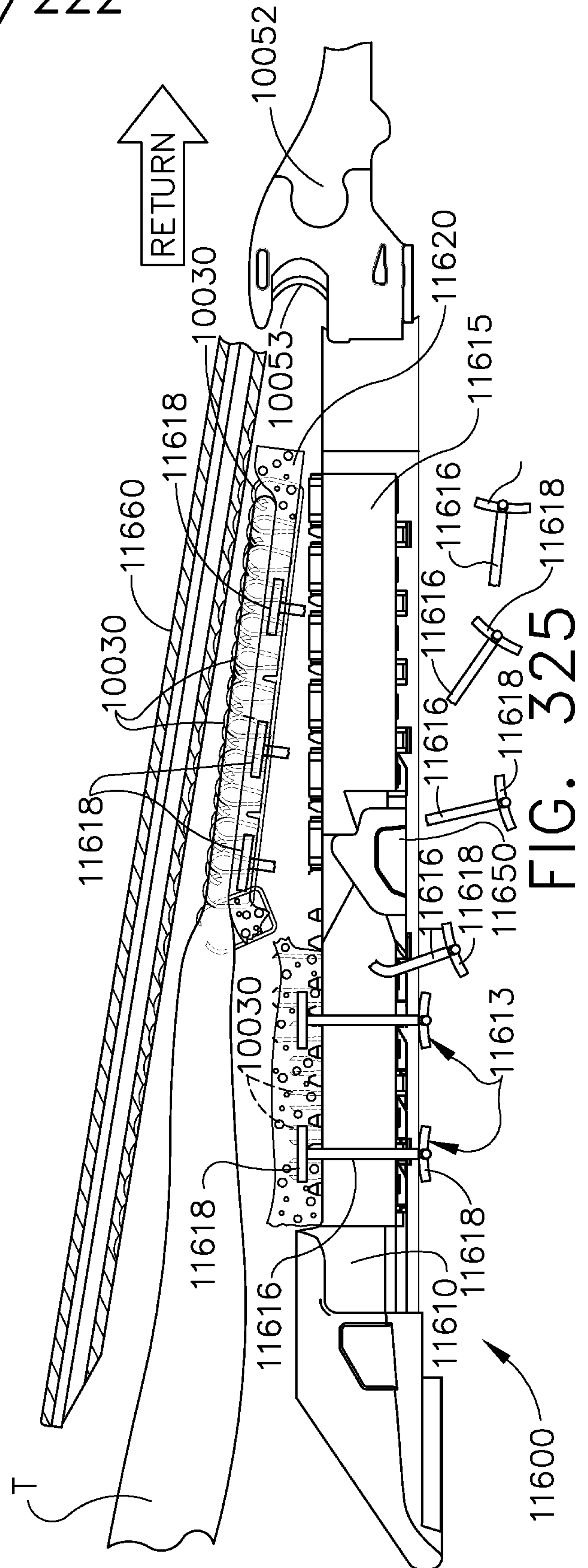
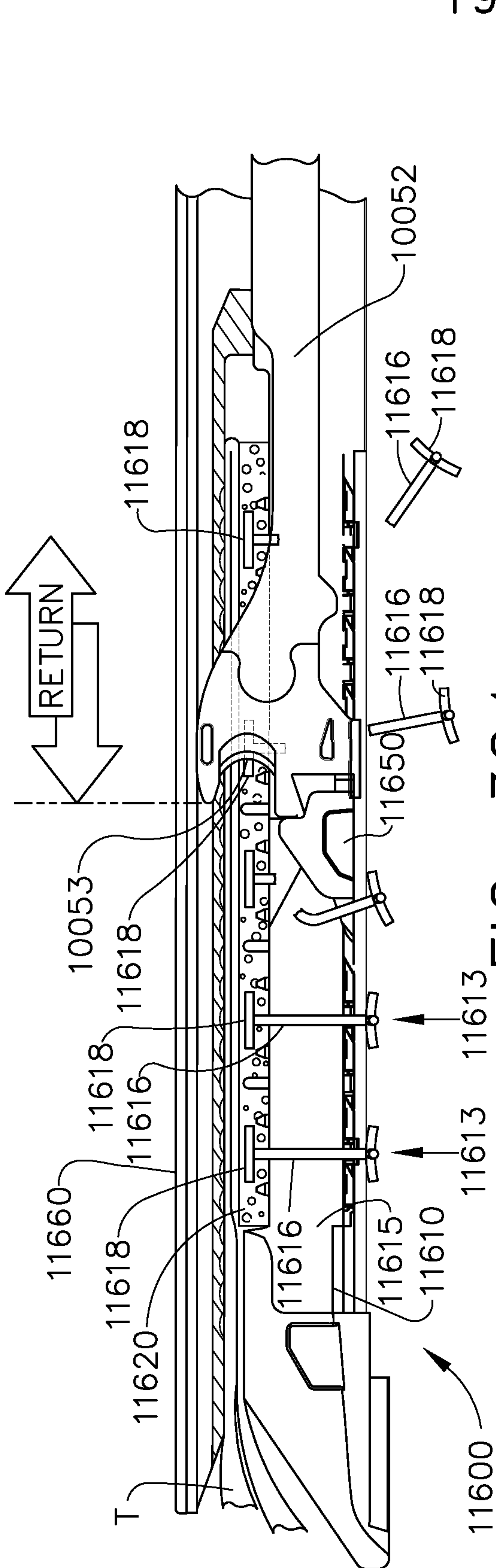
FIG. 322



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11616

FIG. 323

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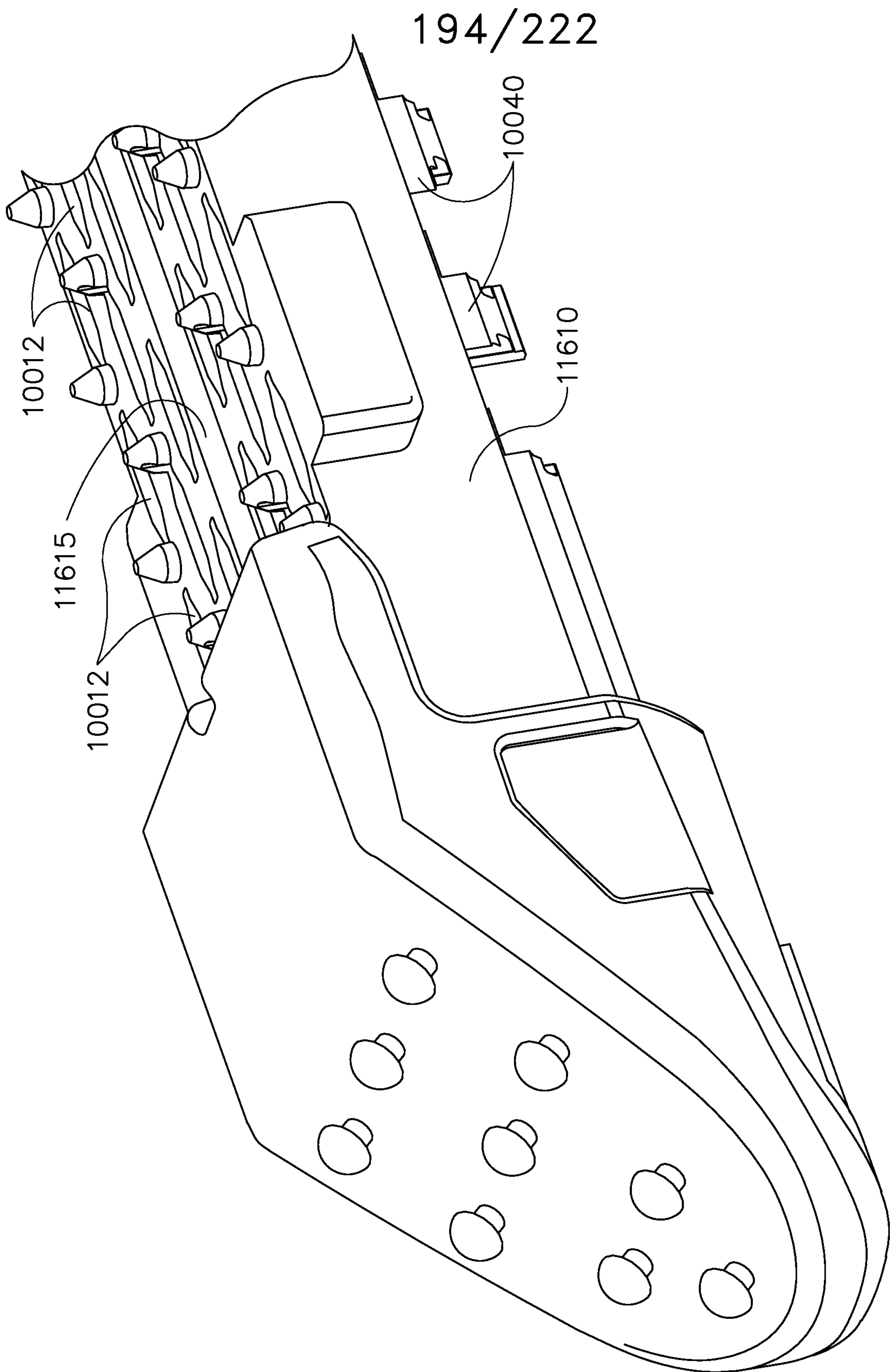


FIG. 326

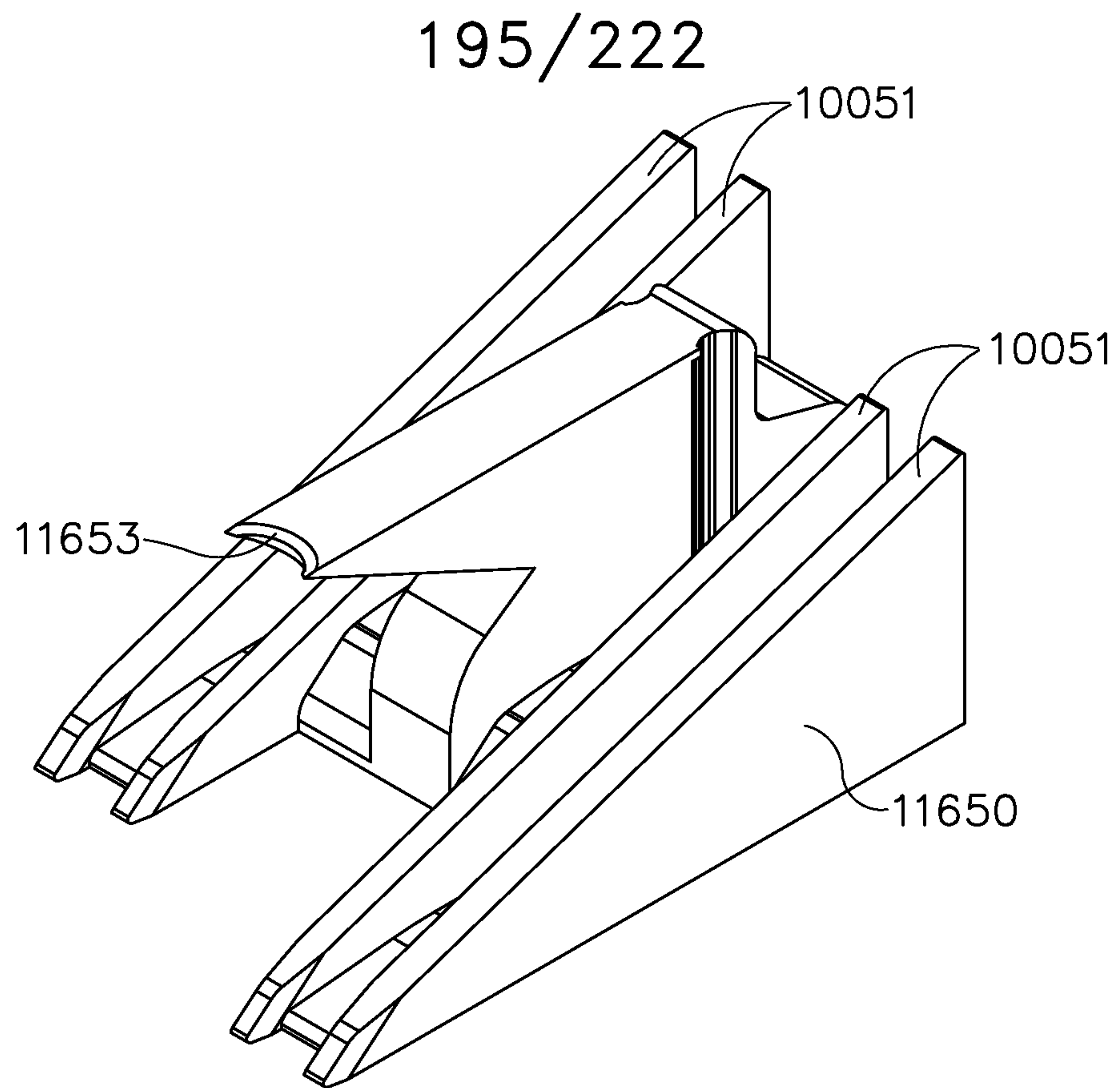


FIG. 327

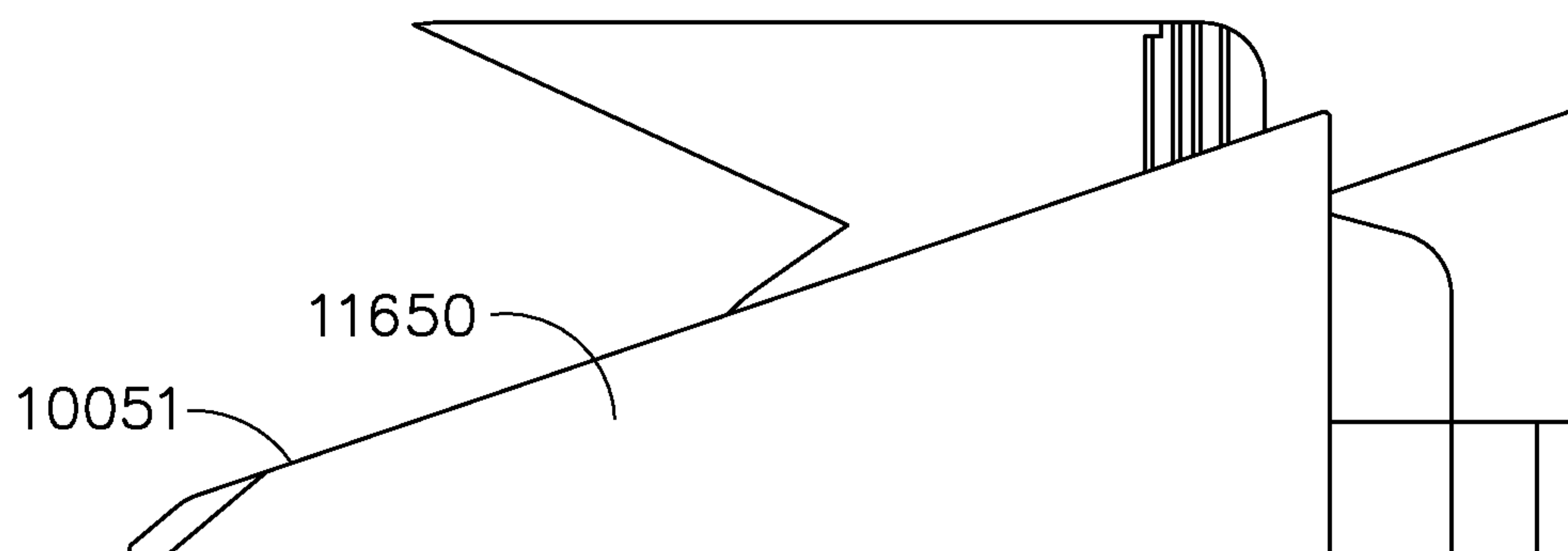


FIG. 328

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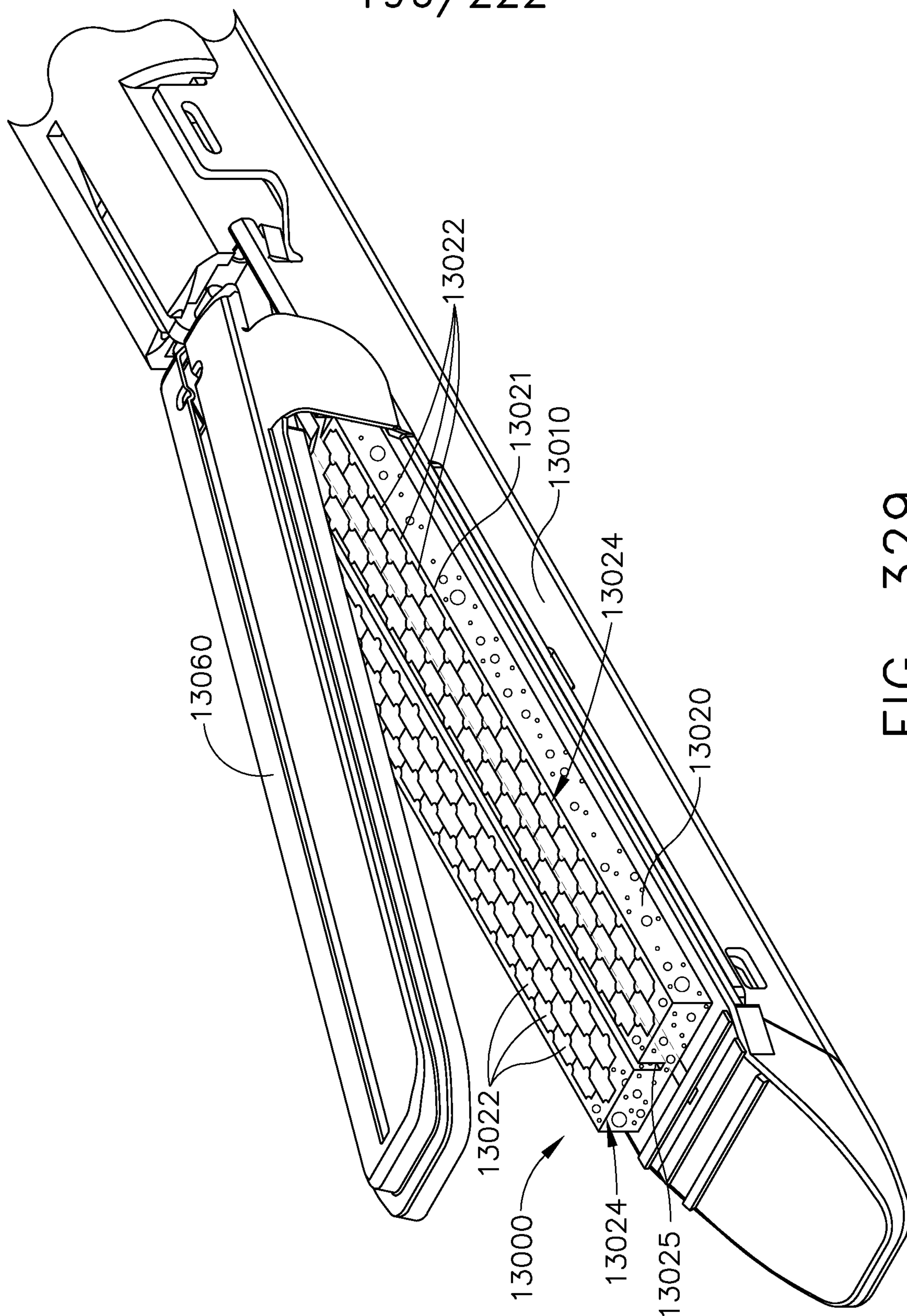
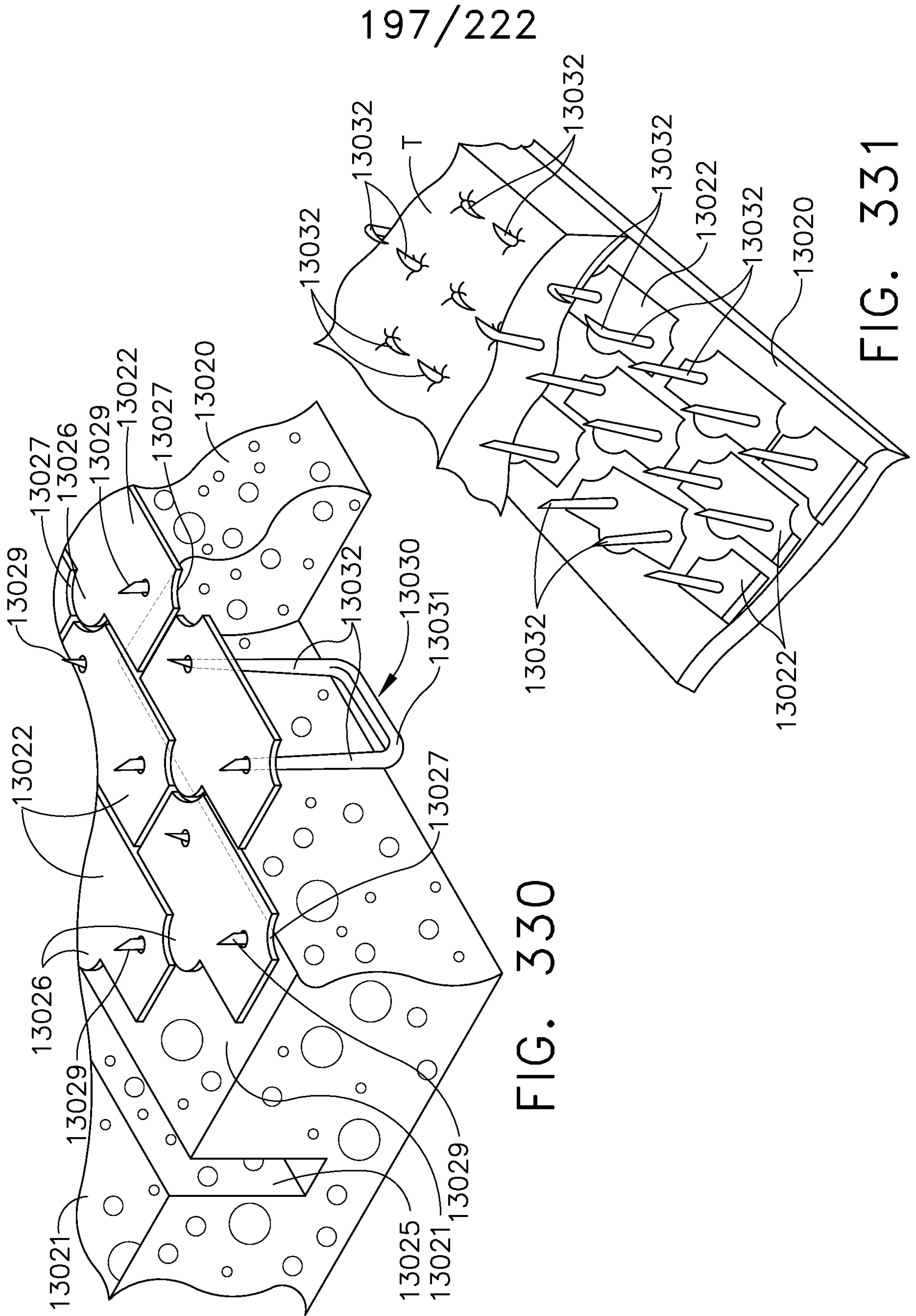


FIG. 329



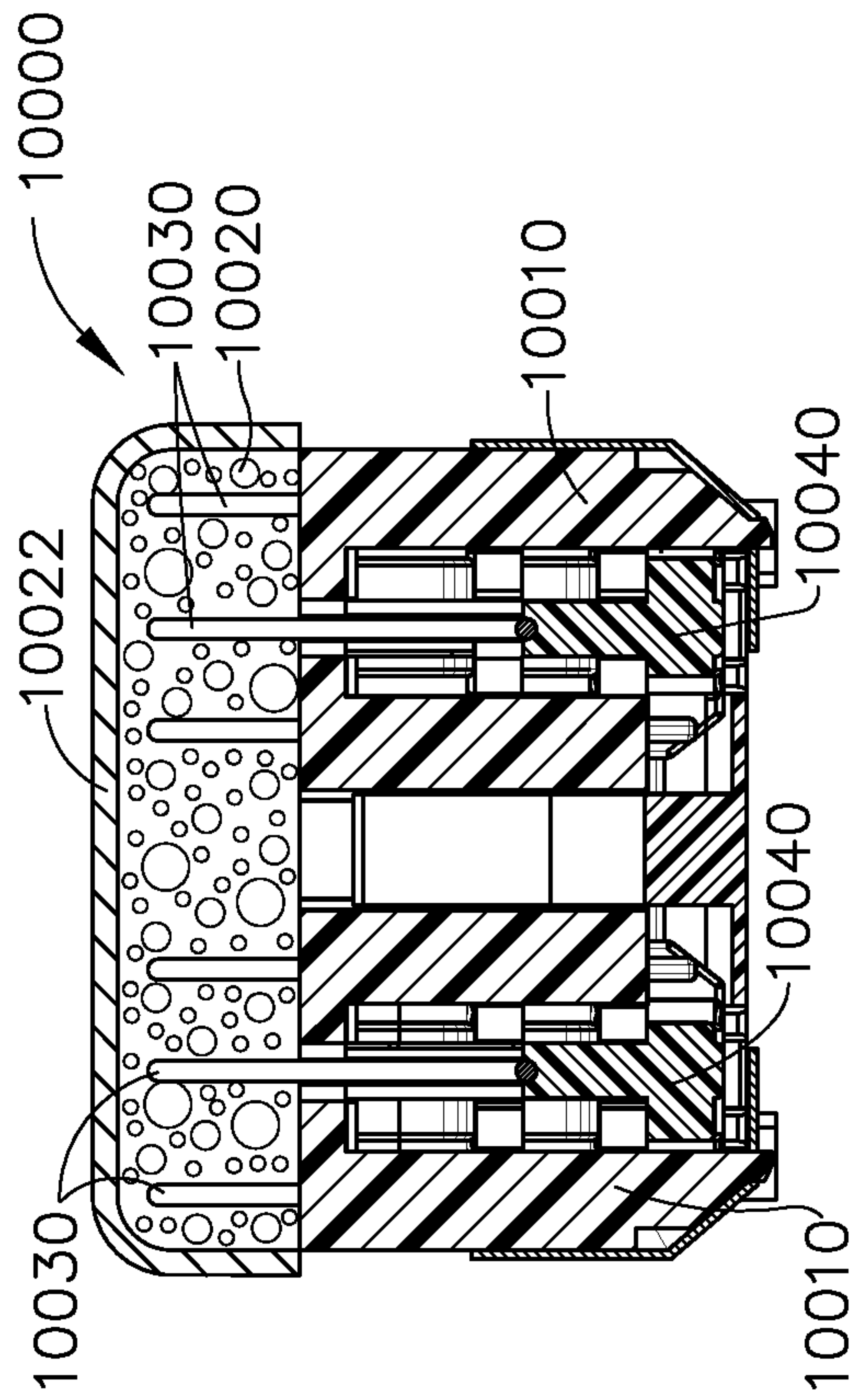


FIG. 332

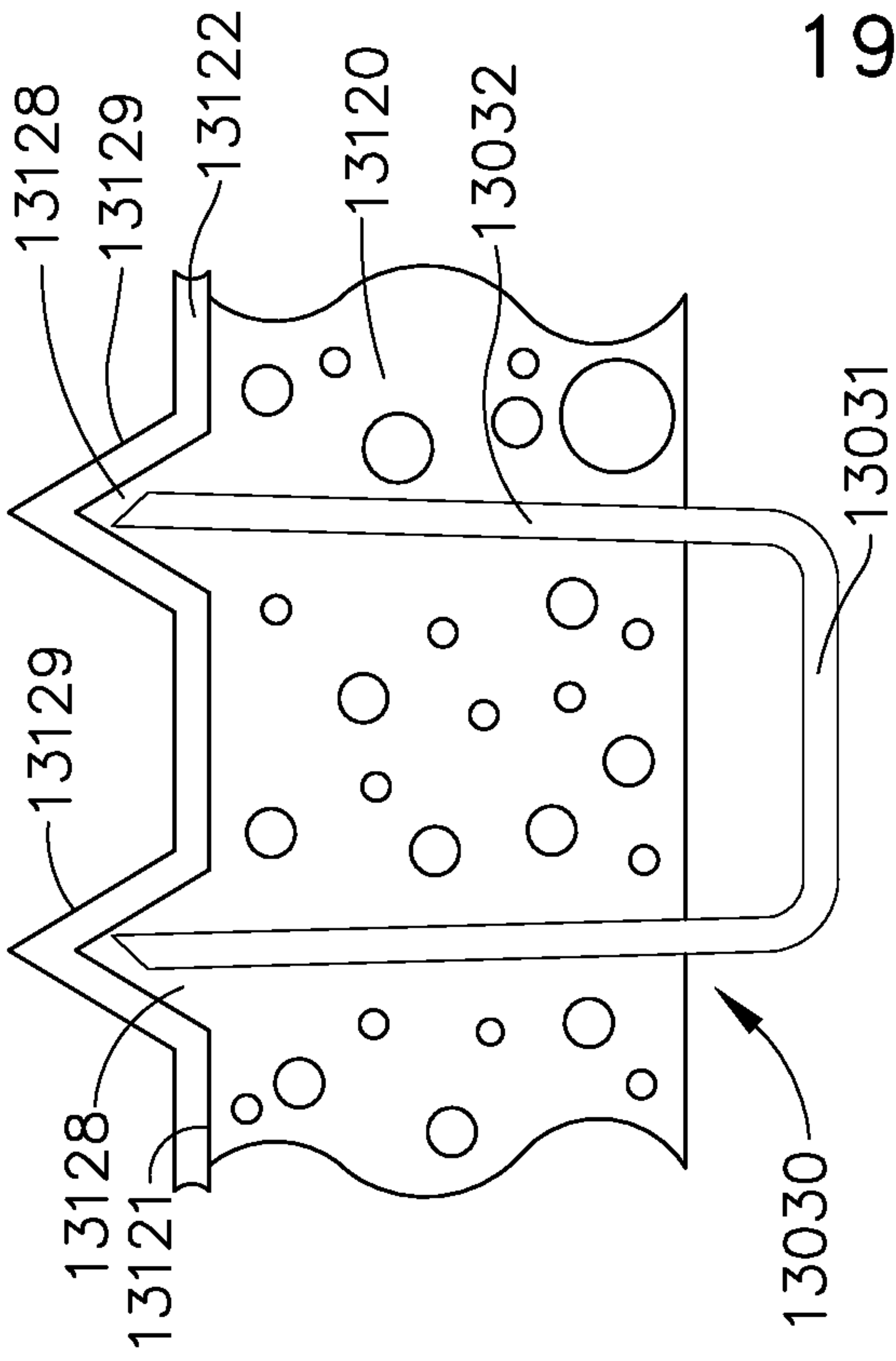


FIG. 333

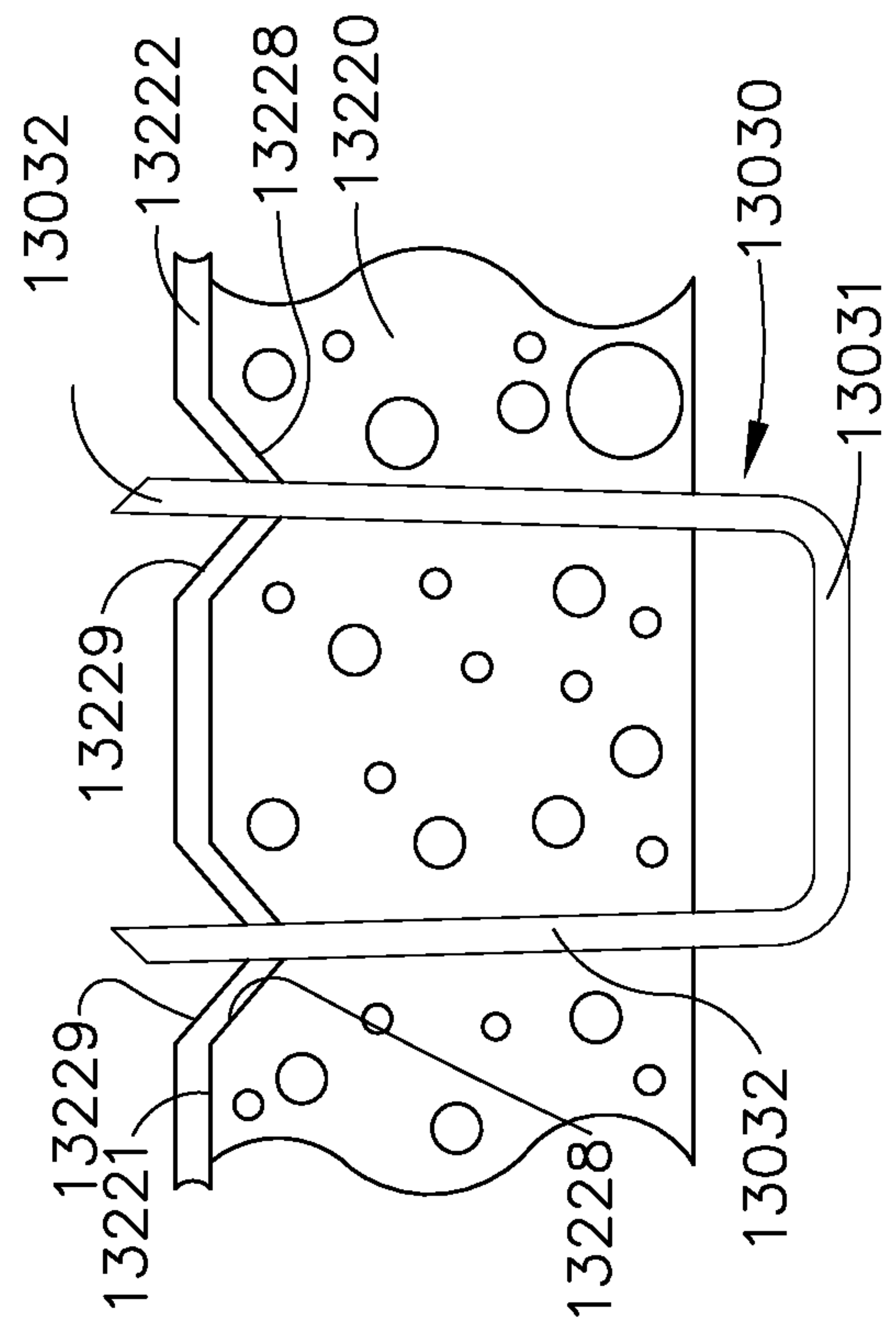


FIG. 334

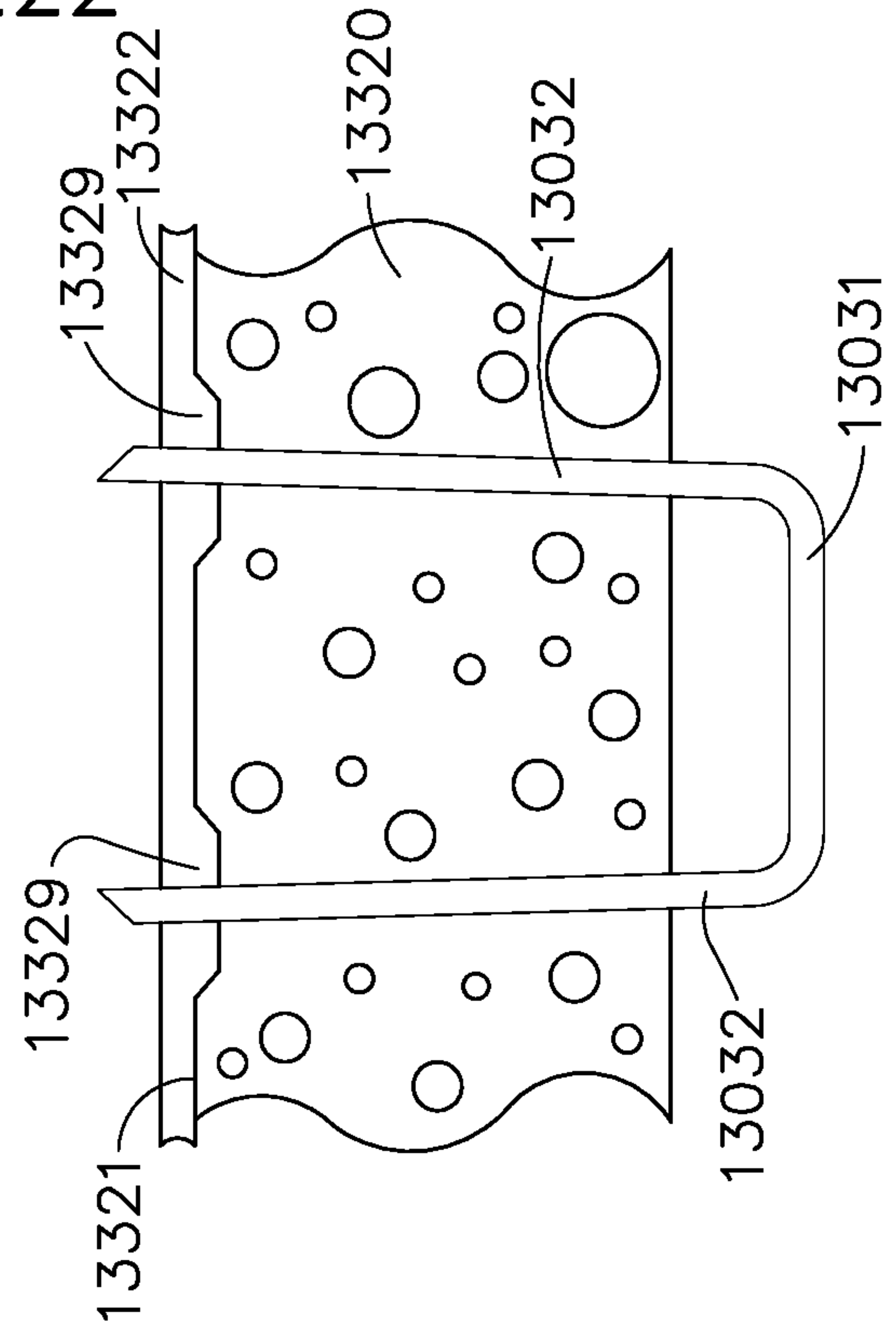


FIG. 335

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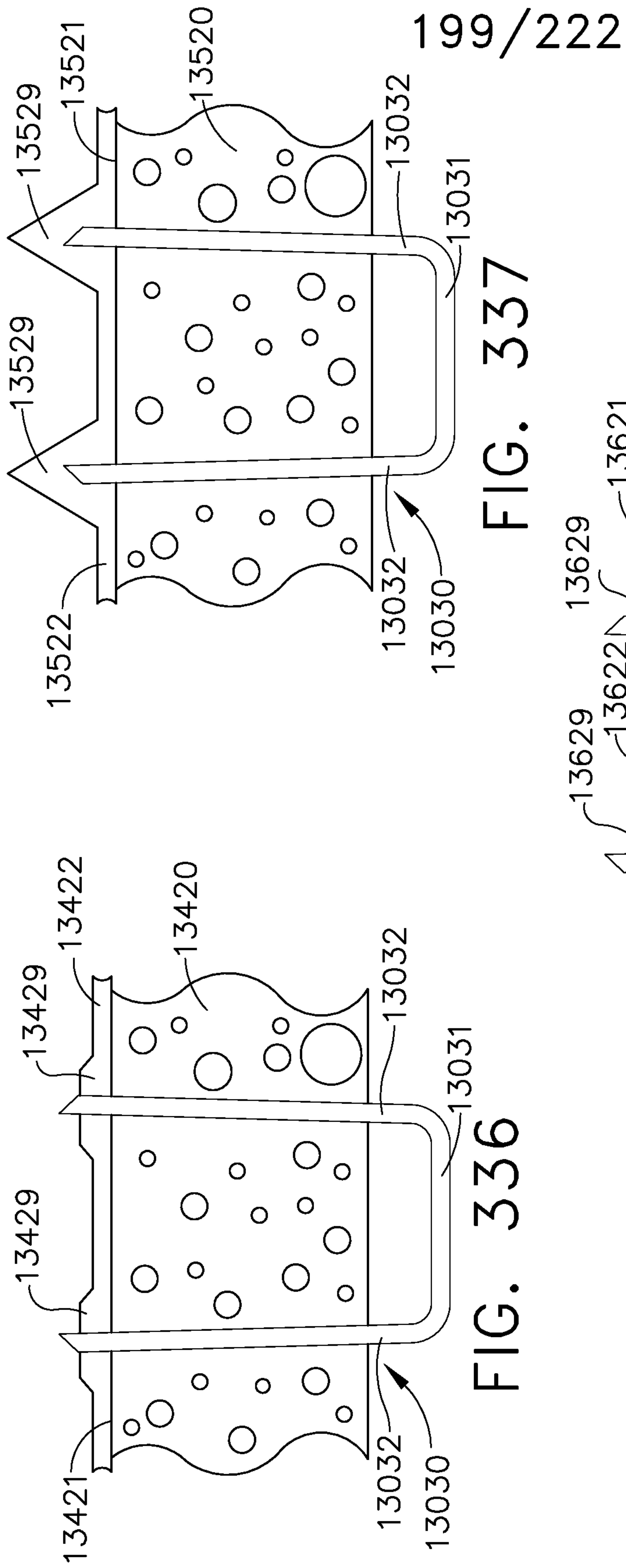


FIG. 337

FIG. 336

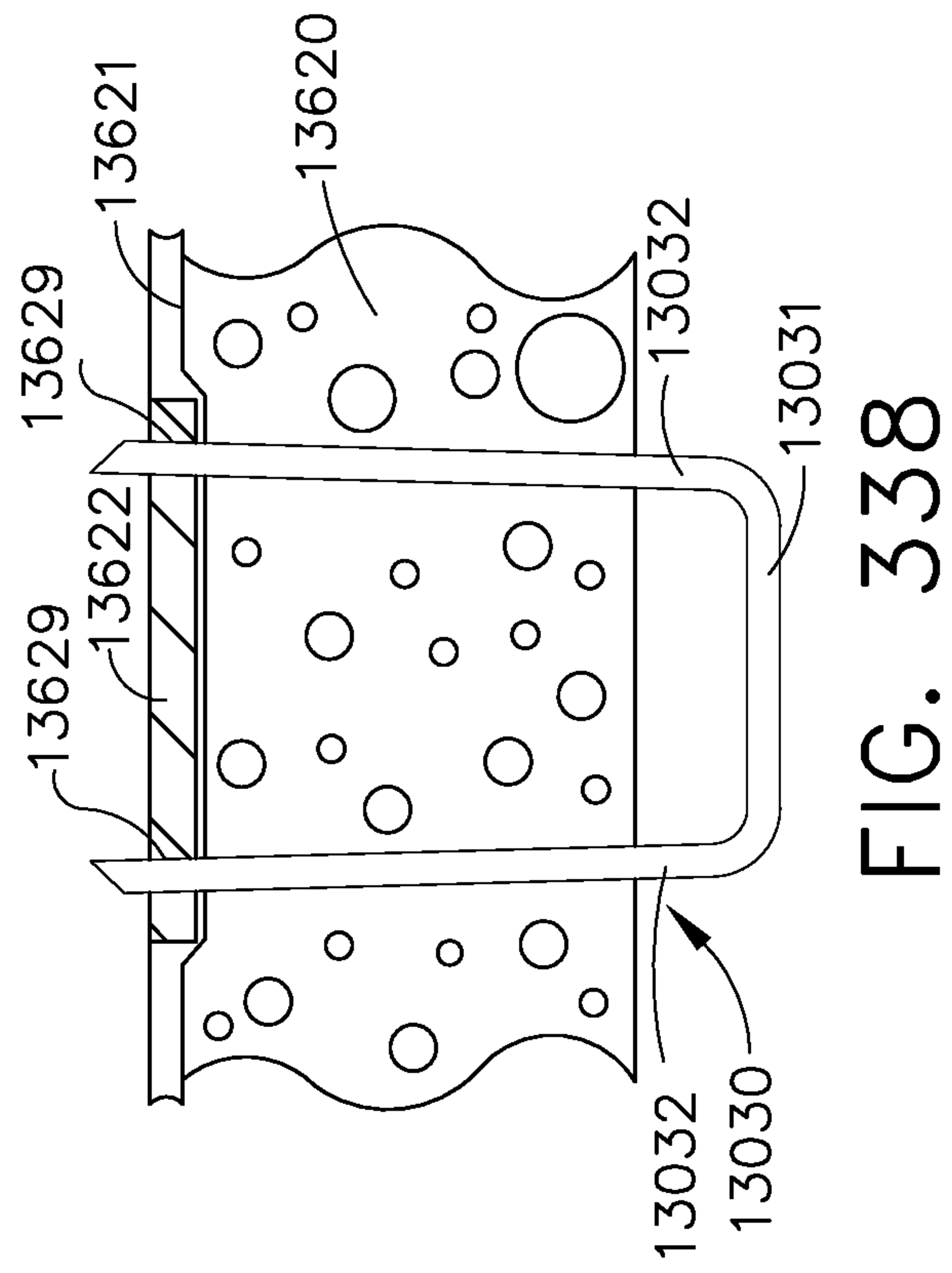


FIG. 338

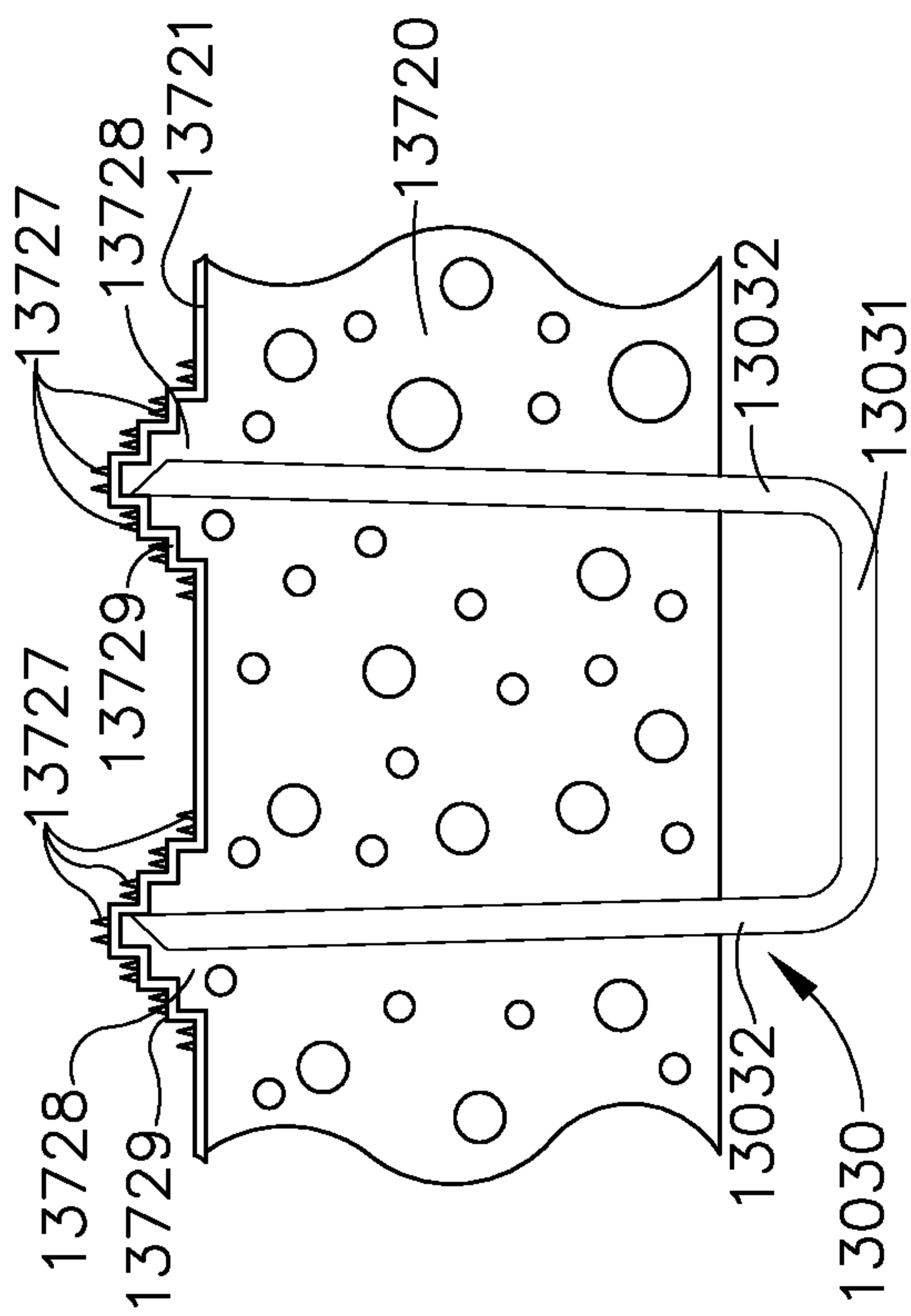


FIG. 339

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FIG. 340

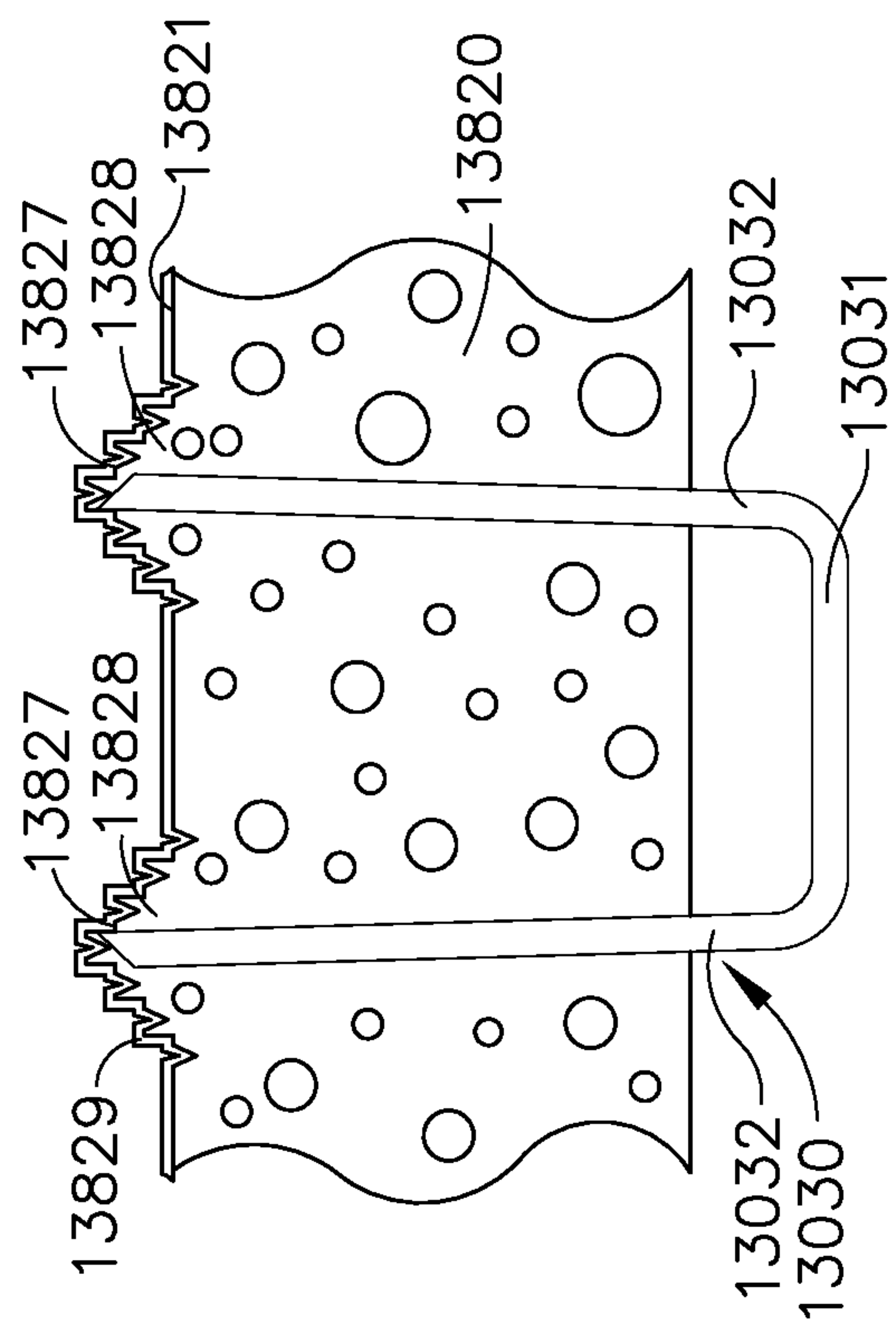


FIG. 341

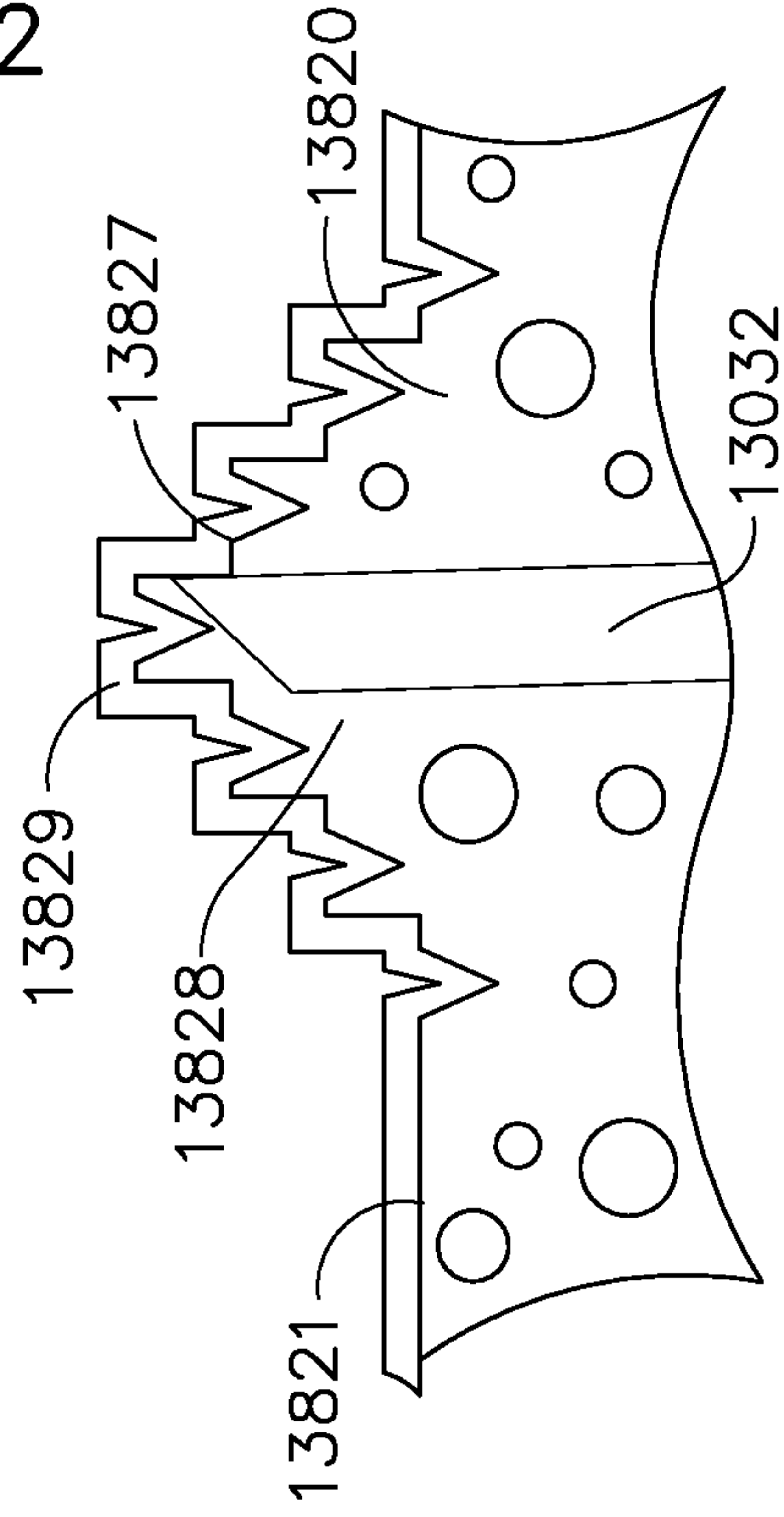


FIG. 342

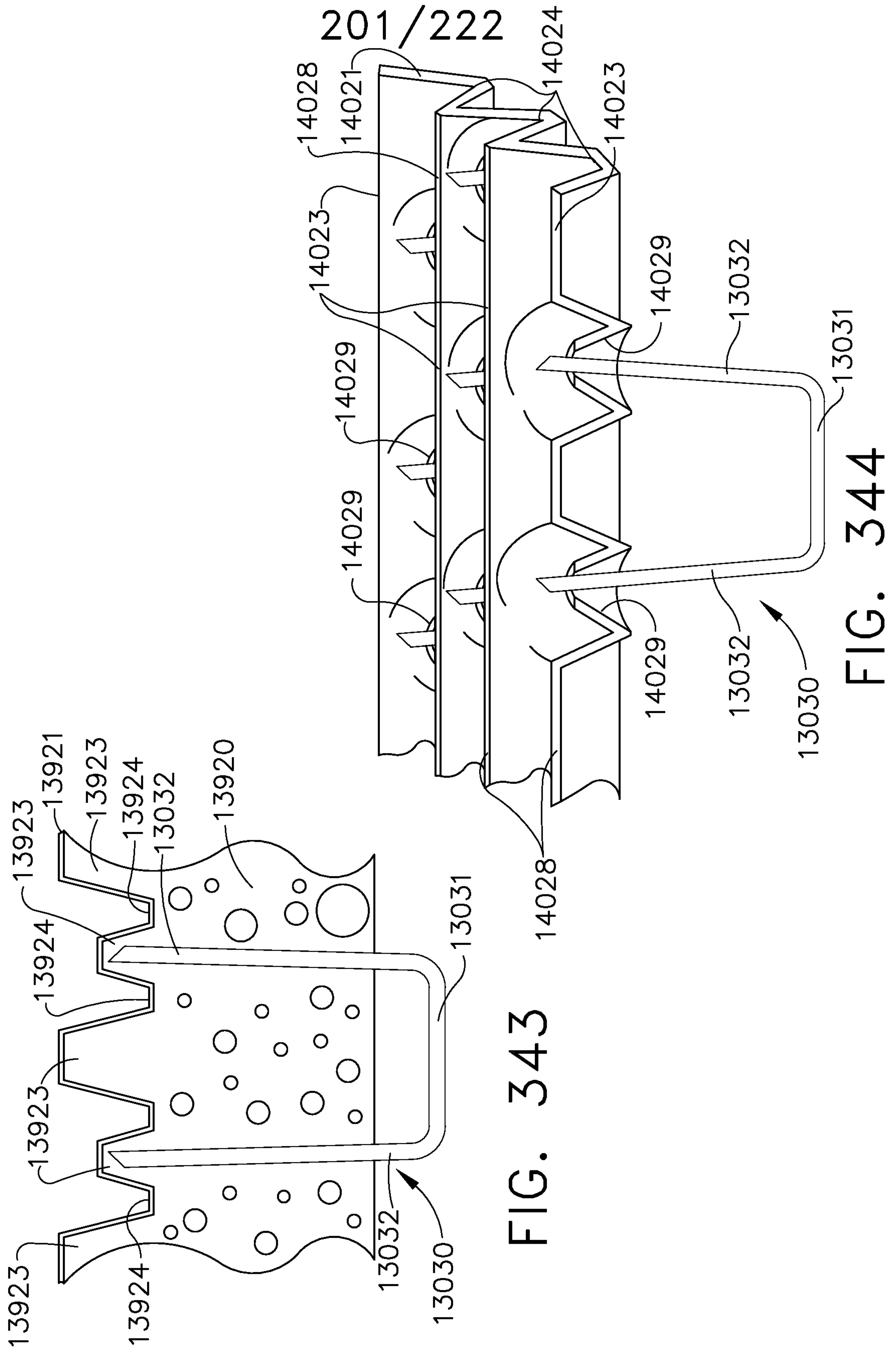
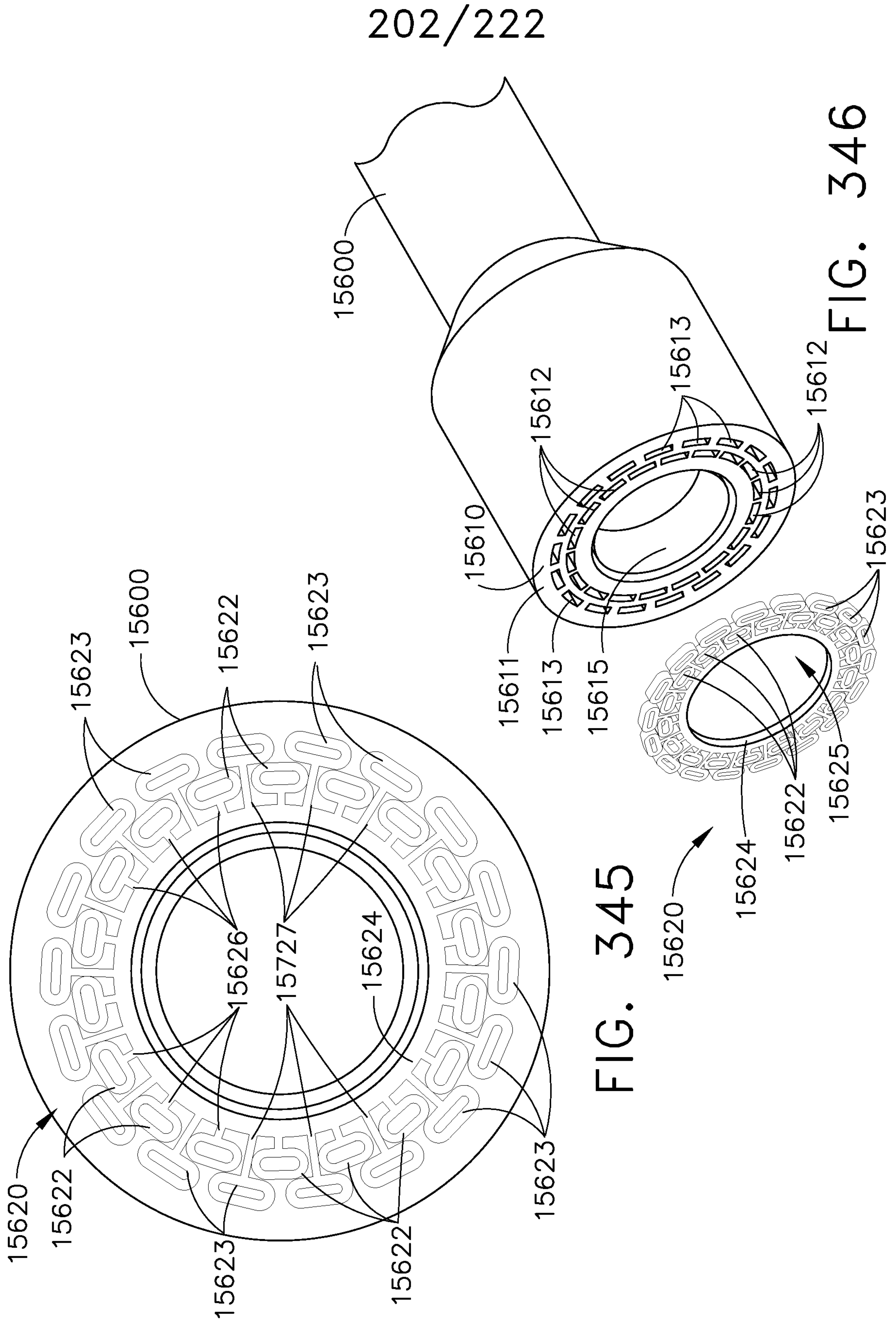
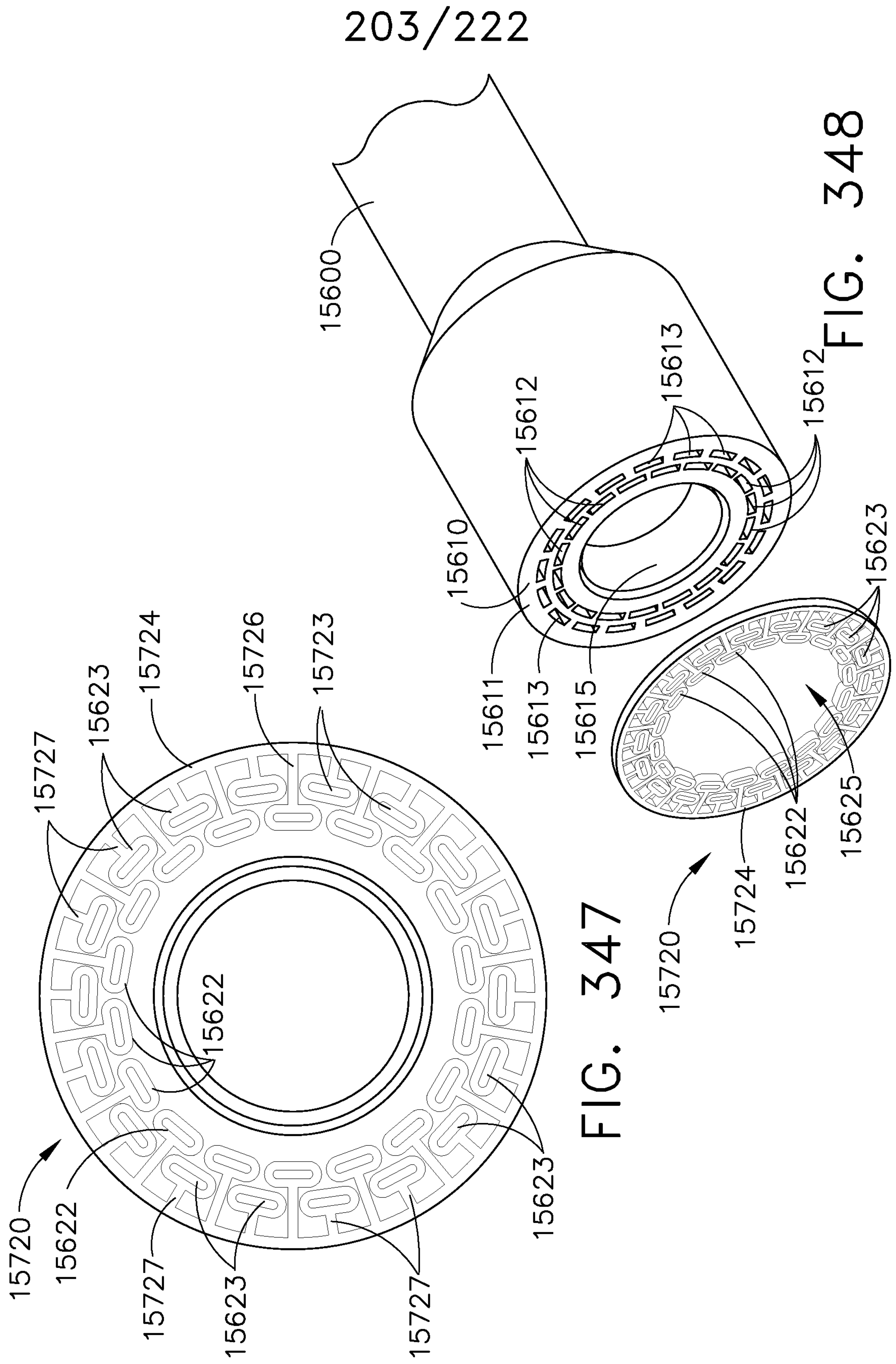


FIG. 343

FIG. 344





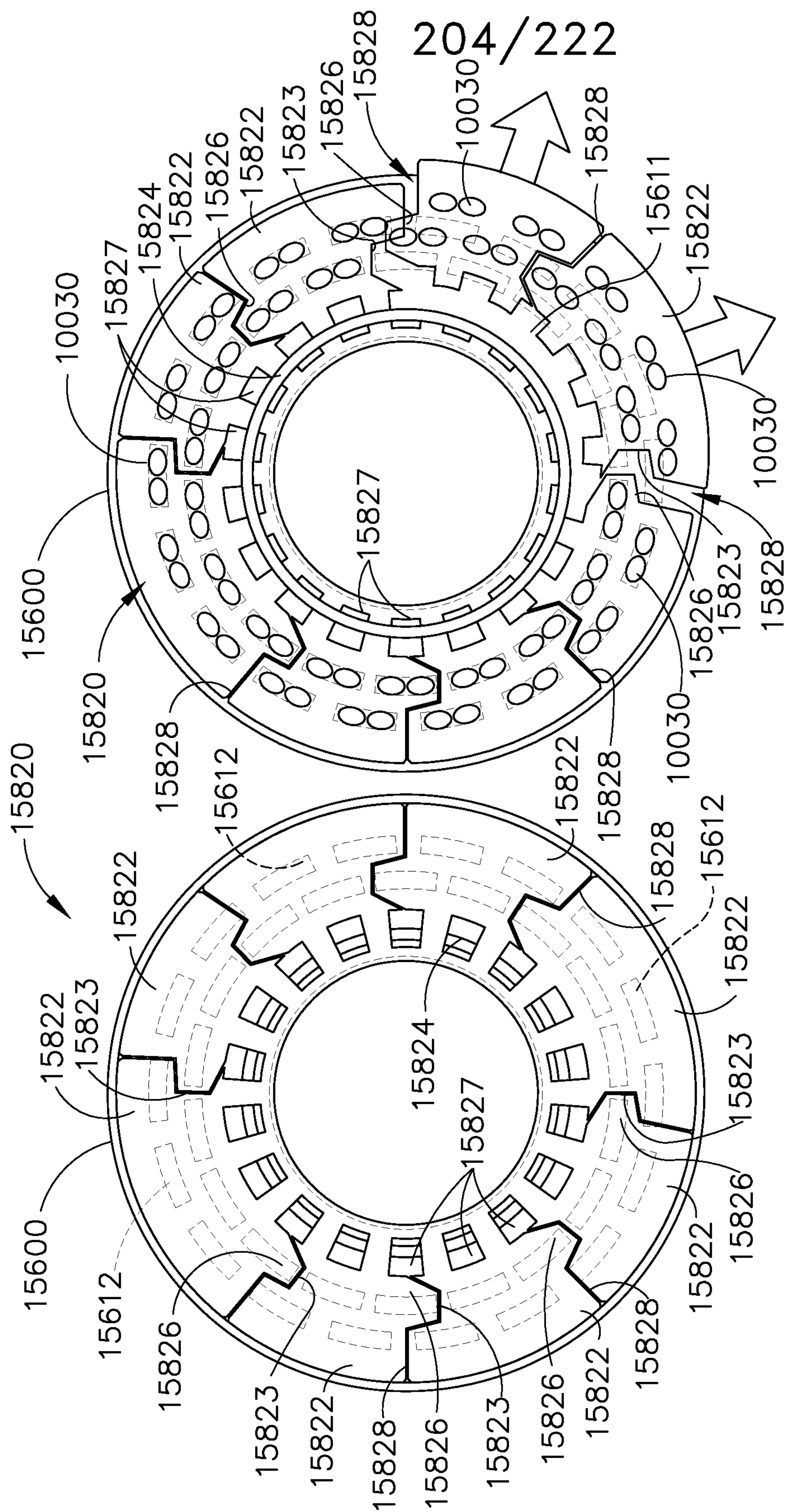


FIG. 349

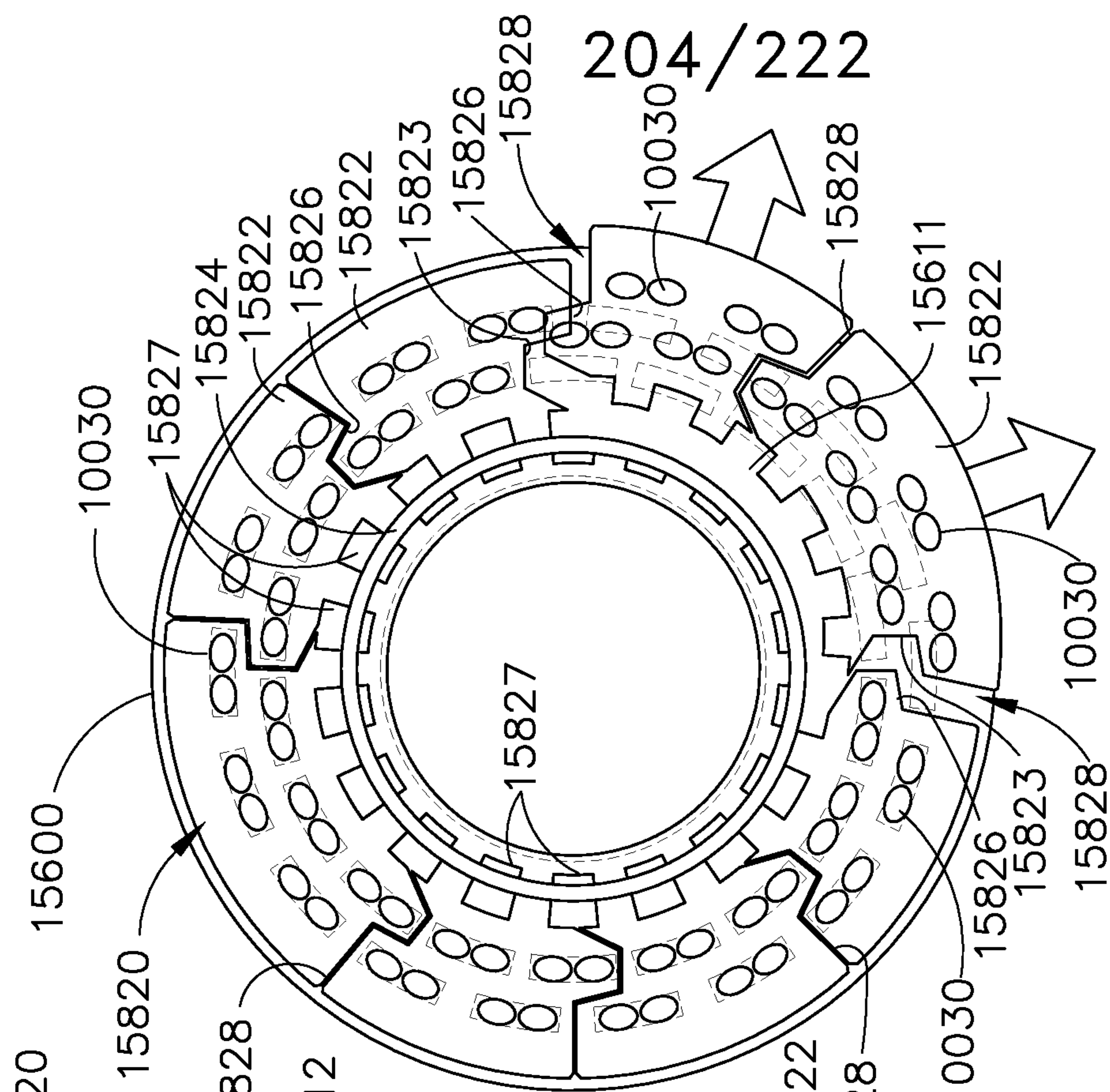


FIG. 350

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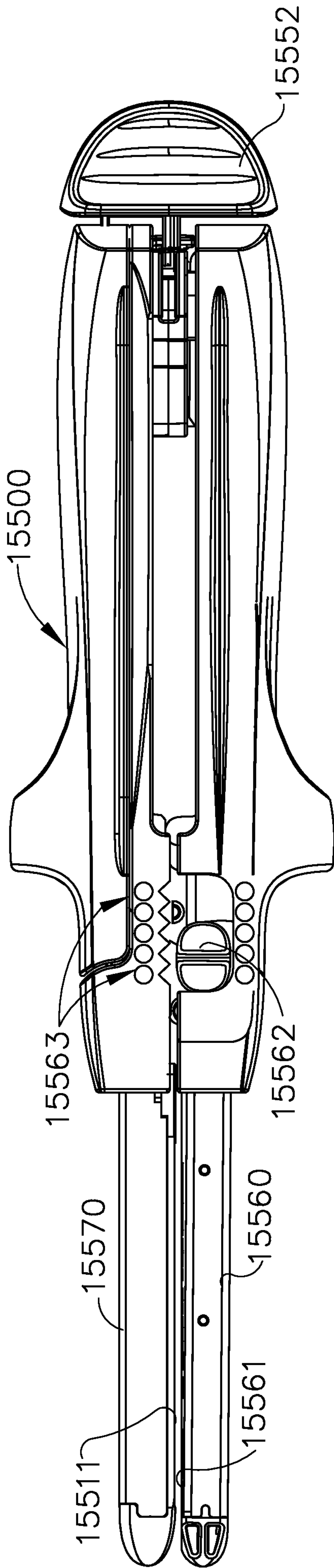


FIG. 351

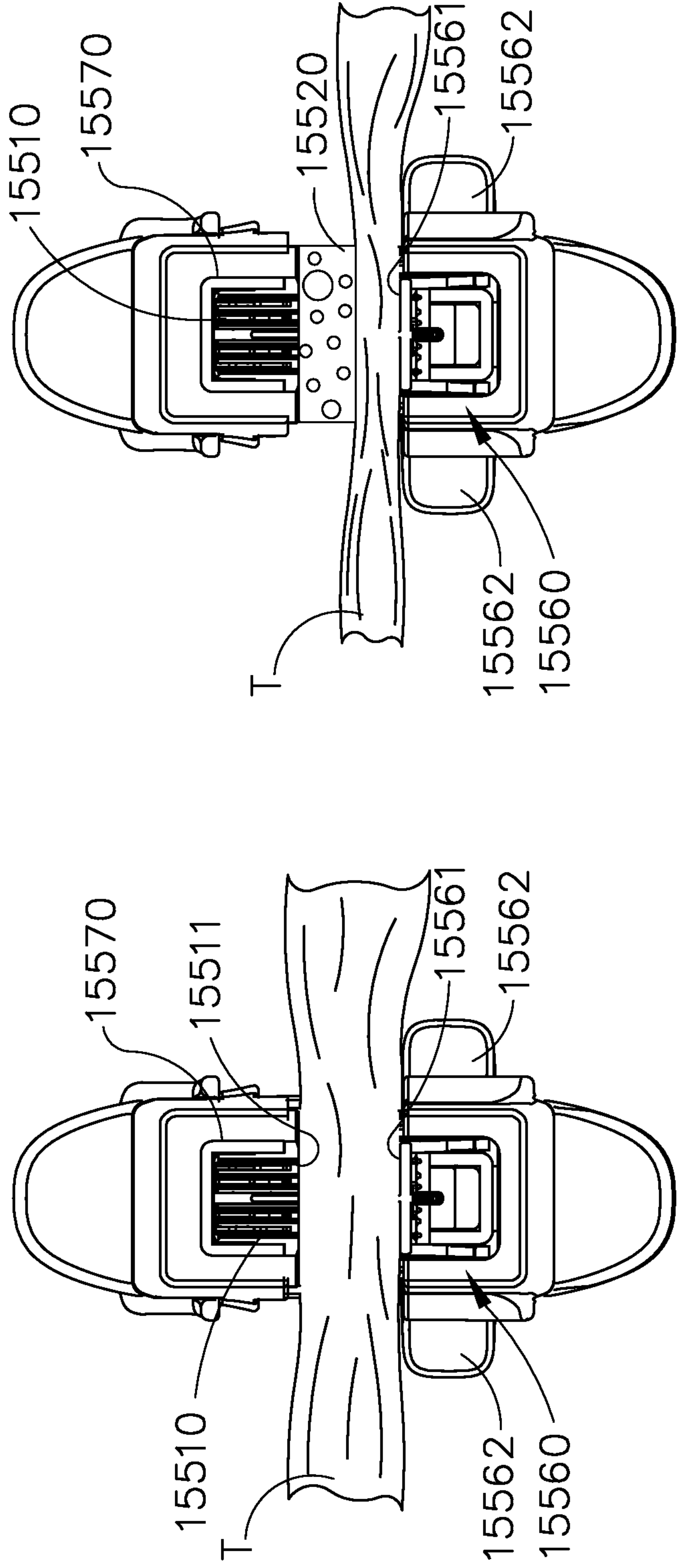


FIG. 352

FIG. 353

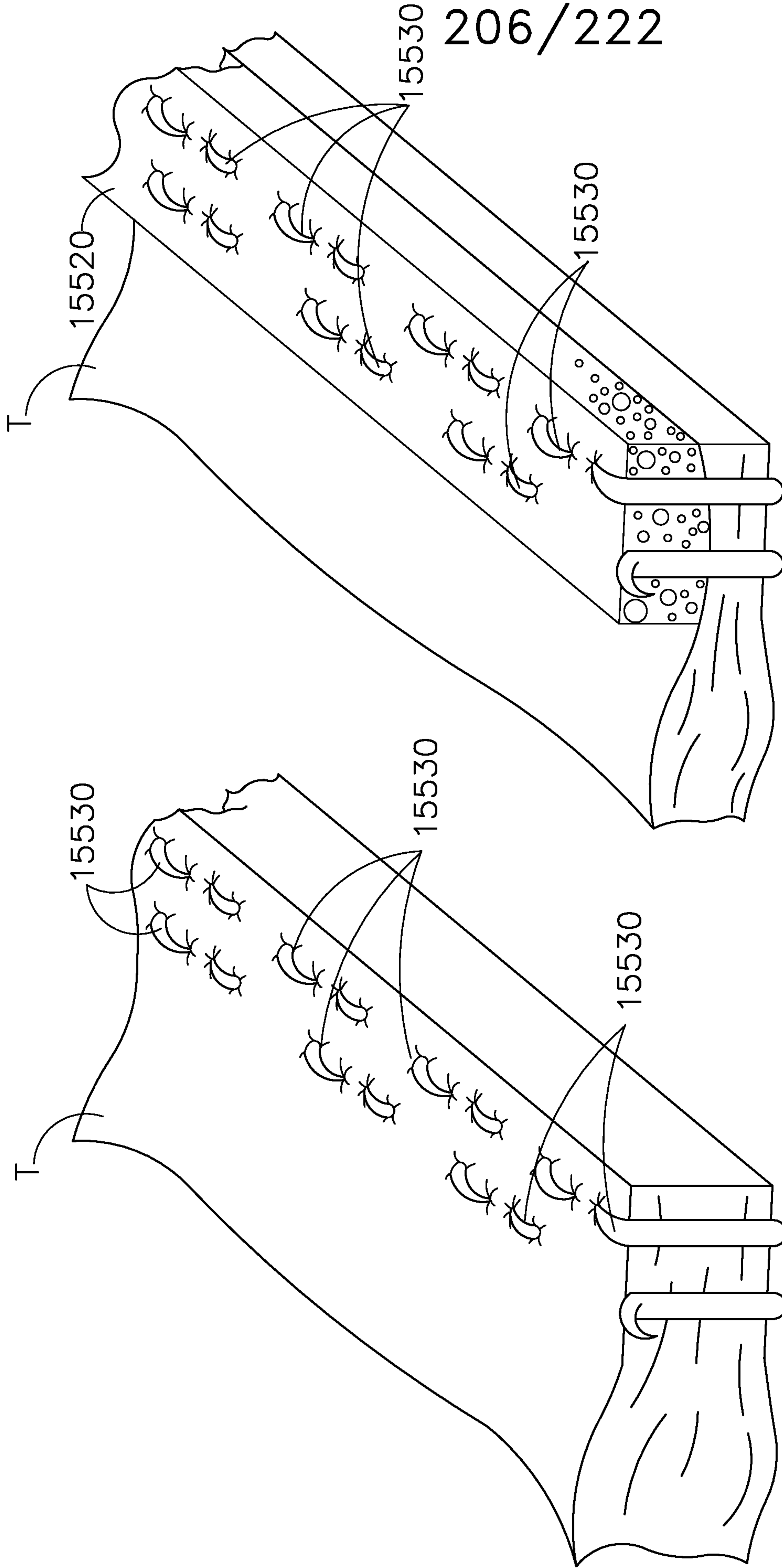
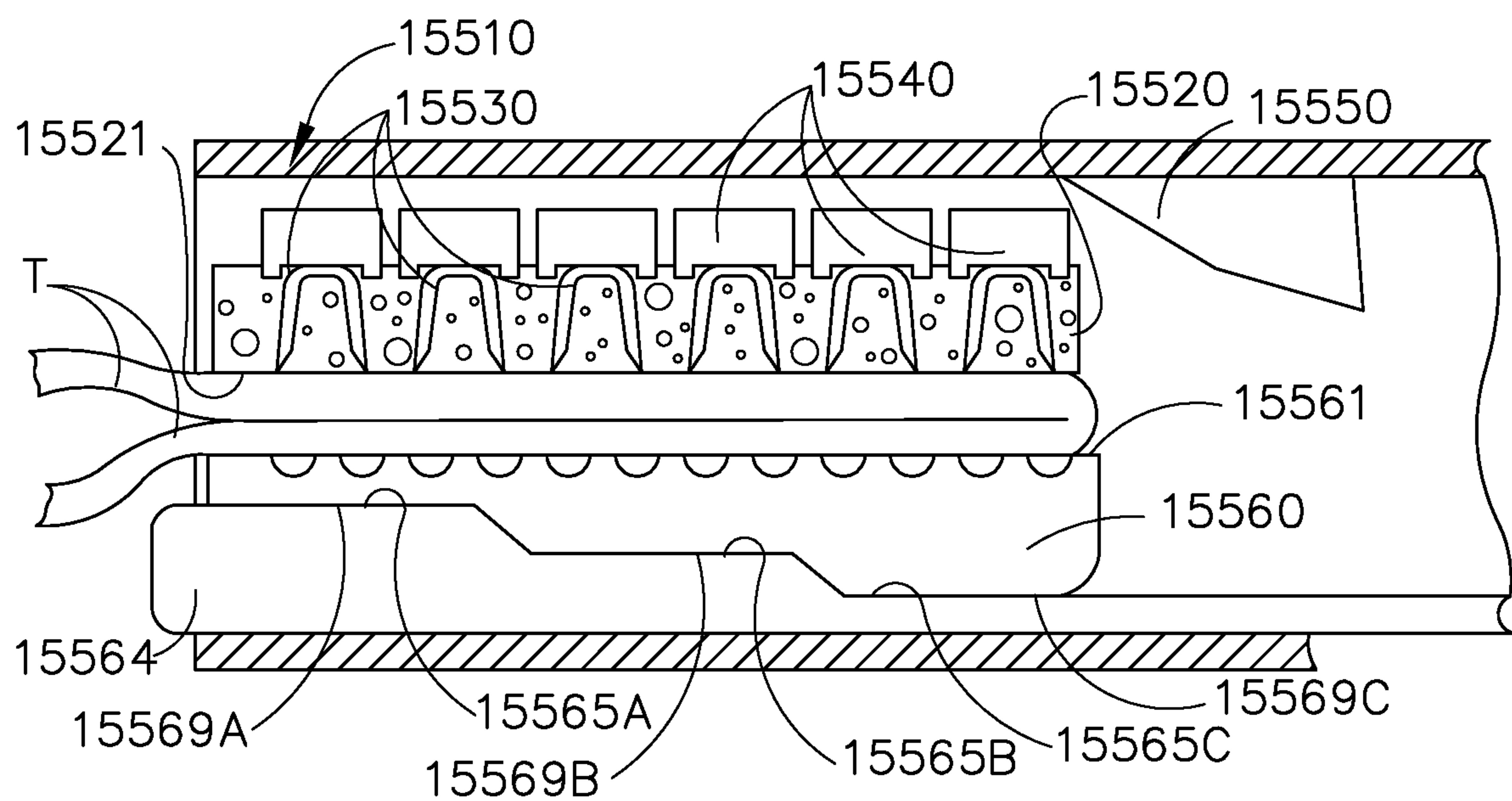
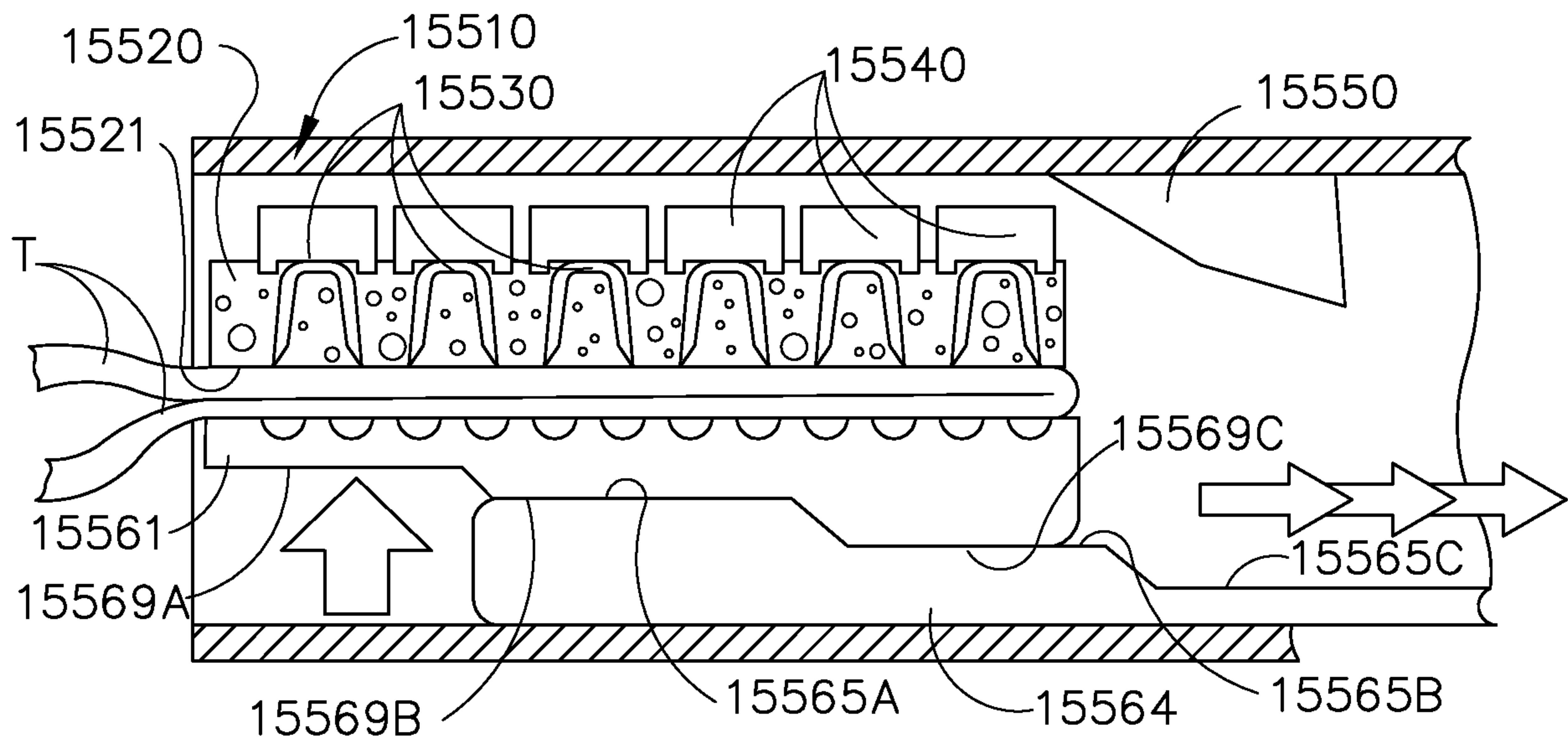
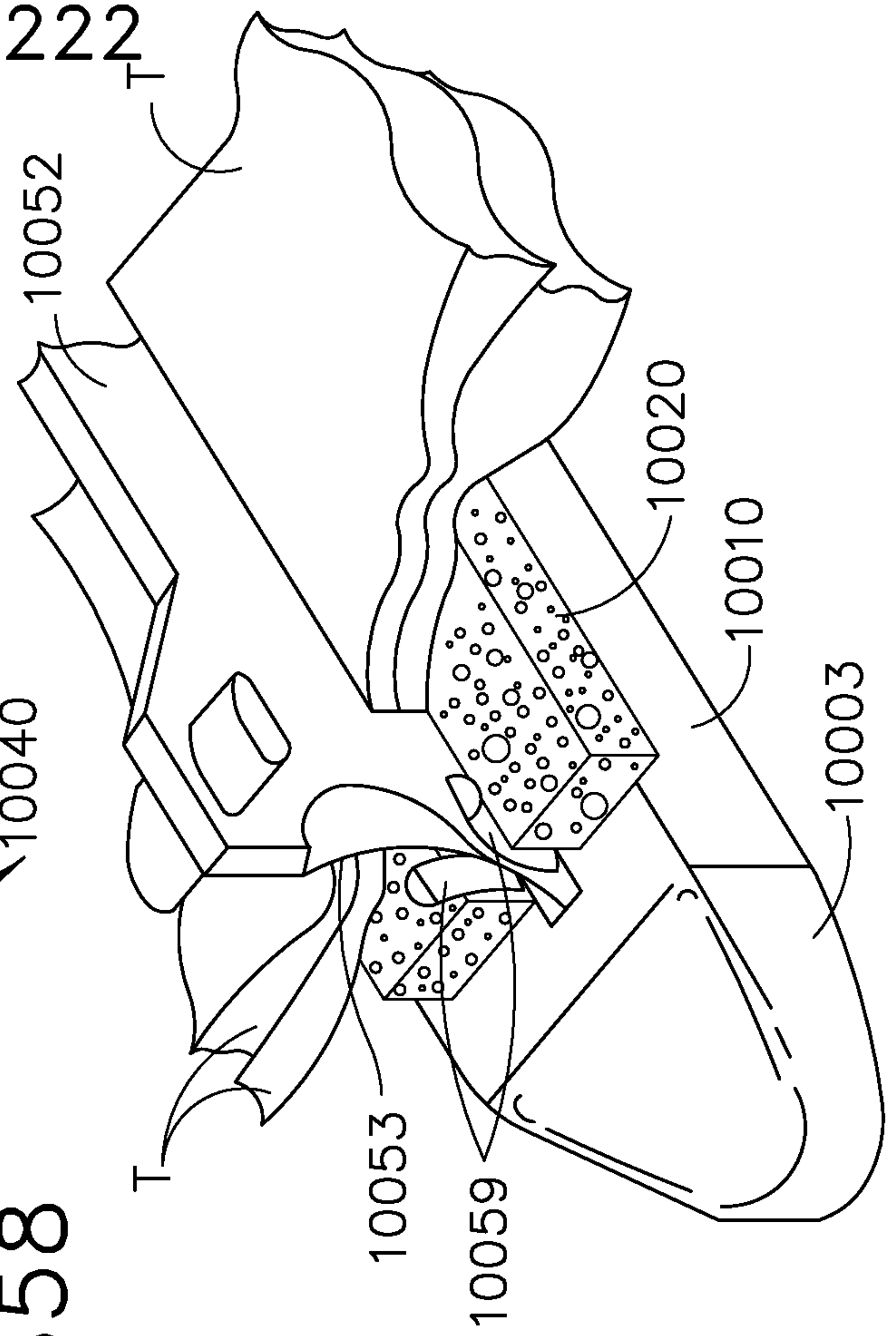
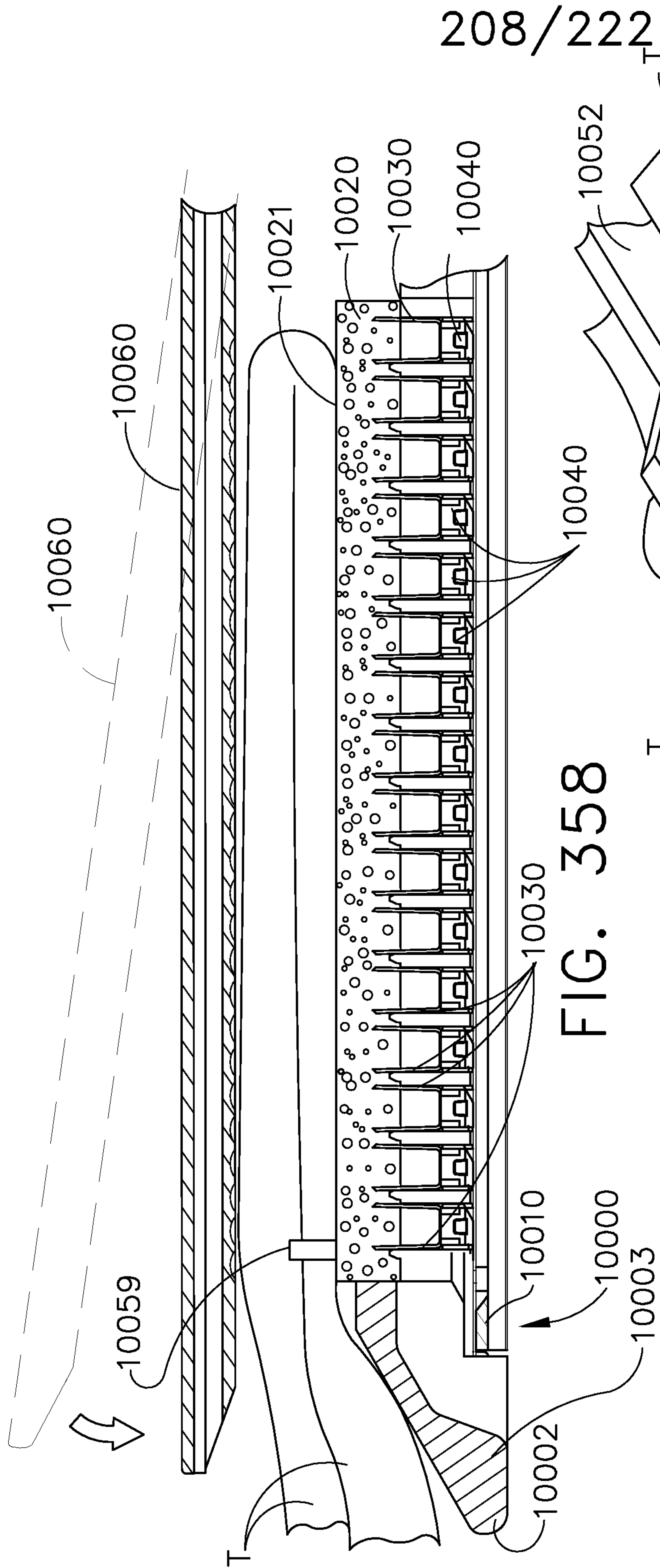


FIG. 355

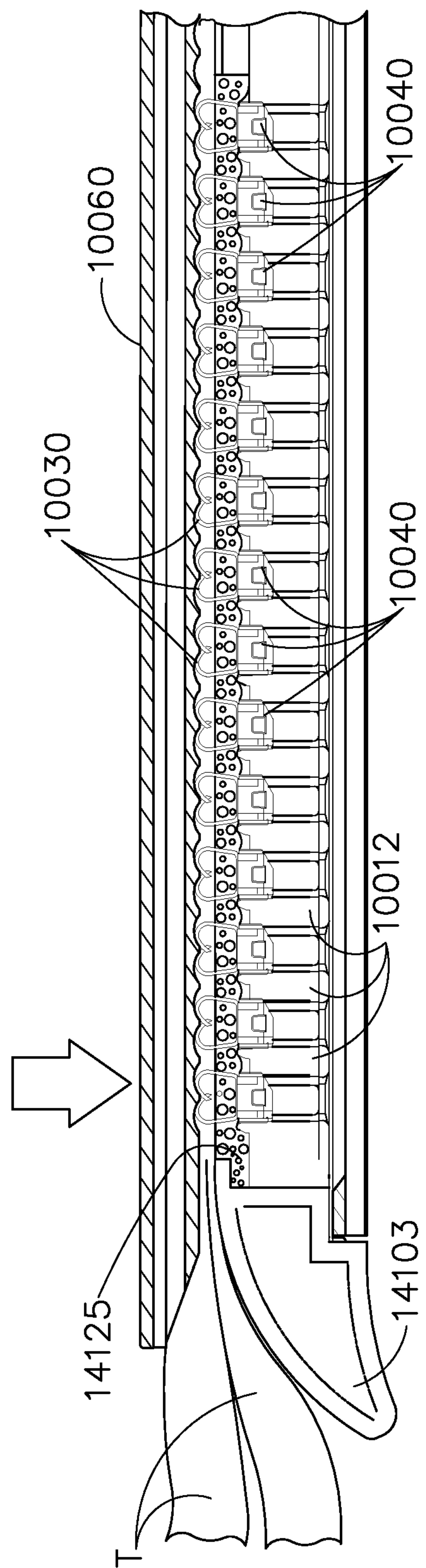
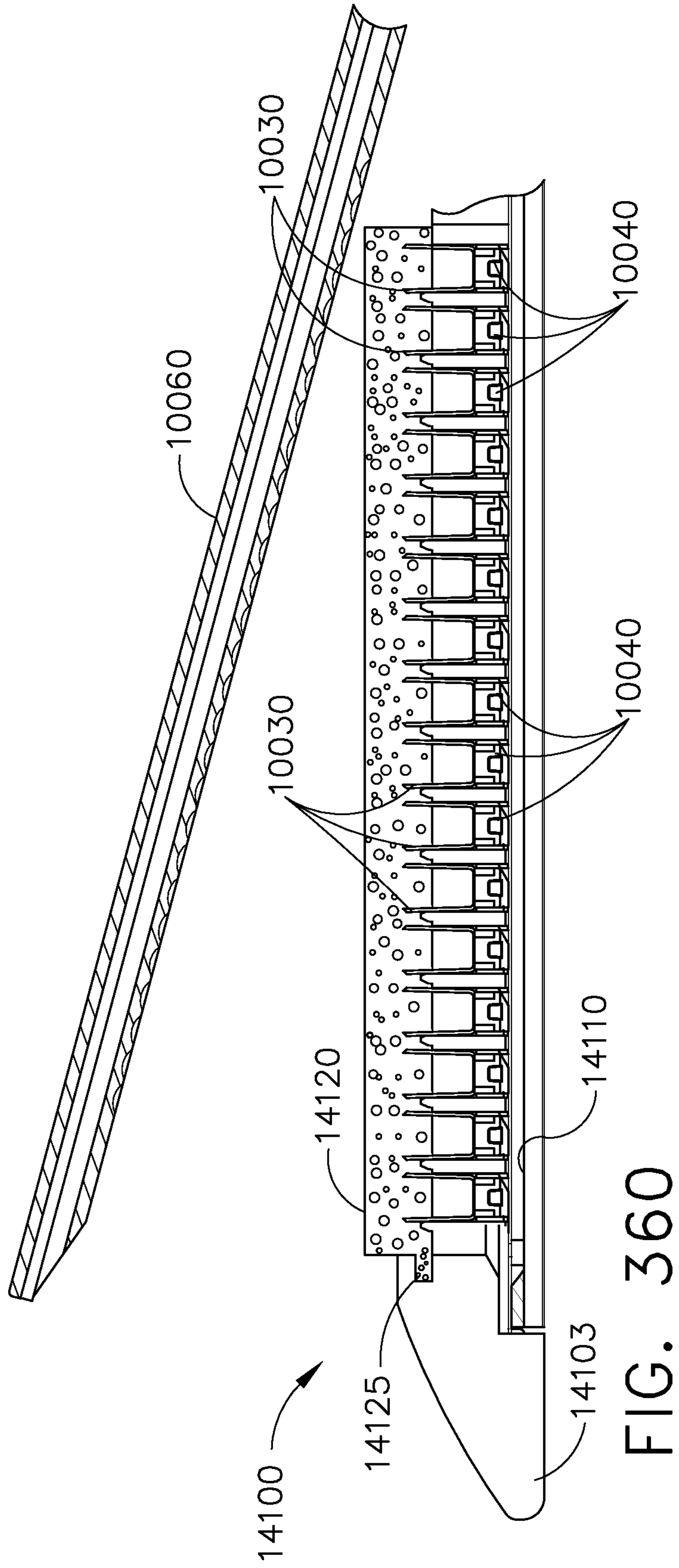
FIG. 354

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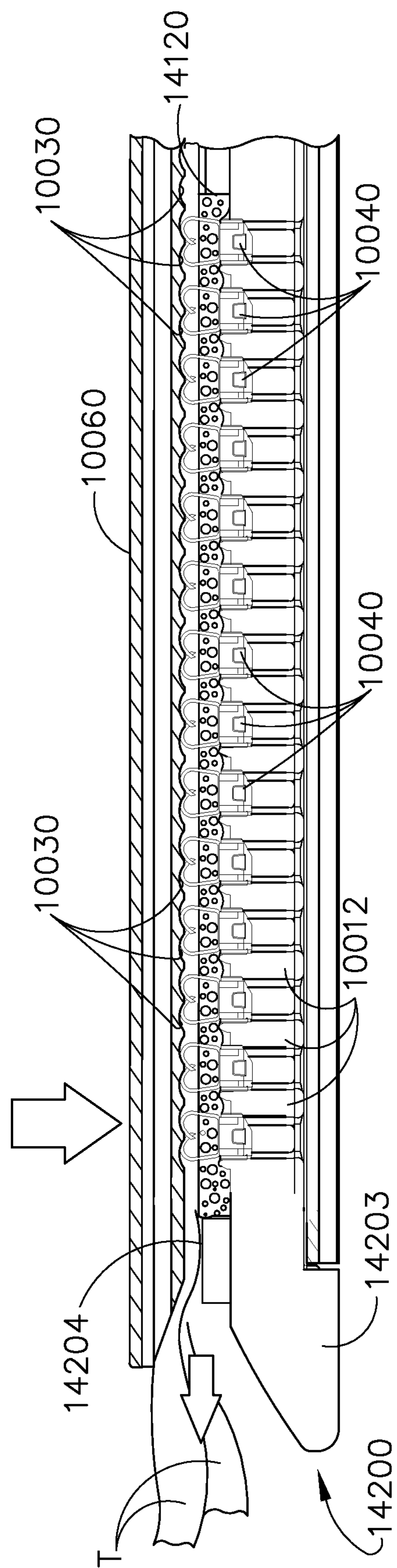
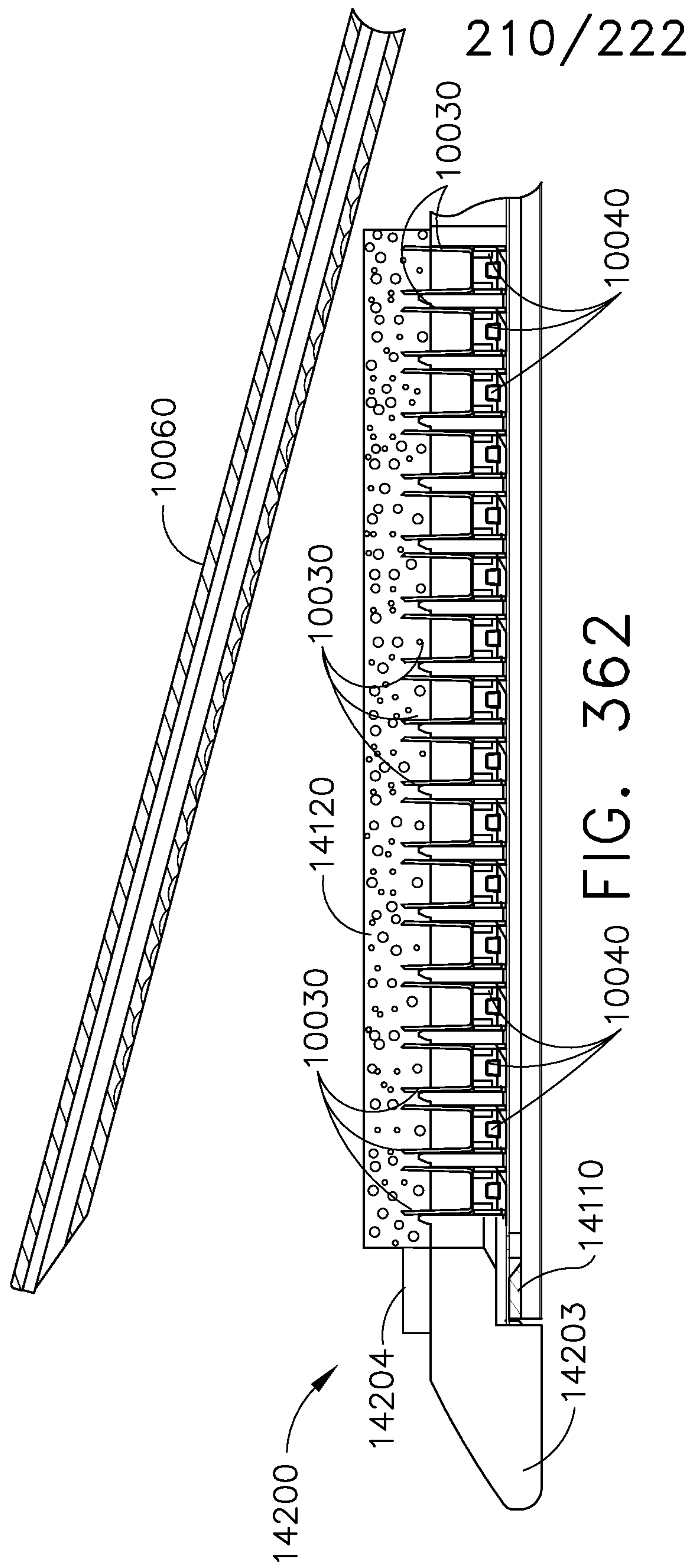
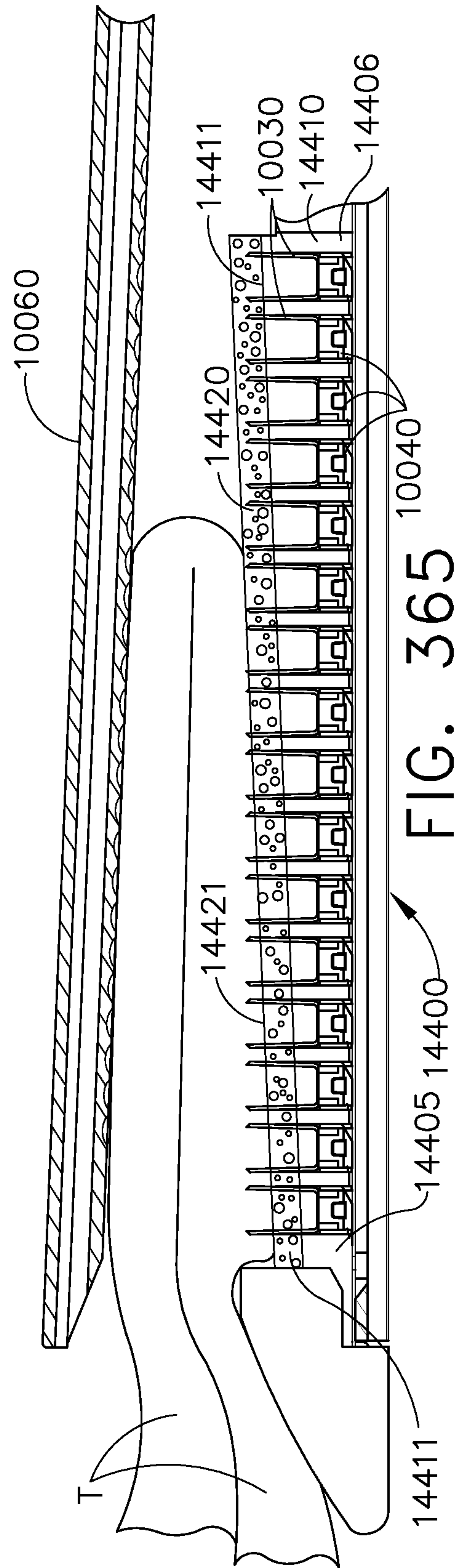
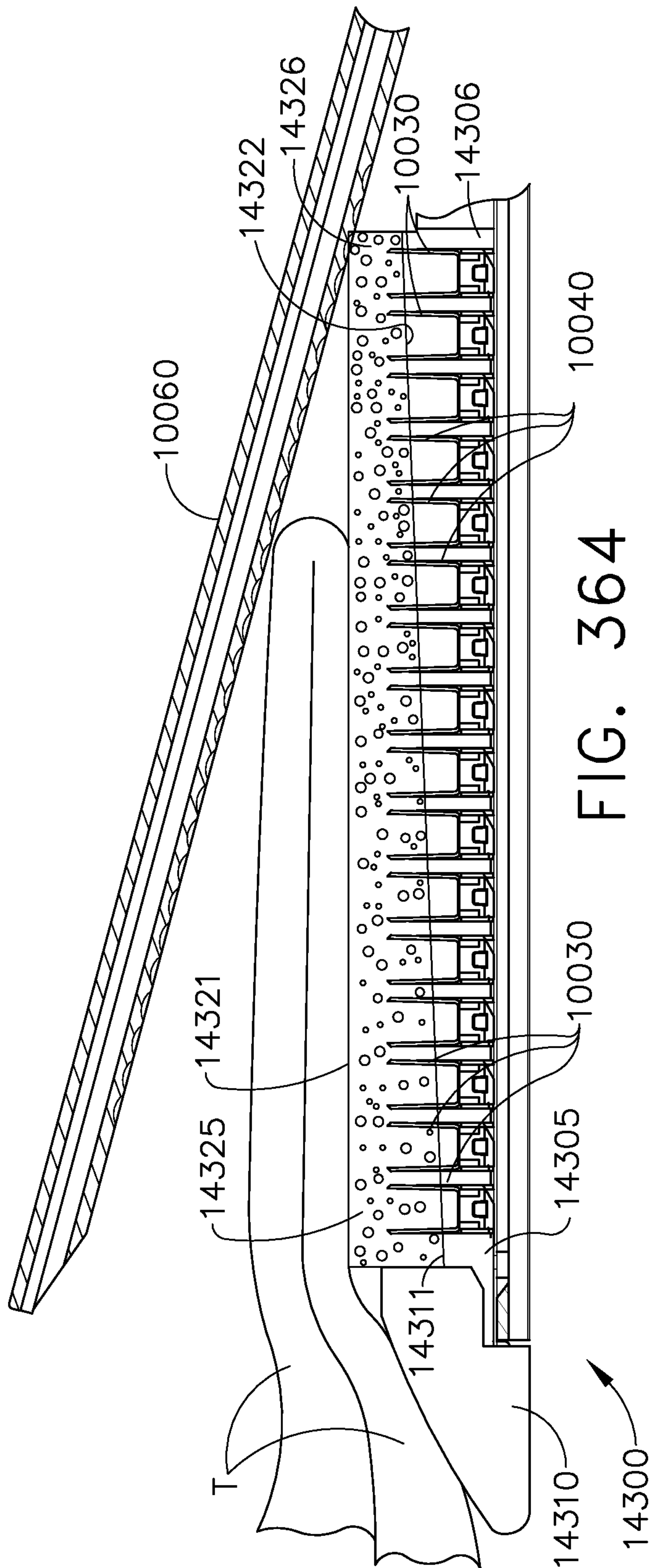


FIG. 363

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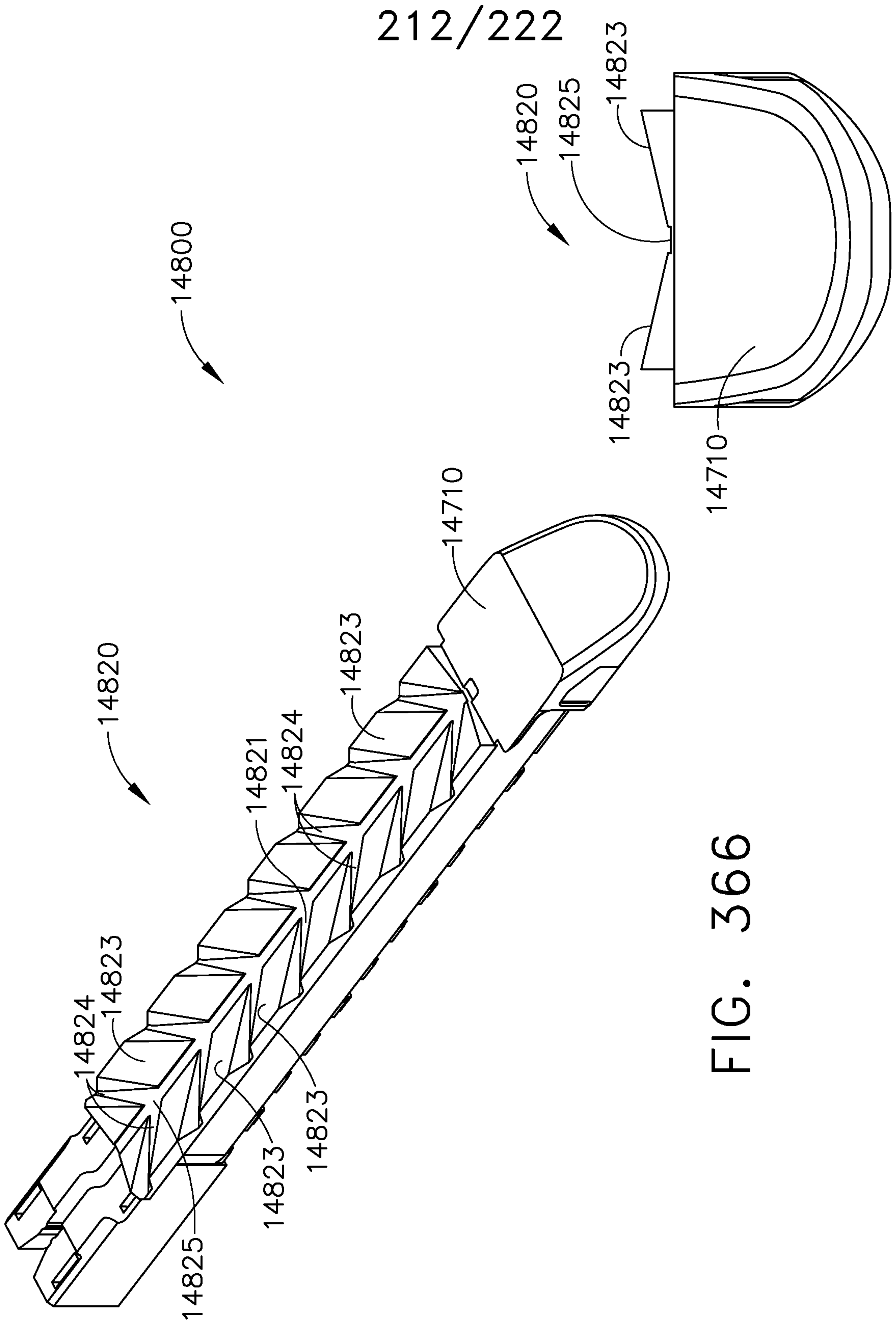


FIG. 366

FIG. 367

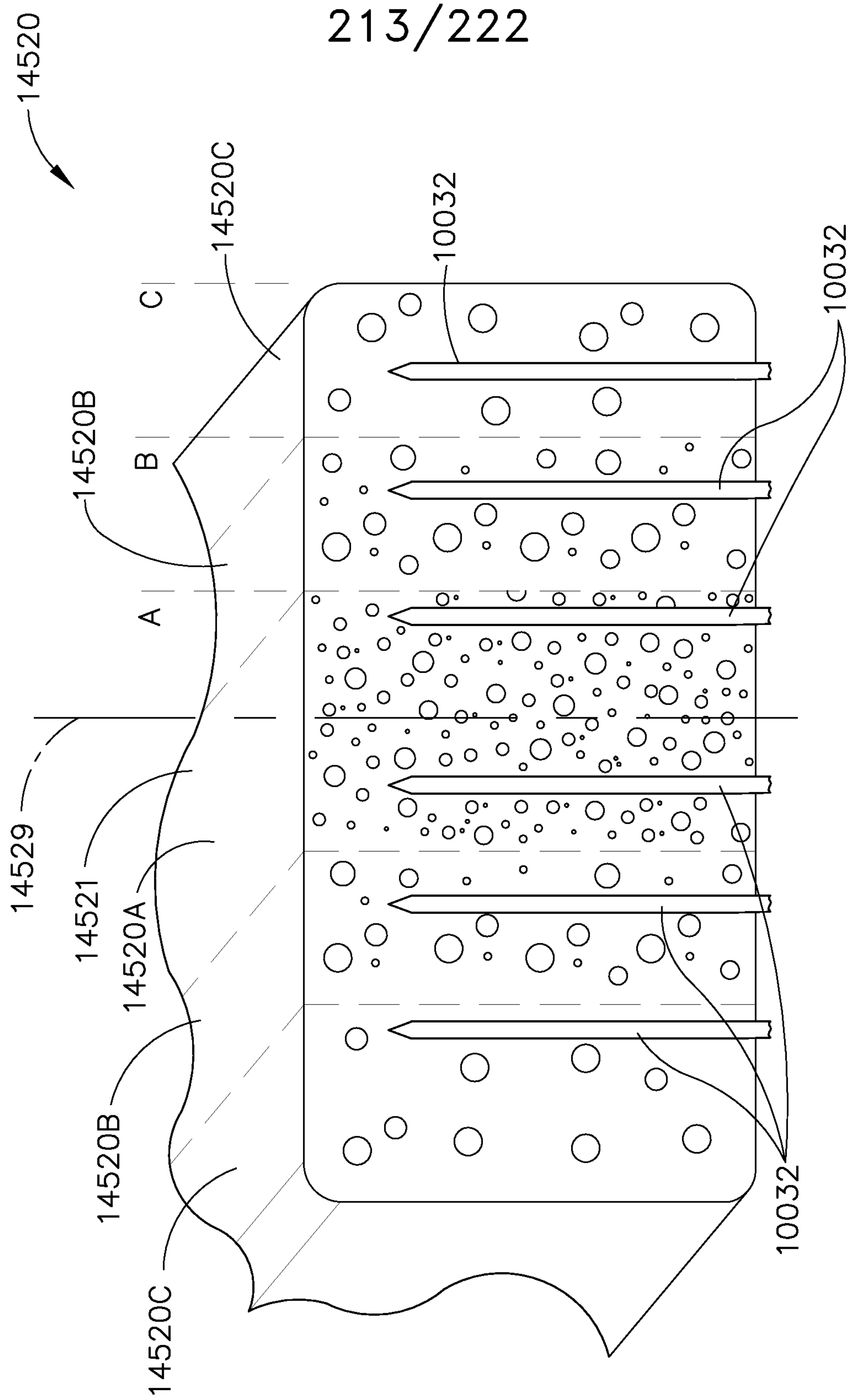


FIG. 368

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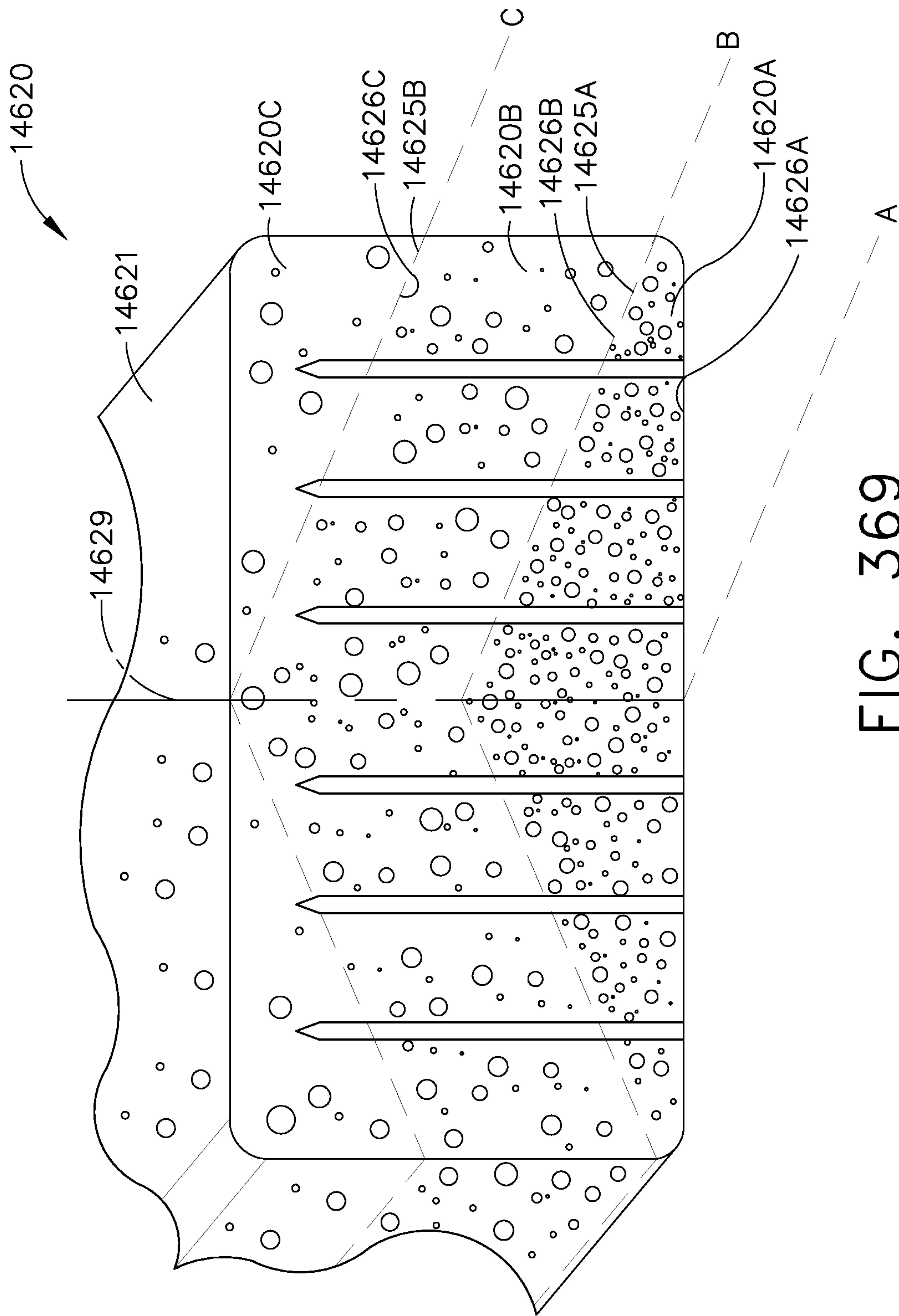


FIG. 369

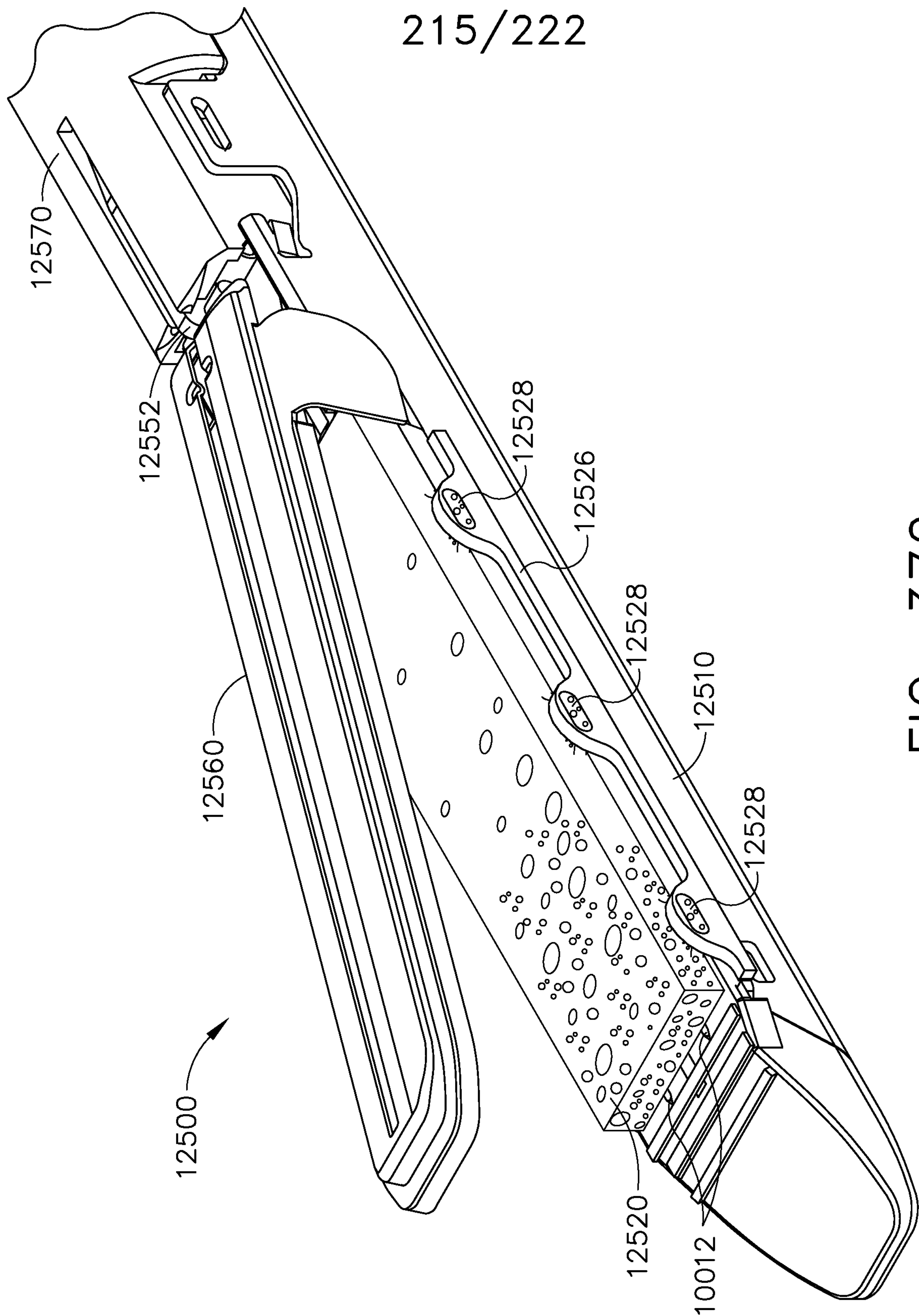


FIG. 370

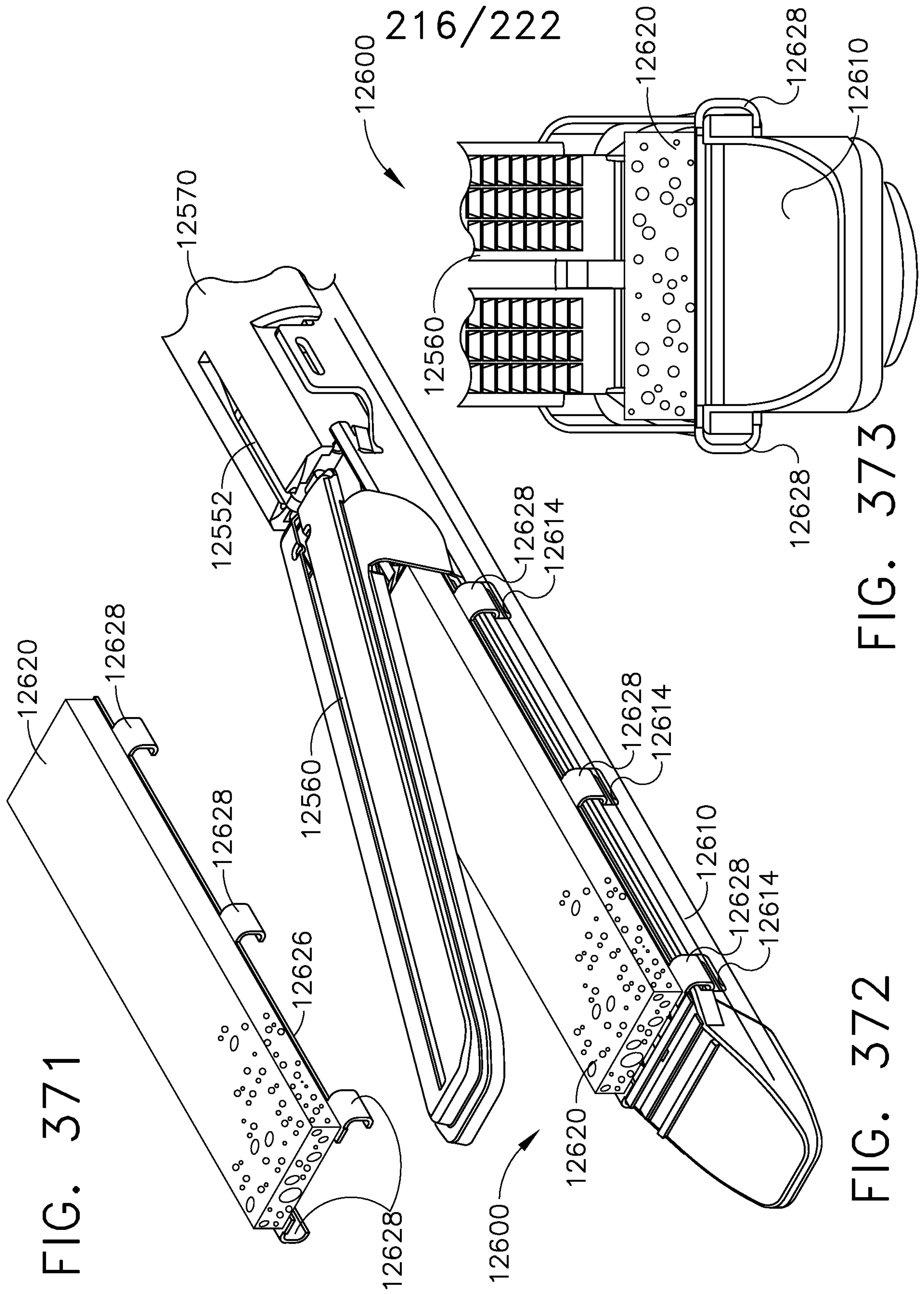
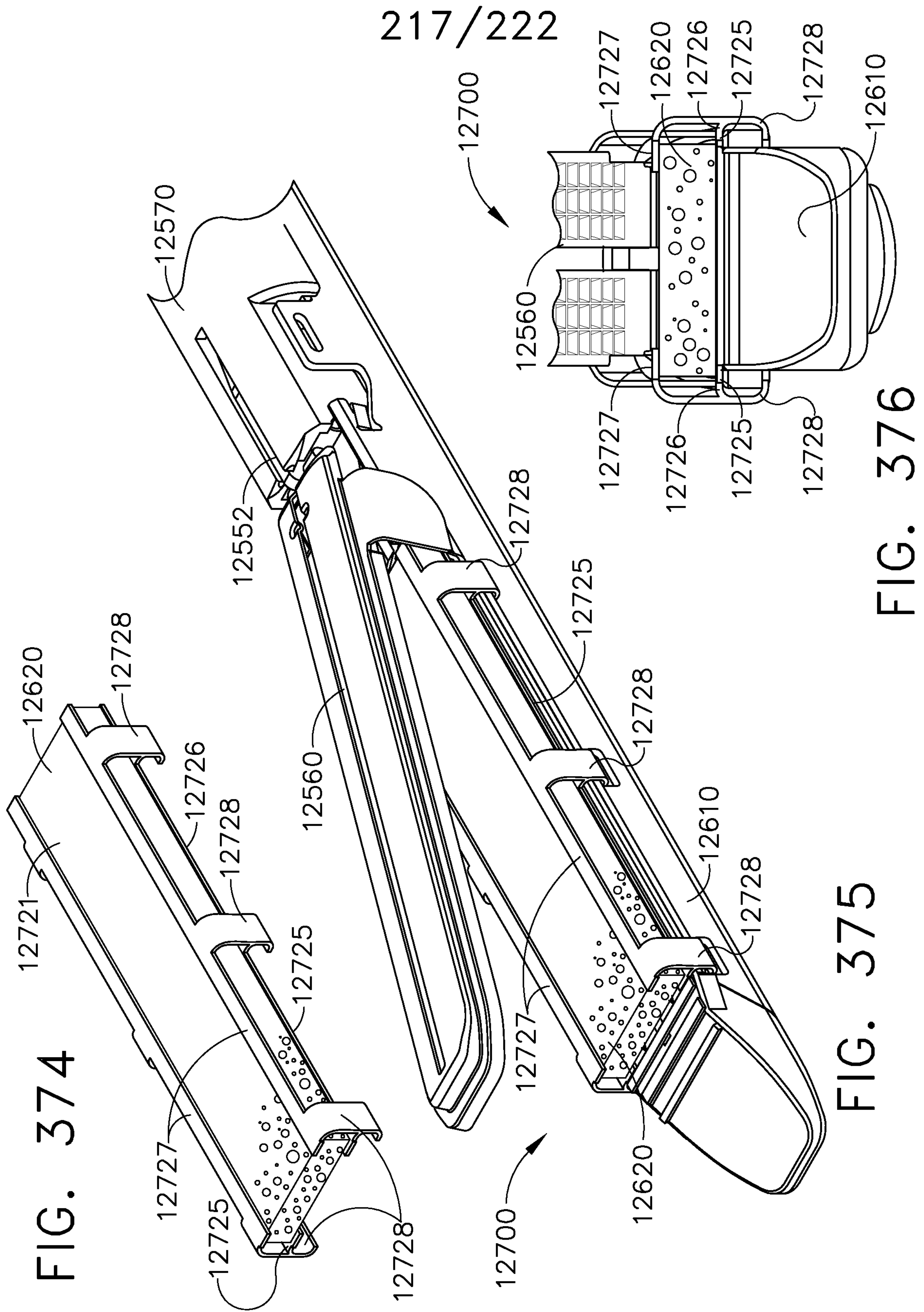
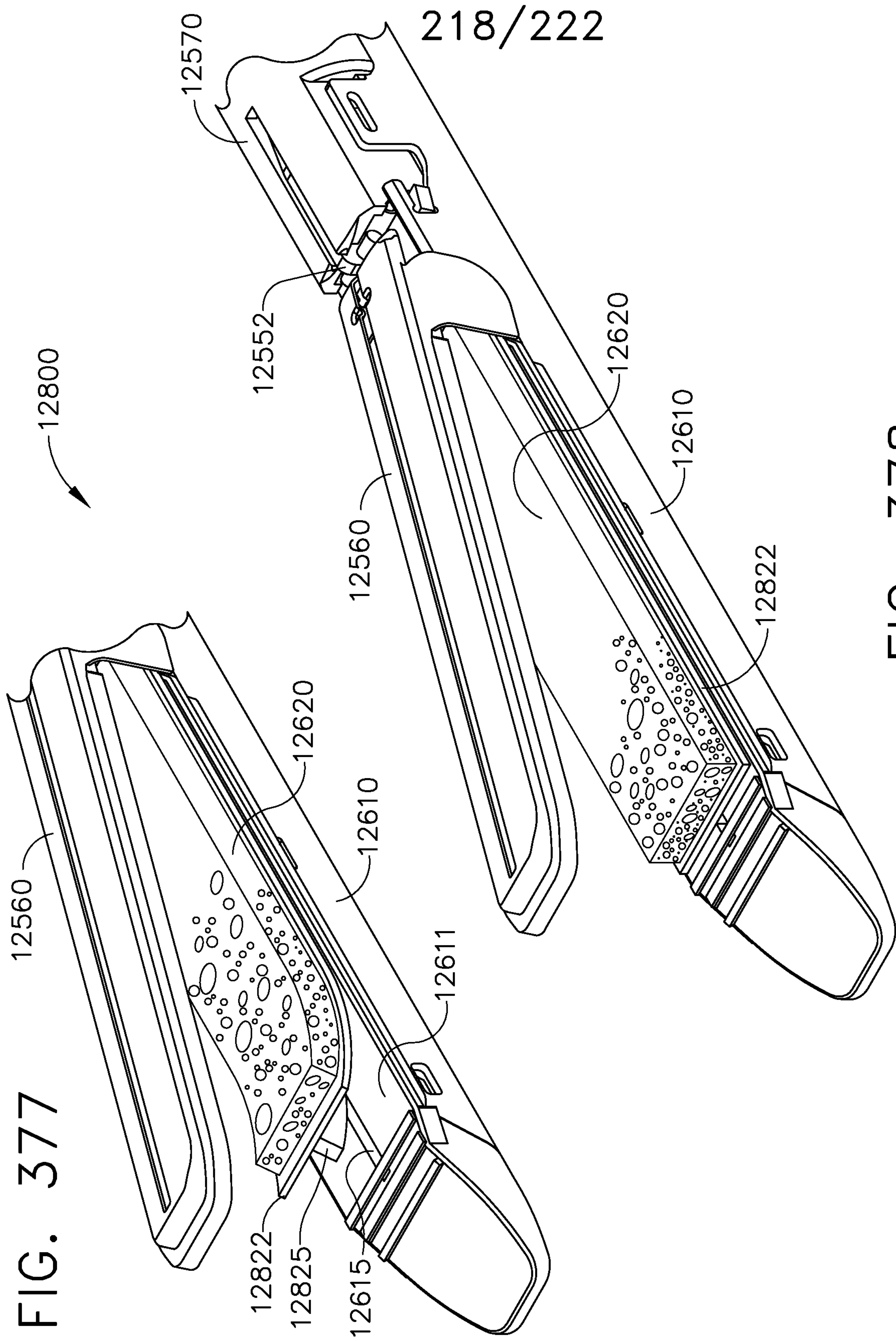


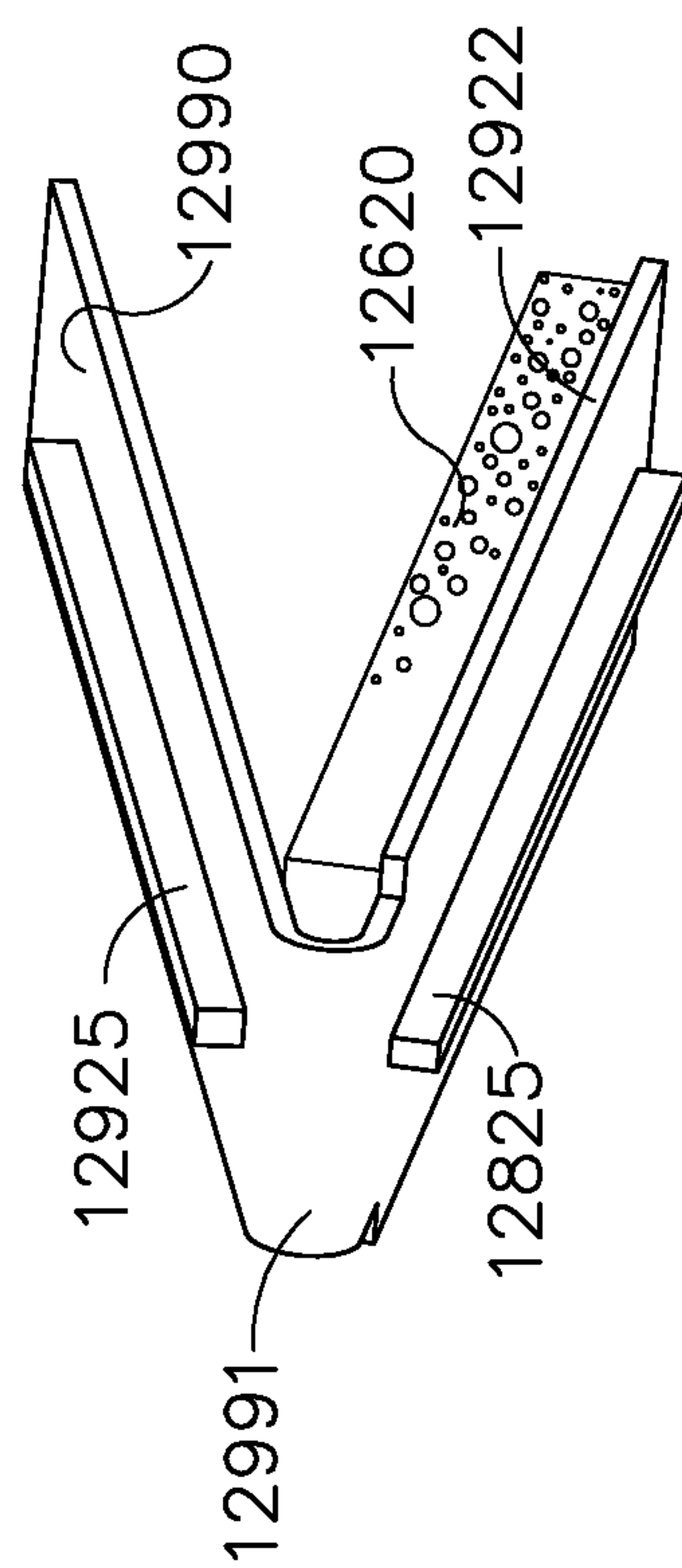
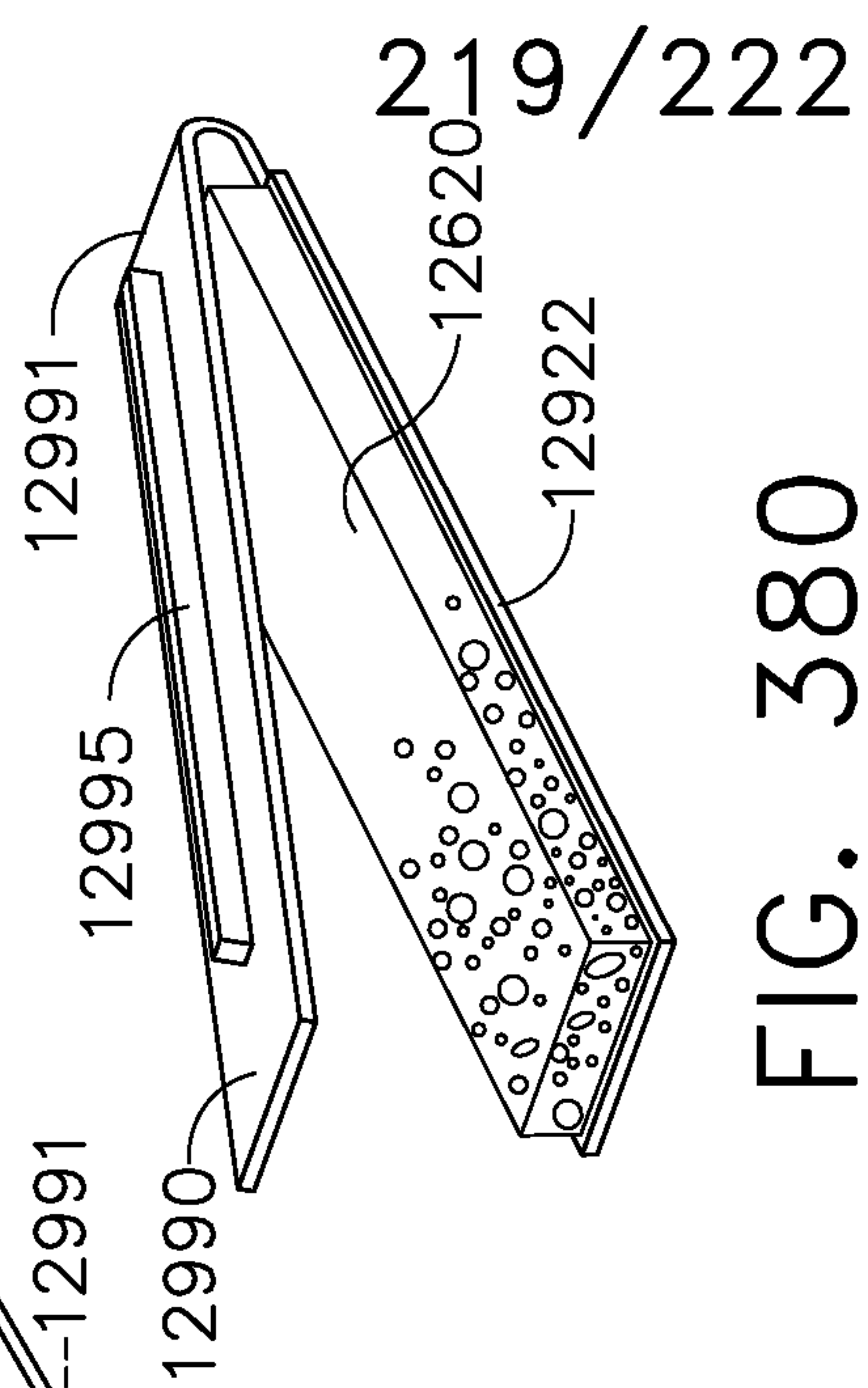
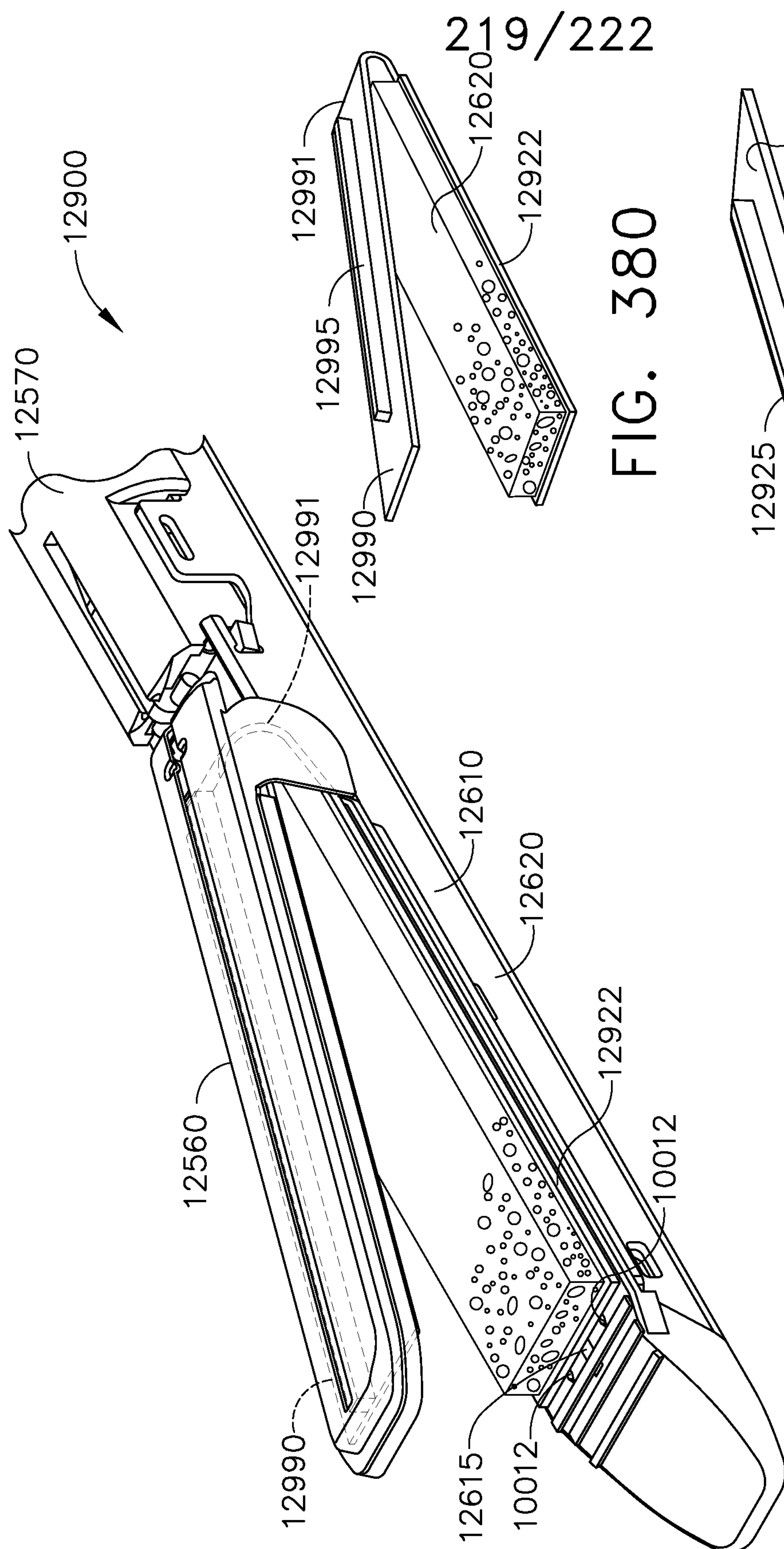
FIG. 371

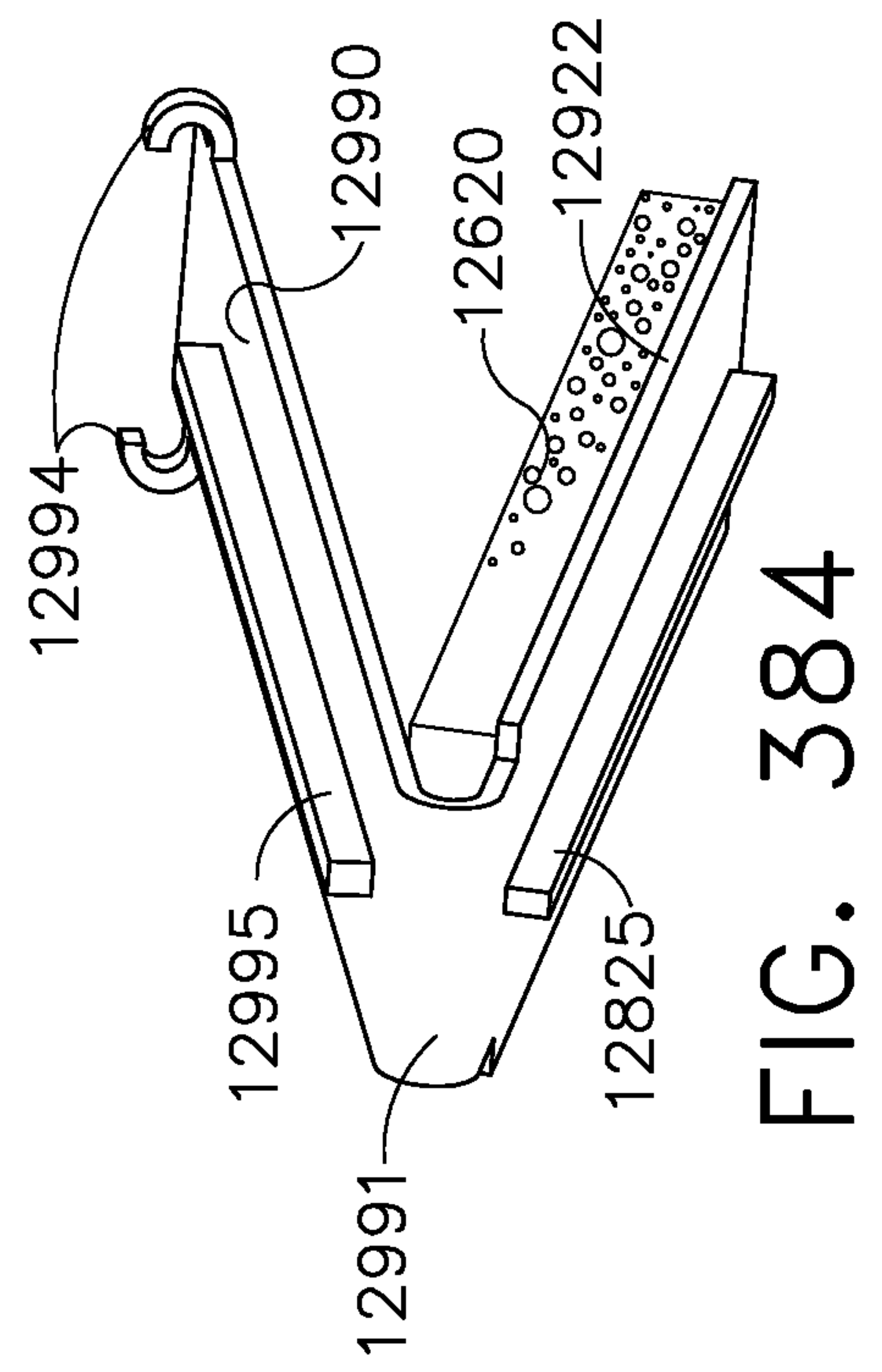
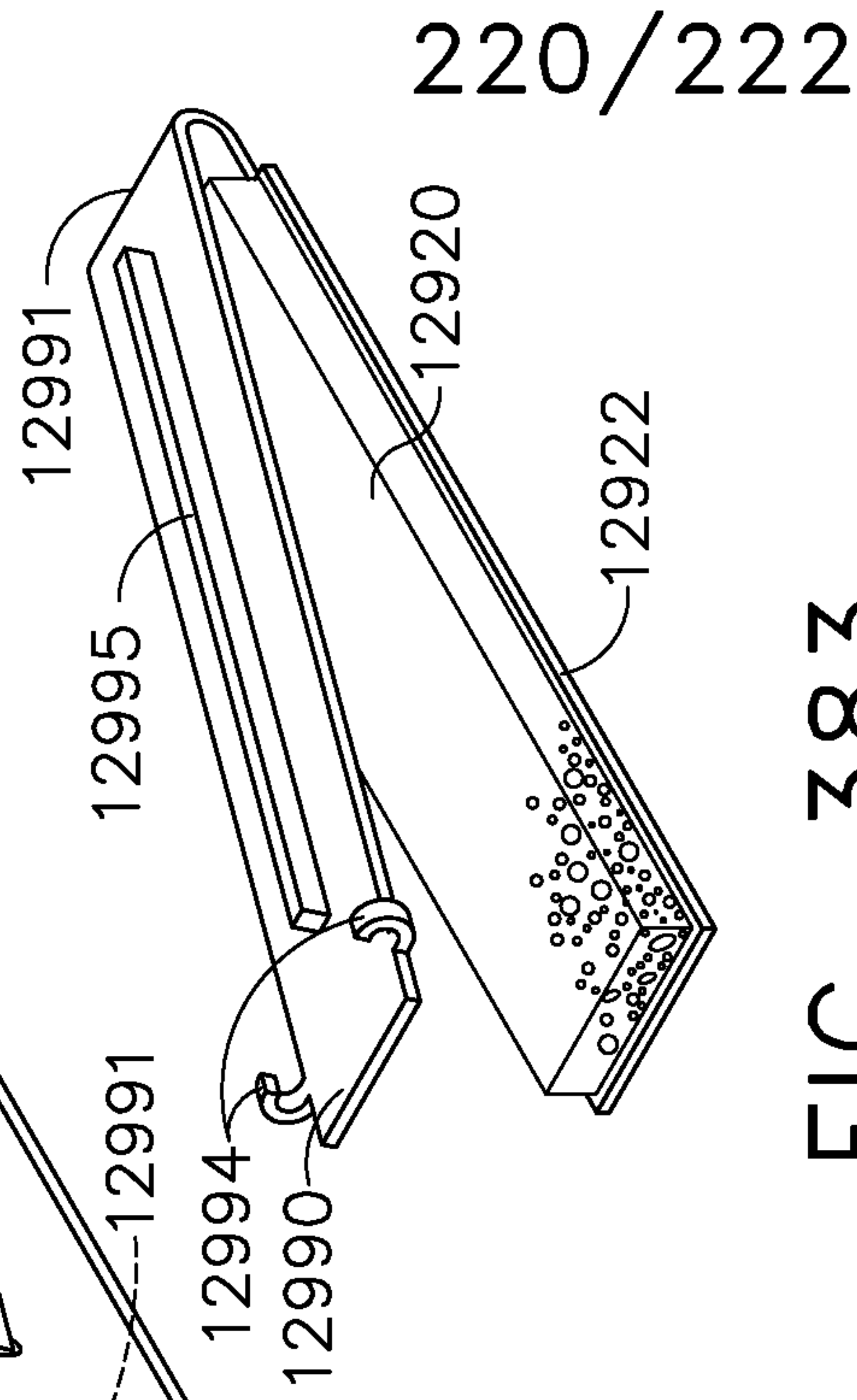
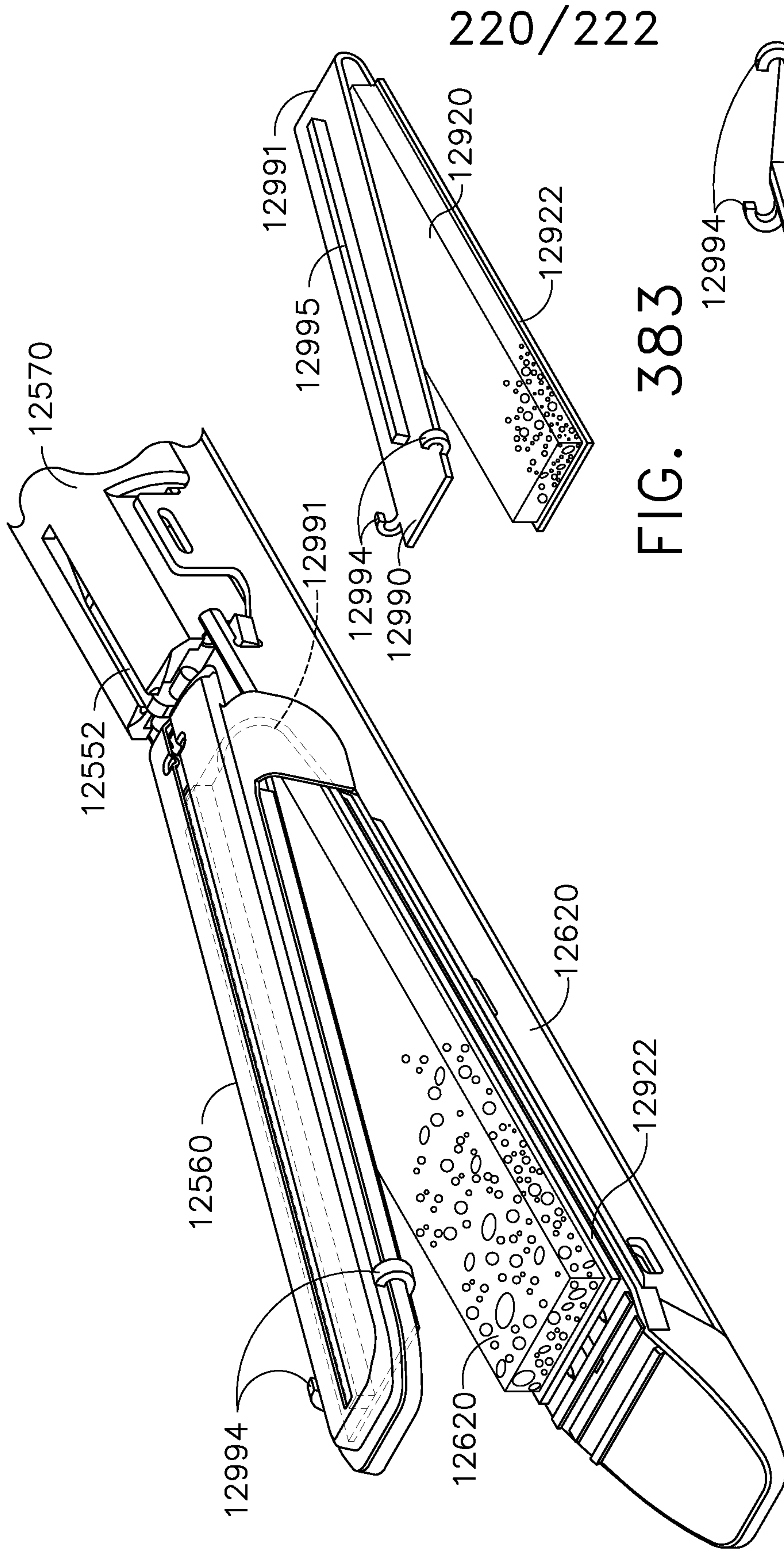
FIG. 372

FIG. 373



**FIG. 378**





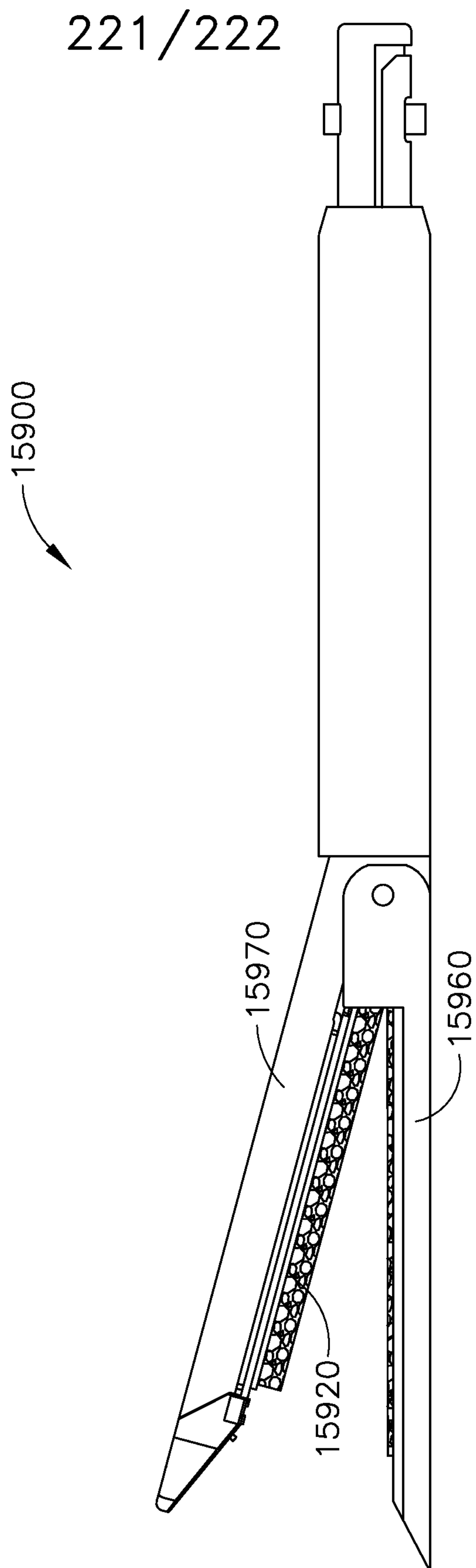


FIG. 385

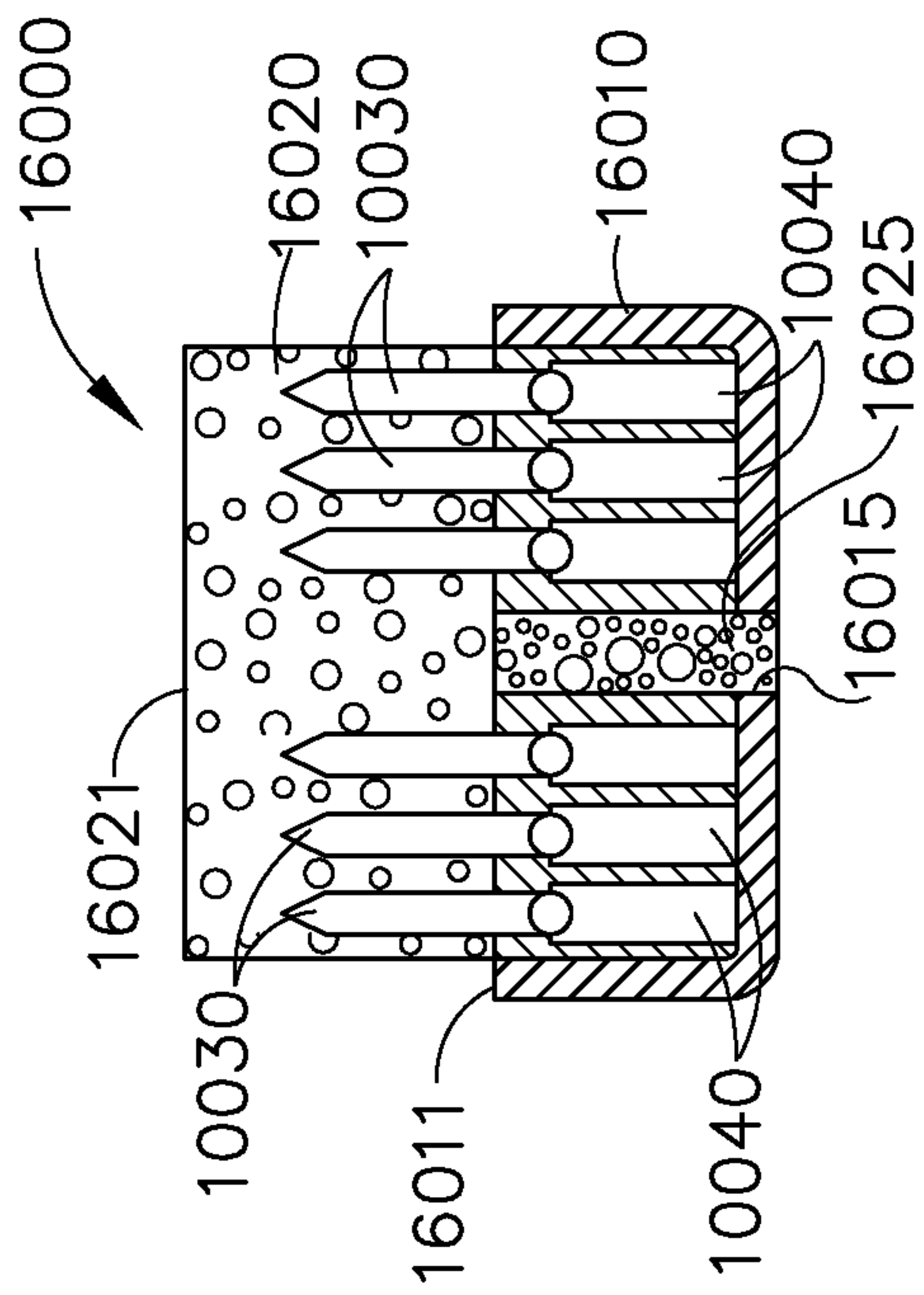


FIG. 386

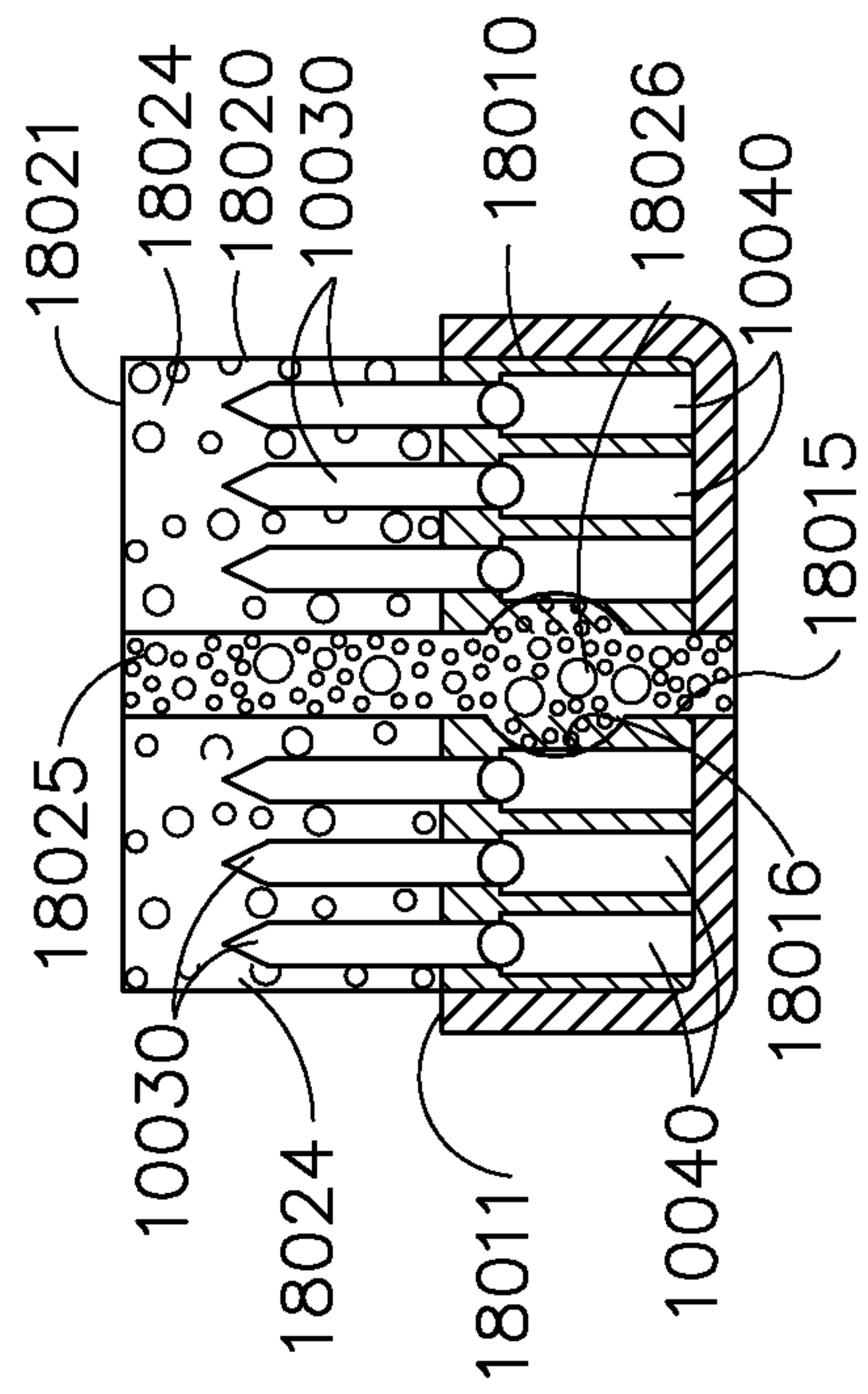


FIG. 388

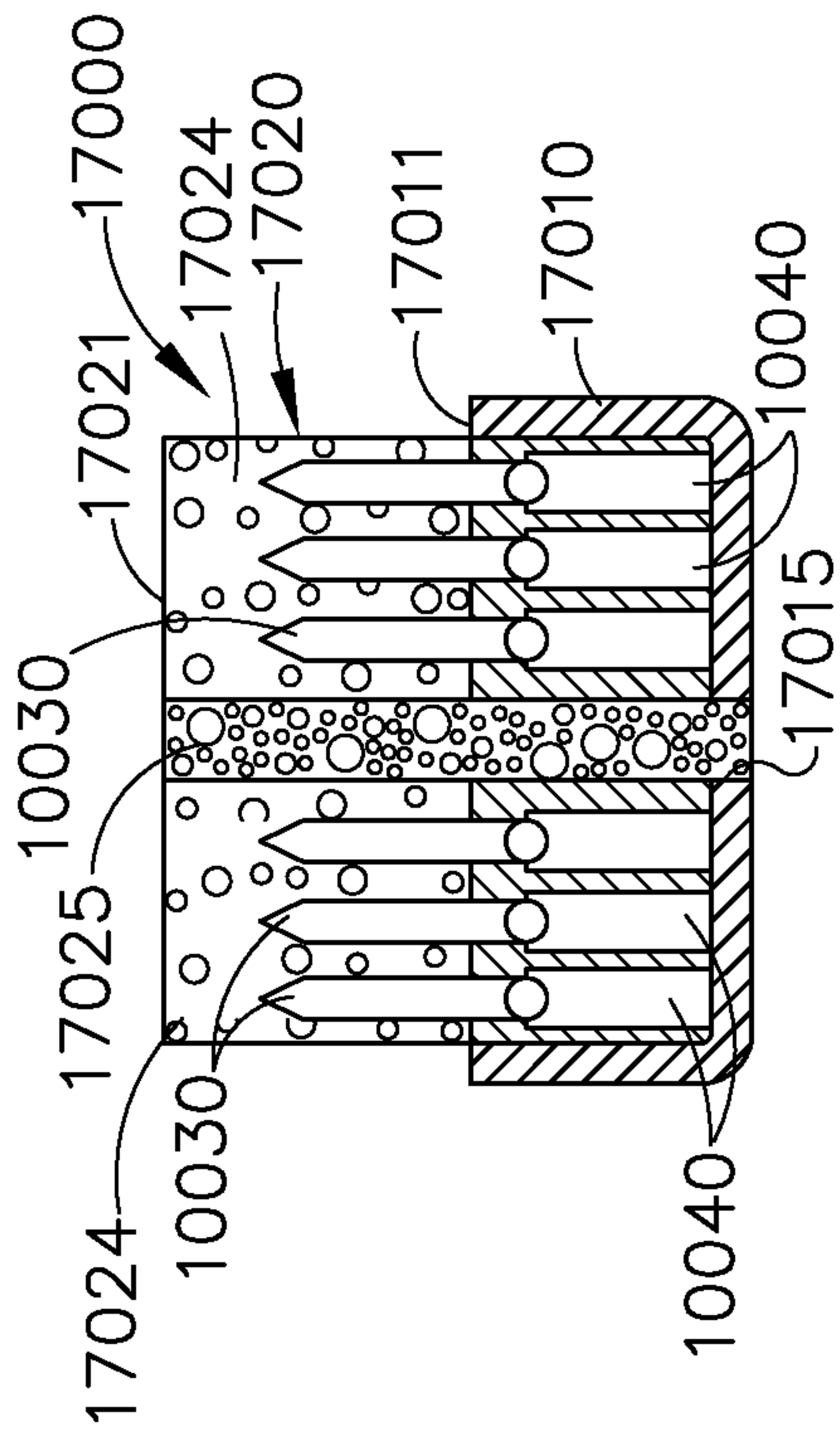


FIG. 387

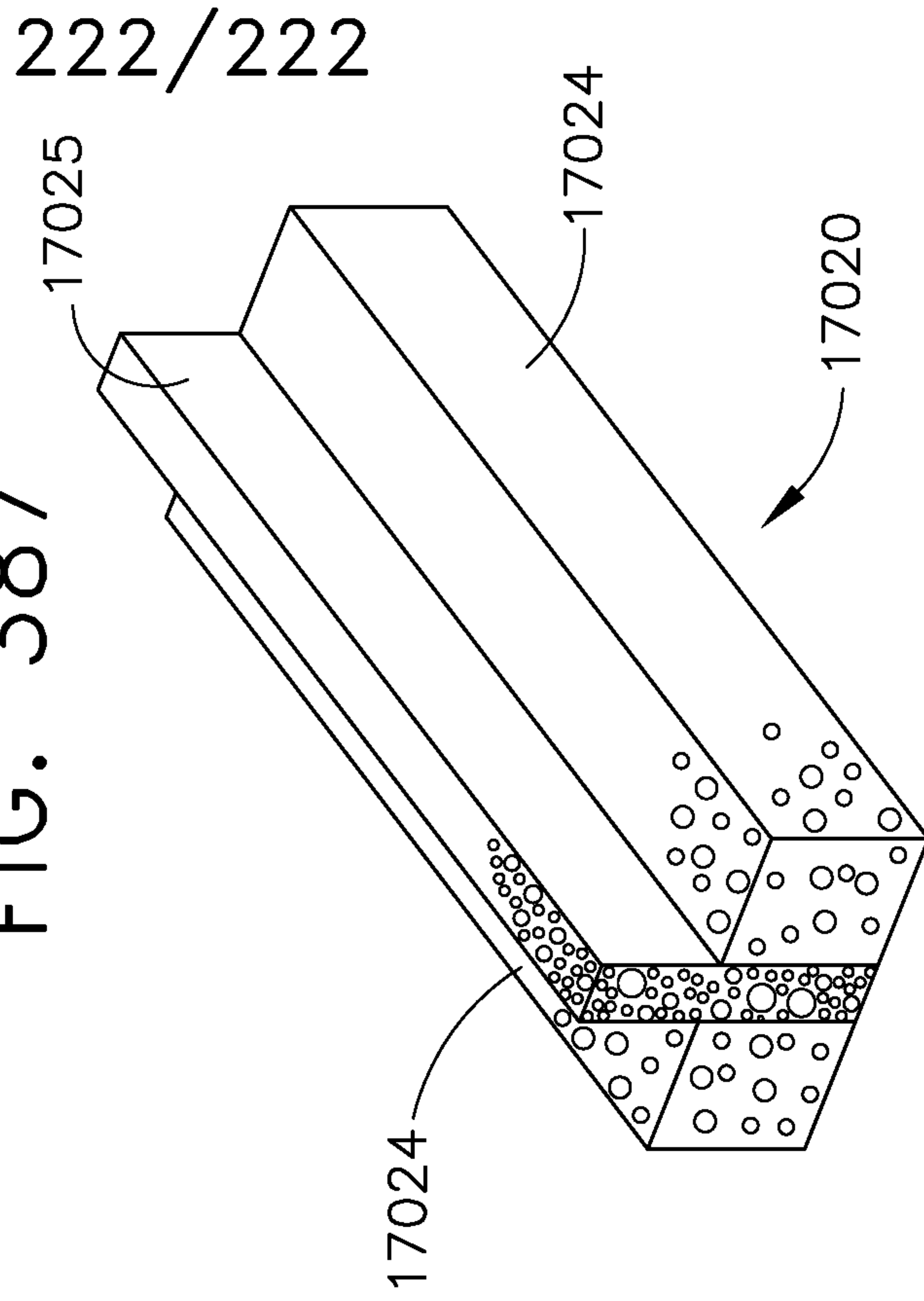


FIG. 389

