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(71) Applicant (for all designated States except US): **EMERSON CLIMATE TECHNOLOGIES, INC.** [US/US]; 1675 W. Campbell Road, Sidney, Ohio 45365-0669 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **TESCH, Todd E.** [US/US]; 434 South Hyatt Street, Tipp City, Ohio 45371 (US). **REYNOLDS, Charles, E.** [US/US]; 6216 Whitehill Drive, Mechanicsburg, Pennsylvania 17050 (US).

(74) Agents: **MALINZAK, Michael** et al.; Harness, Dickey & Pierce, P.L.C., P.O. Box 828, Bloomfield Hills, Michigan 48303 (US).

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(54) Title: COMPRESSOR HAVING WIRE RETAINER

(57) Abstract: A compressor comprising a shell, a compression mechanism disposed within the shell, a drive shaft for operating the compression mechanism, and a motor for driving the drive shaft. A terminal is secured to the shell for delivering electric current to at least one of the compression mechanism and the motor. A terminal block is engaged with the terminal, and a wire carries the electric current from the terminal and the terminal block. A wire retainer located relative to the compression mechanism supports the wire in a predetermined orientation within the shell.



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COMPRESSOR HAVING WIRE RETAINER

FIELD

5 **[0001]** The present disclosure relates to compressors, and more specifically to wire routing within compressors.

BACKGROUND

[0002] The statements in this section merely provide background information related to the present disclosure and may not constitute prior art.

10 **[0003]** Compressors may require electric current to operate. Wires may be used to carry the electric current from an external power source to various devices located within the compressor.

SUMMARY

15 **[0004]** The present disclosure provides a compressor comprising a shell including an aperture, a compression mechanism disposed within the shell, a hermetic terminal assembly having at least one terminal extending through the aperture, and a plug engaged with the at least one terminal. A component is disposed in the shell that receives an electric current, and a wire carries the electric current from the plug to the component. A wire retainer including a mounting portion secures the wire retainer within the shell and a guide portion connected to the mounting portion secures the wire in a predetermined orientation.

25 **[0005]** The wire retainer may be mounted between the hermetic terminal assembly and the plug.

[0006] The wire retainer may secure the plug to the hermetic terminal assembly.

[0007] The guide portion may define a channel and the wire may be disposed within the channel.

30 **[0008]** The guide portion may extend from the mounting portion at an end of the mounting portion that is located in a direction of the component.

[0009] The component may be a capacity modulation system.

[0010] The compression mechanism may include an orbiting scroll member and a non-orbiting scroll member, and the wire retainer may be secured to the non-orbiting scroll member.

5 **[0011]** The guide portion may include at least one notch for securing the wire.

[0012] The guide portion may include a plurality of sections that are coupled by hinges and movable relative each other.

10 **[0013]** The present disclosure also provides a compressor comprising a shell including an aperture, a compression mechanism disposed within the shell, and a hermetic terminal assembly including at least one terminal passing through the aperture for supplying electric current to a component located within the shell. A plug engages with the at least one terminal, and at least one wire extends from the plug. A wire retainer assembly including a mounting portion secures the wire retainer to the compression mechanism and a guide portion
15 secures the wire in a predetermined orientation relative the compression mechanism.

[0014] The compression mechanism may include an orbiting scroll member and a non-orbiting scroll member, and the mounting portion may be secured to the non-orbiting scroll member.

20 **[0015]** A capacity modulation system may receive an electric current carried by the wire.

[0016] The present disclosure also provides a manufacturing method, comprising providing a shell including an aperture, disposing a compression mechanism within the shell, mounting a hermetic terminal assembly having at
25 least one terminal through the aperture, and engaging a plug with the at least one terminal. The method also includes connecting a wire that carries the electric current from the plug to a component within the shell, routing the wire through a wire retainer including a guide portion located proximate the plug and the shell to the component, and directing the wire in a predetermined orientation
30 with the guide portion.

[0017] The wire retainer may secure the plug to the terminal assembly.

[0018] The compression mechanism may include an orbiting scroll member and a non-orbiting scroll member, and the wire retainer may be secured to the non-orbiting scroll member.

5 **[0019]** The guide portion may include a plurality of sections that are coupled by hinges and movable relative each other.

[0020] The method may also include welding an end cap to the shell and protecting the wire with the wire retainer such that when the end cap is welded to the shell, the wire is shielded from heat generated during welding.

10 **[0021]** The present disclosure also provides a compressor comprising a cylindrical shell including an aperture, a hermetic terminal assembly including at least one terminal passing through the aperture for supplying electric current to a component located within the shell, a plug engaged with the at least one terminal, and at least one wire extending from the plug. A wire retainer assembly includes a mounting portion that secures the wire retainer to the plug
15 and a guide portion that directs the wire in a direction from the aperture to the component.

[0022] The wire retainer may be mounted between the hermetic terminal assembly and the plug.

20 **[0023]** The wire retainer may secure the plug to the hermetic terminal assembly.

[0024] The guide portion may define a channel and the wire may be disposed within the channel.

[0025] The guide portion may extend from the mounting portion at an end of the mounting portion that is located in a direction of the component.

25 **[0026]** The component may be a capacity modulation system.

[0027] The guide portion may include at least one notch for securing the wire.

[0028] The guide portion may include a plurality of sections that are coupled by hinges and movable relative each other.

30 **[0029]** Further areas of applicability will become apparent from the description provided herein. It should be understood that the description and

specific examples are intended for purposes of illustration only and are not intended to limit the scope of the present disclosure.

DRAWINGS

5 **[0030]** The drawings described herein are for illustration purposes only and are not intended to limit the scope of the present disclosure in any way.

[0031] Figure 1 is a cross-sectional view of a compressor according to the present disclosure;

[0032] Figure 2 is a perspective view of a capacity modulation and wire
10 retaining system that may be used in a compressor;

[0033] Figure 3 is an exploded perspective view of a wire retaining system according to the present disclosure in an uninstalled state relative to a hermetic terminal;

[0034] Figure 4 is perspective view of a wire retaining system
15 according to the present disclosure in an installed state relative to a hermetic terminal;

[0035] Figures 5A and 5B are a front and rear perspective view, respectively, of a wire retaining system according to the present disclosure;

[0036] Figures 5A' and 5B' are a front and rear perspective view,
20 respectively, of a wire retainer illustrated in Figures 3 and 4;

[0037] Figure 6 is perspective view of a wire retainer according to the present disclosure;

[0038] Figure 7 is a perspective view of a wire retainer illustrated in Figure 6 in an installed state relative to a hermetic terminal;

25 **[0039]** Figure 8 is perspective view of a wire retainer according to the present disclosure;

[0040] Figure 9 is perspective view of a wire retainer according to the present disclosure;

[0041] Figure 10 is perspective view of a wire retainer according to the
30 present disclosure;

[0042] Figure 11 is perspective view of a wire retainer according to the present disclosure;

[0043] Figure 12 is a perspective view of a wire retainer illustrated in Figure 11 in an installed state;

[0044] Figure 13 is perspective view of a wire retainer according to the present disclosure; and

5 **[0045]** Figure 14 is a perspective view of a wire retainer illustrated in Figure 13 in an installed state.

DETAILED DESCRIPTION

[0046] The following description is merely exemplary in nature and is
10 not intended to limit the present disclosure, application, or uses. It should be understood that throughout the drawings, corresponding reference numerals indicate like or corresponding parts and features.

[0047] Figure 1 illustrates an exemplary compressor 10. Compressor 10 includes a cylindrical hermetic shell 14 that houses a compression
15 mechanism 16 that may be supported by a main bearing housing 18 and driven by a motor assembly 20. Main bearing housing 18 may be affixed to shell 14 in any desirable manner.

[0048] Compressor 10 also includes refrigerant discharge fitting 22, a suction gas inlet fitting 24, a capacity modulation system 26 (see Figure 2), an
20 electrical assembly 28, and a wire assembly 30. Shell 14 may be enclosed by an upper end cap 32 and a lower end cap or base 33. Upper end cap 32 and a transversely extending partition 34 form a discharge chamber 35 where refrigerant discharge fitting 22 is attached to upper end cap 32 at an opening 36.

[0049] Motor assembly 20 generally includes a stator 44 and a rotor 46
25 that rotate a drive shaft 42. Stator 44 includes windings 48 and may be press fit into a frame 40, which may in turn be press fit into shell 14. Rotor 46 may be press fit on drive shaft 42. Rotor 46 includes counter-weights 56 and 70 at an upper and lower end 58 and 72, respectively.

[0050] Drive shaft 42 includes an eccentric crank pin 52 having a flat
30 54 thereon. Drive shaft 42 includes a first journal portion 60 rotatably journaled in a first bearing 62 in main bearing housing 18 and a second journal portion 64 rotatably journaled in a second bearing housing 66. Drive shaft 42 may include

an oil-pumping concentric bore 68 that communicates with a radially outwardly inclined and relatively smaller diameter bore 74 extending to the upper end 58 of drive shaft 42. The lower interior portion 59 of shell 14 may be filled with lubricating oil. Concentric bore 68 may provide a pump action in conjunction
5 with bore 74 to distribute lubricating fluid to various portions of compressor 10.

[0051] Compression mechanism 16 may include an orbiting scroll 76 and a non-orbiting scroll 78. Orbiting scroll member 76 includes an end plate 82 having a spiral vane or wrap 84 on an upper surface thereof and an annular flat thrust surface 86 on a lower surface thereof. Thrust surface 86 interfaces with
10 an annular flat thrust bearing surface 88 on an upper surface of main bearing housing 18. A cylindrical hub 90 projects downwardly from thrust surface 86 and may include a journal bearing 92 having a drive bushing 94 rotatively disposed therein. Drive bushing 94 includes an inner bore in which crank pin 52 is drivingly disposed. Crank pin flat 54 drivingly engages a flat surface in a portion
15 of the inner bore of drive bushing 94 to provide a radially compliant driving arrangement.

[0052] Non-orbiting scroll member 78 may include a bolt 80 and an end plate 96 having a spiral wrap 98 on lower surface 100 thereof. Spiral wrap 98 forms a meshing engagement with spiral wrap 84 of orbiting scroll member
20 76, thereby creating an inlet pocket 102, intermediate pockets 104, 106, 108, 110 and outlet pocket 112. Non-orbiting scroll 78 has a centrally disposed discharge passageway 114 in communication with outlet pocket 112 and upwardly open recess 116 which may be in fluid communication with discharge chamber 35 via an opening 120 in partition 34.

[0053] Non-orbiting scroll member 78 may include an annular recess 122 in the upper surface thereof having parallel coaxial side walls in which an annular floating seal 124 is sealingly disposed for relative axial movement. The bottom of recess 122 may be isolated from the presence of gas under suction and discharge pressure by floating seal 124 so that it can be placed in fluid
30 communication with a source of intermediate fluid pressure by means of a passageway 126. Passageway 126 may extend into an intermediate pocket 104, 106, 108, 110. Non-orbiting scroll member 78 may therefore be axially

biased against orbiting scroll member 76 by the forces created by discharge pressure acting on the central portion of scroll member 78 and those created by intermediate fluid pressure acting on the bottom of recess 122. Various additional techniques for supporting scroll member 78 for limited axial movement
5 may also be incorporated in compressor 10. Relative rotation of the scroll members 76, 78 may be prevented by an Oldham coupling 128.

[0054] As illustrated in Figure 2, capacity modulation system 26 is coupled to non-orbiting scroll member 78. Capacity modulation system 26 includes a modulation ring 136, an actuation mechanism 138, and a wire
10 assembly 30. Modulation ring 136 may include a generally annular body 137 that is rotatably disposed around exterior sidewall 139 of non-orbiting scroll member 78 for selectively venting one or more of intermediate fluid pockets 104, 106, 108, 110 through vents 141 (see Figure 1) formed in non-orbiting scroll member 78. Actuation mechanism 138 may be formed by a solenoid having an
15 extendable and retractable arm 140 coupled to modulation ring 136 to rotate modulation ring 136 to various positions. Upon rotation of modulation ring 136 by actuation mechanism 136, vents 141 are opened to provide fluid communication therethrough. In this manner, capacity of compressor 10 may be modulated.

[0055] Actuation mechanism 138 may be electrically coupled to
20 electrical assembly 28 by wire assembly 30. Shown in Figure 3, wire assembly 30 may include a plug or cluster block 146 and wire retainer 200' that assist in providing electric current to actuation mechanism 138. In Figures 3 and 4, electrical assembly 28 may include a hermetic terminal assembly 144 and
25 cluster block 146. Hermetic terminal assembly 144 may be fixed to an aperture 143 formed in shell 14 and include a plurality of terminals 148 that provide electrical communication between a power source (not shown) external to shell 14 and an interior of shell 14.

[0056] Cluster block 146 includes a cluster body 150 including
30 cylindrical extensions 152 that extend from body 150. Cluster block 146 may couple to electrical terminal 144 and be fixed relative shell 14. Cylindrical

extensions 152 of body 150 provide a mating receptacle for terminals 148 of electrical terminal 144 to provide electrical communication to wire assembly 30.

[0057] Figures 5A, 5B, 5A', and 5B' illustrate exemplary configurations of a wire retainer 200 and wire retainer 200'. First referring to Figures 5A and 5B, wire retainer 200 may be formed of a material such as nylon and include a mounting portion 202 and a guide portion 204. Mounting portion 202 may be formed of a plate 206 and first, second, and third walls 208, 210, and 212. Plate 206 may include an aperture 216 that accommodates cylindrical extensions 152 of cluster block 146. A plurality of fastening mechanisms 214 having a tab 215 at an end thereof extend from plate 206. Fastening mechanisms 214 secure cluster block 146 to retainer 200. Guide portion 204 extends from plate 206 and may include an arm 218, a tower 220, retaining features 222, and a spacing member 224. Arm 218 may be a U-shaped channel 226 formed by a first, second, and third sides 227, 228, and 229. Tower 220 may be formed at an end of arm 218, and may also be formed by a U-shaped channel.

[0058] Although guide portion 204 is illustrated in Figures 5A and 5B as being disposed at an end of mounting portion 202 that is opposite aperture 216, the present disclosure should not be limited thereto. For example, referring to Figures 5A' and 5B', wire retainer 200' may include a guide portion 204 that is disposed at an end of mounting portion 202 that includes aperture 216. Moreover, plate 206 of mounting portion 202 does not necessarily require a wall (e.g., 208, 210, and 212) be formed around a perimeter of plate 206.

[0059] Referring again to Figure 4, cluster block 146 may be coupled by retainer 200' by fastening mechanisms 214 and attached to hermetic terminal 144 such that wire retainer 200' may be secured between cluster block 146 and hermetic terminal 144. Fastening mechanisms 214 may be formed at any position around plate 206, as may be seen in Figures 3, 4, 5A, 5B, 5A', and 5B', without departing from the spirit and scope of the present disclosure. Cluster block 146 may also include a guide member 153 that mates with a guide receptacle 155 formed in plate 206. Guide member 153 may include a contoured surface 157 that coordinates with a reciprocal surface 159 of guide receptacle 155. Use of fastening mechanisms 214 and guide member 153

assist in ensuring that retainers 200 and 200' remains securely coupled to cluster block 146 during operation of compressor 10.

[0060] Wire retainers 200 and 200' may generally route and protect wires 232 in communication with cluster block 146 through channel 226 by
5 locating the wires in a predetermined orientation. Retaining features 222 that extend inwardly from sides 227, 229 in U-shaped channel 226 keep wires within channel 226. Spacing member 224 may extend from arm 218 to distance arm 218 from nearby objects such as, for example, shell 14. Wire retainers 200 and 200' may be located radially outward relative to orbiting scroll member 76 and
10 Oldham coupling 128 so that wires in wire retainer 200 and 200' are protected from orbiting scroll member 76, non-orbiting scroll member 78, and Oldham coupling 128 during operation of compressor 10. Wire retainers 200 and 200' may also shield and protect wire within channel 226 from heat produced during welding operations. For example, when end cap 32 and partition 34 are welded
15 to shell 14.

[0061] In addition to channel 226, wire retainer 200' illustrated in Figures 5A' and 5B' may also include an auxiliary channel 230. Auxiliary channel 230 assists in routing wires 232 of cluster block 146 that protrude from cluster block 146 in a direction opposite to a direction in which the wires 232 are
20 to be directed within shell 14. That is, referring to Figure 4, when cluster block 146 is mounted to wire retainer 200', wires 232 of cluster block 146 protrude from cluster block 146 in a direction towards the right in the figure. Because wires 232 may need to be routed to a component within compressor 10 that is located in a direction opposite to the direction in which wires 232 extend from
25 cluster block 146, wires 232 may be routed through channel 230 and up into channel 226. Wires 232 may then be routed from tower 220 to the component that may require electric current (e.g., actuation mechanism 138).

[0062] In contrast to wire retainer 200', wire retainer 200 illustrated in Figures 5A and 5B may be used when wires 232 are to be routed in a direction
30 that is the same as the direction in which wires 232 extend from cluster block 146. In this regard, if wires 232 extend from cluster block 146 to the right like that shown in Figure 4, wires 232 may simply be routed from cluster block 146

up channel 226 of wire retainer 200 and out from tower 220 to the component that may require electric current. In this regard, components that may require electric current other than actuation mechanism 138 include motor assembly 20 and various sensors (not shown) that provide diagnostic information. For
5 example, sensors may provide diagnostics related to compressor mechanical failures, motor failures, and electrical component failures such as missing phase, reverse phase, motor winding current imbalance, open circuit, low voltage, locked rotor currents, excessive motor winding temperature, welded or open contactors, and short cycling. The sensors may also monitor compressor current
10 and voltage to determine, and differentiate between, mechanical failures, motor failures, and electrical component failures. In addition, the sensors may monitor parameters such as discharge temperature, suction and discharge pressure, oil levels, vibration, capacity control, oil injection, and liquid injection.

[0063] Selection of wire retainer 200 and 200', therefore, may be
15 based on a configuration of the components within compressor 10 that may require electric current. In this manner, a length of wires 232 may be kept to a minimum depending on which wire retainer 200 or 200' is selected.

[0064] Now referring to Figures 6-10, alternate configurations of a wire retainer are described. Referring to Figures 6 and 7, a wire retainer 600 includes
20 a mounting portion 602 and an guide portion 604. Similar to wire retainer 200 described above, mounting portion 602 may generally be in the form of a plate 606 with a plurality of apertures 608 that accommodate cylindrical extensions 152 of cluster block 146, and a guide receptacle 655 for accommodating guide member 153. Apertures 608 may have securing features 609 that assist in
25 securing cylindrical extensions 152 of cluster block 146 to mounting portion 602. Guide portion 604 may include an arm 610 having a plurality of notches 628 formed in edges 612, 614, and 616 thereof. Notches 628 may include recesses 630 that assist in retaining a wire in notches 628.

[0065] Wire retainer 600 may be secured between cluster block 146
30 and hermetic terminal 144, relative to shell 14, and fixed radially outward from scroll members 76, 78 and Oldham coupling 128. Wire retainer 600 may route wires in communication with cluster block 146 by locating the wires in a

predetermined orientation to protect wires from orbiting scroll member 76 and Oldham coupling 128 during operation of compressor 10. Wire retainer 600 may also shield and protect wire from heat produced during welding operations.

[0066] Now referring to Figure 8, a wire retainer 800 that is similar to wire retainer 600 is illustrated, with the difference being that notches 828 are formed along substantially the entire length of guide portion 804. Further, although notches 828 are illustrated as not including recesses 630, it should be understood that notches 828 may be formed to include recesses 630 without departing from the spirit and scope of the present disclosure. Wire retainer 800 also differs from wire retainer 600 by inclusion of an tower 820. Similar to wire retainer 600, wire retainer 800 may include a mounting portion 802 in the form of a plate 806 with apertures 808 passing therethrough. Apertures 808 may have securing features 809 for receiving and securing cluster block 146.

[0067] Now referring to Figure 9, a wire retainer 900 having a mounting portion 902 in the form of a plate 906 with apertures 908 passing therethrough is illustrated. Similar to above configurations, apertures 908 may have securing features 909 for receiving and securing cluster block 146. Guide portion 904 may be formed by an arm 910 in the form of a U-shaped channel 926 formed by a first, second and third side 927, 928, and 929. Guide portion 904 may also include one or more stacked sections 932a, 932b, and 932c that may be coupled together by hinges 933 formed in one of the sides 927, 928, and 929. Through use of hinges 933, stacked sections 932a, 932b, and 932c are movable relative each other. In this regard, for example, stacked section 932b may move relative section 932a and stacked section 932c may move relative stacked section 932b.

[0068] Wire retainer 900 may be secured between cluster block 146 and electrical terminal 144, relative to shell 14, and fixed radially outward scroll members 76, 78 and Oldham coupling 128. Wire retainer 900 may generally route wire in communication with cluster block 146 by locating the wire in a predetermined orientation that may be changed by moving stacked sections 932a, 932b, and 932c relative each other. Further, because wire retainer 900 may be located radially outward orbiting scroll member 76 and Oldham coupling

128, wire retainer 900 assists in protecting wires from orbiting scroll member 76 and Oldham coupling 128 during operation of compressor 10, and shields and protects wires from heat that may be generated during welding operations.

5 **[0069]** Now referring to Figure 10, a wire retainer 1000 may include a mounting portion 1002 and a guide portion 1004. Mounting portion 1002 may include body 1006 and a protrusion 1034. Body 1006 may be shaped to receive cluster block 146. Guide portion 1004 may generally be an arm 1010 in the form of a U-shaped channel 1026 formed by a first, second and third side 1027, 1028, 1029. Protrusion 1034 may fit into a recess 535 of cluster block 146 (see Figure 3) to couple wire retainer 1000 to cluster block 146. Cluster block 146 may be located within mounting portion 1002 and fixed to electrical terminal 144.

10 **[0070]** Wire retainer 1000 may be secured about cluster block 146, relative to shell 14, and fixed radially outward scroll members 76, 78 and Oldham coupling 128. Wire retainer 1000 may generally route wire in communication with cluster block 146 through protective channel 1026 by locating the wire in a predetermined orientation. Wire retainer 1000 is located radially outward relative orbiting scroll member 76 and Oldham coupling 128. Wire in wire retainer 500 is protected from orbiting scroll member 76 and Oldham coupling 128 during operation of compressor 10. Wire retainer 1000 may also shield and protect wire within channel 1026 from heat produced by welding operations.

15 **[0071]** As seen in Figures 11 and 12, an alternative wire retainer 1100 may include a hollowed body 1136, a plurality of notches 1138, and a recess 1140. Hollowed body 1136 may generally be formed by sides 1142, 1144, 1146, 1148 and 1150 and may function similar to guide portion 204 of wire retainer 200 described above. Notches 1138 may be formed in sides 1146, 1148. Recess 1140 may be cylindrical and recede into side 1150 of hollowed body 1136 so that side 1150 may function similar to mounting portion 202 of wire retainer 200 described above. Recess 1140 may accommodate bolt 80 (see Figure 1) to thereby fix wire retainer 1100 to non-orbiting scroll 78 and radially outward relative orbiting scroll 76 and Oldham coupling 128. Wire retainer 1100 may generally route wire and clips 142, 143 through hollowed body 1136 by locating the wire in a predetermined orientation. Notches 1138 may hold wires in place

and prevent movement so that the wires are protected from orbiting scroll member 76 and Oldham coupling 128 during operation of compressor 10. Wire retainer 1100 may also shield and protect wire within hollowed body 1136 from heat that may be produced during welding operations.

5 **[0072]** Now to Figures 13 and 14, an alternative wire retainer 1300 may include a hollowed body 1336, notches 1338, arm extensions 1340 and cylindrical extension 1342. Hollowed body 1336 may generally be saddle-like and formed of sides 1344, 1346, 1348, 1350 and 1352 and may function similar to guide portion 204 of wire retainer 200 described above. Notches 1338 may be
10 formed in sides 1348, 1350. Cylindrical extension 1342 may extend from side 1352 of hollowed body 1336 so that side 1352 may function similar to mounting portion 202 of wire retainer 200 described above. Arm extensions 1340 may have a tab 1341 on one end thereof that fixes to an underside 79 of fixed scroll 78 to assist in securing wire retainer 1300 to fixed scroll member 78. Moreover,
15 extension 1342 may accommodate bolt 80 to secure wire retainer 1300 to non-orbiting scroll 78 and radially outward relative to orbiting scroll 76 and Oldham coupling 128. In this regard, arm extensions 1340 and tabs 1341 clipping about non-orbiting scroll 78 also assist in maintaining engagement between extension 1342 and bolt 80.

20 **[0073]** Wire retainer 1300 routes wire and clips 142, 143 through hollowed body 1336 by locating the wire in a predetermined orientation. Notches 1338 may hold wire in place and prevent movement. Because wire retainer 1300 is located radially outward relative orbiting scroll member 76 and Oldham coupling 128, the wires in wire retainer 1300 are protected from orbiting scroll
25 member 76 and Oldham coupling 128 during operation of compressor 10. Wire retainer 1300 may also shield and protect wire within hollowed body 1336 from heat that may be produced during welding operations.

[0074] The above description is merely exemplary in nature and, thus, variations that do not depart from the gist of the present disclosure are intended
30 to be within the scope of the present disclosure. Such variations are not to be regarded as a departure from the spirit and scope of the present disclosure.

CLAIMS

What is claimed is:

1. A compressor comprising:
 - 5 a shell including an aperture;
 - a compression mechanism disposed within said shell;
 - a hermetic terminal assembly including at least one terminal passing through said aperture for supplying electric current through a wire to a component located within said shell;
 - 10 a plug engaged with said at least one terminal and connected to said wire;
 - a wire retainer including a mounting portion securing said wire retainer relative said shell and a guide portion connected to said mounting portion for positioning said wire in a predetermined orientation.
- 15 2. The compressor of claim 1, wherein said wire retainer is mounted between said hermetic terminal assembly and said plug.
3. The compressor of claim 2, wherein said plug includes a cylindrical extension and said mounting portion includes an aperture for receiving said
20 cylindrical extension.
4. The compressor of claim 2, wherein said plug includes a guide member and said mounting portion includes a guide receptacle for receiving said guide member.
25
5. The compressor of claim 4, wherein said guide member includes a contoured surface and said guide receptacle includes a reciprocal surface that corresponds to said contoured surface.
- 30 6. The compressor of claim 2, wherein said wire retainer secures said plug to said hermetic terminal assembly.

7. The compressor of claim 1, wherein said guide portion defines a channel and said wire is disposed within said channel.

5 8. The compressor of claim 1, wherein said guide portion extends from said mounting portion at an end of said mounting portion that is located in a direction of said component.

9. The compressor of claim 1, wherein said wire retainer is secured to said compression mechanism.
10

10. The compressor of claim 9, wherein said compression mechanism includes an orbiting scroll member and a non-orbiting scroll member, and said mounting portion includes a recess for receiving a fastener that secures said wire retainer to said non-orbiting scroll member.
15

11. The compressor of claim 9, wherein said compression mechanism includes an orbiting scroll member and a non-orbiting scroll member, and said mounting portion includes at least one extension that extends from said mounting portion to secure said wire retainer to said non-orbiting scroll member.
20

12. The compressor of claim 1, wherein said component is a capacity modulation system.

13. The compressor of claim 1, wherein said guide portion includes at least one notch for securing said wire.
25

14. The compressor of claim 13, wherein said notch includes a recess.

15. The compressor of claim 1, wherein said guide portion includes a plurality of sections that are coupled by hinges and movable relative each other.
30

16. A compressor comprising:

a shell including an aperture;

a compression mechanism disposed within said shell;

a hermetic terminal assembly including at least one terminal passing
through said aperture for supplying electric current through a wire to a
5 component located within said shell;

a plug engaged with said at least one terminal and connected to said wire;

a wire retainer assembly including a mounting portion securing said wire
retainer to said compression mechanism and a guide portion positioning said
wire in a predetermined orientation relative said compression mechanism.

10

17. The compressor of claim 16, wherein said compression
mechanism includes an orbiting scroll member and a non-orbiting scroll member,
and said mounting portion is secured to said non-orbiting scroll member.

15

18. The compressor of claim 17, wherein said mounting portion
includes a recess for receiving a fastener that secures said wire retainer to said
non-orbiting scroll member.

20

19. The compressor of claim 18, wherein said component includes a
capacity modulation system.

25

20. The compressor of claim 17, wherein said mounting portion
includes at least one extension that extends from said guide portion to secure
said wire retainer to said non-orbiting scroll member.

21. The compressor of claim 16, wherein said guide portion includes at
least one notch for securing said wire.

30

22. The compressor of claim 21, wherein said notch includes a recess.

23. The compressor of claim 17, wherein said mounting portion includes a pair of legs that clip said wire retainer to said non-orbiting scroll member.

5 24. The compressor of claim 16, wherein said guide portion defines a hollowed body.

25. A manufacturing method, comprising:
providing a shell including an aperture;
10 disposing a compression mechanism within said shell;
 mounting a hermetic terminal assembly having at least one terminal through said aperture;
 engaging a plug with said at least one terminal;
 connecting a wire that carries said electric current from said plug to a
15 component within said shell;
 routing said wire to said component through a wire retainer located proximate said plug and said shell; and
 orienting said wire with a guide portion of said wire retainer.

20 26. The method of claim 25, wherein said plug includes a cylindrical extension and said wire retainer includes an aperture for receiving said cylindrical extension.

27. The method of claim 25, wherein said plug includes a guide
25 member and said wire retainer includes a guide receptacle for receiving said guide member.

28. The method of claim 27, wherein said guide member includes a
contoured surface and said guide receptacle includes a reciprocal surface that
30 corresponds to said contoured surface.

29. The method of claim 25, wherein said wire retainer secures said plug to said terminal assembly.

30. The method of claim 25, wherein the compression mechanism
5 includes an orbiting scroll member and a non-orbiting scroll member, and said wire retainer is secured to said non-orbiting scroll member.

31. The method of claim 30, wherein said wire retainer includes a
10 recess for receiving a fastener that secures said wire retainer to said non-orbiting scroll member.

32. The method of claim 31, wherein said wire retainer includes at
least one extension that extends from said wire retainer to secure said wire
15 retainer to said non-orbiting scroll member.

33. The method of claim 25, wherein said wire retainer includes at
least one notch for securing said wire.

34. The method of claim 33, wherein said notch includes a recess.
20

35. The method of claim 25, wherein said guide portion includes a
plurality of sections that are coupled by hinges and movable relative each other.

36. The method of claim 25, further comprising welding an end cap to
25 said shell and protecting said wire with said wire retainer such that when said end cap is welded to said shell, said wire is shielded from heat generated during welding.

37. A compressor comprising:
30 a cylindrical shell including an aperture;

a hermetic terminal assembly including at least one terminal passing through said aperture for supplying electric current through a wire to a component located within said shell;

a plug engaged with said at least one terminal and connected to said wire;

5 a wire retainer assembly including a mounting portion securing said wire retainer to said plug and a guide portion positioning said wire in a direction from said aperture to said component.

10 38. The compressor of claim 37, wherein said wire retainer is mounted between said hermetic terminal assembly and said plug.

15 39. The compressor of claim 38, wherein said plug includes a cylindrical extension and said mounting portion includes an aperture for receiving said cylindrical extension.

40. The compressor of claim 38, wherein said plug includes a guide member and said mounting portion includes a guide receptacle for receiving said guide member.

20 41. The compressor of claim 38, wherein said guide member includes a contoured surface and said guide receptacle includes a reciprocal surface that corresponds to said contoured surface.

25 42. The compressor of claim 37, wherein said wire retainer secures said plug to said hermetic terminal assembly.

43. The compressor of claim 37, wherein said guide portion defines a channel and said wire is disposed within said channel.

30 44. The compressor of claim 37, wherein said guide portion extends from said mounting portion at an end of said mounting portion that is located in a direction of said component.

45. The compressor of claim 37, further comprising a compression mechanism disposed within said shell that includes an orbiting scroll member and a non-orbiting scroll member.

5

46. The compressor of claim 37, wherein said component is a capacity modulation system.

47. The compressor of claim 37, wherein said guide portion includes at least one notch for securing said wire.

10

48. The compressor of claim 47, wherein said notch includes a recess.

49. The compressor of claim 37, wherein said guide portion includes a plurality of sections that are coupled by hinges and movable relative each other.

15

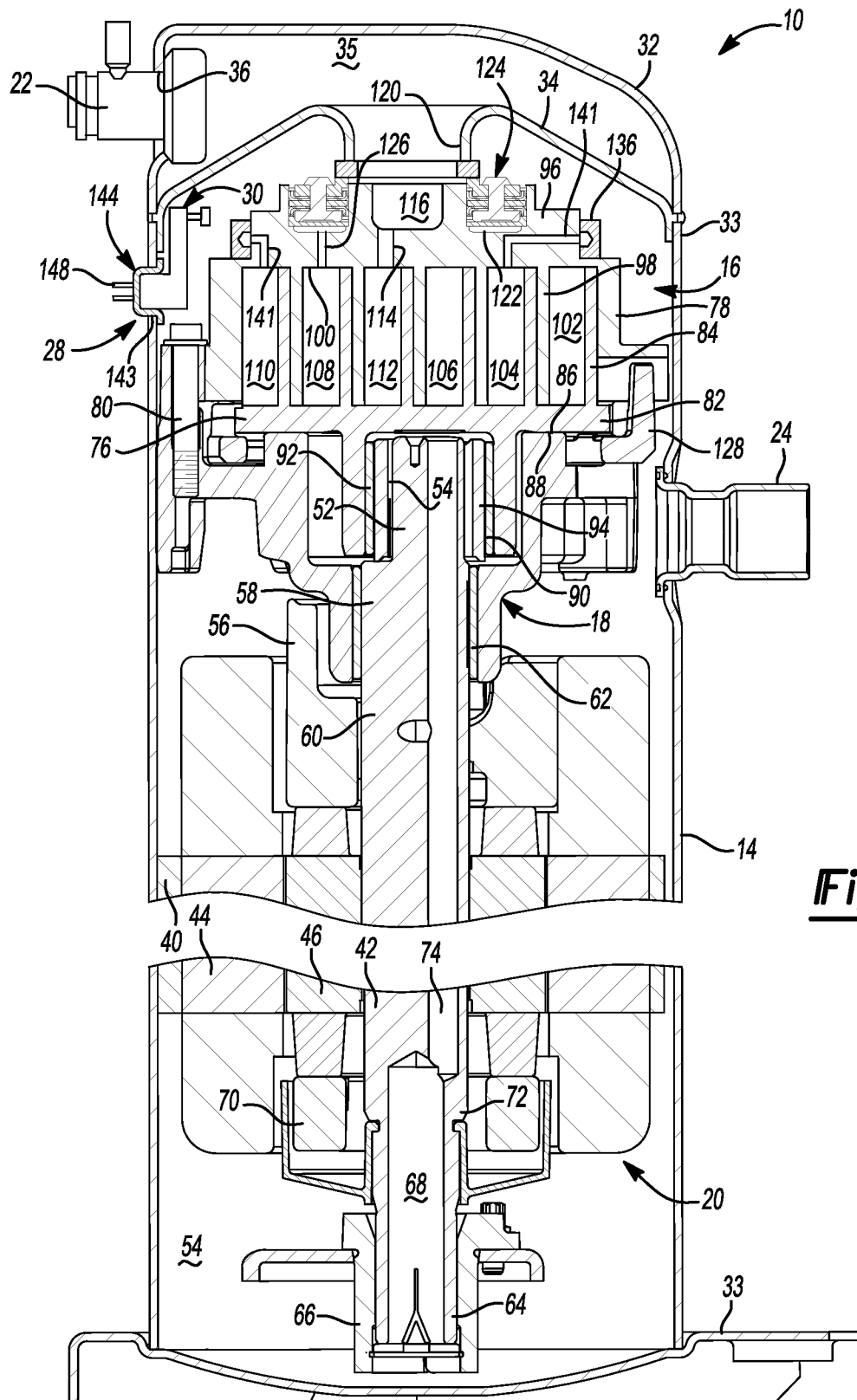


Fig-1

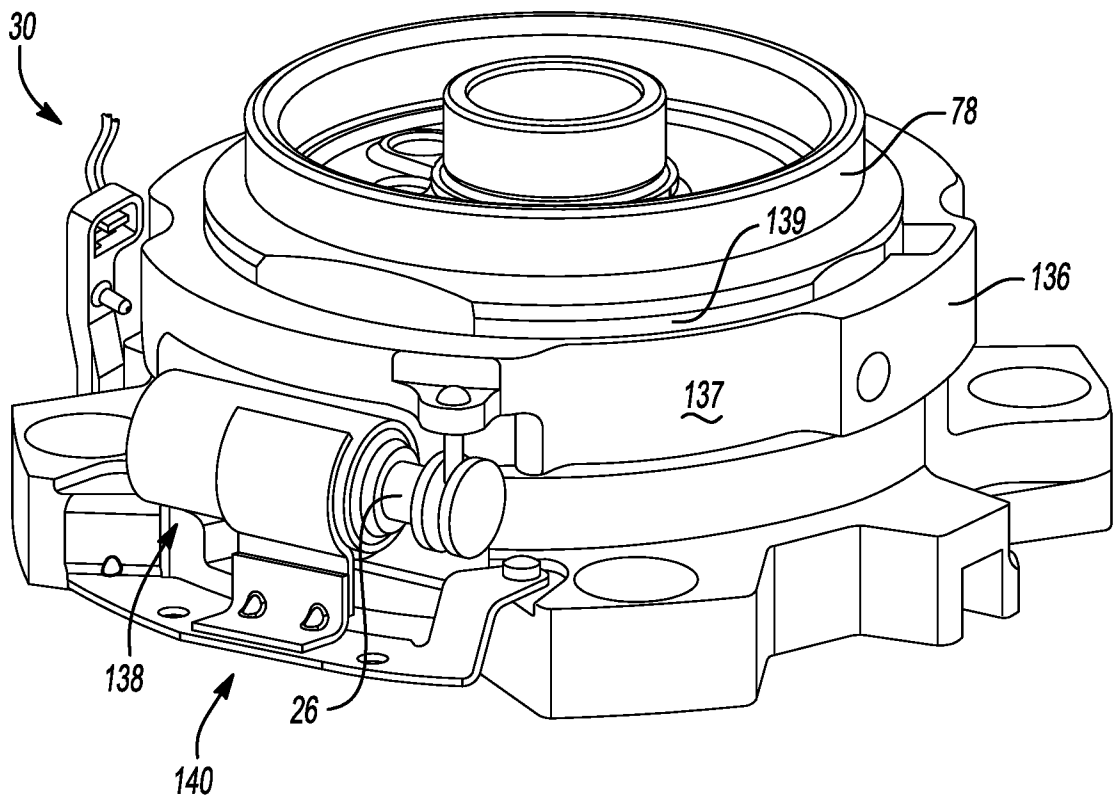


Fig-2

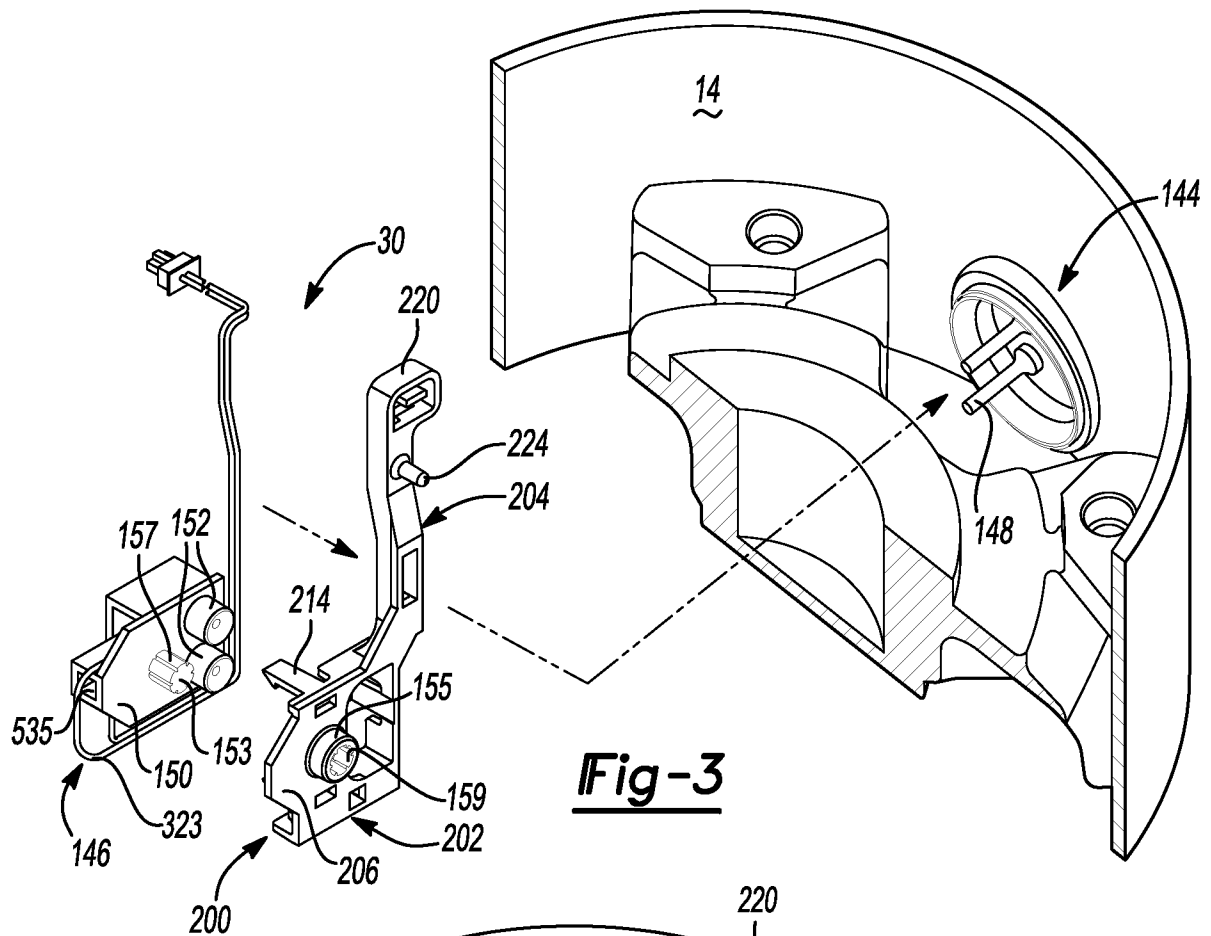


Fig-3

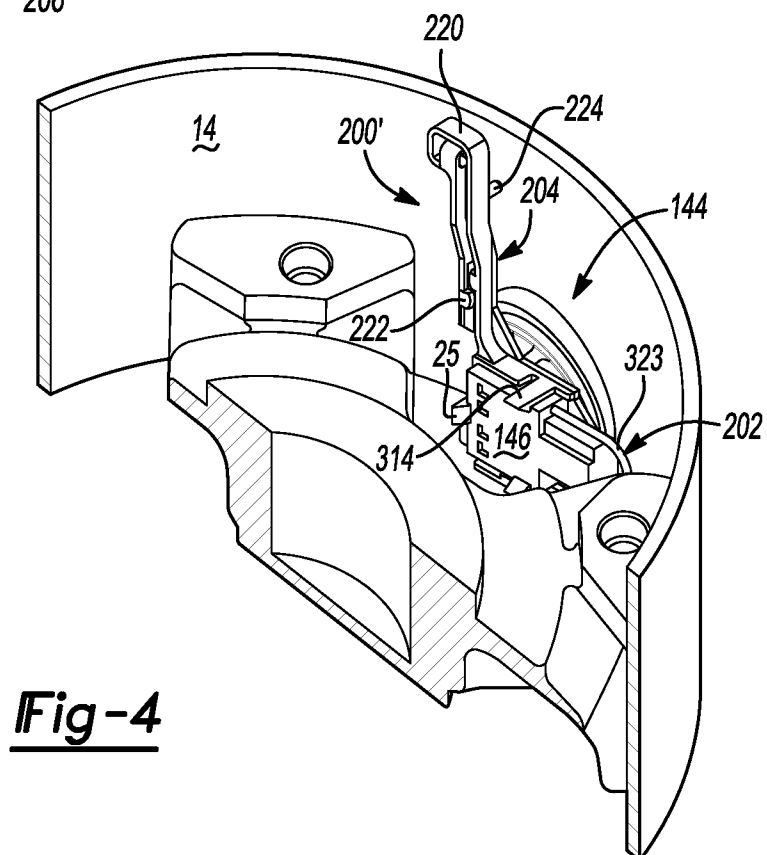


Fig-4

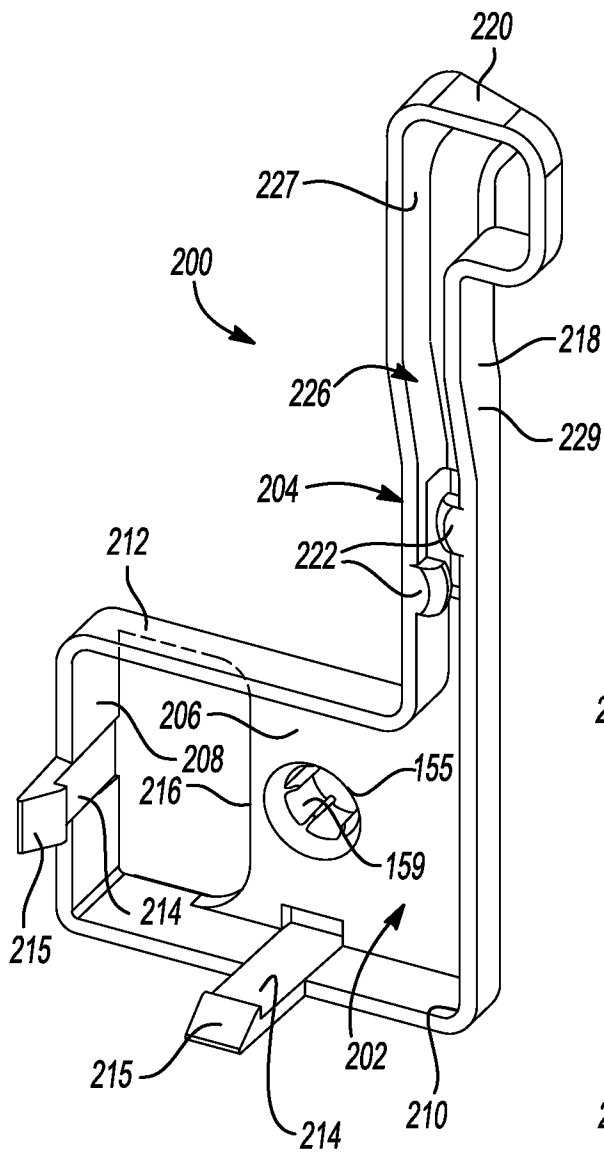


Fig-5A

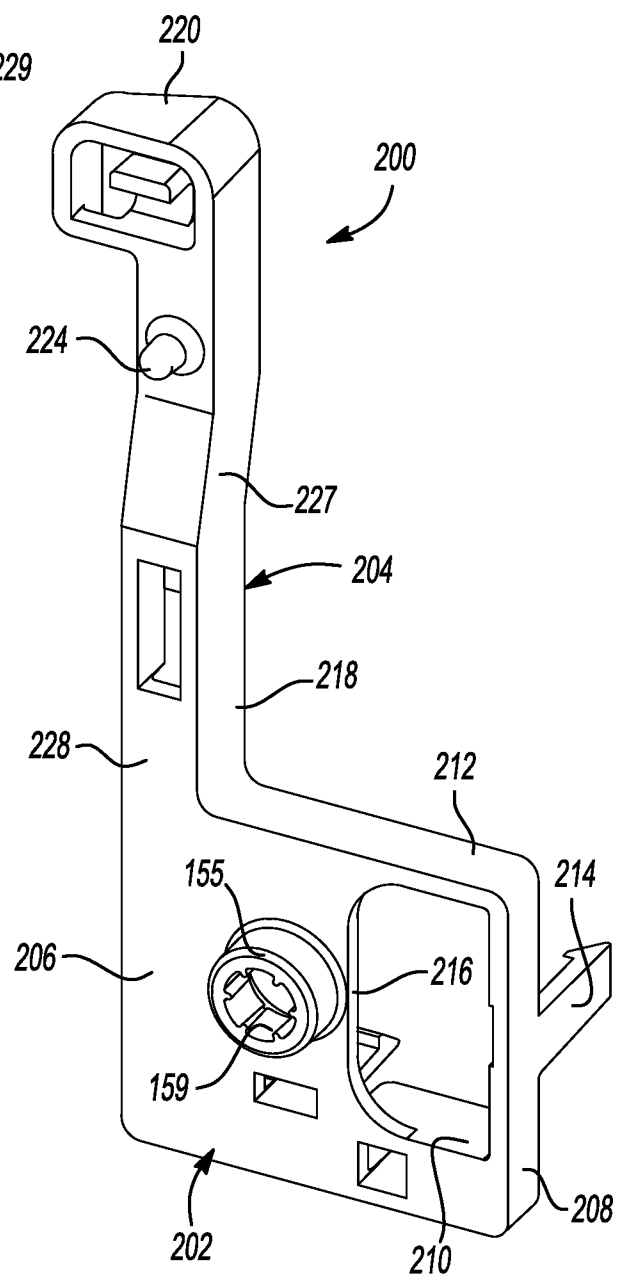
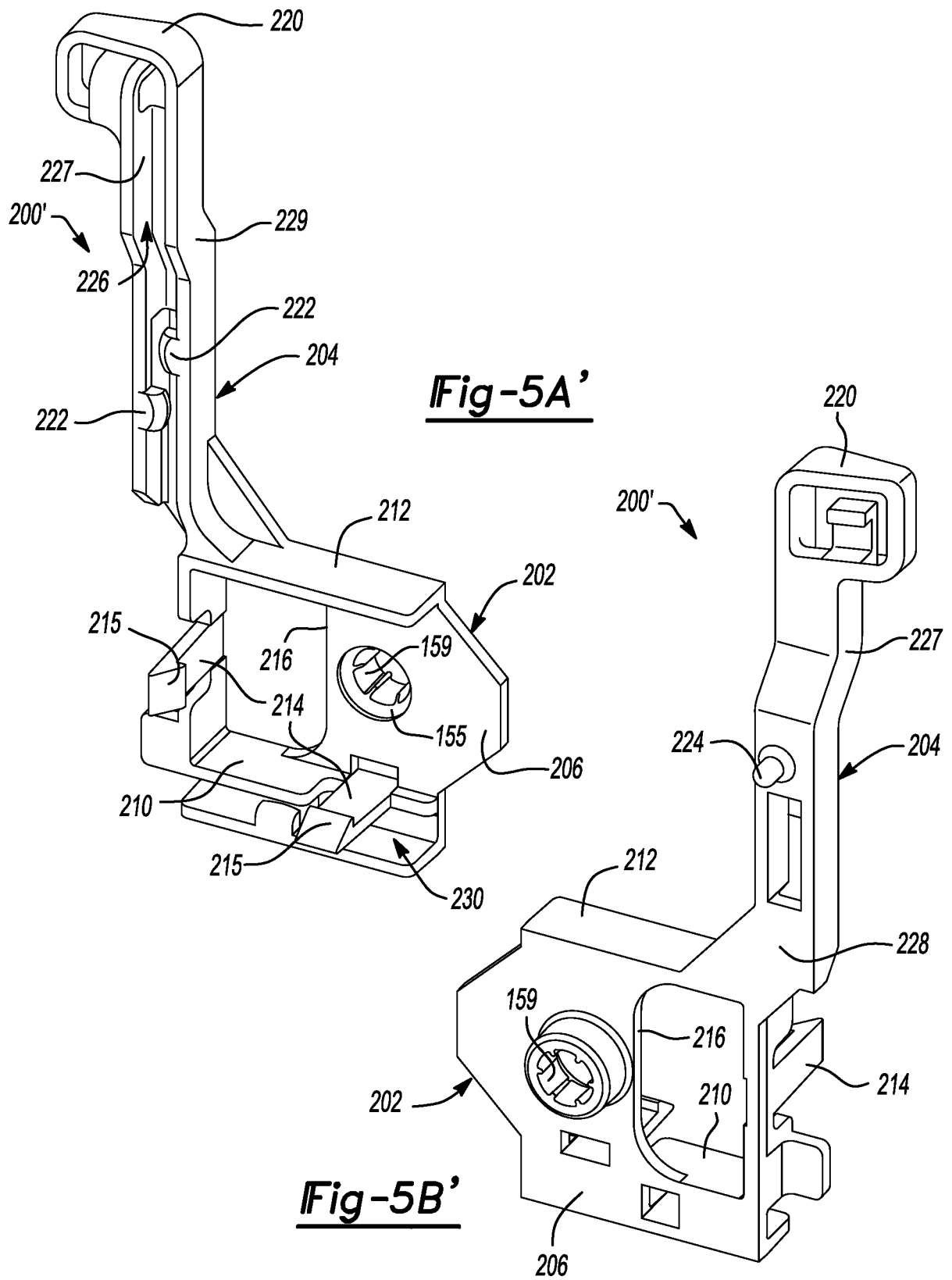


Fig-5B



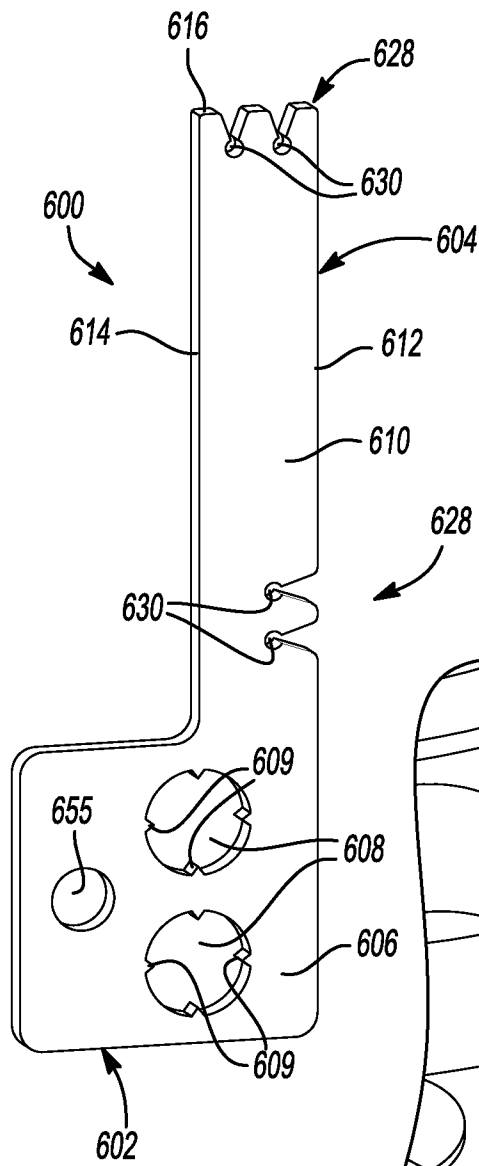
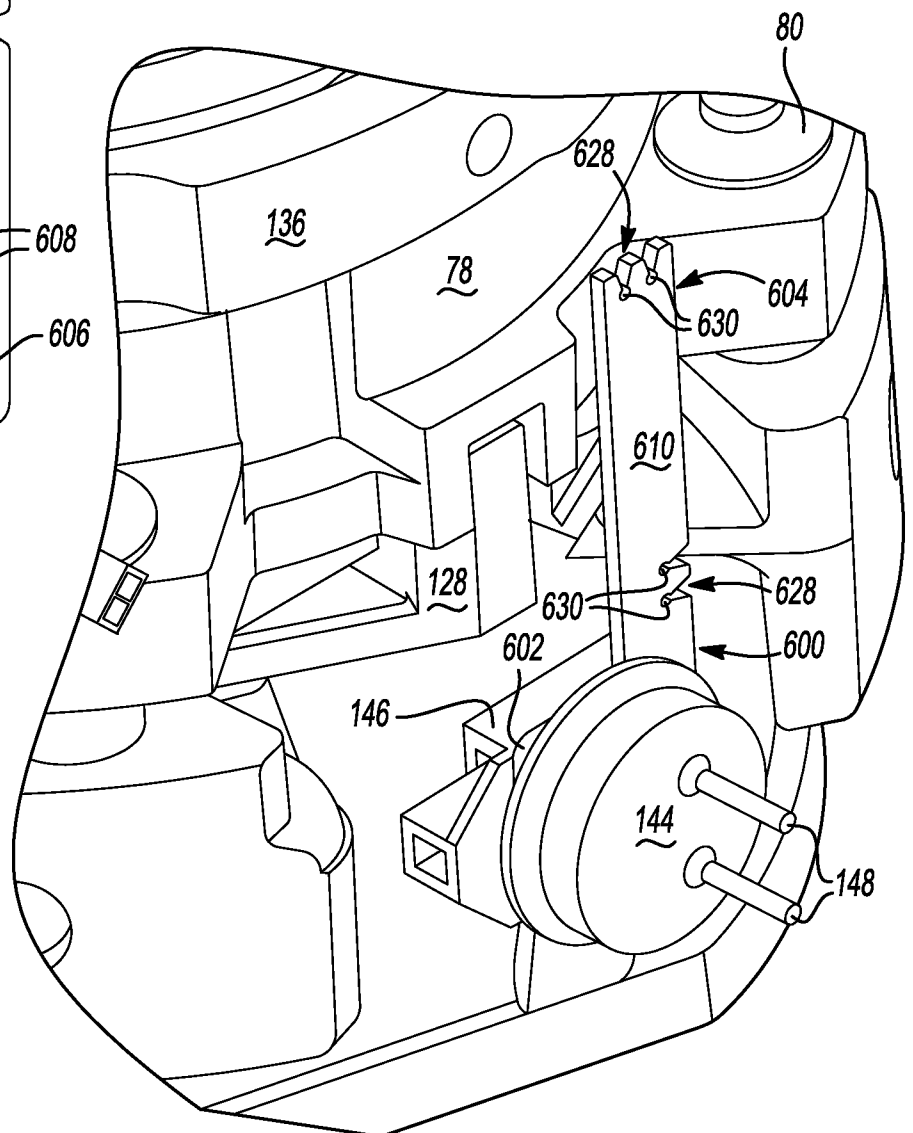
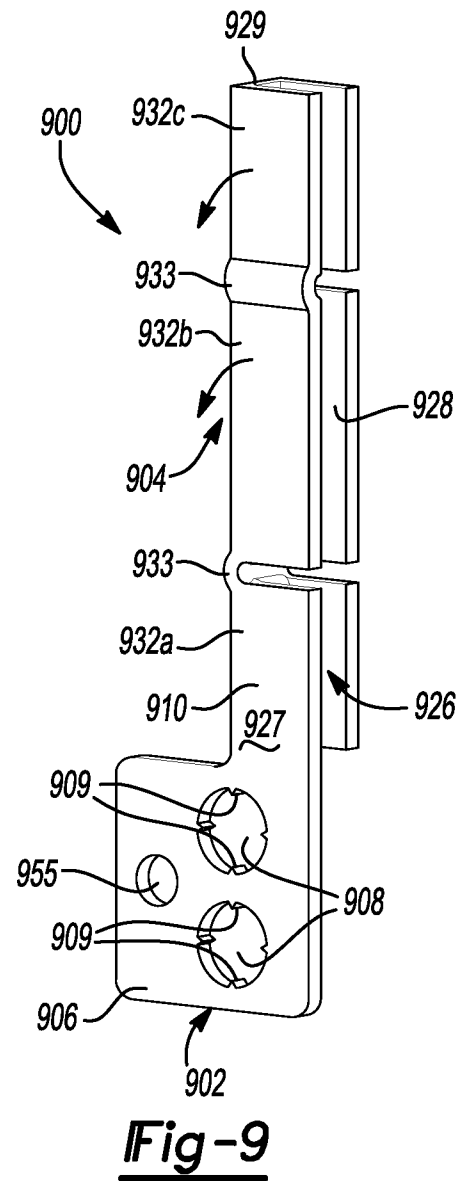
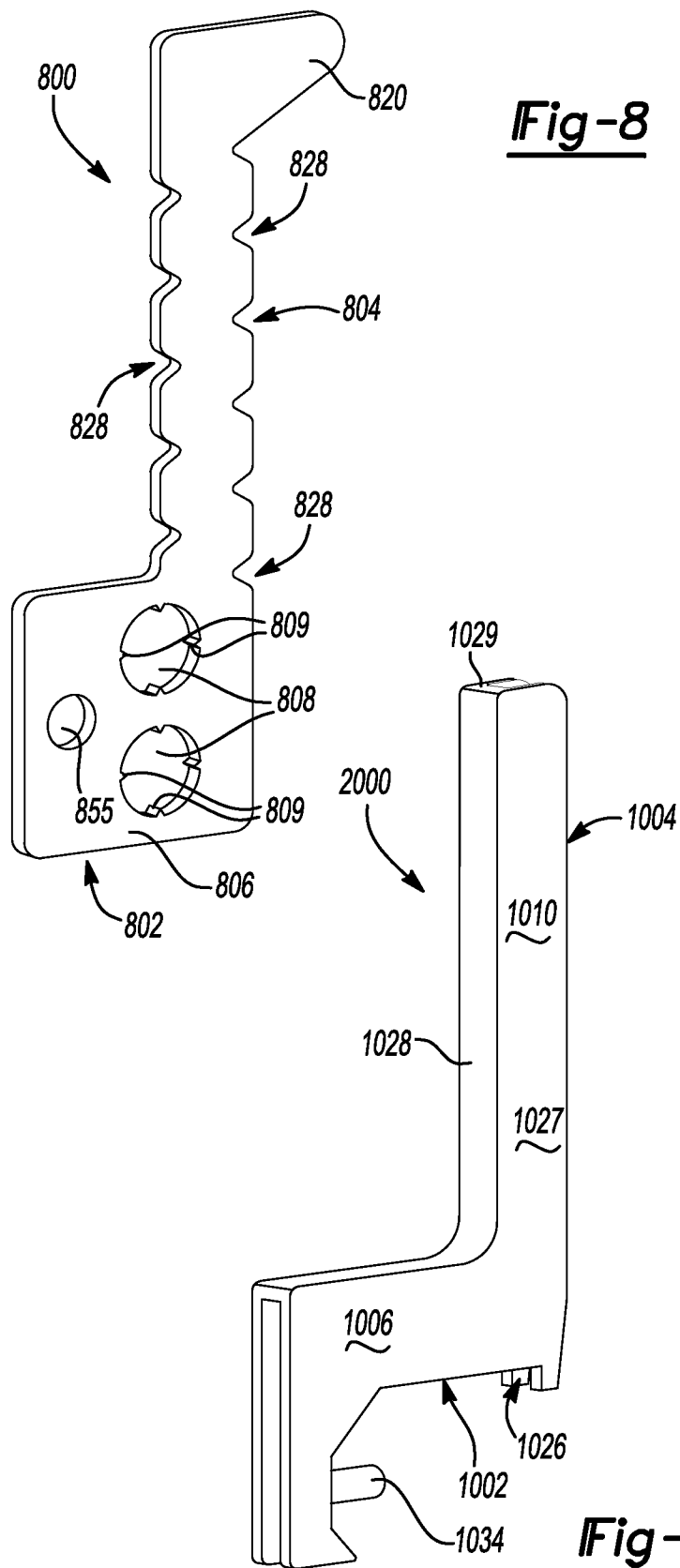


Fig-6

Fig-7



**Fig-10**

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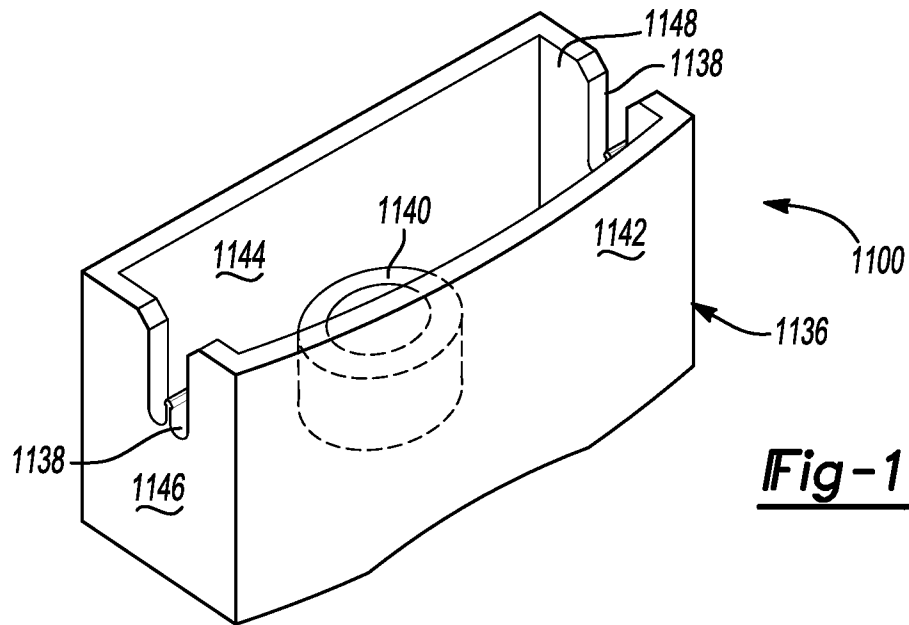
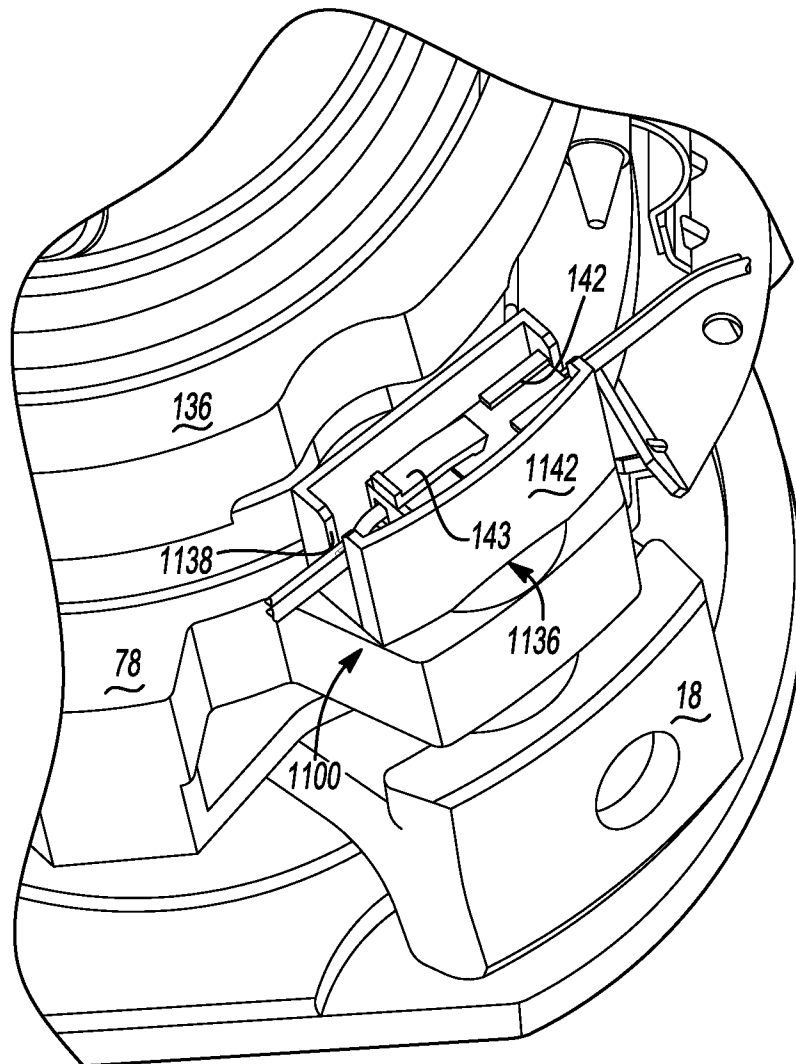


Fig-12



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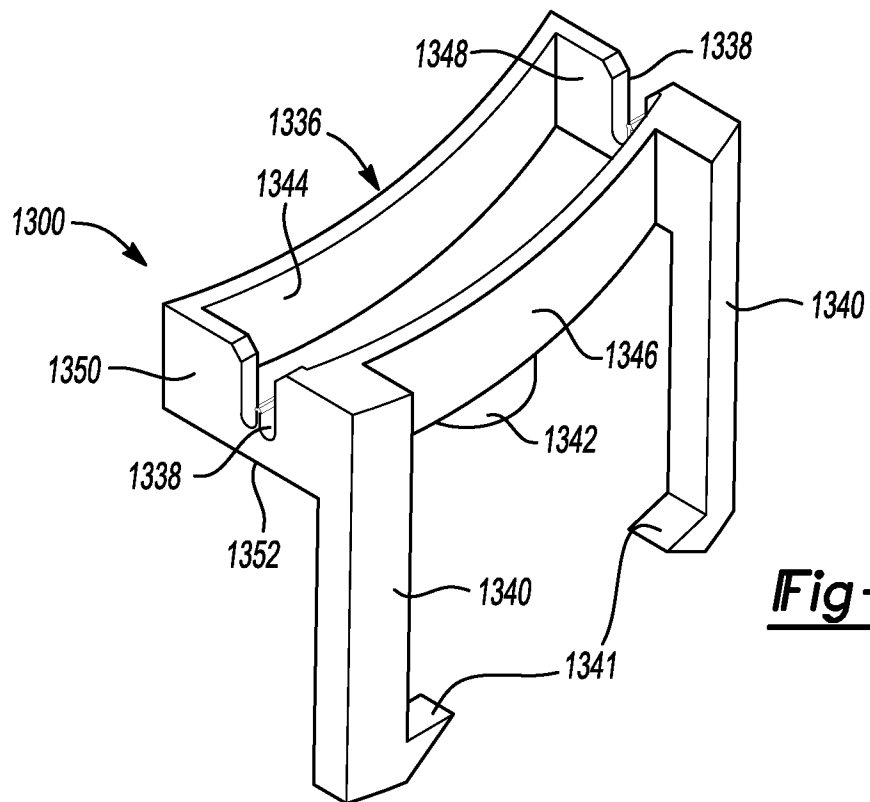


Fig-13

Fig-14

