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(54) **DECK CLIP**

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(2013.01); **E04F 2201/0505** (2013.01)

(21) Appl. No.: **18/631,127**

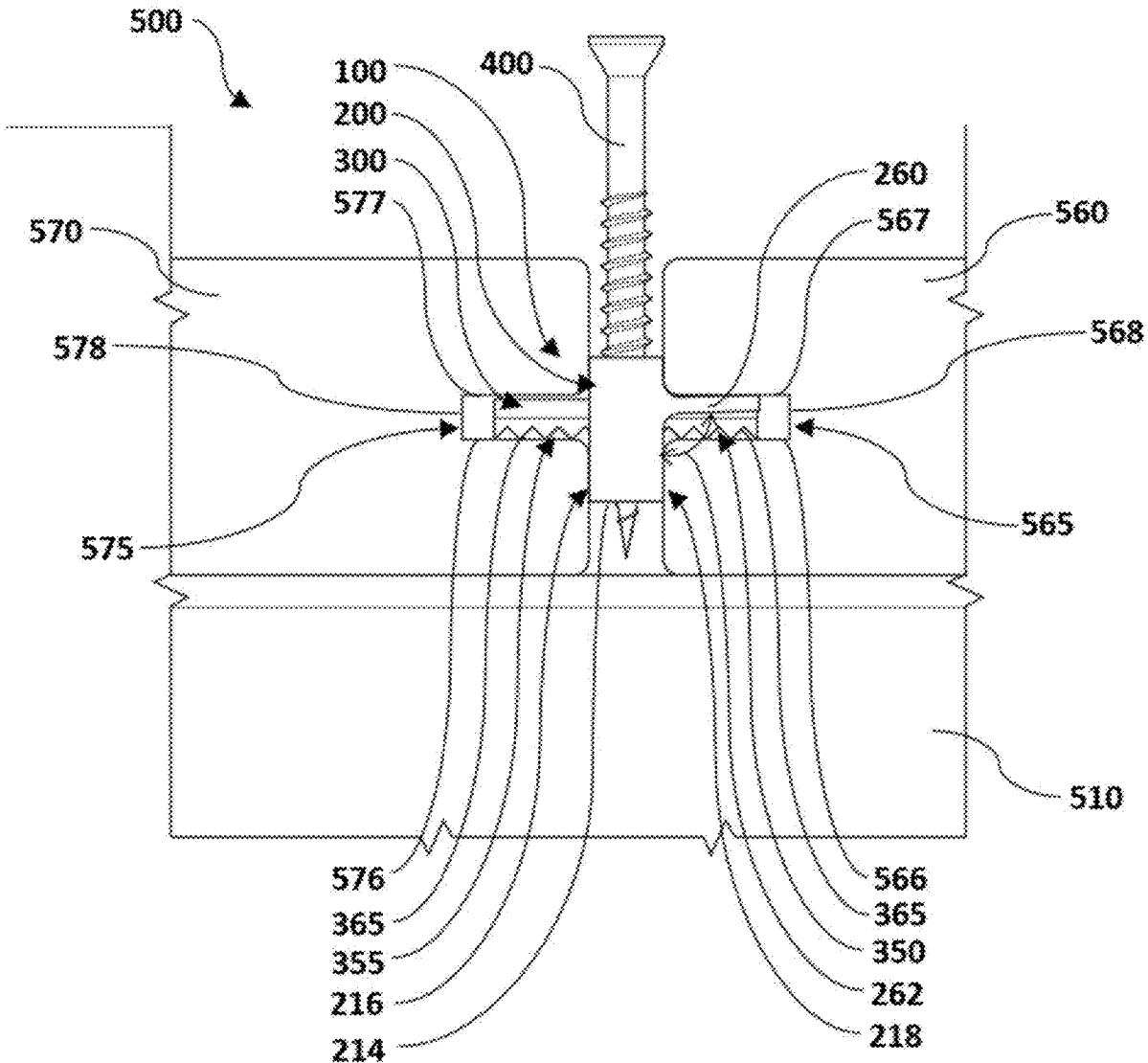
(57) **ABSTRACT**

(22) Filed: **Apr. 10, 2024**

A deck clip includes a spacer and a grip. The spacer has a wing resiliently pivotably connected to a support bar. The support bar has a front face and a lower face. The grip slidably engages with the spacer. The grip has a pin abutting the front face and extending beyond the lower face.

Related U.S. Application Data

(63) Continuation-in-part of application No. 17/974,755,
filed on Oct. 27, 2022.



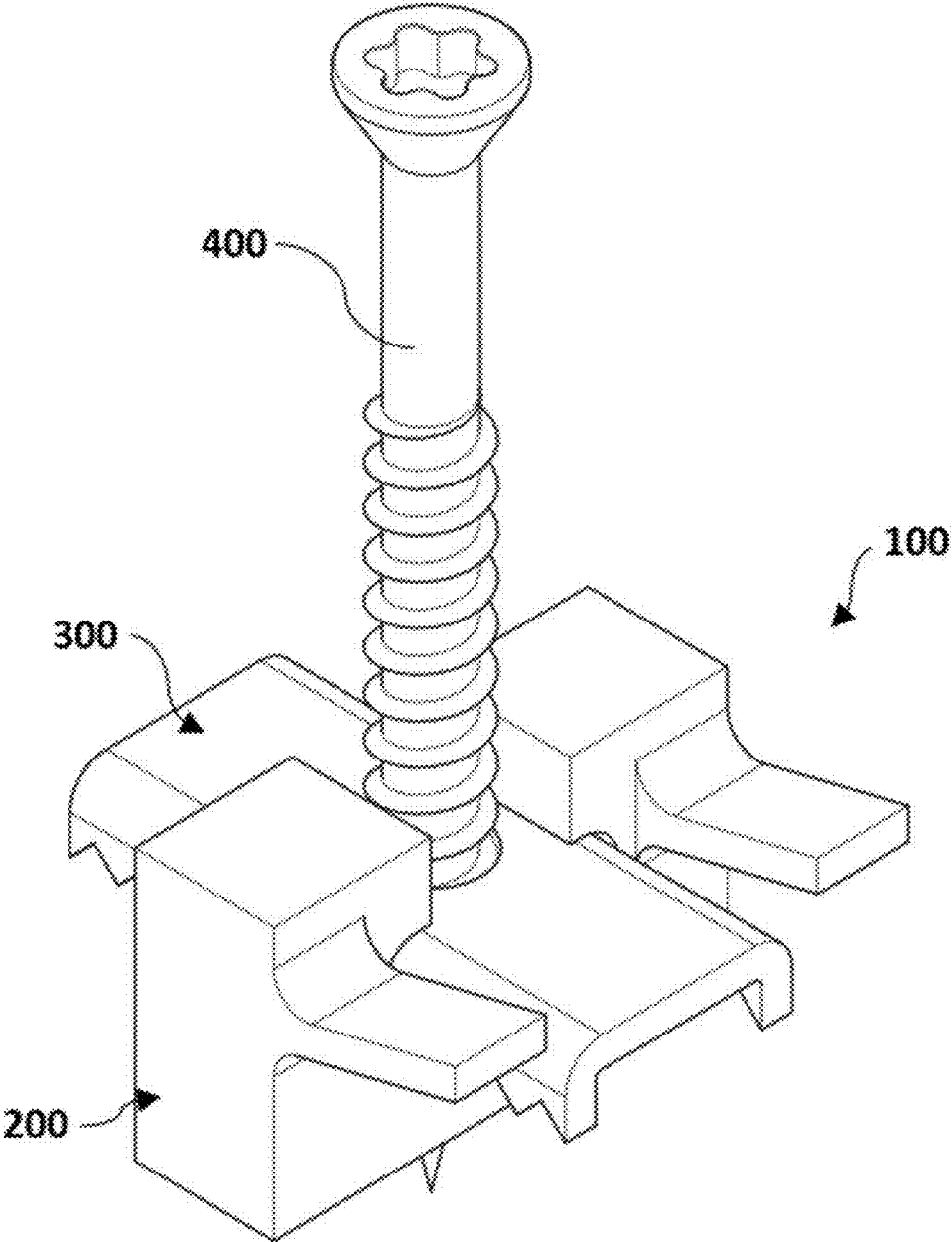


FIG. 1

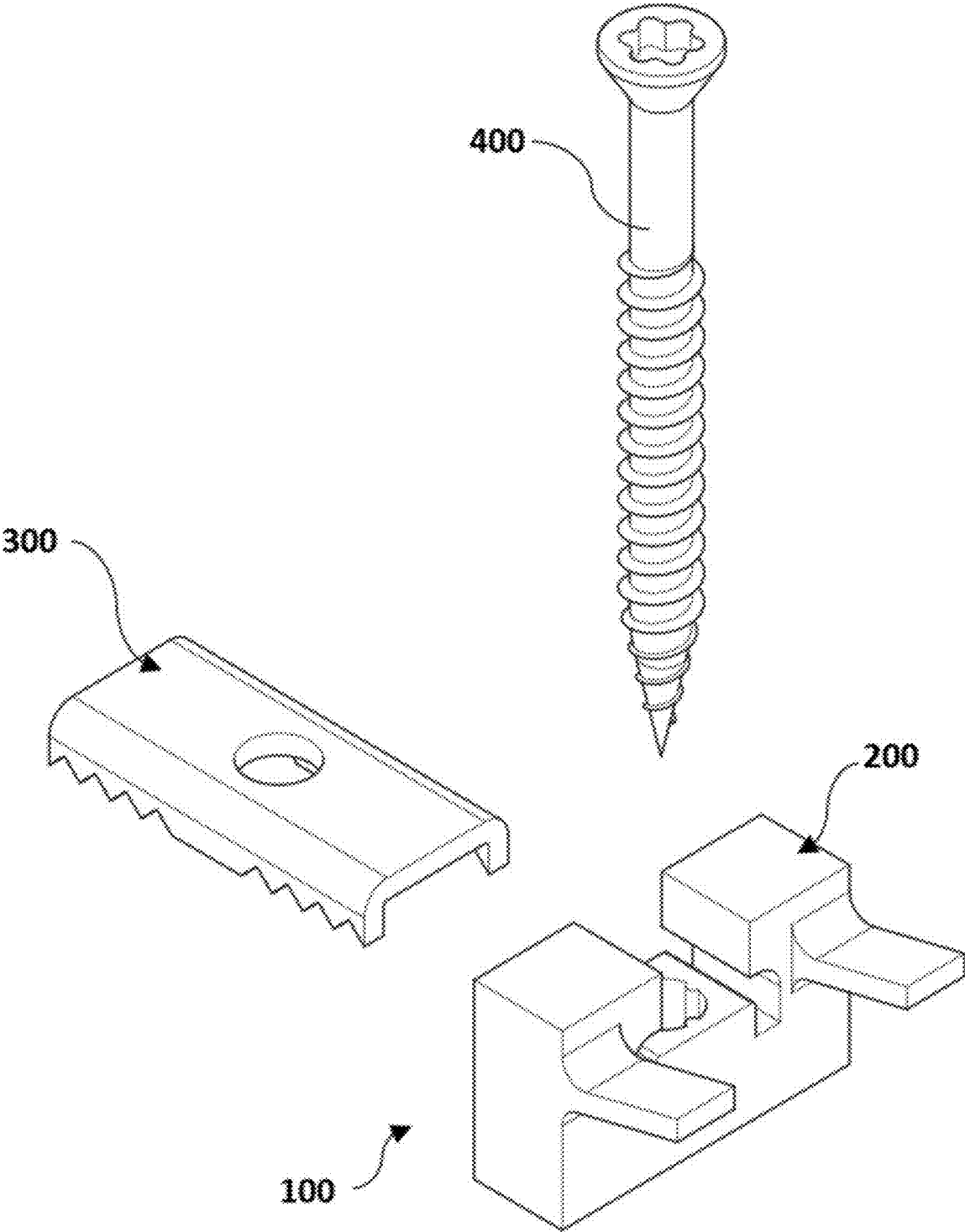


FIG. 2

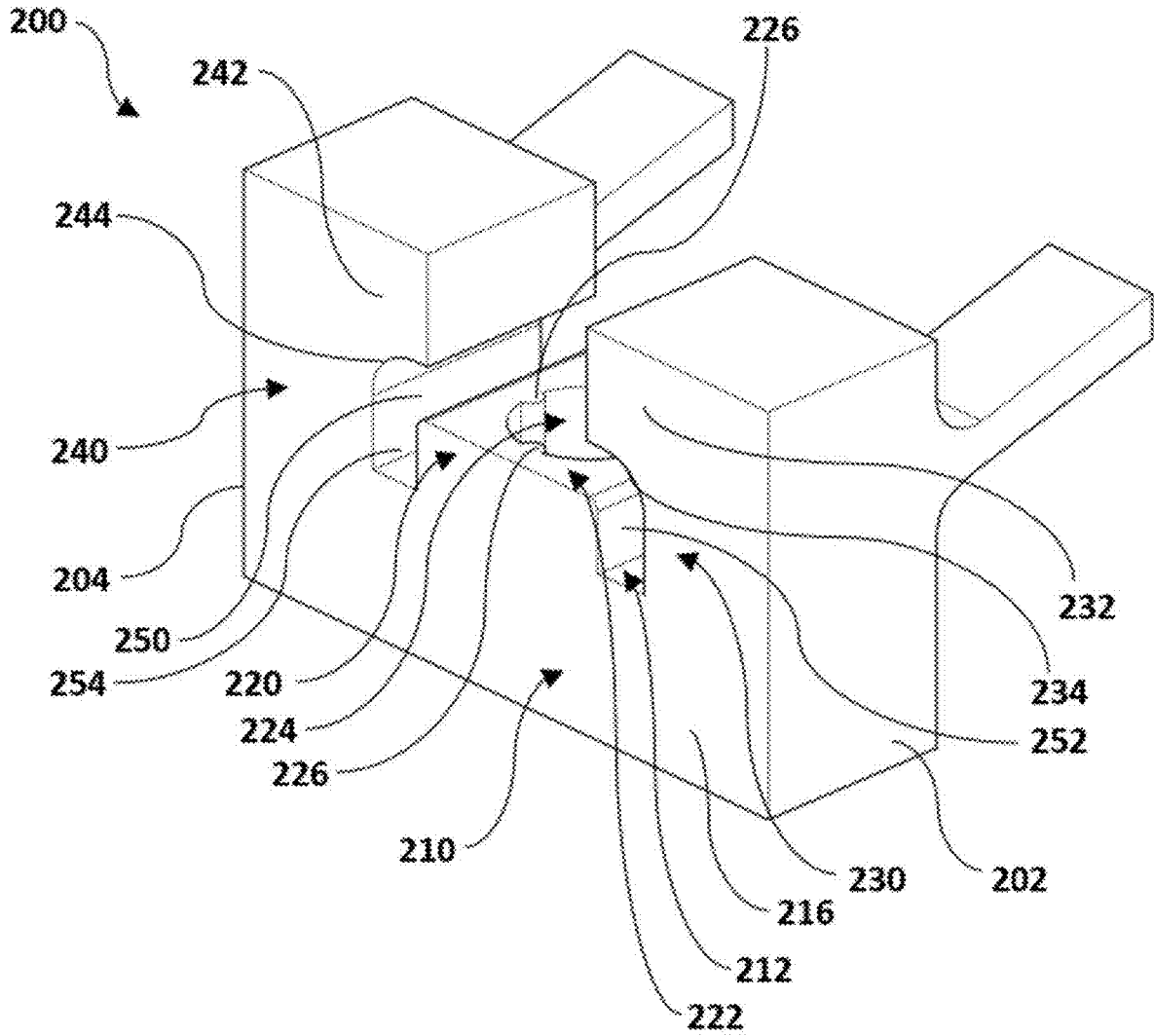


FIG. 3

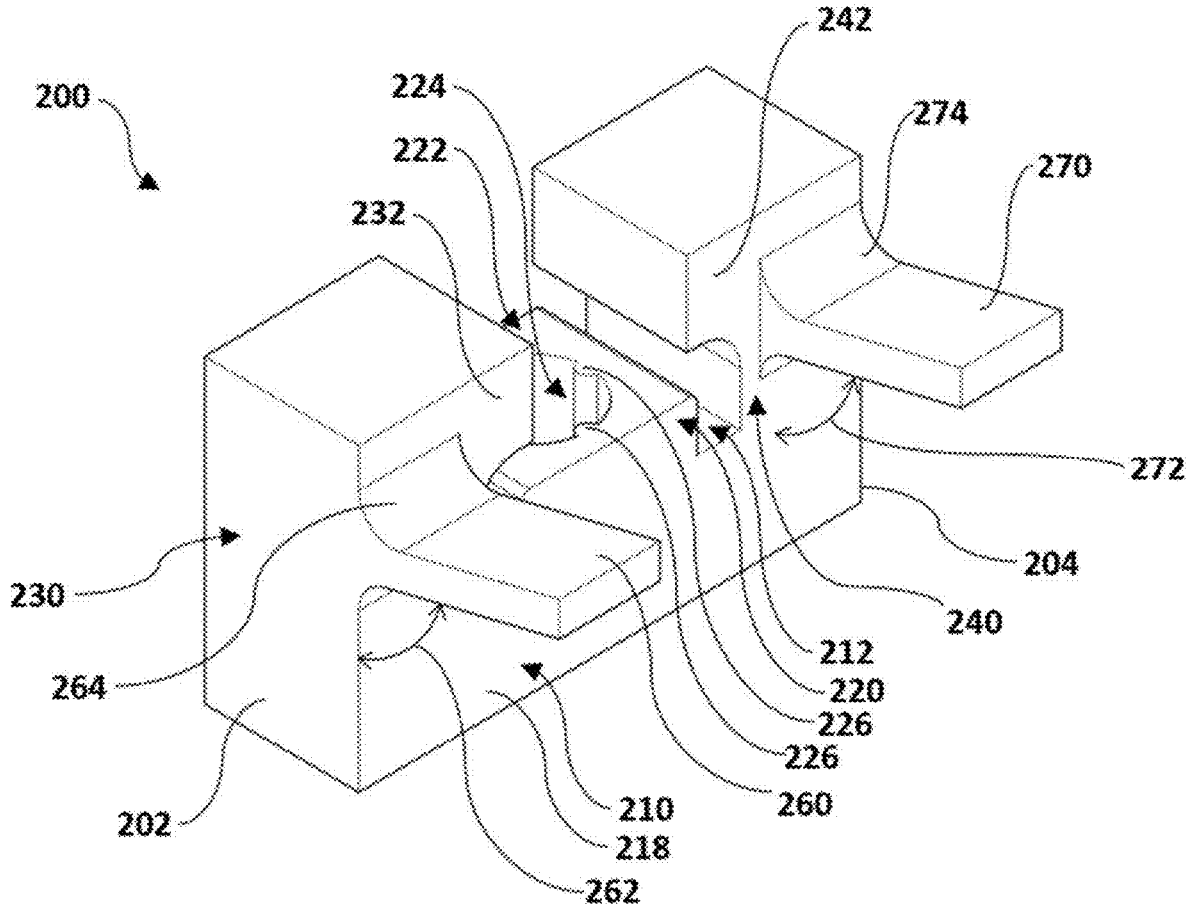


FIG. 4

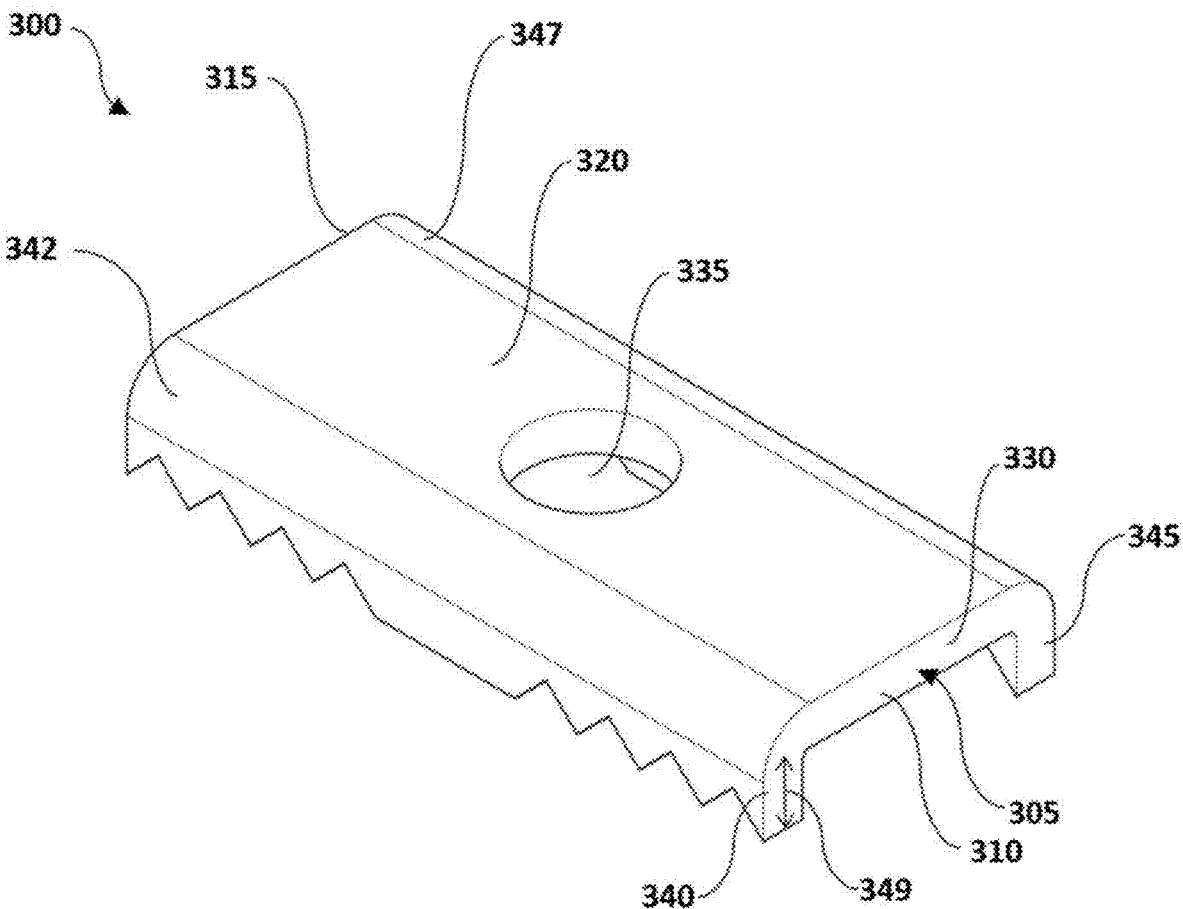


FIG. 5

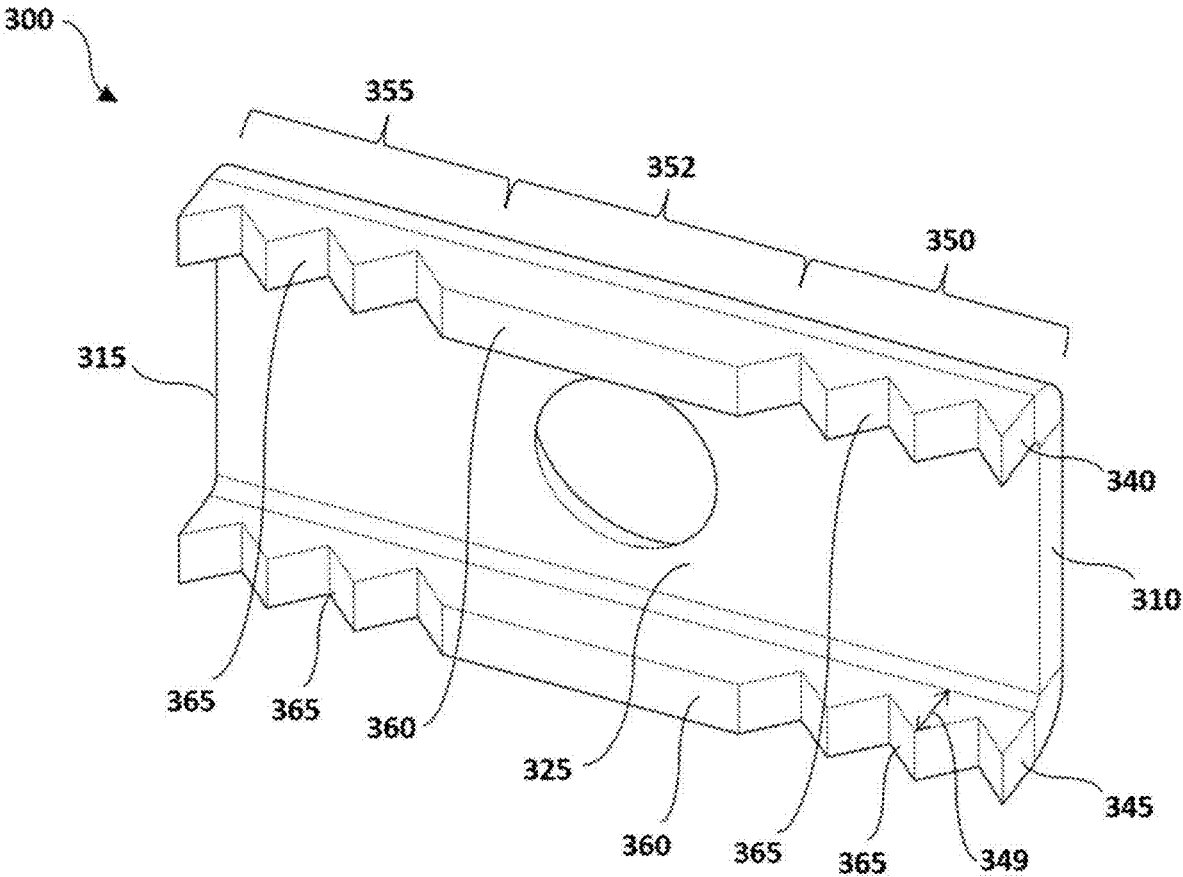


FIG. 6

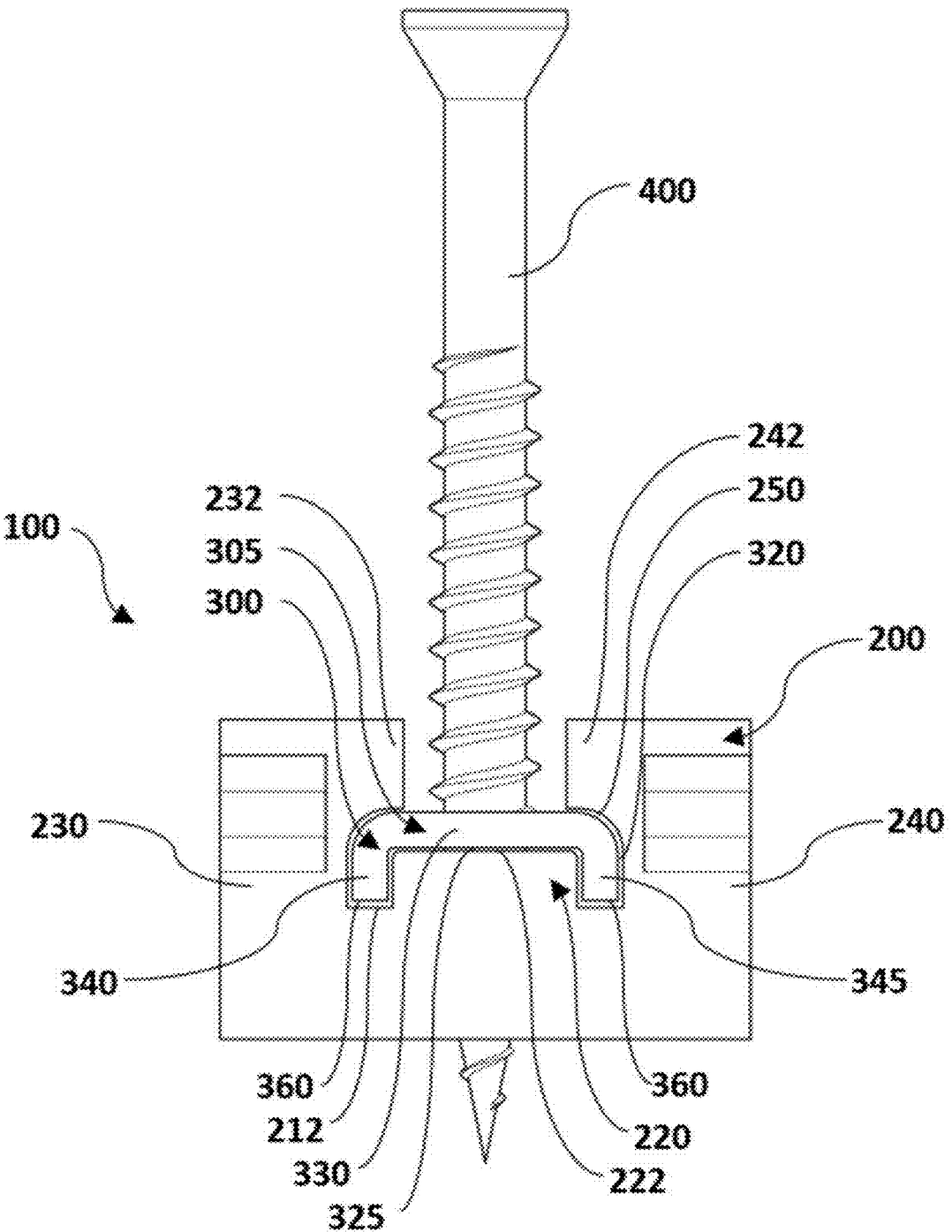


FIG. 7

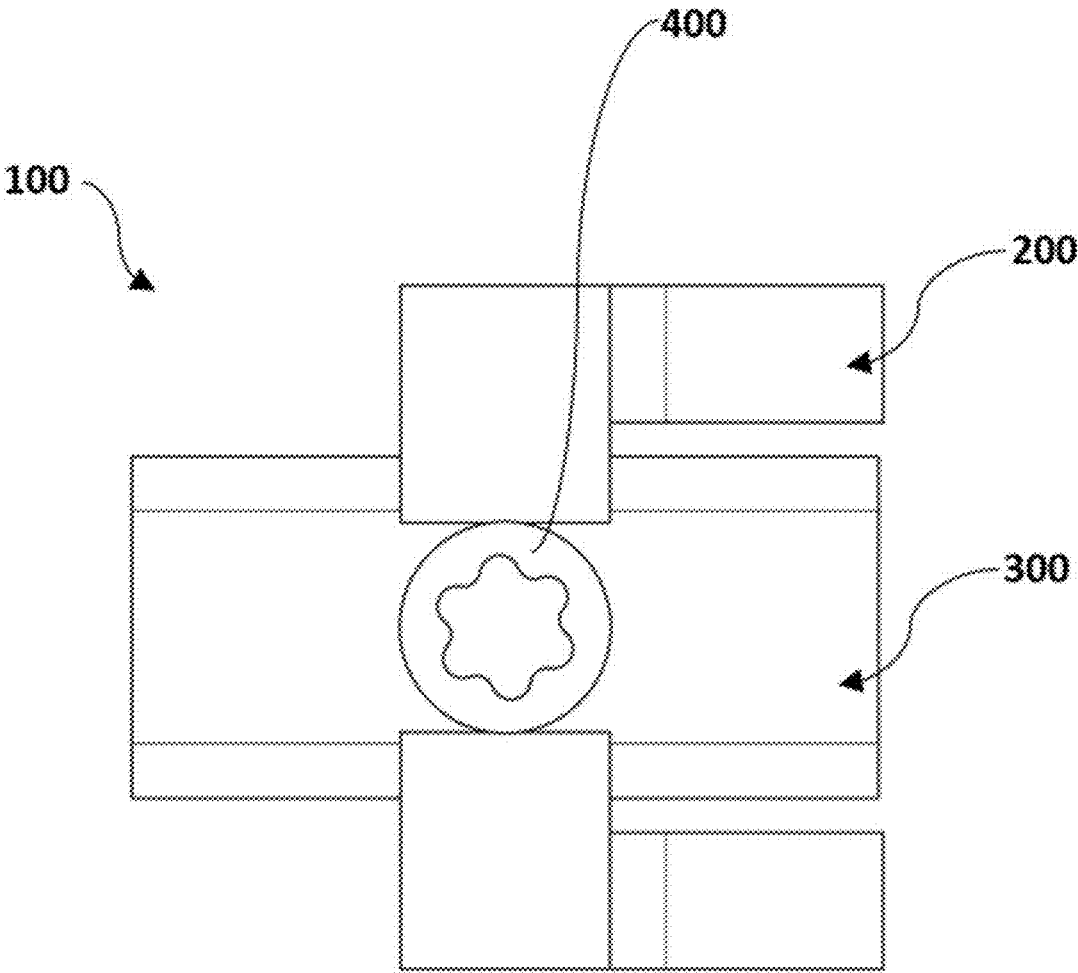


FIG. 8

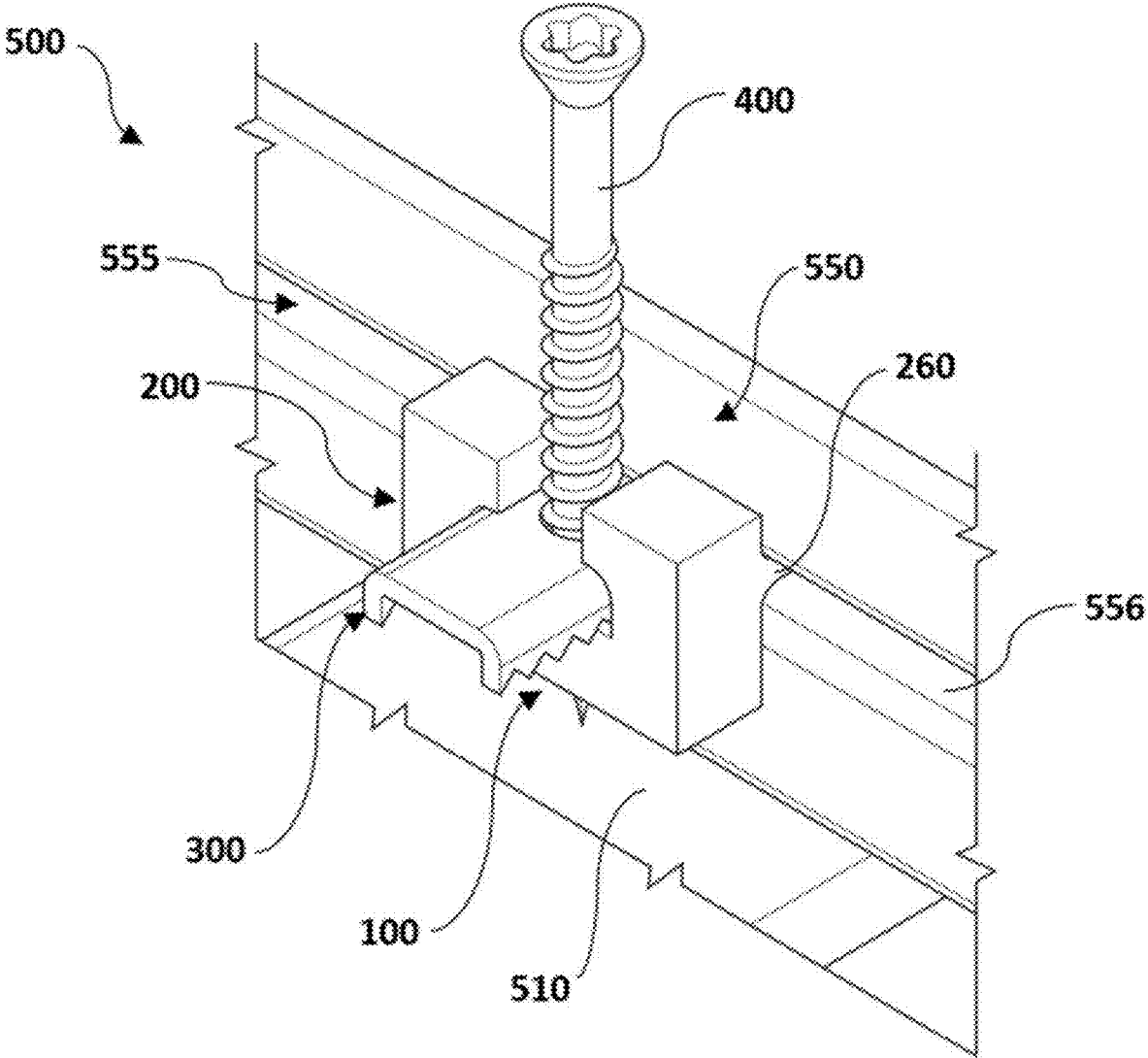


FIG. 9

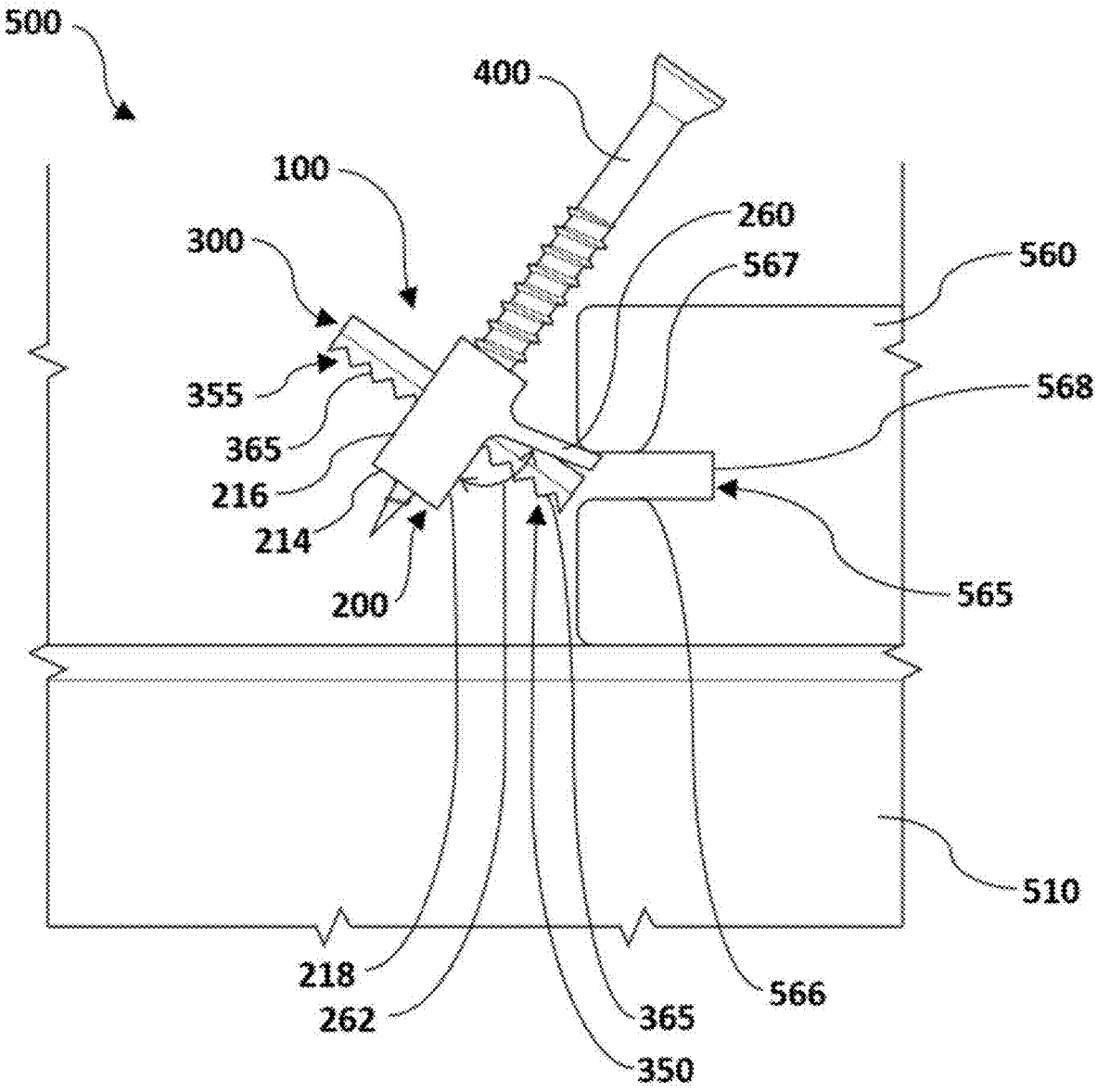


FIG. 10

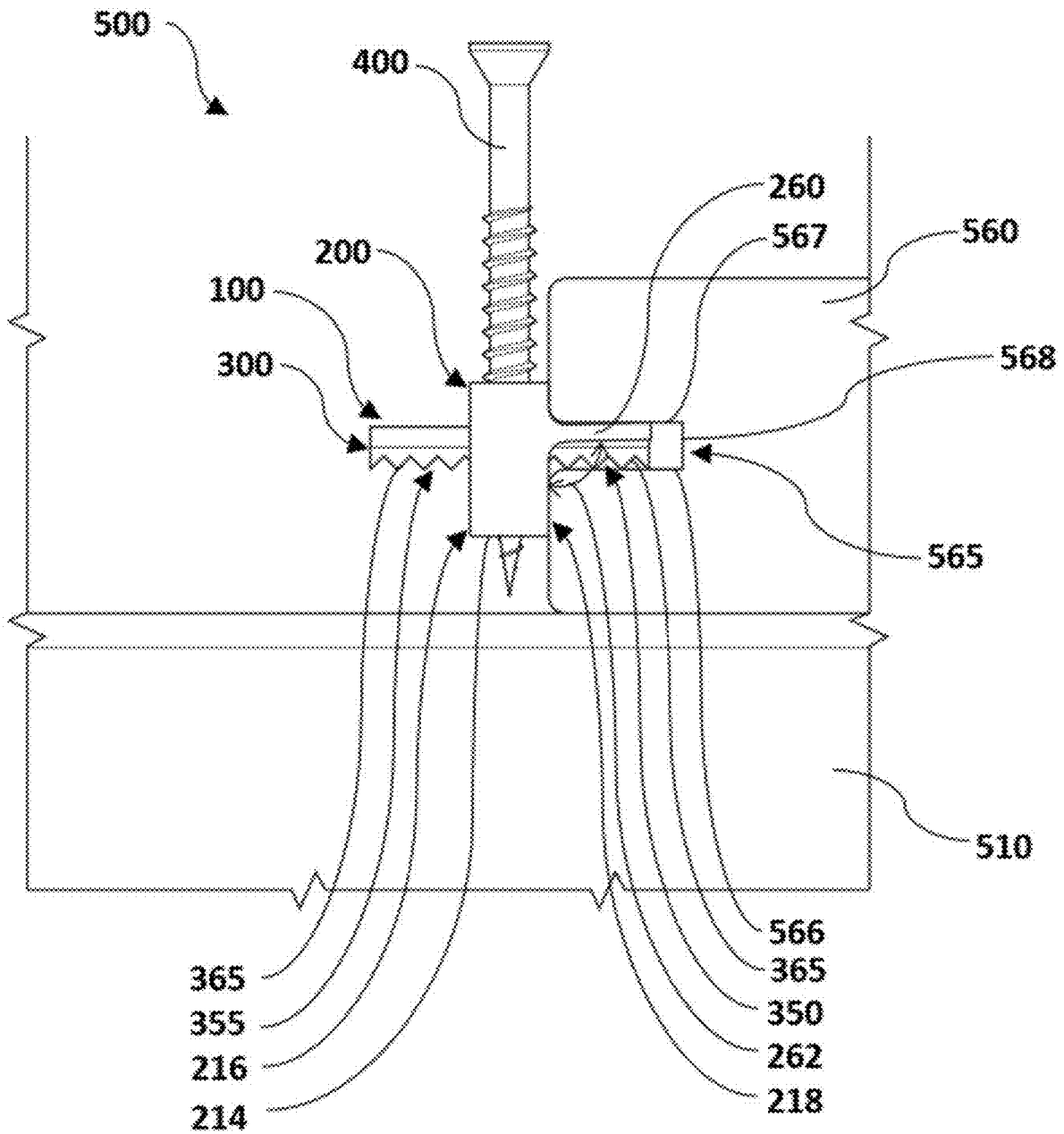


FIG. 11

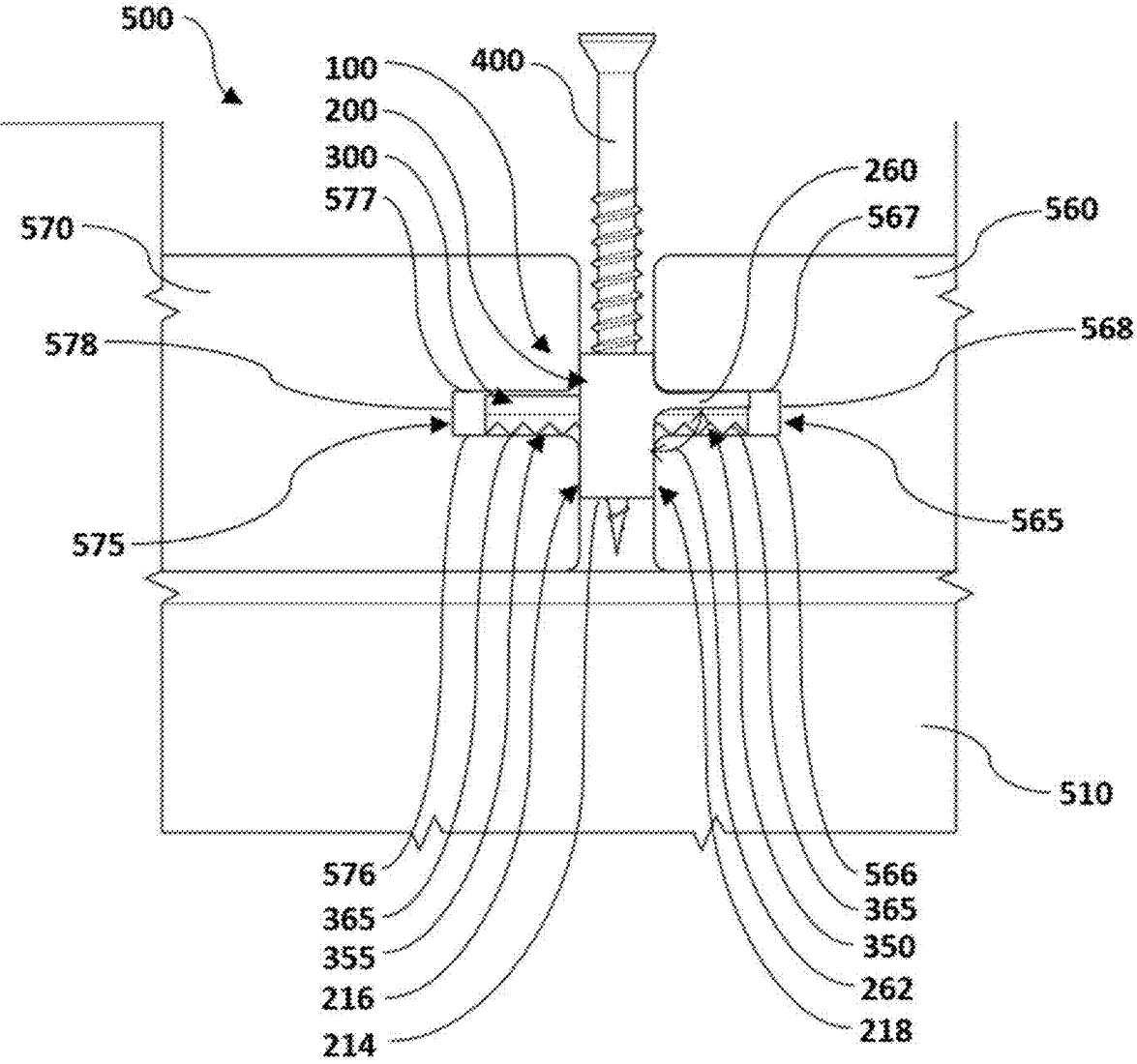


FIG. 12

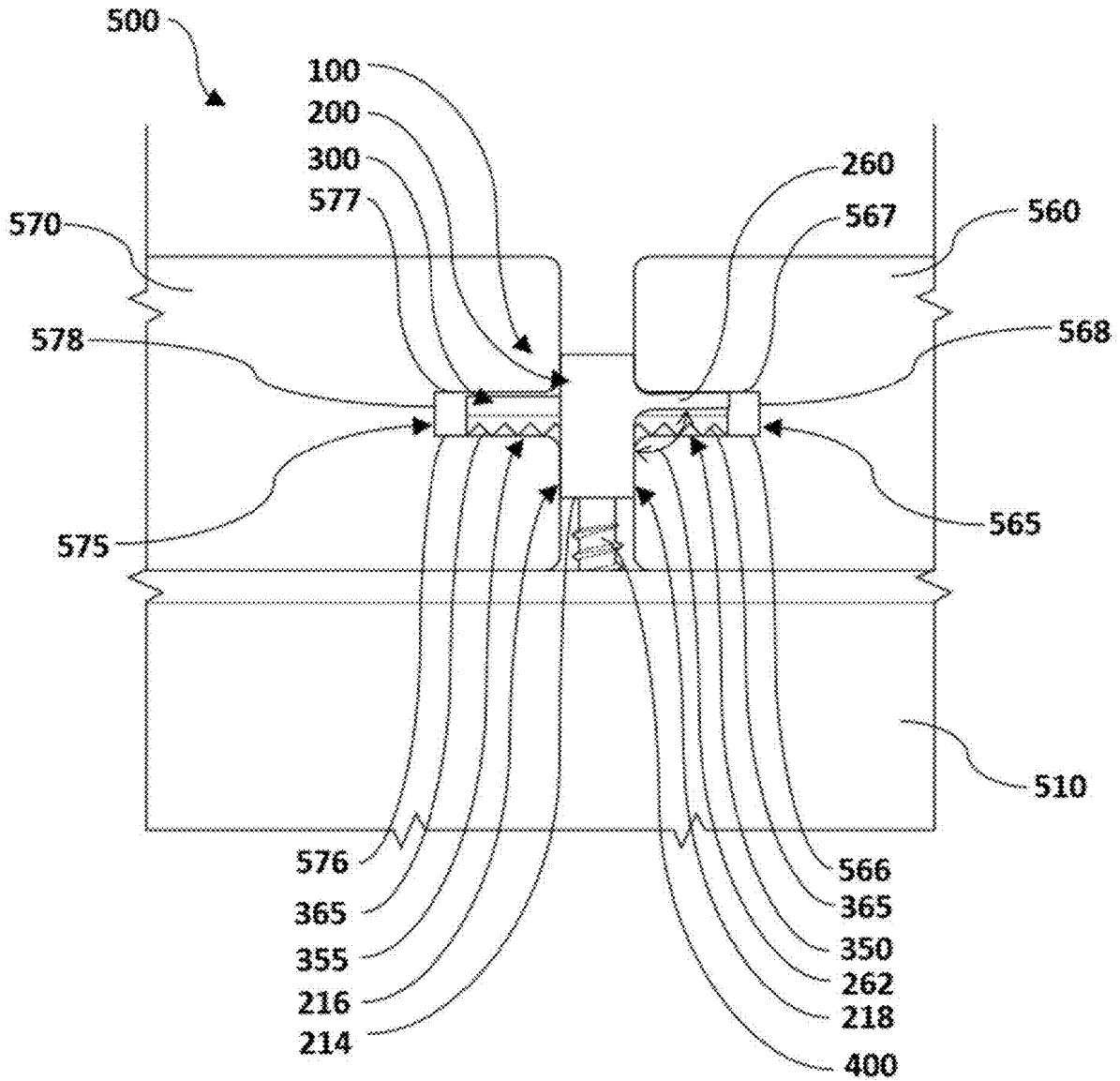


FIG. 13

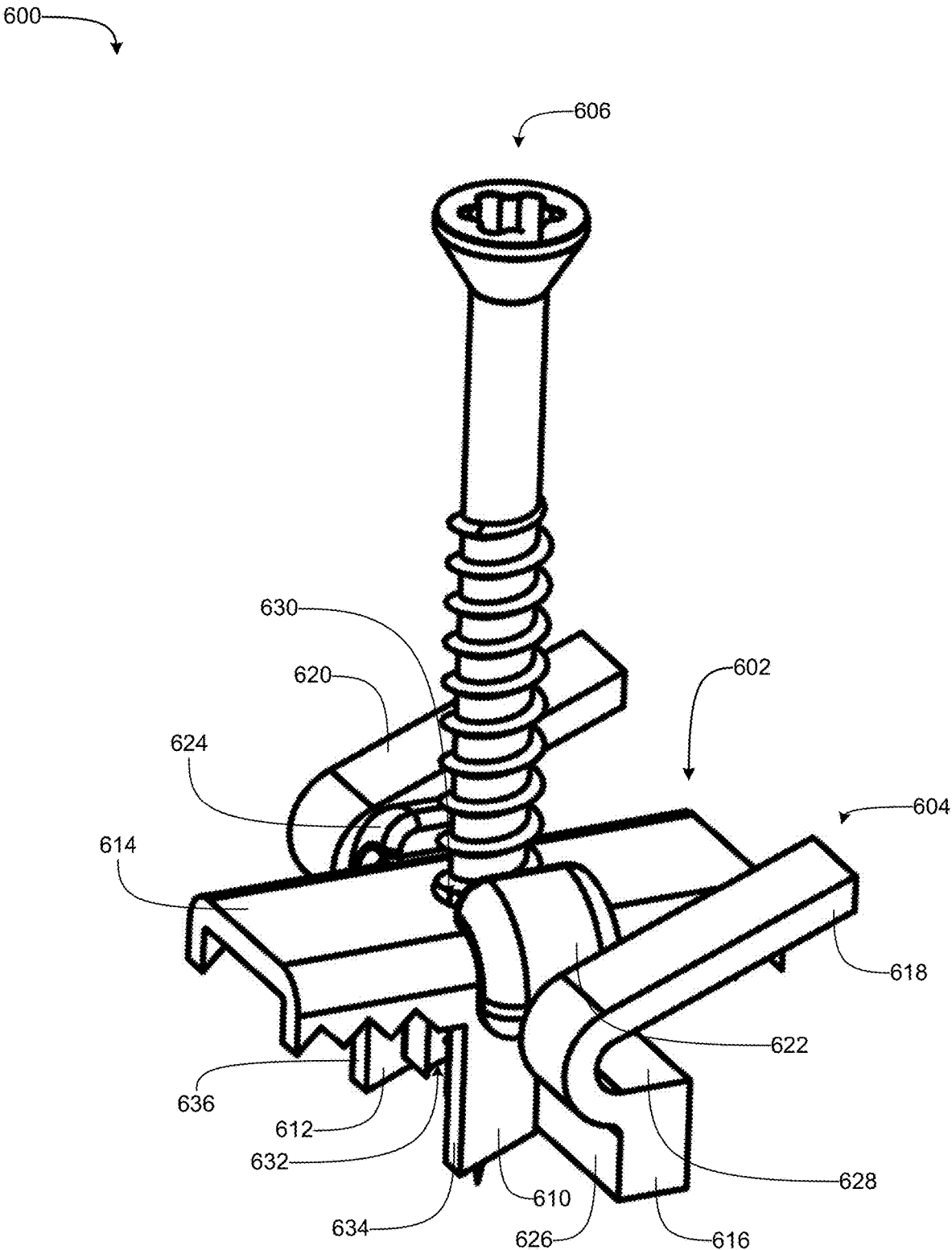


FIG. 14

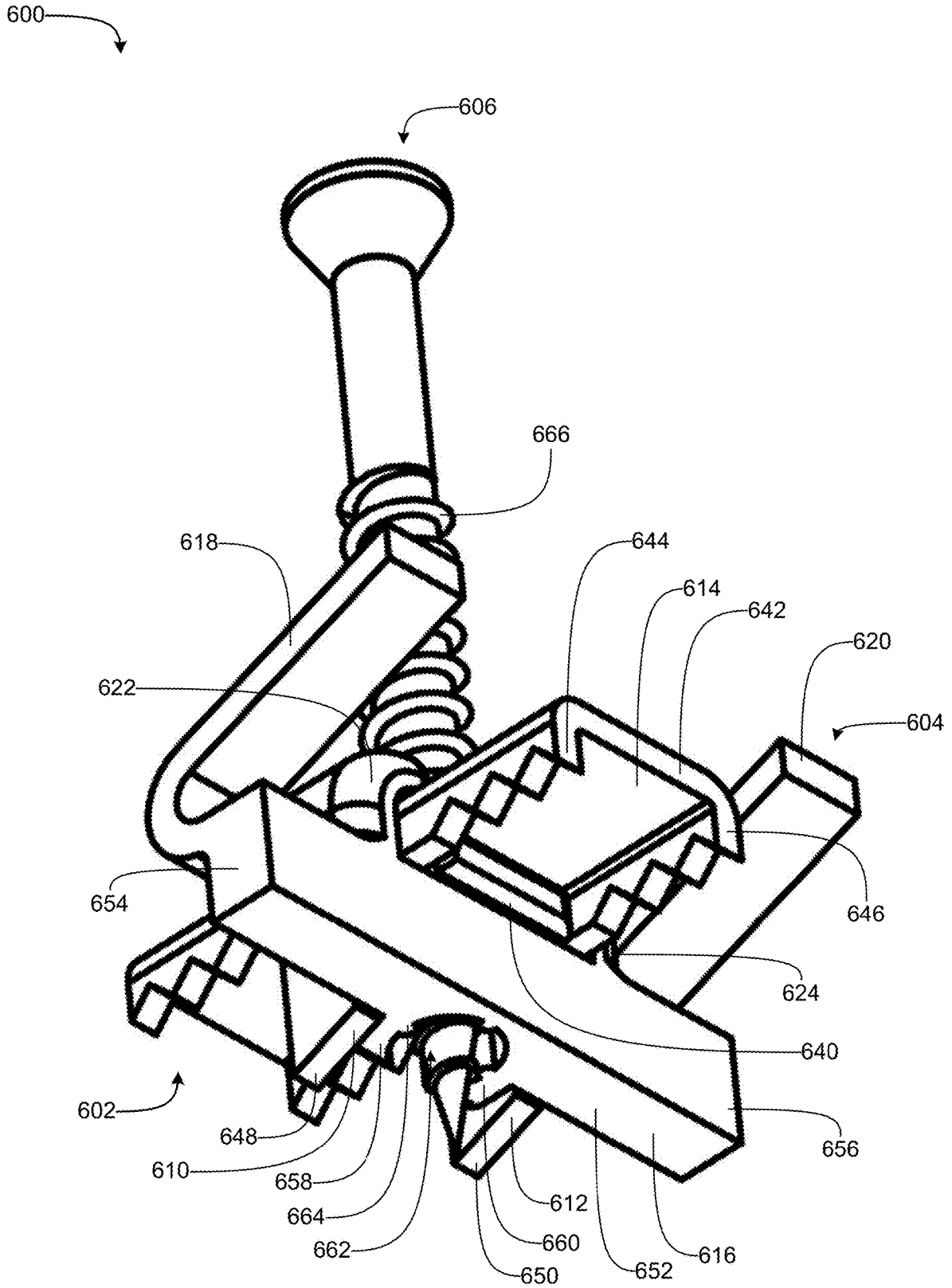


FIG. 15

600

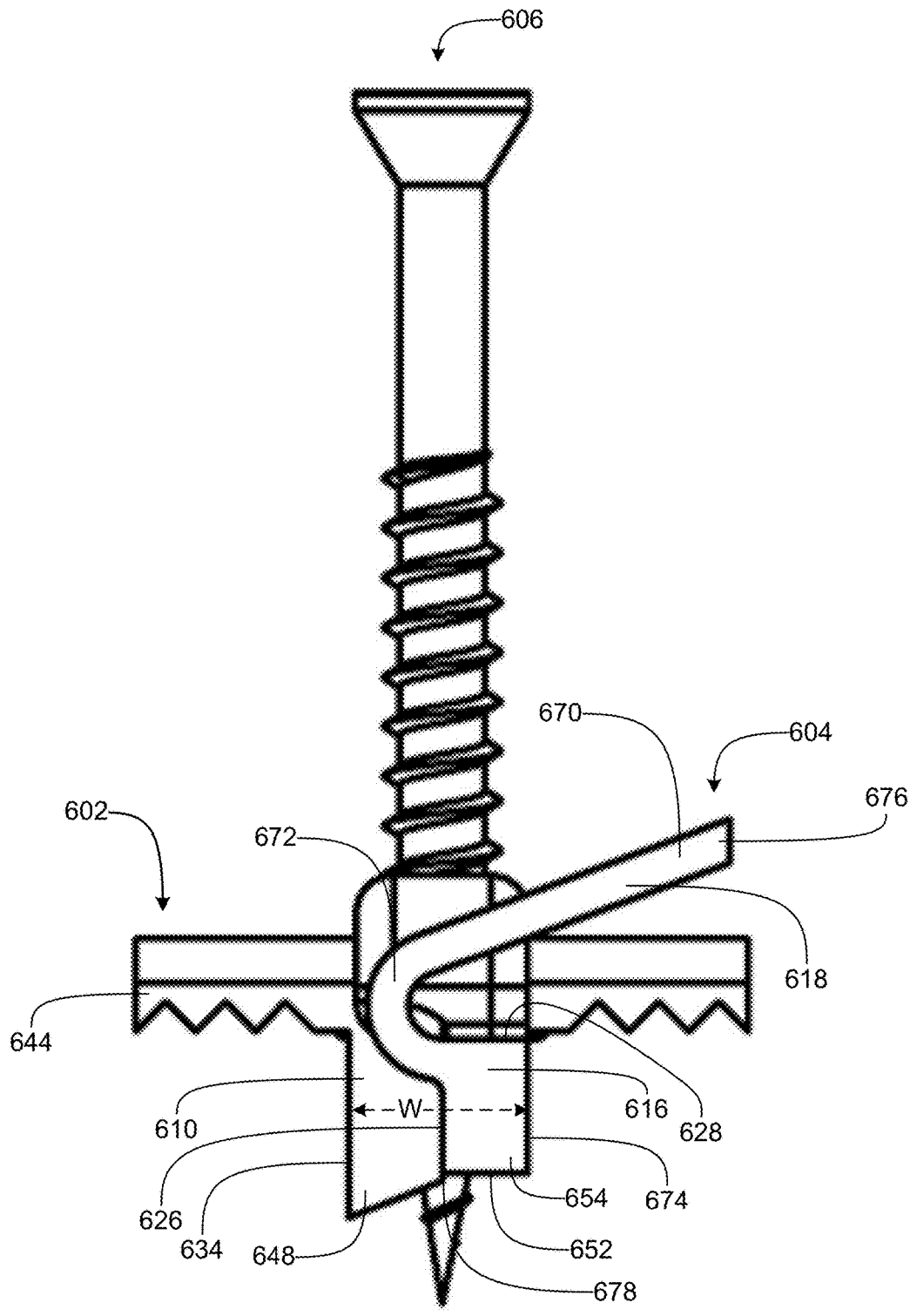


FIG. 16

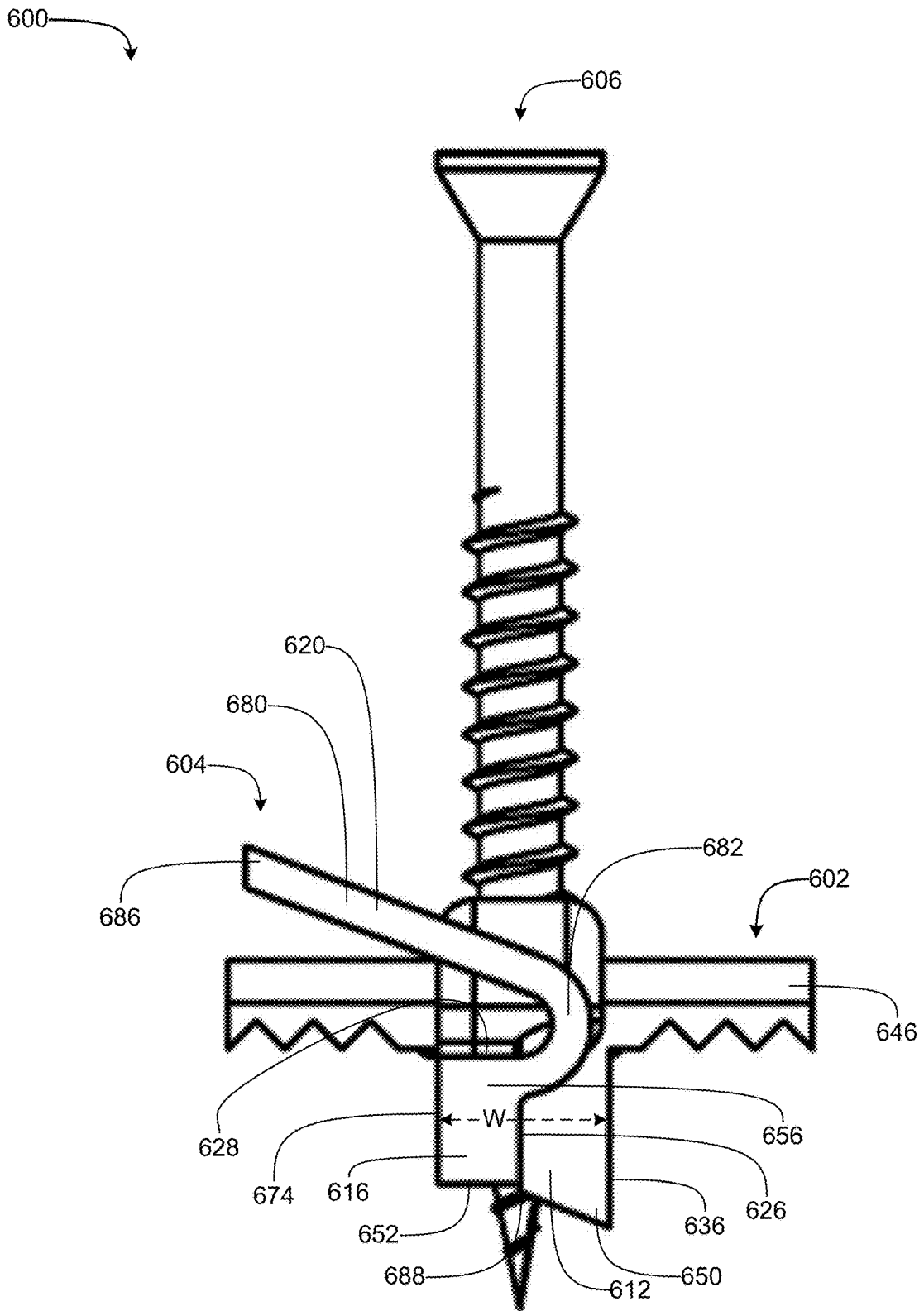


FIG. 17

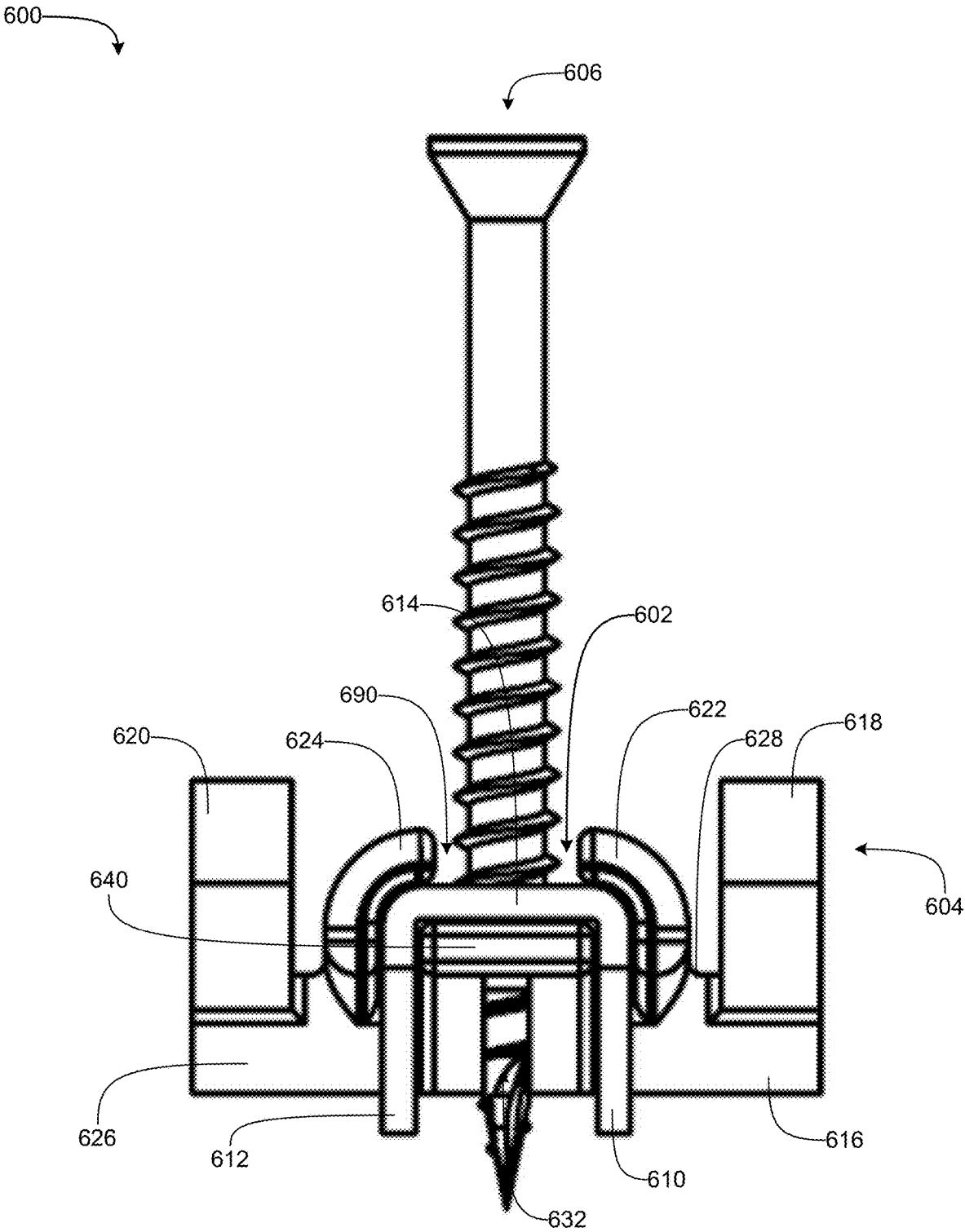


FIG. 18

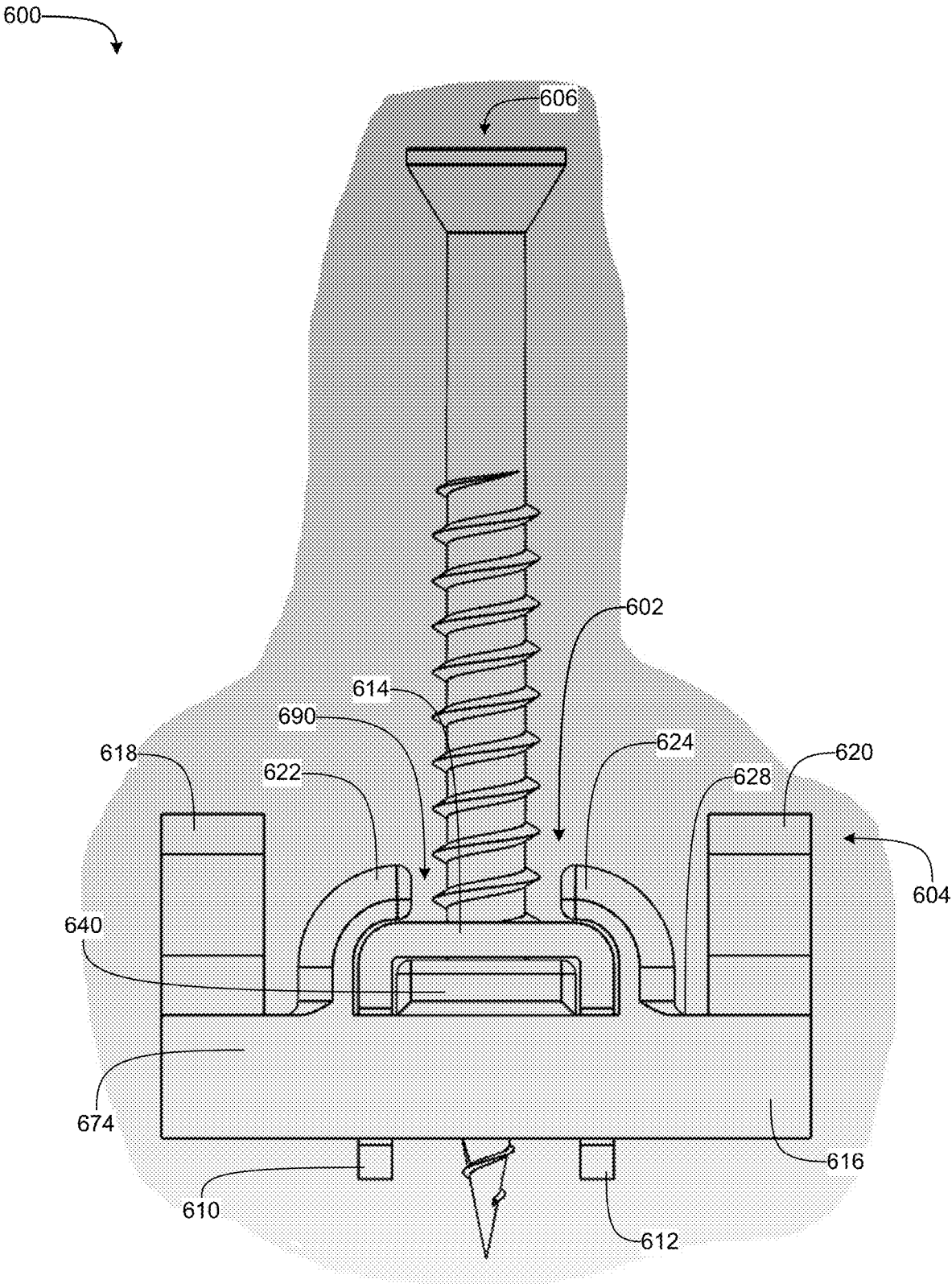


FIG. 19

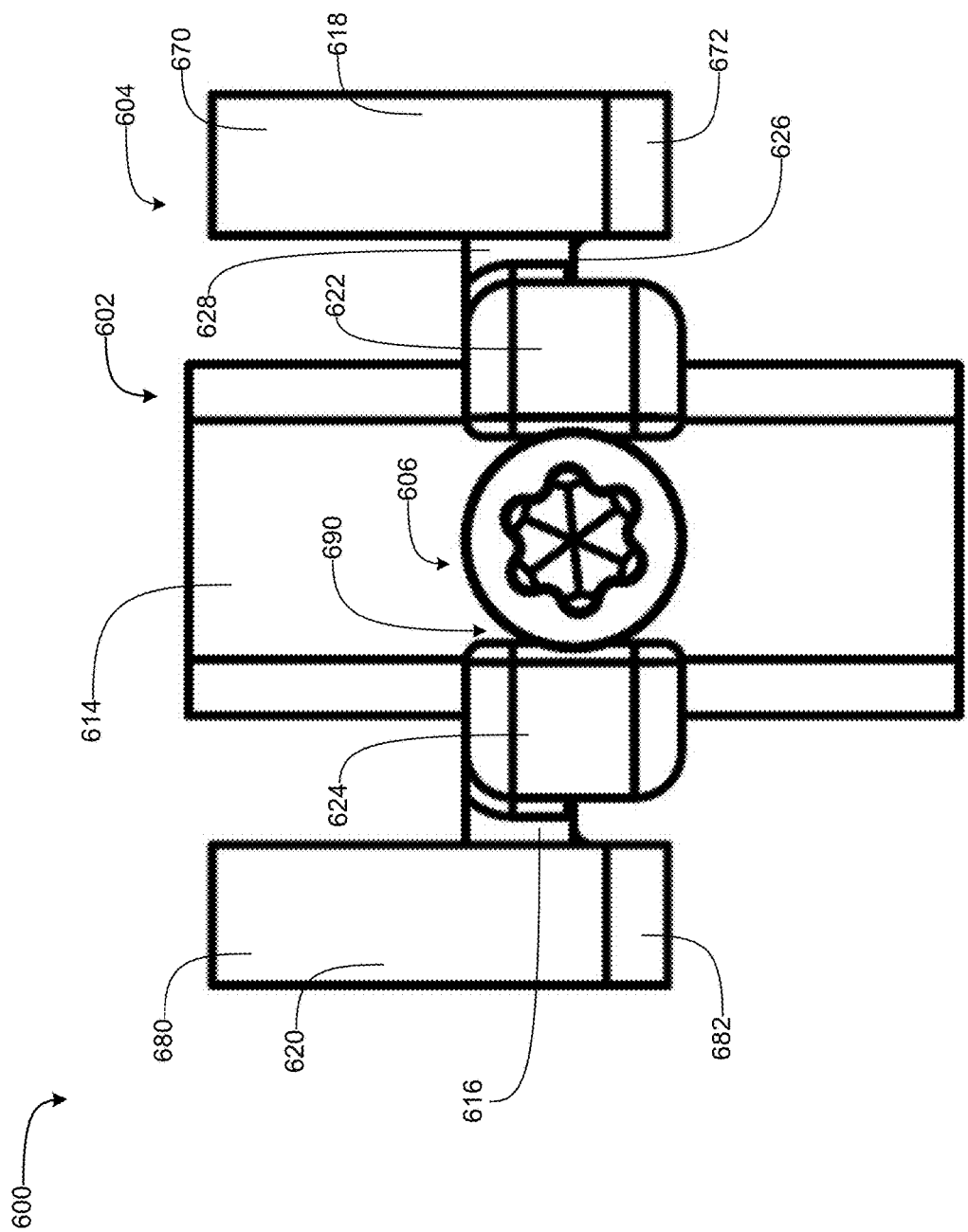


FIG. 20

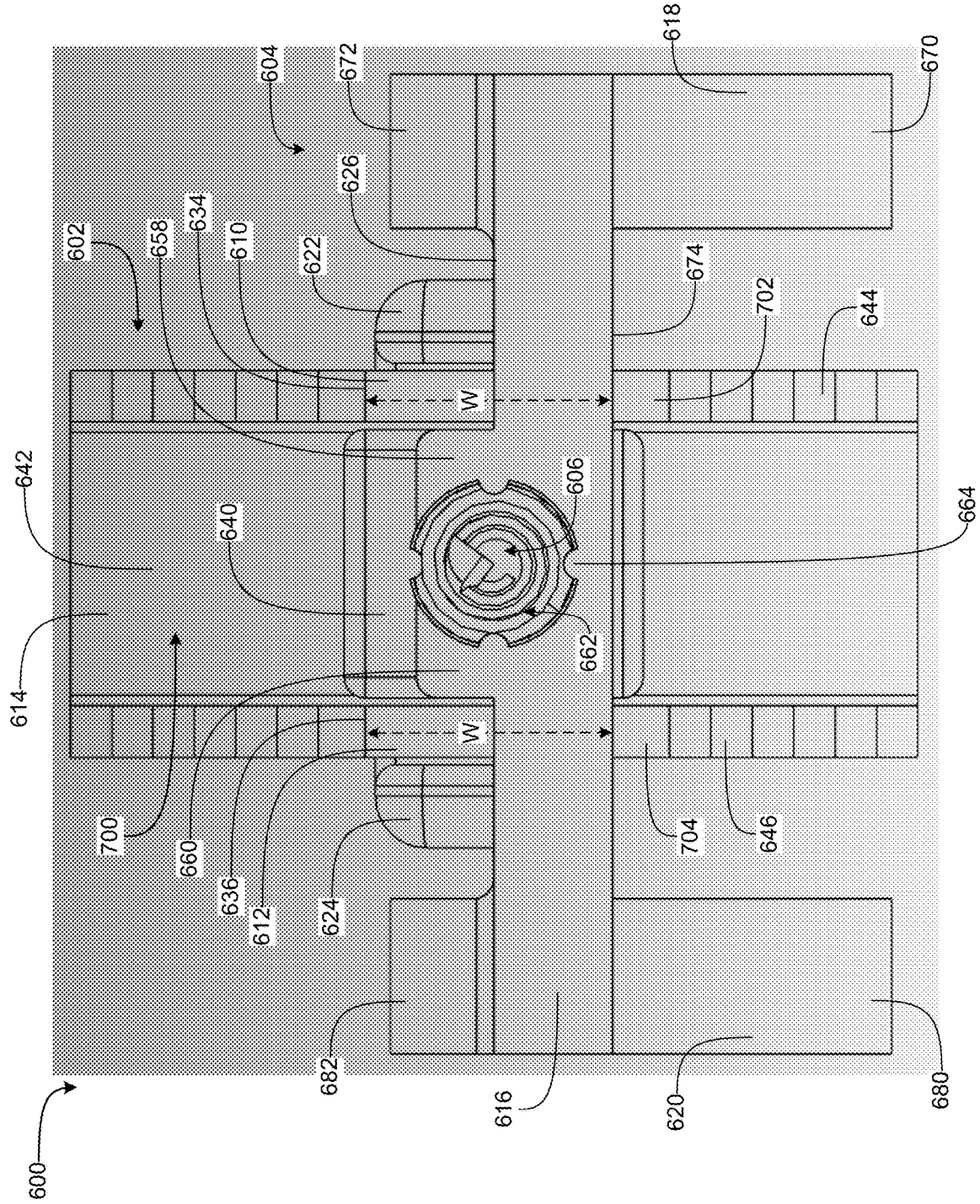


FIG. 21

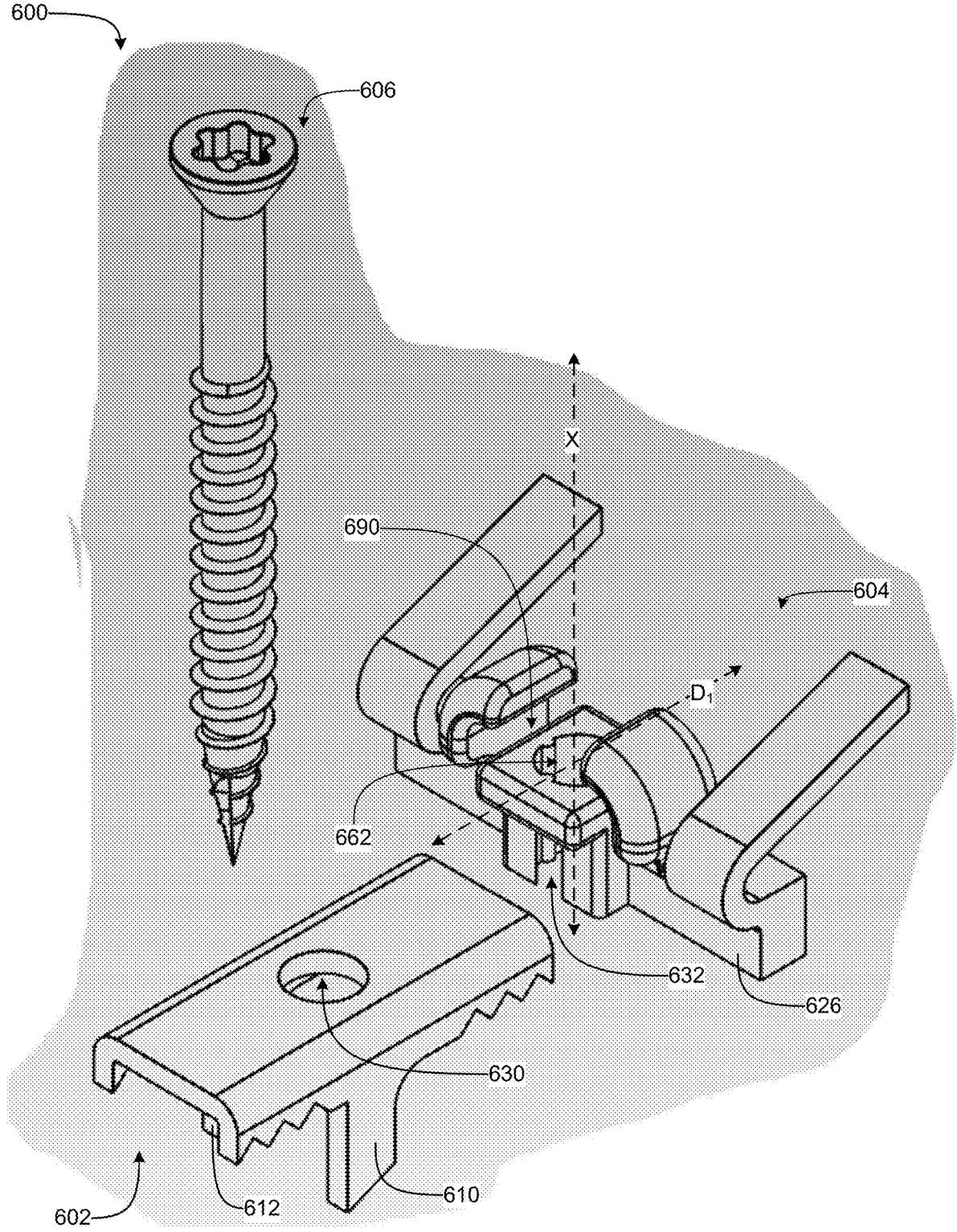


FIG. 22

604 →

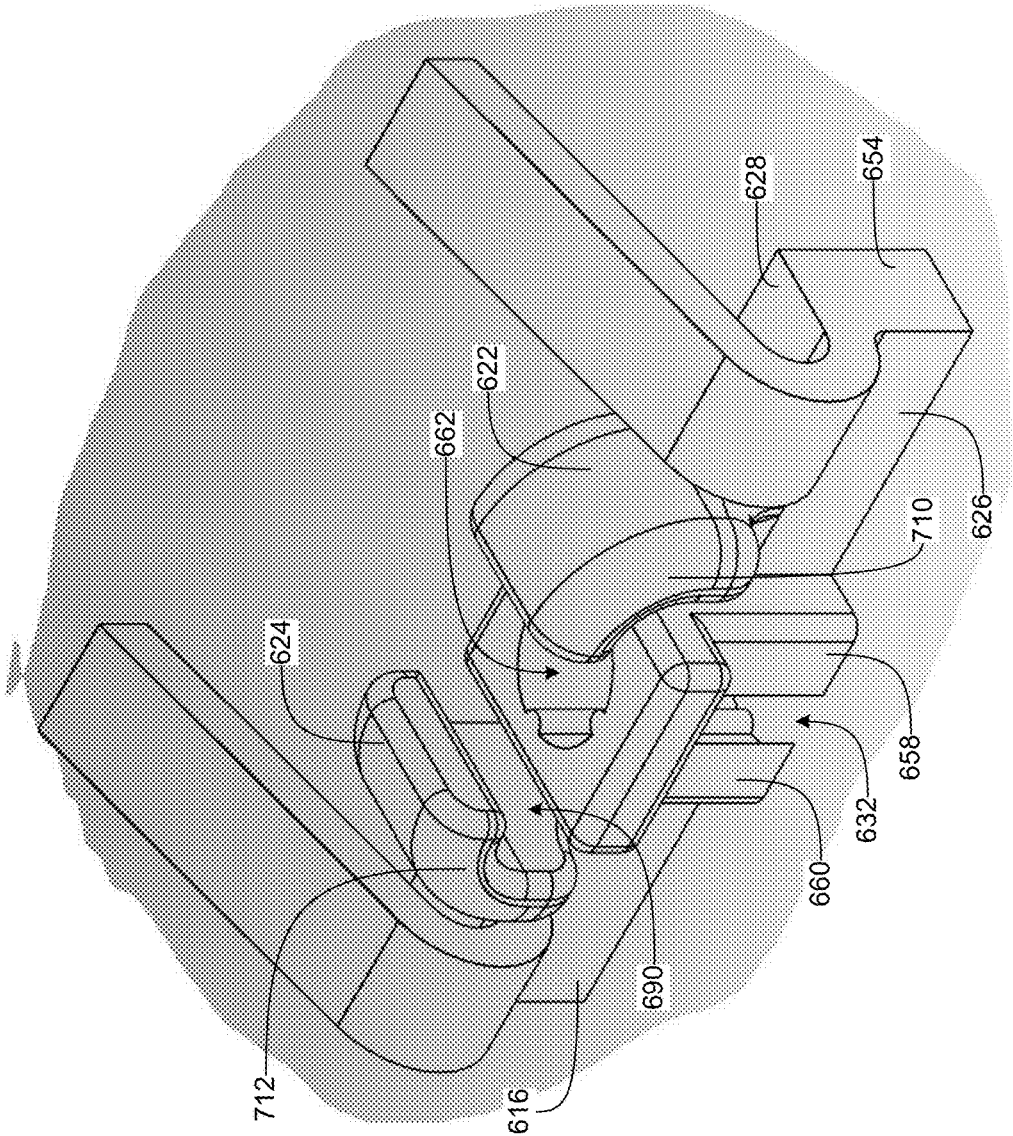


FIG. 23

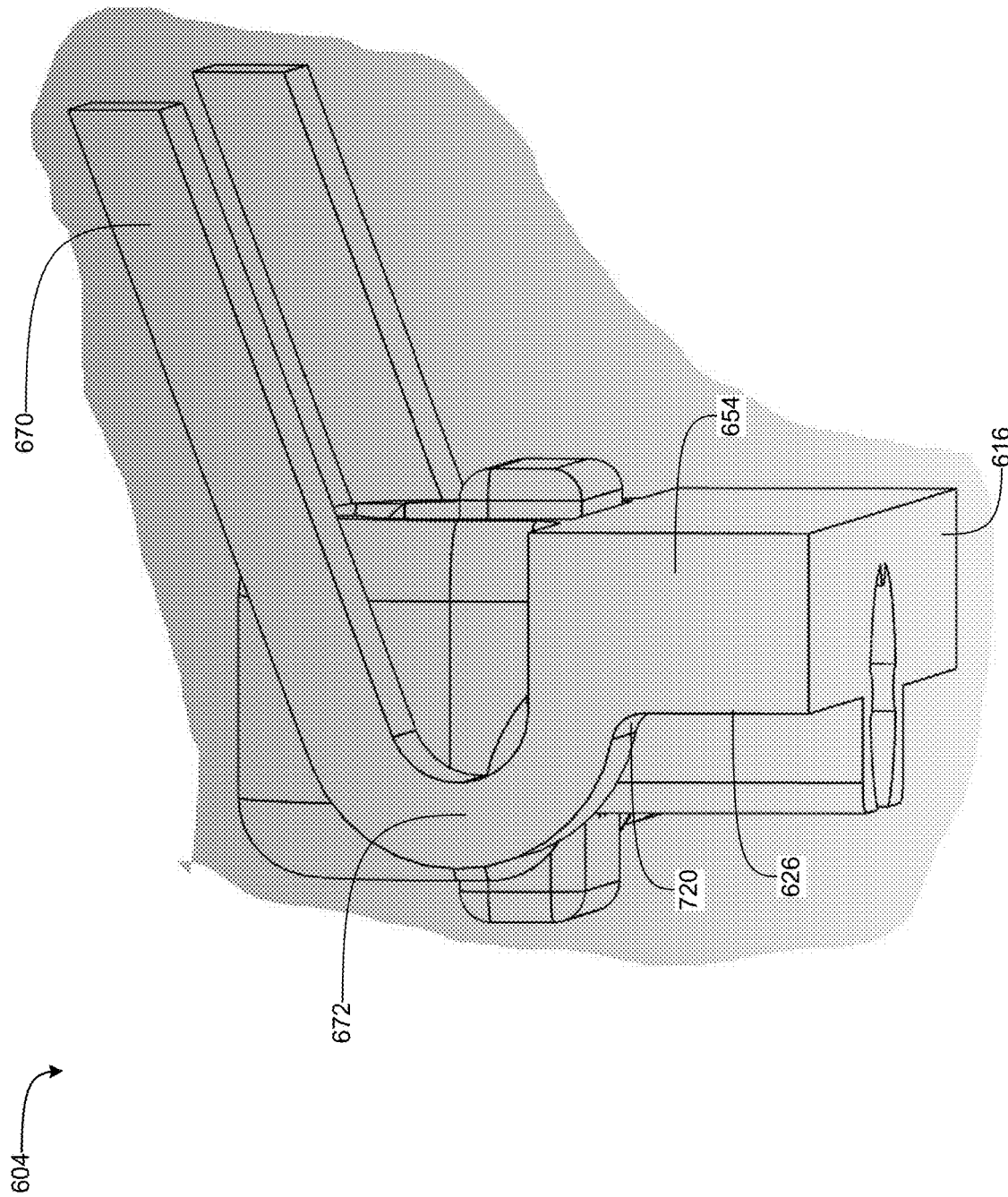


FIG. 24

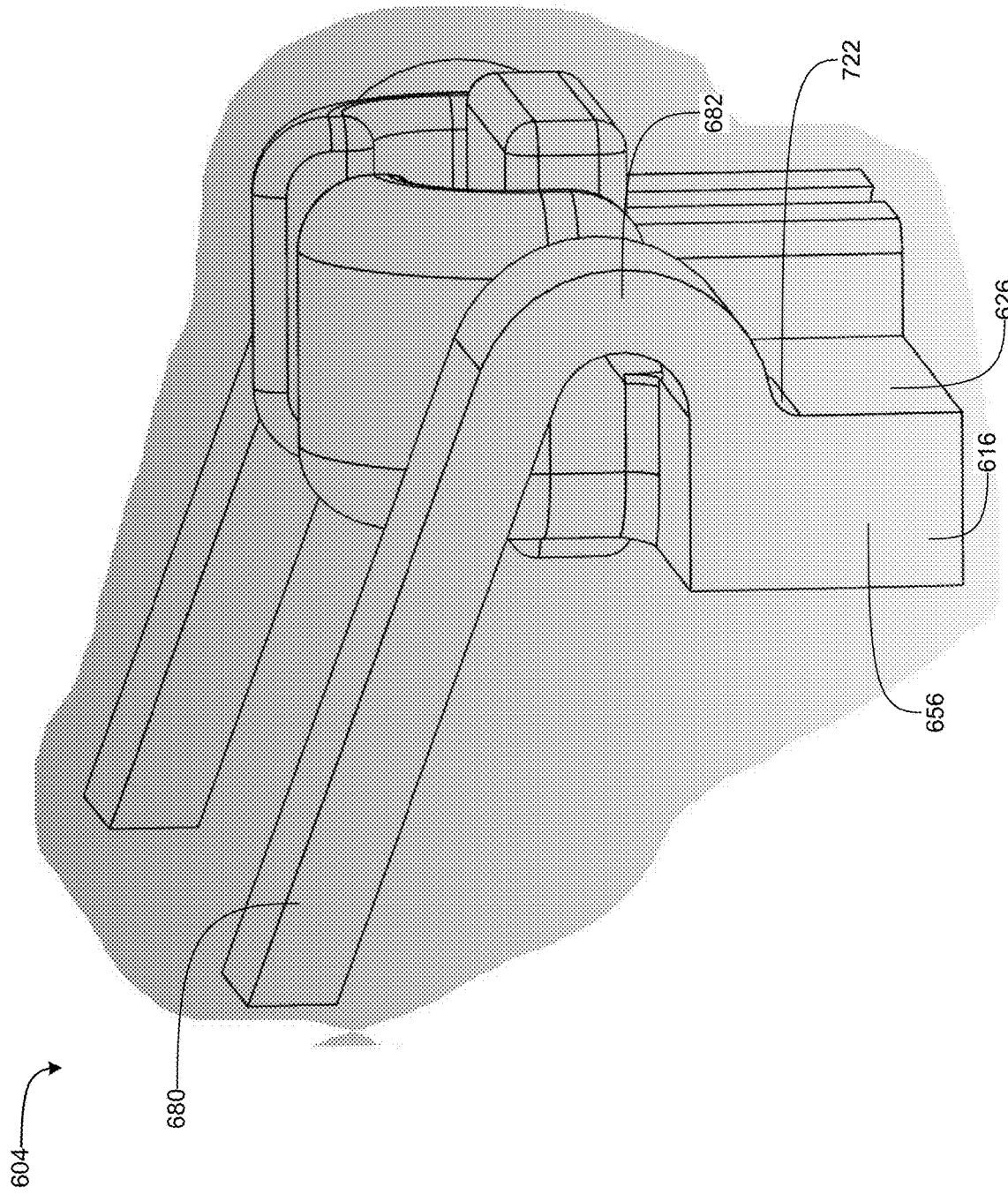


FIG. 25

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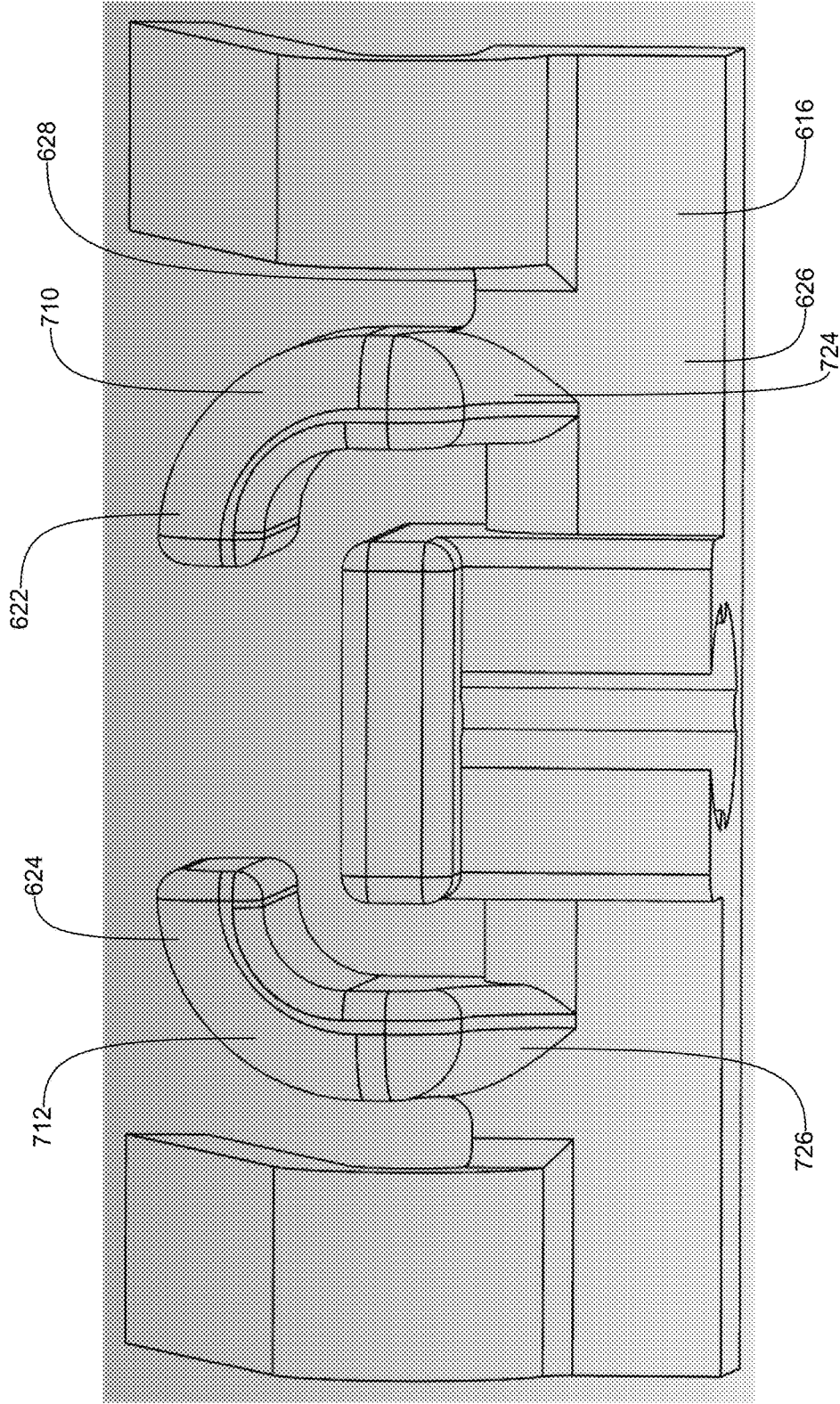


FIG. 26

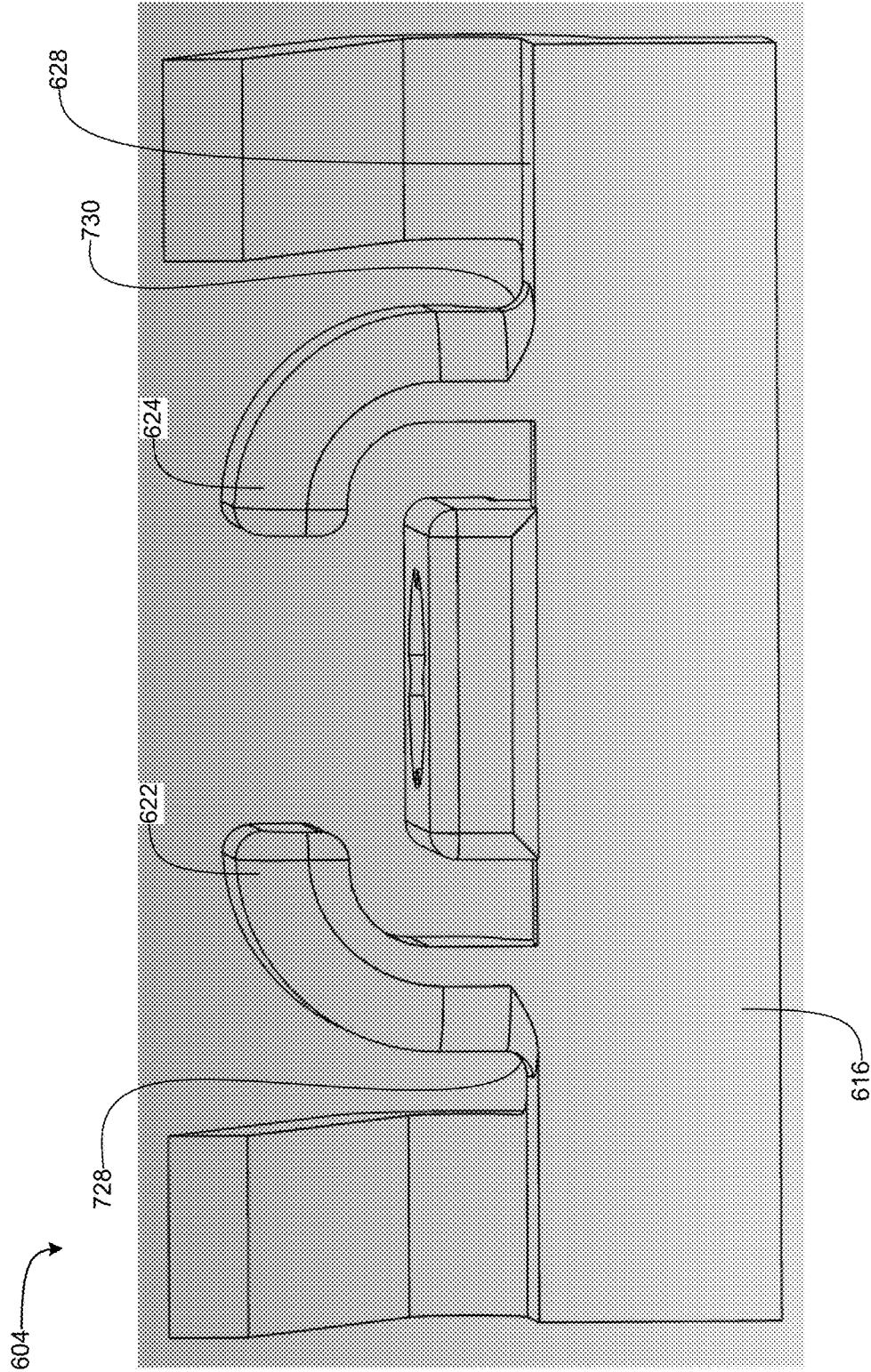


FIG. 27

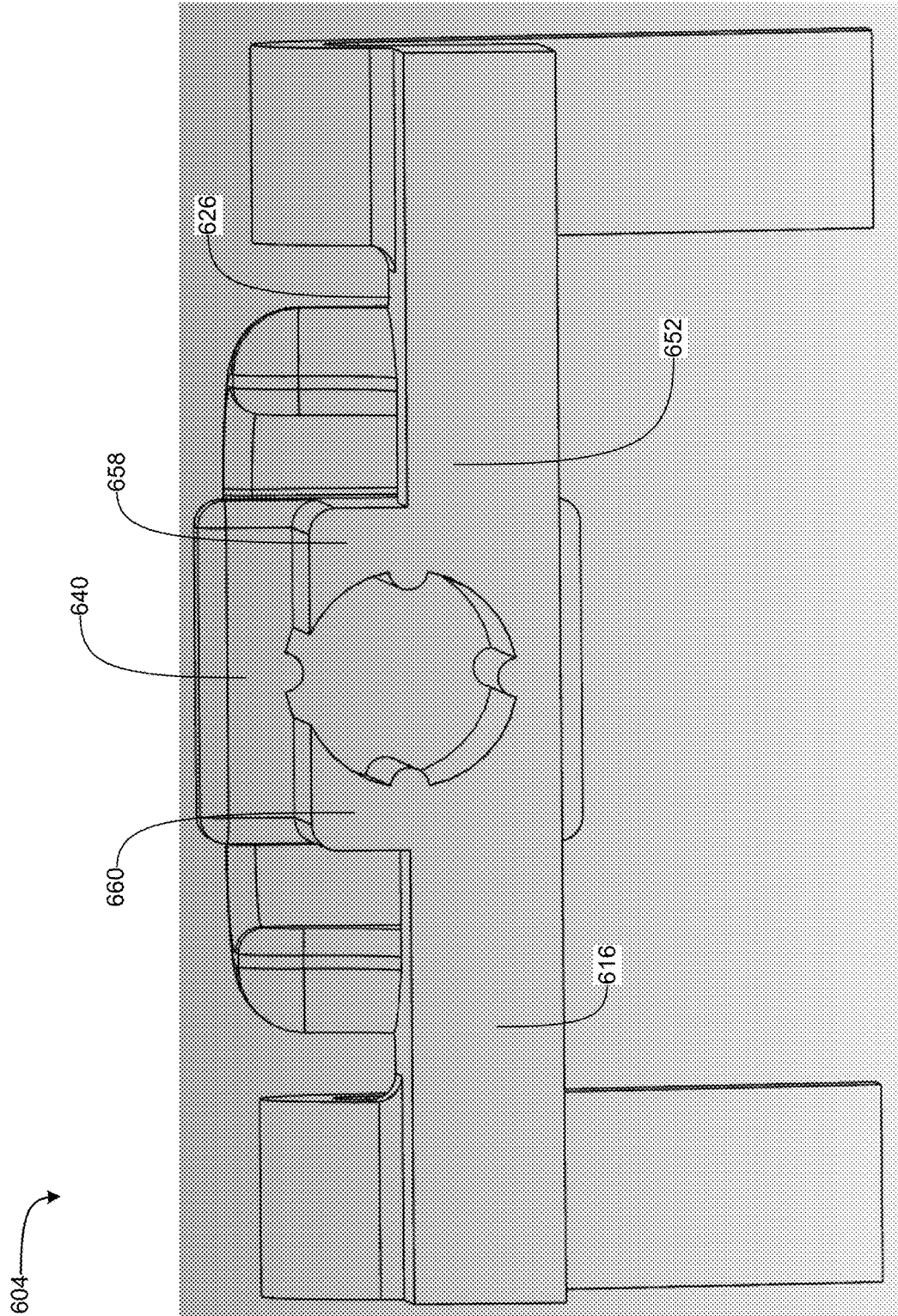


FIG. 28

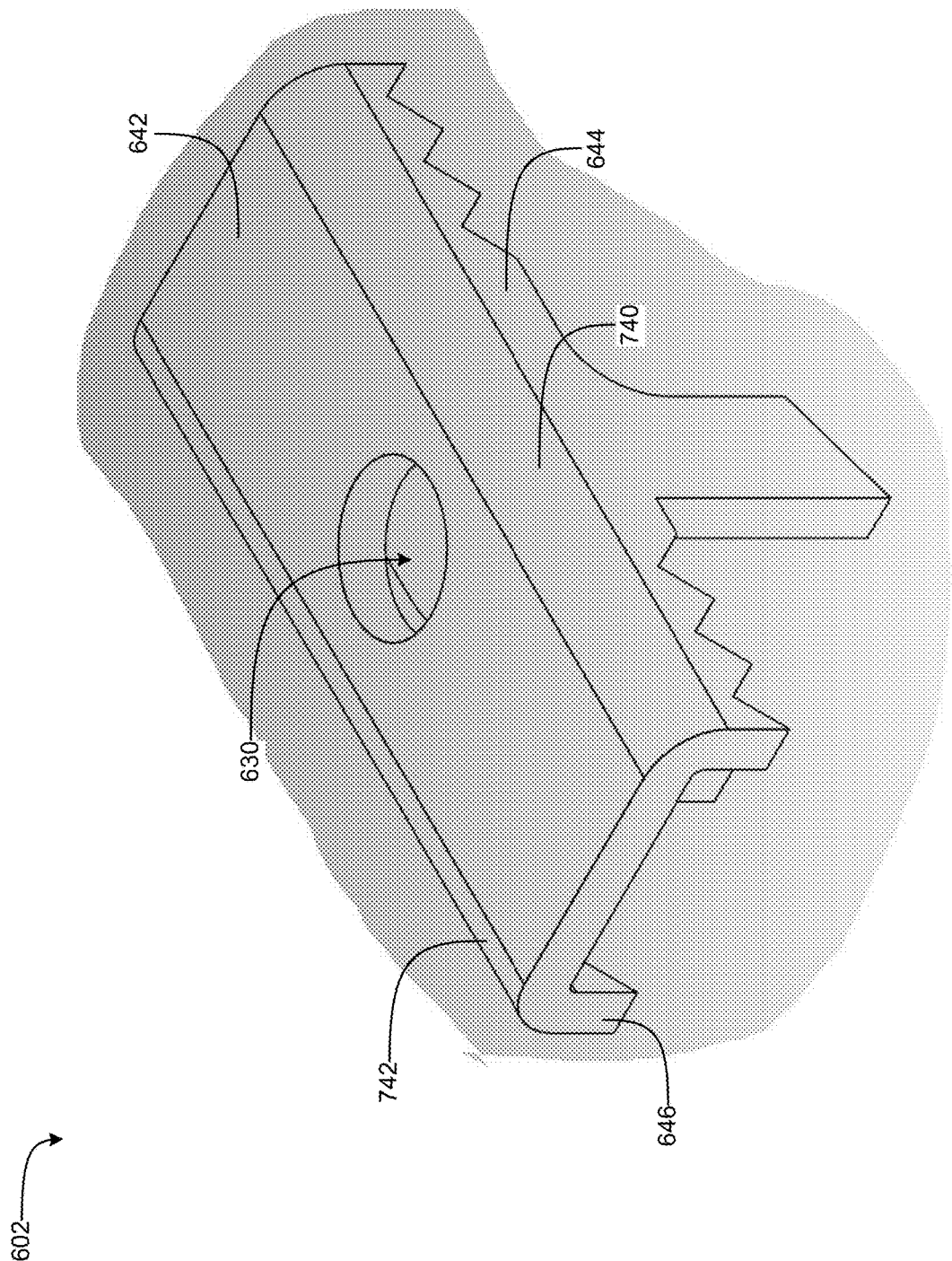


FIG. 29

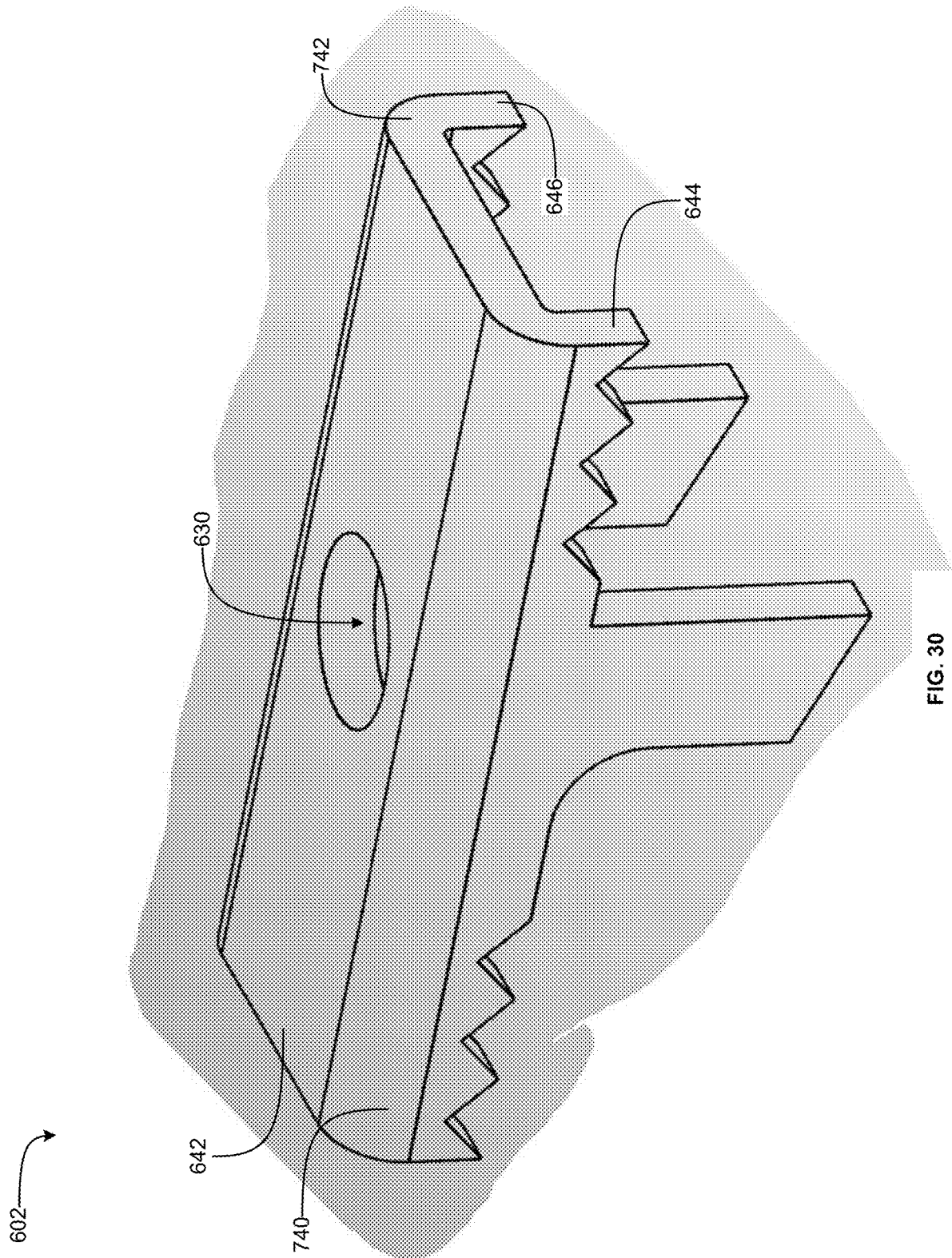


FIG. 30

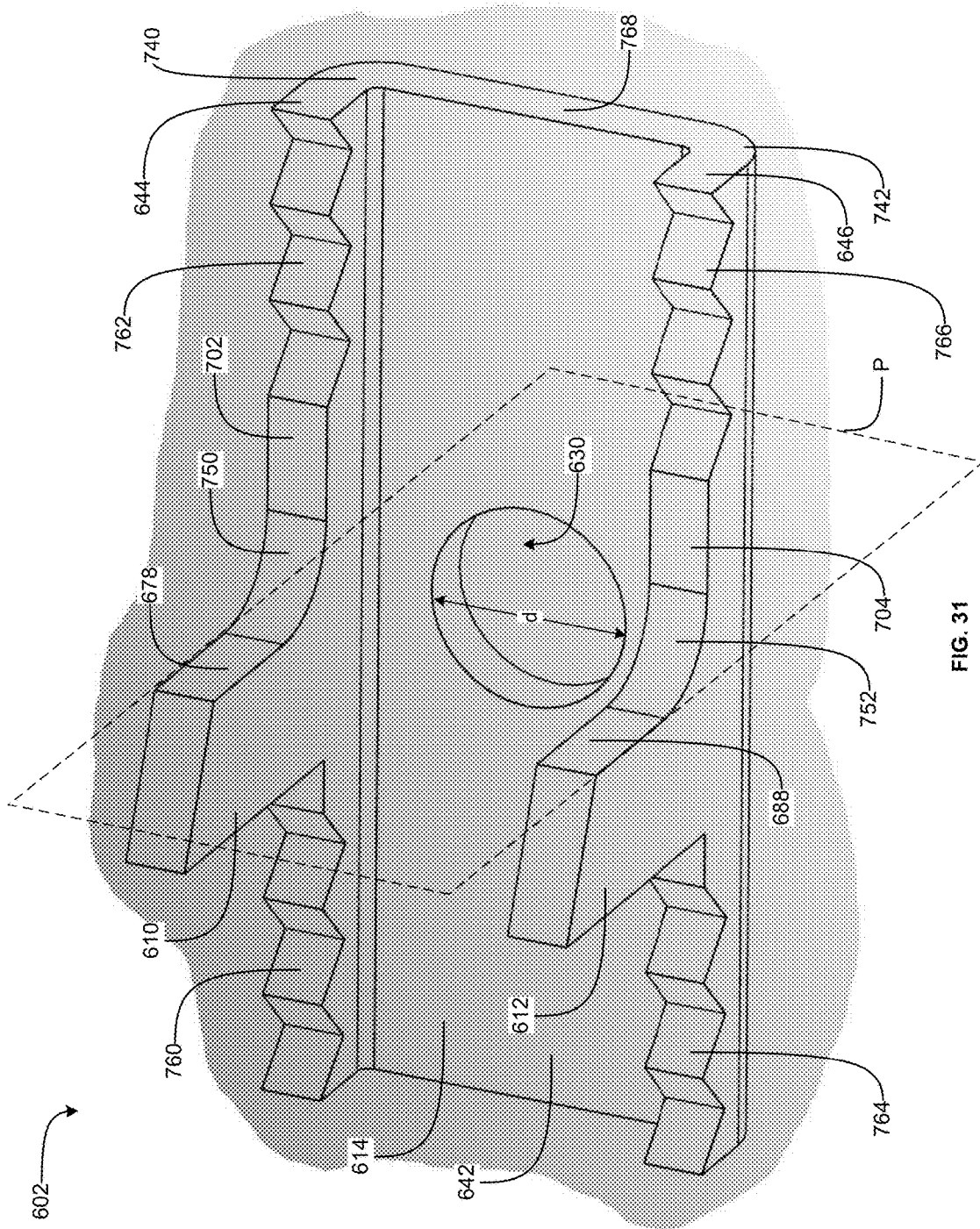


FIG. 31

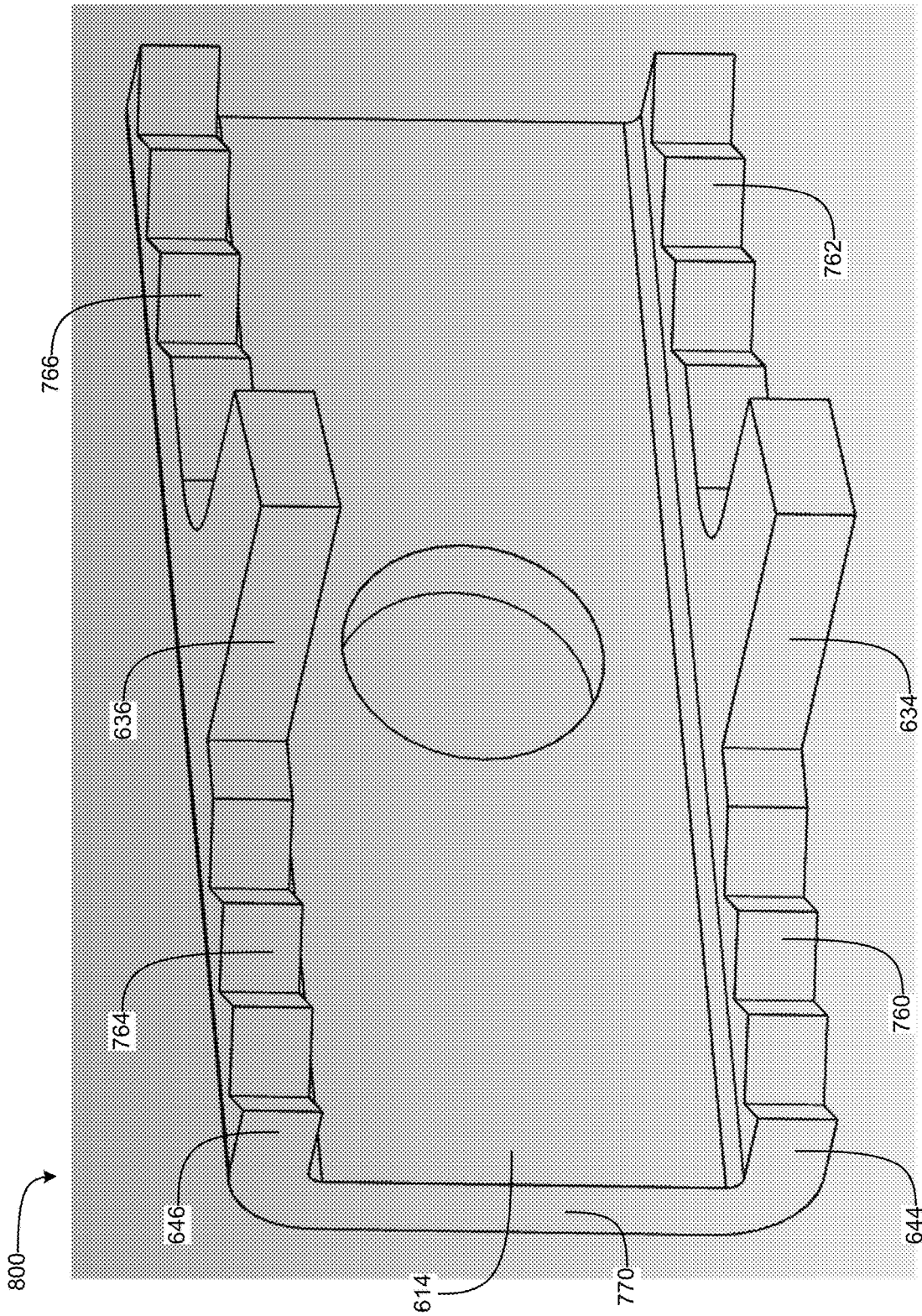


FIG. 32

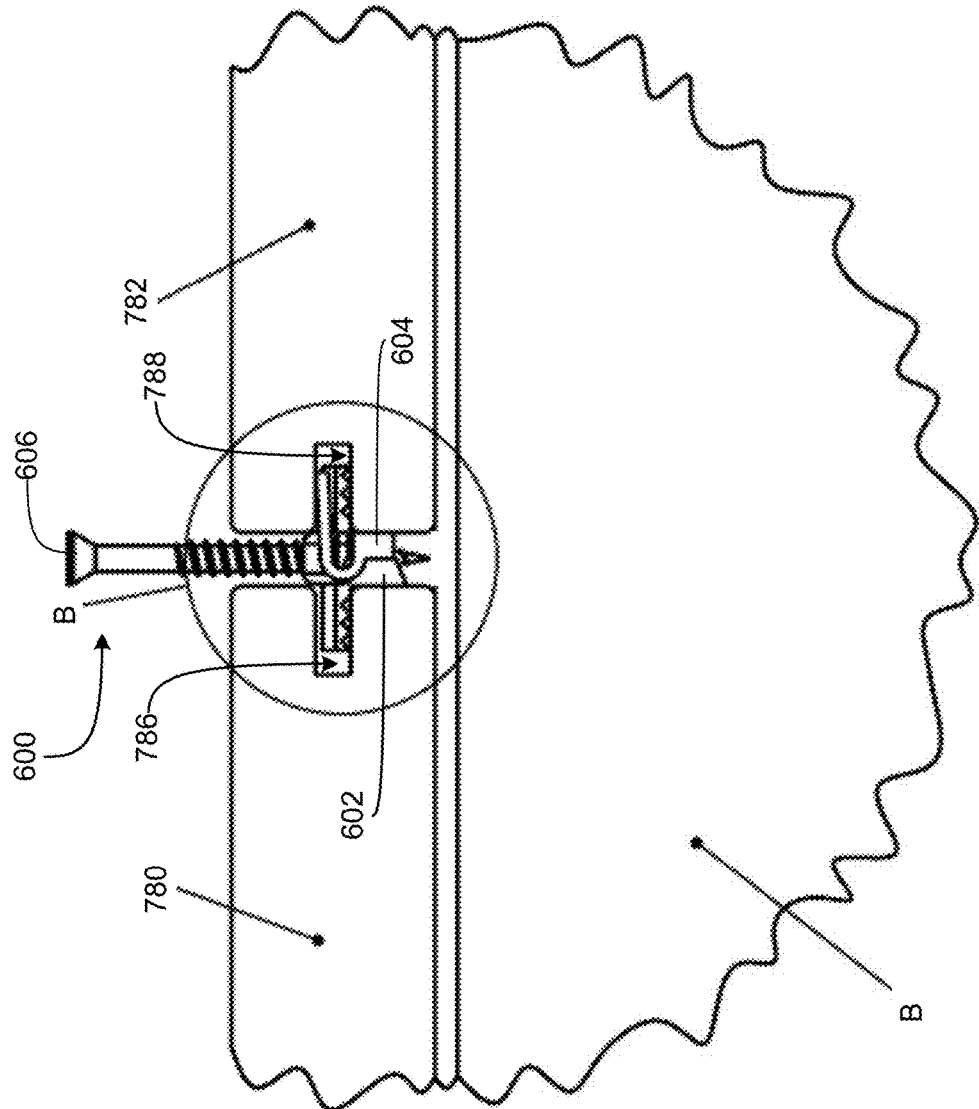


FIG. 33

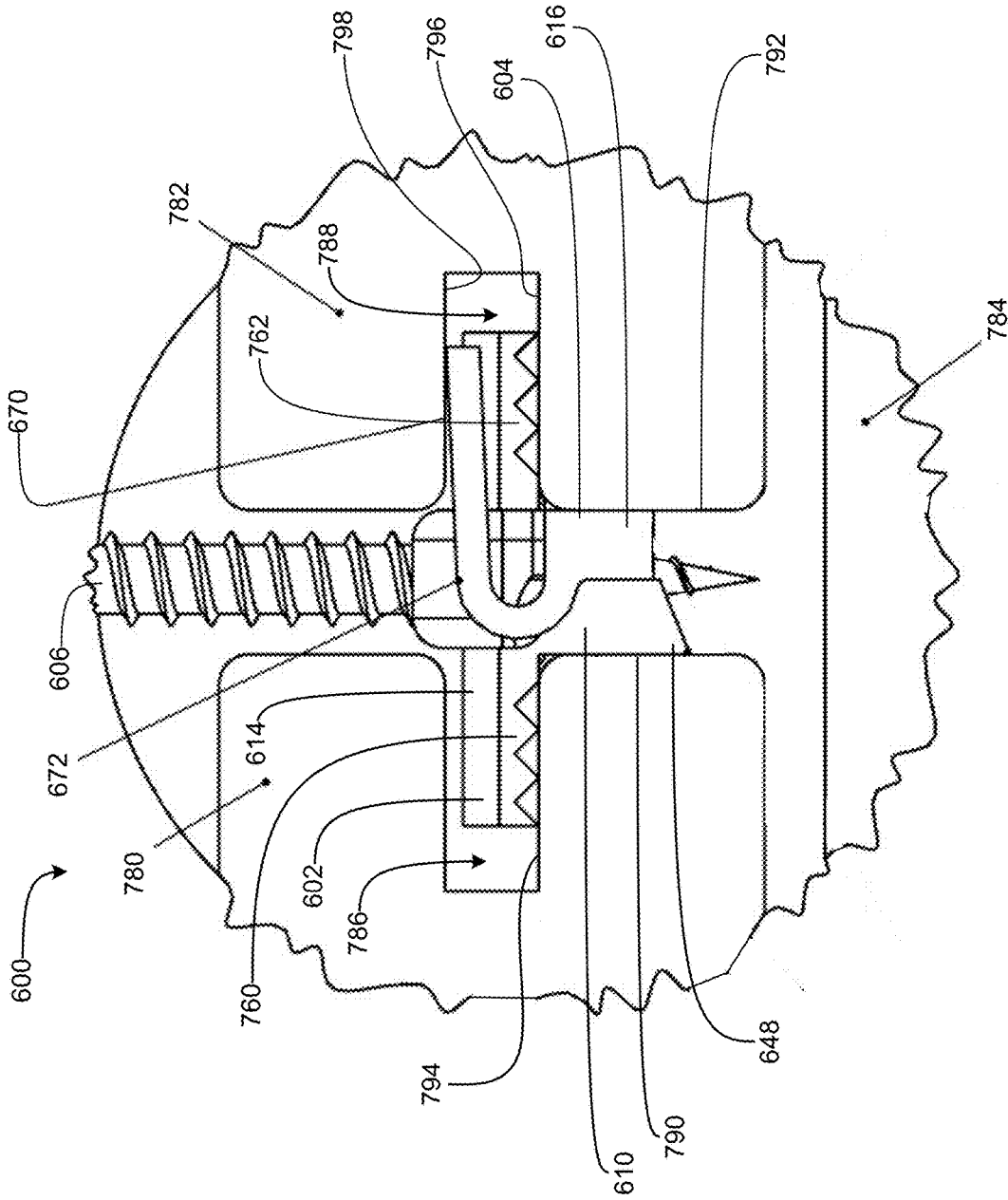


FIG. 34

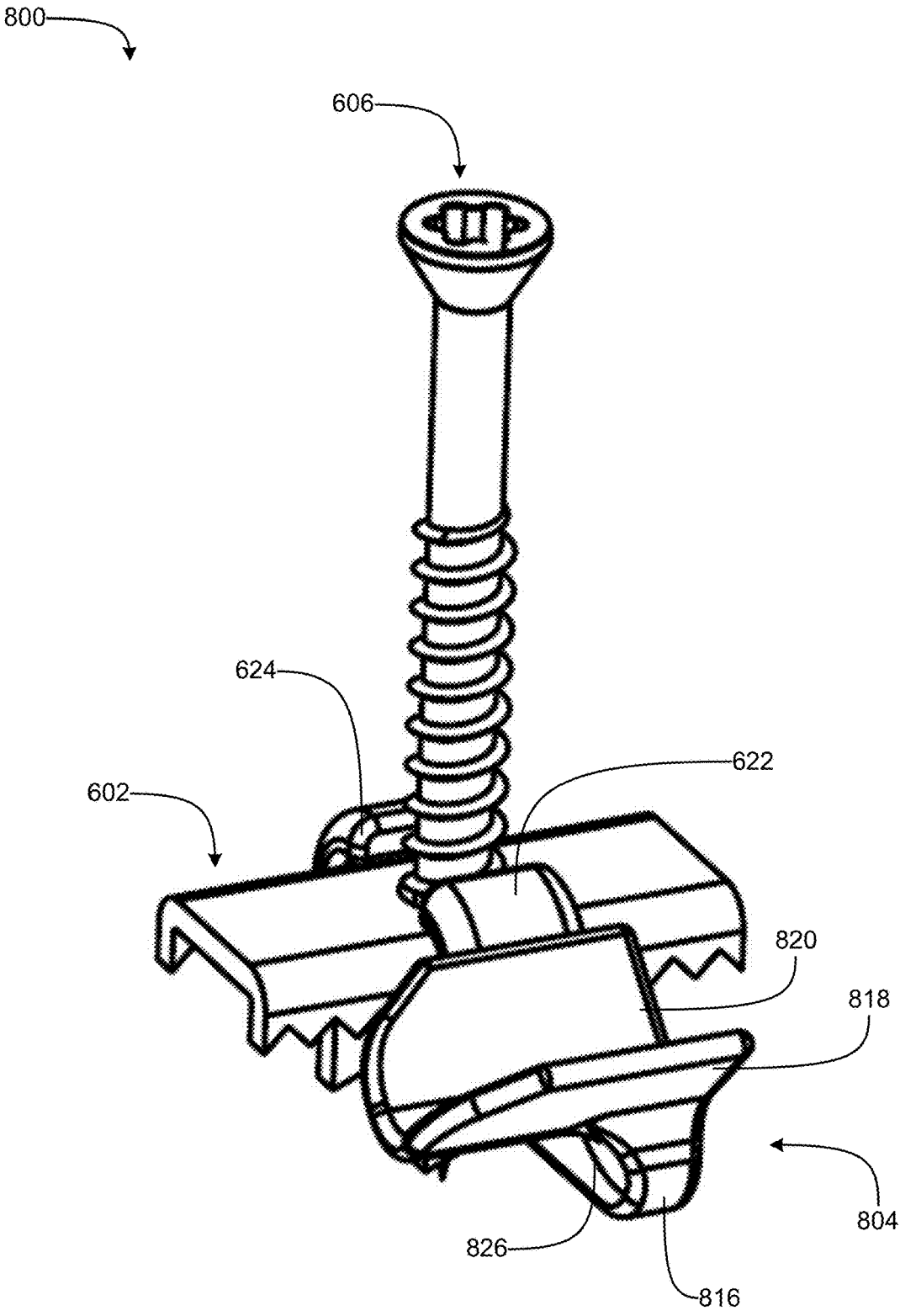


FIG. 35

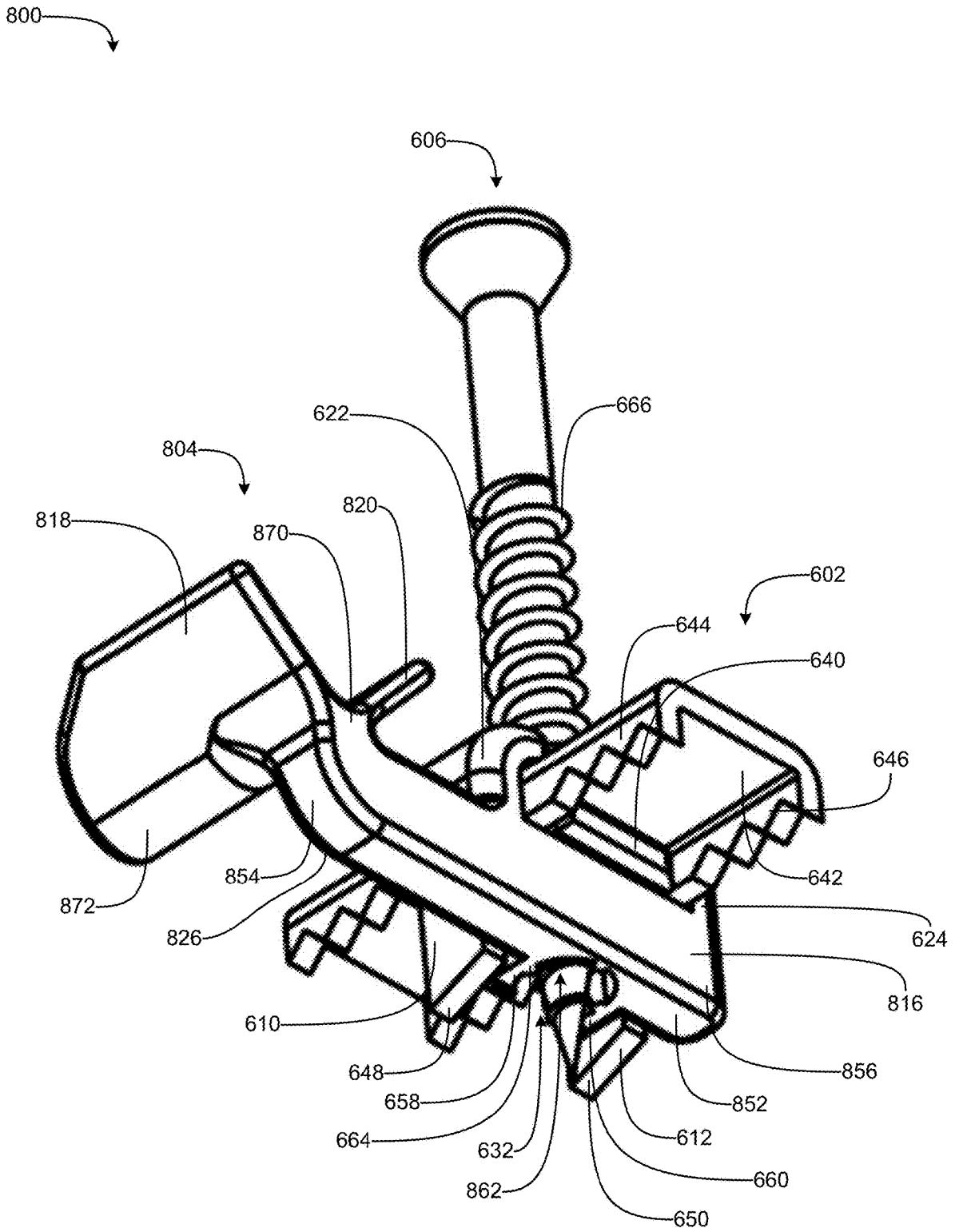


FIG. 36

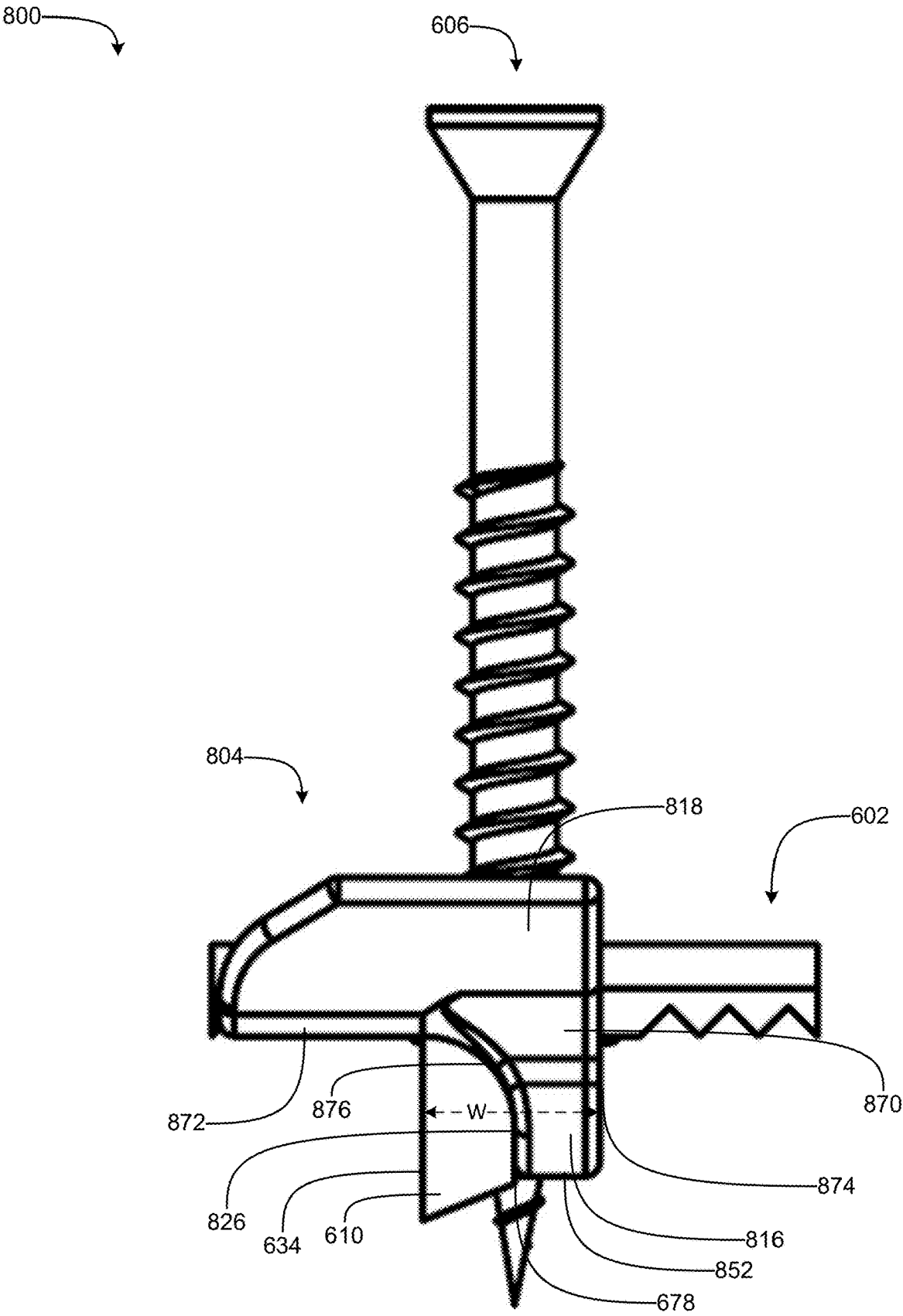


FIG. 37

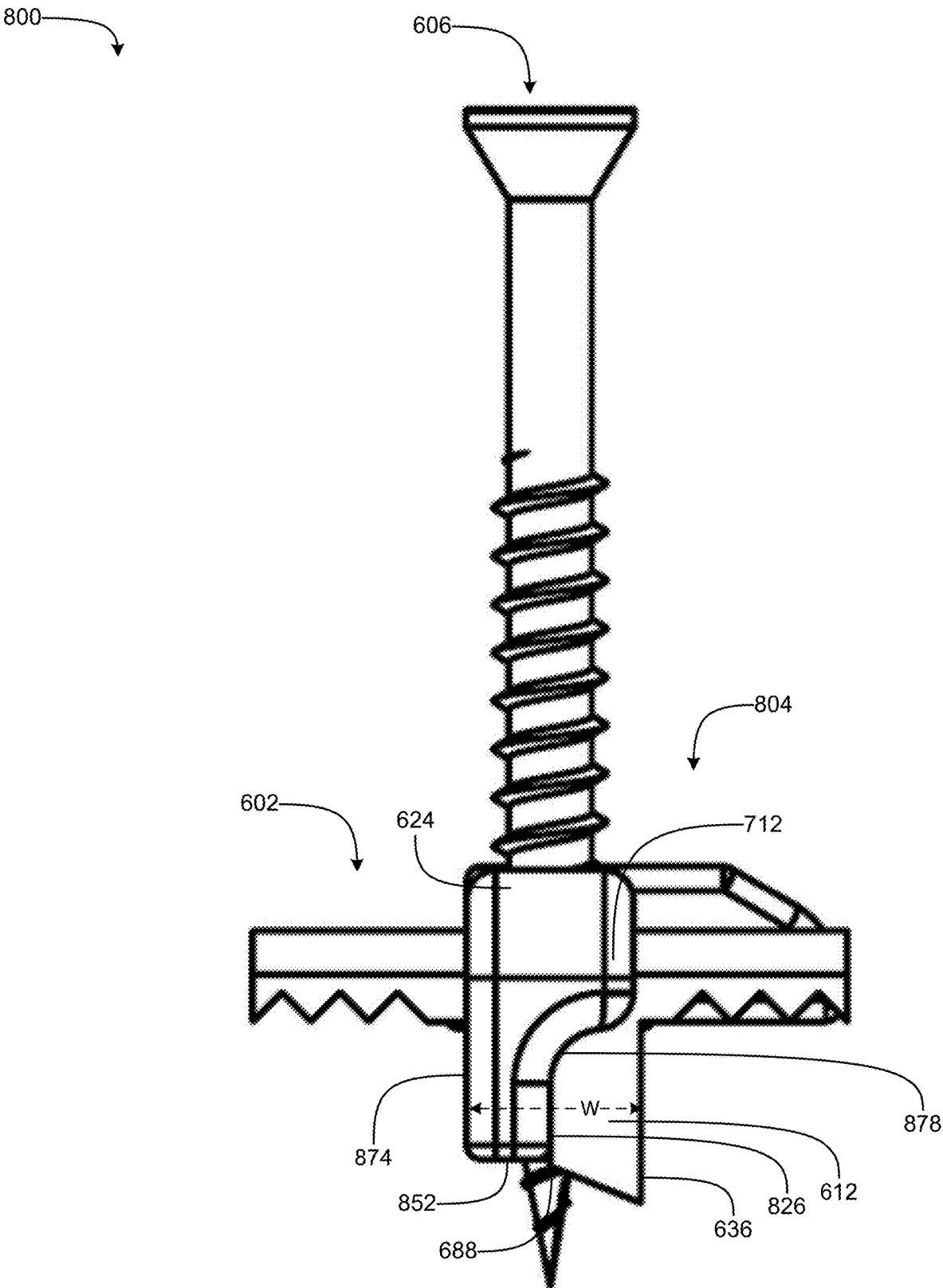


FIG. 38

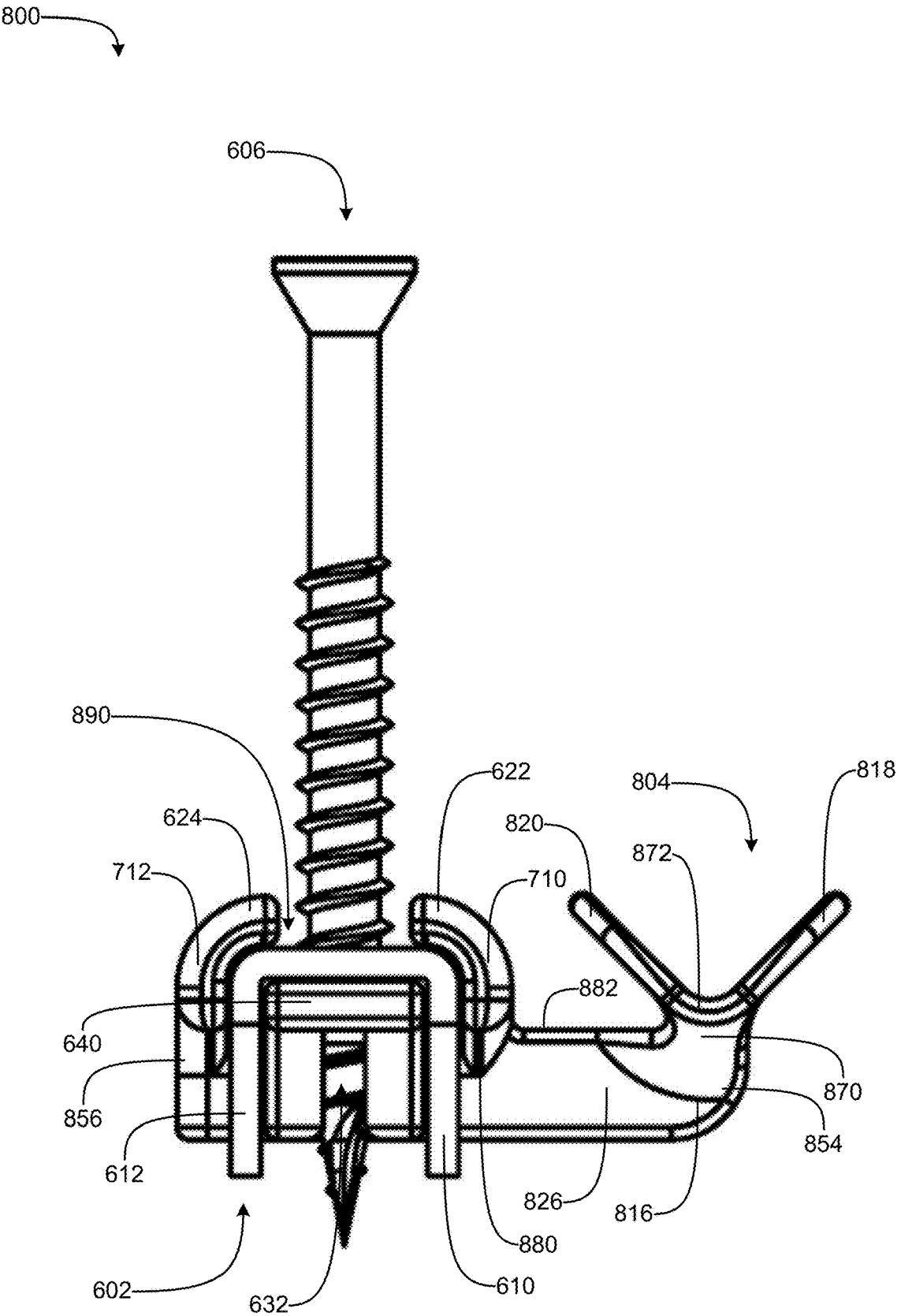


FIG. 39

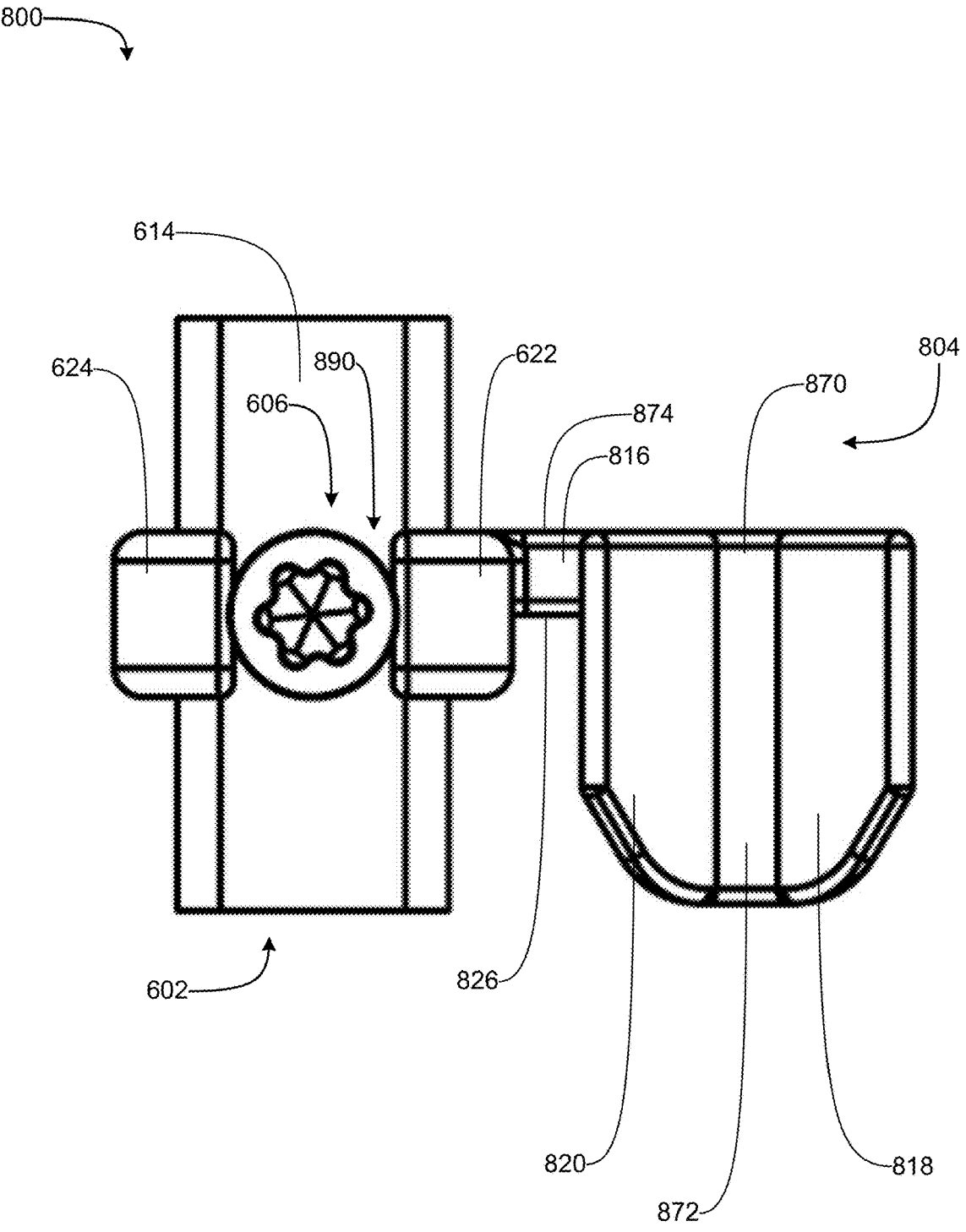


FIG. 40

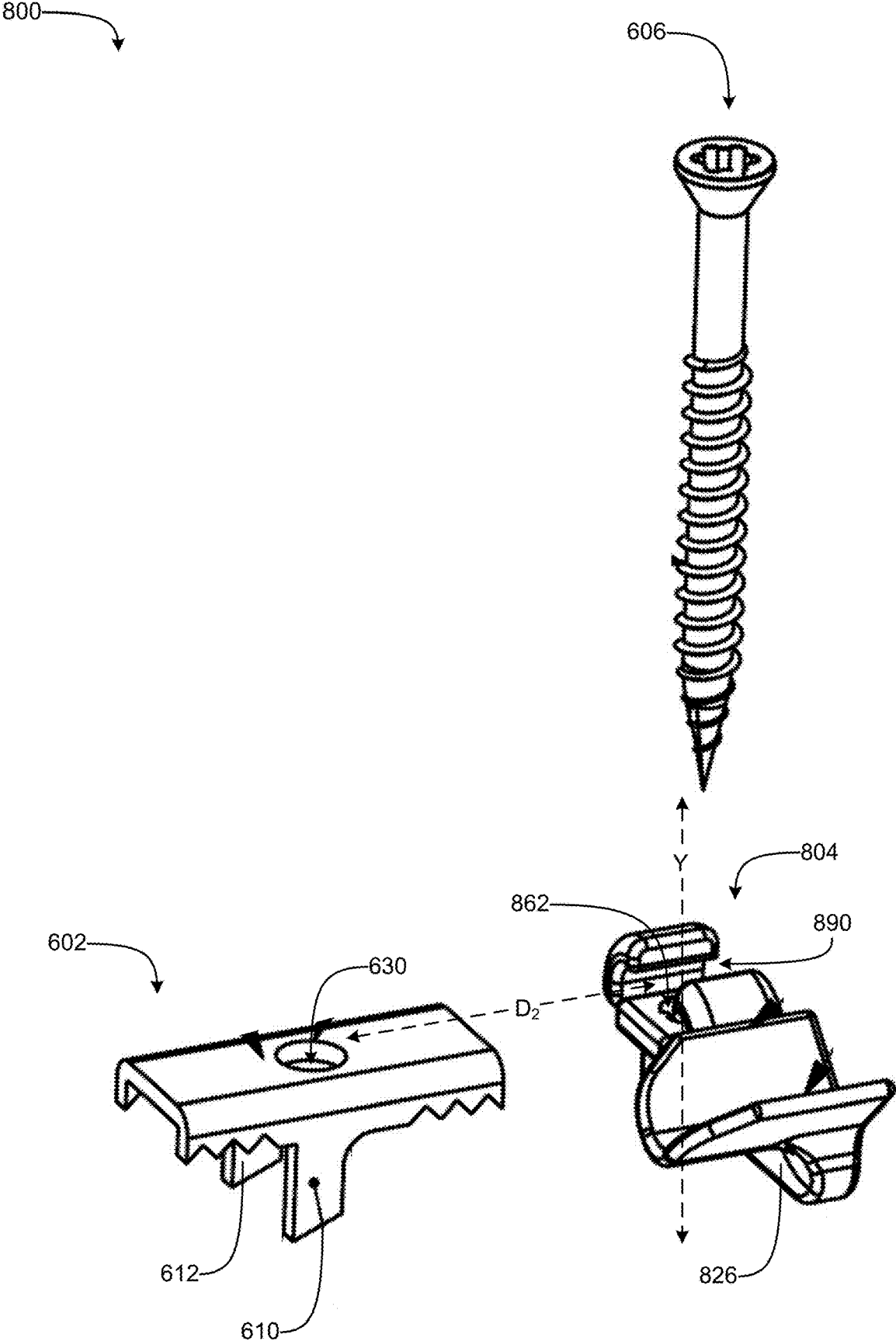


FIG. 41

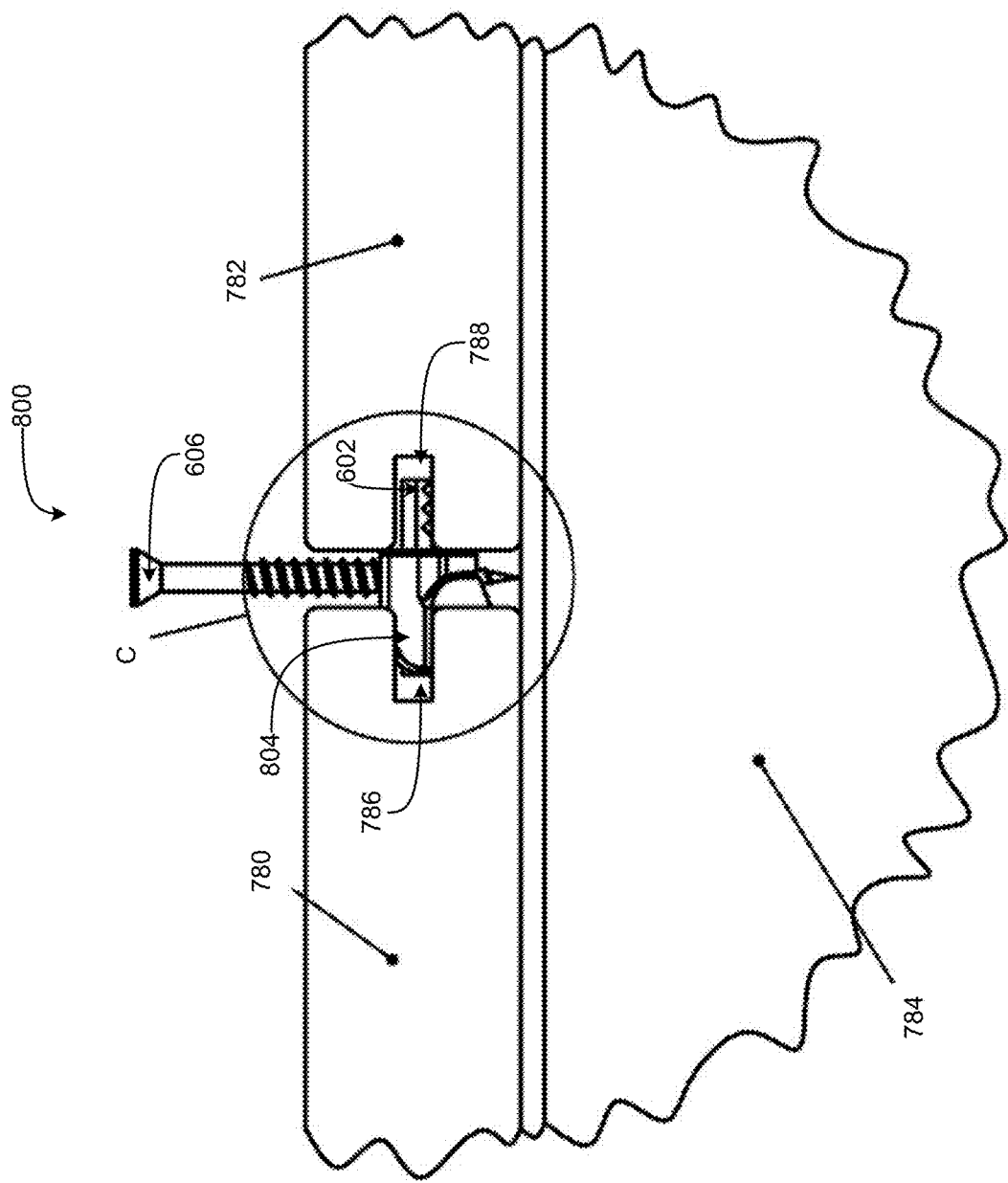


FIG. 42

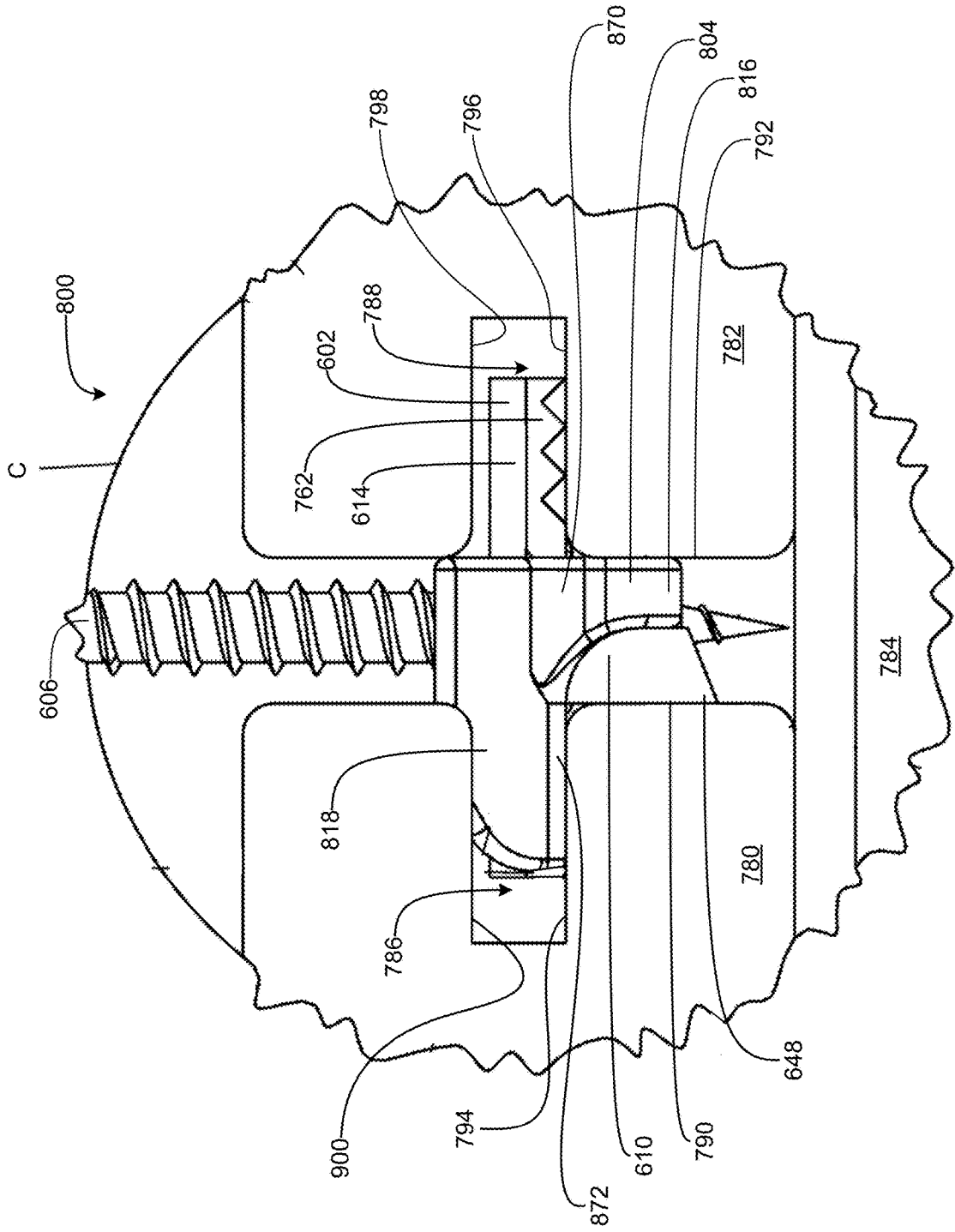


FIG. 43

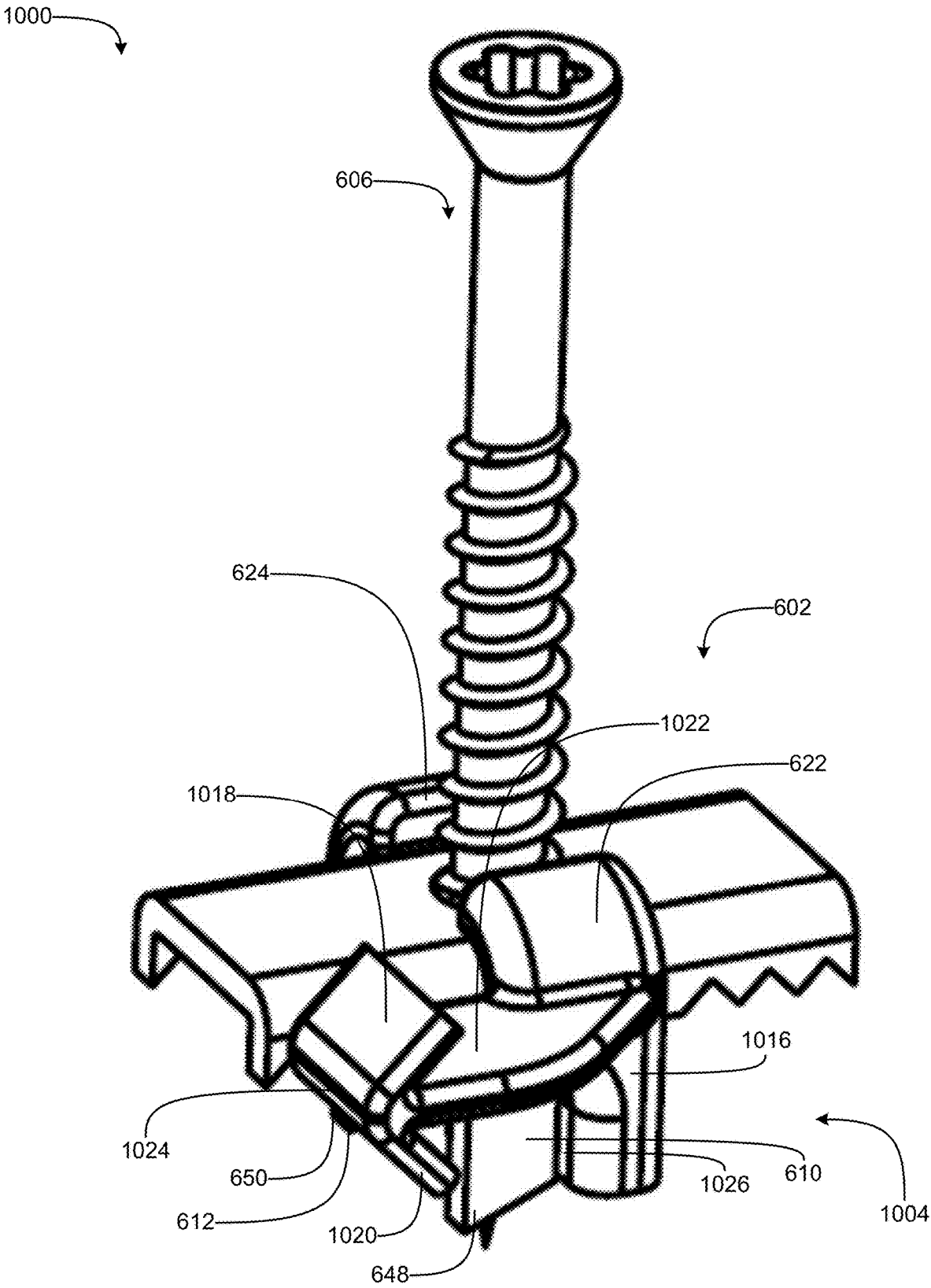


FIG. 44

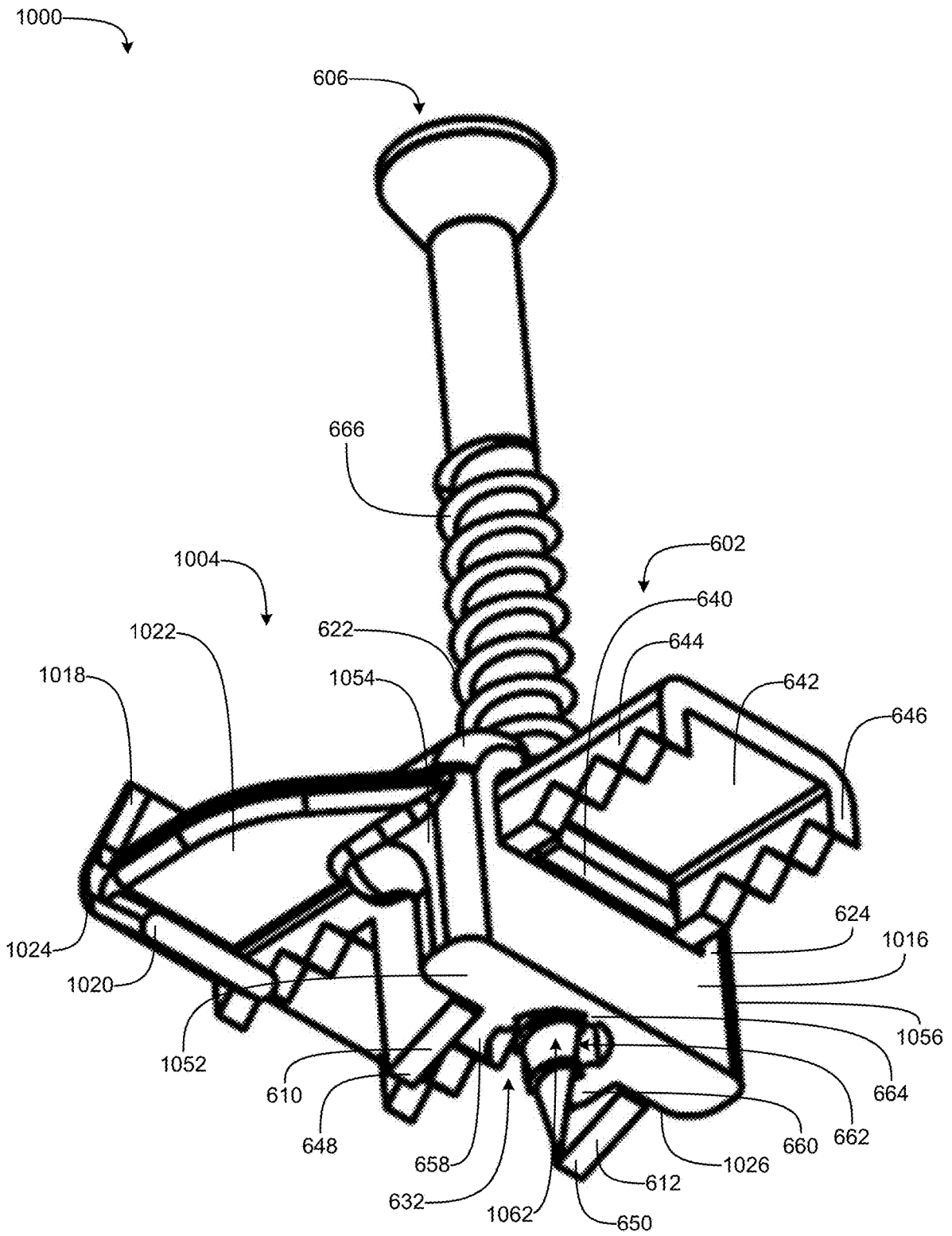


FIG. 45

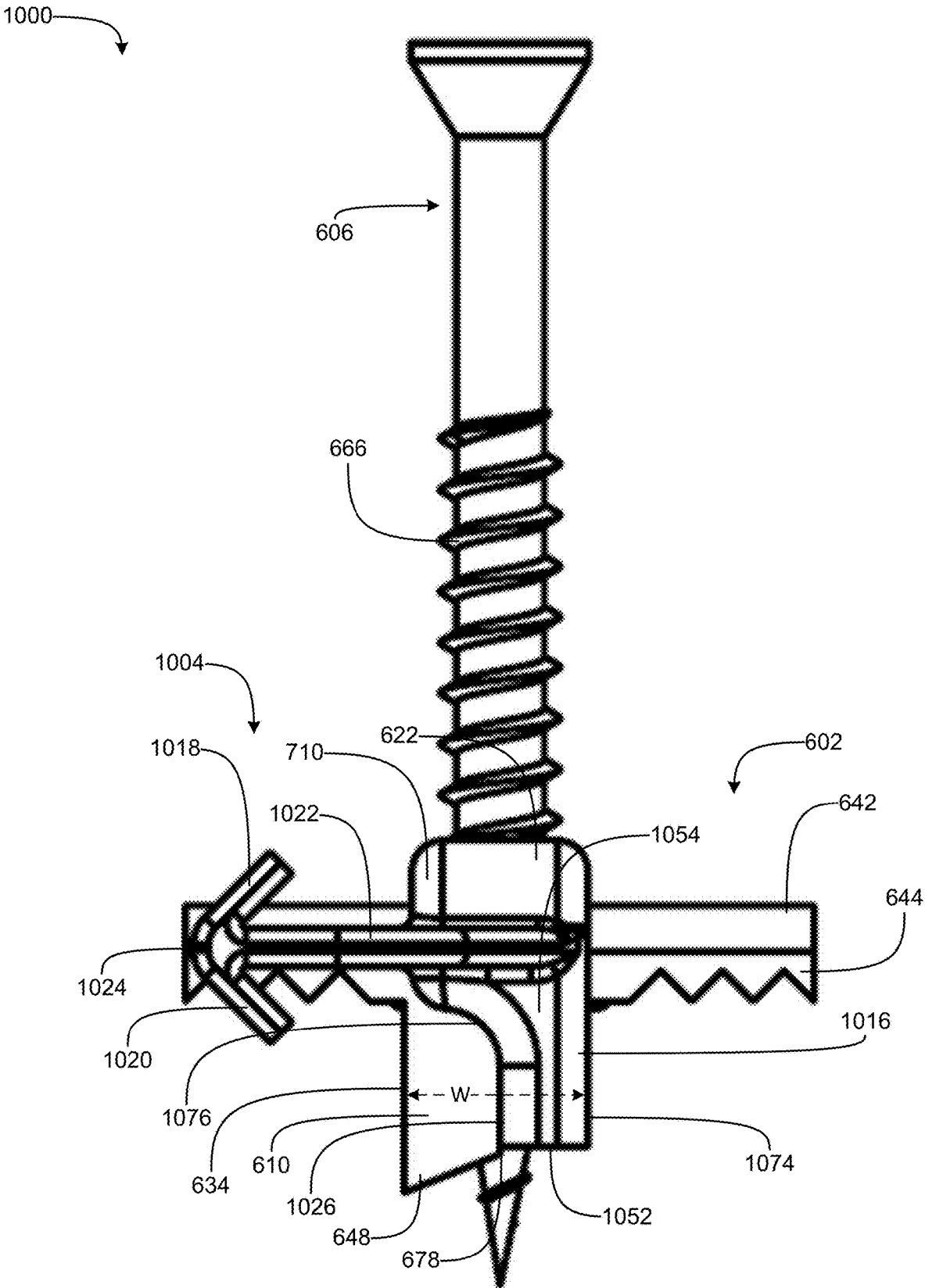


FIG. 46

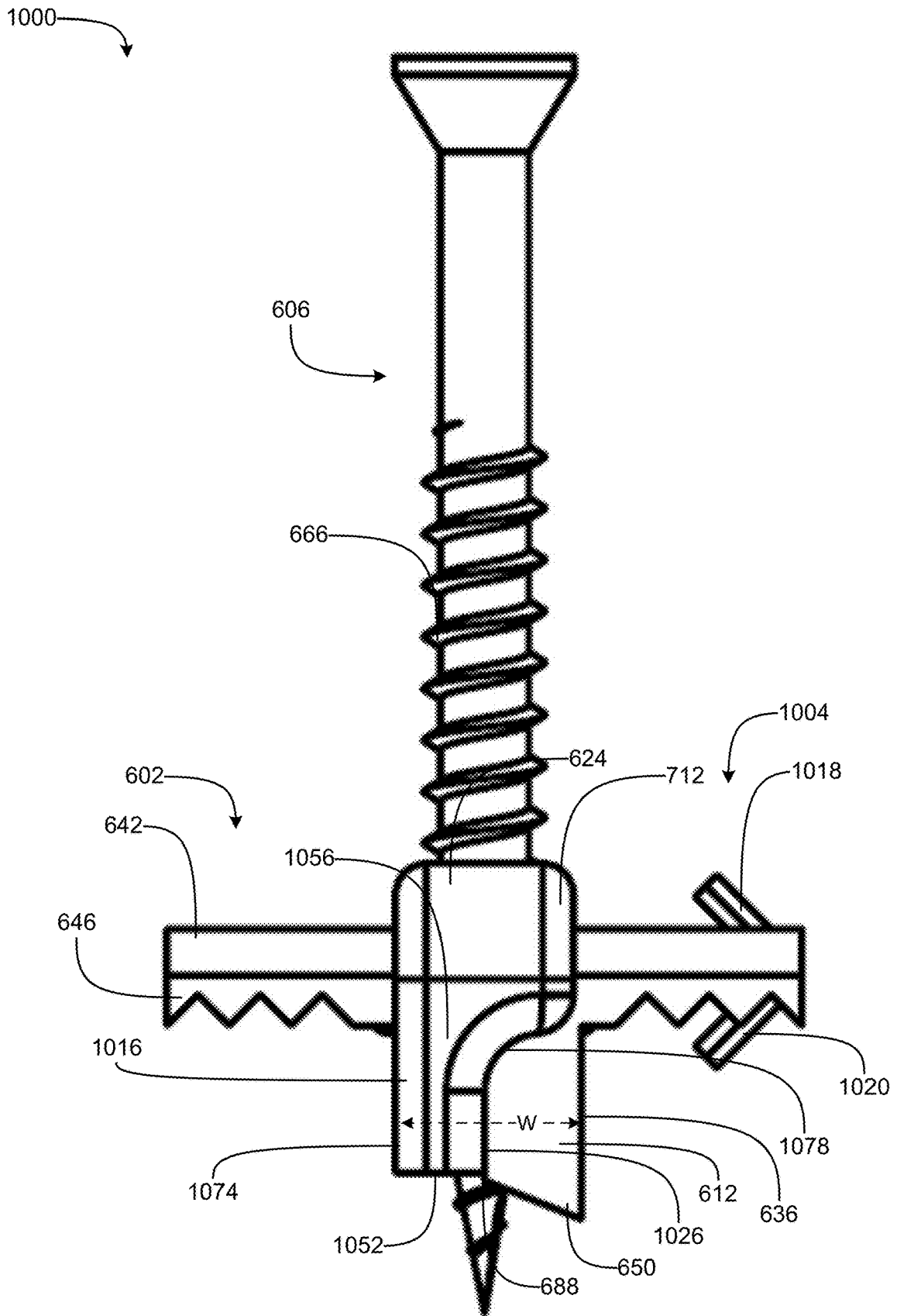


FIG. 47

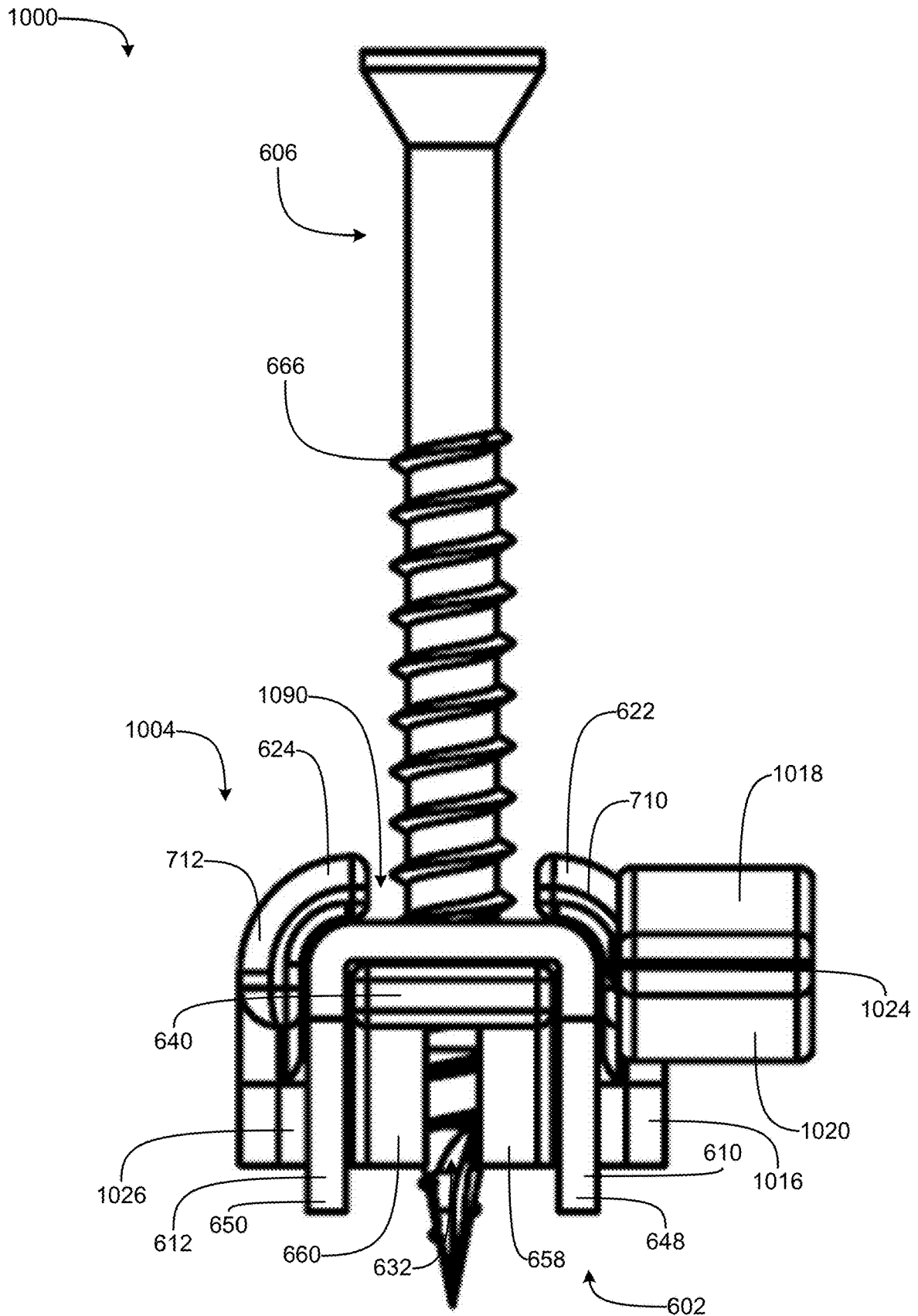


FIG. 48

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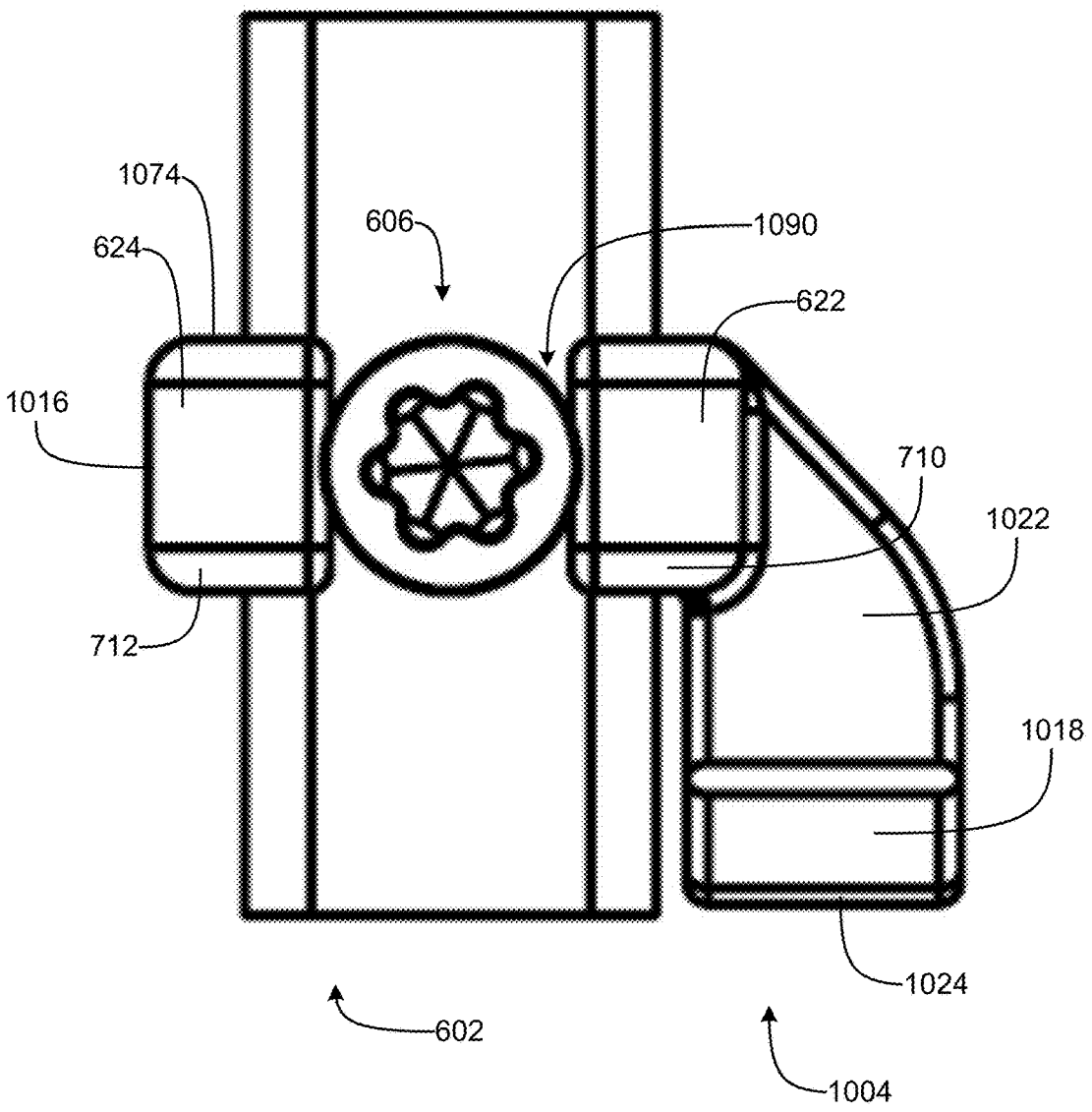


FIG. 49

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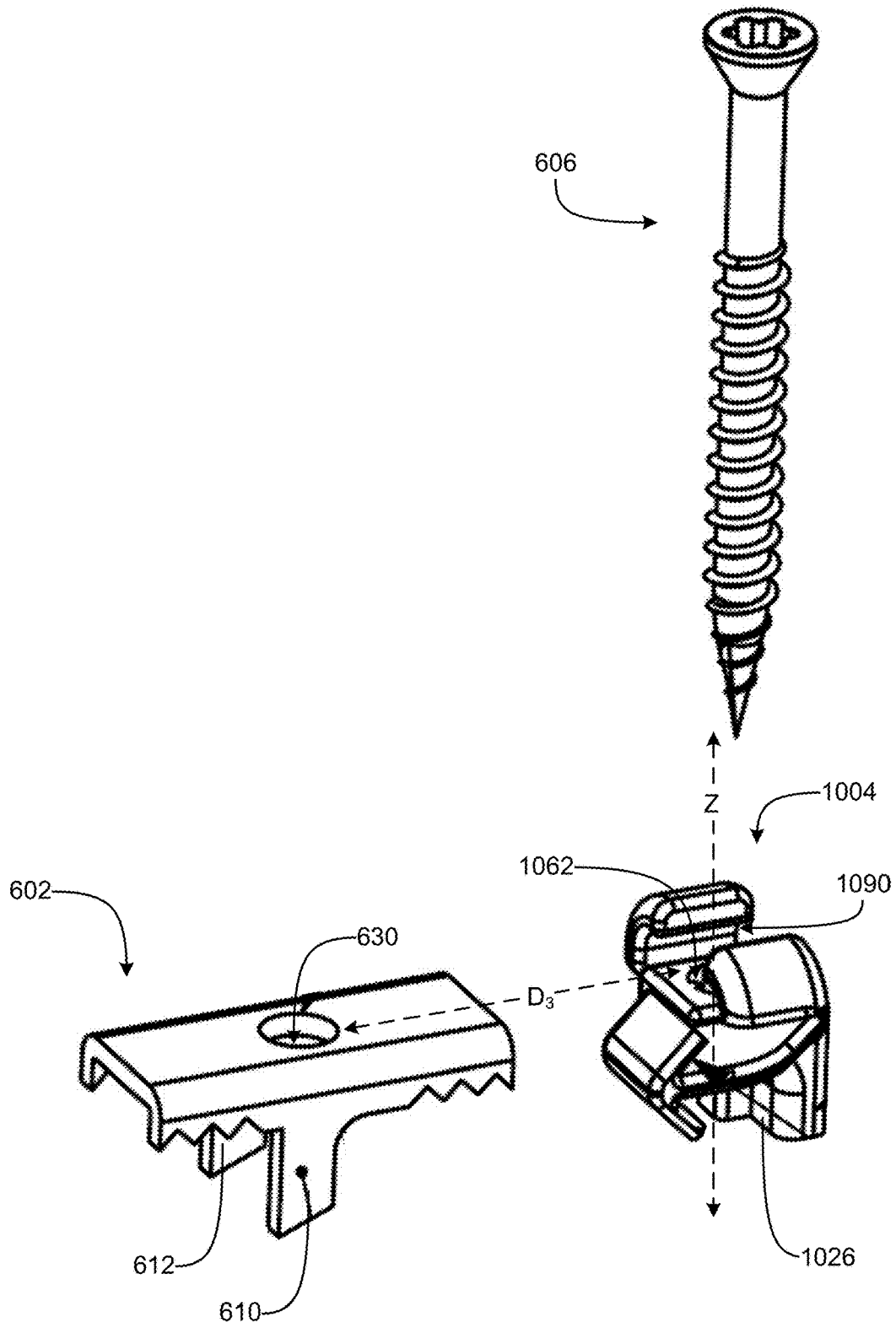


FIG. 50

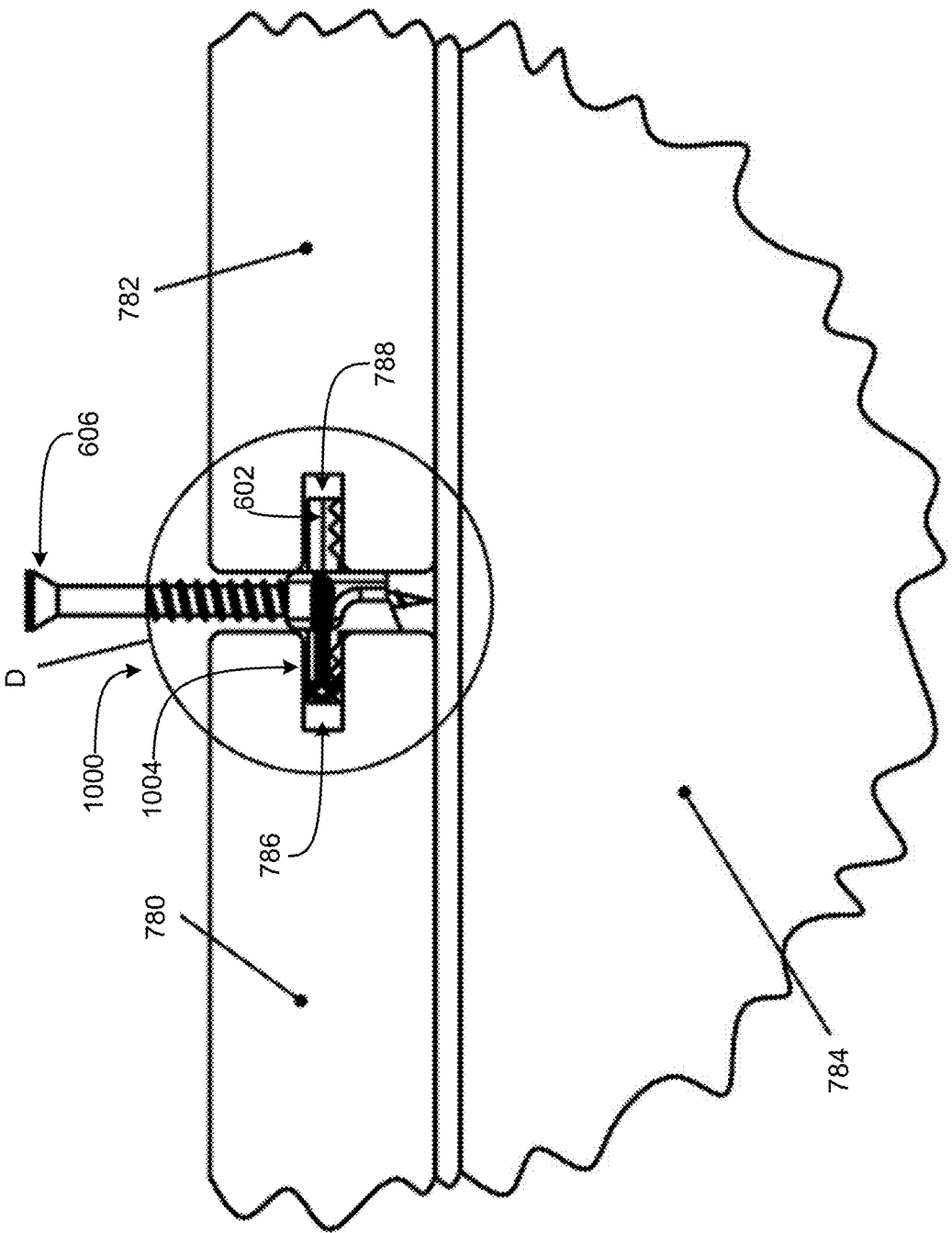


FIG. 51

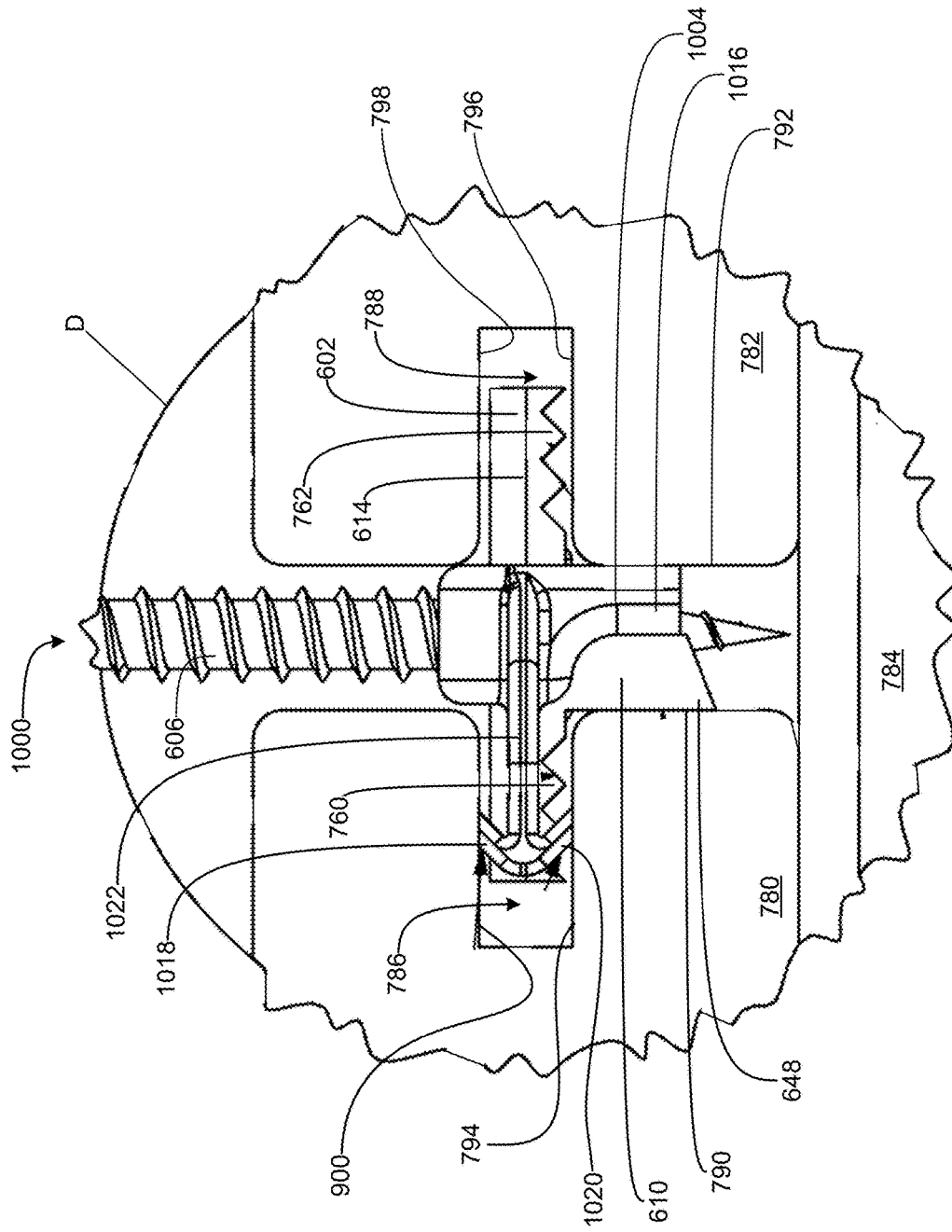


FIG. 52

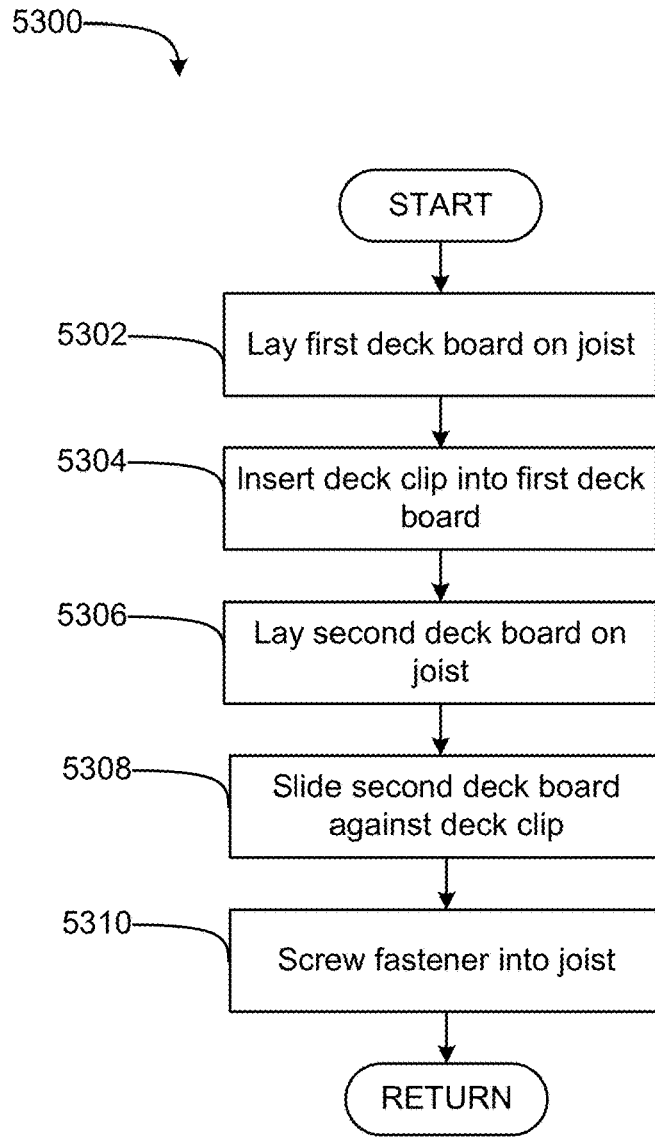


FIG. 53

DECK CLIP**SUMMARY****CROSS-REFERENCE TO RELATED APPLICATIONS**

[0001] The present application is a continuation in part of and claims priority to U.S. patent application Ser. No. 17/974,755, titled DECK CLIP, filed Oct. 27, 2022, the entirety of which is hereby incorporated by reference.

BACKGROUND

[0002] A deck is a flat surface capable of supporting weight, similar to a floor, but typically constructed outdoors, often elevated from the ground, and usually connected to a house. The top of a deck is typically made up of deck boards that lay horizontal and span between joists. The deck boards may be made of wood, or a composite material such as a blend of wood and plastic.

[0003] Traditionally, deck boards are attached directly to the joists using fasteners, such as wood or metal screws. The screws in a traditional deck are orientated vertically and inserted through the top of the deck boards such that the heads of the screws are either flush with the top surface of the deck boards or sit slightly below the surface. However, because the screws remain visible, the screws may detract from an appearance of the deck.

[0004] Additionally, the screws can cause the deck boards to split during assembly or over time leading to accelerated degradation of the deck and an increased risk of splinters for the user.

[0005] Prior solutions to address these problems include using deck clips of various designs. Deck clips are brackets that couple deck boards to joists. Deck clips are typically affixed to joists using screws and are typically coupled to deck boards using a groove-and-groove system, where the deck clip may be inserted into to grooves on the sides of each board.

[0006] Alternatively, a tongue-and-groove system may be used, where the tongue portion contacts solely the bottom surface of the groove. Additionally, the traditional tongue-and-groove system is made up of smooth surfaces. Because the smooth surfaces offer limited friction and because of the relatively small contact area between the tongue and the groove, the typical deck clip system is a flawed method of coupling the deck boards to the joists.

[0007] The typical system does not offer a secure attachment method, and over time, the deck boards that are not securely attached can shift or become detached. This can lead to an unstable and unsafe deck which can be hazardous to the user.

[0008] Moreover, typical deck clip systems fit into the groove but are not held in place by anything other than the screw, meaning the clip must be inserted into the groove, and the screw must first be started into the joist before the next board can be put in place, with the screw being tightened down thereafter. If the screw is not started before the next board is put in place, the deck clip may get knocked off of the joist while aligning the next board. Thus, there is a need for a deck clip design without needing to contact the screws at least twice during installation, and to address some or all of the additional deficiencies.

[0009] This disclosure generally relates to a deck clip. More particularly, the disclosure relates to an improved deck clip for quickly and securely attaching deck boards to joists without the use of exposed fasteners.

[0010] Some embodiments provide a deck clip including a spacer and a grip. The spacer has a wing resiliently pivotably connected to a support bar. The support bar has a front face and a lower face. The grip slidably engages with the spacer. The grip has a pin abutting the front face and extending beyond the lower face.

[0011] In some embodiments, a pressing portion of the grip abuts an upper face of the support bar.

[0012] In some embodiments, a hook extending from the support bar captures the pressing portion against the upper face.

[0013] In some embodiments, the grip and the spacer define a width between a front edge of the pin and a rear face of the support bar.

[0014] In some embodiments, the pin extends further from the front face than the wing.

[0015] In some embodiments, the wing includes a connector and an arm.

[0016] In some embodiments, the connector is arcuate.

[0017] In some embodiments, the connector extends from the front face and loops back rearwardly toward a rear face of the support bar.

[0018] In some embodiments, the wing is connected to the support bar via a stem extending from an upper face of the support bar.

[0019] In some embodiments, the wing extends outwardly relative to the front face.

[0020] In some embodiments, the stem is located at a first end of the support bar.

[0021] In some embodiments, the wing is connected to the support bar via an insertion plate.

[0022] In some embodiments, the wing is connected to a first end of the insertion plate and extends rearwardly towards the front face.

[0023] In some embodiments, the insertion plate extends from a first end of the support bar.

[0024] In some embodiments, the wing extends upwardly relative to the support bar.

[0025] Some embodiments provide a deck clip including a grip and a spacer. The grip has a pin extending from a pressing portion. The pin and the pressing portion define an inner shoulder. The spacer has a support bar configured to matingly engage the inner shoulder.

[0026] In some embodiments, the pin abuts a front face of the support bar.

[0027] In some embodiments, the spacer includes a wing resiliently pivotably connected to the support bar.

[0028] In some embodiments, the spacer and the grip define a width between a front edge of the pin and a rear face of the support bar.

[0029] In some embodiments, the pin extends beyond a lower surface of the support bar.

[0030] Some embodiments provide a method to construct a deck assembly including laying first deck board on a joist; inserting a deck clip into a first groove defined in the first deck board, the deck clip including a grip slidably engaged with a spacer; laying a second deck board on the joist; inserting the deck clip into a second groove defined in the second deck board, a pin of grip abutting the first deck board

and a support bar of the spacer, the spacer abutting the second deck board; and driving a fastener through the grip and the spacer and into the joist, the pin being driven into the joist as the fastener is tightened.

BRIEF DESCRIPTION OF THE DRAWINGS

[0031] FIG. 1 illustrates a perspective view of a deck clip with a fastener according to a first example embodiment;
[0032] FIG. 2 illustrates an exploded view of the deck clip of FIG. 1 with a fastener;
[0033] FIG. 3 illustrates a front perspective view of a spacer of the deck clip of FIG. 1;
[0034] FIG. 4 illustrates a rear perspective view of the spacer of FIG. 3;
[0035] FIG. 5 illustrates a top perspective view of a grip of the deck clip of FIG. 1;
[0036] FIG. 6 illustrates a side perspective view of the grip of FIG. 5;
[0037] FIG. 7 illustrates a side view of the deck clip of FIG. 1 together with a fastener;
[0038] FIG. 8 illustrates a top view of deck clip of FIG. 1 together with a fastener;
[0039] FIG. 9 illustrates a perspective view of a deck assembly partially assembled according to a first example embodiment;
[0040] FIG. 10 illustrates a side view of a first step of assembling the deck assembly of FIG. 9;
[0041] FIG. 11 illustrates a side view of a second step of assembling the deck assembly of FIG. 9;
[0042] FIG. 12 illustrates a side view of a third step of assembling the deck assembly of FIG. 9;
[0043] FIG. 13 illustrates a side view of a fourth step of assembling the deck assembly of FIG. 9;
[0044] FIG. 14 illustrates a first perspective view of a deck clip with a fastener according to a second example embodiment;
[0045] FIG. 15 illustrates a second perspective view of the deck clip with the fastener of FIG. 14;
[0046] FIG. 16 illustrates a first side view of the deck clip with the fastener of FIG. 14;
[0047] FIG. 17 illustrates a second side view of the deck clip with the fastener of FIG. 14;
[0048] FIG. 18 illustrates a front view of the deck clip with the fastener of FIG. 14;
[0049] FIG. 19 illustrates a rear view of the deck clip with the fastener of FIG. 14;
[0050] FIG. 20 illustrates a top view of the deck clip with the fastener of FIG. 14;
[0051] FIG. 21 illustrates a bottom view of the deck clip with the fastener of FIG. 14;
[0052] FIG. 22 illustrates an exploded view of the deck clip with the fastener of FIG. 14;
[0053] FIG. 23 illustrates an upper perspective view of a spacer of the deck clip of FIG. 14;
[0054] FIG. 24 illustrates a first side perspective view of the spacer of FIG. 23;
[0055] FIG. 25 illustrates a second side perspective view of the spacer of FIG. 23;
[0056] FIG. 26 illustrates a front perspective view of the spacer of FIG. 23;
[0057] FIG. 27 illustrates a rear perspective view of the spacer of FIG. 23;
[0058] FIG. 28 illustrates a lower perspective view of the spacer of FIG. 23;

[0059] FIG. 29 illustrates a first upper perspective view of a grip of the deck clip of FIG. 14;
[0060] FIG. 30 illustrates a second upper perspective view of the grip FIG. 29;
[0061] FIG. 31 illustrates a first lower perspective view of the grip of FIG. 29;
[0062] FIG. 32 illustrates a first lower perspective view of the grip of FIG. 29;
[0063] FIG. 33 illustrates a side view of a deck assembly partially assembled according to a second example embodiment;
[0064] FIG. 34 illustrates an enlarged side view of the deck assembly of FIG. 33 taken from section B of FIG. 33;
[0065] FIG. 35 illustrates a first perspective view of a deck clip with a fastener according to a third example embodiment;
[0066] FIG. 36 illustrates a second perspective view of the deck clip with the fastener of FIG. 35;
[0067] FIG. 37 illustrates a first side view of the deck clip with the fastener of FIG. 35;
[0068] FIG. 38 illustrates a second side view of the deck clip with the fastener of FIG. 35;
[0069] FIG. 39 illustrates a front view of the deck clip with the fastener of FIG. 35;
[0070] FIG. 40 illustrates a top view of the deck clip with the fastener of FIG. 35;
[0071] FIG. 41 illustrates an exploded view of the deck clip with the fastener of FIG. 35;
[0072] FIG. 42 illustrates a side view of a deck assembly partially assembled according to a third example embodiment;
[0073] FIG. 43 illustrates an enlarged side view of the deck assembly of FIG. 42 taken from section C of FIG. 42;
[0074] FIG. 44 illustrates a first perspective view of a deck clip with a fastener according to a fourth example embodiment;
[0075] FIG. 45 illustrates a second perspective view of the deck clip with the fastener of FIG. 44;
[0076] FIG. 46 illustrates an exploded view of the deck clip with the fastener of FIG. 44;
[0077] FIG. 47 illustrates a first side view of the deck clip with the fastener of FIG. 44;
[0078] FIG. 48 illustrates a second side view of the deck clip with the fastener of FIG. 44;
[0079] FIG. 49 illustrates a front view of the deck clip with the fastener of FIG. 44;
[0080] FIG. 50 illustrates a top view of the deck clip with the fastener of FIG. 44;
[0081] FIG. 51 illustrates a side view of a deck assembly partially assembled according to a fourth example embodiment;
[0082] FIG. 52 illustrates an enlarged side view of the deck assembly of FIG. 51 taken from section D of FIG. 51; and
[0083] FIG. 53 is a flow diagram depicting a method to construct the deck assemblies of FIGS. 9-13, 33, 42, and 51, according to the principles of this disclosure.
[0084] Before explaining embodiments of the present disclosure in detail, it is to be understood that the disclosure is not limited in its application to the details of the particular arrangement shown, since the disclosure is capable of other embodiments. Example embodiments are illustrated in referenced figures of the drawings. It is intended that the embodiments and figures disclosed herein are to be consid-

ered illustrative rather than limiting. Also, the terminology used herein is for the purpose of description and not of limitation.

DETAILED DESCRIPTION

[0085] While this disclosure is susceptible of embodiments in many different forms, there are shown in the drawings and will be described in detail herein specific embodiments with the understanding that the present disclosure is an exemplification of the principles of the disclosure. It is not intended to limit the disclosure to the specific illustrated embodiments. The features of the disclosure detailed herein in the description, drawings, and claims may be significant, both individually and in any desired combinations, for the operation of the disclosure in its various embodiments. Features from one embodiment may be used in other embodiments of the disclosure.

[0086] As shown in FIGS. 1-52, embodiments of this disclosure include a deck clip that can be used with a fastener.

[0087] Referring to FIGS. 1 and 2, a deck clip 100 according to an embodiment may include a spacer 200 and a grip 300. A fastener 400 may also be provided to fasten the grip 300 with the spacer 200.

[0088] As illustrated in FIGS. 3 and 4, the spacer 200 may include a central member 210 that extends from a first end 202 to a second end 204. In some embodiments, the central member 210 may be substantially flat and rectangular in shape.

[0089] The central member 210 may include a top surface 212 and, opposite from and parallel to the top surface 212, a bottom surface 214 (see FIGS. 10-13). Additionally, the central member 210 may also include a front surface 216 (see FIG. 3) and a rear surface 218 (see FIG. 4) opposite from the front surface 216. The front surface 216 and the rear surface 218 may be perpendicular to the top surface 212 and the bottom surface 214.

[0090] In between the first end 202 and the second end 204, a protrusion 220 may be provided that protrudes upwardly and away from the top surface 212 of the central member 210. The protrusion 220 may include an upper surface 222 that is substantially parallel to the top surface 212 of the central member 210.

[0091] A first fastening hole 224 may be provided on the top surface 212. The first fastening hole 224 may be substantially circular in shape. The first fastening hole 224 may match an outer profile of the fastener 400, thus permitting the fastener 400 to extend through the first fastening hole 224.

[0092] The first fastening hole 224 may extend from the upper surface 222 of the protrusion 220 down to the bottom surface 214 of the central member 210, thereby creates a bore through the entirety of the protrusion 220 and through the entirety of the central member 210.

[0093] A plurality of fastening nubs 226 may be provided in the first fastening hole 224. The fastening nubs 226 may be spaced radially along the circumference of the first fastening hole 224. In an embodiment, there may be four fastening nubs 226. In other embodiments, however, there may be more or less fastening nubs 226, or no fastening nubs 226 at all.

[0094] Further, at the first end 202, a first arm member 230 may be provided that protrudes upwardly and away from the top surface 212. Similarly, at the second end 204, a second

arm member 240 may be provided that protrudes upwardly and away from the top surface 212. A first gap 252 may be provided between the protrusion 220 and the first arm member 230, and a second gap 254 may be provided between the protrusion 220 and the second arm member 240.

[0095] The first arm member 230 and the second arm member 240 may be substantially rectangular; however, other shapes are also foreseeable. Similarly, in the example embodiment, the first arm member 230 and the second arm member 240 are bound by the front surface 216 and the rear surface 218 of the central member 210; however, other configurations are also contemplated.

[0096] In addition, the first arm member 230 and the second arm member 240 may include a first cantilever member 232 and a second cantilever member 242 respectively. The first cantilever member 232 may protrude outwardly from the first arm member 230 towards the second end 204, and the second cantilever member 242 may protrude outwardly from the second arm member 240 towards the first end 202. The first cantilever member 232 and the second cantilever member 242 may be substantially rectangular; however, other shapes are also foreseeable.

[0097] In some embodiments, the first cantilever member 232 may substantially overlap the first gap 252 and the second cantilever member 242 may substantially overlap the second gap 254. More particularly, the first cantilever member 232 may have a first width that is substantially similar to a width of the first gap 252. Likewise, the second cantilever member 242 may have a second width that is substantially similar to a width of the second gap 254.

[0098] Referring now to FIG. 3, where the first cantilever member 232 joins the first arm member 230, a first corner 234 may be provided. The first corner 234 may be rounded, squared, or other suitable geometry. Similarly, where the second cantilever member 242 joins the second arm member 240, a second corner 244 may be provided. Likewise, the second corner 244 may be rounded, squared, or other suitable geometry.

[0099] A channel 250 may be formed in the spacer 200. More particularly, the channel 250 may be formed between the first arm member 230, the second arm member 240, the first cantilever member 232, the second cantilever member 242, and the protrusion 220. The channel 250 may match an outer profile of the grip 300 such that the grip 300 may slidably engage the spacer 200.

[0100] Referring to FIG. 4, a first extension 260 may be provided that protrudes outwardly and away from the rear surface 218 of the first arm member 230. The first extension 260 may be flexible and may form a first angle 262 with the rear surface 218 of the central member 210.

[0101] Similarly, a second extension 270 may be provided that protrudes outwardly and away from the rear surface 218 of the second arm member 240 is illustrated. The second extension 270 may also be flexible form a similar, second angle 272 with the rear surface 218 of the central member 210.

[0102] Where the first extension 260 joins the first arm member 230 and where the second extension 270 joins the second arm member 240, there may be a first tapered portion 264 and a second tapered portion 274 respectively. The first tapered portion 264 and the second tapered portion 274 may be designed to bend in response to a downward shear force being applied to the first extension 260 and the second extension 270. For example, when no external forces are

applied, the first angle 262 and the second angle 272 may each be between 90 degrees and 120 degrees. In some embodiments, when no external forces are applied, the first angle 262 and the second angle 272 may each be between 100 degrees and 110 degrees. More specifically, the first angle 262 and the second angle 272 may each be approximately 104 degrees.

[0103] However, when external forces are applied, the first tapered portion 264 and the second tapered portion 274 may bend such that the first angle 262 and the second angle 272 may decrease to 90 degrees or less. In order to prevent fractures resulting from bending, in the first tapered portion 264 and the second tapered portion 274, the cross-sectional area may be largest proximal to the rear surface 218, and the cross-sectional area may be smallest distal to the rear surface 218.

[0104] Referring now to FIG. 5, the grip 300 of the deck clip 100 is illustrated. The grip 300 may include a cross section 305 that extends from a first end 310 to a second end 315. The cross section 305 may be substantially C-shaped or U-shape. However, other shapes are contemplated. The cross section 305 of the grip 300 may be substantially similar to the channel 250 of the spacer 200. The cross section 305 may define an outer surface 320 of the grip 300. Additionally, parallel to and offset from the outer surface 320, an inner surface 325 may be provided (see FIG. 6).

[0105] The cross section 305 may include several distinct portions. First, a center portion 330 may be provided. A first leg portion 340 may be provided that is orthogonal and joined to the center portion 330. A second leg portion 345 may also be provided that is parallel to and offset from the first leg portion 340 and joined to the center portion 330. The center portion 330, the first leg portion 340, and the second leg portion 345 may each be substantially rectangular. The first leg portion 340 and the second leg portion 345 may both extend a length 349 down from the center portion 330 to their terminations.

[0106] In addition, the grip 300 may further include a first rounded edge 342 and a second rounded edge 347 where the center portion 330 joins the first leg portion 340 the second leg portion 345 respectively. The first rounded edge 342 and the second rounded edge 347 may have a curved profile that is substantially similar to the profile of the first corner 234 and the second corner 244 of the spacer 200.

[0107] A second fastening hole 335 may be provided through the center portion 330. The second fastening hole 335 may be substantially circular and it be located approximately equidistant from the first end 310 and the second end 315 of the grip 300. The second fastening hole 335 may also be positioned approximately equidistant from the first leg portion 340 and the second leg portion 345. In some embodiments, the second fastening hole 335 may also be countersunk or counterbored.

[0108] As best illustrated in FIG. 6, the grip 300 may include a first end region 350, a second end region 355, and a middle region 352. The first end region 350 may be proximal to the first end 310 of the grip 300; the second end region 355 may be proximal to the second end 315 of the grip 300; and the middle region 352 may be positioned between the first end region 350 and the second end region 355.

[0109] In the middle region 352 of the grip 300, the length 349 of the first leg portion 340 and the second leg portion 345 may be relatively constant. Thus, the first leg portion

340 and the second leg portion 345 may each have a mating surface 360 in the middle region 352. In some embodiments, the mating surface 360 may be substantially flat.

[0110] Conversely, in the first end region 350 and the second end region 355, the length 349 of the first leg portion 340 and the second leg portion 345 may vary substantially. Thus, in the first end region 350 and the second end region 355, the first leg portion 340 and the second leg portion 345 may each have grip surfaces 365 that may be irregularly shaped. More specifically, the grip surfaces 365 may be saw-tooth shaped surfaces having a plurality of peaks and a plurality of valleys or sinusoidal shaped surfaces; however, other shapes are contemplated.

[0111] In some embodiments, the channel 250 may be of a dimension such that when the grip 300 is inserted into the channel 250, a friction relative to the grip 300 can be applied on the grip 300. Such friction may prevent the grip 300 from moving in a vertical position toward or away from the first extension 260 or the second extension 270. In further embodiments, once the grip 300 is inserted into the channel 250, the first cantilever member 232 and the second cantilever member 242 may each abut a portion of the outer surface 320 of the grip 300, such that the grip 300 is prevented from moving in a vertical position toward or away from the first extension 260 or the second extension 270.

[0112] FIGS. 7 and 8 illustrate the deck clip 100 selectively assembled with a fastener 400 partially inserted. As shown in FIG. 7, when the deck clip 100 is selectively assembled, the cross section 305 of the grip 300 may be selectively inserted within the channel 250 of the spacer 200.

[0113] In some embodiments, when the deck clip 100 is selectively assembled, the mating surfaces 360 of the grip 300 may abut the top surface 212 of the spacer 200; the inner surface 325 of the center portion 330 of the grip 300 may abut the upper surface 222 of the protrusion 220 of the spacer 200; and the outer surfaces 320 of the first leg portion 340 and the second leg portion 345 of the grip 300 may be abut the first arm member 230 and the second arm member 240 of the spacer 200. Moreover, the outer surface 320 of the center portion 330 of the grip 300 may partially abut the first cantilever member 232 and the second cantilever member 242 of the spacer 200. In other embodiments, a dimension of the channel 250 may be slightly larger such that at least some surfaces of the grip 300 do not abut the spacer 200.

[0114] As best shown in FIG. 8, when the deck clip 100 is selectively assembled, the second fastening hole 335 of the grip 300 may align axially with the first fastening hole 224 of the spacer 200 such that the fastener 400 can be inserted therethrough. When a fastener 400 is inserted therethrough, the fastening nubs 226 may act to retain the fastener 400 within the first fastening hole 224.

[0115] FIG. 9 illustrates an enlarged view of a partially assembled deck assembly 500. The deck assembly 500 may include joists 510 (only one shown). Spanning across and resting on top of the joists 510, deck boards 550 (only one shown) may be provided. The joists 510 and the deck boards 550 may be made of wooden materials. In some embodiments, the deck boards 550 may be composite boards including a blend of multiple materials, such as a blend of wood and plastic.

[0116] In an example embodiment, each deck board 550 may include one or more grooves 555 (only one shown) that run longitudinally along the length of the deck boards 550. The grooves 555 may be pockets with a bottom groove face

556, and a top groove face (not shown) that is parallel to and opposite from the bottom groove face 556. In some embodiments, the grooves 555 may be substantially rectangular pockets, although a curved pockets or other geometries are also contemplated. The grooves 555 may also include a side groove face (not shown) that is orthogonal to both the bottom groove face 556 and the top groove face.

[0117] As shown in FIG. 9, the deck assembly 500 may include deck clips 100 (only one shown) with fasteners 400. The deck clips 100 may be positioned directly above the joists 510. The first extensions 260 and the second extensions 270 of the spacers 200 of the deck clips 100 may be positioned within the grooves 555 of the deck boards 550. The grips 300 of the deck clips 100 may also be positioned within the grooves 555 of the deck boards 550.

[0118] FIGS. 10-13 illustrate a method of assembling the deck assembly 500. First, a joist 510 may be provided. A first deck board 560 may be provided perpendicular to and on top of the joist 510. The first deck board 560 may be substantially the same as the deck boards 550 previously described. Similar to the deck boards 550, the first deck board 560 may include two grooves 565, each with a bottom groove face 566, a top groove face 567, and a side groove face 568.

[0119] Therefrom the deck clip 100 may be inserted into the first deck board 560. More particularly, the first extension 260 and the second extension 270 of the deck clip 100 may be inserted into the groove 565 of the first deck board 560. The first extension 260 and the second extension 270 may be introduced into the groove 565 while the deck clip 100 is angled (i.e., the top surface 212 of the spacer 200 is not parallel to the joists 510).

[0120] Next, as illustrated in FIG. 11, the first end region 350 of the grip 300 may also be inserted into the groove 565 of the first deck board 560. This may be accomplished by rotating the deck clip 100 such that the deck clip 100 is no longer angled (i.e., rotating the deck clip 100 until the top surface 212 of the spacer 200 is parallel with the joists 510).

[0121] As the grip 300 of the deck clip 100 is inserted into the groove 565, the first extension 260 and the second extension 270 abut the top groove face 567, and the grip 300 abuts the bottom groove face 566. Resulting in the groove 565 imparts a shear force onto the first extension 260 and the second extension 270. Said shear force may cause the first tapered portion 264 and the second tapered portion 274 to undergo elastic deformation such that the first angle 262 and the second angle 272 decrease from approximately 104 degrees to approximately 90 degrees.

[0122] Accordingly, as the grip 300 is inserted into the groove 565, the first extension 260 and the second extension 270 are forced into the top groove face 567, and the grip 300 is forced into the bottom groove face 566. Thus, a friction created by an expansive force may be applied between the bottom groove face 566 and the grip surface 365 to prevent the grip 300 from easily disengaging the first deck board 560. Thereafter, the grip 300 may be further inserted into the groove 565 until the rear surface 218 of the spacer 200 abuts the first deck board 560.

[0123] Next, as illustrated in FIG. 12, a second deck board 570 may be introduced. The second deck board 570 can be quickly and accurately positioned by ensuring the front surface 216 of the spacer 200 abuts the second deck board 570.

[0124] Similar to the first deck board 560, the second deck board 570 may include two grooves 575 each with a bottom

groove face 576, a top groove face 577, and a side groove face 578. Also similar to the first deck board 560, the grip 300 of the deck clip 100 may be inserted within the groove 575 of the second deck board 570. Here, however, it is the second end region 355 of the grip 300 that may be inserted into the groove 575. Similar to before, the grip surface 365 of the grip 300 may also abut the bottom groove face 576 of the second deck board 570. Accordingly, a firm connection between the deck clip 100 and the second deck board 570 may be formed.

[0125] Finally, as illustrated in FIG. 13, a fastener 400 may be utilized to affix the deck clip 100 to the joists 510. In the example embodiment, the fastener 400 may be a screw; however, other fastening means are foreseeable. Here, the fastener 400 may be inserted into and through the first fastening hole 224 of the spacer 200 and the second fastening hole 335 of the grip 300. Further, the fastener 400 may be inserted or screwed into the joists 510 to affix the deck clip 100 to the joist 510, thus creating a secured connection between the joists 510 and the deck clip 100. As can be appreciated, a distance between the front surface 216 and the rear surface 218 of the spacer 200 may define the spacing between the first deck board 560 and the second deck board 570.

[0126] Once the fastener 400 is inserted into the joists 510, the downward force asserted due to the fastener 400 may cause the grip surface 365 to sink into or embedded itself in the bottom groove face 566 of the first deck board 560, thus forming a secured connection. Further, by having the fastener 400 inserted into and through both the first fastening hole 224 of the spacer 200 and the second fastening hole 335 of the grip 300, the grip 300 can be held firmly in place (both vertically and horizontally) relative to the spacer 200, thus forming the deck clip 100.

[0127] A quick and secure connection may be provided between the joists 510, the first deck board 560, and the second deck board 570 without any fasteners 400 being exposed. The steps described herein can then be repeated until the desired number of deck boards 550 are connected to form the deck assembly 500 of the desired size. In each subsequent iteration of the steps, the so-called second deck board of the previous iteration may become the so-called first deck board in the subsequent iteration. Finally, when the process is completed, the deck assembly 500 may be securely formed without having exposed fasteners. Because the fasteners may be hidden in the grooves well below the top surface of the deck boards, the fasteners may be difficult to see by an end user, thus the top surface of the deck board can remain clear of any fasteners detracting from the appearance.

[0128] Further, because the deck clip 100 may be held in the deck boards alone through a friction fit due to an expansive force applied by the grip 300 and the first extension 260 and/or the second extension 270 of the spacer 200, multiple deck boards may be placed before having to fasten the deck clip 100 into the joists 510 via the fastener 400. Resulting in an increased ease of installation and efficiency.

[0129] Referring to FIG. 14, a deck clip 600 includes a grip 602 slidably received by a spacer 604. In some embodiments, the grip 602 tightly engages the spacer 604 and is thus retained in the spacer 604 via friction. A fastener 606 is inserted through the grip 602 and the spacer 604. In some embodiments, the fastener 606 thus aids in retaining the grip

602 on the spacer 604. In some embodiments, the fastener 606 is threadably engaged with the spacer 604.

[0130] Remaining with FIG. 14, the grip 602 includes a first pin 610 and a second pin 612 extending downwardly from a pressing portion 614. The pressing portion 614 is downwardly toothed and the first pin 610 and the second pin 612 are pointed, as will be explained in greater detail below. The spacer 604 includes a support bar 616 from which a first wing 618, a second wing 620, a first hook 622, and a second hook 624 upwardly extend. The grip 602 slidably engages the support bar 616, the first hook 622, and the second hook 624. When the deck clip 600 is assembled, the first pin 610 and the second pin 612 abut a front face 626 of the support bar 616. Further, the first hook 622 and the second hook 624 retain the grip 602 against an upper face 628 of the support bar 616. Additionally, the pressing portion 614 defines an opening 630 through which the fastener 606 extends. Thus, when the deck clip 600 is assembled, the grip 602 is captured relative to the upper face 628 by the first hook 622 and the second hook 624 and is retained relative to the front face 626 by the fastener 606. While the deck clip 600 is being assembled, a cutout 632 defined in the spacer 604 permits the support bar 616 to resiliently flex around and accommodate the fastener 606. It should be appreciated that the first pin 610 and the second pin 612 extend beyond the support bar 616. Further, the first pin 610 and the second pin 612 have a first front edge 634 and a second front edge 636.

[0131] Turning to FIG. 15, the spacer 604 further includes a platform 640 extending upwardly from the support bar 616. The platform 640 is located medially along the support bar 616 and slidably supports an upper plate 642 of the grip 602. Thus, the platform 640 is between the first hook 622 and the second hook 624. Further, the first hook 622 is between the first wing 618 and the platform 640. Similarly, the second hook 624 is between the second wing 620 and the platform 640. A first side 644 and a second side 646 are toothed and extend downwardly from the upper plate 642. More specifically, the first side 644 is slidably captured between the first hook 622 and the platform 640. Similarly, the second side 646 is slidably captured between the second hook 624 and the platform 640. The first hook 622 and the second hook 624 also capture the upper plate 642. A first point 648 and a second point 650 respectively of the first pin 610 and second pin 612 extend beyond a lower face 652 of the support bar 616. The first wing 618 and the second wing 620 extend from a first end 654 and a second end 656 of the support bar 616, respectively. Additionally, a first rib 658 and a second rib 660 extend from the support bar 616. The support bar 616, the platform 640, the first rib 658, and the second rib 660 define a passage 662 through which the fastener 606 extends. In some embodiments, a plurality of protrusions 664 extend radially inwardly from the support bar 616 and the platform 640 to engage threads 666 of the fastener 606. In some embodiments, the plurality of protrusions 664 are arranged radially symmetrically.

[0132] Looking at FIG. 16, the first wing 618 includes a first arm 670 extending from a first connector 672, which is connected to the support bar 616 at the first end 654. The first connector 672 is arcuate and thus extends curvilinearly initially outwardly from the front face 626, upwardly away from the upper face 628, and loops back to extend rearwardly toward a rear face 674 of the support bar 616. The first arm 670 connects to the first connector 672 and extends further upwardly and rearwardly. In some embodiments, the

first arm 670 has a first tapered edge 676. Thus, the first arm 670 is resiliently pivotable relative to the support bar 616 via the first connector 672. A width W is defined between the rear face 674 of the support bar 616 and the first front edge 634 of the first pin 610. Additionally, a first rear edge 678 of the first pin 610 extends beyond the lower face 652.

[0133] Referring now to FIG. 17, the second wing 620 includes a second arm 680 extending from a second connector 682, which is connected to the support bar 616 at the second end 656. The second connector 682 is arcuate and thus extends curvilinearly initially outwardly from the front face 626, upwardly away from the upper face 628, and loops back to extend rearwardly toward the rear face 674. The second arm 680 connects to the second connector 682 and extends further upwardly and rearwardly. In some embodiments, the second arm 680 has a second tapered edge 686. Thus, the second arm 680 is resiliently pivotable relative to the support bar 616 via the second connector 682. The width W is further defined between the rear face 674 and the second front edge 636 of the second pin 612. Additionally, a second rear edge 688 of the second pin 612 extends beyond the lower face 652.

[0134] Turning to FIGS. 18 and 19, the first wing 618, the second wing 620, the first hook 622, and the second hook 624 extend from and are interspersed along the support bar 616. The first wing 618 and the second wing 620 are opposite one another. Similarly, the first hook 622 and the second hook 624 are opposite one another. The first hook 622 and the second hook 624 are between the first wing 618 and the second wing 620. The first hook 622 is between the first wing 618 and the second hook 624. The second hook 624 is between the second wing 620 and the first hook 622. The first hook 622 and the second hook 624 are arcuate and extend toward one another. The support bar 616, first hook 622, the second hook 624, and the platform 640 define a keyway 690 through which the grip 602 and the fastener 606 extend.

[0135] Referring to FIG. 20, the grip 602 extends transversely through the keyway 690 relative to the support bar 616. The first wing 618 and the second wing 620 also extend transversely relative to the support bar 616. The first hook 622 and the second hook 624 extend beyond the front face 626. In some embodiments, the first hook 622 and the second hook 624 extend beyond the first connector 672 and the second connector 682. Further, when the deck clip 600 is assembled, the grip 602 extends beyond the first wing 618 and the second wing 620.

[0136] With reference to FIG. 21, the platform 640 extends transversely relative to the support bar 616. More specifically, the platform 640 extends beyond the front face 626 and the rear face 674. Further, when the deck clip 600 is assembled, the platform 640 is disposed in a channel 700 defined by the upper plate 642, the first side 644, and the second side 646. The first rib 658 and the second rib 660 slidably engage and/or abut the first pin 610 and the second pin 612, respectively. Additionally, a first lower edge 702 and a second lower edge 704 respectively of the first side 644 and the second side 646 abut the support bar 616. In some embodiments, the passage 662 is generally circular in cross-section, although any type of cross-sectional shape (e.g., ovoid, elliptical, rectilinear, polygonal, etc.) is anticipated. While four protrusions 664 are depicted, the spacer 604 may have any number of protrusions 664.

[0137] Turning to FIG. 22, the grip 602, the spacer 604, and the fastener 606 are separable from one another. When the deck clip 600 is assembled, the opening 630 is aligned and in communication with the passage 662. Additionally, the passage 662 defines first axis X and is in communication with the cutout 632. As the deck clip 600 is assembled, the grip 602 is inserted into the keyway 690 along a first direction D_1 until the first pin 610 and the second pin 612 abut the front face 626. Further, during assembly, the fastener 606 is inserted through the opening 630 and the passage 662 along the first axis X.

[0138] Referring to FIG. 23, a first lobe 710 and a second lobe 712 extend from the first hook 622 and the second hook 624, respectively. More specifically, the first lobe 710 and the second lobe 712 extend outwardly beyond the front face 626. Additionally, the keyway 690 is in communication with the passage 662. Additionally, the first rib 658 and the second rib 660 define the cutout 632.

[0139] Turning to FIG. 24, the first connector 672 and the front face 626 define a first inner shoulder 720 at the first end 654 of the support bar 616. Similarly, as shown in FIG. 25, the second connector 682 and the front face 626 define a second inner shoulder 722 at the second end 656 of the support bar 616.

[0140] Looking at FIG. 26, the first lobe 710 and the front face 626 define a third inner shoulder 724. Similarly, the second lobe 712 and the front face 626 define a fourth inner shoulder 726. Further, as shown in FIG. 27, the first hook 622 and the upper face 628 define a fifth inner shoulder 728. Analogously, the second hook 624 and the upper face 628 define a sixth inner shoulder 730.

[0141] Referring to FIG. 28, the first rib 658 and the second rib 660 extend outwardly from the front face 626 of the support bar 616. Additionally, the first rib 658 and the second rib 660 extend between the platform 640 and the lower face 652. The platform 640 extends beyond the first rib 658 and the second rib 660.

[0142] With reference to FIGS. 29 and 30, the upper plate 642 and the first side 644 define and are joined via a first rounded corner 740. Similarly, the upper plate 642 and the second side 646 define and are joined via a second rounded corner 742. Further, the opening 630 is located medially along the upper plate 642.

[0143] Turning to FIG. 31, the first rear edge 678 and the second rear edge 688 respectively of the first pin 610 and the second pin 612 are coplanar with one another and thus define a plane P. Further, the first rear edge 678 and the second rear edge 688 are located medially along the upper plate 642. Thus, a transverse diameter d of the opening 630 is located with the plane P and is coplanar with the first rear edge 678 and the second rear edge 688. Additionally, the first rear edge 678 and the first lower edge 702 define and connect via a seventh inner shoulder 750. Similarly, the second rear edge 688 and the second lower edge 704 define and connect via an eighth inner shoulder 752. The support bar 616 (shown in FIG. 26) is shaped to matingly engage the seventh inner shoulder 750 and the eighth inner shoulder 752.

[0144] Referring to FIGS. 31 and 32, the first side 644 includes a first forward set of teeth 760 and a first rear set of teeth 762. Similarly, the second side 646 includes a second forward set of teeth 764 and a second rear set of teeth 766. As shown in FIG. 31, the first rear set of teeth 762 extends between the first lower edge 702 and a rear edge 768 of the pressing portion 614. Likewise, the second rear set of teeth

766 extends between the second lower edge 704 and the rear edge 768. As shown in FIG. 32, the first forward set of teeth 760 extends between the first front edge 634 of the first pin 610 and a forward edge 770 of the pressing portion 614. Similarly, the second forward set of teeth 764 extends between the second front edge 636 of the second pin 612 and the forward edge 770.

[0145] Looking at FIG. 33, in operation, the deck clip 600 is installed in a first deck board 780 and a second deck board 782, which are supported by a joist 784. More specifically, the grip 602 is inserted in a first groove 786 defined in the first deck board 780. The grip 602 and the spacer 604 are inserted in a second groove 788 defined in the second deck board 782. The fastener 606 is between the first deck board 780 and the second deck board 782, ready to be threadably driven into the joist 784.

[0146] Turning to FIG. 34, more specifically, in operation, the deck clip 600 is between the first deck board 780 and the second deck board 782. Thus, the first pin 610 and the second pin 612 (shown in FIG. 17) abut a first lower side 790 of the first deck board 780. Further, the support bar 616 abuts a second lower side 792 of the second deck board 782. It should be appreciated that the spacer 604 contacts only the second deck board 782. The pressing portion 614 contacts a first lower surface 794 and a second lower surface 796, which partially define the first groove 786 and the second groove 788, respectively. Similarly, the first arm 670 and the second arm 680 (shown in FIG. 17) contact an upper surface 798, which further defines the second groove 788. Because the first arm 670 and the second arm 680 are resiliently pivotable relative to the support bar 616 via the first connector 672 and the second connector 682 (shown in FIG. 17), respectively, the first arm 670 and the second arm 680 urge the pressing portion 614 against the first lower surface 794 and the second lower surface 796. Consequently, the first forward set of teeth 760 and the second forward set of teeth 764 (shown in FIG. 31) are urged against the first lower surface 794. Similarly, the first rear set of teeth 762, and the second rear set of teeth 766 (shown in FIG. 31) are urged against the second lower surface 796. Thus, the deck clip 600 is positionally retained in the first deck board 780 and the second deck board 782 before the fastener 606 is driven into the joist 684.

[0147] Remaining with FIG. 34, further in operation, the fastener 606 is threadably driven through the grip 602 and the spacer 604 into the joist 784. As the fastener 606 tightens against the grip 602 and the spacer 604, the first forward set of teeth 760 and the second forward set of teeth 764 (shown in FIG. 31) dig into the first lower surface 794. Similarly, the first rear set of teeth 762, and the second rear set of teeth 766 (shown in FIG. 31) dig into the second lower surface 796. Thus, the pressing portion 614 pushes the first deck board 780 and the second deck board 782 downwardly to abut the joist 784. Further, as the fastener 606 tightens against the grip 602 and the spacer 604, the first point 648 and the second point 650 (shown in FIG. 17) are driven into the joist 684. Thus, the first pin 610 and the second pin 612 aid in resisting lateral movement of the first deck board 780 and the second deck board 782 relative to the joist 784 while the fastener 606 is being driven. It should be appreciated that when the fastener 606 is fully tightened against the grip 602 and the spacer 604 and driven into the joist 784, the spacer 604 contacts only the second deck board 782.

[0148] Referring to FIG. 35, a deck clip 800 includes the grip 602 slidably received by a spacer 804. In some embodiments, the grip 602 tightly engages the spacer 804 and is thus retained in the spacer 804 via friction. The fastener 606 is inserted through the grip 602 and the spacer 804. In some embodiments, the fastener 606 thus aids in retaining the grip 602 on the spacer 804. In some embodiments, the fastener 606 is threadably engaged with the spacer 804. Further, the spacer 804 includes a support bar 816 from which a first wing 818, a second wing 820, the first hook 622, and the second hook 624 upwardly extend. The grip 602 slidably engages the support bar 816, the first hook 622, and the second hook 624. The first wing 818 and the second wing 820 extend outwardly relative to a front face 826 of the support bar 816.

[0149] Turning to FIG. 36, the spacer 804 further includes the platform 640 extending upwardly from the support bar 816. The platform 640 is located along the support bar 816 and slidably supports the upper plate 642 of the grip 602. Thus, the platform 640 is between the first hook 622 and the second hook 624. The first side 644 is slidably captured between the first hook 622 and the platform 640. Similarly, the second side 646 is slidably captured between the second hook 624 and the platform 640. The first hook 622 and the second hook 624 also capture the upper plate 642. It should be appreciated that the first pin 610 and the second pin 612 extend beyond the support bar 816. More specifically, the first point 648 and the second point 650 extend beyond a lower face 852 of the support bar 816. The first wing 818 and the second wing 820 extend from a first end 854 of the support bar 816. The platform 640, the first hook 622, and the second hook 624 are located toward a second end 856 of the support bar 816. Additionally, the first rib 658 and the second rib 660 extend outwardly from the front face 826. Additionally, the first rib 658 and the second rib 660 extend between the platform 640 and the lower face 852. The support bar 816, the platform 640, the first rib 658, and the second rib 660 define a passage 862 through which the fastener 606 extends. In some embodiments, the plurality of protrusions 664 extend radially inwardly from the support bar 816 and the platform 640 to engage threads 666 of the fastener 606. In some embodiments, the plurality of protrusions 664 are arranged radially symmetrically. In some embodiments, the passage 862 is generally circular in cross-section, although any type of cross-sectional shape (e.g., ovoid, elliptical, rectilinear, polygonal, etc.) is anticipated. The spacer 804 may have any number of protrusions 664.

[0150] Remaining with FIG. 36, the first wing 818 and the second wing 820 are connected to the support bar 816 via a stem 870, which is connected to the support bar 816 at the first end 854. Additionally, the first wing 818 and the second wing 820 are joined to one another via a connector 872, which extends from the stem 870. The connector 872 is arcuate and thus extends curvilinearly between the first wing 818 and the second wing 820. The first wing 818 extends upwardly from the stem 870 and outwardly relative to the first end 854. The second wing 820 extends upwardly from the stem 870 and inwardly toward the second end 856. In some embodiments, the first wing 818 and the second wing 820 are tapered. The first wing 818 and the second wing 820 are resiliently pivotable relative to the stem 870 and to one another via the connector 872. The support bar 816 is shaped to matingly engage the seventh inner shoulder 750 and the eighth inner shoulder 752 (shown in FIG. 31).

[0151] With reference to FIG. 37, the first rear edge 678 of the first pin 610 extends beyond the lower face 852. A width W is defined between a rear face 874 of the support bar 816 and a first front edge 634 of the first pin 610. Additionally, the first rear edge 678 of the first pin 610 extends beyond the lower face 852. Further, the connector 872 extends outwardly relative to the front face 826. The front face 826, the stem 870, and the connector 872 define a first inner shoulder 876. Similarly, as shown in FIG. 38, the width W is further defined between the rear face 874 and the second front edge 636 of the second pin 612. Additionally, the second rear edge 688 of the second pin 612 extends beyond the lower face 852. The second lobe 712 of the second hook 624 extends outwardly beyond the front face 826. Thus, the front face 826 and the second lobe 712 define a second inner shoulder 878.

[0152] Referring to FIG. 39, the first lobe 710 of the first hook 622 extends outwardly beyond the front face 826. Thus, the front face 826 and the first lobe 710 define a third inner shoulder 880. Further, when the deck clip 800 is assembled, the first pin 610 and the second pin 612 abut the front face 826 of the support bar 816. Further, the first hook 622 and the second hook 624 retain the grip 602 against an upper face 882 of the support bar 816. Thus, when the deck clip 800 is assembled, the grip 602 is captured relative to the upper face 882 by the first hook 622 and the second hook 624 and is retained relative to the front face 826 by the fastener 606. While the deck clip 800 is being assembled, the cutout 632 permits the support bar 816 to resiliently flex around and accommodate the fastener 606.

[0153] Remaining with FIG. 39, the first hook 622, the platform 640, the second hook 624, and the stem 870 extend from and are interspersed along the support bar 816. The first hook 622 and the second hook 624 oppose one another. The first hook 622 is between the stem 870 and the platform 640. The first hook 622 and the second hook 624 are arcuate and extend toward one another. The support bar 816, the first hook 622, the second hook 624, and the platform 640 define a keyway 890 through which the grip 602 and the fastener 606 extend. The keyway 890 is in communication with the passage 862 (shown in FIG. 36).

[0154] Referring to FIG. 40, the grip 602 extends transversely through the keyway 890 relative to the support bar 816. The first wing 818, the second wing 820, and the connector 872 also extend transversely relative to the support bar 816. The first hook 622 and the second hook 624 extend beyond the front face 826. Further, when the deck clip 800 is assembled, the grip 602 extends beyond the first wing 618, the second wing 620, and the connector 872. Additionally, the first wing 818, the second wing 820, the first hook 622, the second hook 624, the platform 640 (shown in FIG. 36), the stem 870, and the connector 872 extend rearwardly up to the rear face 874.

[0155] Turning to FIG. 41, the grip 602, the spacer 804, and the fastener 606 are separable from one another. When the deck clip 800 is assembled, the opening 630 is aligned and in communication with the passage 862. Additionally, the passage 862 defines a second axis Y and is in communication with the cutout 632 (shown in FIG. 39). As the deck clip 800 is assembled, the grip 602 is inserted into the keyway 890 along a second direction D₂ until the first pin 610 and the second pin 612 abut the front face 826. Further, during assembly, the fastener 606 is inserted through the opening 630 and the passage 862 along the second axis Y.

[0156] Looking at FIG. 42, in operation, the deck clip 800 is installed in a first deck board 780 and a second deck board 782, which are supported by a joist 784. More specifically, the grip 602 and the spacer 804 are inserted in the first groove 786 defined in the first deck board 780. The grip 602 is inserted in the second groove 788 defined in the second deck board 782. The fastener 606 is between the first deck board 780 and the second deck board 782, ready to be threadably driven into the joist 784.

[0157] Turning to FIG. 43, more specifically, in operation, the deck clip 800 is between the first deck board 780 and the second deck board 782. Thus, the first pin 610 and the second pin 612 (shown in FIG. 36) abut a first lower side 790 of the first deck board 780. Further, the support bar 816 abuts a second lower side 792 of the second deck board 782. The pressing portion 614 contacts a first lower surface 794 and a second lower surface 796, which partially define the first groove 786 and the second groove 788, respectively. Similarly, the first wing 818 and the second wing 820 (shown in FIG. 36) contact an upper surface 900, which further defines the first groove 786. Because the first wing 818 and the second wing 820 are resiliently pivotable relative to the support bar 816 via the stem 870 and the connector 872, the first wing 818 and the second wing 820 urge the pressing portion 614 against the first lower surface 794 and the second lower surface 796. Consequently, the first forward set of teeth 760 (shown in FIG. 31) and the second forward set of teeth 764 (shown in FIG. 31) are urged against the first lower surface 794. Similarly, the first rear set of teeth 762, and the second rear set of teeth 766 (shown in FIG. 31) are urged against the second lower surface 796. Thus, the deck clip 800 is positionally retained in the first deck board 780 and the second deck board 782 before the fastener 606 is driven into the joist 784.

[0158] Remaining with FIG. 43, further in operation, the fastener 606 is threadably driven through the grip 602 and the spacer 804 into the joist 784. As the fastener 606 tightens against the grip 602 and the spacer 804, the first forward set of teeth 760 (shown in FIG. 31) and the second forward set of teeth 764 (shown in FIG. 31) dig into the first lower surface 794. Similarly, the first rear set of teeth 762, and the second rear set of teeth 766 (shown in FIG. 31) dig into the second lower surface 796. Thus, the pressing portion 614 pushes the first deck board 780 and the second deck board 782 downwardly to abut the joist 784. Further, as the fastener 606 tightens against the grip 602 and the spacer 804, the first point 648 and the second point 650 (shown in FIG. 36) are driven into the joist 784. Thus, the first pin 610 and the second pin 612 aid in resisting lateral movement of the first deck board 780 and the second deck board 782 relative to the joist 784 while the fastener 606 is being driven.

[0159] Referring to FIG. 44, a deck clip 1000 includes the grip 602 slidably received by a spacer 1004. In some embodiments, the grip 602 tightly engages the spacer 1004 and is thus retained in the spacer 1004 via friction. The fastener 606 is inserted through the grip 602 and the spacer 1004. In some embodiments, the fastener 606 thus aids in retaining the grip 602 on the spacer 1004. In some embodiments, the fastener 606 is threadably engaged with the spacer 1004. Further, the spacer 1004 includes a support bar 1016 from which a first wing 1018, a second wing 1020, the first hook 622, and the second hook 624 extend. In some embodiments, the first wing 1018 and the second wing 1020 are shaped as barbs. The grip 602 slidably engages the

support bar 1016, the first hook 622, and the second hook 624. The first wing 1018 and the second wing 1020 are connected to the support bar 1016 via an insertion plate 1022. More specifically, the first wing 1018 and the second wing 1020 oppose one another, are connected to a first end 1024 of the insertion plate 1022, and extend rearwardly toward a front face 1026 of the support bar 1016. The first wing 1018 and the second wing 1020 are resiliently pivotable relative to the insertion plate 1022 and to one another.

[0160] Turning to FIG. 45, the spacer 1004 further includes the platform 640 extending upwardly from the support bar 1016. The platform 640 is located along the support bar 1016 and slidably supports the upper plate 642 of the grip 602. Thus, the platform 640 is between the first hook 622 and the second hook 624. The first side 644 is slidably captured between the first hook 622 and the platform 640. Similarly, the second side 646 is slidably captured between the second hook 624 and the platform 640. The first hook 622 and the second hook 624 also capture the upper plate 642. It should be appreciated that the first pin 610 and the second pin 612 extend beyond the support bar 1016. More specifically, the first point 648 and the second point 650 extend beyond a lower face 1052 of the support bar 1016.

[0161] Remaining with FIG. 45, the insertion plate 1022 is connected to a first end 1054 of the support bar 1016. The first wing 1018 extends upwardly from the insertion plate 1022. Similarly, the second wing 1020 extends downwardly from the insertion plate 1022. The first hook 622 and the second hook 624 are located at the first end 1054 and a second end 1056 of the support bar 1016, respectively. Additionally, the first rib 658 and the second rib 660 extend outwardly from the front face 1026. Further, the first rib 658 and the second rib 660 extend between the platform 640 and the lower face 1052. The support bar 1016, the platform 640, the first rib 658, and the second rib 660 define a passage 1062 through which the fastener 606 extends. In some embodiments, the plurality of protrusions 664 extend radially inwardly from the support bar 1016 and the platform 640 to engage threads 666 of the fastener 606. In some embodiments, the plurality of protrusions 664 are arranged radially symmetrically. In some embodiments, the passage 1062 is generally circular in cross-section, although any type of cross-sectional shape (e.g., ovoid, elliptical, rectilinear, polygonal, etc.) is anticipated. The spacer 1004 may have any number of protrusions 664. The support bar 1016 is shaped to matingly engage the seventh inner shoulder 750 and the eighth inner shoulder 752 (shown in FIG. 31).

[0162] With reference to FIG. 46, the first rear edge 678 of the first pin 610 extends beyond the lower face 1052. A width W is defined between a rear face 1074 of the support bar 1016 and the first front edge 634 of the first pin 610. Additionally, the first rear edge 678 of the first pin 610 extends beyond the lower face 1052. Further, the insertion plate 1022 extends outwardly relative to the front face 1026. The first lobe 710 of the first hook 622 extends outwardly beyond the front face 1026. Thus, the front face 1026 and the first lobe 710 define a first inner shoulder 1076. Similarly, as shown in FIG. 47, the width W is further defined between the rear face 1074 and the second front edge 636 of the second pin 612. Additionally, the second rear edge 688 of the second pin 612 extends beyond the lower face 1052. The second lobe 712 of the second hook 624 extends outwardly beyond

the front face 1026. Thus, the front face 1026 and the second lobe 712 define a second inner shoulder 1078.

[0163] Referring to FIG. 48, when the deck clip 1000 is assembled, the first pin 610 and the second pin 612 abut the front face 1026 of the support bar 1016. Further, the first hook 622 and the second hook 624 retain the grip 602 against the support bar 1016. Thus, when the deck clip 1000 is assembled, the grip 602 is captured relative to the support bar 1016 by the first hook 622 and the second hook 624 and is retained relative to the front face 1026 by the fastener 606. While the deck clip 1000 is being assembled, the cutout 632 permits the support bar 1016 to resiliently flex around and accommodate the fastener 606.

[0164] Remaining with FIG. 48, the first hook 622, the platform 640, and the second hook 624 extend from and are interspersed along the support bar 1016. The first hook 622 and the second hook oppose one another. The first hook 622 and the second hook 624 are arcuate and extend toward one another. The support bar 1016, the first hook 622, the second hook 624, and the platform 640 define a keyway 1090 through which the grip 602 and the fastener 606 extend. The keyway 1090 is in communication with the passage 1062 (shown in FIG. 45).

[0165] Referring to FIG. 49, the grip 602 extends transversely through the keyway 1090 relative to the support bar 1016. The first wing 1018, the second wing 1020 (shown in FIG. 48), and the insertion plate 1022 also extend transversely relative to the support bar 1016. Further, when the deck clip 1000 is assembled, the grip 602 extends beyond the first wing 1018, the second wing 1020, and the insertion plate 1022. Additionally, the first hook 622, the second hook 624, the platform 640 (shown in FIG. 45), and the insertion plate 1022 extend rearwardly up to the rear face 1074.

[0166] Turning to FIG. 50, the grip 602, the spacer 1004, and the fastener 606 are separable from one another. When the deck clip 1000 is assembled, the opening 630 is aligned and in communication with the passage 1062. Additionally, the passage 1062 defines a third axis Z and is in communication with the cutout 632 (shown in FIG. 48). As the deck clip 1000 is assembled, the grip 602 is inserted into the keyway 1090 along a third direction D_3 until the first pin 610 and the second pin 612 abut the front face 1026. Further, during assembly, the fastener 606 is inserted through the opening 630 and the passage 1062 along the third axis Z.

[0167] Looking at FIG. 51, in operation, the deck clip 1000 is installed in a first deck board 780 and a second deck board 782, which are supported by a joist 784. More specifically, the grip 602 and the spacer 1004 are inserted in the first groove 786 defined in the first deck board 780. The grip 602 is inserted in the second groove 788 defined in the second deck board 782. The fastener 606 is between the first deck board 780 and the second deck board 782, ready to be threadably driven into the joist 784.

[0168] Turning to FIG. 52, more specifically, in operation, the deck clip 1000 is between the first deck board 780 and the second deck board 782. Thus, the first pin 610 and the second pin 612 (shown in FIG. 45) abut the first lower side 790 of the first deck board 780. Further, the support bar 1016 abuts the second lower side 792 of the second deck board 782. The pressing portion 614 contacts the first lower surface 794 and the second lower surface 796, which partially define the first groove 786 and the second groove 788, respectively. Similarly, the first wing 1018 and the second wing 1020 contact the upper surface 900 and the first lower

surface 794, respectively. Because the first wing 1018 and the second wing 1020 are resiliently pivotable relative to the support bar 1016 via the insertion plate 1022, the first wing 1018 and the second wing 1020 are urged against the first lower surface 794 and the upper surface 900. Consequently, the spacer 1004 is retained in the first groove 786. Thus, the deck clip 1000 is positionally retained in the first deck board 780 and the second deck board 782 before the fastener 606 is driven into the joist 684.

[0169] Remaining with FIG. 52, further in operation, the fastener 606 is threadably driven through the grip 602 and the spacer 1004 into the joist 784. As the fastener 606 tightens against the grip 602 and the spacer 1004, the second wing 1020 flexes toward the insertion plate 1022. Thus, the first forward set of teeth 760 and the second forward set of teeth 764 (shown in FIG. 31) dig into the first lower surface 794. Similarly, the first rear set of teeth 762, and the second rear set of teeth 766 (shown in FIG. 31) dig into the second lower surface 796. Thus, the pressing portion 614 pushes the first deck board 780 and the second deck board 782 downwardly to abut the joist 784. Further, as the fastener 606 tightens against the grip 602 and the spacer 1004, the first point 648 and the second point 650 (shown in FIG. 45) are driven into the joist 784. Thus, the first pin 610 and the second pin 612 aid in resisting lateral movement of the first deck board 780 and the second deck board 782 relative to the joist 784 while the fastener 606 is being driven.

[0170] FIG. 53 illustrates a flow diagram depicting a method 5300 to install the deck clips, 600, 800, 1000 of FIGS. 14, 35 and 44. The method 5300 starts at block 5302, where the first deck board 780 is laid on the joist 784. The method 5300 proceeds to block 5304.

[0171] At block 5304, the deck clip 600, 800, 1000 is inserted into the first deck board 780. More specifically, the deck clip 600, 800, 1000 is inserted into the first groove 786. The method 5300 proceeds block 5306. In some embodiments, resiliently pivotable features of the spacer 604, 804, 1004 urge the grip 602 downwardly in the first groove 786. In some embodiments, resiliently pivotable features of the spacer 604, 804, 1004 retain the spacer 604, 804, 1004 in the first groove 786.

[0172] At block 5306, the second deck board 782 is laid on the joist 784. The method proceeds to block 5308.

[0173] At block 5308, the second deck board 782 is slid toward the first deck board and the deck clip 600, 800, 1000. More specifically, as the deck clip 600, 800, 1000 encounters the second deck board 782, the deck clip 600, 800, 1000 is inserted into the second groove 788. In some embodiments, resiliently pivotable features of the spacer 604, 804, 1004 urge the grip 602 downwardly in the first groove 786. In some embodiments, resiliently pivotable features of the spacer 604, 804, 1004 retain the spacer 604, 804, 1004 in the first groove 786. The method 5300 proceeds to block 5310.

[0174] At block 5310, the fastener 606 is screwed into the joist 784. In some embodiments, as the fastener 606 is driven and tightens against the spacer 604, the first pin 610 and the second pin 612 are driven into the joist 784. The method 5300 then returns to block 5302.

[0175] Specific embodiments of a deck clip according to the present disclosure have been described for the purpose of illustrating the manner in which the disclosure may be made and used. It should be understood that the implementation of other variations and modifications of this disclosure and its different aspects will be apparent to one skilled in the art,

and that this disclosure is not limited by the specific embodiments described. Features described in one embodiment may be implemented in other embodiments. The subject disclosure is understood to encompass the present disclosure and any and all modifications, variations, or equivalents that fall within the spirit and scope of the basic underlying principles disclosed and claimed herein.

What is claimed is:

1. A deck clip comprising:
 - a spacer having a wing resiliently pivotably connected to a support bar, the support bar having a front face and a lower face; and
 - a grip slidably engageable with the spacer, the grip having a pin abutting the front face and extending beyond the lower face.
2. The deck clip of claim 1, wherein a pressing portion of the grip abuts an upper face of the support bar.
3. The deck clip of claim 2, wherein a hook extending from the support bar captures the pressing portion against the upper face.
4. The deck clip of claim 1, wherein the grip and the spacer define a width between a front edge of the pin and a rear face of the support bar.
5. The deck clip of claim 1, wherein the pin extends further from the front face than the wing.
6. The deck clip of claim 1, wherein the wing includes a connector and an arm.
7. The deck clip of claim 6, wherein the connector is arcuate.
8. The deck clip of claim 7, wherein the connector extends from the front face and loops back rearwardly toward a rear face of the support bar.
9. The deck clip of claim 1, wherein the wing is connected to the support bar via a stem extending from an upper face of the support bar.
10. The deck clip of claim 9, wherein the wing extends outwardly relative to the front face.
11. The deck clip of claim 9, wherein the stem is located at a first end of the support bar.
12. The deck clip of claim 1, wherein the wing is connected to the support bar via an insertion plate.
13. The deck clip of claim 12, wherein the wing is connected to a first end of the insertion plate and extends rearwardly towards the front face.
14. The deck clip of claim 12, wherein the insertion plate extends from a first end of the support bar.
15. The deck clip of claim 1, wherein the wing extends upwardly relative to the support bar.
16. A deck clip comprising:
 - a grip having a pin extending from a pressing portion, the pin and the pressing portion defining an inner shoulder; and
 - a spacer having a support bar configured to matingly engage the inner shoulder.
17. The deck clip of claim 16, wherein the pin abuts a front face of the support bar.
18. The deck clip of claim 16, wherein the spacer includes a wing resiliently pivotably connected to the support bar.
19. The deck clip of claim 16, wherein the spacer and the grip define a width between a front edge of the pin and a rear face of the support bar.
20. The deck clip of claim 16, wherein the pin extends beyond a lower face of the support bar.
21. A method to construct a deck assembly comprising:
 - laying a first deck board on a joist;
 - inserting a deck clip into a first groove defined in the first deck board, the deck clip including a grip slidably engaged with a spacer;
 - laying a second deck board on the joist;
 - inserting the deck clip into a second groove defined in the second deck board, a pin of the grip abutting the first deck board and a support bar of the spacer, the spacer abutting the second deck board; and
 - driving a fastener through the grip and the spacer and into the joist, the pin being driven into the joist as the fastener is tightened.

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