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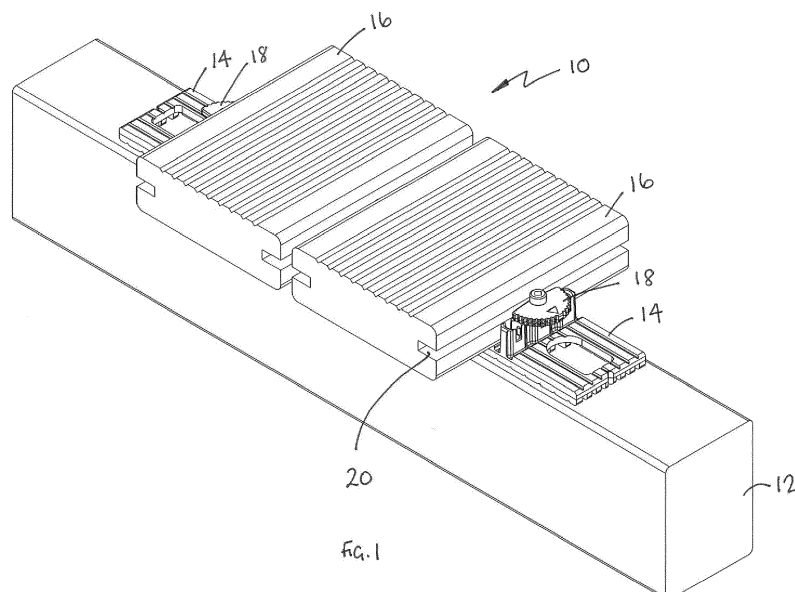
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(54) FASTENING SYSTEM FOR DECKING BOARDS

(57) A fastening system for decking boards (16) includes a series of supports (14) which attach to a bearer (12). The supports define a central raised wall (24) and two planar portions (22) located either side of the wall. In the centre of the wall there is a cylindrical recess (30) which receives a stem (52) depending from a generally semi-circular washer (18). The stem (52) can rotate in the recess. The decking boards define slots which run along both sides of the board. In use, a first pair of supports is located on a bearer (12) and a first board is supported on the planar portions (22) of the supports, above the bearer. The washer is rotated so that one half of the

semi-circular top (50) of one washer extends into the slot in the side of the decking board. The washer is then fixed in place by a screw which extends through the stem into the support and into the bearer. A board is then located adjacent the first board on the support and a further support is slipped under the free side of the board and the washer in the further support is rotated and locked in place with a screw. The heads of the screws are visible between the boards and can be accessed and partially unscrewed to allow rotation of the washer to allow the removal of individual or multiple boards.



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Description

Technical Field

[0001] This invention relates to a fastening system for decking boards/floor boards.

Background

[0002] Decking boards have been used extensively to create raised decks and floors. Decking boards are laid side by side, spaced apart by about 5mm on top of transverse bearers, and are fixed to the bearers using nails.

[0003] One problem with current methods for laying decking boards occurs when it is necessary to remove the decking boards, either to replace damaged decking boards, or for access underneath the deck for services or the like. This is difficult to do as it involves removal of a number of boards and the removal of the boards often results in damage to the deck.

[0004] Any discussion of documents, acts, materials, devices, articles or the like which has been included in the present specification is not to be taken as an admission that any or all of these matters form part of the prior art base or were common general knowledge in the field relevant to the present disclosure as it existed before the priority date of each claim of this application.

[0005] Throughout this specification the word "comprise", or variations such as "comprises" or "comprising", will be understood to imply the inclusion of a stated element, integer or step, or group of elements, integers or steps, but not the exclusion of any other element, integer or step, or group of elements, integers or steps.

Summary

[0006] According to the present invention, there is provided a locking support for decking boards or the like including a support element defining a wall portion and at least two generally planar support portions disposed on opposed sides of the wall portion for supporting the underside of a decking board, the wall portion defining a generally cylindrical or part cylindrical recess; and an anchoring element having a generally planar top portion, which is preferably generally semi-circular, and a depending stem, located in the recess, the stem being able to turn in the recess and an aperture extending through the stem for receiving the shaft of a fastening means for fixing the anchoring element relative to the support element.

[0007] Advantageously, the fastening system allows decking boards to be laid and fastened in place but subsequently removed e.g. for replacement or repair, or to allow access to areas covered by the boards.

[0008] Each planar support portion may define an aperture, preferably a generally D-shaped aperture.

[0009] Typically, the semi-circular perimeter edge of the top portion of the washer is knurled.

[0010] The washer should preferably be rigid and is typically made of a metal or very strong plastic such as glass reinforced nylon.

[0011] Typically, the generally cylindrical or part cylindrical recess defines an upper portion having a larger internal diameter and a lower portion having a smaller internal diameter. The stem of the washer is a close fit inside the upper portion of the generally cylindrical or part cylindrical recess.

[0012] In a related aspect, the invention provides a method of assembling a floor comprising decking boards defining slots extending along opposed side edges of the board, the floor being supported on bearers using a decking support as described above, comprising the steps of:-

locating a first pair of supports on a bearer;

supporting a first board on the planar portions of the supports;

adjusting the washer so that part of the top portions of one washer extends into a slot in the side of the decking board; and

fixing the washer using a removable fastener such as a screw extending through the stem into the support and into the bearer.

Brief Description of Drawings

[0013] A specific embodiment of the present invention will now be described, by way of example only, and with reference to the accompanying drawings, in which:-

Figure 1 is an isometric view of part of a raised deck embodying the present invention;

Figure 2 shows a section through the deck shown in Figure 1;

Figure 2a is an enlarged view of part of the section shown in Figure 2;

Figure 3 is an isometric view of a support element of the deck showing the top of the support element;

Figure 4 is a top plan view of the support element of Figure 3;

Figure 5 is an isometric view showing the underside of the support element of Figure 3;

Figure 6 is an isometric view of an anchoring element showing the top of the anchoring element;

Figure 7 is a top plan view of the anchoring element shown in Figure 6;

Figure 8 is an isometric view showing the underside of the anchoring element shown in Figure 6;

Figure 9 is a top plan view of the deck showing the anchoring element in a first locked position;

Figure 10 is a top plan view of the deck showing the anchoring element in a second locked position;

Figure 11 is a top plan view of the deck showing the anchoring element in an unlocked position

Figure 12 shows a variant of the deck incorporating a rail; and

Figures 13 to 16 illustrate the use of the support with different combinations and arrangements of washers.

Description of Embodiments

[0014] Referring to the drawings, Figure 1 shows a part of a floor or deck 10. The floor includes a series of spaced apart parallel bearers/beams 12, of which only one is shown. The bearers may be supported on height adjustable pedestals (not shown), however the specific manner in which the bearers are supported is not critical.

[0015] A series of three support elements 14 (of which one is hidden) are attached to the upper surface of the bearer, on top of which two decking boards 16 are located. The support elements are shown in more detail in Figures 3 to 5, and an anchoring element in the form of a washer 18 which locates in the support element, is shown in more detail in Figures 6 to 8.

[0016] As can be seen in Figure 1, a groove 20 extends along and into each longitudinal side edge of the decking board 16.

[0017] Turning to Figures 3 to 5, the support element 14 defines two generally planar portions/platforms 22, on which decking boards are supported in use. The planar portions 22 are separated by a wall portion 24 extending across the middle of the support element. A large generally D-shaped aperture 25 is defined in the centre of each planar portion 22. A series of V-shaped channels 26 (best seen in Figure 3) are defined in the upper surface of the planar portions which assist in the prevention of water build up under the decking board. A V-shaped notch 28 (best seen in Figure 4) is defined in each opposed end of the support element 14. This notch assists in aligning the supports on the bearer. The wall portion 24 defines three part-cylindrical bores 30, a central bore 30a and a bore 30b, 30c on opposed sides of the central bore. The bores are substantially identical. Each bore is defined by two opposed part cylindrical surfaces 32. As is best seen in Figure 4, two diametrically opposed protrusions 34 are defined in the bore, one protrusion being located in the centre of each part cylindrical surface 32. Each bore has a larger diameter upper part 36 and a

slightly narrower diameter lower part 38 separated at a circular step 40 (refer to Figure 3).

[0018] Figure 5 shows the underside of the support element which defines two longitudinally extending support rails/feet 42, which extend along each of lateral edge of the support element, the lower surfaces of which define a series of spaced V-shaped cut outs 44, and a number of supporting feet 46 under the centre and longitudinal edges of the support element some of whose lower surfaces also define a series of spaced V-shaped cut outs 44. The V-shaped cut-outs 44 help to prevent the build of water by allowing freer drainage/movement of water on top of the bearer 12. They also function as cutting grooves to allow a support to be used for an edge or end board by cutting off one of the planar portions.

[0019] Figures 6 to 8 illustrate the anchoring washer 18 in more detail. The washer defines a generally planar top portion 50 and an integral depending stem/support 52. As is best seen in Figure 7 the generally planar top portion 50 is generally semi-circular defining a central aperture 54 but with an edge strip 56 disposed to one side of the aperture (refer to Figure 7). The edge of the curved part of the semi-circular portion is knurled and defines a series of ribs 58. An indicia in the form of an arrow 60 is defined pointing to the midpoint of the semi-circular portion. In use, the ribs facilitate the turning of the washer using a small screwdriver or similar tool accessing the washer through a gap between boards.

[0020] As is best seen in Figure 8, the depending stem 52 has a generally annular cross-section, but defines two opposed U shaped cut out portions 62 which extend from the base 64 of the stem. Spaced around the exterior of the stem at 90° to the cut out portions are two recesses or indents 66. The external diameter of the stem is the approximately the same or slightly smaller than the internal diameter of the bore 30a, so that it is a close fit in the bore 30a but can turn in it, and is greater than the diameter of the bore 30b.

[0021] As is best seen in Figures 1, 2 and 2a, the stem 52 of the washer 18 locates in the upper bore 36 of one of the bores 30a of the support element. The stem of the washer is held aligned with the bore by the fit of the stem of the washer in the bore 30a. A fastening means in the form of a screw 100 having a head 102, shaft 104, threaded part 106 and tip 108, locates inside the bore in the stem of the washer. Where the head of the screw joins the stem a radiused portion is defined which allows the screw to be self-centring. The diameter of the lower bore of the support element is approximately the external diameter of the helix of the screw so that the screw is a snug fit in the bore.

[0022] In use, with reference to Figures 9 and 10, a support 14 is located on a bearer 12 and a first board 16 is supported on the planar portions of the support, above the bearer 12. The washer 18 is rotated so that half of the semi-circular portion of the washer is located in the groove 20 in the side of the decking board 16, and the arrow 60 is visible adjacent the edge of the board. At this

stage the washer and support 14 may be partly fixed in place by the screw 100 which extends through the stem into the support 14 and into the bearer, but the screw is not fully inserted and the washer remains free to rotate. Note that as the washer does rotate, the combination of the two protrusions in the bore 30a and the two recesses 62 and two cut outs 66 provides a series of click stops spaced apart at 90° as the protrusions engage in the recesses or cut-outs.

[0023] A second board (not shown) is then located adjacent the first board on the support and a further support is slipped under the distal side of the second board. The washer in the first support is rotated through 90° to the position shown in Figure 10 and the screw is tightened to lock the washer in place. Note that in this position, the arrow 60 is visible. The board is then locked in place either side by washers. A next board is placed adjacent the second board a support is located under the distal side of the second board and the process is continued until the decking is complete. Where access is only required in certain areas of a deck it is possible to use the washers in those areas and use support elements without washers in other areas and simply nail the boards in place, with the nails passing through sides of the boards and into the D-shaped apertures. The support elements also assist in maintaining an even separation between boards.

[0024] The head of the screw is visible between the boards and can be accessed and partially unscrewed to allow rotation of the washer to allow the removal of individual or multiple boards, as illustrated in Figure 11.

[0025] Figure 12 illustrates a variant of the invention in which a rail 200 is mounted to the top of the bearer using fasteners such as screws. The rail defines two parallel longitudinally extending ribs 202, 204. The ribs locate between the central supporting feet of the support elements and ensure they are correctly aligned with one another. The support elements may be slid along the rails, before they are locked in place by screws.

[0026] While the use of the semi-circular washer allows for the easy removal and replacement of boards, the supports may be used with square washers and the like, which do not have the advantage of being removable, but can be used where the boards do not need to be removed. Also the provision of the three bores in the centre of the support, allows the supports to support and fix the ends of two boards butted end to end, simultaneously. Figures 13 to 16 show a number of different washer and board combinations using the supports.

[0027] In particular, Figure 13 shows the use of a semi-circular washer 18 and a square washer 300 to fix two boards 16 butted end to end. Figure 14 shows a similar arrangement, but using two semi-circular washers 18.

[0028] Figure 15 shows a single square washer 300 attached via the central bore 30a of the support, fixing the ends of two boards. Figure 16 illustrates the use of two square washers retaining a single board 16. Other arrangements are possible.

[0029] It will be appreciated by persons skilled in the art that numerous variations and/or modifications may be made to the above-described embodiments, without departing from the broad general scope of the present disclosure. The present embodiments are, therefore, to be considered in all respects as illustrative and not restrictive.

10 Claims

1. A locking support for decking boards (16) or the like including a support element (14) defining a wall portion (24) and at least two generally planar support portions (22) disposed on opposed sides of the wall portion (24) for supporting the underside of a decking board, the wall portion defining a generally cylindrical or part cylindrical recess (30); and an anchoring element (18) having a top portion (50) and a depending stem (52), located in the recess, the stem being able to turn in the recess and having an aperture (54) extending through the stem for receiving the shaft of a fastening means (100) for fixing the anchoring element relative to the support element.
2. A locking support for decking boards as claimed in claim 1 wherein the top portion (50) of the anchoring element is generally planar and generally semi-circular.
3. A locking support for decking boards as claimed in any preceding claim wherein each planar support portion of the support element defines an aperture (25).
4. A locking support for decking boards as claimed in claim 3 wherein the aperture is generally D-shaped.
5. A locking support for decking boards as claimed in any one of claims 2 to 4 wherein the generally semi-circular top portion defines a semi-circular perimeter edge which is knurled and defines a series of ribs (58).
6. A locking support for decking boards as claimed in claim 5 including an indicia (60) located part way around the semi-circular perimeter edge of the washer.
7. A locking support for decking boards as claimed in any preceding claim wherein the generally cylindrical or part cylindrical recess (30) defines an upper portion having a larger internal diameter (36) and a lower portion (38) having a smaller internal diameter.
8. A locking support for decking boards as claimed in claim 7 wherein the stem of the washer is a close fit

inside the upper portion of the generally cylindrical or part cylindrical recess.

9. A locking support for decking boards as claimed in claim 8 wherein the upper portion of the bore defines an inwardly directed protrusion (34) and the stem of the washer defines a recess (66) which can receive the protrusion when aligned with the same. 5

10. A method of assembling a floor comprising decking boards (16) defining slots extending along opposed side edges of the board, the floor being supported on bearers (12) using a decking support as claimed in any preceding claim, comprising the steps of:- 10

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 locating a first pair of supports on a bearer;
 supporting a first board on the planar portions of the supports;
 adjusting the washer so that part of the top portions of one washer extends into a slot in the side of the decking board and 20
 fixing the washer using a removable fastener such as a screw extending through the stem into the support and into the bearer.

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 11. A method as claimed in claim 10 further including the step of;

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 locating a second board adjacent the first board on the support
 placing a further support under the second board and adjusting the washer in the further support and securing the same with removable fasteners such as a screw. 35

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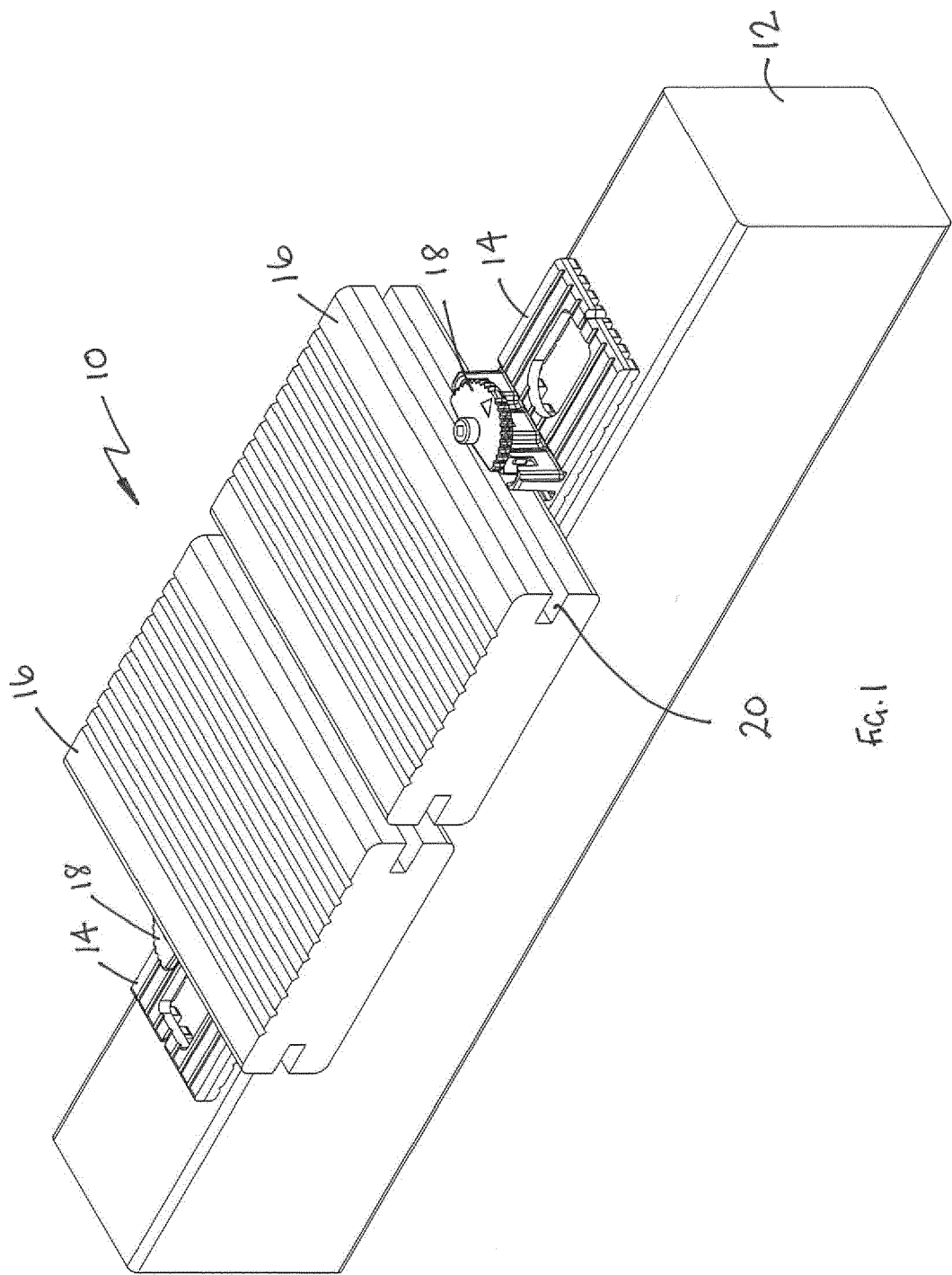
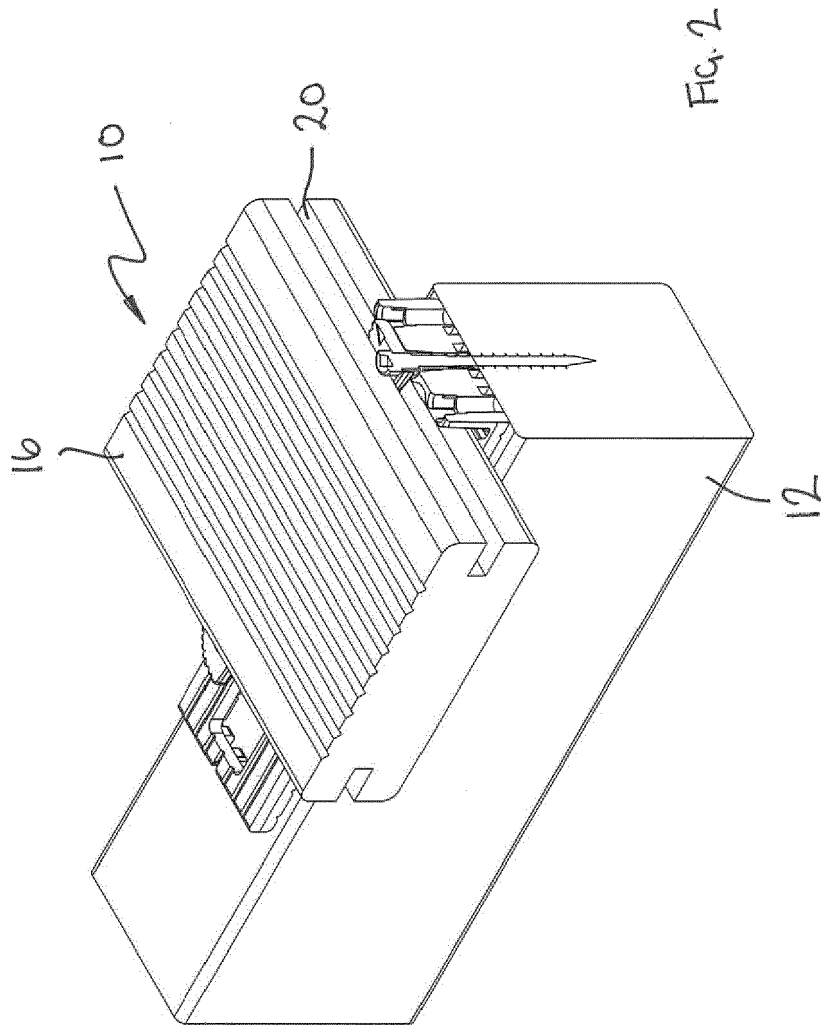
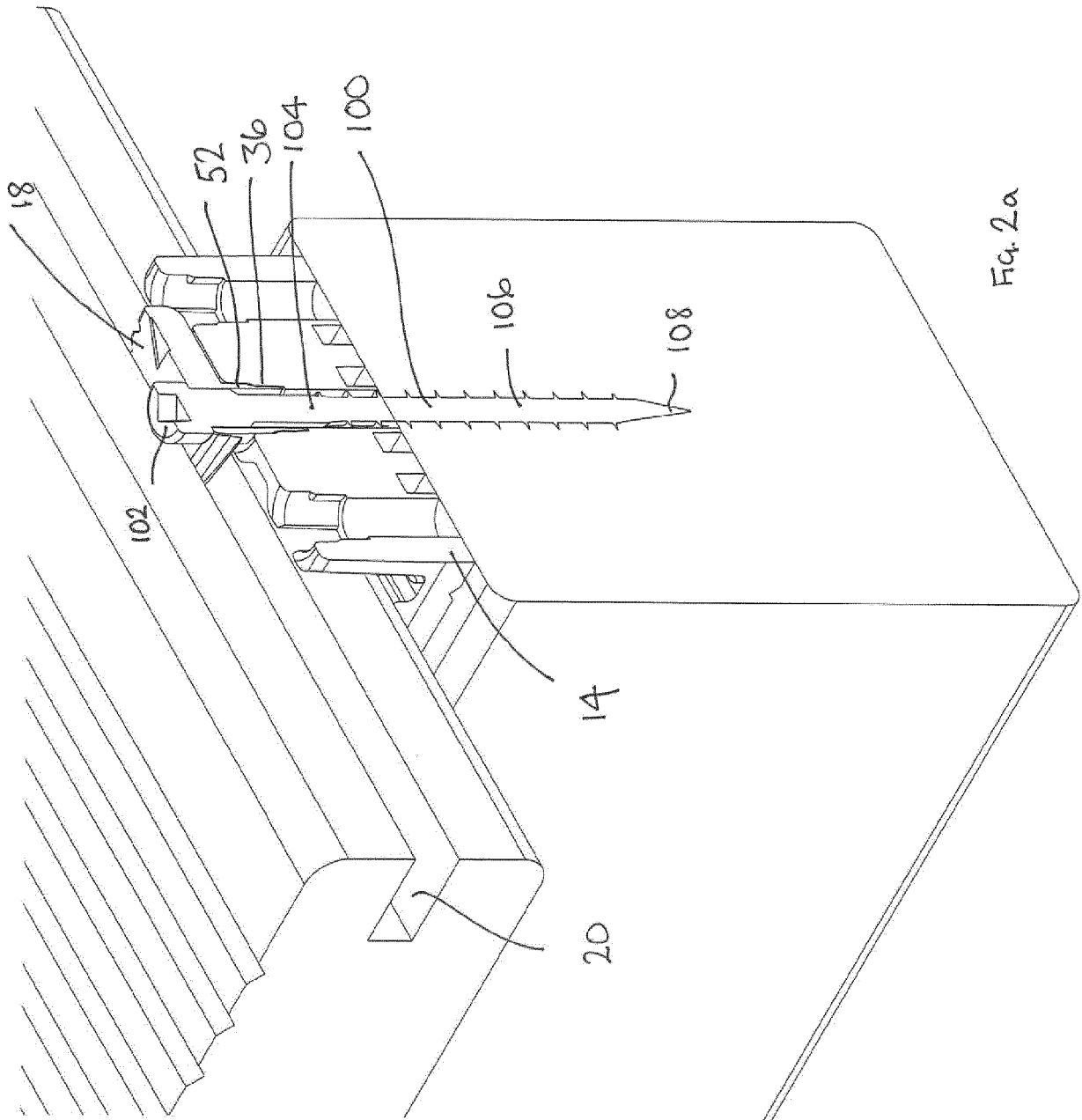


Fig. 1





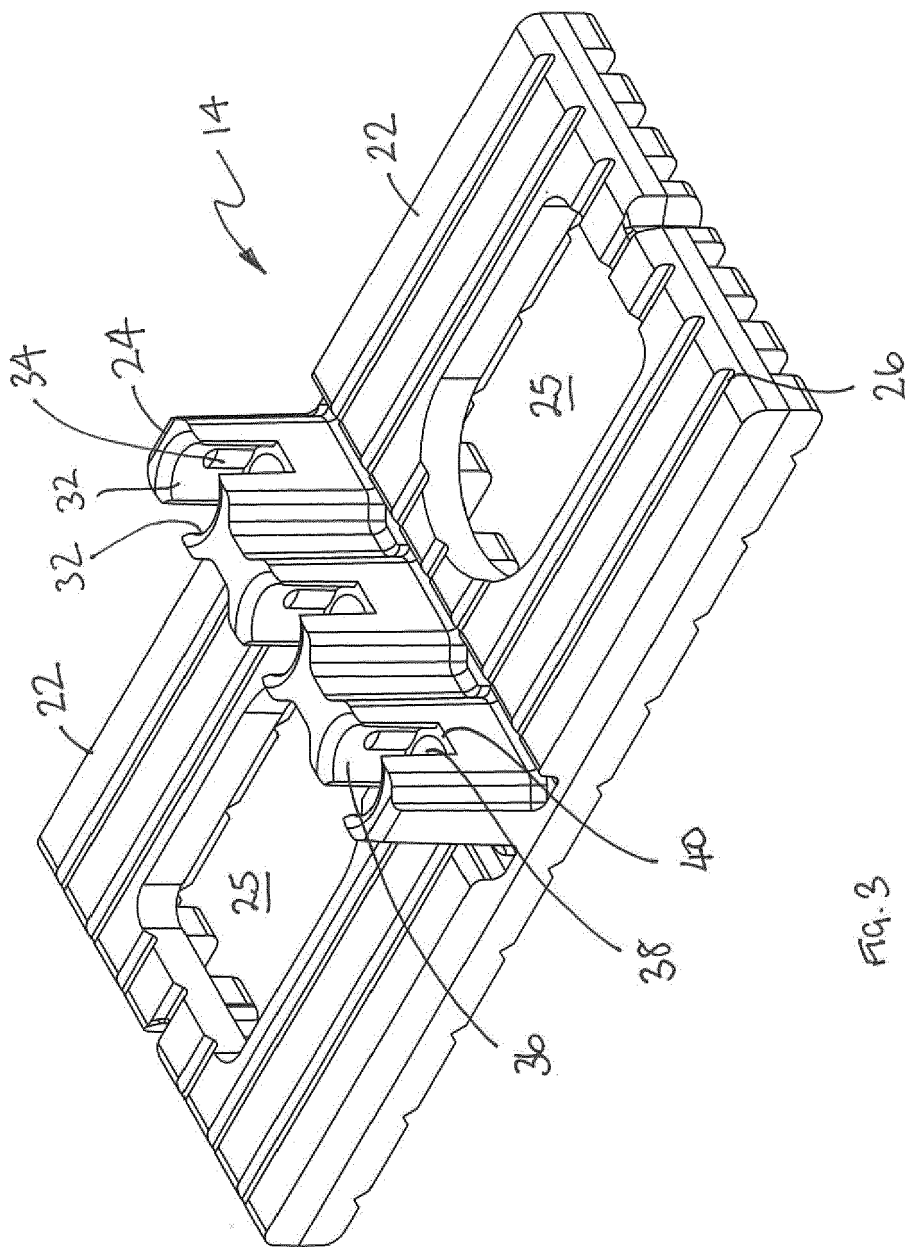
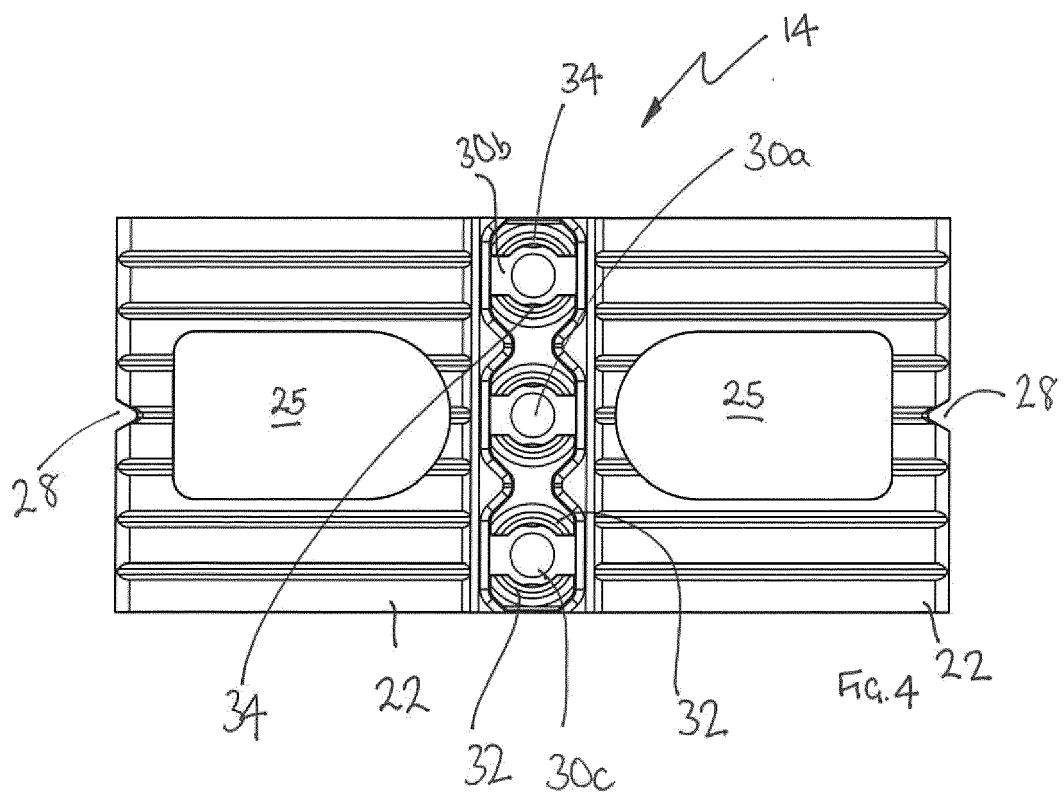
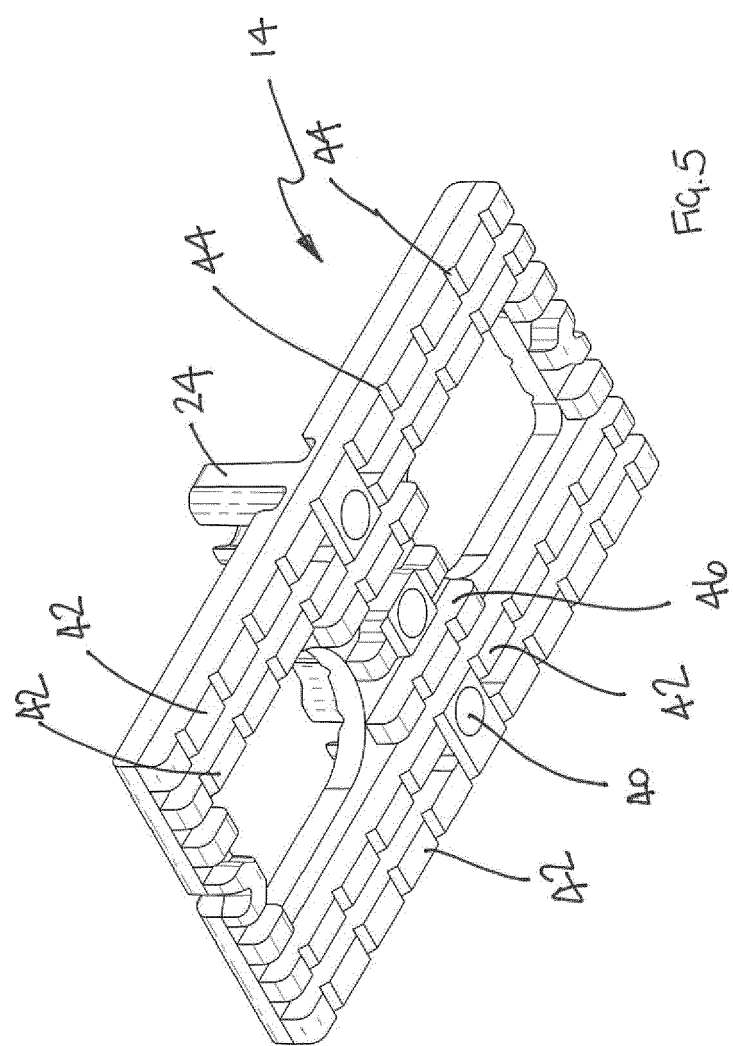
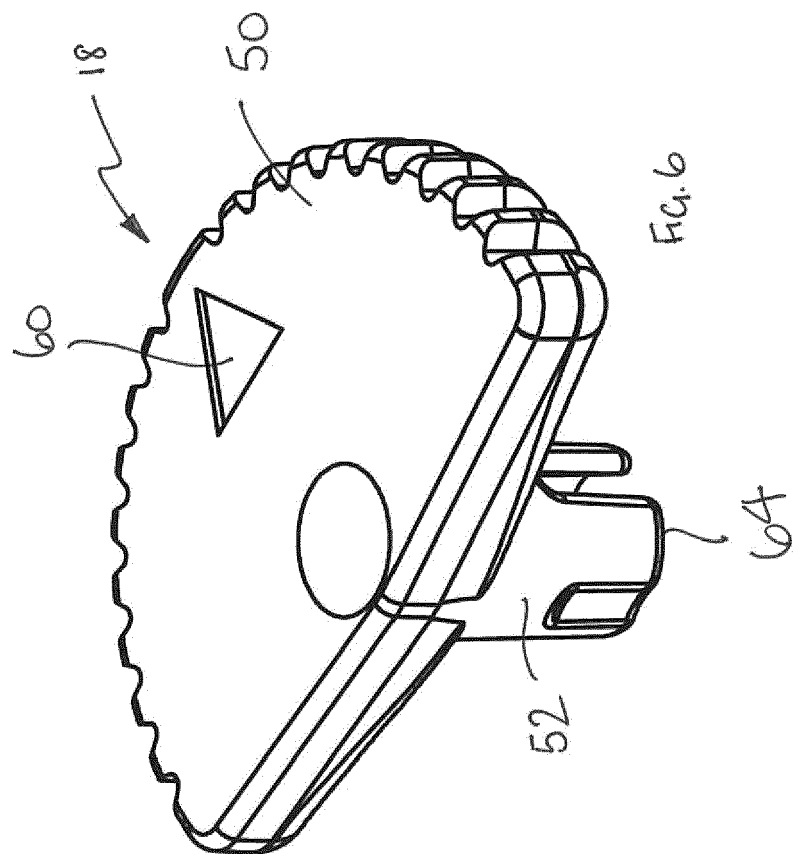
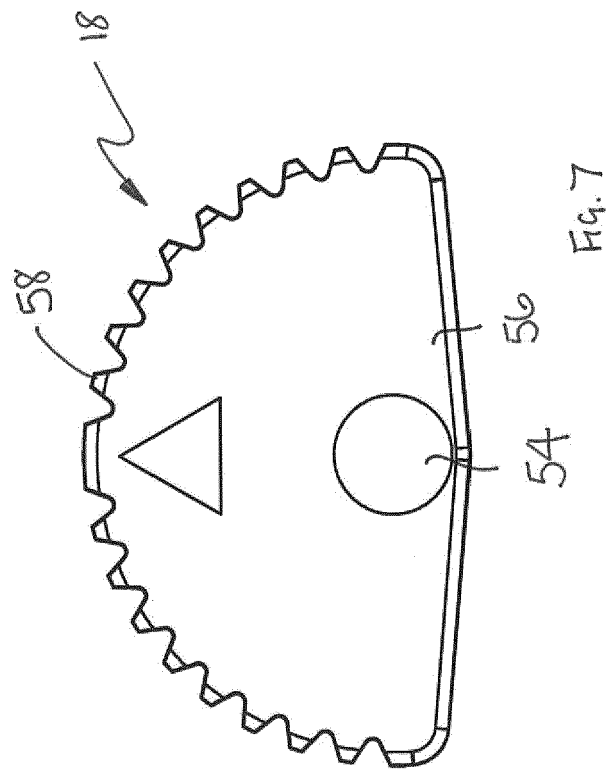


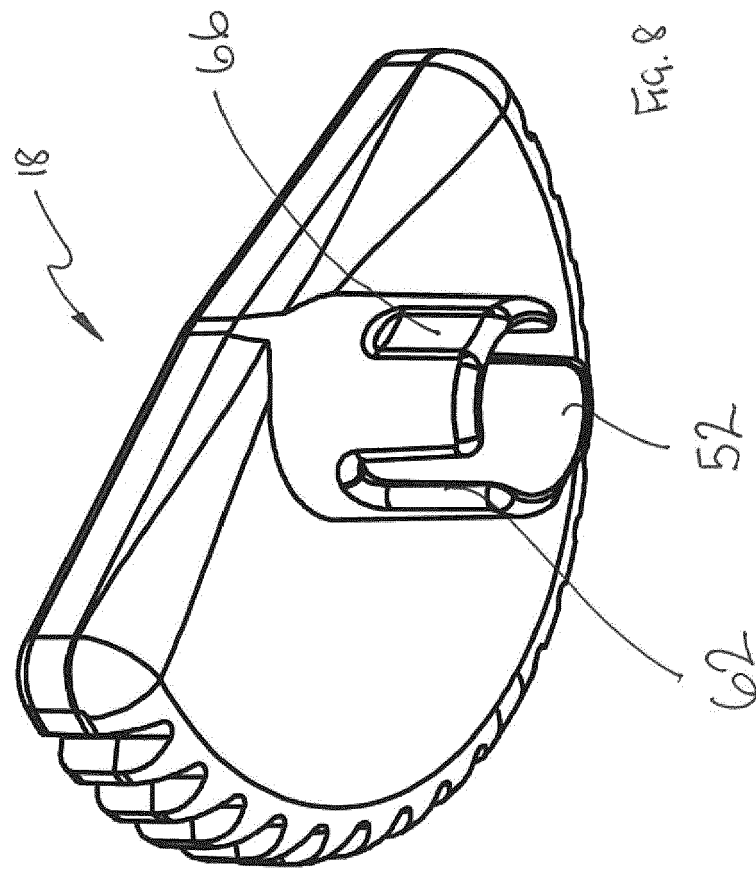
Fig. 3

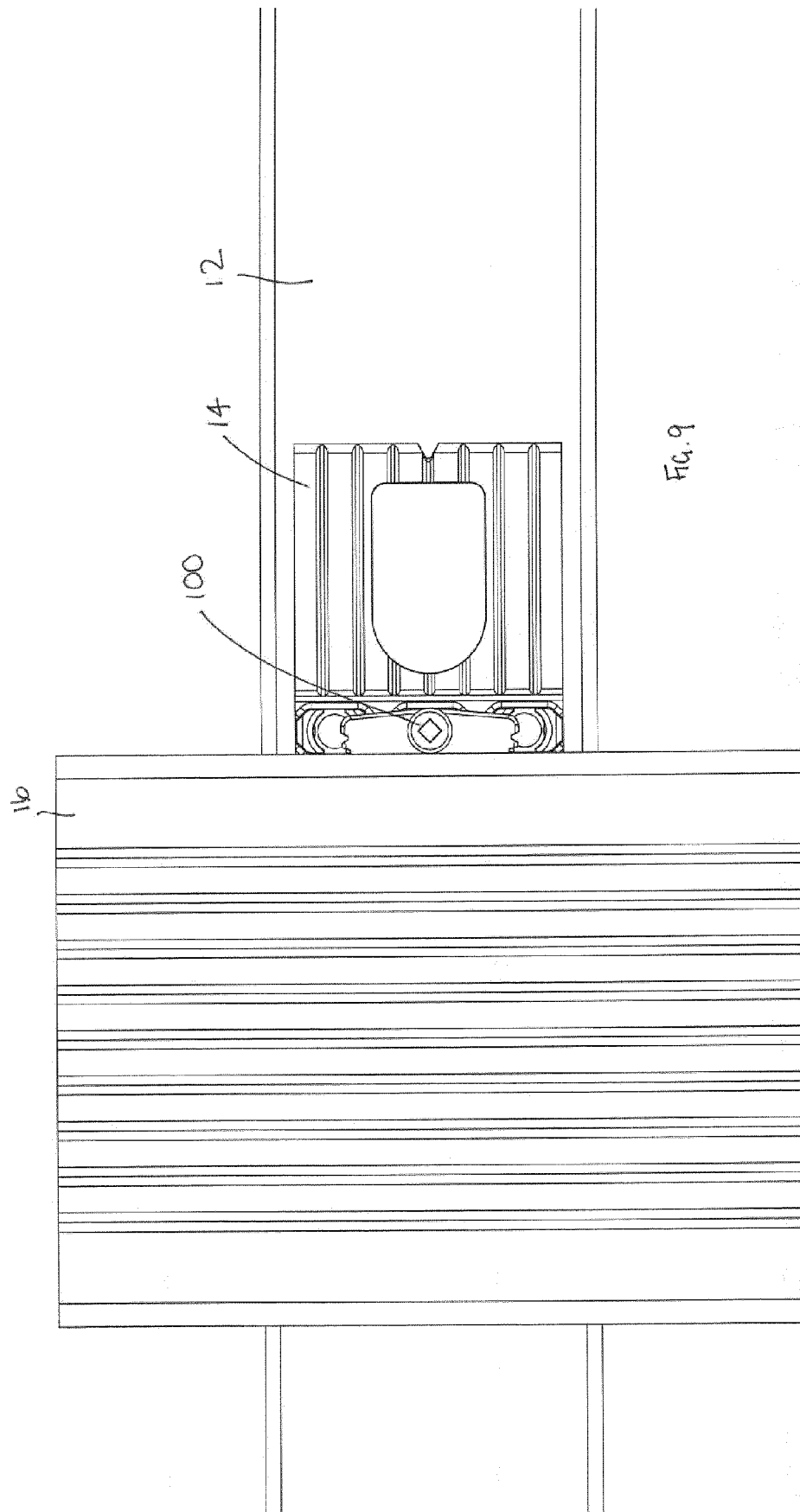


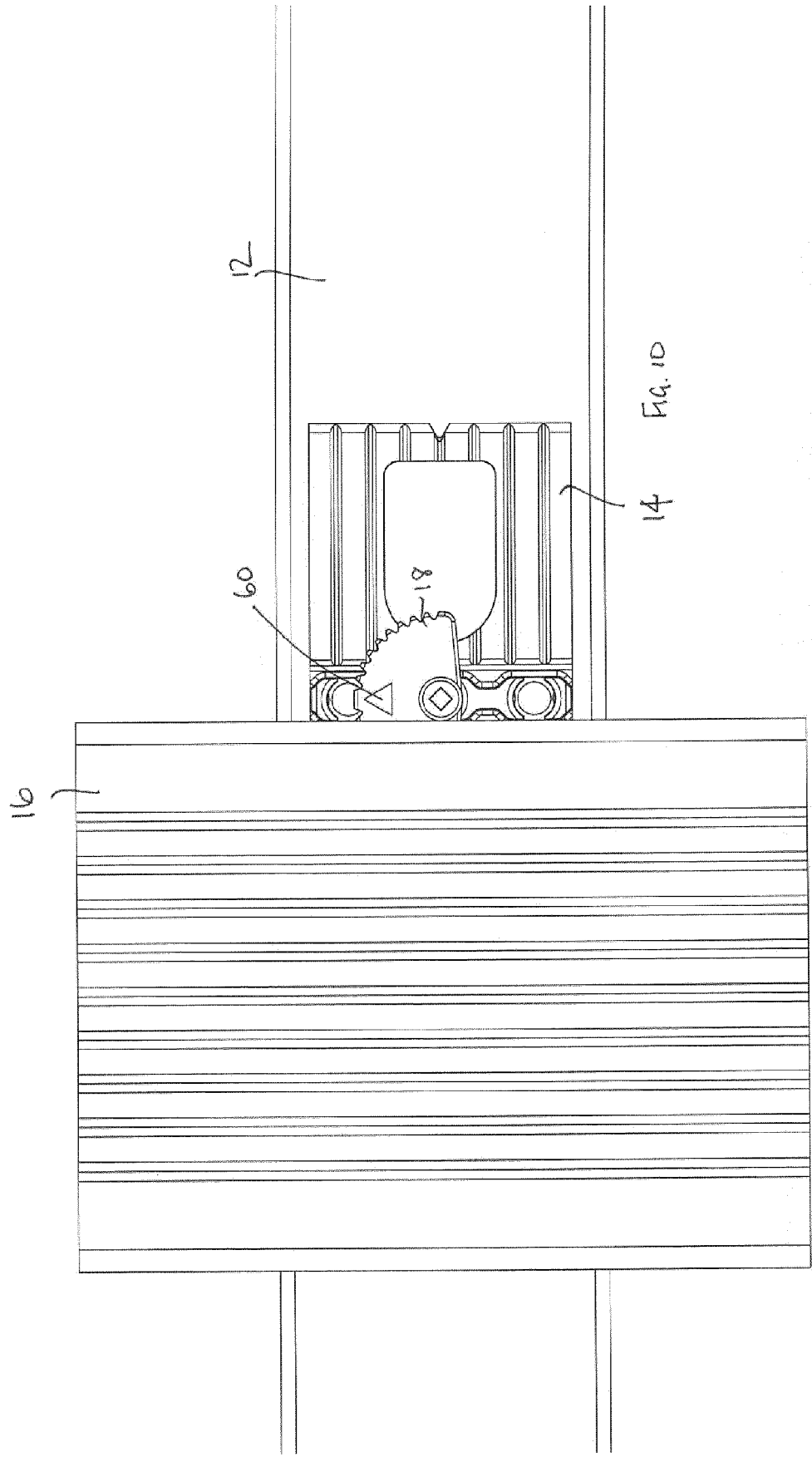


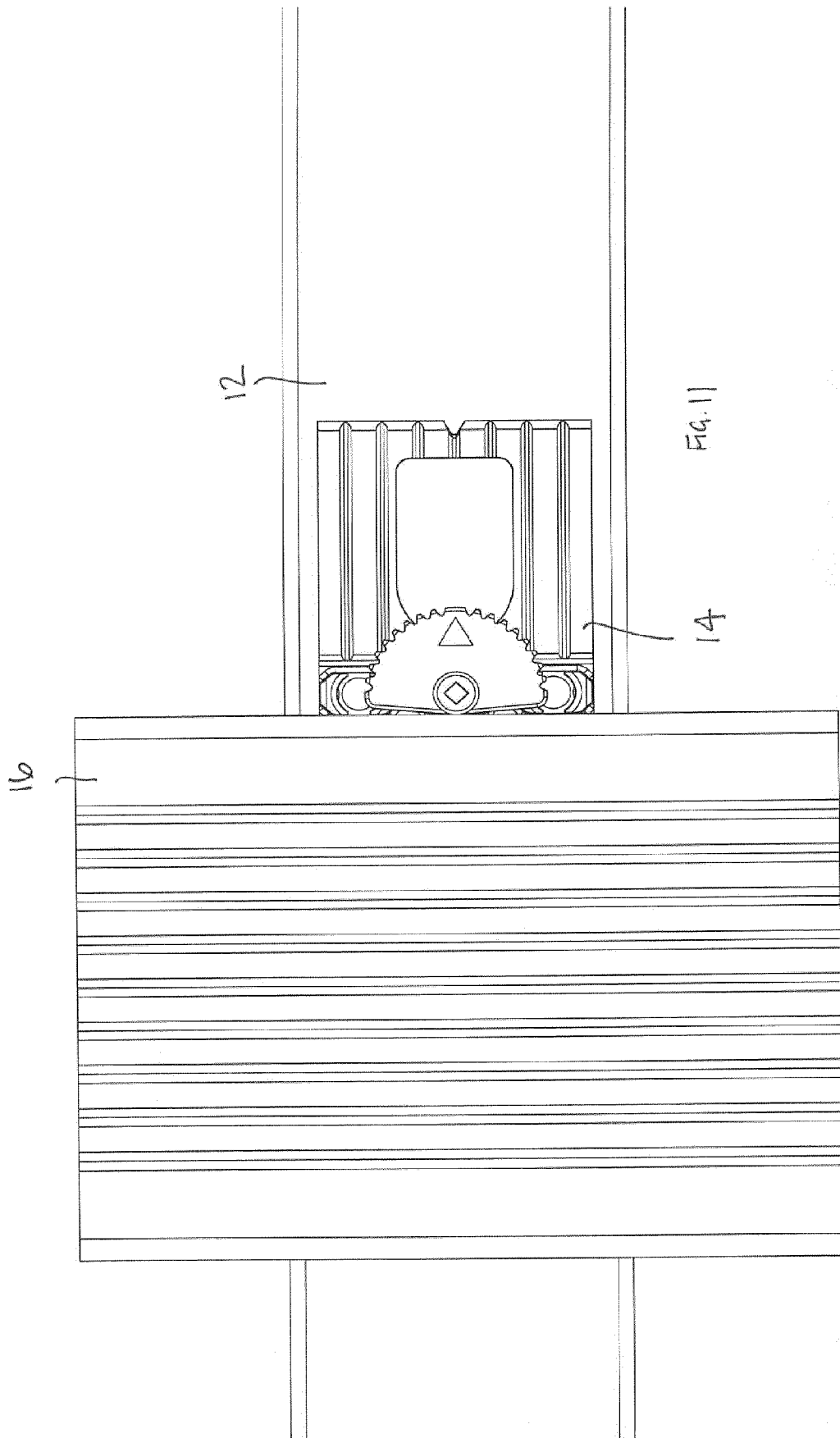


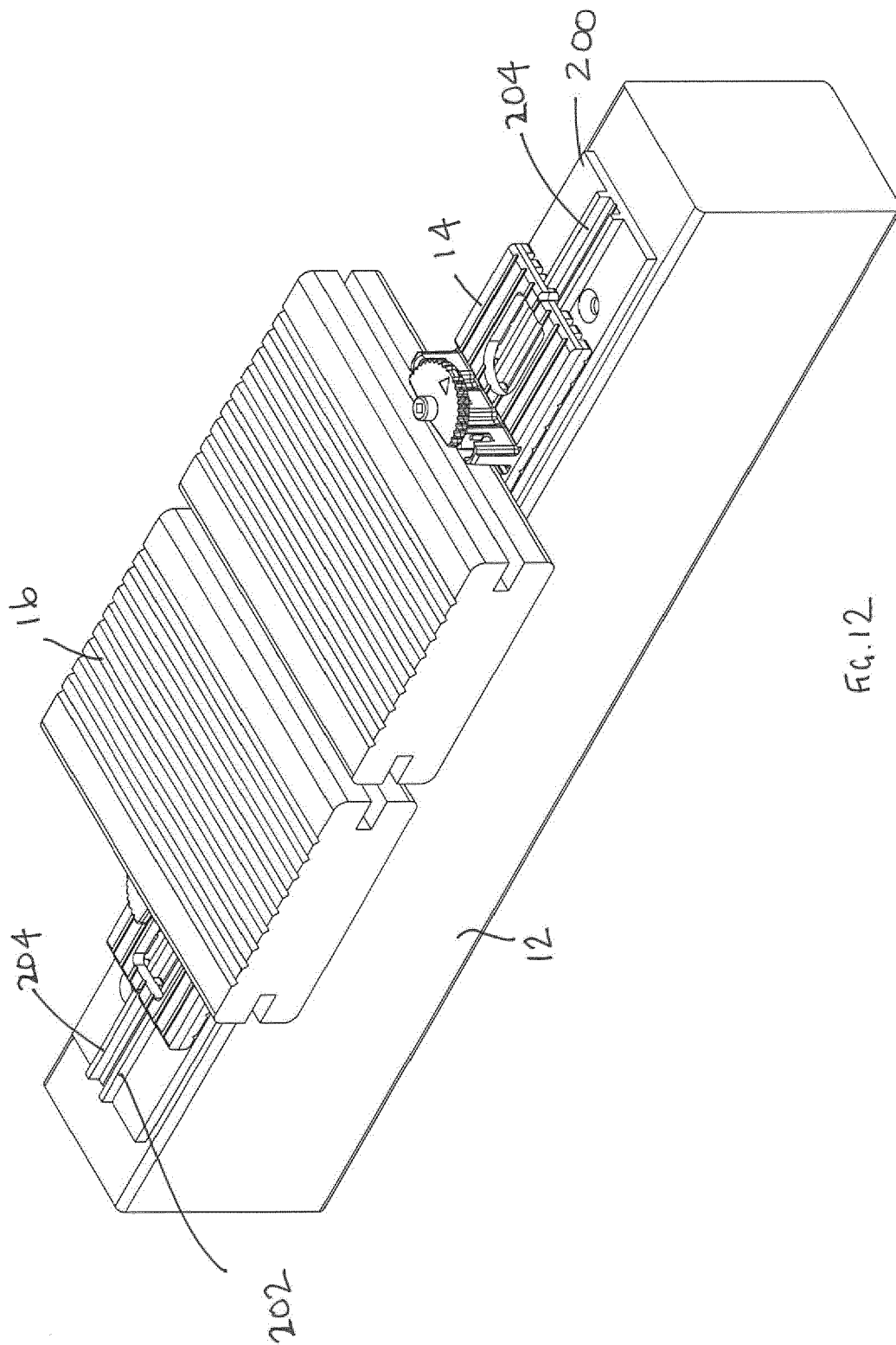


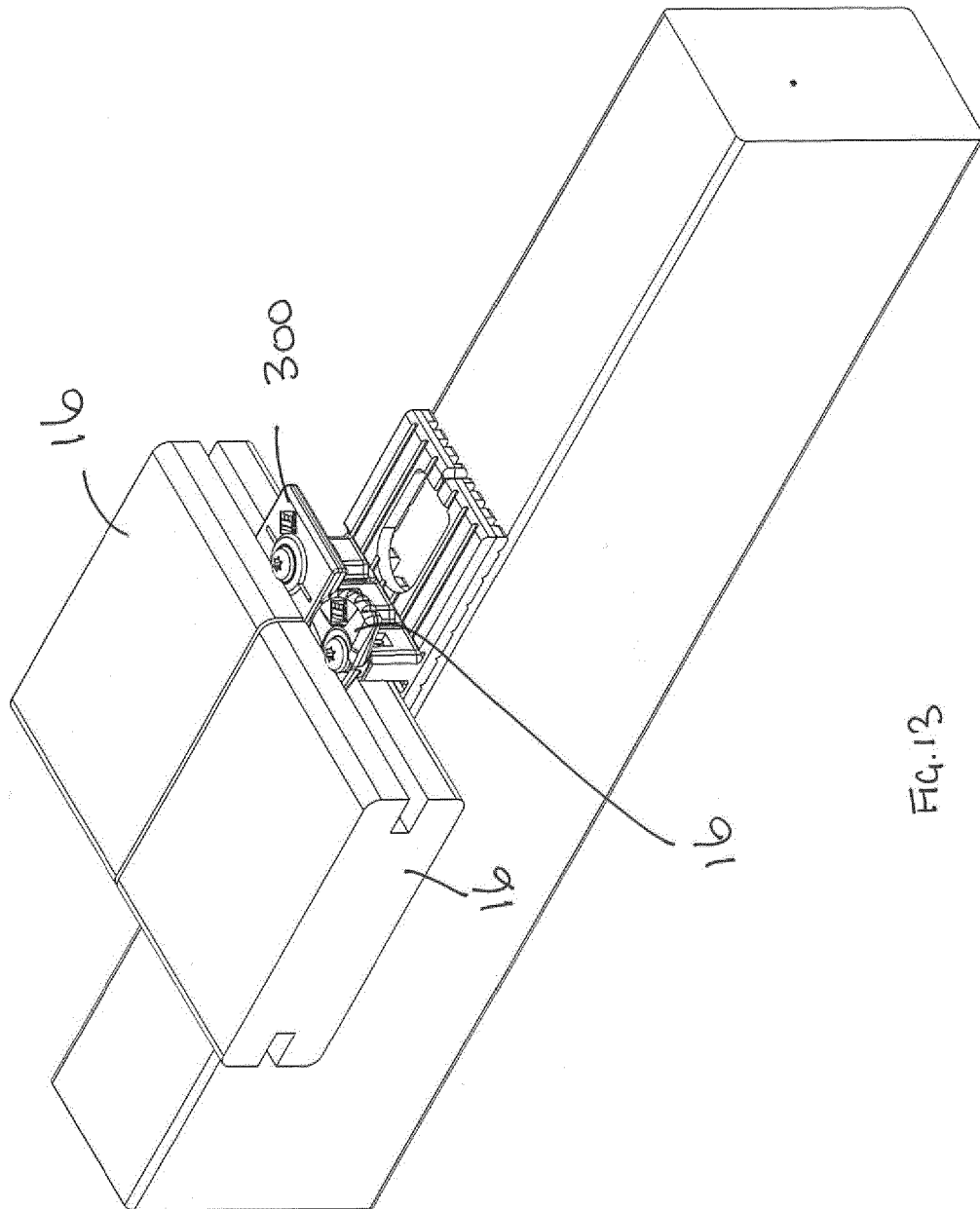












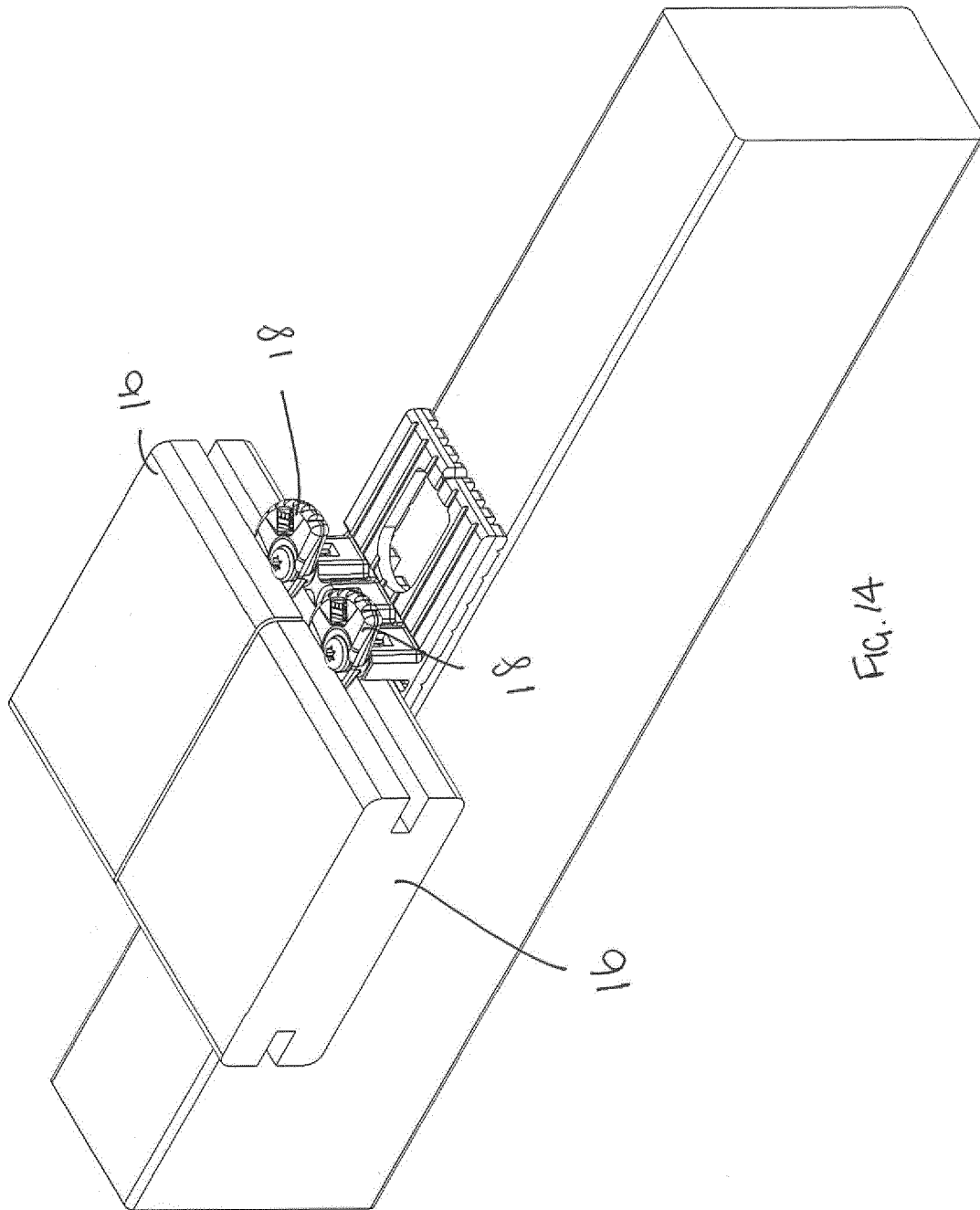
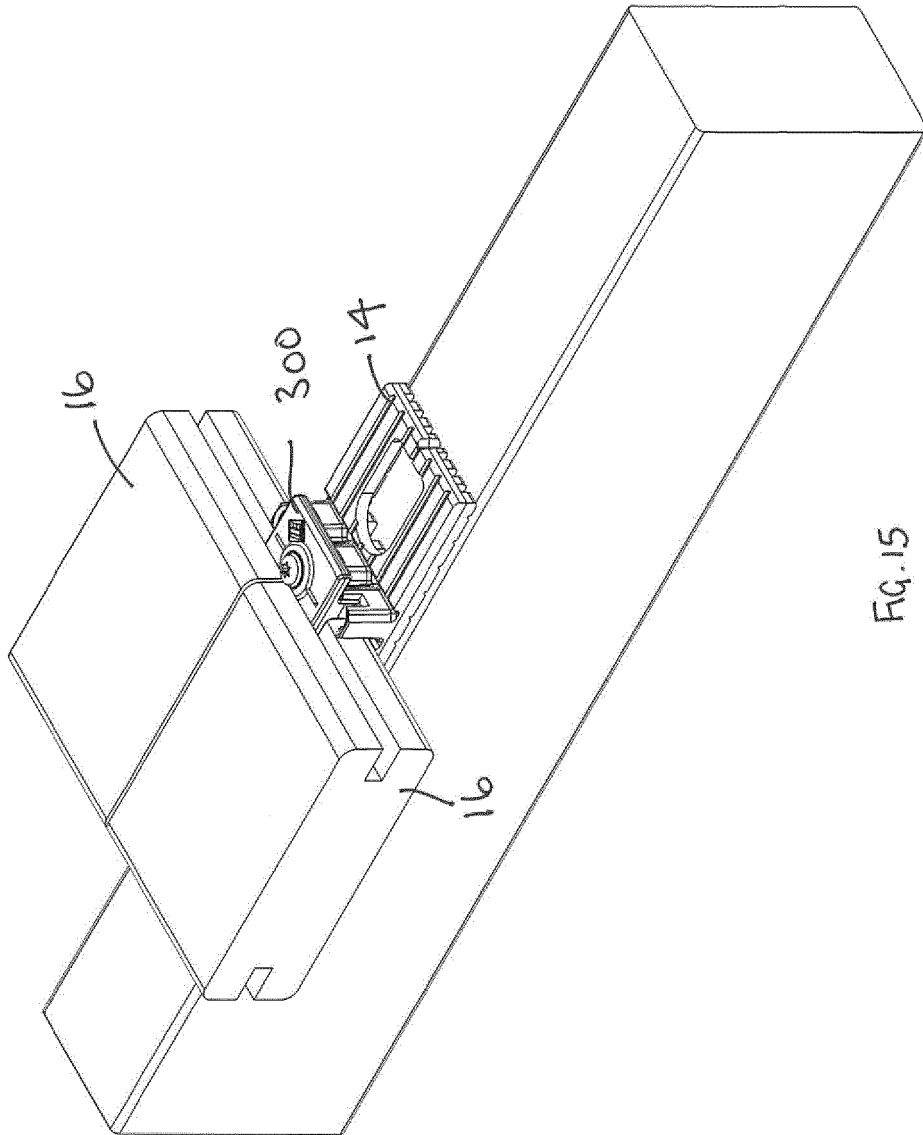


FIG. 14



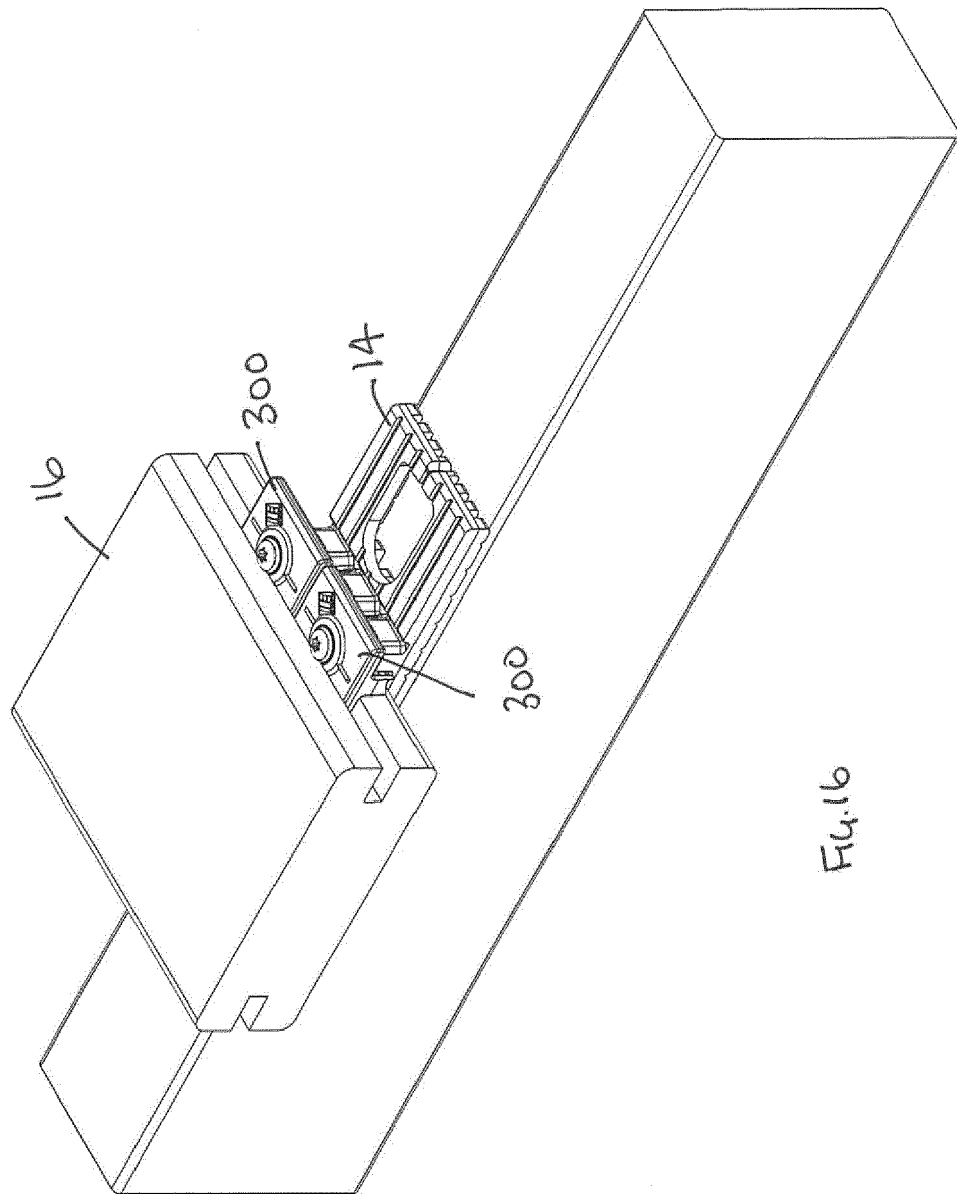


Fig. 16



EUROPEAN SEARCH REPORT

 Application Number
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			TECHNICAL FIELDS SEARCHED (IPC)
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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 4 October 2016	Examiner Estorgues, Marlène
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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