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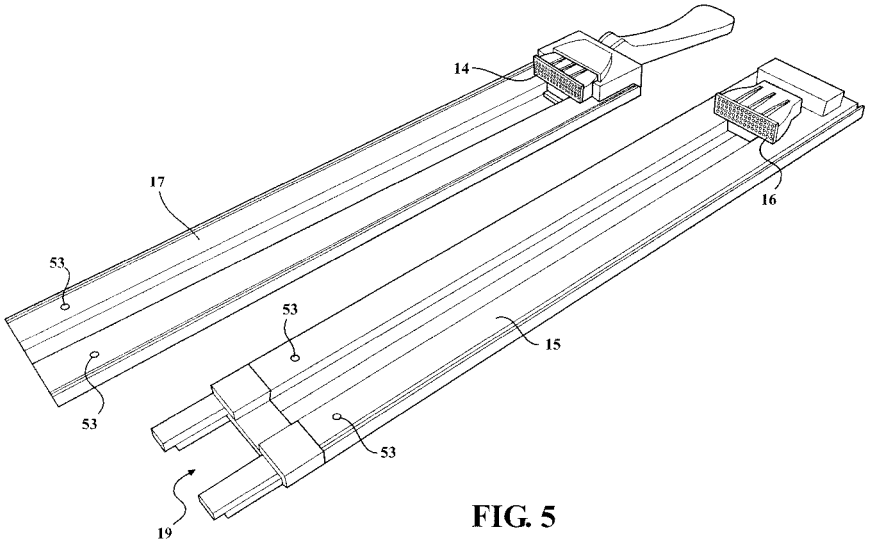


FIG. 5

(57) Abstract: The present invention relates to a straight edge clamp (10) that has a clamping head assembly (14) and a stop assembly (16) mounted upon the body of the straight edge. The head (14) and stop (16) are not connected together and the stop assembly (16) is free to move with respect to the head assembly (14). The stop assembly (16) has a locking assembly that allows it to be locked to the straight edge. The straight edge clamp body (12) can include sections (15,17) that are adapted to be connected together to form the overall length of the straight edge clamp (10).

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STRAIGHT EDGE CLAMP

[0001] This application claims the benefit of US Provisional Application No. 61/807,786 filed on April 3, 2013 and US Utility Application No. 14/243,935 filed on April 3, 2014.

[0002] NONE

[0003] This invention relates generally to a straight edge clamp and, more particularly, a straight edge clamp with a unique clamping system which reduces weight and costs and a unique connector that permits the length of the straight edge to be easily changed by the attachment or removal of sections.

[0004] In general terms, this invention provides a straight edge clamp and, more particularly, a straight edge clamp that permits the length of the straight edge to be easily changed by the attachment or removal of sections through a connector and the use of a unique clamping system which also reduces weight and costs.

[0004A] According to a first aspect of the present invention, there is provided a straight edge clamp comprising: an elongated body having a longitudinal centerline, a clamping head assembly and an end stop assembly; said elongated body has opposed edges, a top and a bottom, a main channel formed in said bottom, said clamping head assembly and said end stop assembly are mounted within said main channel a spaced distance from one another; said stop assembly has a movable first jaw which is movable with respect to said clamping head assembly, from an unlocked position to a locked position; said clamping head assembly has a second jaw which is movable with respect to said first jaw from a released position to a clamped position; whereby said bottom of said elongated body is adapted to be positioned against a work surface having sides and said clamping head assembly and stop assembly are adapted to be positioned against the sides, said second jaw is moved to said clamped position and said first jaw is moved to said locked position to clamp said straight edge clamp to said work surface;

said stop assembly includes at least one clamp pad mounted adjacent said first jaw, said first jaw being moveable with respect to said at least one clamp pad to move said

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clamp pad into engagement with said elongated body to said locked position;

said main channel has sidewalls, said first jaw being moveable with respect to said at least one clamp pad to move said at least one clamp pad into engagement with at least one of said sidewalls to said locked position;

said first jaw includes at least one side wall extending at an acute angle with respect to the longitudinal centerline of said elongated body.

[0004B] According to an embodiment of the present invention, there is provided a straight edge clamp comprising: an elongated body, a clamping head assembly and an end stop assembly, said elongated body has opposed edges, a top and a bottom, and a main channel formed in said bottom; said clamping head assembly has a first jaw, said stop assembly has a second jaw which is movable within said main channel; said stop assembly including a rotatable locking member that rotates between a locked and unlocked position, whereby said bottom of said elongated body is adapted to be positioned against a work surface having sides and said clamping head assembly and stop assembly are adapted to be positioned against the sides, and said second jaw is moved to said clamped position.

[0004C] According to a second aspect of the present invention, there is provided a straight edge clamp comprising;

an elongated body having a longitudinal centerline, said elongated body including at least two sections, and at least one connector for connecting said sections to form a unitary elongated body; said elongated body has opposed edges, a top and a bottom, and a main channel formed in said bottom,

a clamping head and an end stop assembly, said stop assembly is movably mounted within said main channel a spaced distance from said clamping head;

said end stop assembly includes a locking mechanism to lock said end stop assembly with respect to said elongated body; whereby said bottom of said elongated body is adapted to be positioned against a work surface having sides and said stop assembly is adapted to be positioned against one of the sides, and said locking mechanism is moved to a clamped position;

said locking mechanism of said stop assembly has a movable first jaw that is

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movable with respect to said clamping head assembly, from a released position to a locked position, said clamping head assembly has a movable second jaw which is movable with respect to said stop assembly, from a released position to a clamped position, whereby said bottom of said elongated body is adapted to be positioned against a work surface having sides, said second jaw is moved against one of the sides to said clamped position and said first jaw is moved against the other side to said locked position;

said stop assembly includes at least one clamp pad mounted adjacent said first jaw, said first jaw being moveable with respect to said at least one clamp pad to move said clamp pad into engagement with said elongated body to said locked position;

said first jaw includes at least one side wall extending at an acute angle with respect to the longitudinal center line of said elongated body.

[0005] The straight edge clamp of certain embodiments of the present invention includes an elongated body, a clamping head assembly and an end stop assembly. In the preferred embodiment, the elongated body includes at least two sections and a connector for connecting the sections to form the elongated body. It should be appreciated by those of ordinary skill in the art that the number of sections connected together determines the length of the straight edge clamp. Any number of sections can be connected together; additionally, a single section can be used due to the unique head and stop assemblies.

[0006] The length of the sections in the disclosed embodiment are each approximately two feet in length and can be attached to form two, four, six, eight, ten, twelve foot, etc., straight edge clamps. The section lengths can be any other length if desired. This is a benefit since it allows a user to purchase the number of sections to form the desired length of the straight edge clamp. This also alleviates the need for the user to have a number of straight edge clamps for different jobs as is required with conventional straight edge clamps. With the straight edge clamp of certain embodiments of the present invention, the user merely attaches the sections together to obtain the desired length. Another benefit of the sections is the straight edge clamp of certain embodiments of the present invention may be easier and less costly to ship than conventional straight edge

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clamps since it can be packaged in a small package, the general size of the sections. A still further benefit of the sections is that it is easier to display at the point of purchase when compared to conventional straight edge clamps. With the straight edge clamp of certain embodiments of the present invention, the sections may be displayed with the clamping head assembly, the end stop assembly and if desired the end cap.

[0007] The elongated body has opposed edges, a top and a bottom. A main channel is formed in the bottom. The connector can be inserted into the main channel of adjoining sections to form any desired length. The clamping head assembly and the stop assembly are mounted within the main channel a spaced distance from one another. The clamping head assembly has a movable jaw that is movable in the direction of the stop assembly, from a released position to a clamped position. The stop assembly has a jaw that is movable in the direction away from said first jaw from an unlocked position to a locked position.

[0008] In the disclosed embodiment, the stop assembly can be removed and repositioned in the channel of the end section that is furthest away from the clamping head assembly. The ability to move the stop assembly to the last section, allows any number of sections to be attached to form a straight edge of desired length. The clamping head assembly and the stop assembly are not connected together allowing the stop assembly to be moved.

[0009] In use, the bottom of the elongated body is adapted to be positioned against a work surface. The work surface has sides and the clamping head assembly and stop assembly are adapted to be positioned against the sides. Once positioned, the second jaw is moved to the clamped position. In one of the disclosed embodiments, the second jaw is moved to the clamped position by rotating a handle. The first jaw is moved to the locked position upon movement of the second jaw. The second jaw pulls the elongated body in the direction away from the stop assembly, which in turn pushes the first jaw of the end stop into the locked position. As a result, the straight edge clamp is locked onto the work

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surface.

[00010] In a second embodiment, the stop assembly can also be moved along the elongated body. In this embodiment, the stop assembly has a rotatable lock mechanism that is rotated from the unlocked to the locked position. The locking mechanism includes engagement surfaces to engage the sidewalls of the channel. An advantage of this embodiment is that a very simple engagement member can be used in place of the clamping head assembly.

[00011] The invention will now be described, by way of non-limiting example only, with reference to the accompanying drawings, in which:

[00012] Figure 1 is a perspective view of the underside of the first embodiment of the straight edge clamp;

[00013] Figure 2 is a side view of the first embodiment of the straight edge clamp clamped to a surface;

[00014] Figure 3 is a perspective view of the first embodiment of the straight edge clamp clamped to a surface;

[00015] Figure 4 is a top view of the first embodiment of the straight edge clamp clamped to a surface;

[00016] Figure 5 is a perspective view of two sections of the first embodiment of the straight edge clamp;

[00017] Figure 6 is an end view of the straight edge clamp;

[00018] Figure 7 is a perspective view of the end stop assembly of the first embodiment;

[00019] Figure 8 is an end view of the end stop base of the first embodiment;

[00020] Figure 9 is a perspective view of the end stop base of the first embodiment;

[00021] Figure 10 is an end view of the first jaw of the first embodiment;

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[00022] Figure 11 is a perspective view of the first jaw of the first embodiment;

[00023] Figure 12 is a perspective view of the clamping head assembly;

[00024] Figure 13 is an end view of a further embodiment of the end stop in the unlocked position;

[00025] Figure 14 is an end view of the embodiment of Figure 13 in the locked position;

[00026] Figure 15 is a bottom view of the end stop of Figure 13 in the locked position.

[00027] With reference to figures 1 through 4, the first embodiment of the straight edge clamp is shown generally at 10. The straight edge clamp 10 includes an elongated body 12, a clamping head assembly 14 and an end stop assembly 16. An end cap 18 is provided in the disclosed embodiment to close the end of the straight edge clamp 10.

[00028] With reference to figures 5 and 6, the elongated body 12 includes at least two sections 15 and 17 and a connector 19 for connecting the sections 15 and 17 together to form the elongated body 12. It will be appreciated by those of ordinary skill in the art that the number of sections 15 and 17 that are connected together will determine the length of the straight edge clamp 10. By way of example, the sections in the disclosed embodiment are each approximately two feet in length and can be attached to form two, four, six, eight, ten, twelve foot etc. straight edge clamps. This allows a user to purchase the number of sections 15 and 17 to form the desired length straight edge clamp 10. This also alleviates the need for the user to have a number of straight edge clamps for different jobs. With the straight edge clamp 10 of the present invention, the user merely attaches the sections 15 and 17 to obtain the desired length. It should be appreciated by those of ordinary skill in the art that other section lengths can be used, for example 6 inches, 1 foot, 2 foot, etc.

[00029] With reference to figure 6, the profile of the elongated body 12 is shown. The elongated body 12 includes a top surface 21 and a bottom surface 23. The bottom

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surface 23 has spaced openings 22 adjoining a generally c-shaped central channel 24. In the disclosed embodiment, the central channel 24 has protrusions 26 and locator rails 28 protruding into the channel 24. There are also optional outer attachment ribs 30 and attachment grooves 20. These can be used to attach other items to the straight edge clamp 10.

[00030] With reference to figure 7, the end stop 16 will be described in greater detail. The end stop 16 has a base 32 that slides into and along the channel 24. There is a handgrip 34 on the base that facilitates the movement of the end stop along the channel 24. A first jaw 36 is movably mounted upon the base 32 and can be moved from a released position to a locked position. Clamp pads 38 are mounted within the base 32 and can be forced outwardly by the movement of the first jaw 36 to the locked position. The clamp pads 38 engage the sidewalls 25 (see figure 6) when the end stop 16 is in the locked position.

[00031] With reference to figures 7 through 15, the first jaw 36 has limit tabs 40 that engage limit tabs 42 on the base 32. The limit tabs 42 restrict the movement of the first jaw 36 within the base 32.

[00032] The base 32 includes a passage 35 that receives a wedge member 50 extending from the first jaw 36. The wedge member 50 has angled sides that engage the clamp pads 38 and force them to the locked position when the wedge member 50 is forced into the passage 35. The wedge member is forced into the passage 35 and against the clamp pads 38, when the clamping head assembly 14 is engaged, as will be described in greater detail below. It should be appreciated by those of ordinary skill the art that the wedge member 50 could have a single side extending at an acute angle to the longitudinal center line of the straight edge body 12 and that only one clamp pad 38 would be needed.

[00033] Guide fingers 46 extend out of the base 32 and into guide finger pockets 48, see figure 10. The fingers 46 in the first pockets 48 align the first jaw 36 and facilitate its movement with respect to base 32. A second pocket 55 can also be provided to receive a spring to bias the first jaw 36 to the released position.

[00034] With reference to figure 12, the clamping head assembly 14 will be described. The clamping head assembly 14 is fitted into the end of one of the sections 15, 17 of the elongated straight edge body 12. As shown in figures 2 through 4, the clamping head

assembly 14 has attachment fingers 51 that are positioned in the c-shaped tracks 20. Additionally, in the disclosed embodiment, there are apertures 53 that receive detents extending from the fingers 51. The clamping head assembly 14 also includes a mounting extension, not shown, that extends into the channel 24. In another embodiment, there are additional mounting extensions that extend into the openings 22.

[00035] The clamping head assembly includes a second jaw 52 and a clamp actuation handle 54. The second jaw 52 is movably mounted in a clamp body 56. The handle 54 includes a cam member 57 that engages and pushes the second jaw in to the direction of the stop assembly 16 when the handle 54 is rotated. Guides 58 engage the rails 28 to facilitate the movement of the second jaw 52. Limit tabs 60 and 62 limit the movement of the second jaw 52.

[00036] In use, the bottom surface 23 of the elongated body 12 is positioned against a work surface, (see figures 2 through 4). The work surface has sides and the clamping head assembly 14 and stop assembly 16 are adapted to be positioned against the sides. The second jaw 52 is positioned against one side of the work surface and the end stop assembly 16 is moved to engage the first jaw 36 against the other side of the work surface. Once positioned, the second jaw 52 is moved to the clamped position. In the disclosed embodiment, the second jaw 52 is moved to the clamped position by rotating handle 54. The first jaw 36 is moved to the locked position upon movement of the second jaw 52. The second jaw 52 pulls the elongated body 12 in the direction away from the stop assembly 16, which in turn pushes the first jaw 36 of the end stop 16 into the locked position. As a result, the straight edge clamp is locked onto the work surface.

[00037] With reference to figures 15 through 17, a further embodiment of the end stop assembly 70 is illustrated. The end stop assembly 70 includes a jaw 74 and a base 76 and a rotatable locking member 78. The locking member 78 is rotatably mounted upon a pin 80.

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The locking member 78 includes engagement surfaces 82. As illustrated, the locking member 78 is a generally ovoid shaped member, but could have any shape that includes engagement surfaces 82 that can be rotated into contact with the sidewalls 25.

[00038] In this embodiment, the clamping head assembly can be the same as assembly 14 or it can be a simple extension from the straight edge body 12. If the clamping head is assembly 14, the assembly 14 can be positioned at one side of the work piece and the clamping head 72 is positioned against the opposite side and the locking member 78 is rotated to the locked position. The clamp actuation handle 54 can then be rotated to tightly fix the straight edge body 12 to the work surface. If a simple extension from the straight edge 12 is used, the extension is abutted against one side of the work surface and the clamping head 72 is moved along the straight edge body 12 to abut snugly against the opposite side of the work surface. Once the clamping head 72 is snugged against the opposite side, the locking member 78 is rotated to the locked position.

[00039] While various embodiments of the present invention have been described above, it should be understood that they have been presented by way of example only, and not by way of limitation. It will be apparent to a person skilled in the relevant art that various changes in form and detail can be made therein without departing from the spirit and scope of the invention. Thus, the present invention should not be limited by any of the above described exemplary embodiments.

[00040] Throughout this specification and the claims which follow, unless the context requires otherwise, the word "comprise", and variations such as "comprises" or "comprising", will be understood to imply the inclusion of a stated integer or step or group of integers or steps but not the exclusion of any other integer or step or group of integers or steps.

[00041] The reference in this specification to any prior publication (or information derived from it), or to any matter which is known, is not, and should not be taken as, an acknowledgement or admission or any form of suggestion that that prior publication (or information derived from it) or known matter forms part of the common general knowledge in the field of endeavour to which this specification relates.

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THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A straight edge clamp comprising; an elongated body having a longitudinal centerline, a clamping head assembly and an end stop assembly; said elongated body has opposed edges, a top and a bottom, a main channel formed in said bottom, said clamping head assembly and said end stop assembly are mounted within said main channel a spaced distance from one another; said stop assembly has a movable first jaw which is movable with respect to said clamping head assembly, from an unlocked position to a locked position; said clamping head assembly has a second jaw which is movable with respect to said first jaw from a released position to a clamped position; whereby said bottom of said elongated body is adapted to be positioned against a work surface having sides and said clamping head assembly and stop assembly are adapted to be positioned against the sides, said second jaw is moved to said clamped position and said first jaw is moved to said locked position to clamp said straight edge clamp to said work surface;

said stop assembly includes at least one clamp pad mounted adjacent said first jaw, said first jaw being moveable with respect to said at least one clamp pad to move said clamp pad into engagement with said elongated body to said locked position;

said main channel has sidewalls, said first jaw being moveable with respect to said at least one clamp pad to move said at least one clamp pad into engagement with at least one of said sidewalls to said locked position;

said first jaw includes at least one side wall extending at an acute angle with respect to the longitudinal centerline of said elongated body.

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2. The straight edge clamp of claim 1, further including a pair of clamp pads mounted adjacent said first jaw, said first jaw being moveable with respect to said clamp pads to move said clamp pads into engagement with said elongated body to said locked position.

3. The straight edge clamp of claim 2, wherein said first jaw includes sidewalls extending at an acute angle with respect to the longitudinal centerline of said elongated body, said sidewalls engaging said pads to force said pads against said elongated body.

4. The straight edge clamp of any one of claims 1 to 3, wherein said second jaw has a cam surface rotatable into engagement with said second jaw to move said second jaw between said released position and the clamped position.

5. The straight edge clamp of any one of claims 1 to 4, wherein said stop assembly is movable along the length of said elongated body with respect to said clamping assembly.

6. The straight edge clamp of any one of claims 1 to 5, wherein said elongated body includes at least two sections and a connector for connecting said sections to said elongated body.

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7. The straight edge clamp of any one of claims 1 to 6, wherein said stop assembly includes a rotatable locking member that rotates between a locked and unlocked position.

8. The straight edge clamp of claim 7, wherein said rotatable locking member has engagement surfaces adapted to engage the elongated body when in said locked position.

9. The straight edge clamp of claim 8, wherein said main channel has sidewalls, said engagement surfaces engage said sidewalls in said locked position.

10. A straight edge clamp comprising;

an elongated body having a longitudinal centerline, said elongated body including at least two sections, and at least one connector for connecting said sections to form a unitary elongated body; said elongated body has opposed edges, a top and a bottom, and a main channel formed in said bottom,

a clamping head and an end stop assembly, said stop assembly is movably mounted within said main channel a spaced distance from said clamping head;

said end stop assembly includes a locking mechanism to lock said end stop assembly with respect to said elongated body; whereby said bottom of said elongated body is adapted to be positioned against a work surface having sides and said stop assembly is adapted to be positioned against one of the sides, and said locking mechanism is moved to a clamped position;

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said locking mechanism of said stop assembly has a movable first jaw that is movable with respect to said clamping head assembly, from a released position to a locked position, said clamping head assembly has a movable second jaw which is movable with respect to said stop assembly, from a released position to a clamped position, whereby said bottom of said elongated body is adapted to be positioned against a work surface having sides, said second jaw is moved against one of the sides to said clamped position and said first jaw is moved against the other side to said locked position;

said stop assembly includes at least one clamp pad mounted adjacent said first jaw, said first jaw being moveable with respect to said at least one clamp pad to move said clamp pad into engagement with said elongated body to said locked position;

said first jaw includes at least one side wall extending at an acute angle with respect to the longitudinal centerline of said elongated body.

11. The straight edge clamp of claim 10, wherein said elongated body has three or more sections attached together by said connectors.

12. The straight edge clamp of claim 10 or claim 11, wherein said locking mechanism of said stop assembly includes a rotatable locking member that rotates between a locked and unlocked position.

13. The straight edge clamp of claim 12, wherein said rotatable locking member has engagement surfaces adapted to engage the elongated body.

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14. The straight edge clamp of claim 13, wherein said main channel has sidewalls, said engagement surfaces engage said sidewalls in said locked position.

15. The straight edge clamp of any one of claims 10 to 14, wherein said main channel has sidewalls, said first jaw being moveable with respect to said at least one clamp pad to move said clamp pad into engagement with at least one of said sidewalls to said locked position.

16. The straight edge clamp of any one of claims 10 to 15, further including a pair of clamp pads mounted adjacent said first jaw, said first jaw being moveable with respect to said clamp pads to move said clamp pads into engagement with said elongated body to said locked position.

17. The straight edge clamp of claim 16, wherein said first jaw includes sidewalls extending at an acute angle with respect to the longitudinal centerline of said elongated body, said sidewalls engaging said pads to force said pads against said elongated body.

18. The straight edge clamp of any one of claims 10 to 17, wherein said second jaw has a cam surface rotatable into engagement with said second jaw to move said second jaw between said released position to the clamped position.

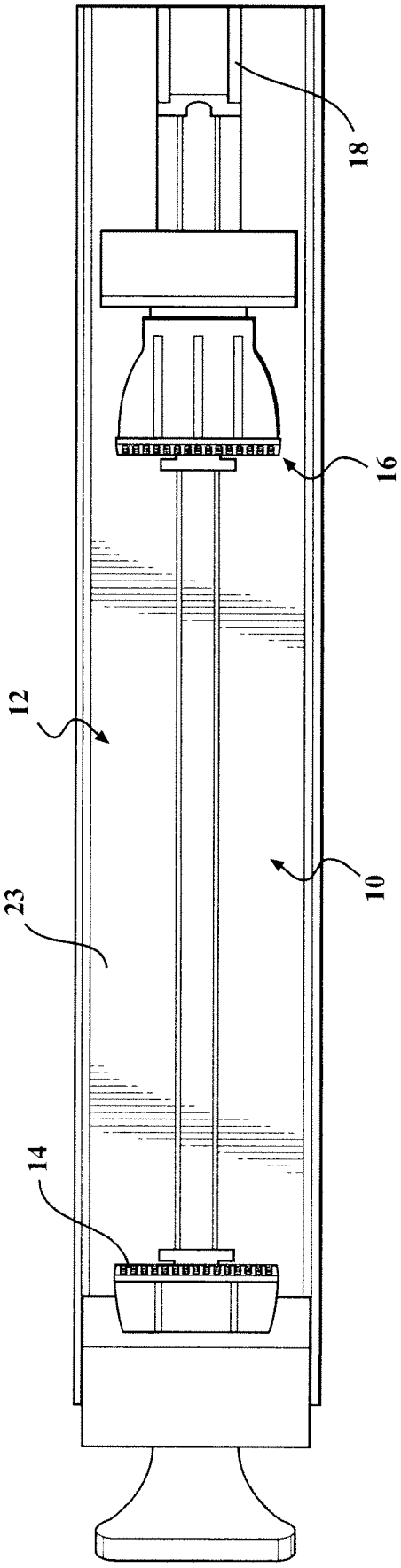


FIG. 1

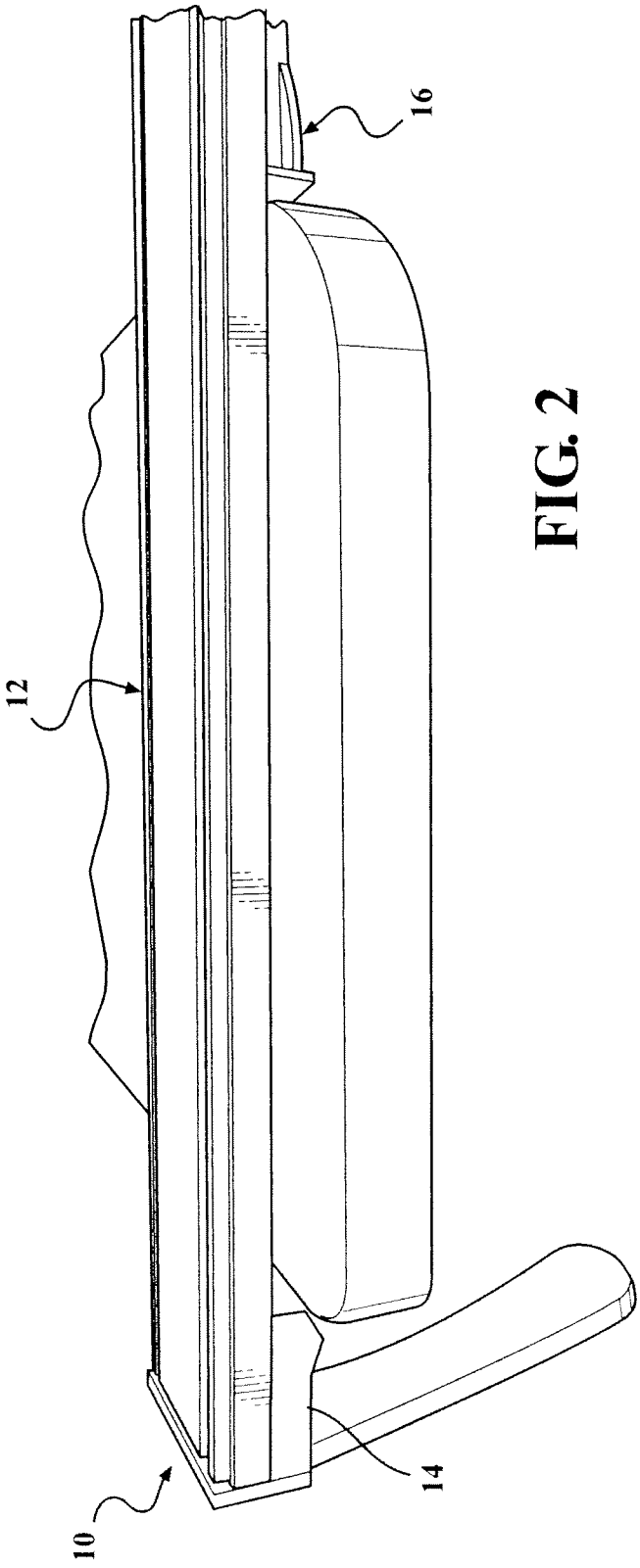


FIG. 2

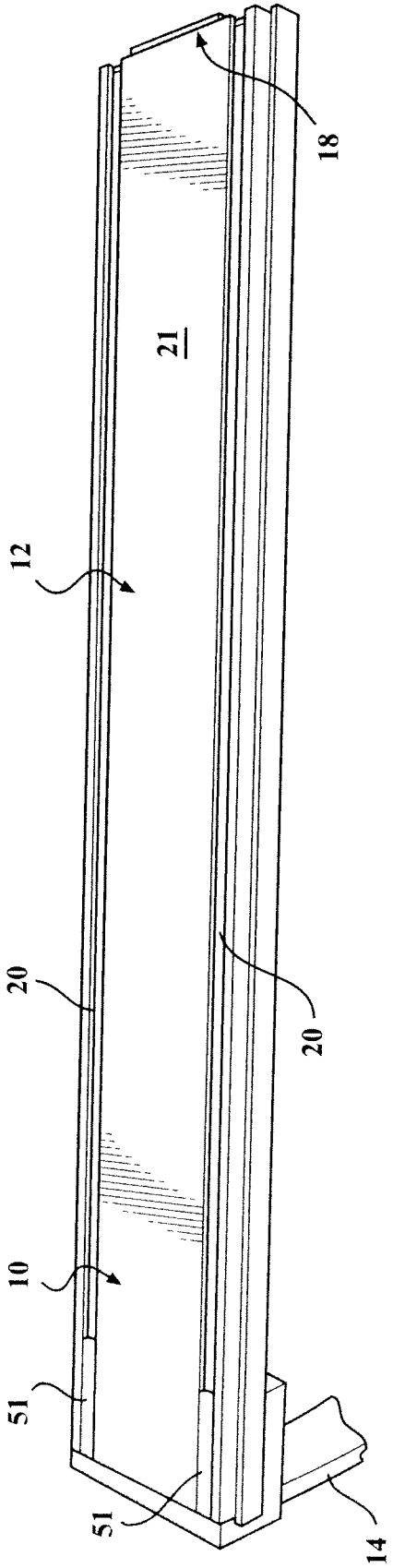


FIG. 3

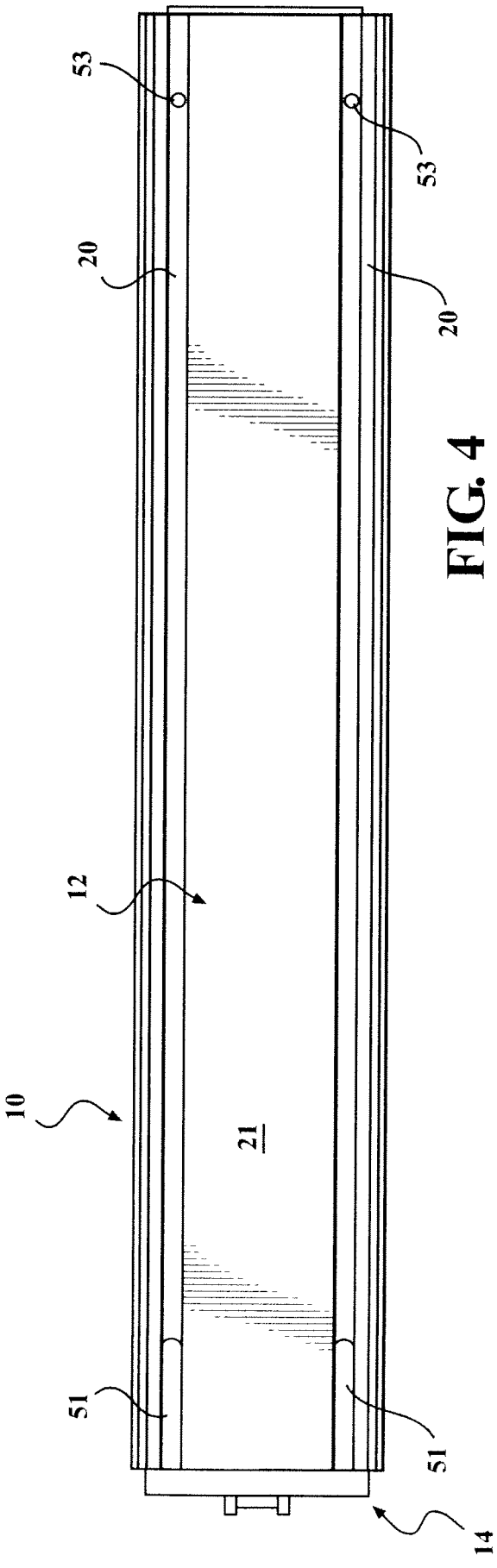


FIG. 4

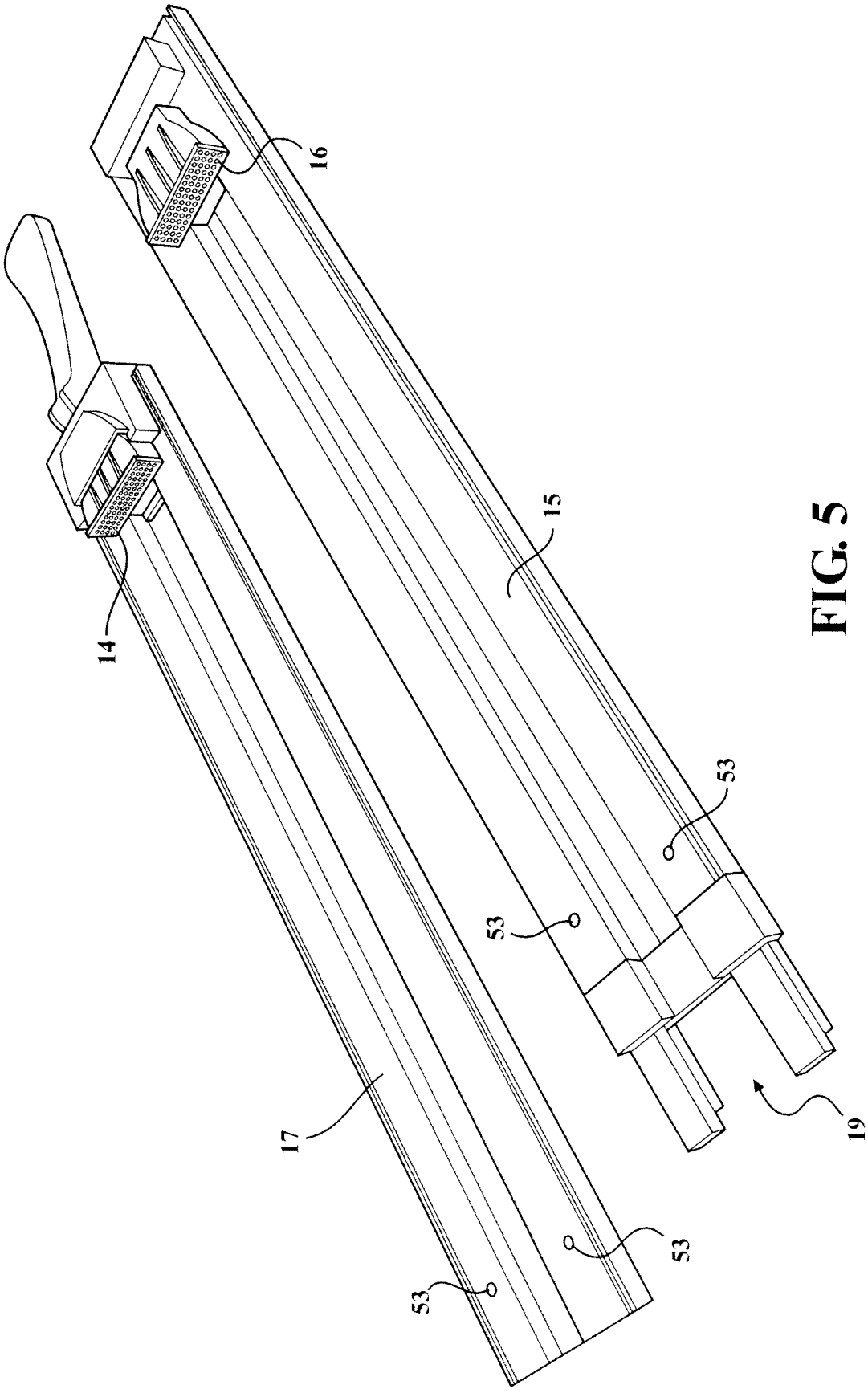


FIG. 5

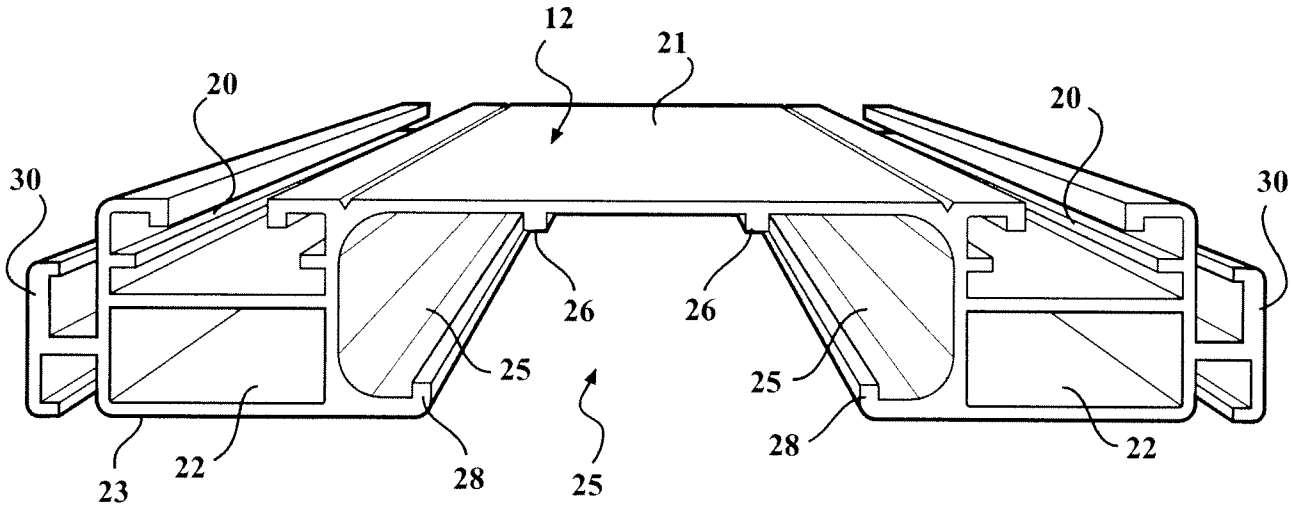


FIG. 6

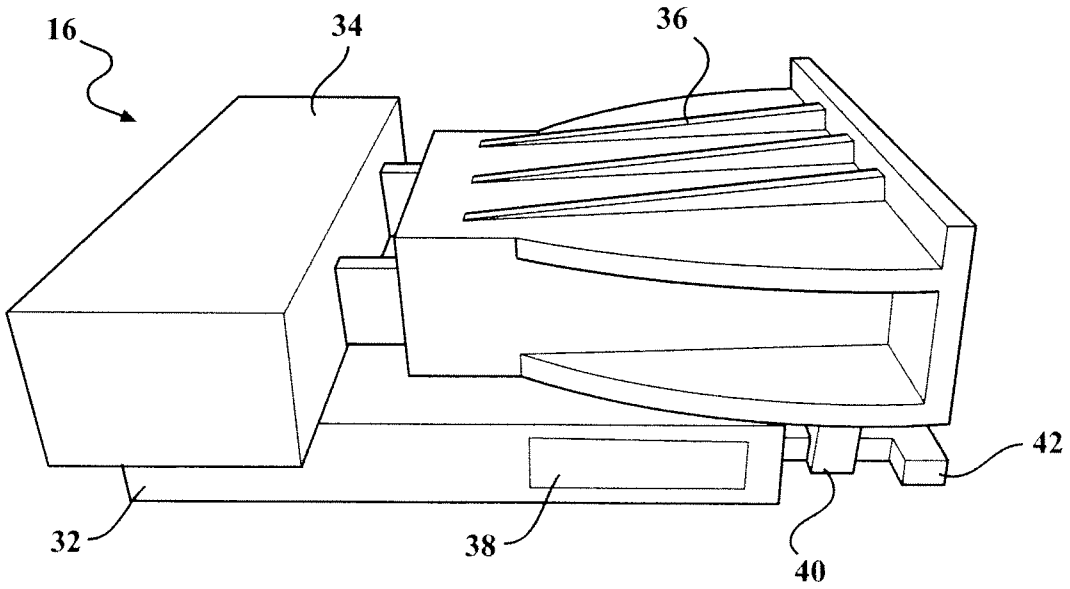


FIG. 7

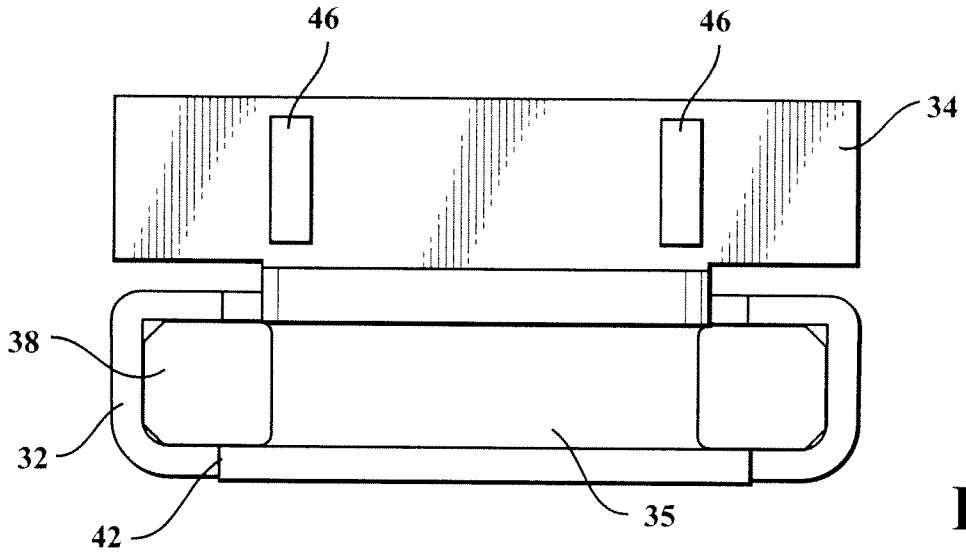


FIG. 8

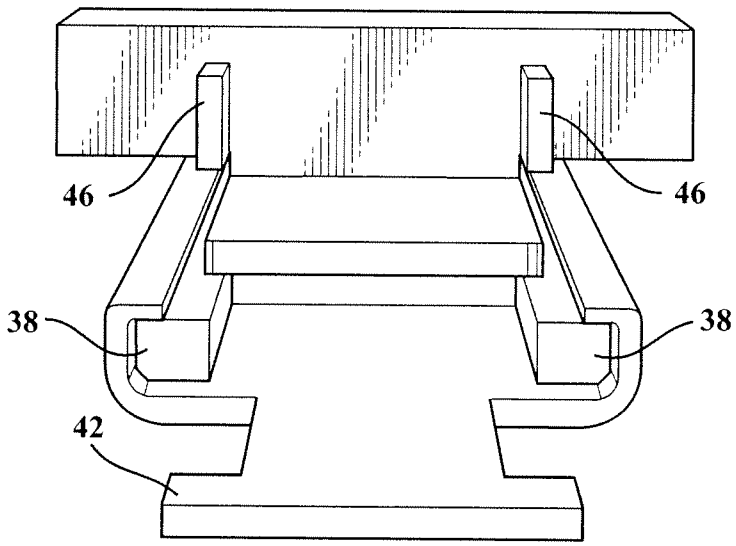


FIG. 9

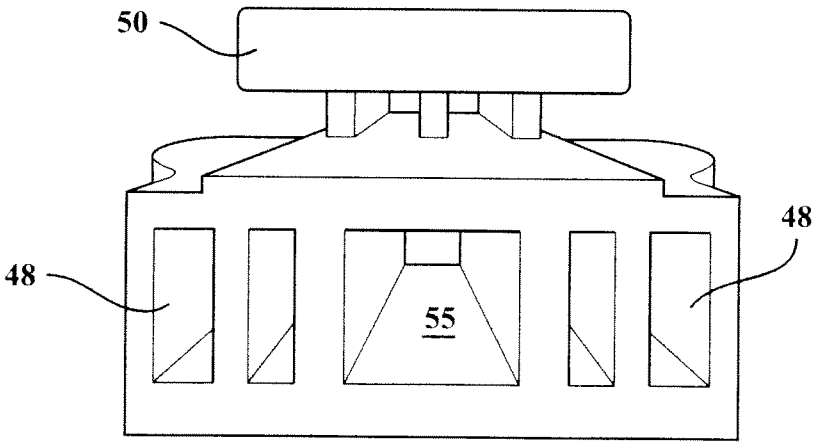


FIG. 10

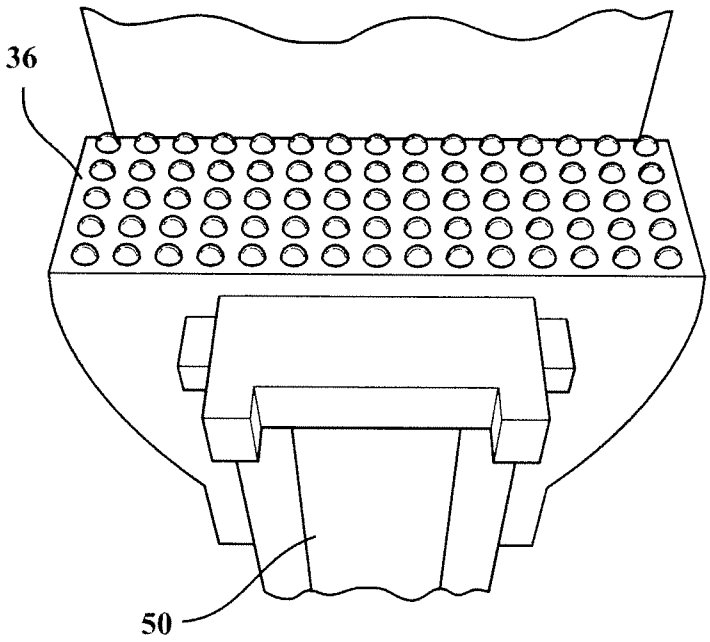


FIG. 11

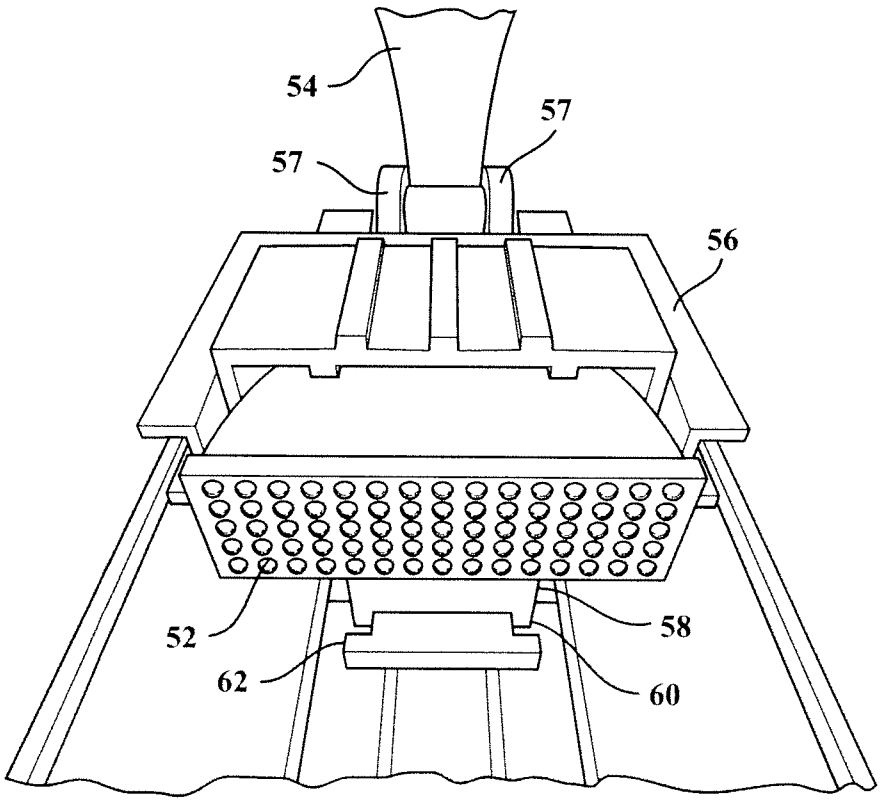


FIG. 12

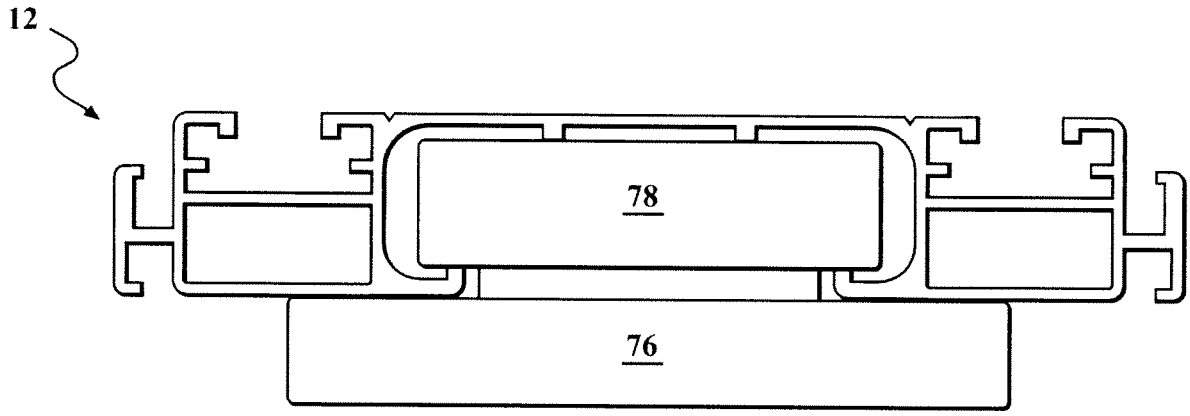


FIG. 13

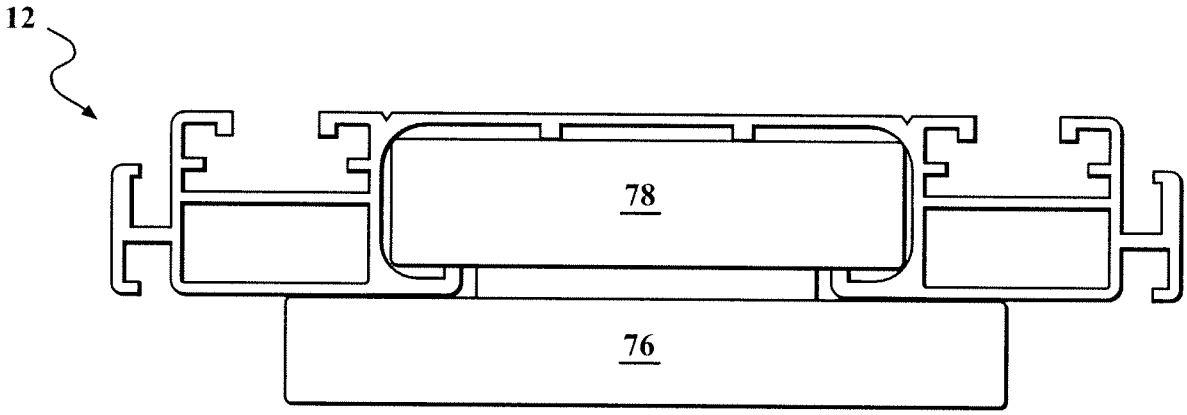


FIG. 14

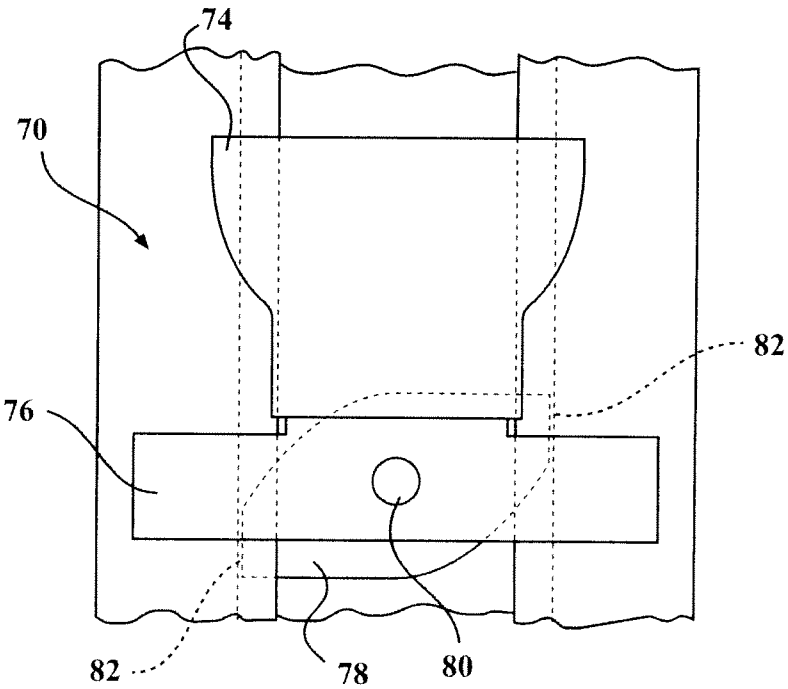


FIG. 15