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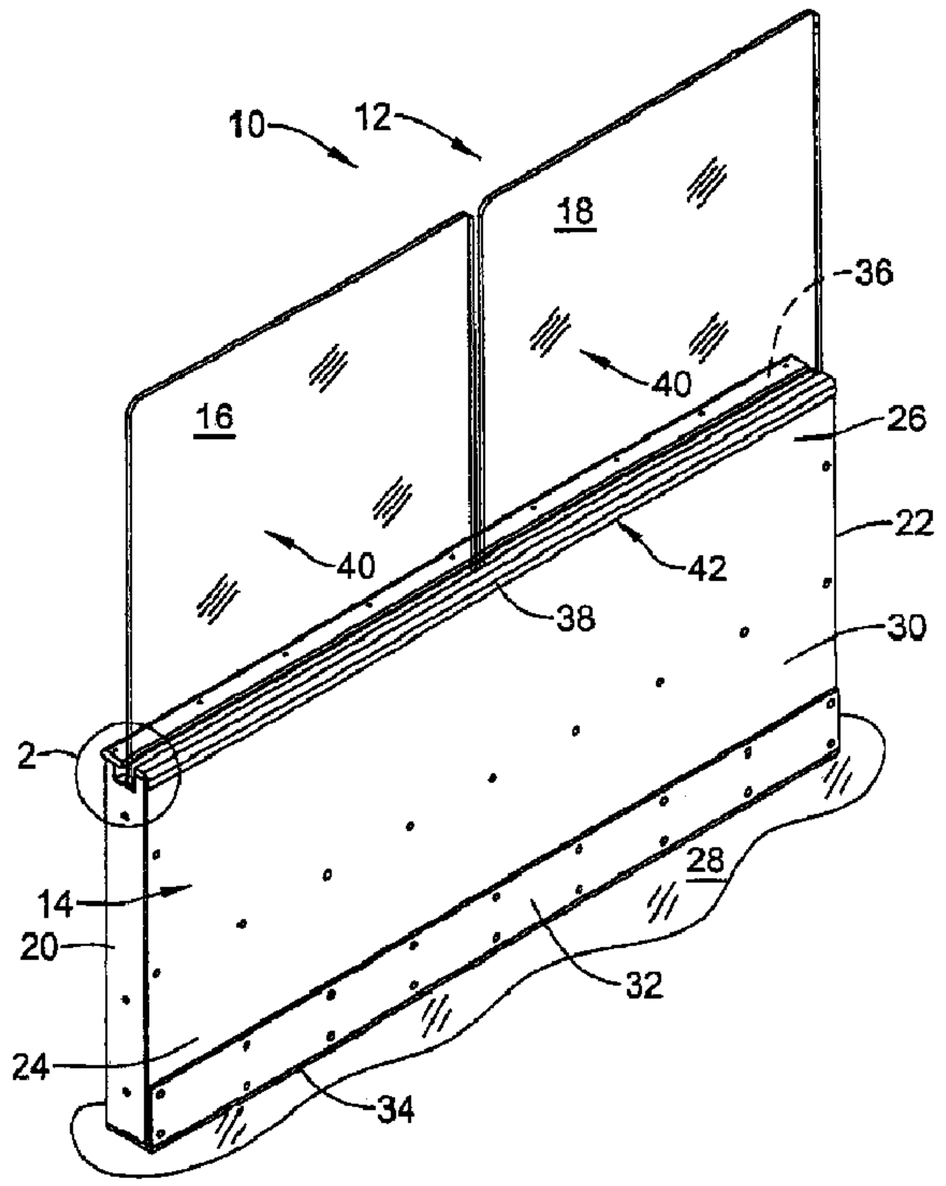
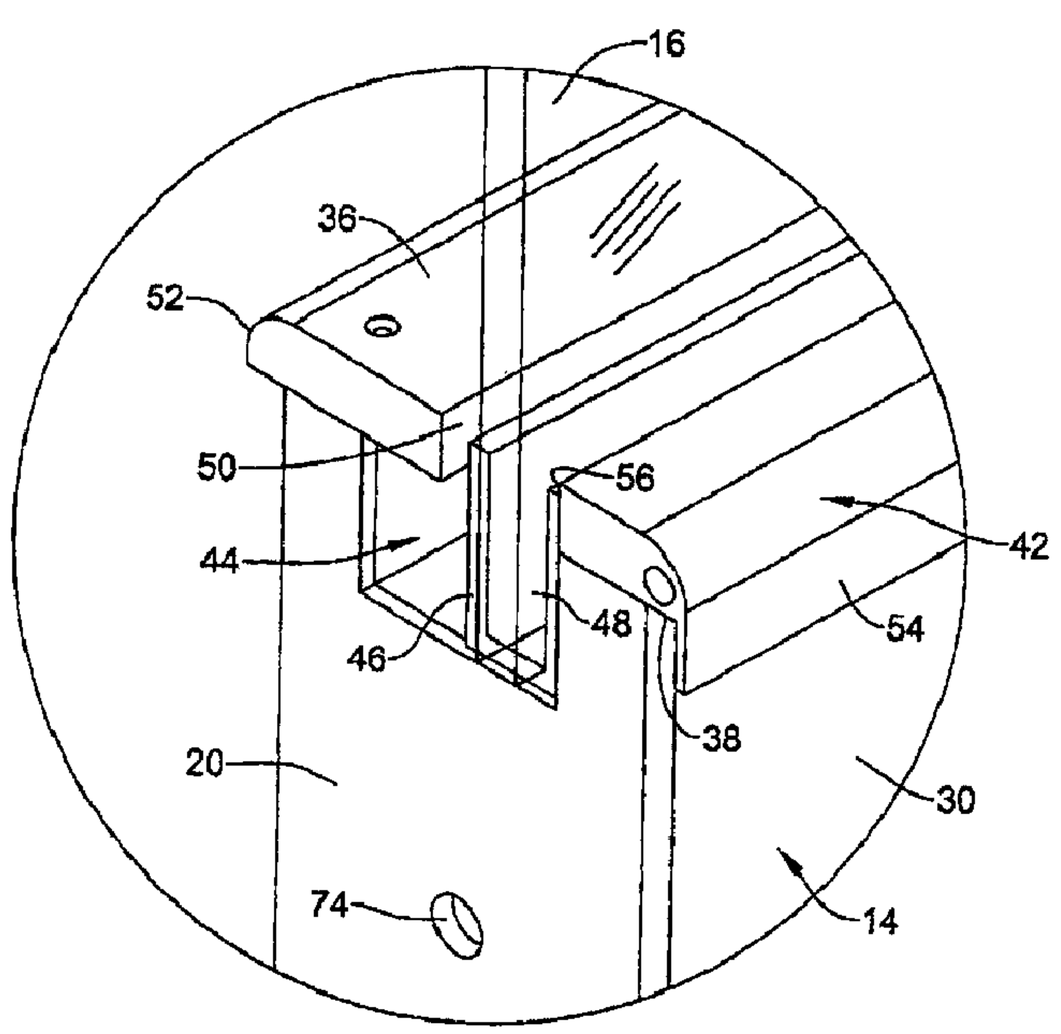
(54) Titre : COUVERCLES SOUPLES POUR TABLEAUX DE BORD
(54) Title: BUMPERS FOR DASHER BOARD ASSEMBLIES





(57) Abrégé/Abstract:
Bumpers for absorbing player impact against dasher boards are disclosed. The bumper can include an elongated body defining a number of absorption ribs and channels for absorbing impact forces against the dasher board. The elongated body can be formed from a material having a relatively low durometer adapted to displace and absorb the impact energy when a player strikes the dasher board. One or more curved sections of the elongated body can be configured to fit adjacent to the hard edges of the dasher board. The bumper can be provided as part of a dasher board assembly including a lower frame assembly and a number of upper shielding panes.

Abstract

Bumpers for absorbing player impact against dasher boards are disclosed. The bumper can include an elongated body defining a number of absorption ribs and channels for absorbing impact forces against the dasher board. The elongated body can be formed from a material having a relatively low durometer adapted to displace and absorb the impact energy when a player strikes the dasher board. One or more curved sections of the elongated body can be configured to fit adjacent to the hard edges of the dasher board. The bumper can be provided as part of a dasher board assembly including a lower frame assembly and a number of upper shielding panes.

BUMPERS FOR DASHER BOARD ASSEMBLIES

Field

The present invention relates generally to the field of dasher boards and accessories for use in bounded sports arenas such as hockey and soccer arenas. More specifically, the present invention pertains to bumpers for absorbing player impact against dasher boards.

Background

Dasher boards are used in bounded sports arenas to demarcate a general boundary line dividing a playing field from on-looking spectators and to absorb impact from players as they maneuver the outer periphery of the playing field. The dasher boards are typically designed to be secure and stable in order to withstand vibration or shock while also providing the spectators with a clear and unobstructed view of the game. In the design of ice hockey rinks, for example, such dasher boards are designed to withstand significant impacts caused by hockey players skating or being pushed into the boards throughout the course of a game while also allowing spectators to view the game without obstructions.

A typical dasher board for a hockey rink includes a lower frame, an anchoring system for attaching the lower frame to the rink surface, an upper shielding pane, and a support mechanism for connecting the upper shielding pane to the lower frame. The dasher boards can be fabricated as either a fixed, continuous frame forming the boundary, or in demountable sections typically eight feet in length that are assembled together in an end-to-end fashion to form the boundary. In some designs, an ice retainer or ice dam is sometimes used on the bottom of the lower frame to prevent ice from creeping away from the playing surface.

More recent trends have focused on imparting greater flexibility and absorption capabilities to dasher boards in order to dampen the significant impacts that can occur during play. The "flexibility" of the dasher board is

sometimes used on the bottom of the lower frame to prevent ice from creeping away from the playing surface.

More recent trends have focused on imparting greater flexibility and absorption capabilities to dasher boards in order to dampen the significant impacts that can occur during play. The "flexibility" of the dasher board is generally understood as the displacement of the dasher board in response to an impact, which can vary from as little as 1/16" for systems that utilize boards mounted to a concrete block wall to as much as 2" to 3" for demountable systems which employ loose anchors and bolts and are constructed from aluminum frames. An illustrative dasher board system employing several features for absorbing player impact is described in greater detail in U.S. Patent No. 6,004,217 to *Johnston et al.*

Although many existing dasher board systems employ features to absorb the energy from an impact, the surfaces of the dasher boards are typically made from hard materials such as high-density polyethylene (HDPE) or fiberglass which are not absorptive. Due to the more aggressive playing style and faster speeds associated with contact sports such as hockey, there is an ongoing need in the art for dasher boards having shock absorption features that lessen player impact while also providing spectators with a clear and unobstructed view of the playing field.

Summary

The present invention relates generally to soft caps for absorbing player impact against dasher boards. An illustrative soft cap for use with a dasher board can include an elongated body defining a number of absorption ribs which act to absorb impact forces exerted against the cap. The absorption ribs may be spaced apart from each other via a number of channels, and can extend lengthwise in a direction either parallel or transverse to the length of elongated body. A curved section formed on one or both sides of the elongated body can be configured to fit adjacent to the hard edges of the lower frame. In some embodiments, the elongated body can be formed from a soft material such as low-density polyethylene, which in contrast to the harder materials typically used in forming dasher boards, can be configured to displace or yield when compressed to absorb impact energy.

The soft cap can be provided as part of a dasher board assembly including a lower frame assembly and a number of upper shielding panes. The frame assembly can include an impact panel attached to a number of vertical posts and stringers. An upper section of the frame assembly may define an upper periphery that can be configured to support the soft cap, In some dasher board systems, the soft cap can be coupled to the upper periphery of the frame assembly adjacent the impact-side of the upper shielding panes. In other dasher board systems, the soft cap can be coupled to the lower frame, either above or adjacent to an existing sill. In use, the soft cap may form a bumper along all or a portion of the upper periphery of the frame assembly in order to absorb impact forces caused when a player strikes the dasher board.

In accordance with one aspect of the present invention, there is provided a flexible, compressible extruded elongate thermoplastic bumper cap to be mounted to a top sill over a hard upper 90° edge along the impact side of a lower frame dasher board for a rink, comprising: an elongate body having: a top flat first side; a solid vertical flat second side, the top flat first side being thicker than the solid vertical flat second side, the solid vertical flat second side being orthogonal to the first side and overlapping the impact side of the lower frame dasher board in flush arrangement as to not interfere with sports play; and a curved section between the first and second sides to be mounted adjacent the upper hard dasher board edge; wherein the bumper cap is formed of a soft material having a durometer of less than 90 Shore A and being adapted to absorb impact energy when a player strikes the dasher board.

In accordance with another aspect of the present invention, there is provided a flexible, compressible extruded elongate thermoplastic bumper cap to be mounted to a top sill over a hard upper 90° edge along the impact side of a lower frame dasher board for a rink, comprising: an elongate body having: a top flat first side; a solid vertical flat second side, the top flat first side being thicker than the solid vertical flat second side, the solid vertical flat second side being orthogonal to the first side and overlapping the impact side of the lower frame dasher board in a flush arrangement as to not interfere with sports play; a curved section between the first and second sides to be mounted adjacent the upper hard dasher board edge; and a void

channel extending longitudinally in the body below the curved section to be displaced or yield when compressed to absorb and distribute impact energy when a player strikes the cap; wherein the bumper cap is formed of a soft material having a durometer of less than 90 Shore A and being adapted to absorb impact energy when a player strikes the dasher board.

In accordance with another aspect of the present invention, there is provided a flexible, extruded elongate thermoplastic bumper cap to be mounted to a top sill over a hard upper 90° edge along the impact side of a lower frame dasher board for a rink, comprising: an elongate body having a top flat first side; a solid vertical flat second side, the top flat first side being thicker than the solid vertical flat second side, the solid vertical flat second side being orthogonal to the first side and overlapping the impact side of the lower frame dasher board; a curved section between the first and second sides to be mounted adjacent the upper hard dasher board edge; a void channel extending longitudinally in the body below the curved section to be displaced or yield when compressed to absorb and distribute impact energy when a player strikes the cap; and alternating ribs and void channels extending longitudinally in the body below the top flat surface to be displaced or yield when compressed to absorb and distribute impact energy when a player strikes the cap; and wherein the bumper cap is formed of a soft material having a durometer of less than 90 Shore A and being adapted to absorb impact energy when a player strikes the dasher board.

Brief Description of the Drawings

Figure 1 is a perspective view of an illustrative dasher board system employing a soft cap;

Figure 9 is a bottom plan view of the illustrative SOFTCAP™ bumper depicted in Figures 7-8;

Figure 10 is a side cross-sectional view showing the illustrative SOFTCAP™ bumper of Figures 7-9 attached to a dasher board assembly without shielding panes;

Figure 11 is perspective view of an illustrative SOFTCAP™ bumper having longitudinally oriented absorption ribs; and

Figure 12 is a perspective view of another illustrative SOFTCAP™ bumper having longitudinally oriented absorptions ribs.

Detailed Description

The following description should be read with reference to the drawings, in which like elements in different drawings are numbered in like fashion. The drawings, which are not necessarily to scale, depict selected embodiments and are not intended to limit the scope of the invention. Although examples of construction, dimensions, and materials are illustrated for the various elements, those skilled in the art will recognize that many of the examples provided have suitable alternatives that may be utilized.

Referring now to Figure 1, an illustrative dasher board system 10 employing a SOFTCAP™ bumper for absorbing player impact will now be described. As shown in Figure 1, the dasher board system 10 can include a series of modular dasher board assemblies 12 that can be flexibly connected to each other in an end-to-end fashion to form a bounded area such as a hockey rink or soccer arena. In the illustrative view of Figure 1, a single dasher board assembly 12 is depicted, which, when attached to other dasher board assemblies, forms a modularized dasher board system. It should be understood, however, that the dasher board assembly could be part of a fixed, continuous dasher board system, if desired.

Each dasher board assembly 12 can include a lower frame assembly 14 adapted to vertically support a number of upper shielding panes 16,18. The lower frame assembly 14 can include a first end section 20, a second end section 22, a lower section 24, and an upper section 26. The lower section 24 of the frame assembly 14 can be anchored to the underlying playing surface 28 of the arena or rink via an anchoring mechanism in order to secure the dasher board assembly 12 in place.

The impact side of the frame assembly 14 can be covered with a high-density polyethylene or fiberglass impact panel 30, which can be supported to the frame assembly 14 using several vertical posts and stringers as described in greater detail with respect to Figure 3. A kickboard 32 can be connected to the lower portion of the panel 30 to further strengthen the panel 30 from hits with the players' skates. In some embodiments, an ice retainer or ice dam 34 can also be connected to the lower section 24 of the frame assembly 14 to prevent ice from creeping away from the playing surface 28.

The shielding panes 16,18 can be made from a variety of materials including tempered glass, acrylic, Plexiglass, or other suitable material. In dasher board systems 10 employing tempered glass, the shielding panes 16,18 will typically be about 1/2" thick on the sides of the arena and about 5/8" thick on the ends and radius sections of the arena. Acrylic shielding panes 16,18, on the other hand, are typically about 1/2" thick at all locations. The shielding panes 16,18 may have a horizontal length of about 4 feet, with two such panels 16,18 typically forming an 8 foot length of dasher board. The number and length of the shielding panes may vary, however, depending on the dimensions of each dasher board assembly 12.

The shielding panes 16,18 can be vertically supported at least in part using a sill 36 located on the upper periphery 38 of the frame assembly 14 adjacent to the non-impact or spectator side of the dasher board assembly 12. The sill 36 may extend along all or a portion of the length of the frame

assembly 14, and can be configured to abut the non-impact side of the shielding panes 16,18 for support. The sill 36 may be formed from a relatively hard material such as high-density polyethylene (HDPE), which acts to support the shielding panes 16,18 in place within the frame assembly 14 when deflected in the direction indicated generally by the arrows 40.

As can be further seen in Figure 1, each dasher board assembly 12 can further include a SOFTCAP™ bumper 42 extending longitudinally along the upper periphery 38 of the frame assembly 14 between the ends 20,22. In the illustrative embodiment depicted, the SOFTCAP™ bumper 42 is located along the upper periphery 38 adjacent the impact side of the frame assembly 14 and shielding panes 16,18. During use, and as discussed in greater detail below, the structure and material composition of the SOFTCAP™ bumper 42 can be configured to provide impact absorption when a player strikes the dasher board assembly 12, or when the player jumps a section of the dasher board assembly 12 not containing shielding panes.

Figure 2 is an enlarged perspective view showing the connection of the sill 36 and SOFTCAP™ bumper 42 to the frame assembly 14 of Figure 1. As can be further seen in Figure 2, an upper channel 44 of the frame assembly 14 may include a slot or U-shaped support channel 46 adapted to support the lower periphery 48 of each shielding pane 16,18 therein. A first edge 50 of the sill 36 can overhang a portion of the upper channel 44, and can be configured to engage the non-impact or spectator side of the shielding panes 16,18 for support. A second edge 52 of the sill 36, in turn, can be configured to lie flush with or extend at least in part beyond the spectator-side of the frame assembly 14.

The SOFTCAP™ bumper 42 can be configured to cover the upper periphery 38 of the frame assembly 14 adjacent to the impact side of the shielding panes 16,18. A first edge 54 of the SOFTCAP™ bumper 42 can be configured to overhang a portion of the impact panel 30, as shown, forming a

bumper to cover the hard edges of the panel 30 during an impact. A second edge 56 of the SOFTCAP™ bumper 42, in turn, can be configured to engage the impact side of the shielding panes 16,18, thereby supporting the impact side of the shielding panes 16,18 opposite the second edge 50 of the sill 36. In some embodiments, the slot or U-shaped support channel 46 can be spring loaded against the second edge 56 of the SOFTCAP™ bumper 42 to provide additional shock absorption during impact.

Figure 3 is a side cross-sectional view of the dasher board assembly 12 along line 3-3 in Figure 1. As shown further in Figure 3, the frame assembly 14 can further include a number of vertical posts 58 each connected or welded at a lower end thereof to a lower base plate or bottom channel 60 anchored into the playing surface 28 via bolts 62. The upper ends of the posts 58, in turn, are connected to several upper stringers 64,66 via a welding plate 68. A number of additional stringers 70,72 can be further connected to the vertical posts 58 adjacent to the panel 30 to provide additional structural support to the frame assembly 14, if desired. Several holes or openings 74 can be provided in the vertical posts 58 to permit an adjacent dasher board assembly to be fastened together in an end-to-end manner so as to define a bounded enclosure such as a hockey rink or soccer arena.

Figures 4-5 are perspective views showing the SOFTCAP™ bumper 42 of Figure 1 in greater detail. In the illustrative embodiment depicted, the SOFTCAP™ bumper 42 comprises an elongated body 74 having a first end 76, a second end 78, a first side 80, and a second side 82. The sides 80,82 of the elongated body 74 may be oriented in a direction along a general longitudinal axis L of the elongated body 74 which, when assembled to the dasher board, are adapted to lie substantially parallel to the upper periphery 38 of the frame assembly 14.

The first edge 54 of the elongated body 74 can be oriented orthogonal to the second edge 56 thereof via a curved section 84 of the elongated body

74. During use, the curved section 84 of the elongated body 74 can be configured to lie adjacent to the upper edge of the panel 30 via a semi-circular channel 86 oriented along the length of the elongated body 74. As can be seen by reference back to Figure 3, for example, the semi-circular channel 86 permits the curved section 84 of the elongated body 74 to bend or flex about the upper edge of the panel 30, which, during impact, helps to distribute the impact forces over a wider area.

Figure 6 is a bottom plan view showing the bottom of the SOFTCAP™ bumper 42 in greater detail. As can be further seen in Figure 6, the elongated body 74 may further define a number of absorption ribs 88 which act to further absorb forces exerted on the dasher board when struck by a player. The ribs 88 can be spaced apart from each other via a number of channels 90 that can be oriented lengthwise in a direction transverse to the general longitudinal axis L of the elongated body 74. The width W1 of the ribs 88 as well as the width W2 of the channels 90 can be selected so as to impart a desired amount of flexibility to the elongated body 74. In certain embodiments, for example, the ribs 88 may have a width W1 of about 3/4" whereas the channels 90 may have a width W2 of about 1". It should be understood, however, that the dimensions of the ribs 88 and channels 90 can be varied to impart a different flexibility characteristic to the SOFTCAP™ bumper 42.

In contrast to the sill 36, which may be formed from a relatively hard material such as high-density polyethylene (HDPE), the SOFTCAP™ bumper 42 can be fabricated from a soft material having a lower indentation hardness to provide better absorption during impact. The term "soft" as used herein generally indicates a material having a shore durometer lower than 90-100 Shore A. In certain embodiments, for example, the material used to form the SOFTCAP™ bumper 42 can include a low-density polyethylene material having a durometer of about 60-30 Shore A whereas the material forming the sill 36 and other components of the dasher board assembly can have a

durometer of about 90-100 Shore A or greater. The material used in forming the SOFTCAP™ bumper 42 will typically have a hardness sufficient to withstand cuts from the players' skates and to withstand repeated strikes without permanently deforming.

Figures 7-8 are perspective views showing another illustrative SOFTCAP™ bumper 92 for use with acrylic dasher board systems or for portions of the dasher board without shielding panes. In the illustrative embodiment depicted in Figures 7-8, the SOFTCAP™ bumper 92 can comprise an elongated body 94 having a first end 96, a second end 98, a first side 100, and a second side 102. The sides 100,102 may be oriented in a direction along a general longitudinal axis L of the elongated body 94 which, when assembled to the dasher board, lies substantially parallel with the upper periphery of the lower frame assembly.

The first side 100 of the elongated body 94 can include a first curved section 104 forming a first edge 106 that extends along the length of the body 94. The second side 102, in turn, can include a second curved section 108 forming a second edge 110 that extends along the length of the body 94. A number of semi-circular channels 112,114 oriented along the length of the elongated body 94 can be provided to allow the curved sections 104,108 to bend or flex about the upper edges of the frame assembly.

Figure 9 is a bottom plan view showing the bottom of the SOFTCAP™ bumper 92 in greater detail. As can be further seen in Figure 9, the elongated body 94 may further define a number of absorption ribs 116 which act to further absorb forces exerted on the dasher board when struck by a player. The ribs 116 can be spaced apart from each other via a number of channels 118, which may be oriented lengthwise in a direction transverse to the general longitudinal axis L of the elongated body 94. As with other embodiments herein, the width W1 of the ribs 116 as well as the width W2 of the channels 118 can be selected so as to impart a desired amount of flexibility to the

elongated body 94. In certain embodiments, for example, the ribs 116 may have a width W1 of about 3/4" whereas the channels 118 may have a width W2 of about 1". Other dimensions are possible, however.

Figure 10 is a side cross-sectional view showing the illustrative SOFTCAP™ bumper 92 of Figures 7-9 attached to a dasher board assembly 120 without shielding panes. The dasher board assembly 120 may be similar to that described above with respect to Figures 1-3, with like elements labeled in like fashion in the views. For example, the dasher board assembly 120 can include a lower frame assembly 14 having a lower section attached to the playing surface 28 via a number of bolts 62, and a number of vertical posts 58 connected to several upper stringers 64,66 via a welding plate 68. Other features such as additional stringers 70,72 and connecting holes or openings 74 can be further provided, if desired.

In those dasher board systems where supported shielding panes are employed, or in portions of the dasher board where shielding panes are not present, the SOFTCAP™ bumper 92 can be configured to overly the entire upper periphery 38 of the frame assembly 14, forming a soft surface which acts to displace and absorb player impact. In the illustrative dasher board assembly 120 of Figure 10, the SOFTCAP™ bumper 92 is shown overlying an existing sill 122 connected to the frame assembly 14. In contrast to the existing sill 122, which may be made from a relatively hard material such as high-density polyethylene (HDPE), the SOFTCAP™ bumper 92 can be fabricated from a relatively soft material such as low-density polyethylene which acts to absorb more energy during an impact. In certain embodiments, for example, the SOFTCAP™ bumper 92 can be formed from low-density polyethylene material having a durometer of about 60-30 Shore A whereas the existing sill 122 may be formed from a high-density polyethylene material having a durometer of about 90-100 Shore A or greater. The materials used to

form the SOFTCAP™ bumper 92 may vary, however, depending on the level of absorption desired, manufacturing considerations, as well as other factors.

Although the SOFTCAP™ bumper 92 in Figure 10 is shown overlying an existing sill 122, other embodiments in which the SOFTCAP™ bumper 92 is adapted to fit underneath an existing sill, or alternatively is configured to fit onto a dasher board without an existing sill are also contemplated. When installed underneath an existing sill, for example, the SOFTCAP™ bumper 92 can be configured to provide additional impact absorption while also reducing damage to the material resulting from the skaters' blades being pushed against the top surface of the SOFTCAP™ bumper 92.

In some embodiments, one or more layers of harder material can be formed over all or a portion of the SOFTCAP™ bumper 92 to prevent scuffing and/or cutting of the SOFTCAP™ bumper 92 material during use. As shown in Figure 10, for example, a layer 123 of material can be formed over the outer portion of the SOFTCAP™ bumper 92 that is generally harder than the material forming the SOFTCAP™ bumper 92. In certain embodiments, for example, the layer 123 can include a layer of high-density polyethylene (HDPE) having a hardness that is greater than the material forming the SOFTCAP™ bumper 92, which can comprise a low-density polyethylene.

Fabrication of the SOFTCAP™ bumpers described herein can be accomplished using any number of suitable manufacturing methods such as injection molding, compression molding, transfer molding, or extrusion molding. While thermoplastic materials such as low-density polyethylene can be used to fabricate the SOFTCAP™ bumpers, it should be understood that other types of moldable and/or extrudable materials can also be used to fabricate the SOFTCAP™ bumpers, if desired.

In certain embodiments, the structure of the SOFTCAP™ bumpers, including the orientation of the absorption ribs and channels, can be formed as a continuous piece of extruded material that can be later cut to a particular

length, as needed. In one such embodiment depicted in Figure 11, for example, a SOFTCAP™ bumper 124 for use in some supportless dasher board systems can include a number of longitudinally oriented absorption ribs 126 to facilitate extrusion of the SOFTCAP™ bumper 124 as a single, continuous piece via an extruder. The SOFTCAP™ bumper 124 can comprise, for example, an elongated body 128 having a first end 130, a second end 132, a first side 134, and a second side 136. The ribs 126, which are spaced apart via channels 138, may be oriented lengthwise in a direction along a general longitudinal axis L of the elongated body 128. In contrast to transversely oriented ribs, the longitudinally oriented ribs 126 provide a degree of symmetry along the length of the elongated body 128, allowing the SOFTCAP™ bumper 124 to be extruded as a continuous piece of material.

Figure 12 is a perspective view showing another illustrative SOFTCAP™ bumper 140 having longitudinally oriented absorption ribs. The SOFTCAP™ bumper 140, which is configured for dasher board systems employing supported shielding panes or no shielding panes, can include a number of longitudinally oriented absorption ribs 142 to facilitate extrusion of the SOFTCAP™ bumper 140 as a single, continuous member via an extruder. The SOFTCAP™ bumper 140 can comprise, for example, an elongated body 144 having a first end 146, a second end 148, a first side 150, and a second side 152. The ribs 142, which are spaced apart via channels 154, may be oriented lengthwise in the direction of a general longitudinal axis L of the elongated body 144. Similar to the embodiment of Figure 11, the symmetry of the elongated body 144 along its length allows the SOFTCAP™ bumper 140 to be extruded as a continuous piece of material.

Having thus described the several embodiments of the present invention, those of skill in the art will readily appreciate that other embodiments may be made and used which fall within the scope of the claims attached hereto. Numerous benefits of the invention covered by this document have

been set forth in the foregoing description. It will be understood that this disclosure is, in many respects, only illustrative. Changes may be made in details, particularly in matters of shape, size and arrangement of parts without exceeding the scope of the invention.

What Is Claimed Is:

1. A flexible, compressible extruded elongate thermoplastic bumper cap to be mounted to a top sill over a hard upper 90° edge along the impact side of a lower frame dasher board for a rink, comprising:

an elongate body having:

a top flat first side;

a solid vertical flat second side, the top flat first side being thicker than the solid vertical flat second side, the solid vertical flat second side being orthogonal to the first side and overlapping the impact side of the lower frame dasher board in flush arrangement as to not interfere with sports play; and

a curved section between the first and second sides to be mounted adjacent the upper hard dasher board edge;

wherein the bumper cap is formed of a soft material having a durometer of less than 90 Shore A and being adapted to absorb impact energy when a player strikes the dasher board.

2. The bumper cap of claim 1, further comprising a void channel extending longitudinally in the body below the curved section to be displaced or yield when compressed to absorb and distribute impact energy when a player strikes the cap.

3. The bumper cap of claim 1 or 2, further comprising alternating ribs and void channels extending longitudinally in the body below the top flat surface and curved section to be displaced or yield when compressed to absorb and distribute impact energy when a player strikes the cap.

4. The bumper cap of any one of claims 1 to 3, having a durometer range for displacement upon the player striking and for withstanding cuts from a player's skates and to withstand repeated player strikes without permanently deforming.

5. A flexible, compressible extruded elongate thermoplastic bumper cap to be mounted to a top sill over a hard upper 90° edge along the impact side of a lower frame dasher board for a rink, comprising:

an elongate body having:

a top flat first side;

a solid vertical flat second side, the top flat first side being thicker than the solid vertical flat second side, the solid vertical flat second side being orthogonal to the first side and overlapping the impact side of the lower frame dasher board in a flush arrangement as to not interfere with sports play;

a curved section between the first and second sides to be mounted adjacent the upper hard dasher board edge; and

a void channel extending longitudinally in the body below the curved section to be displaced or yield when compressed to absorb and distribute impact energy when a player strikes the cap;

wherein the bumper cap is formed of a soft material having a durometer of less than 90 Shore A and being adapted to absorb impact energy when a player strikes the dasher board.

6. The bumper cap of claim 5, further comprising alternating ribs and void channels extending longitudinally in the body below the top flat surface and curved section to be displaced or yield when compressed to absorb and distribute impact energy when a player strikes the cap.

7. The bumper cap of claim 6 wherein the cap has a durometer range for displacement upon the player striking and for withstanding cuts from a player's skates and to withstand repeated player strikes without permanently deforming.

8. A flexible extruded elongate thermoplastic bumper cap to be mounted to a top sill over a hard upper 90° edge along the impact side of a lower frame dasher board for a rink, comprising:

an elongate body having

a top flat first side;

a solid vertical flat second side, the top flat first side being thicker than the solid vertical flat second side, the solid vertical flat second side being orthogonal to the first side and overlapping the impact side of the lower frame dasher board;

a curved section between the first and second sides to be mounted adjacent the upper hard dasher board edge;

a void channel extending longitudinally in the body below the curved section to be displaced or yield when compressed to absorb and distribute impact energy when a player strikes the cap; and

alternating ribs and void channels extending longitudinally in the body below the top flat surface to be displaced or yield when compressed to absorb and distribute impact energy when a player strikes the cap; and

wherein the bumper cap is formed of a soft material having a durometer of less than 90 Shore A and being adapted to absorb impact energy when a player strikes the dasher board.

9. The bumper cap of claim 8, wherein the bumper cap has a durometer range for displacement upon the player striking and for withstanding cuts from a players skates and to withstand repeated player strikes without permanently deforming.

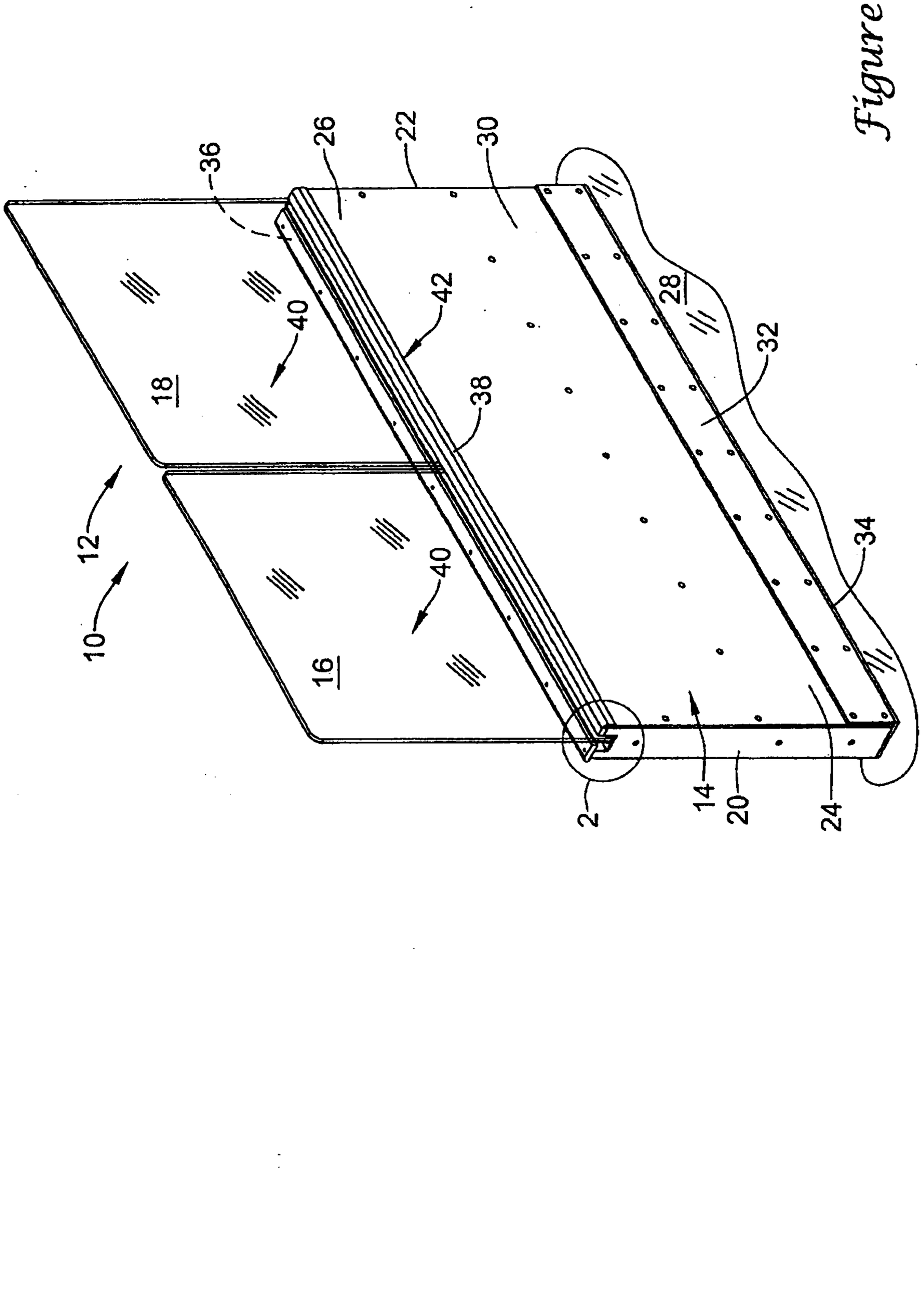


Figure 1

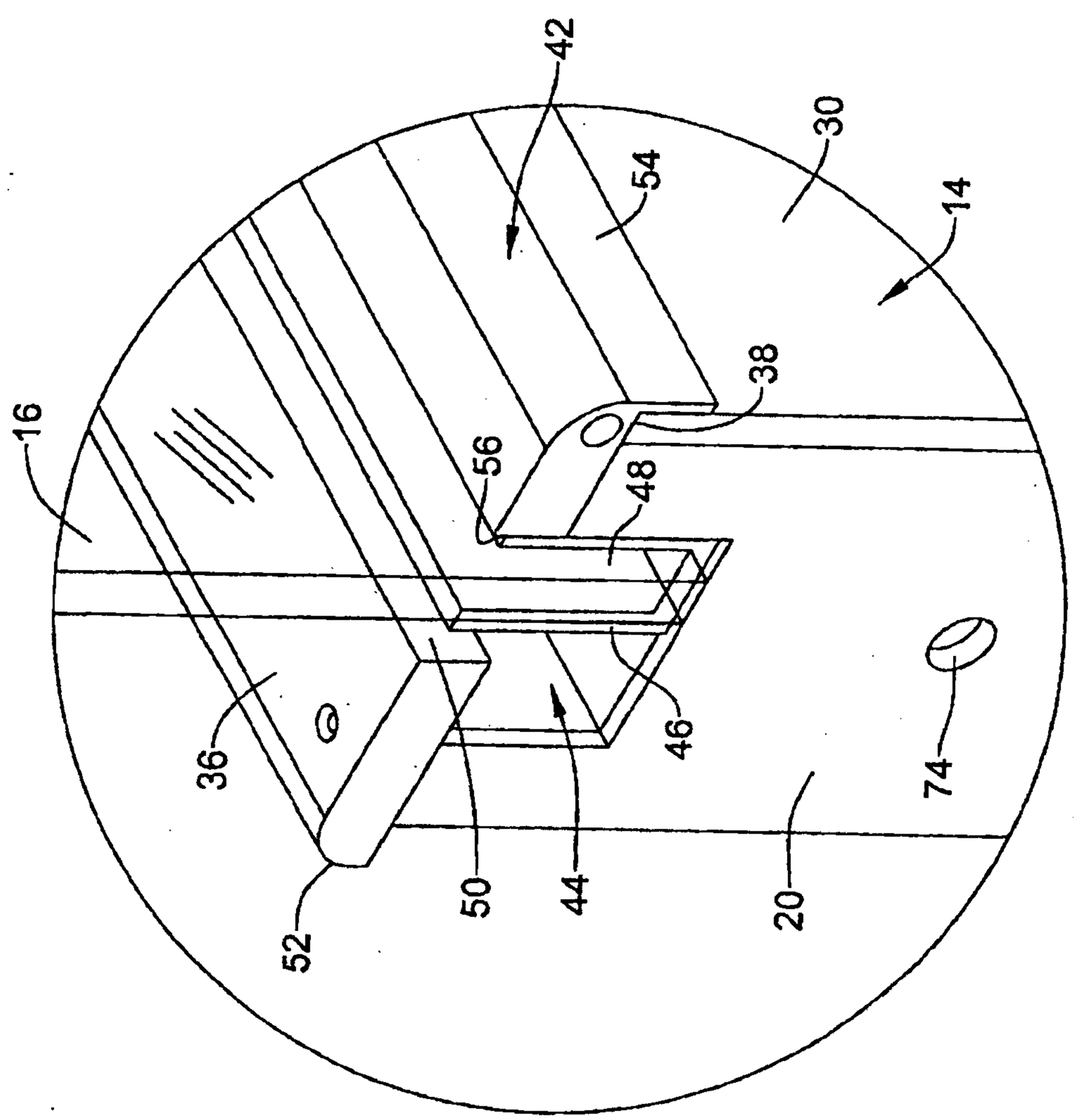


Figure 2

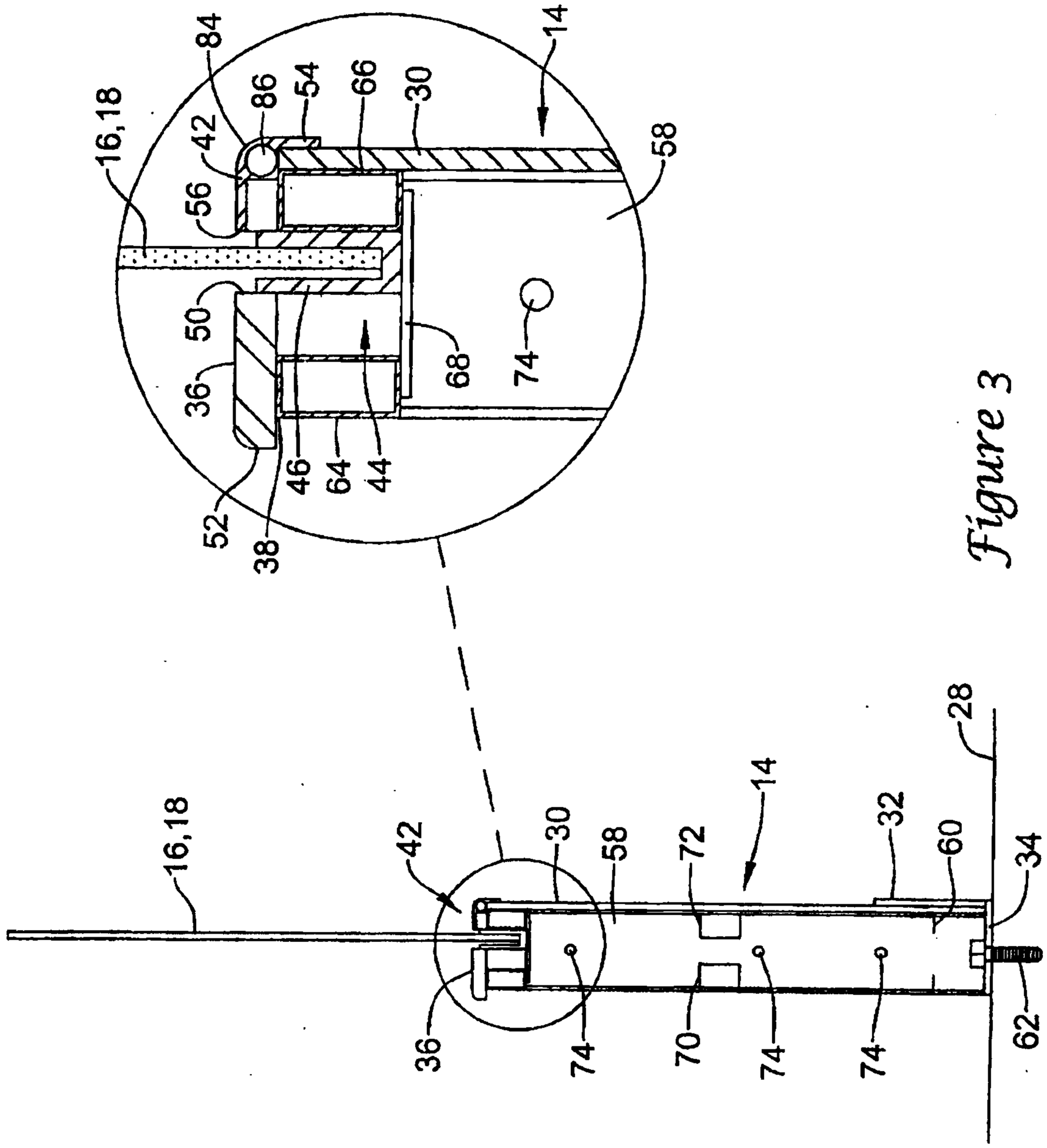

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Figure 3

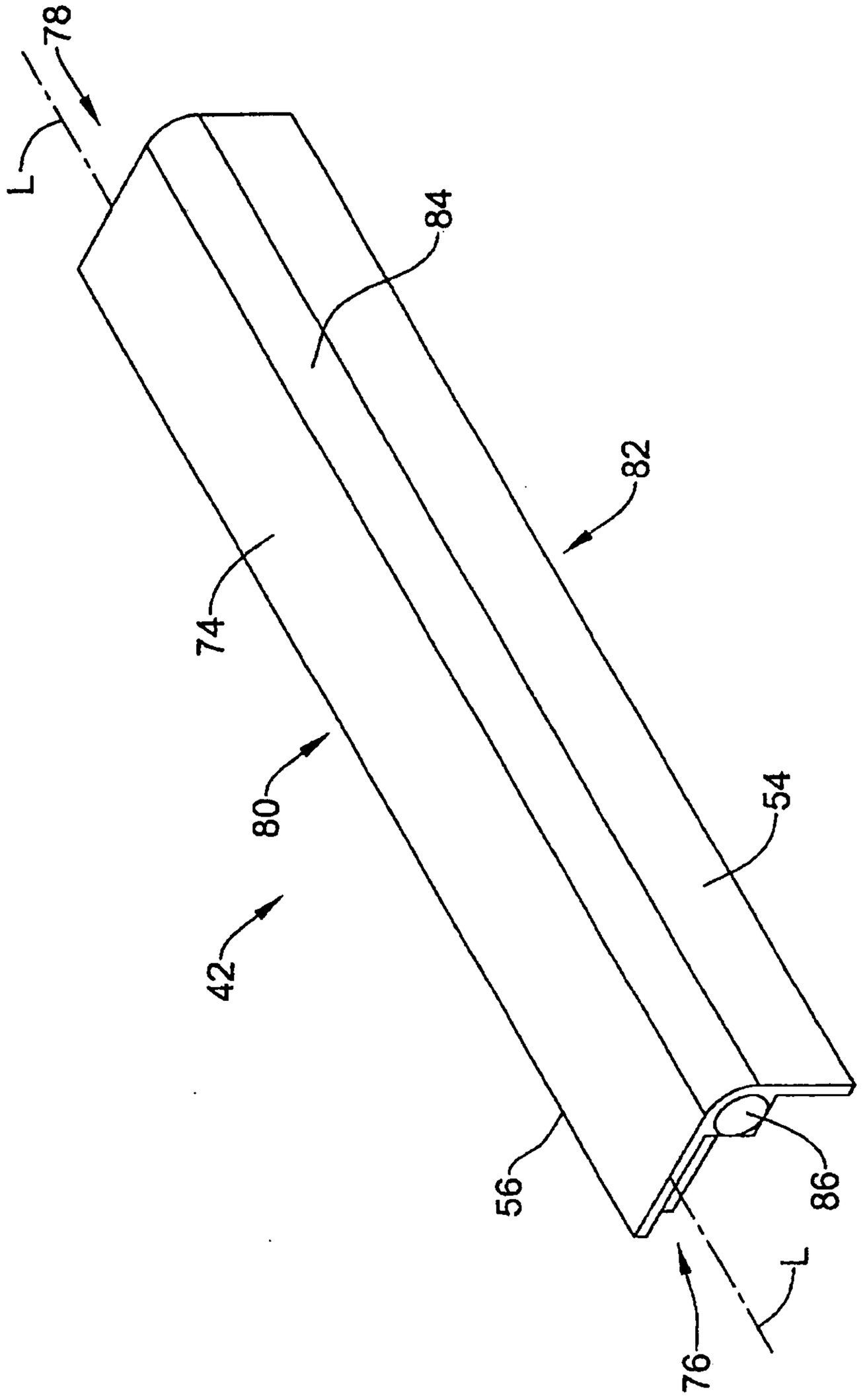


Figure 4

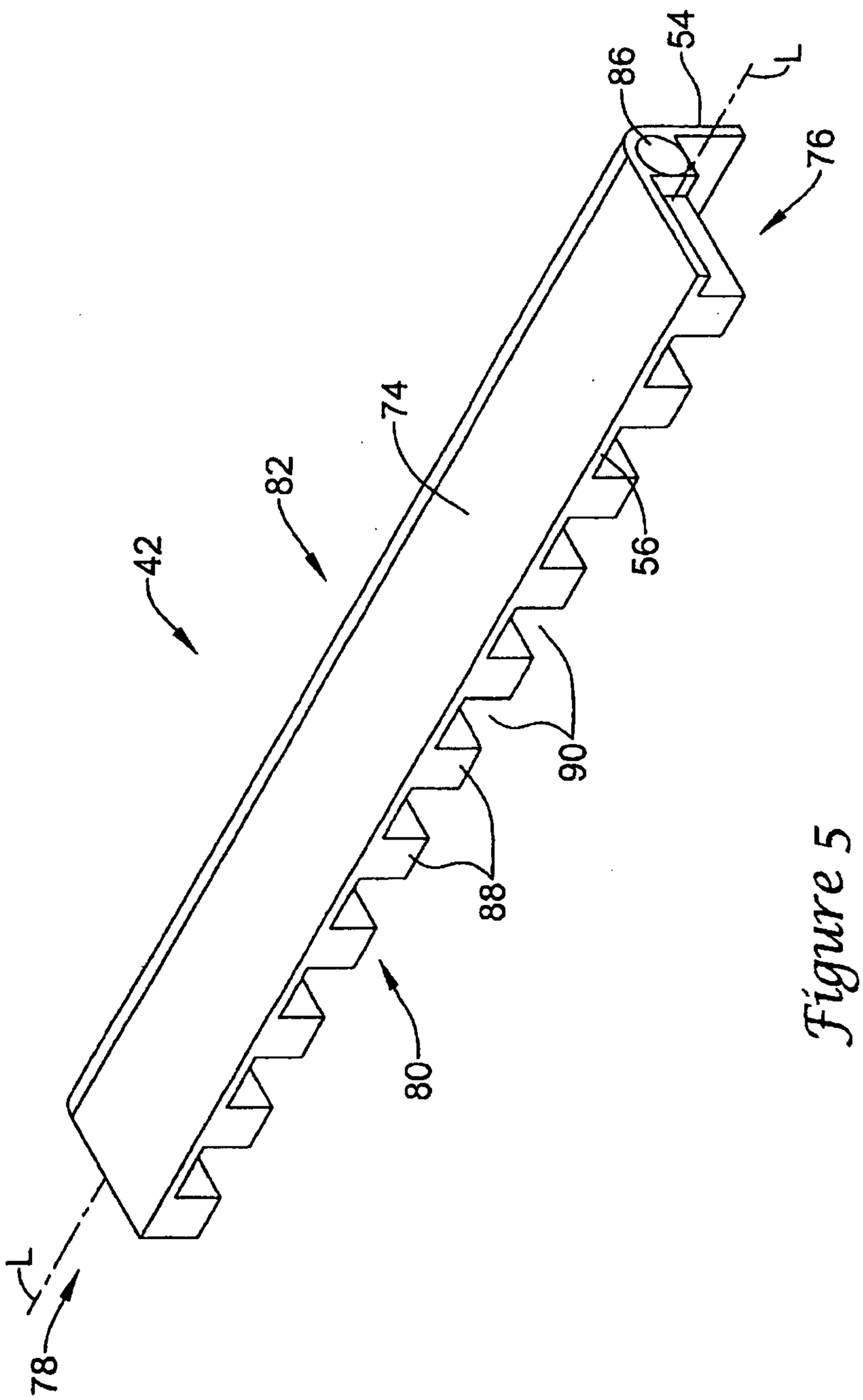


Figure 5

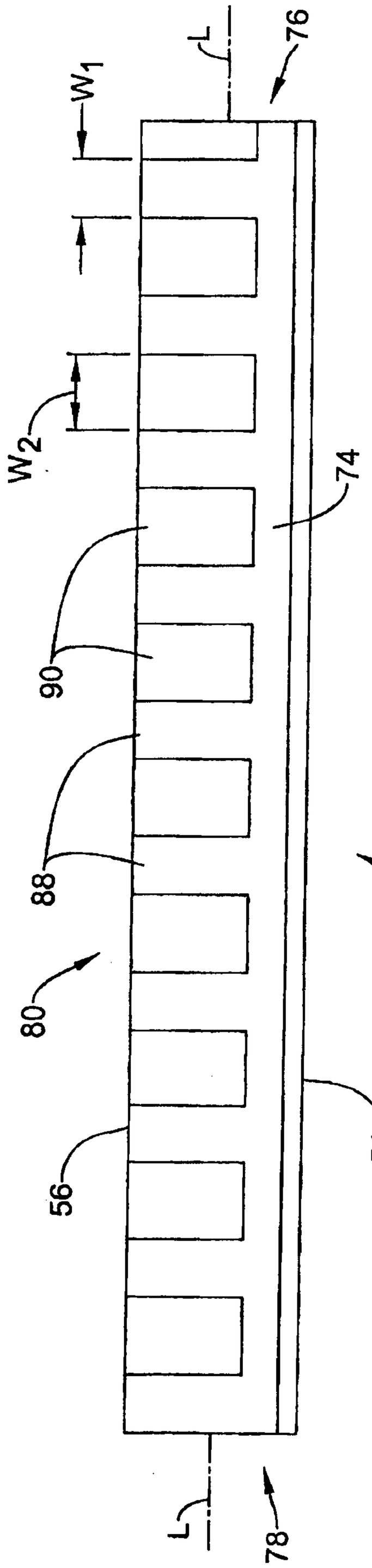
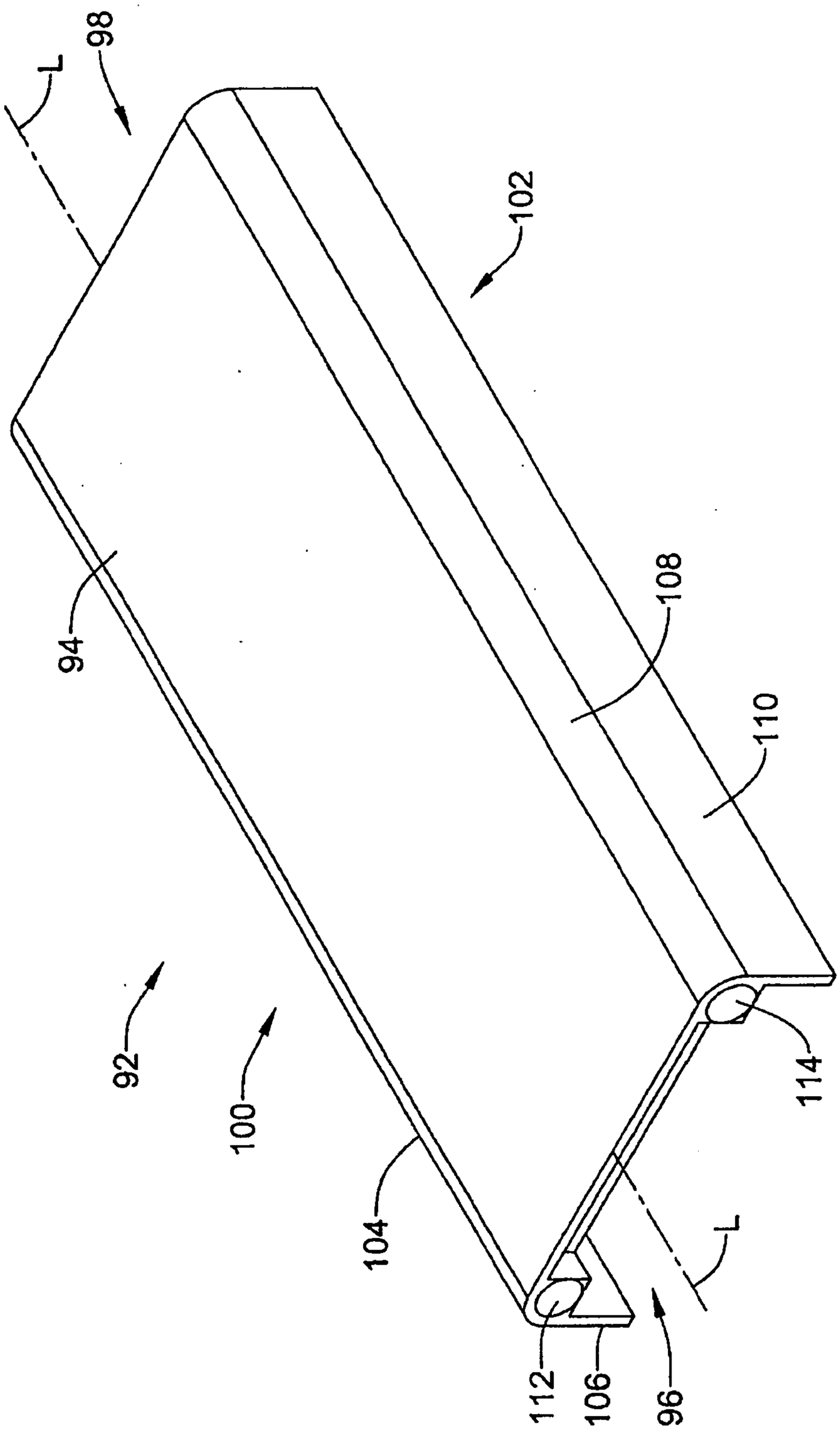


Figure 6



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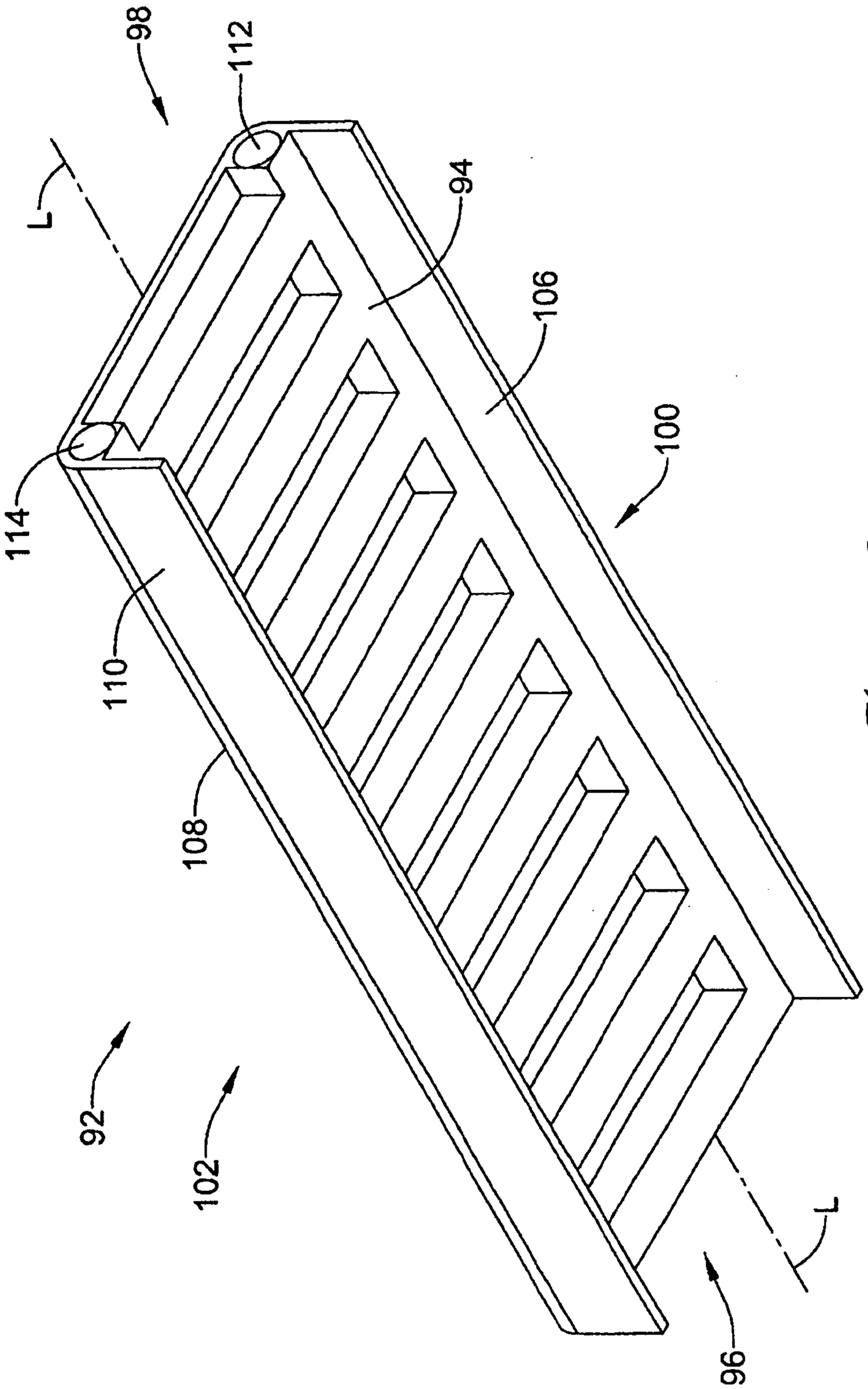
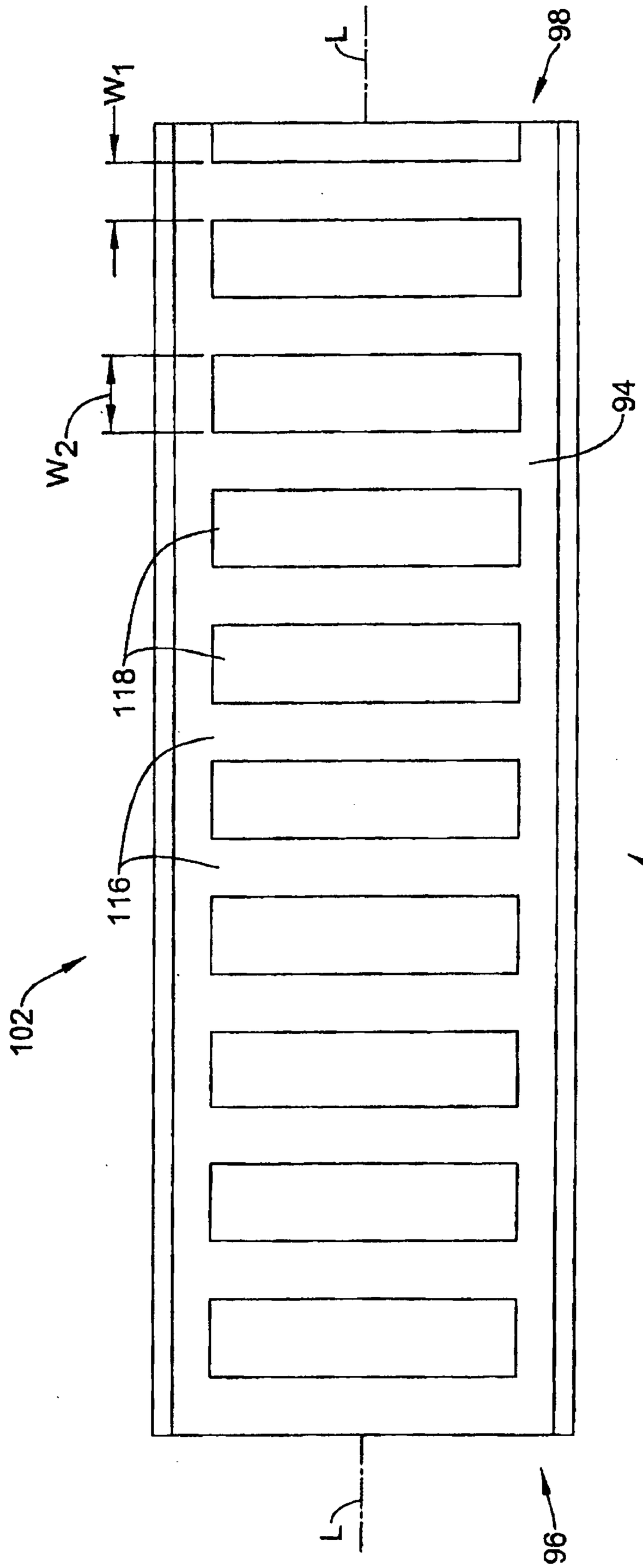


Figure 8



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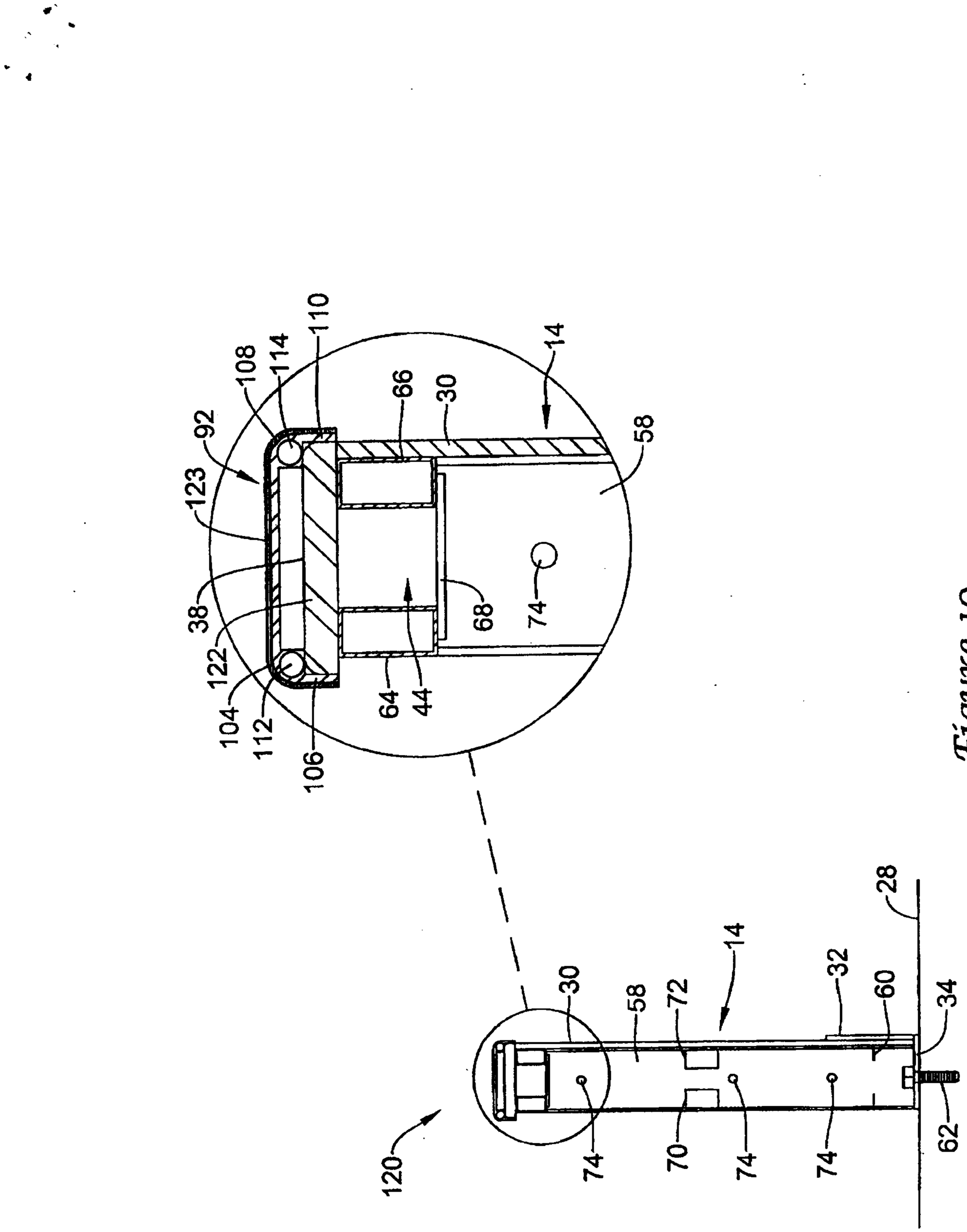
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Figure 10

Figure 11

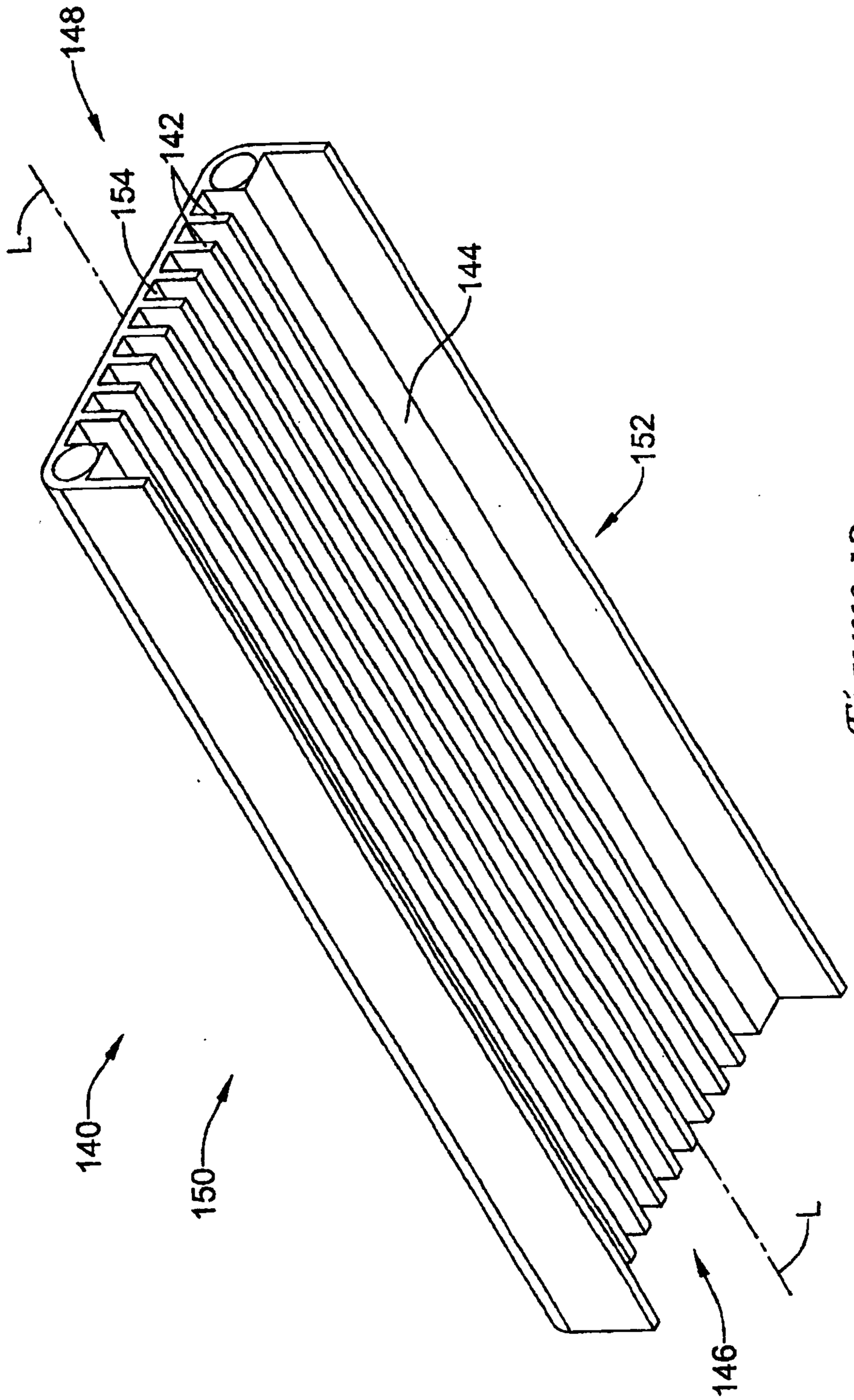
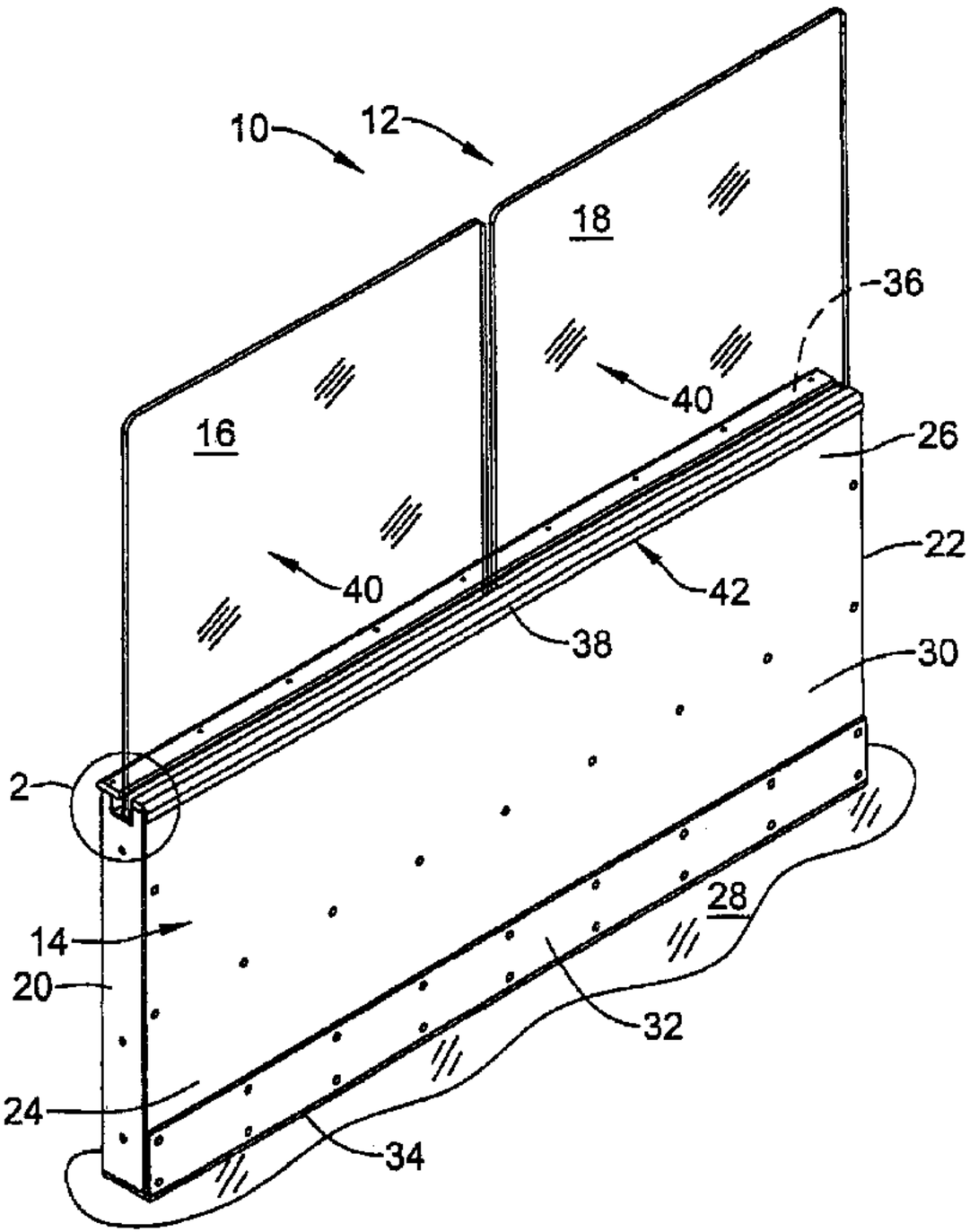


Figure 12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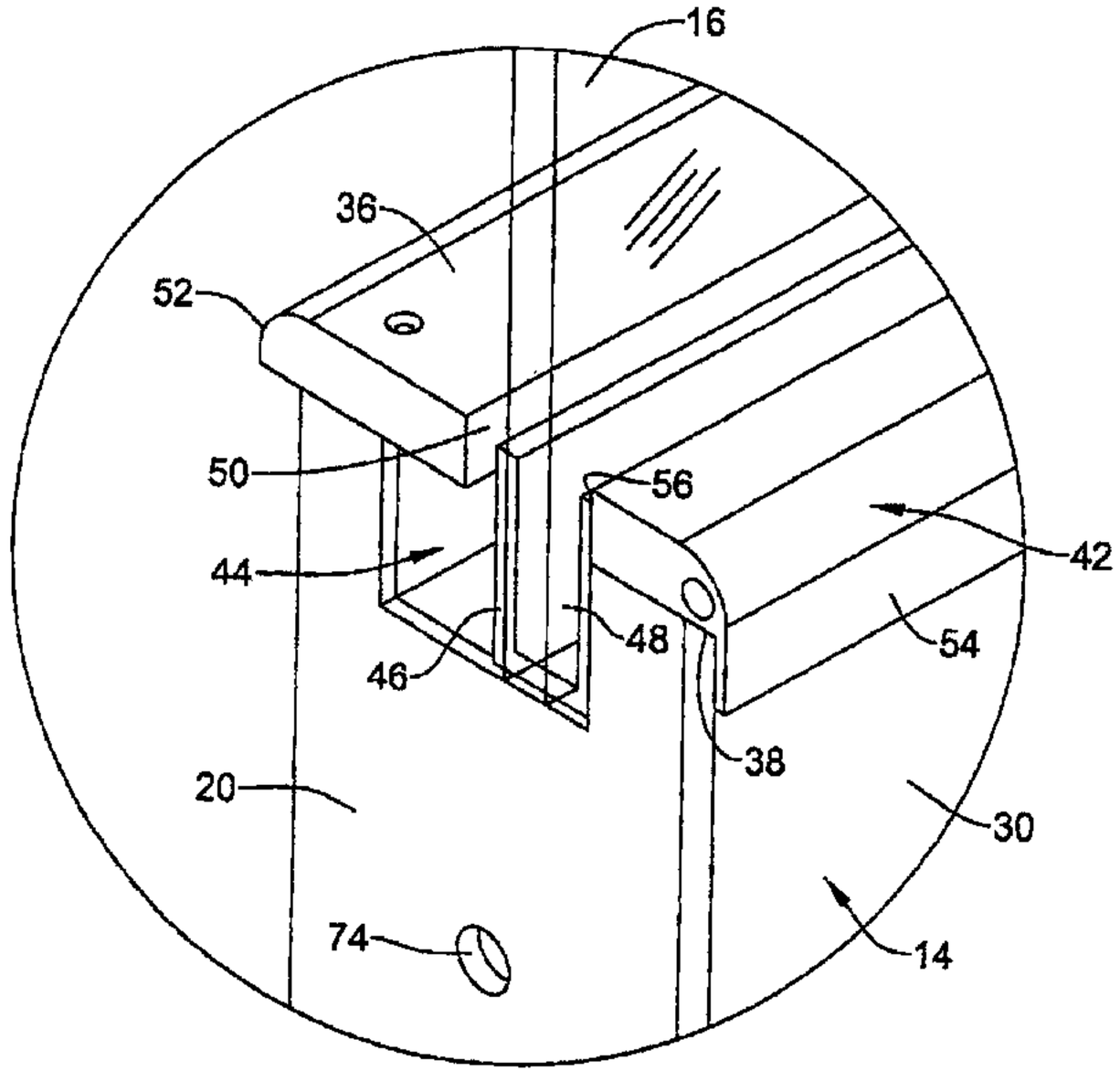
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