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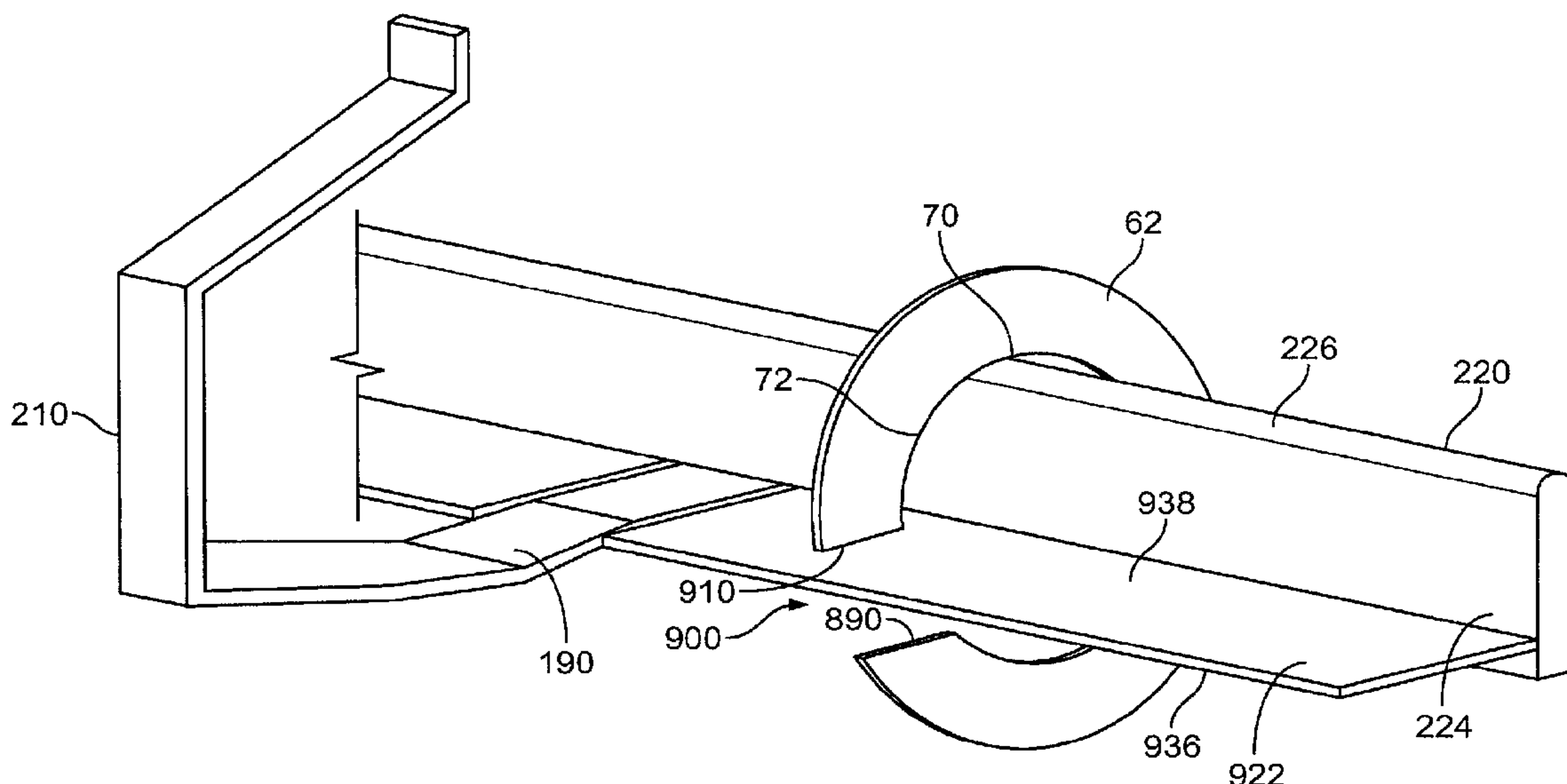
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A modular track system for hanging a curtain, the track system consisting of modules or sections with attachments and accessories designed to adjust to varying environments and specifications. Track shape and length are adjusted by specifying various combinations of the specialized components created as part of the system. Complementing the track system is a curtain with integrated loop fasteners which allows the curtain to be attached and removed without removing the track. The system further preferably includes a side support for use in attached the track to a fixed support in the environment, and a guiderail on the side of the track on one or more track sections, the track and curtain all being coordinated to form an efficient and improved curtain hanging system.

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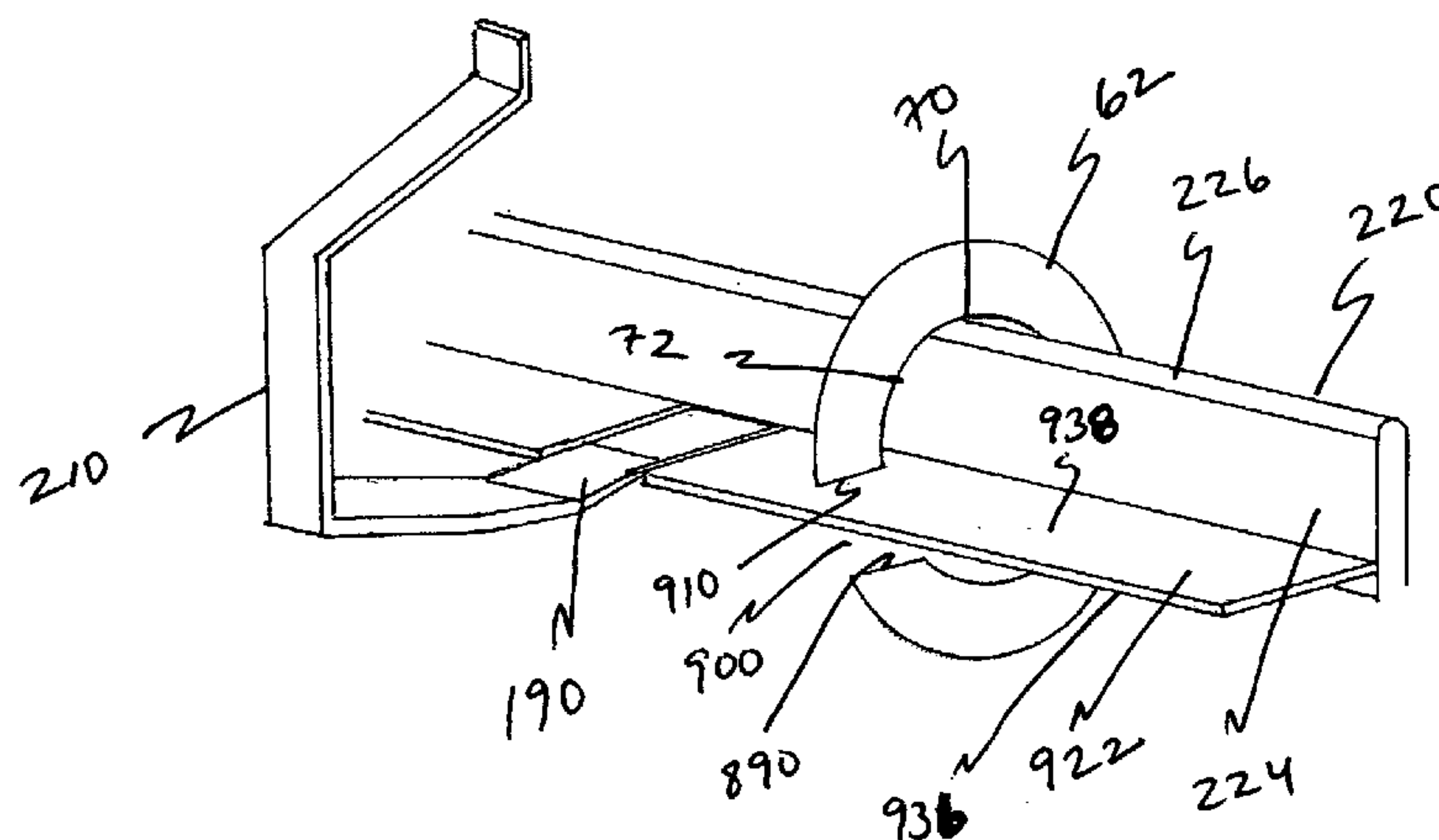


FIGURE 25(E)

(57) Abstract: A modular track system for hanging a curtain, the track system consisting of modules or sections with attachments and accessories designed to adjust to varying environments and specifications. Track shape and length are adjusted by specifying various combinations of the specialized components created as part of the system. Complementing the track system is a curtain with integrated loop fasteners which allows the curtain to be attached and removed without removing the track. The system further preferably includes a side support for use in attached the track to a fixed support in the environment, and a guiderail on the side of the track on one or more track sections, the track and curtain all being coordinated to form an efficient and improved curtain hanging system.

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Track and Curtain System

Field of the Invention

The present invention relates to a track system and associated curtain for use as a room divider or to create an enclosed space. In preferred embodiments, the invention can be used as a hospital privacy curtain system, or in related applications.

Background of the Invention

Throughout hospitals and extended care facilities, bed and examination areas are often provided privacy through the use of ceiling-mounted movable fabric curtains. There are many manufacturers of these products and all are essentially the same basic idea with limited variation.

Figures 1a and 1b illustrate some examples of these systems of the prior art. As shown in the figures, a track is provided which consists of an extruded aluminum channel. The track is attached to a conventional or dropped ceiling, and traces a path around the area to be sequestered. A series of rollers slide within that track, each of the rollers having a chain hanging from it. The chains, in turn, each end in a hook.

To drape a curtain around the examination area, each hook is attached to a grommet in the curtain, a series of grommets being provided along the curtain's upper edge. Once the hooks

1 have been attached to the curtain's grommets, the curtain hangs from the ceiling and can slide
2 along the track's path. Usually, this path is arc-shaped, extending around three sides of a bed or
3 examination area (the fourth side often being a wall). A health care professional such as a doctor
4 or nurse pulls the curtain to slide it along the track, to open and close a space around the bed.

5 The present inventors have identified extensive shortcomings to these current systems.
6 Because of the track, the rollers, and the moving parts, the noise of the curtain sliding along the
7 aluminum track is very disturbing to patients. Particularly in a hospital environment, patients
8 need their rest. Yet, the movement of the curtain along the track not only disturbs the patient in
9 the bed surrounded by the curtain, but also the patient in the adjoining bed (which is a problem
10 in general, and particularly so if that second patient was sleeping).

11 Furthermore, maintenance, repair and laundering of these systems is highly inefficient.
12 The existing designs use a single entry and exit point for insertion or removal of the curtain at
13 an end of the track (or at the two ends of the track at best). If one roller breaks in the sequence
14 of rollers, all the rollers and the entire curtain up to that point need to be removed from the track,
15 so that the broken roller can be replaced.

16 Likewise, the curtain can often disengage from the track. Particularly considering the
17 large number of hooks and rollers and small parts, it is time consuming to maintain and repair
18 the system and its parts, and to reattach the curtain. Yet, the number of moving parts only
19 increases the likelihood of breakage, of the curtain disengaging from the track, of the
20 disengagement of the hooks from the grommets, and so forth.

21 The curtains themselves consist of a single, continuous, lengthy stretch of material
22 (usually greater than 24 feet, and often 30 feet long) and are heavy as a result. Due to that length
23 and size, they must be sent out to a costly commercial laundering facility.

24 Moreover, the design of the system and the curtain's weight make it difficult to handle

1 the curtain, with it being particularly cumbersome to hang or change it. One roller at a time must
2 be inserted into the track and then one hook at a time must be attached to the heavy curtain. As
3 there are approximately two grommets per linear foot, the mounting or removal of the curtain
4 (whether for maintenance, repair, cleaning, or replacement purposes) is a considerable chore that
5 usually requires the efforts of two maintenance workers.

6 The utility and aesthetics of the system are also severely lacking. To pass beyond the
7 curtain into the bed area, the health care professional must pull the curtain from the far end – i.e.
8 he or she cannot simply enter in the middle. Also, the movement of the curtain is often not
9 smooth or stable along the track, and can jam up when there is interference with the moving
10 parts. The curtain can also get tangled as the hooks catch each other and/or sections of the
11 curtain fabric. The use of the chains, rollers and hooks also results in a configuration where the
12 curtain hangs a significant distance below the track, leaving a relatively large gap through which
13 unwanted light can enter.

14 In terms of both appearance and space, the existing curtains stack or gather together in
15 an extremely wide silhouette - for example, 24 feet of curtain stack as approximately 4 feet, in
16 other words, as a width of fabric approximately 4 feet wide. Moreover, since the curtain is a
17 single continuous length, it can only be stacked together in one bundle. For all practical
18 purposes, curtains in that system cannot be layered one on top of the other, even if desired. Also,
19 the upper edge of the curtain is sloppy in appearance – whether spread or stacked.

20 Additionally, the products are usually custom created for the installation, creating long
21 lead times and high prices for the institution. The system is also relatively costly due to the
22 complicated ring system, the multiple parts, the use of the grommets, and the attendant higher
23 labor involved. Likewise, most parts of those systems are metal, which are inherently noisier,
24 may tarnish, and can be relatively expensive in cost.

Summary of the Invention

In accordance with the invention, a system is provided for hanging an associated curtain, the modules of the system including a series of track sections. The track sections are each configured as a combination or hybrid of a rod and a track, with the benefits of both. The track sections are further being configured for attachment to each other, forming an extremely adaptable system for use in suspending a curtain therefrom.

As a result, a modular track or rod and modular curtain system is provided which can easily accommodate a facility's requirements while overcoming the shortcomings of the prior art. The track modules or sections have with attachments and accessories designed to conform and adjust to varying environments and specifications. The track shape and length are adjusted by specifying various combinations of the modular parts, the product being attached to various media with the use of the specialized components created as part of the system.

In a preferred embodiment of the invention, the system includes at least two track sections which are attached together to form a length of said track, wherein at least one track section includes a guiderail projecting from the body of that track section.

In a further additional or alternative embodiment of the invention, the system includes a side mount and/or a vertical mount for attaching the track system to a fixed support in the environment, wherein the side mount and/or vertical mount is attached to the side of the length of track.

Complementing the track system is a curtain with integrated loop fasteners which allows the curtain to be attached and removed without removing the track. In accordance with one embodiment of the invention, a unique opening is provided in the ring to provide a ring mouth which allows the curtain to easily pass over the track's mounting points (such as the side mount and/or vertical mount), and/or over the guiderail. The ring also allows attachment of the curtain

1 to the track in one movement. Further preferably, the curtain is a modular design allowing the
2 user to create various lengths, widths and configurations.

3 According to an aspect of the present invention, there is provided an article of
4 manufacture, comprising:

5 a curtain for hanging on a track, wherein the track comprises a top surface, and a
6 guiderail extending from the track, said curtain comprising an opening, said opening
7 comprising a ring, said ring comprising:

8 an inner circumference such that said inner circumference of said ring can
9 hang from, and slide along, said top surface of the track; and

10 a mouth, said mouth comprising at least two surfaces, said two surfaces
11 comprising a top surface and a bottom surface,

12 wherein at least one of said surfaces of said mouth moves along the guiderail when
13 said curtain moves along the track.

14 Further embodiments of the invention will become apparent from the detailed disclosure
15 of the invention and the figures provided herein.

16 17 **Brief Description of the Drawings**

18 Figures 1a and 1b are schematics of the prior art to the present invention.

19 Figure 2 is an exploded perspective view of the various components of a track system for
20 hanging a curtain, in accordance with one embodiment of the present invention.

21 Figure 3 is an exploded perspective view of the various components of a track system for
22 hanging a curtain to a ceiling or wall, in accordance with one embodiment of the present
23 invention.

24 Figure 4 is an exploded perspective view of a track system for hanging a curtain, in
25 accordance with an embodiment of the present invention in which an extension and adapter are

1 can be used to lower the track, i.e. to increase the distance between the track and the ceiling.

2 Figure 5 is an exploded perspective view of a further embodiment of the invention in
3 which a track mount is used, which attaches to the existing tracks of the prior art.

4 Figure 6 is a front view of a curtain for use with the track system of the present invention.

5 Figure 7 is a front view of one embodiment of a curtain and track system of the current
6 invention, wherein the curtain is attached to the track.

7 Figure 8 is a perspective view and side view of various rings for use with the curtains of
8 Figures 6 and 7.

9 Figure 9 is a perspective view of one embodiment of the present invention, wherein a
10 series of wide mouth rings of the curtain are inserted over a section of the track in a single

1 motion. (In addition, the rings do not need to flex in this embodiment, due to the sizing of the
2 mouth of the ring and track).

3 Figure 10 is a perspective view of one embodiment of the present invention, wherein the
4 ring of the curtain sits on the track with the top of the inner circumference of the ring hanging
5 from (e.g. resting or balancing on) the top of the track section, the mouth of the ring being
6 angled, sized and positioned to glide over a vertical support and side mount, the mouth of the
7 ring having fingers to simply and assist with insertion of the curtain ring onto the track.

8 Figure 11 is a rear view of an embodiment of the invention in which two modular curtains
9 are used, the curtains attaching together and hanging from the track.

10 Figure 12 is a rear view of a further embodiment of the curtains, wherein the curtains
11 overlap at their top ends, with a gap between the curtains, to create an entry or exit area for
12 passing through the curtains and into or out of its enclosed space.

13 Figure 13 is a top view showing the layering of two curtains on a track, in accordance
14 with an embodiment of the invention.

15 Figure 14 is a front view showing an embodiment of the invention with multiple stacks
16 of curtains, showing a narrow stack, a wider stack, and an entry/exit area between them.

17 Figure 15a is a perspective view of a component of the track system of the present
18 invention.

19 Figure 15b comprises schematics of the component of Figure 15a.

20 Figure 16a is a perspective view of a further component of the track system of the present
21 invention.

22 Figure 16b comprises schematics of the component of Figure 16a.

23 Figure 17a is a perspective view of a further component of the track system of the present
24 invention.

1 Figure 17b comprises schematics of the component of Figure 17a.

2 Figure 18a is a perspective view of a further component of the track system of the present
3 invention.

4 Figure 18b comprises schematics of the component of Figure 18a.

5 Figure 19a is a perspective view of a further component of the track system of the present
6 invention.

7 Figure 19b comprises schematics of the component of Figure 19a.

8 Figure 20a is a perspective view of a further component of the track system of the present
9 invention.

10 Figure 20b comprises schematics of the component of Figure 20a.

11 Figure 21a is a perspective view of a further component of the track system of the present
12 invention.

13 Figure 21b comprises schematics of the component of Figure 21a.

14 Figure 22a is a perspective view of a further component of the track system of the present
15 invention.

16 Figures 22b and 22c comprise schematics of the component of Figure 22a.

17 Figures 23 and 24 are perspective views of further components of the track system of the
18 present invention.

19 Figure 25 are views of a further embodiment of the present invention, wherein the track
20 includes a guiderail. Figures 25a and 25b are perspective views of the guiderail and a section of
21 the track respectively, with Figure 25c being a view of the guiderail and section of track attached
22 together. Figure 25d is a perspective view of the embodiment of Figures 25a-25c, showing the
23 curtain resting on the track section which includes the guiderail, and showing attempted rotation
24 of the curtain ring. Figure 25e is a perspective view of the embodiment of Figures 25a-25d,

1 showing the curtain resting on the track section, and illustrating the guiderail, vertical mount, and
2 side mount.

3 Figure 26 is an exploded view of a further embodiment of the present invention wherein
4 the side mount locks onto the track section.

5 6 **Detailed Description of the Invention and the Preferred Embodiments**

7 In accordance with the invention, a modular system is provided for hanging an associated
8 curtain. As shown in the figures, the modules of the system include a series of track sections, the
9 track sections being configured as a combination of a rod and a track, with the benefits of both.
10 The modular track sections are further configured for attachment to each other to adjust the
11 length and shape of the track to suit any desired environment.

12 Like a rod, the top surface 938 of each modular track section is curved; thus, the openings
13 of a curtain can hang from and slide along that top surface 938, as with the top surface of an
14 ordinary (cylindrical) rod or tube. In particular, the top surface of each modular track section is
15 preferably shaped as the upper portion of a rod or cylinder. Thus, a curtain with an opening
16 therein or with rings 62 can be suspended from the track, such that the opening or rings slide or
17 glide along that top surface. Examples of curtains having rings integrated therein which slides
18 along a rod are disclosed for example, in U.S. Patent Nos. 5,186,232; 6,494,248; 6,935,402; and
19 7,296,609.

20 Like a track, however, the modular track sections also include grooves therein, the
21 grooves being provided in the side of one or more, or all, of the sections of the track. The
22 grooves allow the attachment of accessory components which extend from the side of the track,
23 and which can be used to attach the track to fixed supports in the environment.

24 In a preferred embodiment, the system is provided for use in hospitals and other health

1 care facilities. However, the invention is not limited to health care contexts, but rather can be
2 used in any environment where a room divider, privacy or an enclosed space is desirable or
3 necessary, whether commercial, residential, military, or emergency contexts, or otherwise.

4 For example, in commercial settings, the inventions can be used in office cubicles,
5 showrooms, trade shows, display booths, in stores (or store windows), among other uses. In
6 residential settings, it can be used around a bed, or anywhere else desired in homes, dormitories,
7 hotels, nursing homes, and so forth. In military and governmental settings, the invention can be
8 used in military barracks and offices, whether permanent or temporary, and in prisons. In an
9 emergency setting, the invention can be used with tents or temporary structures in the field,
10 whether for hurricane or disaster relief, in hospital units (field hospitals), within temporary tents
11 or structures (belonging to relief or aid workers or governmental personnel), or so forth. (In such
12 temporary or makeshift contexts, the curtains can be affixed to tracks on the frame of the tent or
13 structure, or to portable weighted stands, or so forth). For outdoor use, the inventions can be
14 used around tennis courts, swimming pools, porches, terraces, and so forth. In general, the
15 inventions can be used in any indoor or outdoor location desired.

16 As shown in Figures 2-5 and Figures 15 -24, in accordance with the invention the
17 modular track system consists of a series of components designed for adaptability to form a
18 horizontal track which can be attached to fixed supports in any of numerous different
19 environments. Preferably, each of the modular track sections are a combination of a rod and
20 track (although they can include portions which are flat, round, solid and/or hollow, as desired).
21 In the preferred embodiment, the track system is mounted directly to the fixed support, such as
22 a wall, ceiling, column, stand, or so forth. Alternatively, the system can be mounted onto the
23 track systems of the prior art, such as the existing tracks in hospitals as further discussed below,
24 or to the frame of a tent, or a portable weighted stand as previously noted.

1 In a new installation, when the track system is mounted directly to a wall or ceiling, a
2 ceiling mount 160 and/or end cap 170 is used as shown in Figures 2, 3 and 4. Ceiling mount 160
3 (as further shown in Figures 16a and 16b) consists of a flat plate 162 on its top side, the flat plate
4 preferably being screwed or otherwise adhered to the ceiling of the desired environment. End
5 cap or wall mount 170 (as further shown in Figures 17a and 17b) likewise consists of a flat plate
6 172, the plate being on its side, and provided for screwing or adhering to a flat surface (whether
7 a wall or otherwise). Alternatively, a curved plate can be used for attachment of the mount to
8 a column.

9 As shown in Figures 2 and 17, end cap 170 includes a socket 174 extending therefrom.
10 Socket 174 of end cap 170 is used to attach the end cap to the rod or track 220. Preferably,
11 screws are used to secure the track to the end cap (and likewise to attach other components
12 together as shown in the figures). In one preferred embodiment, the cross section of socket 174
13 is a four sided polygon with three straight and one curved side, to correspond to one of the
14 preferred embodiments of a track for insertion therein.

15 Ceiling mount 160 likewise includes a socket 164 extending therefrom, as shown in
16 Figures 2 and 16. Socket 164 of ceiling mount 160 can be used for attaching the ceiling mount
17 to vertical mount 210. Alternatively, if a lower track is desired (i.e. a track which hangs farther
18 from the ceiling), extension 240 can be used, as shown in Figure 4. As shown in that figure, in
19 that embodiment a ceiling mount 230 is attached to the extension 240, which attaches to adapter
20 or socket 180, which in turn is attached to vertical mount 210. Due to the desired length of
21 extension 240 (up to approximately 24 inches), a hollow tube construction is used for that
22 extension to provide torsional stability (with adapter 180 being used to mate vertical mount 210
23 with extension 240).

24 In a preferred embodiment, the track includes a side support, with one end of the side

1 support being attached to the track and the other being attached to a fixed support, whether
2 directly or through another component. Thus, the side support can be a side mount, or a vertical
3 mount, or the combination of a side mount and vertical mount. Whether the side mount and/or
4 vertical mount are used individually or in combination, they act as side supports to attach a side
5 of the track to a fixed support. Thus, a side mount can be attached to a side of the track on one
6 end, with the side mount extending parallel or approximately parallel to the ground, and having
7 a second end for attachment to a vertical fixed support, such as a column (such as the column of
8 a building), or a stand (such as the stand of a movable support for use at a trade show). Or, the
9 vertical mount can be used to attach the track to a horizontal fixed support, such as a ceiling or
10 other overhead support. For example, one end of the vertical mount 210 can be attached to the
11 side of a track section 220, to act as a side support secured to the track, with the other end
12 extending toward the ceiling to suspend the side of the track from the ceiling. The vertical mount
13 210 can be attached directly to the side of the track or through a side mount 210; if attached
14 directly to the side, the vertical mount and side mount can be integrated into a single unit.

15 In the preferred embodiment, the bottom of vertical mount 210 is attached to one end of
16 side mount 190. For example, the end 218 of vertical mount 210 can be inserted into and
17 screwed to a socket 192 at the end of the side mount 190. The other end of side mount 190 is
18 attached to the length of track, by attaching it to a side of the track section 220. Since the vertical
19 mount is curved or C-shaped, or the combination of the vertical mount and side mount forms a
20 curve or C-shape, the attachment form a curved or approximately C-shaped connection between
21 the ceiling and the track, as shown in Figures 3-4.

22 Various connections can be made between the side mount and the track section 220. For
23 example, in one embodiment, side mount 190 includes an end piece 194 (shown in Figures 19a-
24 b) which is configured for insertion into the groove 222 of track 220 (shown in Figure 22a)

1 and/or groove 930 of Figure 25. Preferably groove 222 is horizontal, although a vertical groove
2 can alternatively be provided if desired. In a further embodiment of the invention, a twist lock
3 mechanism is provided for a side mount 195, as shown in Figure 26. In accordance with this
4 mechanism, side mount 195 is inserted into the groove of the track and then rotated to affix it in
5 place. Width (W_b) of the end of component 195 is less than the height (H_g) of the groove in the
6 track component, whereas height (H_b) of the end of side mount 195 is equal to (or slightly greater
7 than) the height (H_g) of the groove. Accordingly, the side mount is initially inserted with the end
8 sideways such that width W_b is oriented along the height of the groove, with the component
9 sliding easily (due to its small width). Once the side mount is at the correct spot along the track,
10 the component is rotated 90 degrees so that the side mount 195 is wedged tightly in place, due
11 to height H_b being equal to the height H_g of the groove (or slightly greater in height if the
12 material of the component is slightly flexible).

13 The track is preferably provided in track sections 220, wherein individual sections can
14 be attached together to reach any length desired using couplers 200. Each side of coupler 200
15 slides into the groove 222 of a track section 220 to connect together the two track sections, as
16 shown in Figures 3 and 4. Any number of track sections 220, whether two, three, five, ten,
17 twenty or more, can be attached together to form any length of track desired. In addition, each
18 section 220 of the track can be linear or curved, and each coupler 200 can likewise be linear or
19 curved, to achieve any configuration desired and surround any shaped space regardless of the
20 environment.

21 Thus, in a new installation the various components of the invention fit together in relative
22 relationship as shown by the exploded view of Figure 3. If desired, extension 240 and adapter
23 180 can be used to lower the track as shown by the exploded view of Figure 4.

24 In a further embodiment of the invention, the modular system of the invention can be

1 attached to an existing track system, e.g., a pre-existing track system already mounted in a
2 hospital room. In this embodiment, shown in the exploded view of Figure 5, track mount 150
3 is used (shown in Figures 15a and 15b). Track mount 150 attaches to the existing track of the
4 prior art by sliding prong 152 into groove 12 of that existing track (shown in Figure 1) where the
5 prior art rollers 14 would normally slide. As many track mounts 150 as desired or needed can
6 be attached to the pre-existing track.

7 Once the track mount has been inserted into the pre-existing track, vertical mount 210 is
8 then attached to the track mount. Vertical mount 210 is attached to side mount 190 as shown,
9 with the remainder of the component attachments being conducted as in a new installation. An
10 exploded view showing the relative positions of the components during installation to an existing
11 track is shown in Figure 5. (Although the existing track is not shown in that figure, it will be
12 understood that track mount 150 slides into a groove 12 of the existing track, such as shown in
13 Figure 1a).

14 Accordingly, consistent with the invention, a track system of modular construction and
15 design is provided which can span unlimited lengths, as long as there is a secure wall, ceiling or
16 pole to attach it to. The system is adaptable to a large variety of shapes to conform to any shaped
17 area. The specially designed components of the system allow the track to be attached to ceilings,
18 dropped ceilings, walls, existing cubicle tracks and even free standing columns (by using the end
19 caps having a curved plate), allowing use in a wide variety of applications. Additionally, the
20 system includes intermediate attachments fixed to a ceiling along the length of the track to
21 support the weight of the curtain for longer lengths.

22 These modular track configurations of the invention are designed for use with a curtain
23 60 having a series of integrated rings 62 therein, as shown in Figures 6-14. In preferred
24 embodiments, rings 62 are circular or oval in shape. These rings form opposed pairs 62a and 62b

1 that are designed to fit over track 220 as shown in Figures 7, 9 and 10. The rings 62 are related
2 to those disclosed in U.S. Patent No. 5,186,232, as preferably modified by the disclosures of U.S.
3 Patent Nos. 6,494,248; 6,935,402; and 7,296,609; and as further modified by the additional
4 disclosure herein.

5 As shown in Figure 10, ring 62 balances on track section or rod 220, with the rings sliding
6 along the top surface of the track 220 during use. Vertical support 210 is used to position the
7 track within the openings 63 of rings 62. Thus, rings 62, track 230, and vertical support 210 are
8 mutually configured to cooperate and to allow the curtain to slide easily along the track. At the
9 same time, they are also designed to allow easy insertion and removal of the curtain onto and off
10 of the track.

11 Rings or openings 62 are either integral parts of the curtain (i.e. are openings in the
12 curtain, such as reinforced holes without a separate attached ring), or preferably are relatively
13 rigid rings attached to openings in the curtain's more flexible material. In the preferred
14 embodiment of the invention, rings 62 have been configured such that ring opening (ring mouth)
15 68 is angled and dimensioned corresponding to the entry angle of the bottom of the side mount
16 190 (affixed to vertical support 210) as shown, for example, in Figure 10. In this preferred
17 embodiment, the ring mouth is a large gap, with that mouth or gap being directed at an angle
18 down toward the ground when the curtain is hanging on the track.

19 Preferably, this angle is greater than zero degrees down off of an imaginary horizontal
20 reference line parallel to the ground (such that zero degrees would correspond to a flat,
21 horizontal, gap) but angled less than or at most ninety degrees downward. Further preferably,
22 the angle is sixty degrees or less, or forty five degrees or less, or thirty degrees or less, down from
23 a horizontal reference line. As previously noted, the particular angle further preferably
24 corresponds to the entry angle of the bottom of side mount 190, which is the angle upward

1 formed between segments 196 and 198 of side mount 190, i.e. the angle formed between
2 segments 196 and 198 when segment 196 is affixed to bottom end 218 of vertical support 210,
3 with bottom end 218 of vertical support 210 and segment 196 being horizontal (or approximately
4 horizontal), according to one preferred embodiment.

5 Ring mouth 68 or 900 is an open slot allowing the ring to glide past the bar support, and
6 providing the ability to hold the weight of the curtain while maintaining the easy on/off nature
7 of the ring and system concept. Preferably, the ring mouth is sufficiently wide to allow the ring
8 to easily be inserted onto the track without needing to flex the ring (or alternatively, without
9 needing it flex it too excessively), yet narrow enough to sit on the track without easily coming
10 off during use, with the width/narrowness of the mouth also being configured to easily pass the
11 support mounts. Slit 76 of the curtain is likewise a wide slit, i.e. a slit dimensioned with a
12 sufficiently large width to allow easy attachment and detachment of the curtain, and facilitate
13 easy sliding of the curtain along the rod.

14 A projection, extension or finger can also be provided to the side of the ring or the mouth
15 of the ring as shown in Figures 18, 19 and 20 of U.S. Patent Nos. 6,494,248; 6,935,402; and
16 7,296,609. One or two projections can be provided off of the ring, as with the projecting edge,
17 flange, extension, or finger discussed in those patents. The projections can be off of the side of
18 the ring and/or off of the ring's mouth. For example, one or two projections can be provided,
19 each projection being located adjacent to and to the side of the ring mouth. If two extensions
20 are provided, one is preferably provided on each side of the mouth.

21
22 In a further embodiment of the invention, the track system includes at least one guiderail
23 922, as shown in Figure 25a, c, d and e. Guiderail 922 of Figure 25a is a bar, rail, shelf, flange,
24 lip or edge 924 which projects or extends from the back 926. Thus, guiderail 922 projects out

1 from the body 224 of track section 220, and preferably also extends along that body. The
2 guiderail 922 provides a unique interface between the curtain and track which improves the
3 movement of the curtain on the track, and acts as a stabilizer bar. The guiderail also interferes
4 with and prevents detachment of the ring from the track during use.

5 The guiderail may be provided along part or all of the inner perimeter of the track, and
6 can project outward by any desired distance. The guiderail can also project from the track at any
7 desired angle, whether ninety degrees, or any other angle from zero to 180 degrees. Thus, the
8 guiderail can angle toward the floor or the ceiling (or anywhere in between) when the track is
9 mounted.

10 In a preferred embodiment, the guiderail 922 extends horizontally, or approximately
11 horizontally, from the body 224 of the track component. Further preferably, the guiderail is
12 perpendicular (at a 90 degree angle) to the body 224 of the track, and is preferably parallel to the
13 ground. In that embodiment, the combination of the body 220 of the track, and the guiderail 922
14 extending from it form the shape of, or approximately the shape of a sideways "T" (a "T" resting
15 on its side, so that the combination of body and guiderail are approximately T-shaped in cross-
16 section). In other words, the body 224 of the track provides the vertical bar of the T (which
17 would be the top segment of the T if the T were not on its side), and the guiderail or stabilizer
18 bar 922 provides the attached horizontal bar (which would be the vertical segment of the T if the
19 T were not on its side). Those vertical and horizontal bars can themselves be any shape, length,
20 or cross section desired. In a preferred embodiment, the guiderail is also, preferably, positioned
21 near the bottom edge of the track, although, alternatively, it can be positioned anywhere from the
22 top to the bottom edge of the track section. At least one guiderail is provided on a track section,
23 although more can be used if desired.

24 The guiderail can also extend from either side of the track, whether the inner perimeter

1 or outer perimeter or both. For example, it can extend from the side that the vertical support and
2 side mount attach to (referred to as the back side, merely for reference); or the opposite side
3 (referred to as the front side, for reference); or both sides of the track.

4 In a preferred embodiment, the guiderail extends from the back side of the track (the inner
5 perimeter when it surrounds a bed), as shown in Figure 25. In this embodiment, the guiderail can
6 be attached to any part of the track component of Figure 25b by sliding the back 926 into groove
7 930 of the track (or by otherwise attaching the guiderail to the track component), to form the
8 track. As shown in Figures 25c and d, the guiderail is inserted into the groove of the body 224
9 of the track section to extend from that body.

10 As an alternative to a detachable guiderail, the guiderail and track component can be
11 constructed or molded as a single integrated unit. In other words, the body 224 of the track 220
12 and the guiderail 922 can be detachable (as shown in the figures), or the body 224 and guiderail
13 922 can be formed into a single, non-detachable unit. In any of the embodiments of the invention,
14 the guiderail can be the same material as the track component or a different material, if desired.

15 As discussed above, the curtain is designed with a ring that has a mouth which can pass
16 over the vertical supports and/or the side mount (which are preferably attached to the side of of
17 the track). The preferred ring is a C-shaped ring (such as ring 62, for example), with the mouth
18 or gap 900 in the ring being the gap in the "C". Further preferably, a combination curtain 60 and
19 track component 220 is used, wherein the curtain uses the C-shaped ring described above, and
20 the track component 220 has the guiderail 922 extending therefrom. In this preferred
21 embodiment, the guiderail 922 extends toward the gap 900. Or, the guiderail 922 can extend or
22 project into the gap 900 of the ring 62, whether partially into that gap, or into and through that
23 gap.

24 Thus, in that preferred embodiment, as shown in Figures 25d and 25e, the curtain includes

1 an opening therein with an inner circumference, that opening being integral to the curtain, or
2 being a ring 62 having an inner circumference 72. The top 70 of the inner circumference 72 of
3 that opening or ring 62 rests on the top 226 of the track 220 when the curtain is stationary; with
4 that top 70 of the inner circumference gliding on and along that top 226 of the track when the
5 curtain is moved along the track.

6 As also shown in Figure 25e, guiderail 922 extends into mouth 900 of ring 62, with the
7 top surface 938 of the guiderail 922 being opposite the top surface 910 of the mouth 922 and the
8 bottom surface 936 of the guiderail 922 being opposite the bottom surface 890 of the mouth 922,
9 when the curtain is suspended from the track section. Preferably, the top and bottom surfaces
10 of the guiderail are spaced from the top and bottom surfaces of the mouth. Alternatively, the top
11 surface of the mouth can rest against the top surface of the guiderail and/or the bottom surface
12 of the mouth can rest against the bottom surface of the guiderail. In certain embodiments, the
13 mouth of the ring can glide above and along the length of the guiderail when the curtain is moved
14 along the track.

15 As shown in Figures 25d and 25e, a wide mouth ring is preferably provided to facilitate
16 the movement of the mouth over the vertical support 210 and side mount 190 when the curtain
17 is moved along the track. In a preferred embodiment, as shown in Figure 25d, the ring mouth's
18 width (W_r) is larger than the width W_t at the top 226 of the track 220, to facilitate placement of
19 the ring on the track. It should be noted that the mouth is only wider than the width of the track
20 W_t when the mouth is being inserted onto the top of the track (i.e. when the mouth is in the 6:00
21 position) – the mouth is not wider than the height of the track (H_t). Alternatively, the ring mouth
22 can be wider than the height of the track when using a rounded track or a track with a lesser
23 height.

24 As also shown in Figures 25d and 25e, guiderail or stabilizer bar 922 blocks rotation of

1 the movement of the mouth of the ring, restricting excessive upward or downward rotation, and
2 also preventing accidental detachment of the ring from the track. During use, it is common for
3 the ring to move about one or more axes of the track, whether to partially rotate or swing about
4 the track, or so forth. For example, when a user pulls down on the curtain of Figure 25d (from
5 the right side of the figure towards the left), the mouth of the ring will normally rotate upward
6 (toward the dotted outline marked "4" on the figure, i.e. clockwise). Conversely, pulling down
7 on the curtain of that figure (from the left side of the figure towards the right), will normally
8 rotate the mouth of the ring downward (toward the dotted outline marked "3" on the figure, i.e.
9 counterclockwise).

10 In the embodiment in which the guiderail 922 extends into mouth 900, the guiderail
11 restricts this rotational movement, blocking any excessive, undesired, rotation of the ring. As
12 shown in Figure 25d, upon initial rotation, the mouth of the ring will hit the guiderail 924
13 preventing further rotation upward or downward. In particular, the inside top surface 910 or
14 inside bottom surface 890 of the mouth or gap 900 of the ring will hit or contact the guiderail or
15 stabilizer bar 922 once rotation exceeds a certain predetermined angle, blocking further rotation
16 of the ring. Furthermore, this configuration prevents detachment of the ring from the track.
17 Since the height H_t of the body 224 of track section 220 is greater than width W_r of mouth 900
18 of the ring, the ring cannot be accidentally detached. Specifically, the ring cannot be detached
19 from the track when the mouth is in another position other than one near the top of the track. To
20 achieve this, the ring 62 must be pushed from the right to the left of Figure 25d until the guiderail
21 no longer extends into the mouth 900, and then the ring must be rotated clockwise until the gap
22 900 coincides with width W_t of the body 224 of track section 220. As width W_t is less than width
23 W_r , the ring can now be pulled downward and off the track.

24 Furthermore, since the guiderail 922 restricts rotation of the ring, the guiderail prevents

1 the mouth 900 from catching on the top 226 of the track section 220 during use. By preventing
2 excessive ring rotation and keeping the top of the inner circumference of the ring aligned with
3 the top of the track, the guiderail stabilizes the motion of the ring so as to provide comfortable
4 and smooth movement of the curtain along the track.

5 The guiderail can extend along part or all of the track to extend along the entire periphery
6 of the track, or any portion thereof, as desired. Thus, for any adjacent first track section, second
7 track section and third track sections, the guiderail can be included on all of those sections, or
8 can be left off of any of those sections. Even a partial guiderail provides a benefit, as that
9 guiderail restricts rotation of the ring located along it, and thereby further restricts rotation to a
10 certain degree in adjacent areas of the curtain. In addition, while one guiderail per track section
11 is preferred, multiple guiderails can alternatively be provided, if desired.

12 As shown in Figure 25e, the guiderail and side mount (and/or vertical mount) are
13 preferably aligned, so that the mouth of the ring moves smoothly over both. In other words,
14 preferably the guiderail 922 passes through the mouth 900 of ring 62, with that mouth 900
15 gliding along the guiderail 922 (whether the mouth is spaced from the guiderail or in contact with
16 it), when the curtain is moved along the length of the track. Likewise preferably, and as also
17 shown in Figure 25e, the vertical mount 210 and/or the side mount 190 also pass through mouth
18 900 when the curtain moves along that track.

19 In addition, as shown in Figures 21a-21b, vertical mount 210 is preferably a curved
20 component. That curved component preferably has at least one segment which is approximately
21 in a C-shape, to accommodate the sliding of the curtain within the space enclosed by segments
22 214, 216 and 218. As shown in that figure, segment 214 extends in a direction away from the
23 curtain, segment 216 extends down parallel or approximately parallel to the edge of the curtain,
24 and segment 218 travels back toward the curtain. Alternatively, a more rounded or hemispherical

1 configuration C-shape can also be used, provided that the dimensioning is configured to allow
2 the curtain to easily slide within the space enclosed by the vertical mount. The vertical mount
3 also has end 212 for attachment to a fixed support or to a ceiling mount.

4 Accordingly, using the design provided a modular section of curtain (usually six feet
5 long) can be easily attached to the track in one simple movement, and can be accomplished by
6 a single person without the use of tools. Since there is no moving part other than the curtain,
7 movement is quieter, smoother and more stable than existing track curtains. The materials used
8 for the track and ring are further selected to maximize the smooth and quiet movement of the ring
9 on the track.

10 Likewise, the use of minimal moving parts also ensures that the system is more reliable
11 and less costly than the systems of the prior art. The system and curtain design further ensures
12 that the curtain will not come off the track or become entangled. The manner in which the
13 curtain drapes due to the paired ring configuration also eliminates tie backs, reduces bulk, and
14 is more aesthetic than the prior art curtains, such as those currently used in hospitals and related
15 settings (such as nursing homes).

16 Furthermore, as shown in Figures 11, 12 and 13, the curtains themselves can be provided
17 in modular sections that can be attached or removed to the track in sections. As shown in Figure
18 12, adjacent overlapping sections of curtain can be used to form entry areas within the curtain,
19 allowing entry to the bed environment wherever desired (e.g. at a mid point of the curtain, rather
20 than at the far ends of the curtain as with existing systems). Likewise, the side edges of the
21 curtains can be attached together using VELCRO®, snaps, buttons, or so forth as shown in
22 Figure 11. This feature can likewise be used to form doors within the curtain length. Thus,
23 sections of curtains can be attached to each other, overlap each other, or remain separate from
24 one another as needed in the particular environment.

1 If desired, two (or more) curtains can be layered one on top of the other, as shown in
2 Figure 13. As shown in that figure, Curtain A forms the entire outer layer of the enclosure, while
3 Curtain B forms the entire inner layer of the enclosure around the bed, the two curtains
4 overlapping with each other along much or all of their length. As one example, this
5 configuration can be used with a disposable liner (as Curtain B) along the inner area of the
6 enclosure. The disposable liner can be discarded or destroyed when blood or other biohazardous
7 materials splatter on it, rather than autoclaving or sterilizing it. The outer Curtain A in this (or
8 any of the other embodiments) can in contrast be more durable and attractive, fabricated in a
9 multitude of finishes to complement the surrounding environment.

10 The layering can also be used to achieve two different environments. In one preferred
11 embodiment, the outside curtain is designed to complement or blend in with the room decor,
12 while the inside curtain is customized to the particular patient. For example, the inside curtain
13 can be colored and patterned suitable for the age, gender, interests, and tastes of the patient, with
14 a child-like interiors being available for a young child; a feminine interior provided for a female
15 patient; a sports interior provided for a sports fan (whether young or old); and so forth.

16 Moreover, these short sections of curtain can be attached to and removed from the track
17 individually without needing to remove the entire curtain, whether for cleaning, maintenance or
18 so forth. Thus the track and curtain design not only allows multiple entry points, but also
19 provides the ability to remove or attach sections as needed. Accordingly, the facility can more
20 easily launder sections of curtain using standard washers and dryers, rather than sending them
21 out for laundering using more expensive commercial units. Nonetheless, as discussed above, the
22 curtains can still be snapped together to create long or 'unlimited lengths' and can be
23 disassembled for cleaning or switching out (such that one can clean a part of the curtain without
24 needed to clean the entire length).

1 This curtain also has a cleaner upper edge appearance than the prior art hospital privacy
2 curtains – whether the curtain is spread around a bed or stacked. The curtains also align (e.g.
3 stack or bunch) in a much narrower silhouette – a 24 foot curtain’s stack is approximately twenty
4 inches wide rather than the approximately forty eight inches (or four feet) of the prior art.

5 Since the curtain is attached onto the track (rather than hanging a distance below it) it also
6 allows less light to enter, when that is desirable. Moreover, a modular adaptor can be used to
7 adjust the distance between the track and curtain (e.g. to provide a greater distance between the
8 curtain and track, to lower the curtain if needed or desired).

9 Alternatively, or additionally, a separate mesh header can be provided for attachment to
10 a lower section of curtain (via snaps or VELCRO® etc.) to allow for compliance with fire
11 suppression codes where applicable.

12 In further embodiments, sections of the curtain can be provided with built-in pockets to
13 hold medical charts, medication, or so forth. Disposable curtains can be provided as discussed
14 above and any other features desired can also be included with the disposable or regular curtains,
15 whether integrated air fresheners and/or anti-bacterial treatments, liquid dispensers, or so forth.
16 Varieties of curtains can be provided of different light transmittivity for different applications,
17 whether opaque, translucent, or transparent, as needed. Similarly, different degrees of sound
18 blockage can be provided (e.g. based on the thickness and composition of the material), without
19 making the curtain unduly unwieldy or heavy due to the ability to use modular sections of much
20 smaller size.

21
22 Having described the invention with respect to particular embodiments, it will be
23 understood that the description is not intended to be limiting, it being apparent that
24 modifications can be made. For example,

1 various dimensions, shapes and so forth are merely for illustration of various preferred
2 embodiments and are not intended as limitations upon the scope of the invention hereon.
3 Likewise, as a further example, while a modular system is preferred, the teachings of the present
4 invention can alternately be applied to a non-modular as well. The scope of the present
5 application and invention is intended to cover all such modifications and variations as would be
6 apparent to one of ordinary skill in the art, and all equivalents to the embodiments described
7 herein.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. An article of manufacture, comprising:
a curtain for hanging on a track, wherein the track comprises a top surface, and a guiderail extending from the track, said curtain comprising an opening, said opening comprising a ring, said ring comprising:
an inner circumference such that said inner circumference of said ring can hang from, and slide along, said top surface of the track; and
a mouth, said mouth comprising at least two surfaces, said at least two surfaces comprising a top surface and a bottom surface,
wherein at least one of said surfaces of said mouth moves along the guiderail when said curtain moves along the track.
2. The article as claimed in claim 1, wherein said curtain includes a projection from said mouth of said ring.
3. The article as claimed in claim 2, wherein said projection moves along the guiderail when said curtain moves along the track.
4. The article as claimed in claim 2 or 3, wherein said projection hits the guiderail upon rotation of said ring, such that contact between the projection and the guiderail blocks further rotation of said ring.
5. The article as claimed in any one of claims 1 to 4, wherein said top surface of said mouth moves along the guiderail when said curtain moves along the track.
6. The article as claimed in any one of claims 1 to 5, wherein said bottom surface of said mouth moves along the guiderail when said curtain moves along the track.
7. The article as claimed in any one of claims 1 to 6, wherein the track has a body, and the guiderail extends horizontally along the track such that the guiderail is

perpendicular to the body and parallel to the ground, and wherein said top surface of said mouth moves along the guiderail when said curtain moves along the track.

8. The article as claimed in any one of claims 1 to 6, wherein the track has a body, and the guiderail is perpendicular to the body of the track and parallel to the ground, and wherein said bottom surface of said mouth moves along the guiderail when said curtain moves along the track.

9. The article as claimed in claim 7, wherein said bottom surface of said mouth moves along the guiderail when said curtain moves along the track.

10. The article as claimed in any one of claims 1 to 9, wherein the track comprises a side, and comprises a side support extending from the side of the track, and wherein said mouth of said ring is configured to move over the side support when said curtain moves along the track.

11. The article as claimed in any one of claims 1 to 10, wherein said mouth of said ring is parallel to the guiderail when said curtain is hanging on the track.

12. The article as claimed in any one of claims 1 to 11, wherein said mouth of said ring is directed at an angle down toward the ground when said curtain is hanging on the track.

13. The article as claimed in any one of claims 1 to 12, wherein rotation of said curtain is restricted by the guiderail of the track when the curtain is suspended from the track.

14. The article as claimed in any one of claims 1 to 13, wherein when said curtain hangs from the track the guiderail extends into said mouth of said ring.

15. The article as claimed in any one of claims 1 to 14, wherein when said curtain hangs from the track the guiderail extends into and through said mouth of said ring.

16. The article as claimed in any one of claims 1 to 15, wherein the guiderail comprises a top surface and a bottom surface, and wherein said top surface of the guiderail is opposite said top surface of said mouth, and said bottom surface of the guiderail is opposite said bottom surface of said mouth, when said curtain is suspended from the track.

17. The article as claimed in any one of claims 1 to 16, wherein said top surface or bottom surface of said mouth hits the guiderail upon rotation of said ring, such that the contact between said surface and the guiderail blocks further rotation of said ring.

18. The article as claimed in any one of claims 1 to 17, wherein said mouth is configured to move above and below the guiderail when said curtain is moved along the track.

19. The article as claimed in any one of claims 1 to 18, wherein said mouth has a width, and the track has a height, and wherein said width of said mouth is less than the height of the track.

20. The article as claimed in any one of claims 1 to 18, wherein said mouth has a width, and a top of the track has a width, and wherein said width of said mouth is greater than the width of the top of the track.

21. The article as claimed in any one of claims 1 to 18, wherein said mouth has a width, and the track has a height, and a top of the track has a width, and wherein said width of said mouth is less than the height of the track, and said width of said mouth is greater than the width of the top of the track.

22. The article as claimed in any one of claims 1 to 21, wherein said curtain is configured such that said mouth hits the guiderail upon rotation of said ring.

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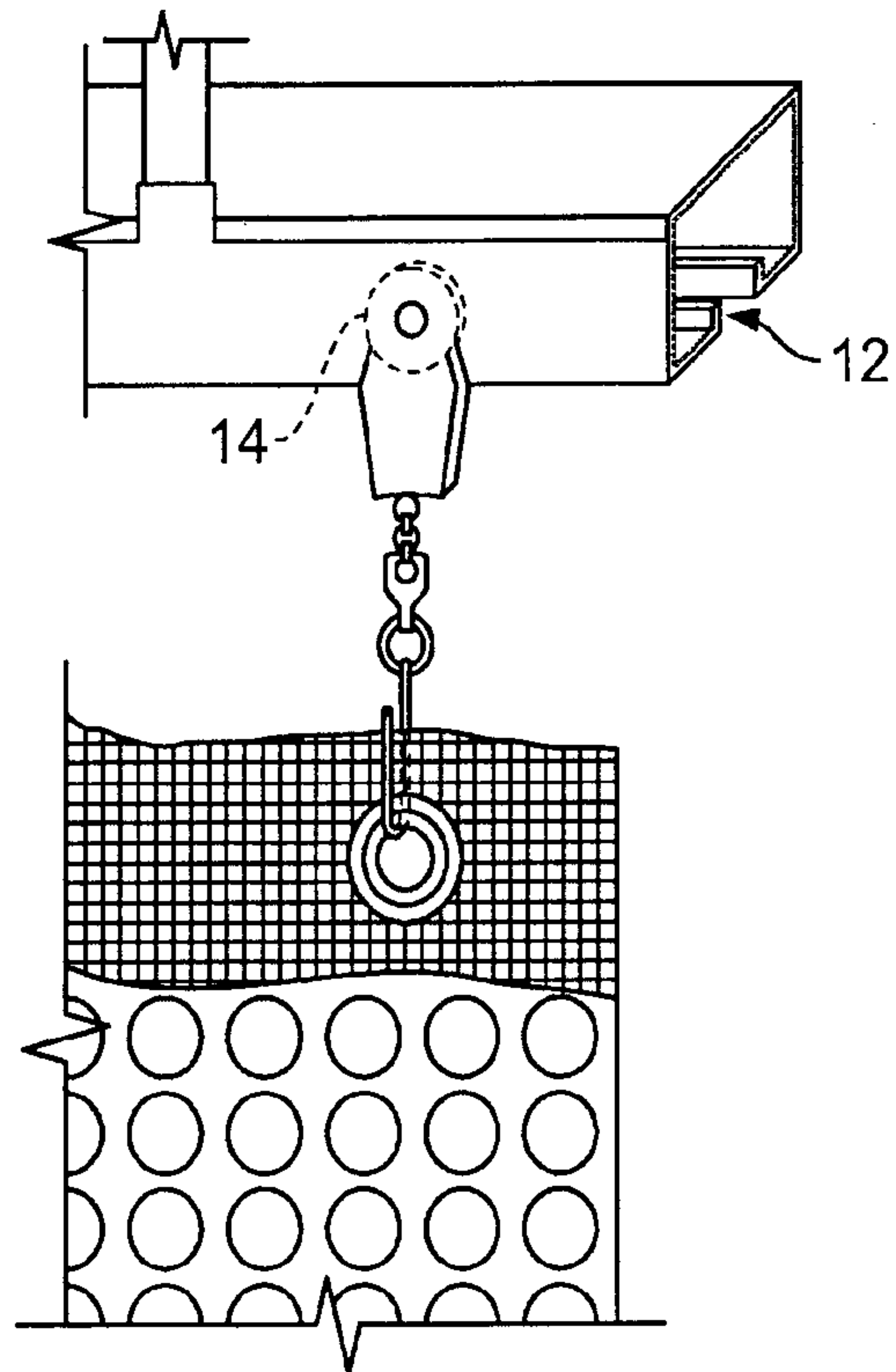


FIG. 1A
(Prior Art)

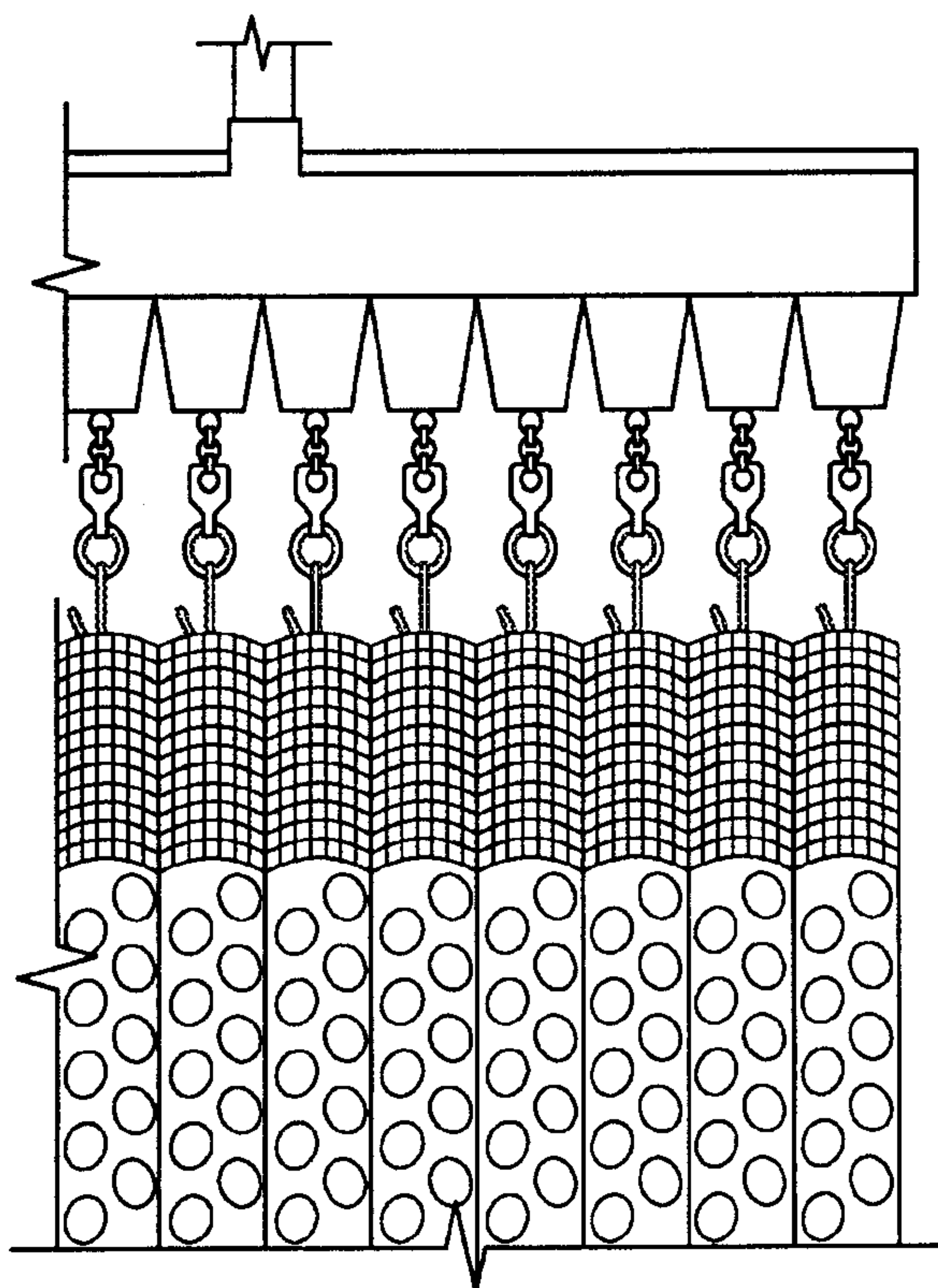


FIG. 1B
(Prior Art)

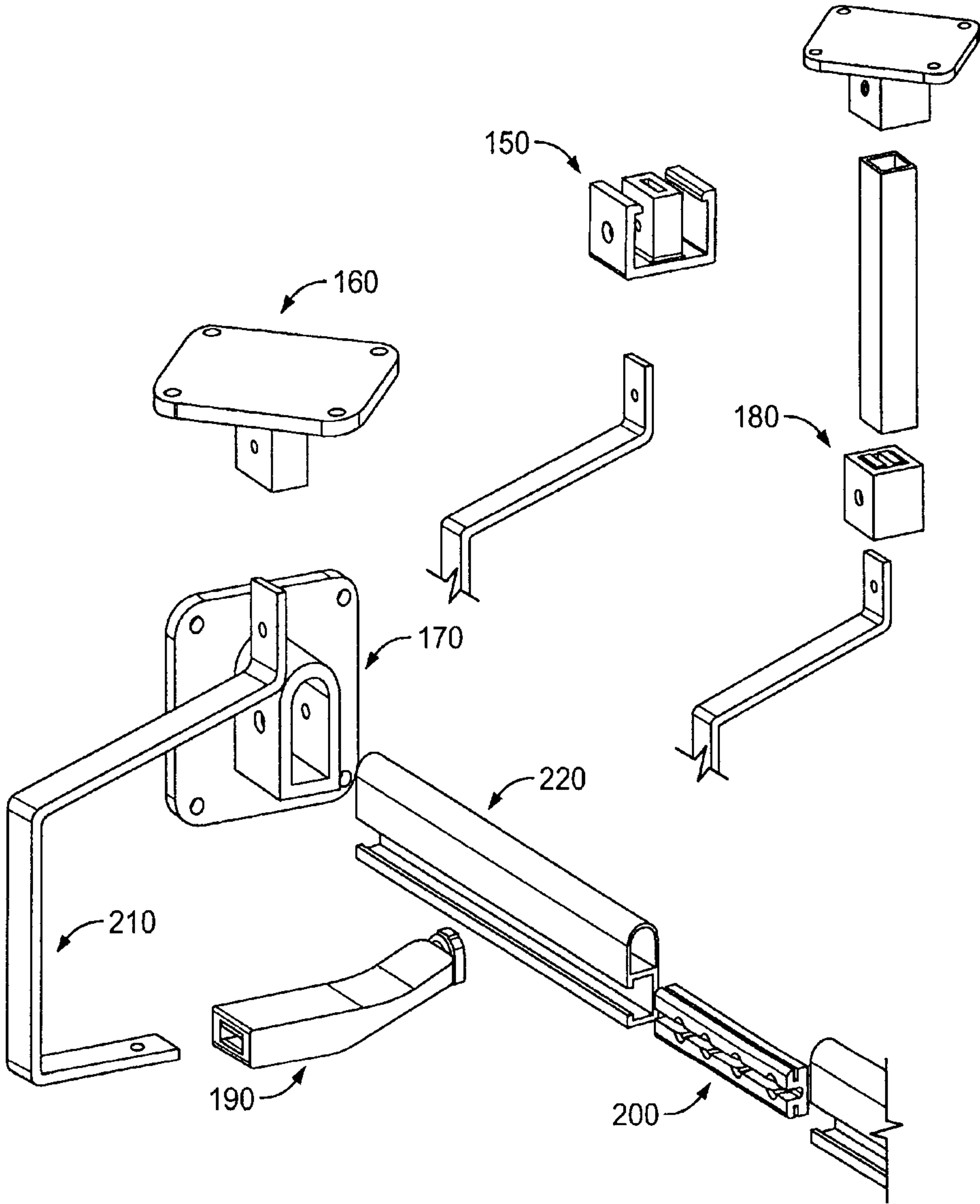


FIG. 2

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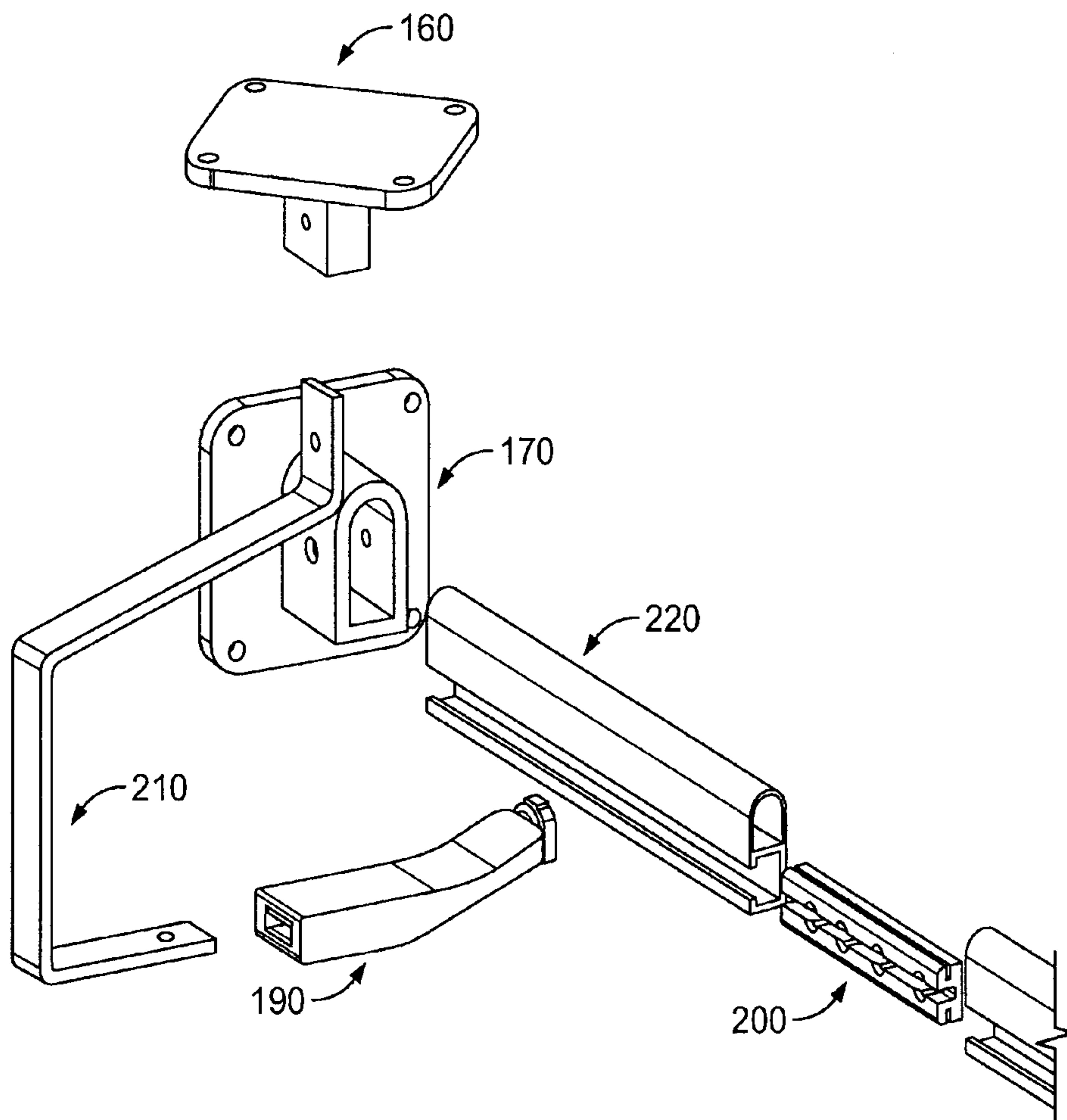


FIG. 3

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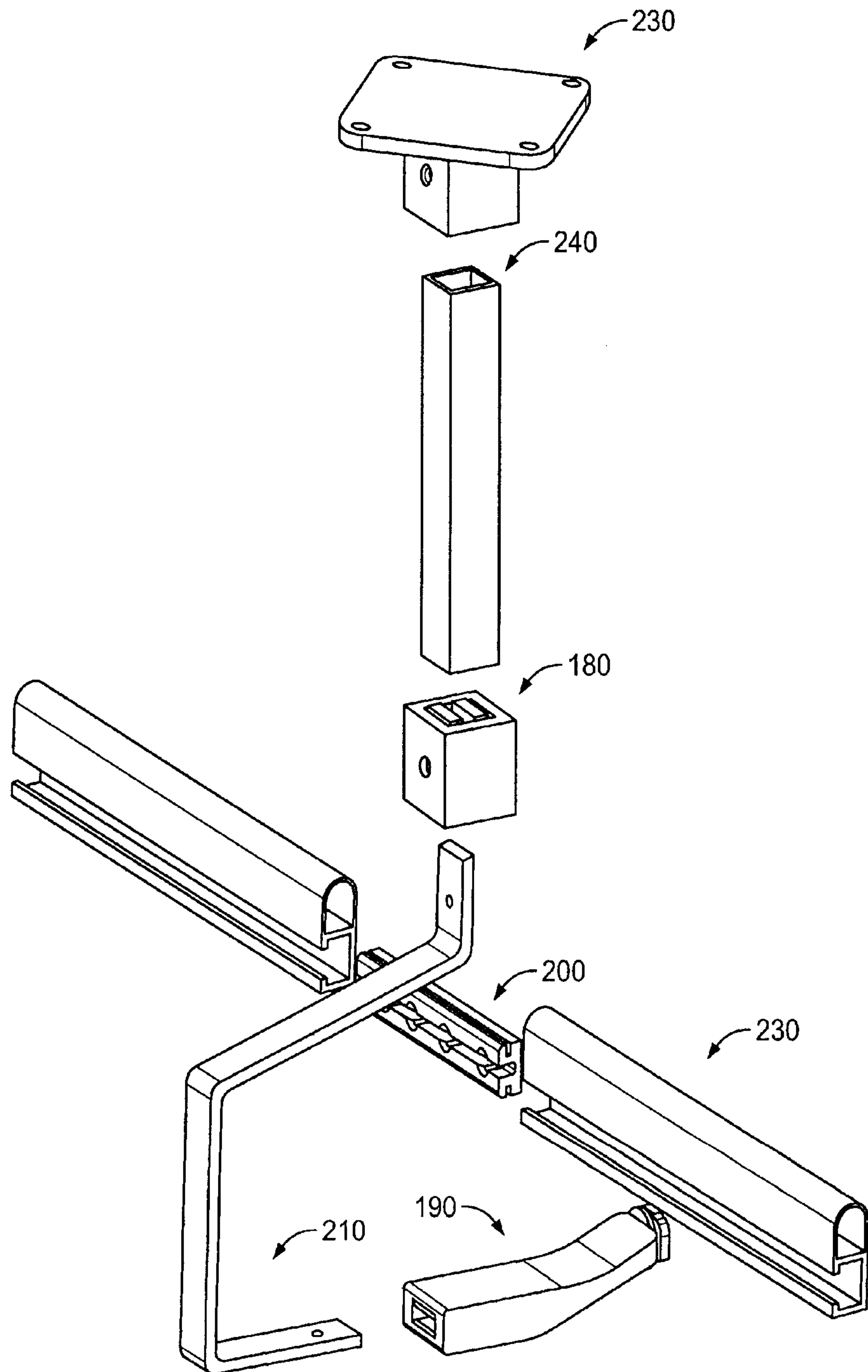


FIG. 4

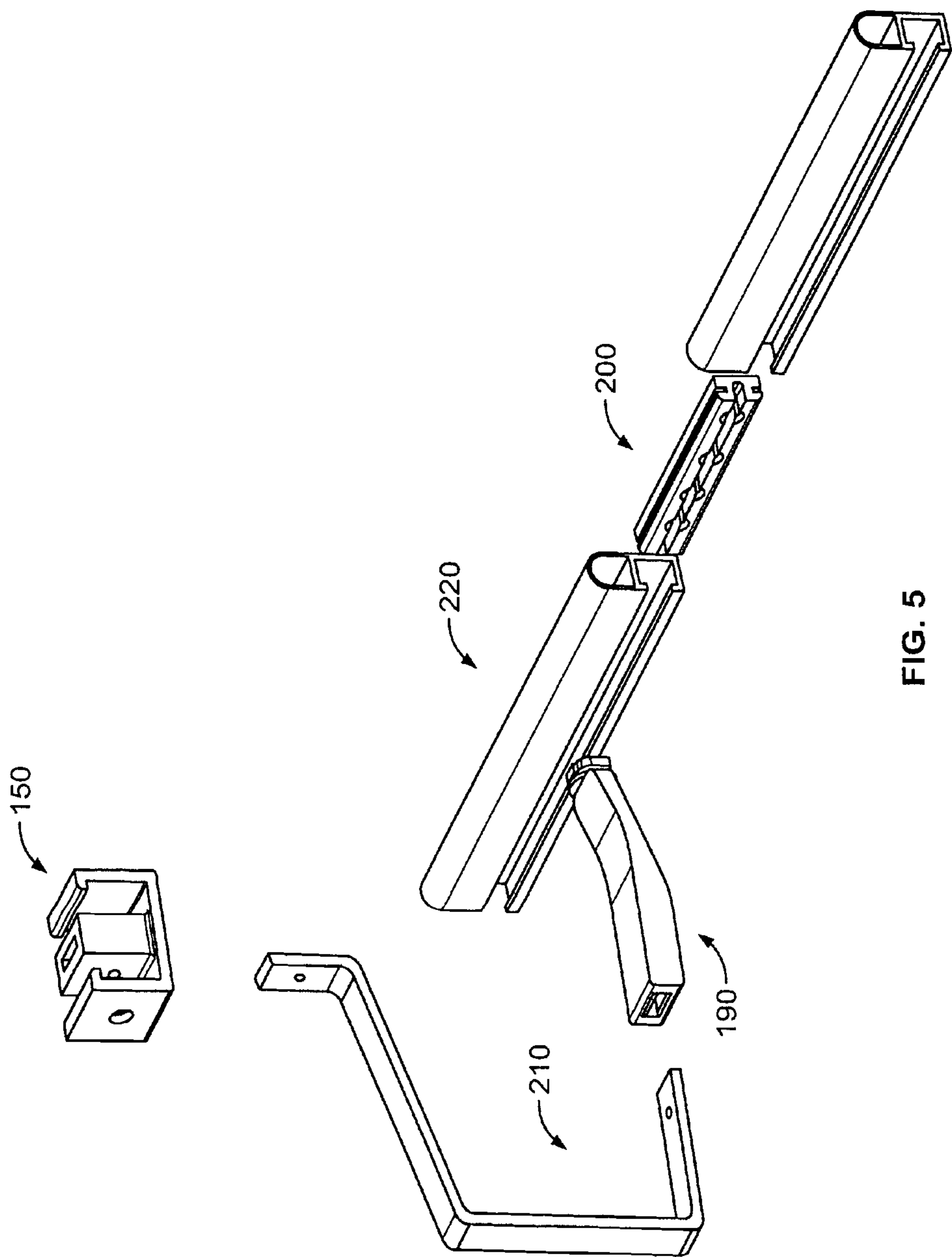


FIG. 5

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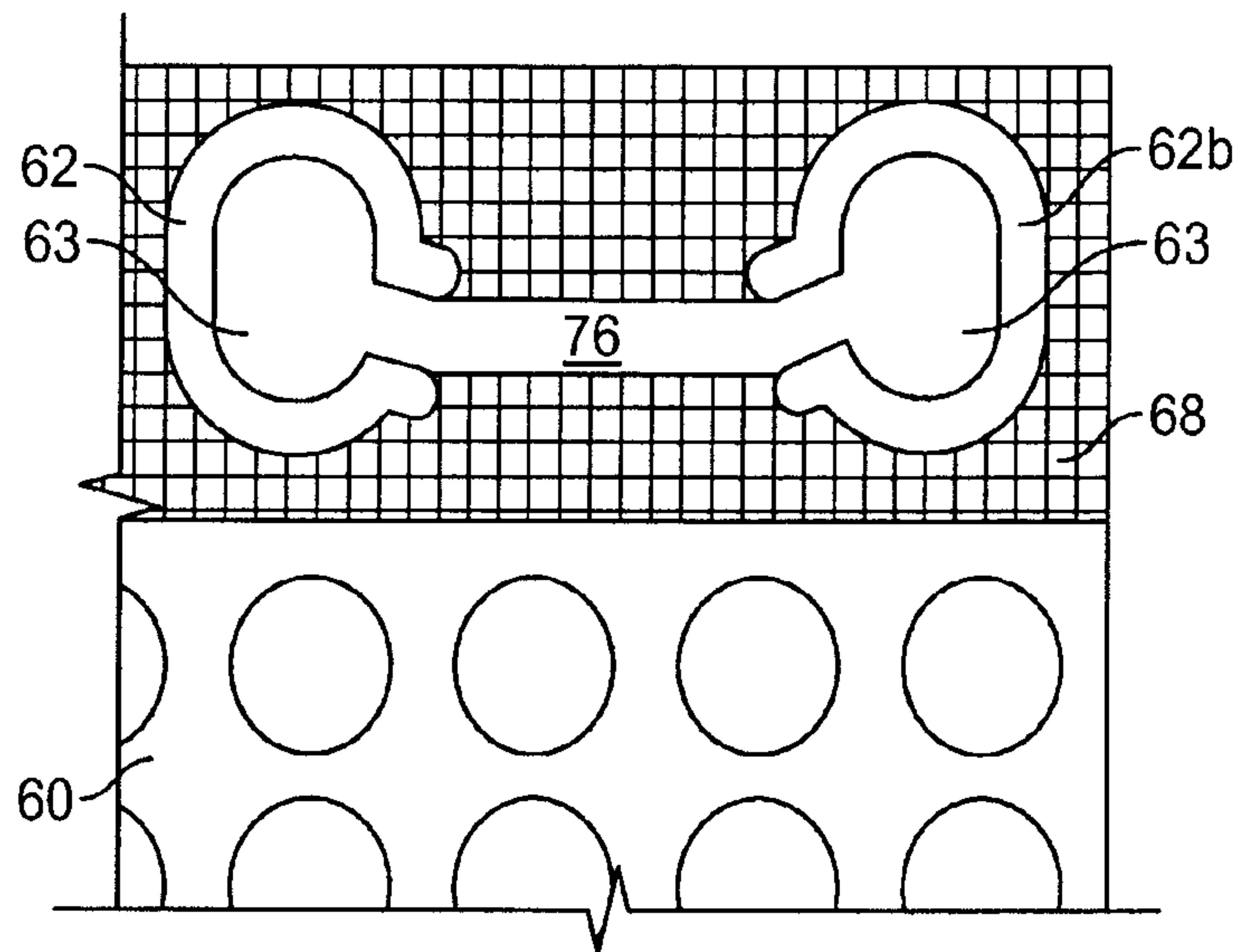


FIG. 6

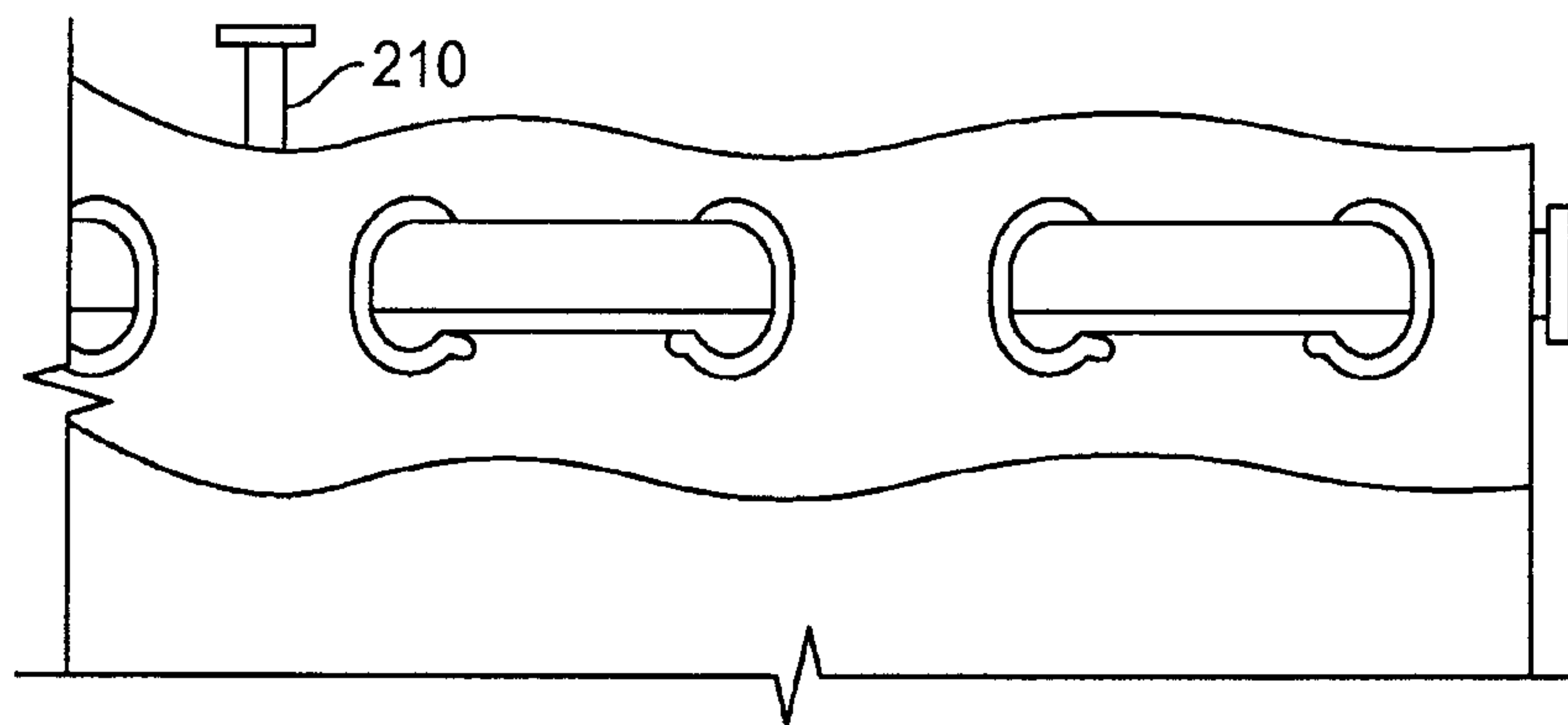


FIG. 7

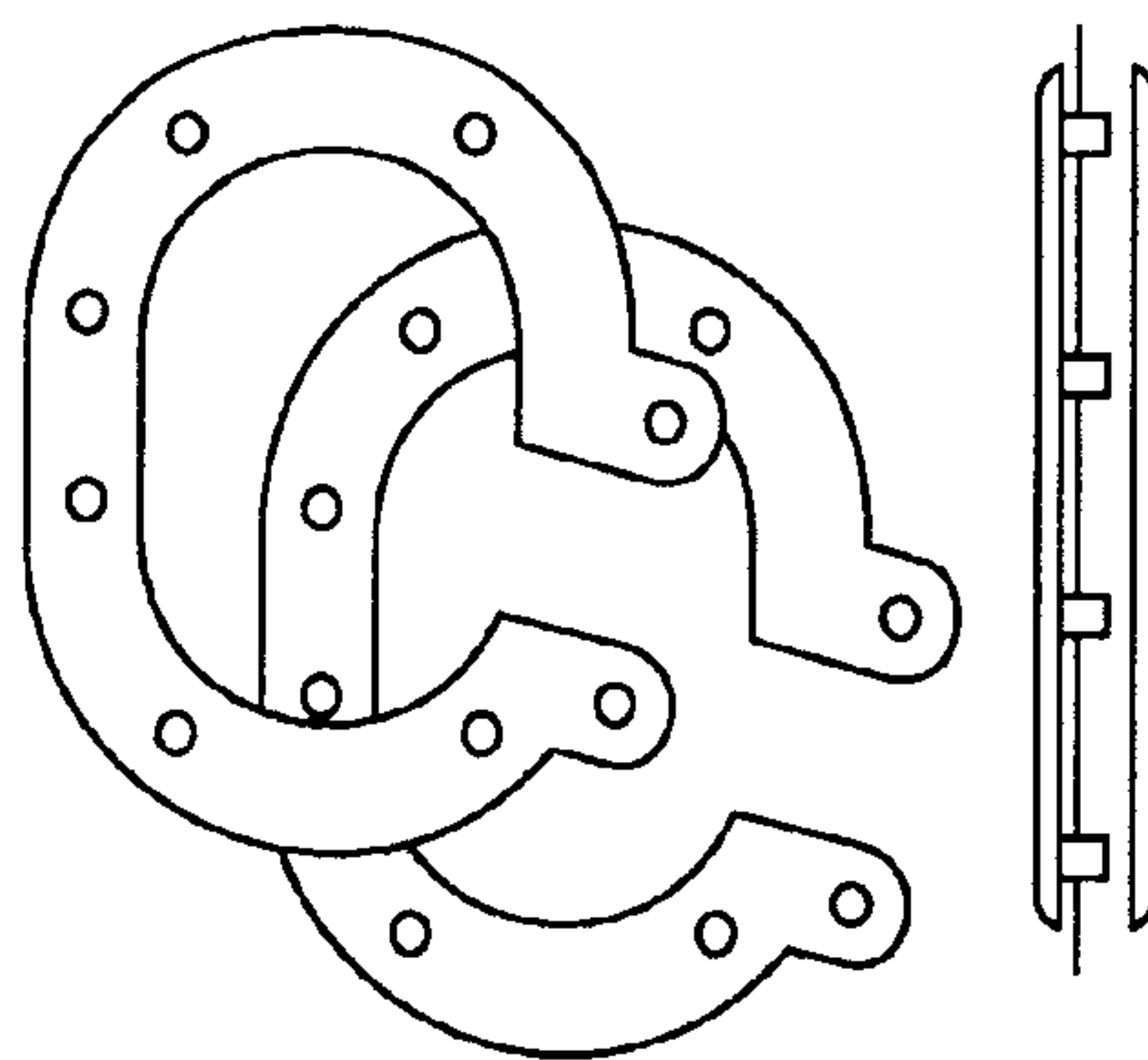


FIG. 8

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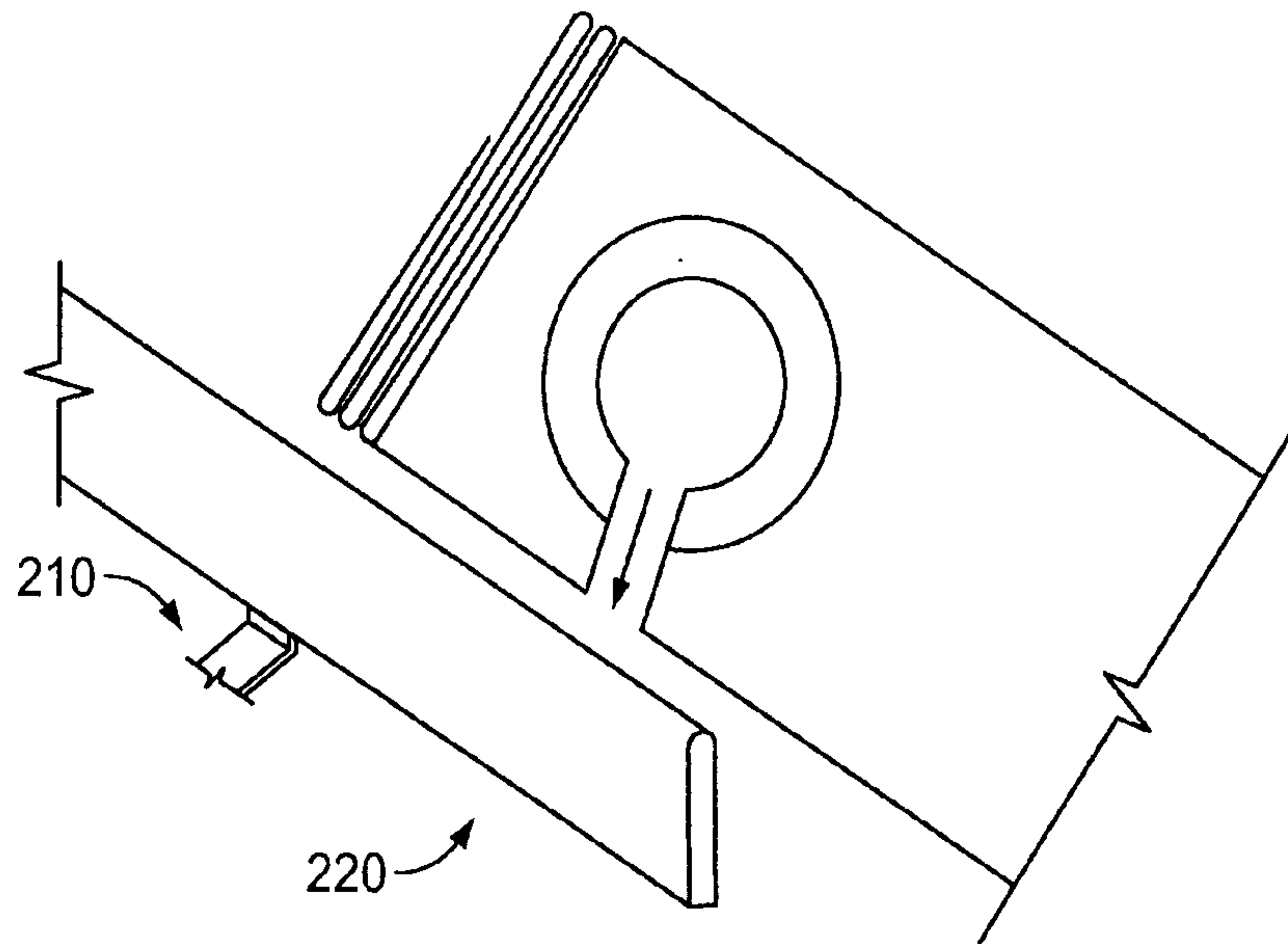


FIG. 9

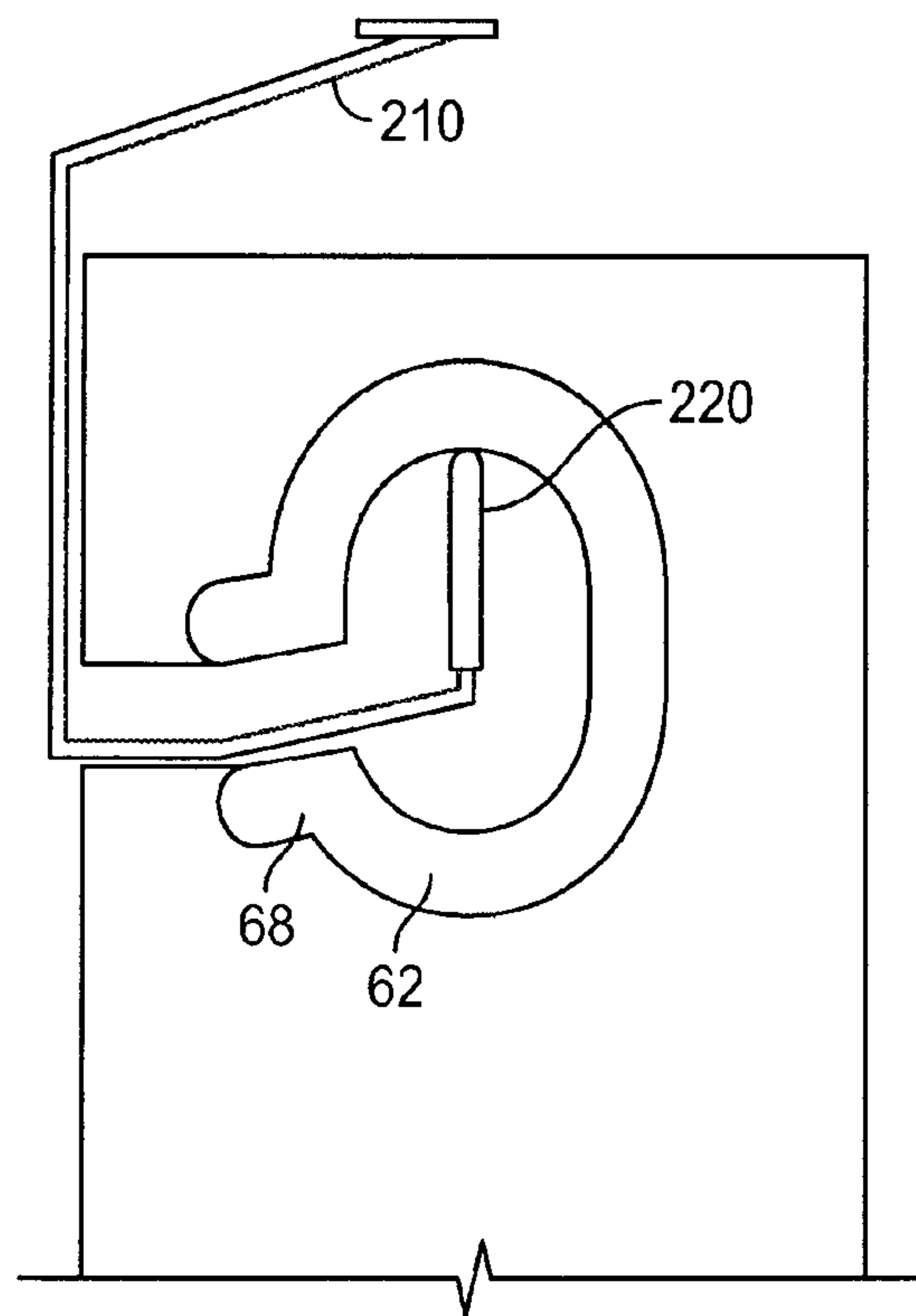


FIG. 10

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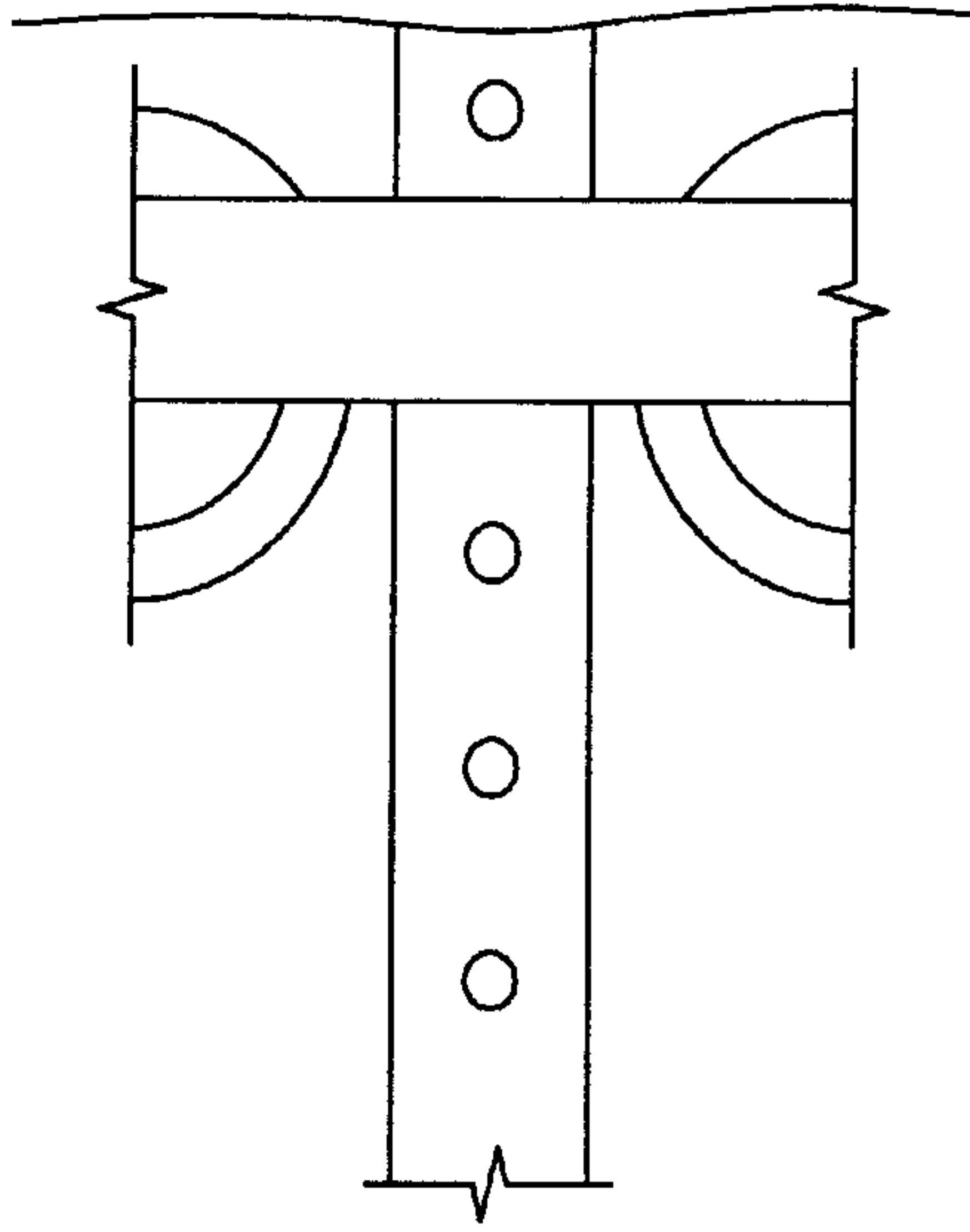


FIG. 11

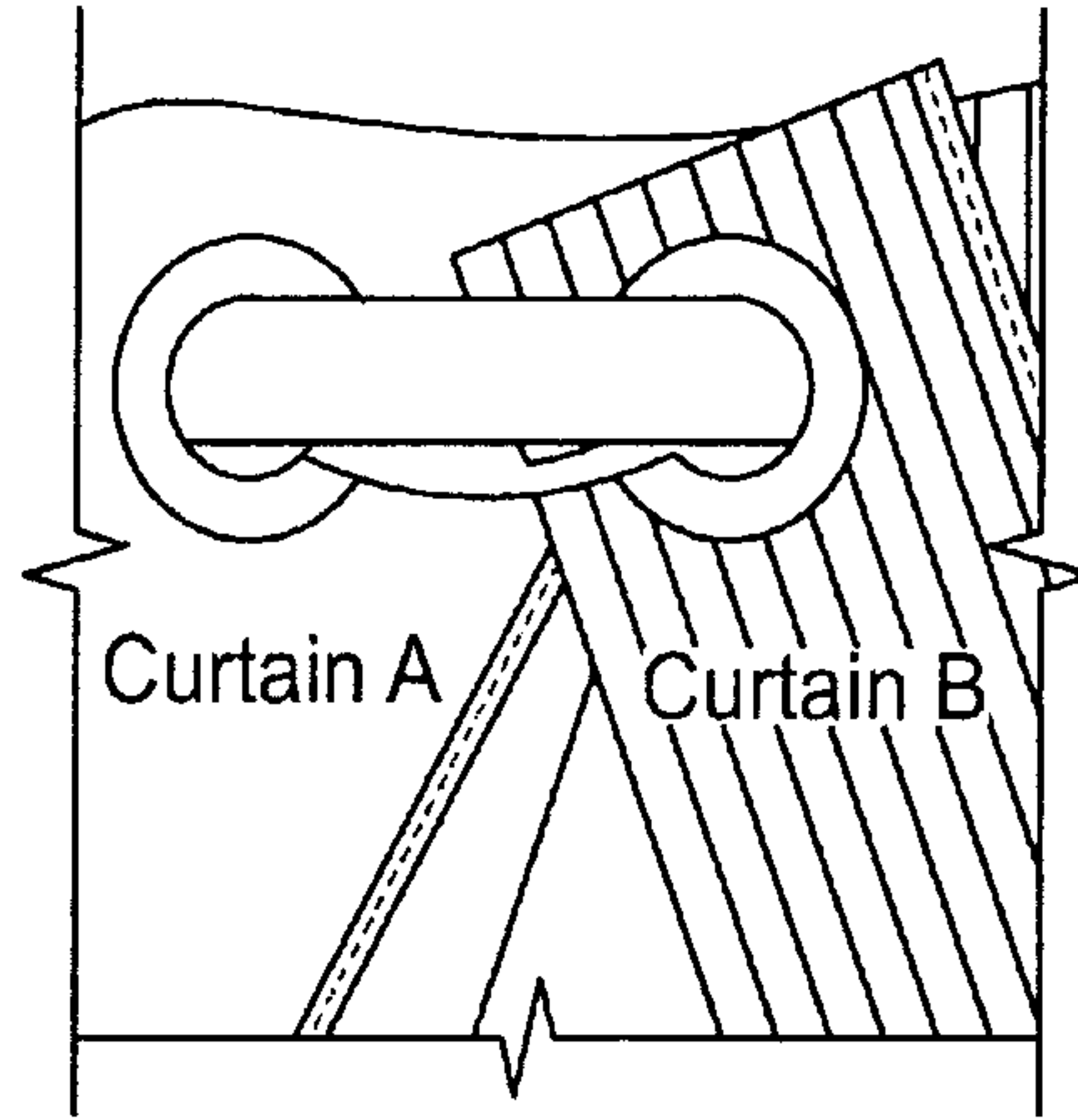


FIG. 12



FIG. 13

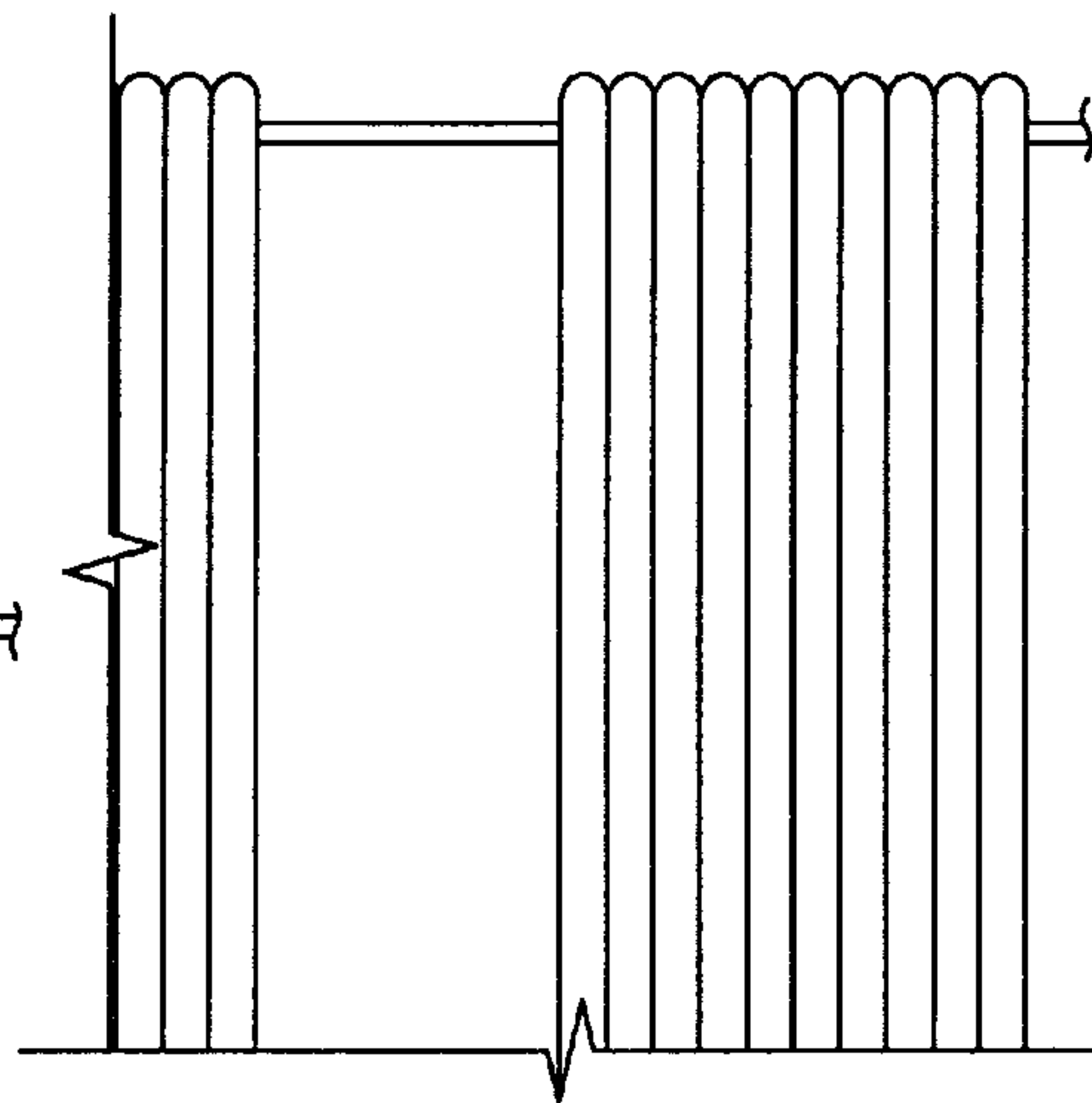


FIG. 14

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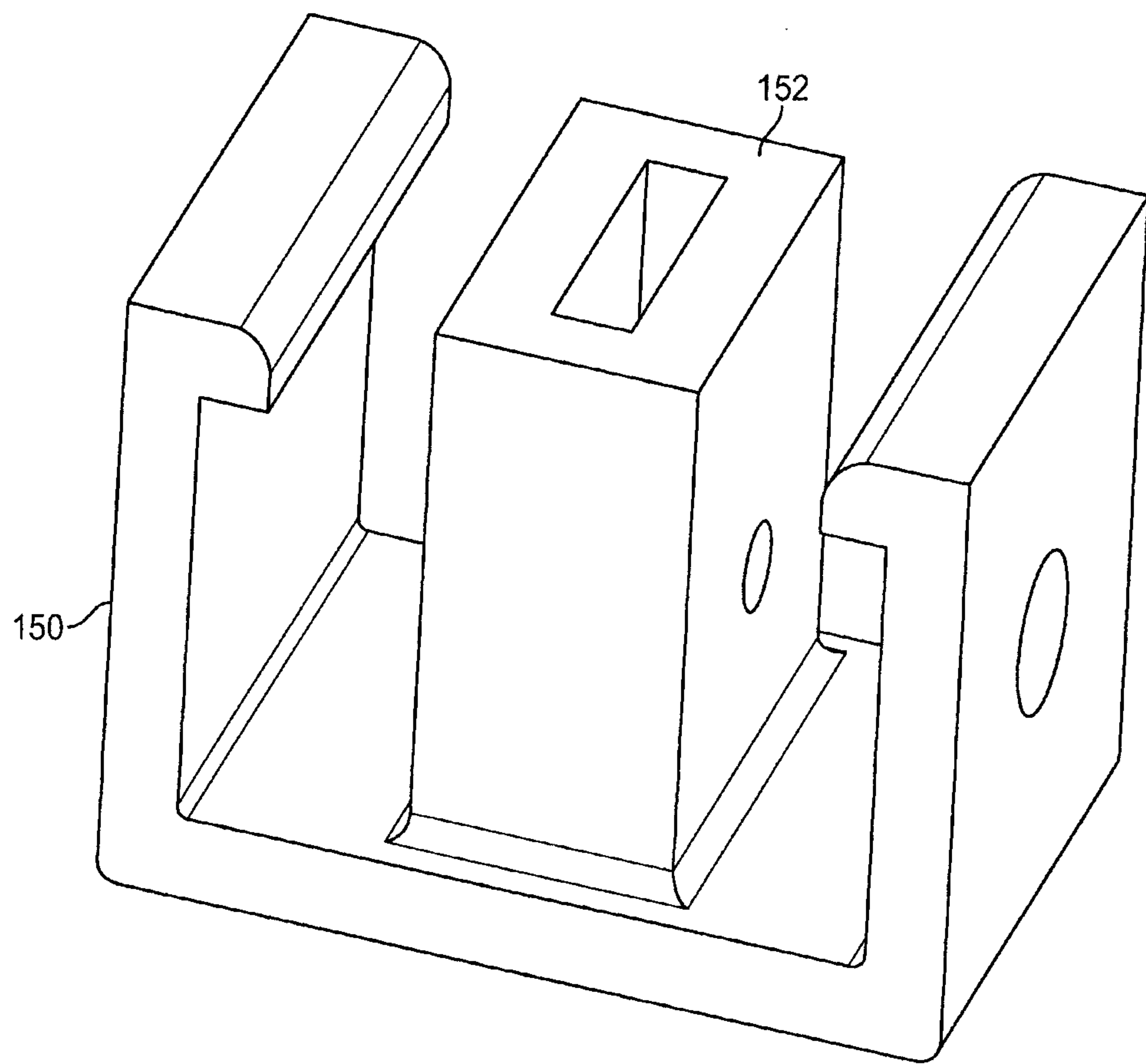


FIG. 15A

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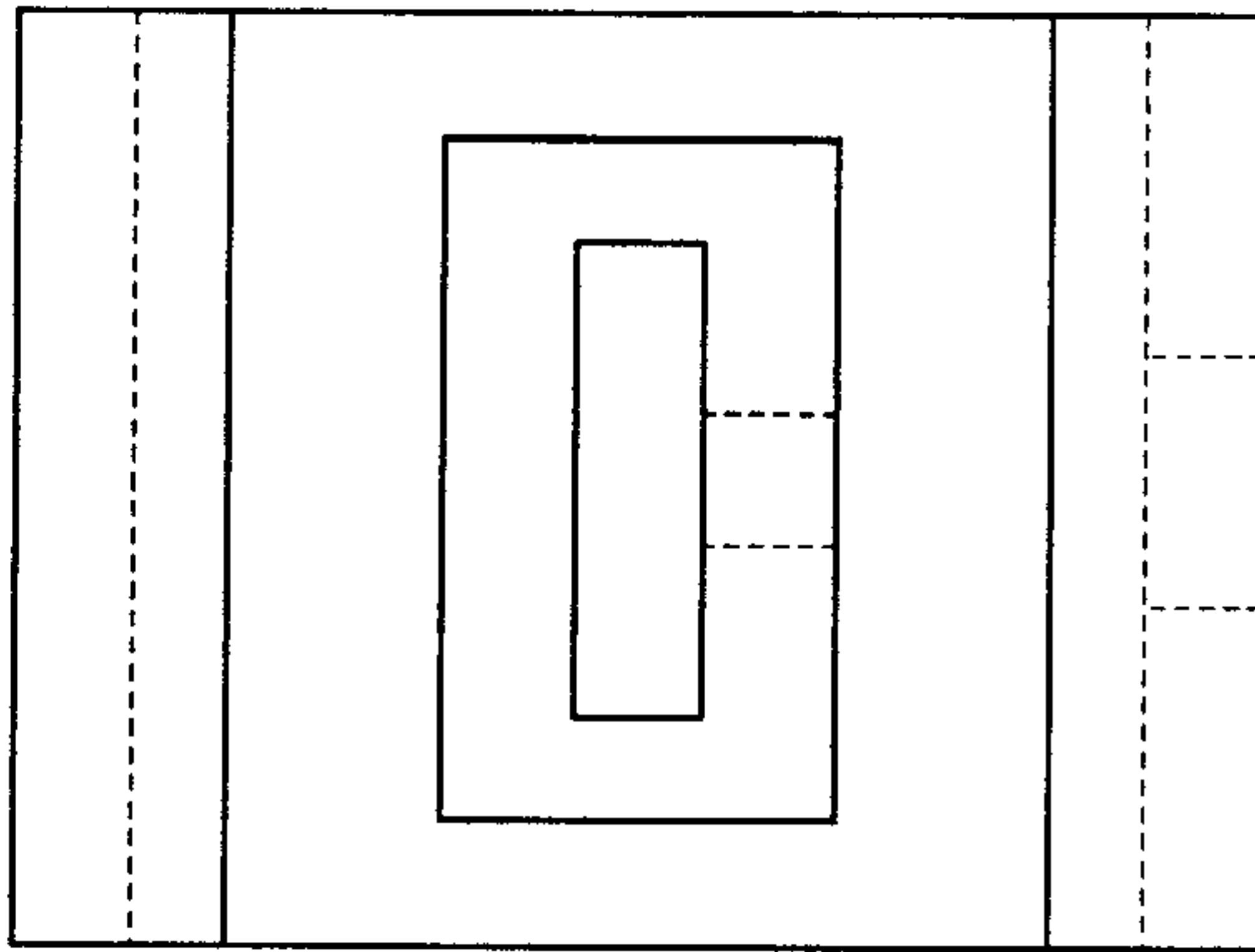


FIG. 15B-1

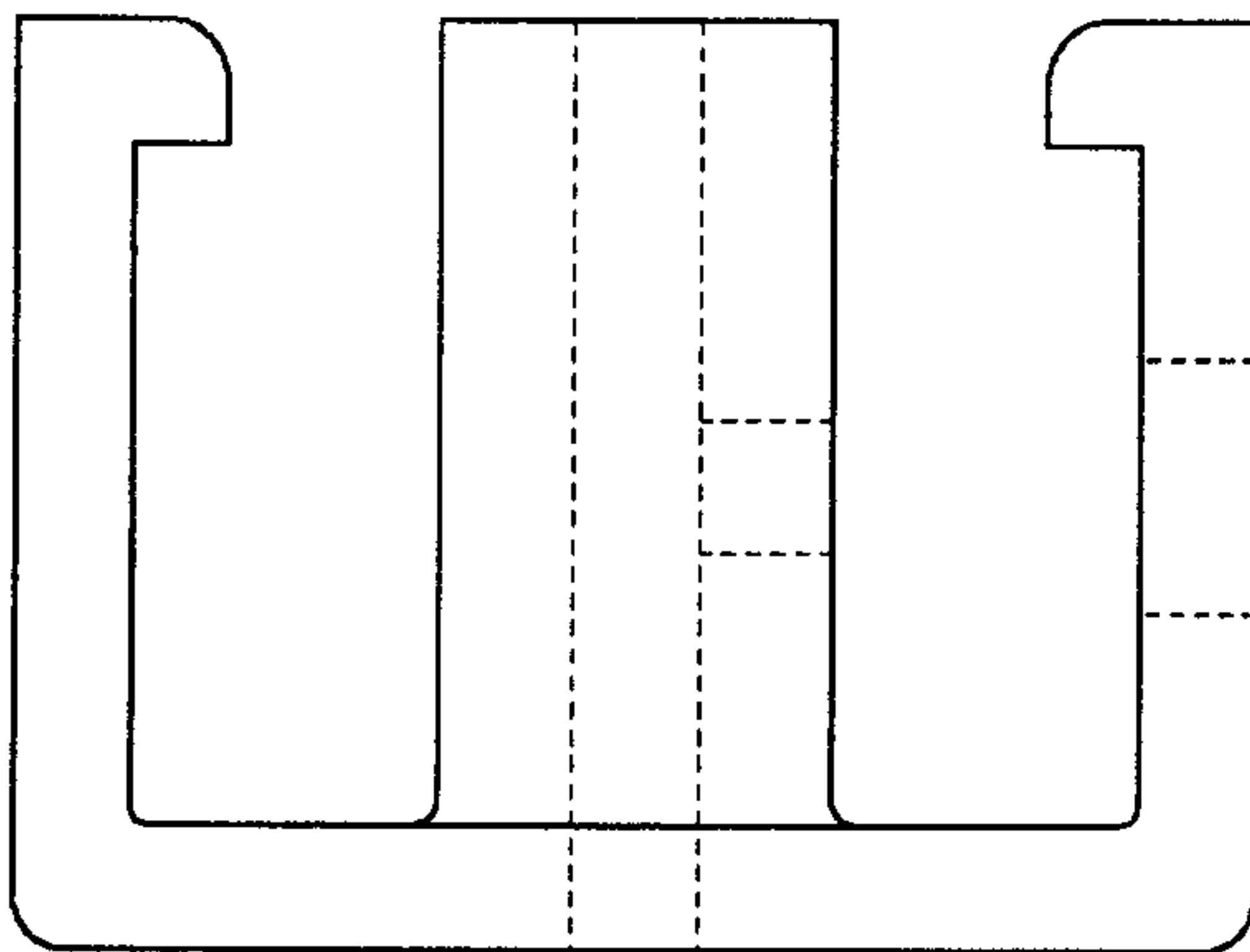


FIG. 15B-2

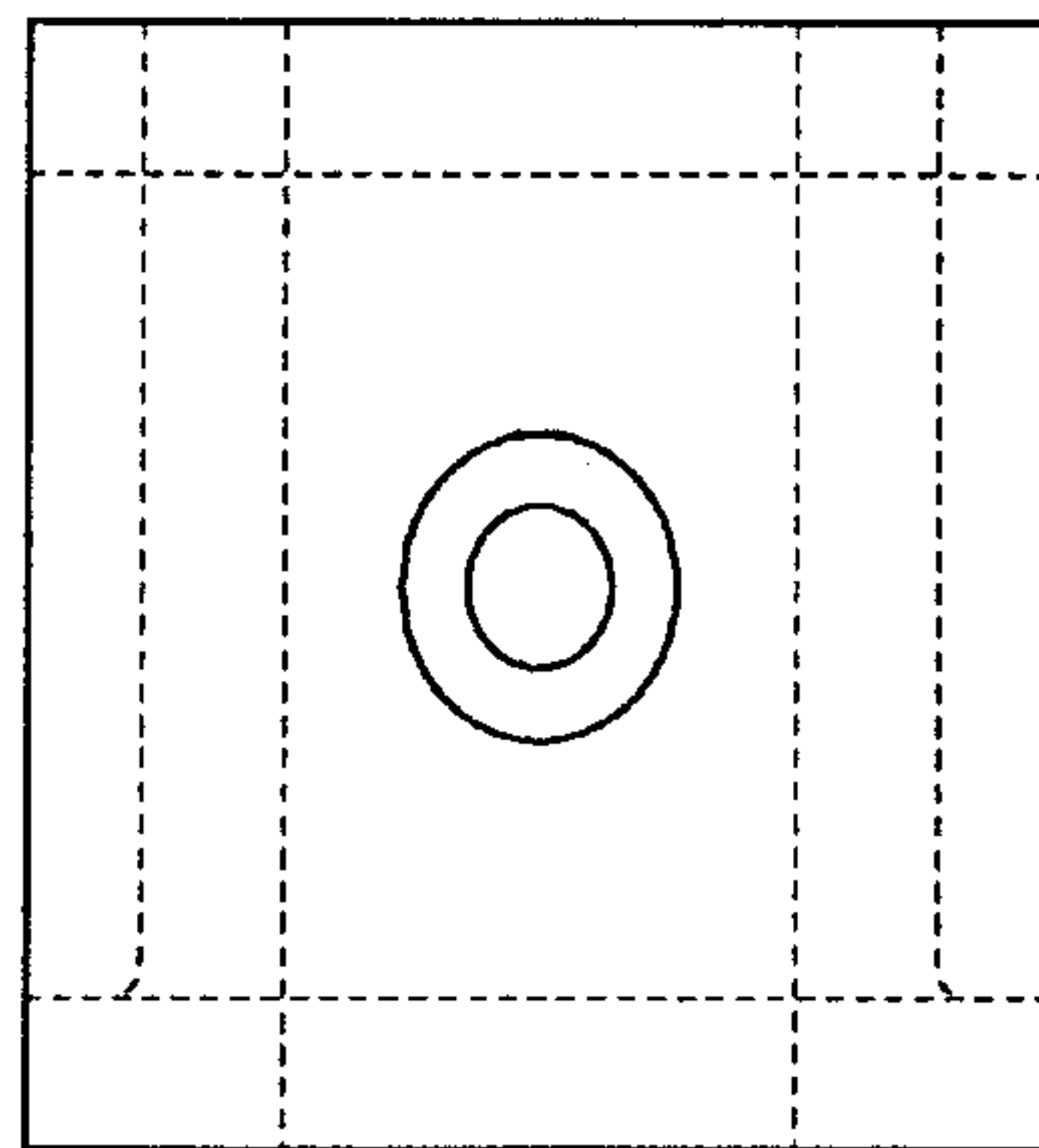


FIG. 15B-3

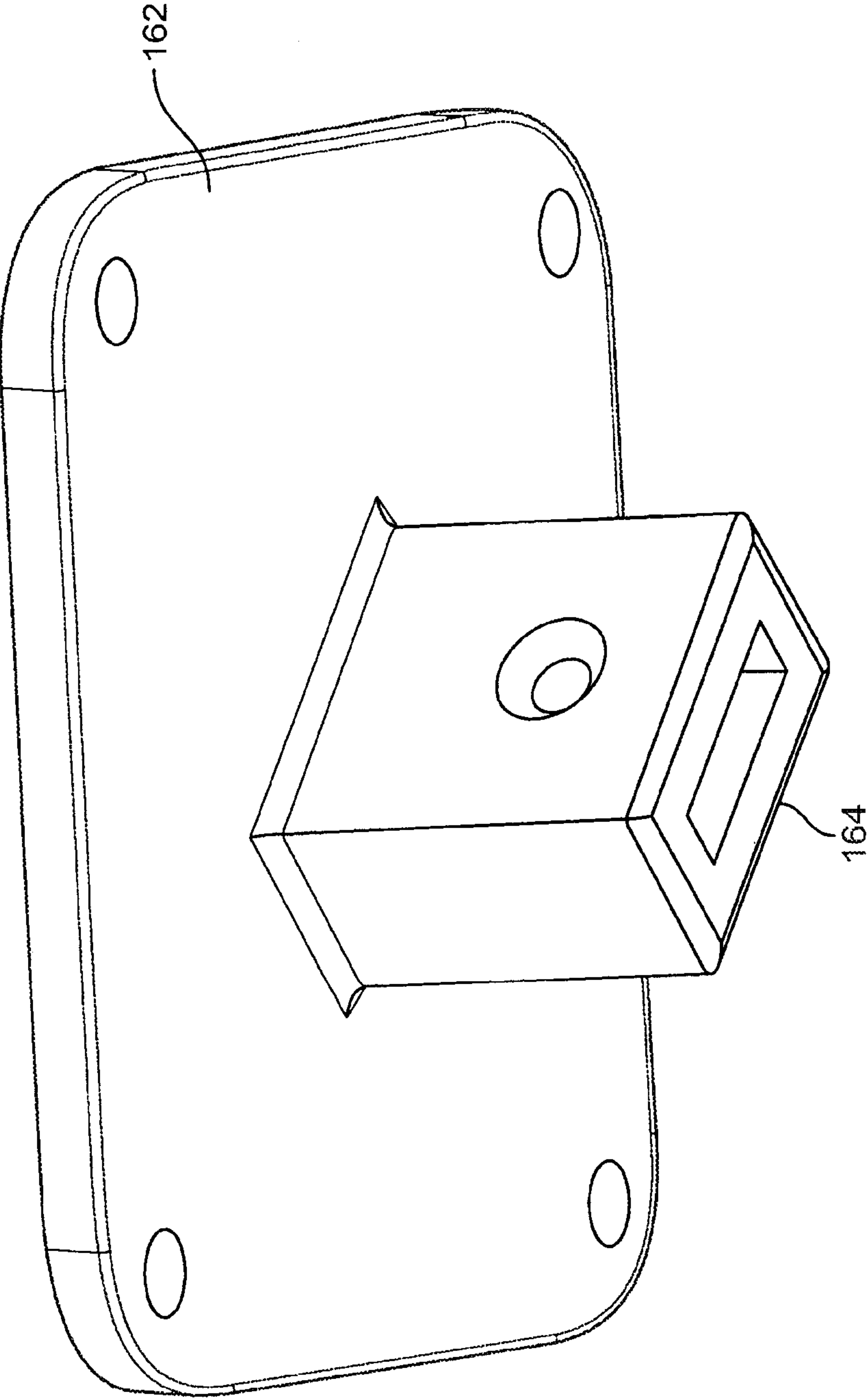


FIG. 16A

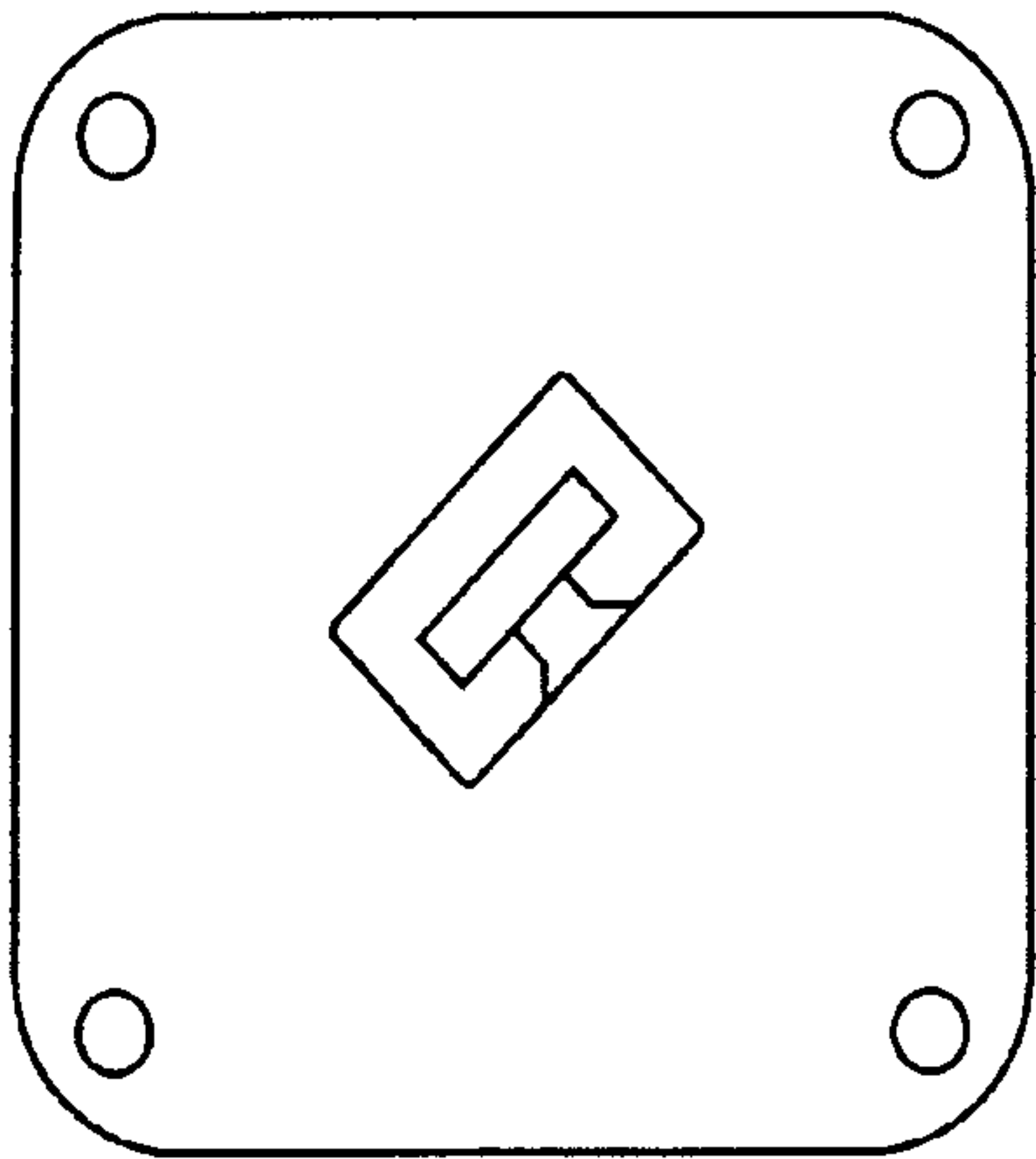


FIG. 16B-1

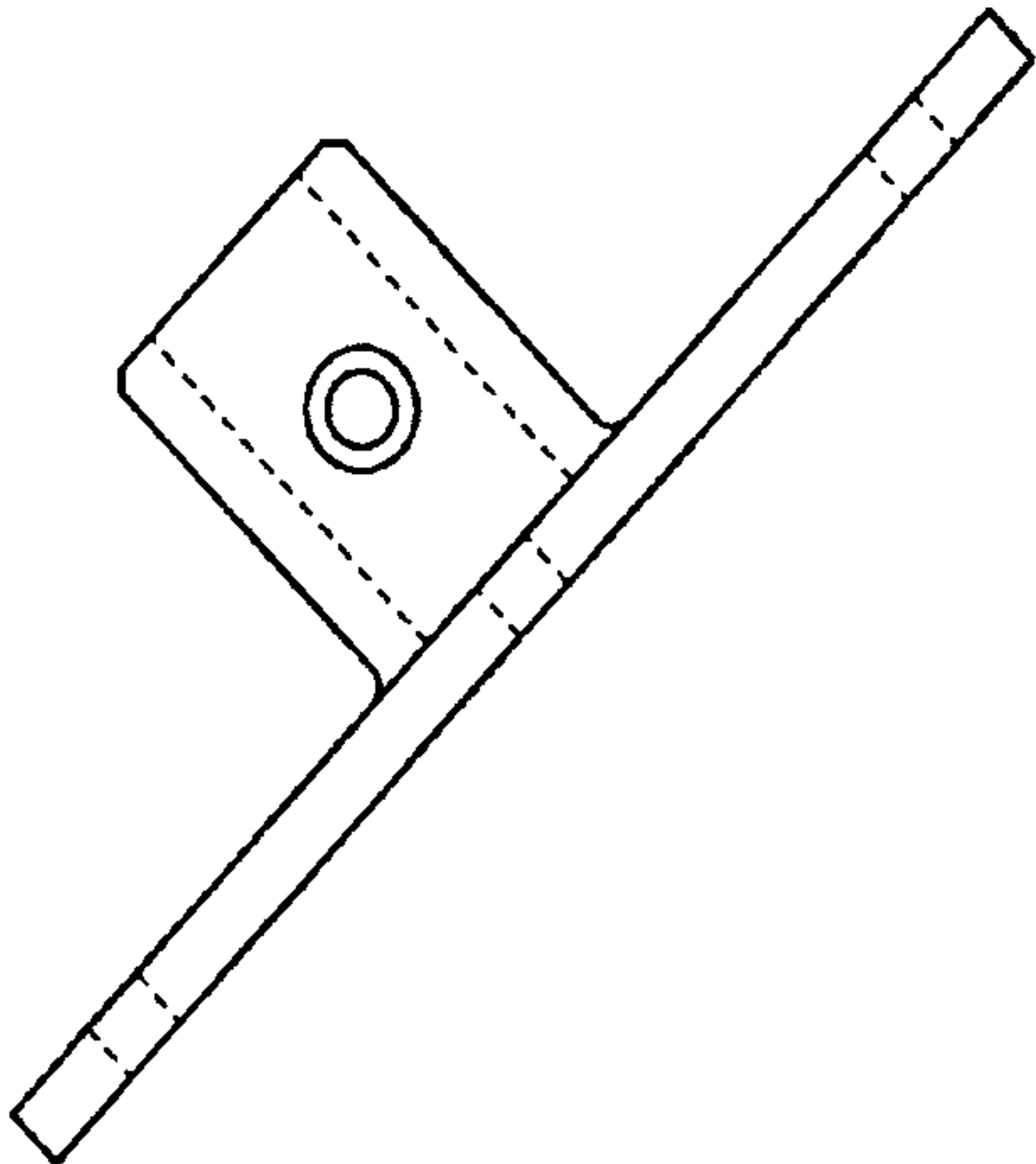


FIG. 16B-3

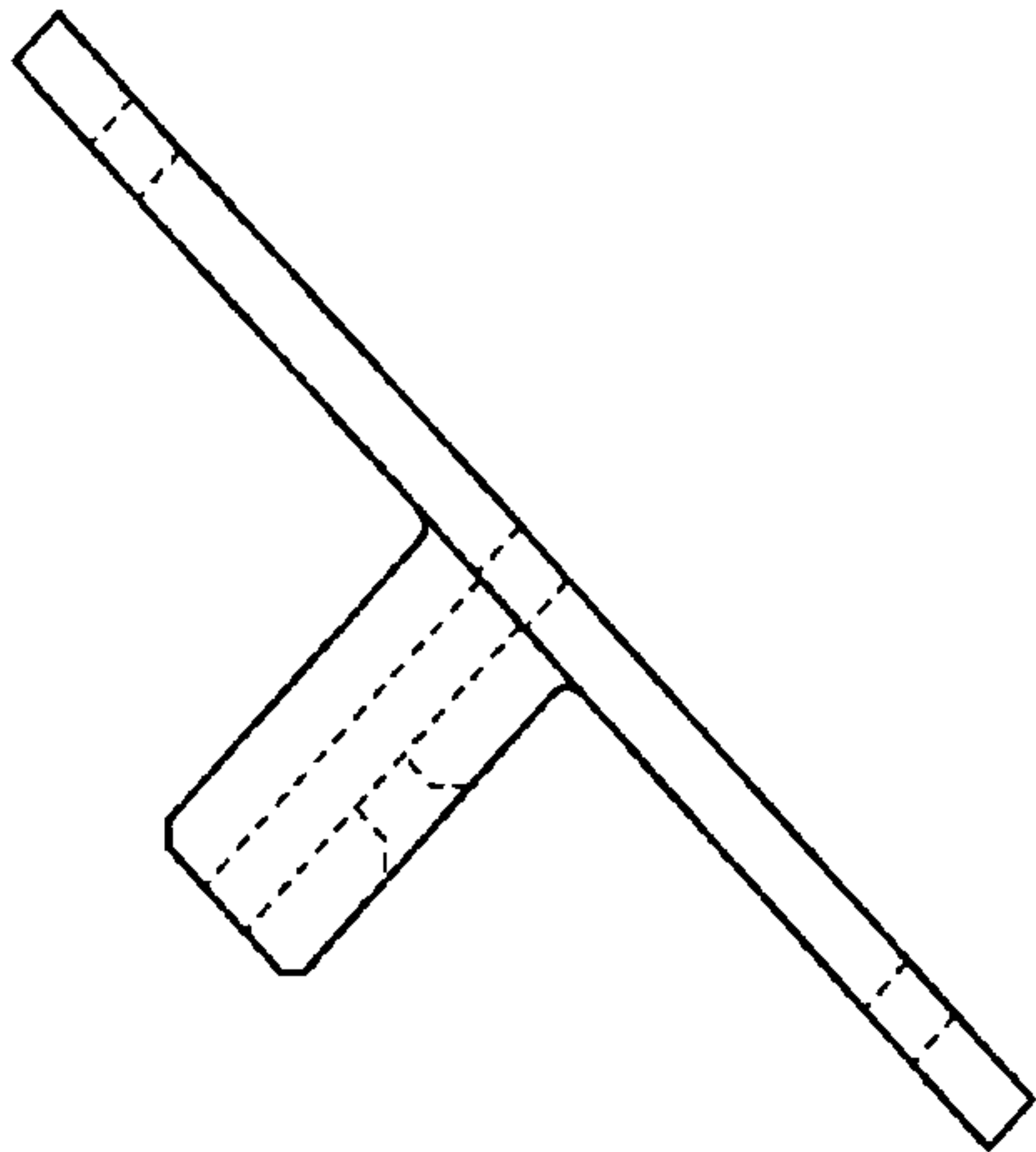


FIG. 16B-2

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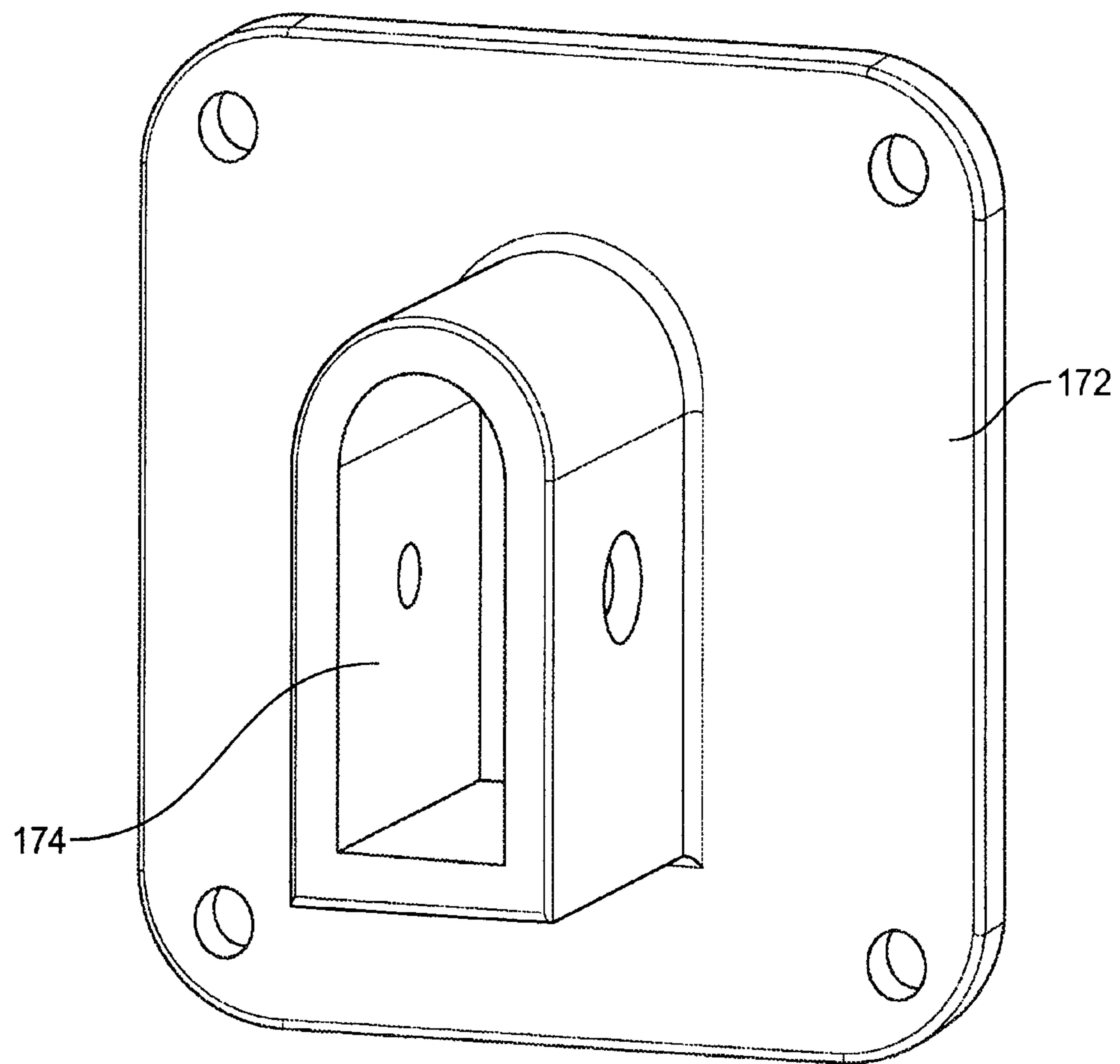


FIG. 17A

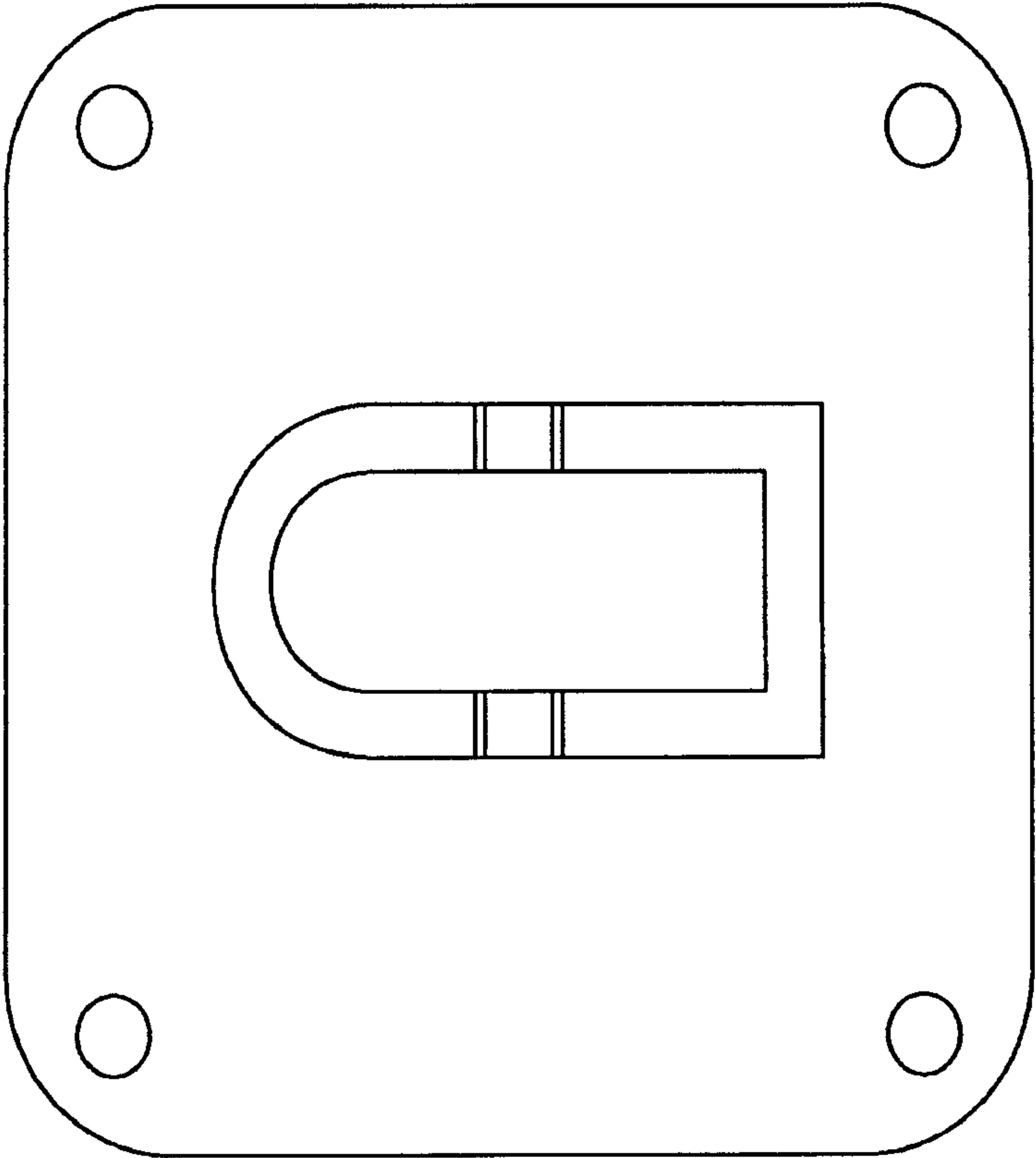


FIG. 17B-2

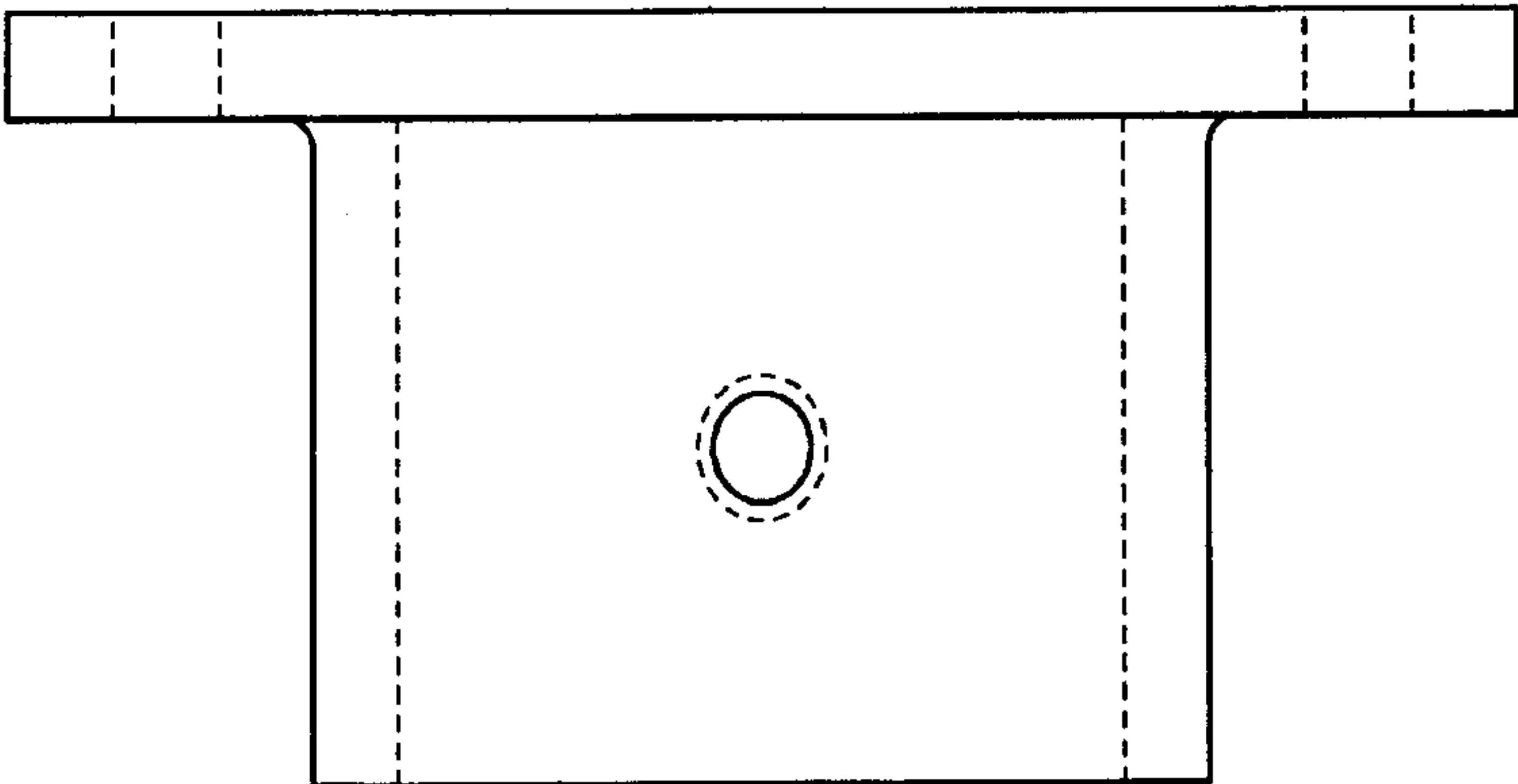


FIG. 17B-1

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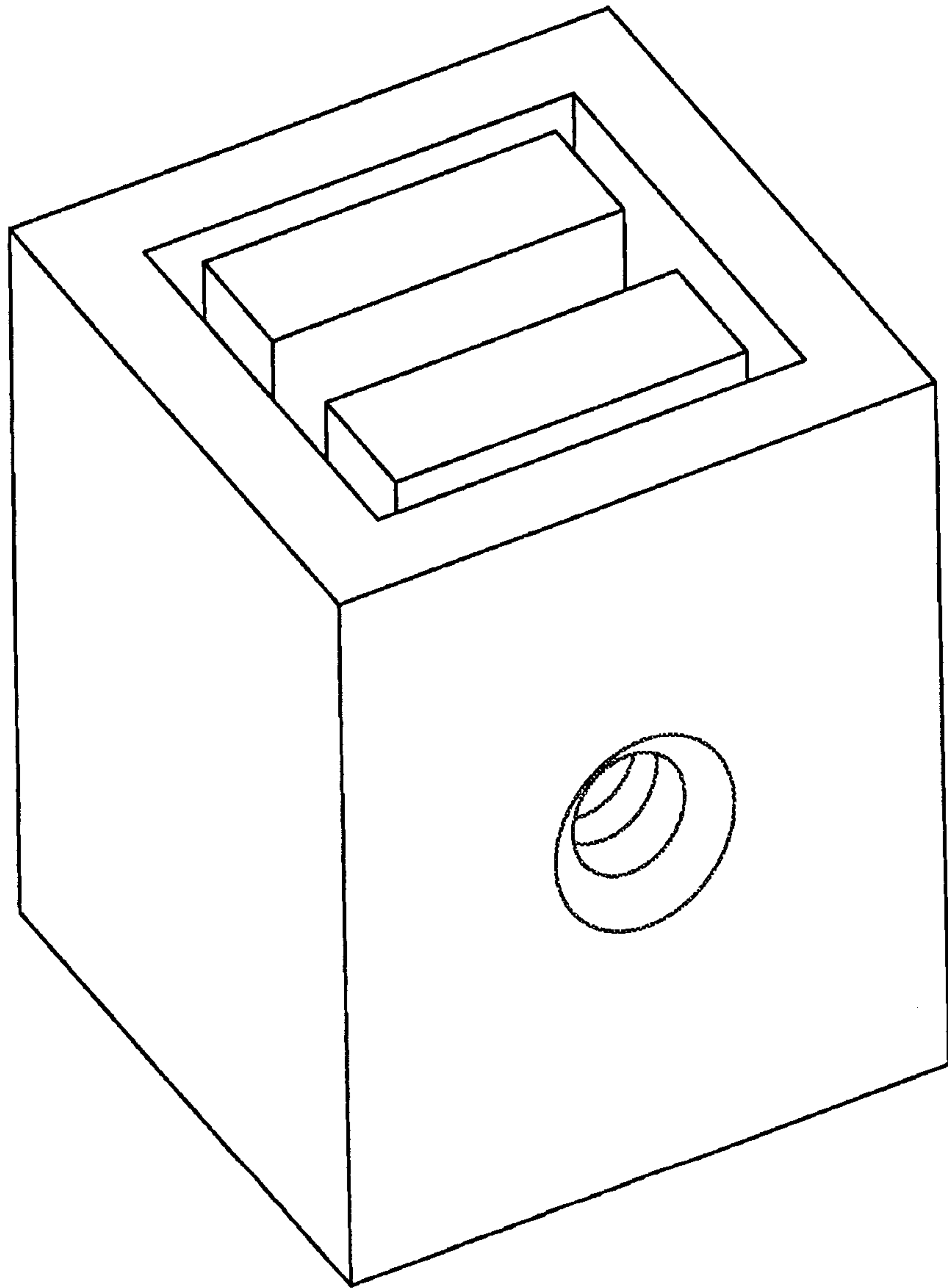


FIG. 18A

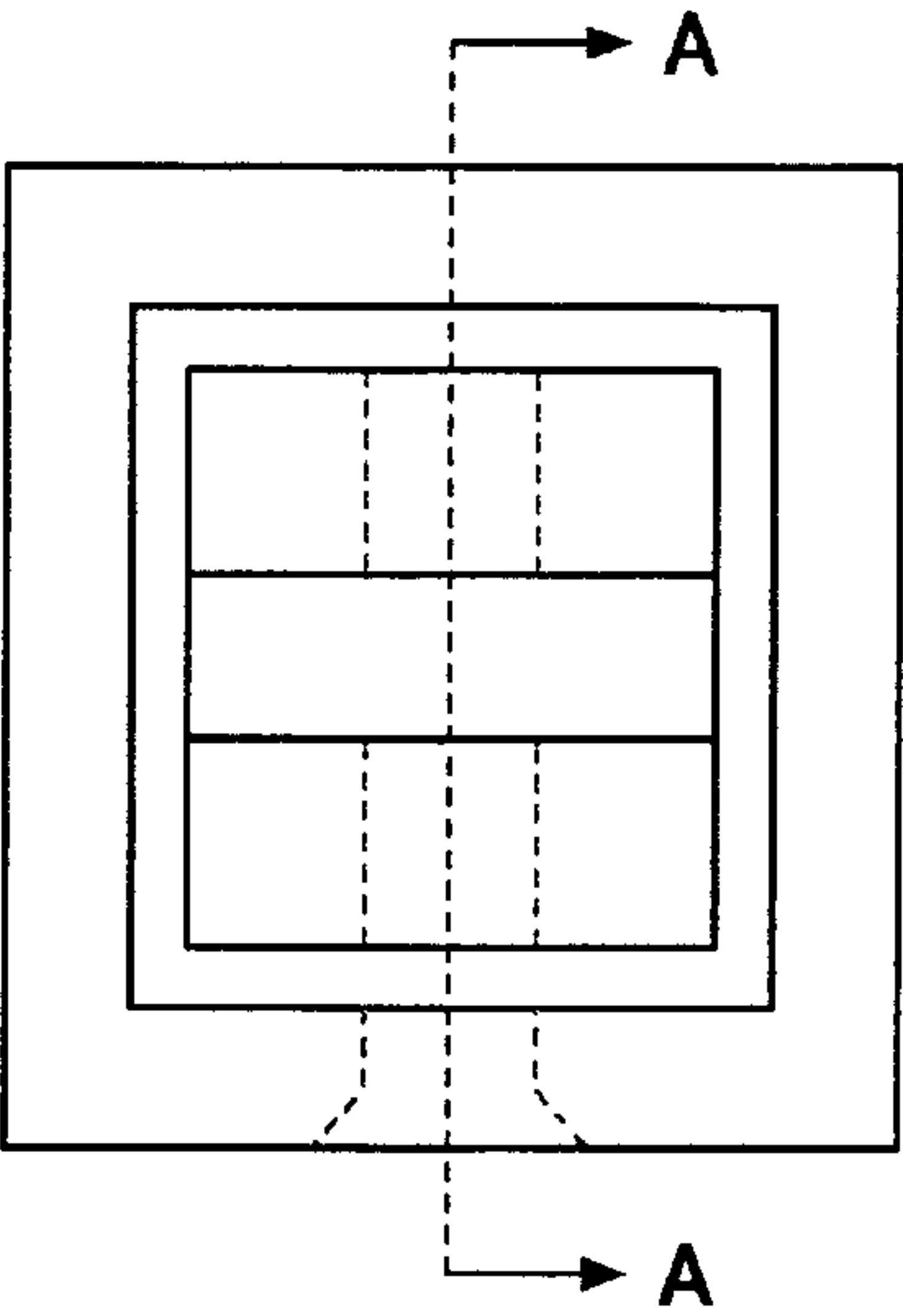


FIG. 18B-1

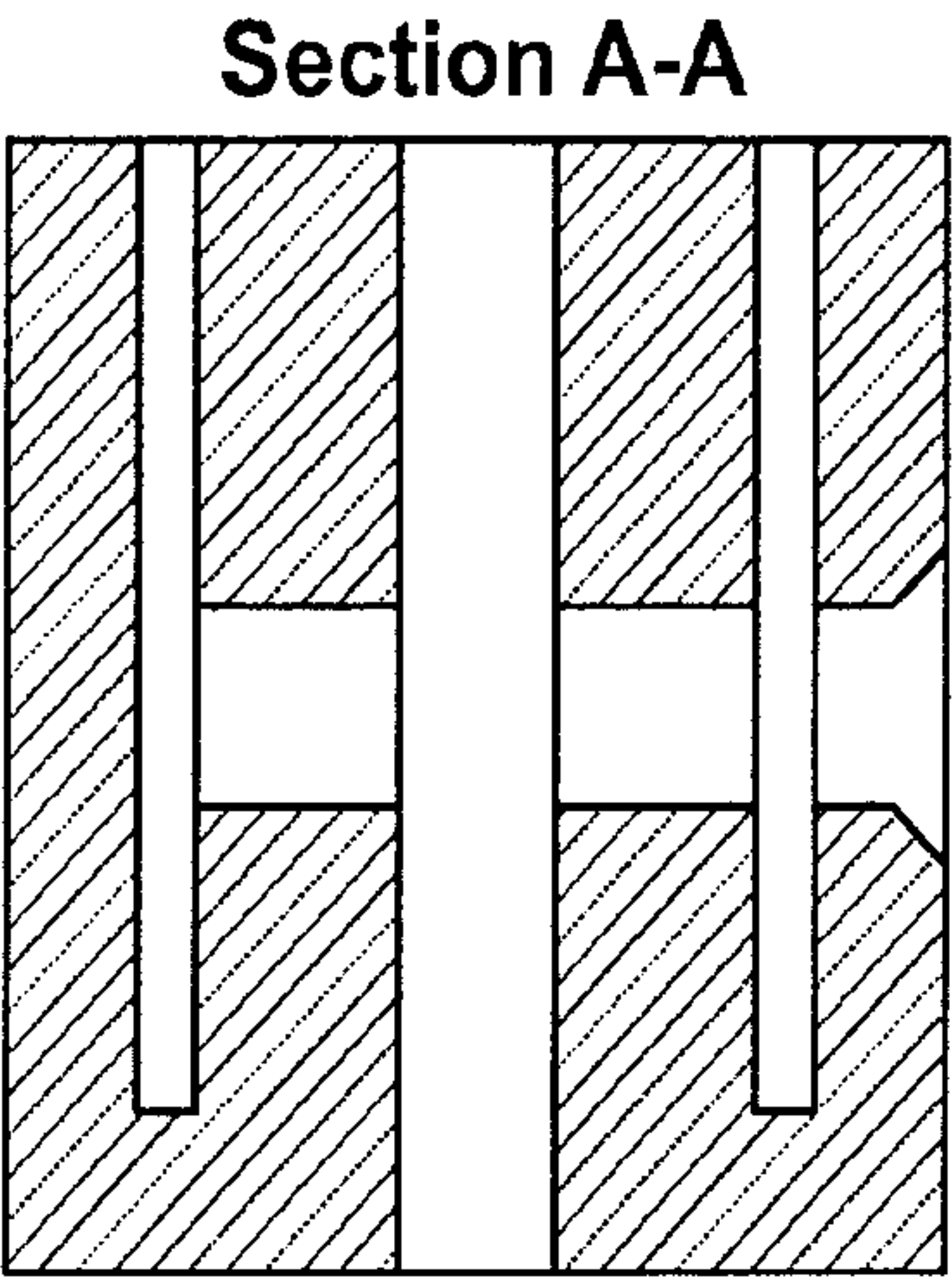


FIG. 18B-2

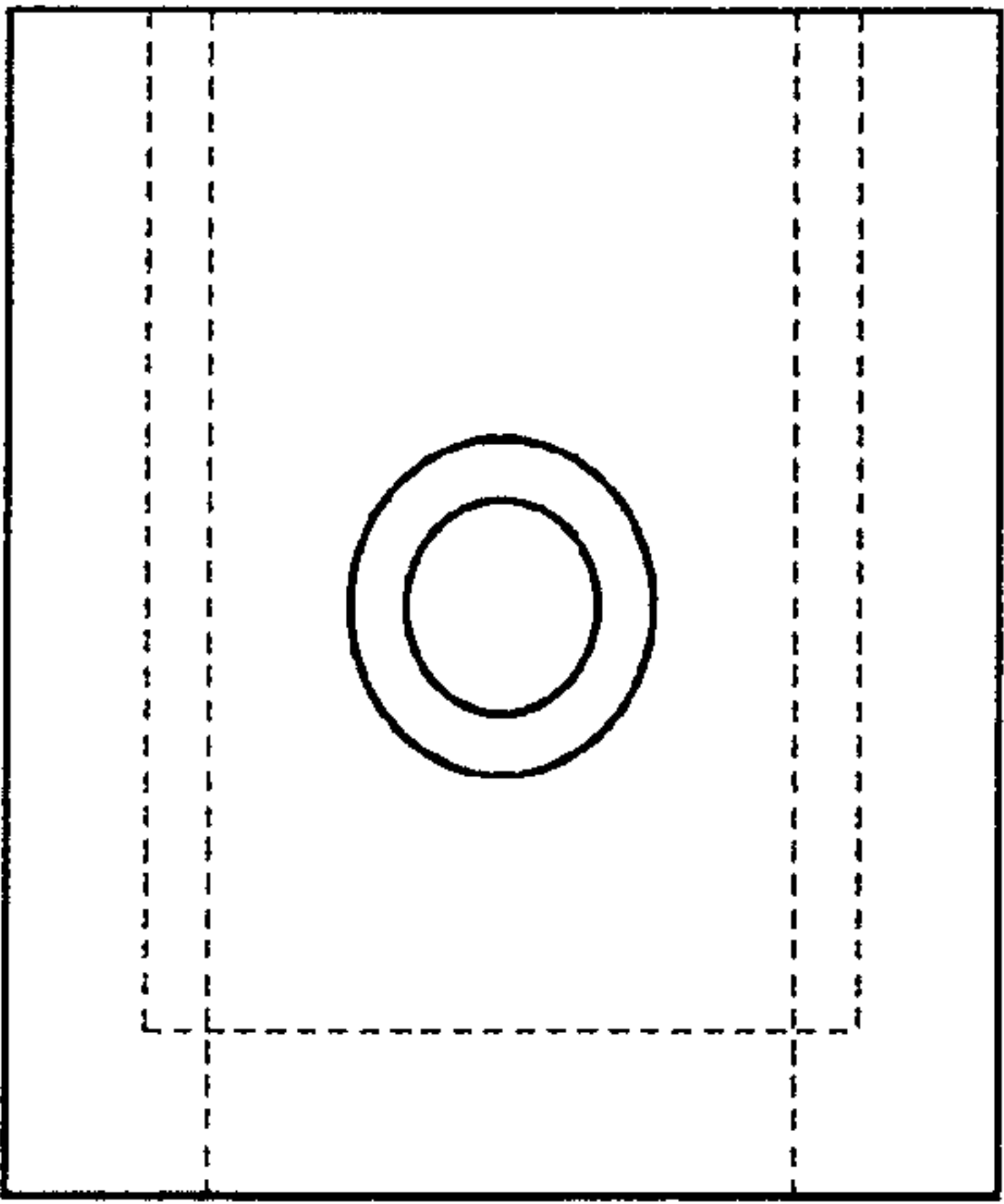


FIG. 18B-3

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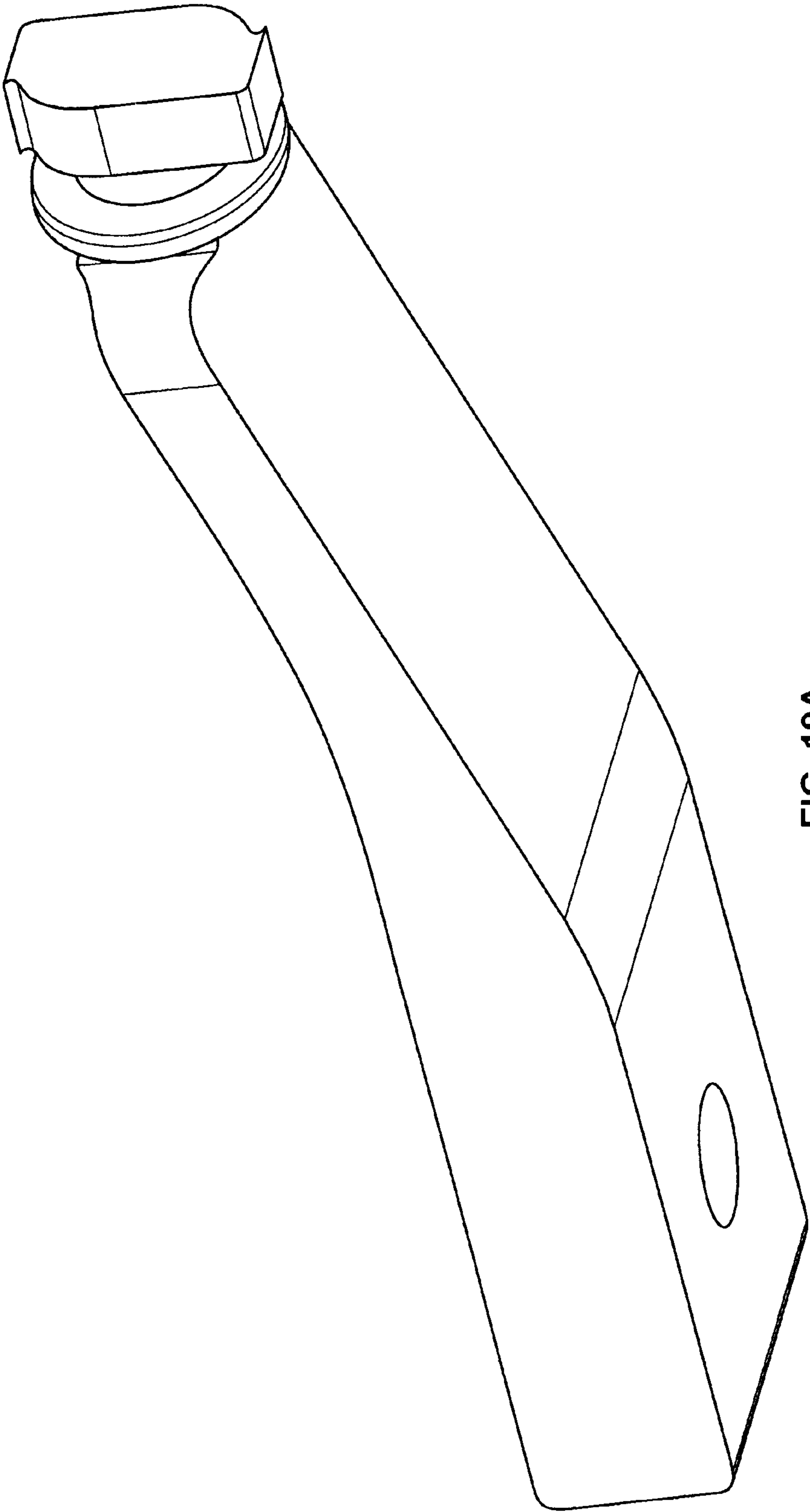


FIG. 19A

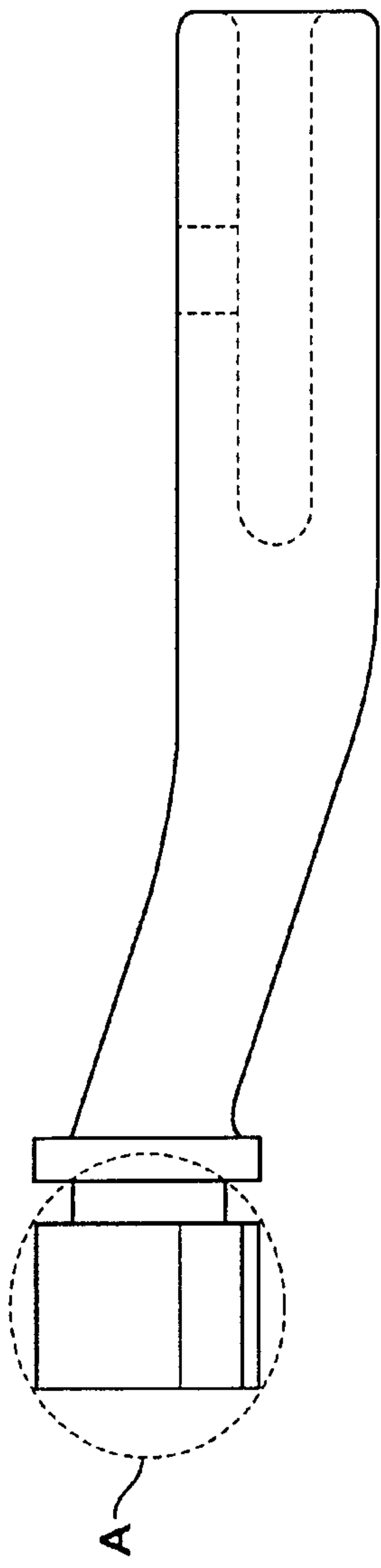
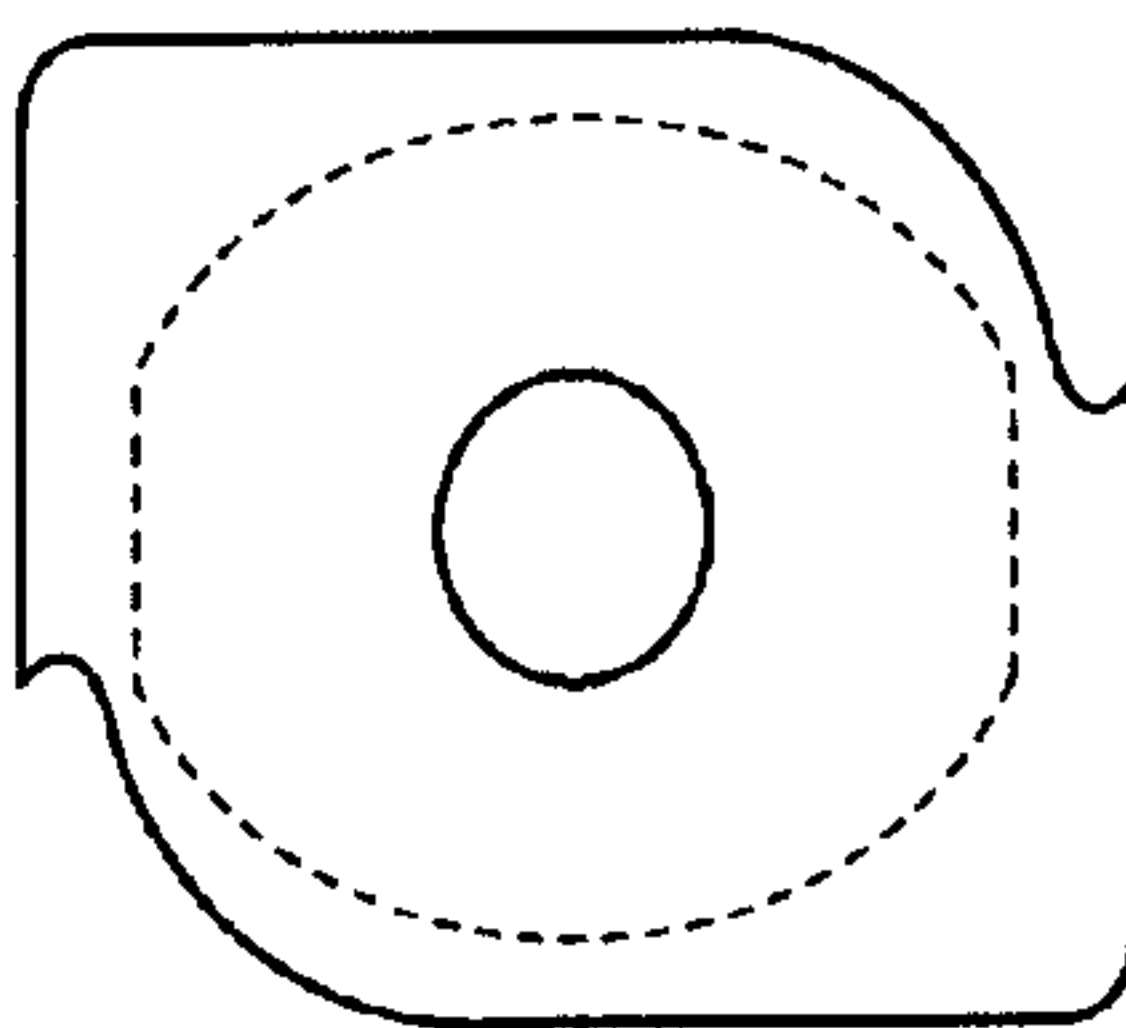


FIG. 19B-1



Detail A

FIG. 19B-3

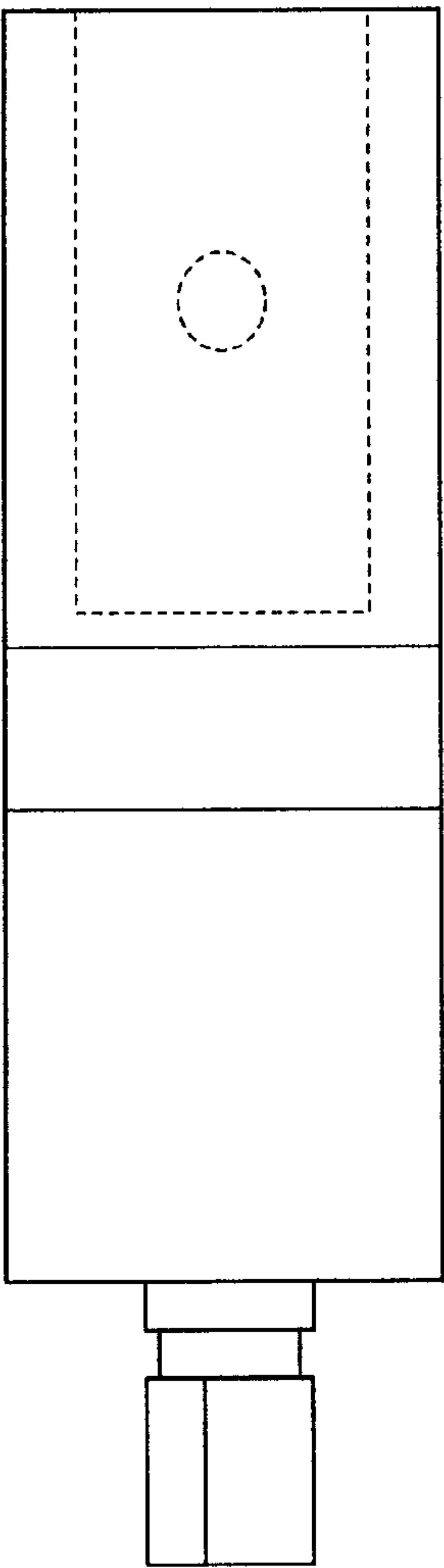


FIG. 19B-2

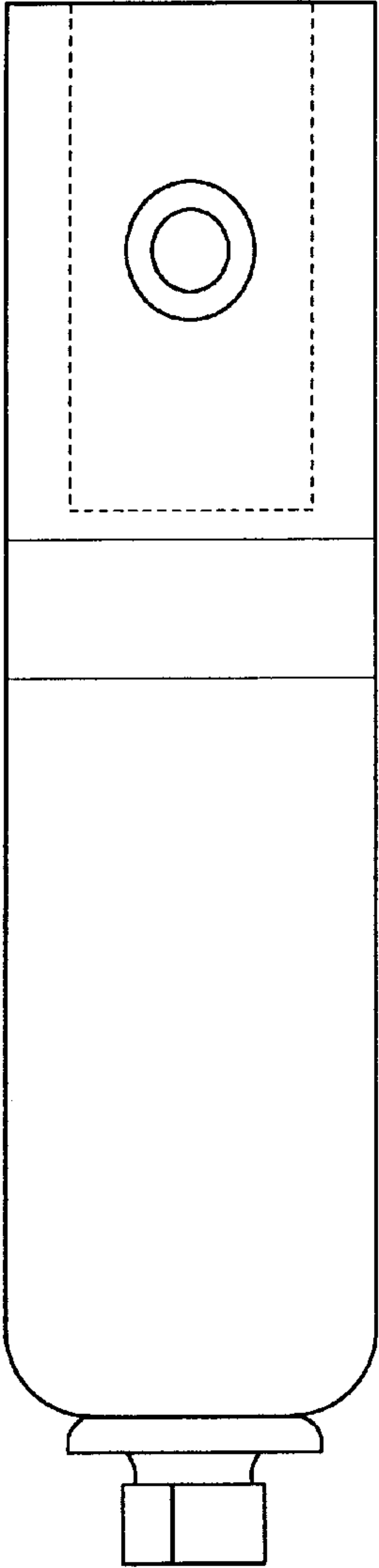


FIG. 19B-4

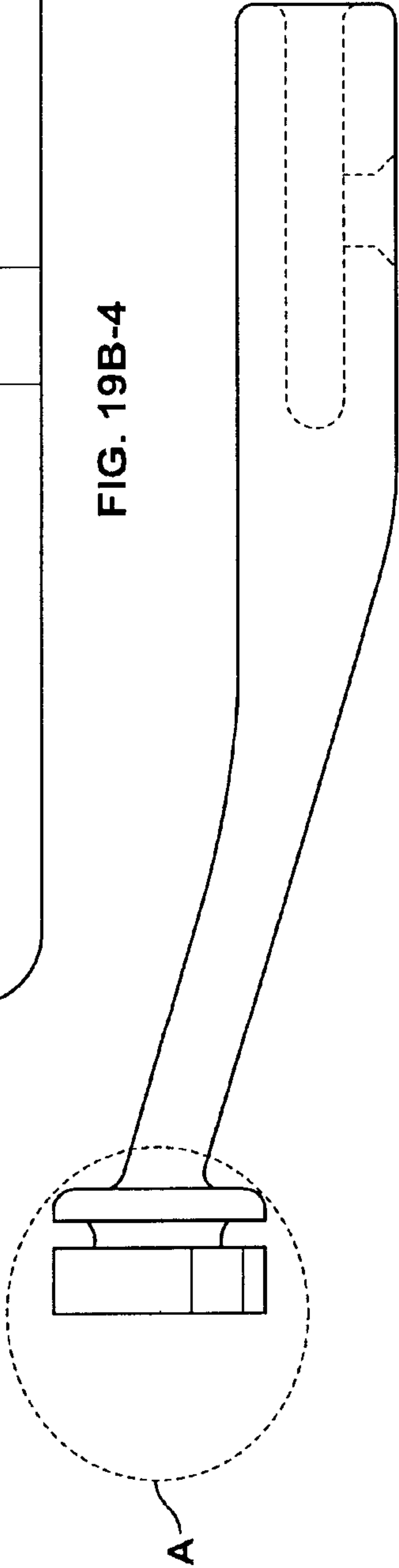
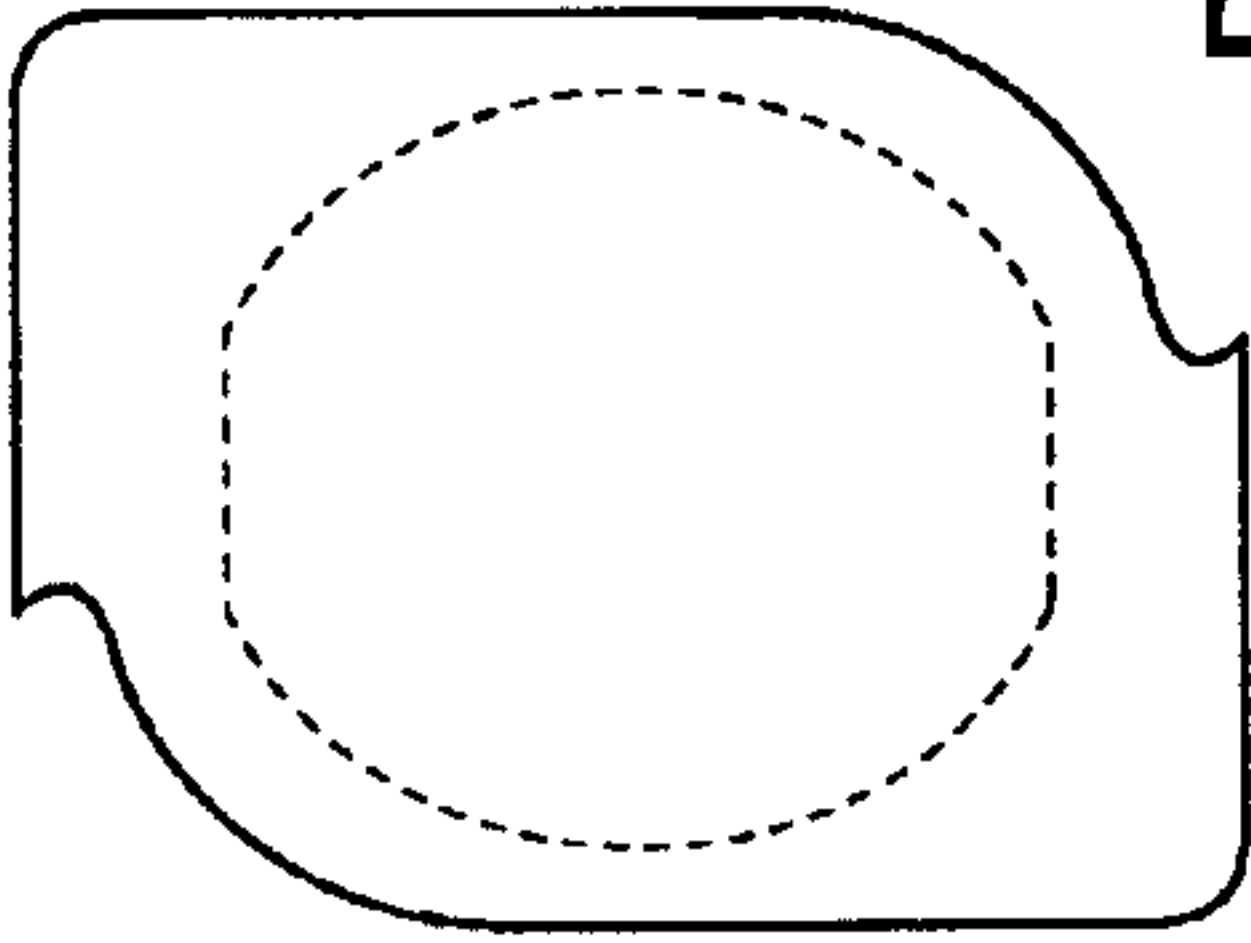


FIG. 19B-5



Detail A

FIG. 19B-7

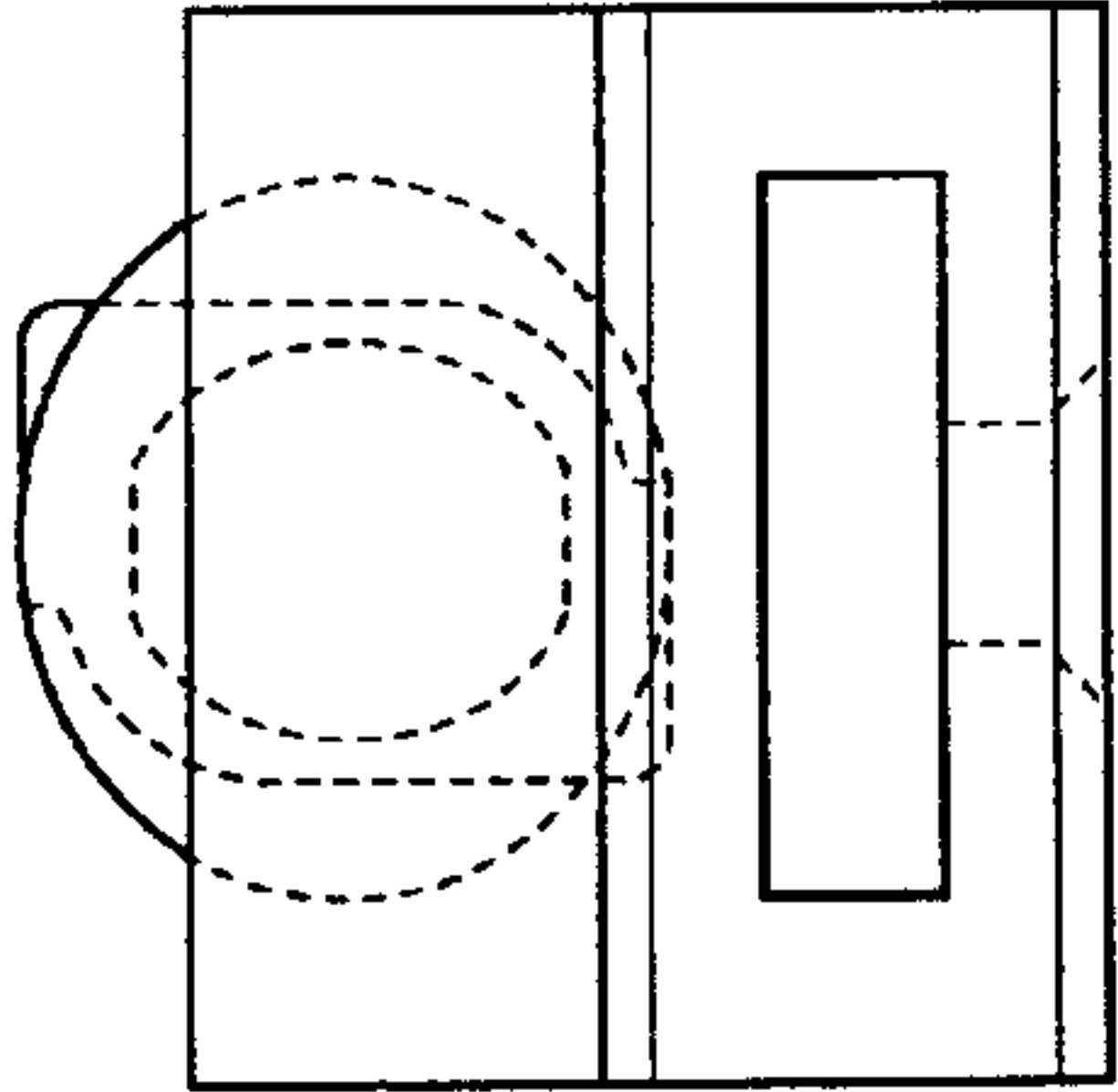


FIG. 19B-6

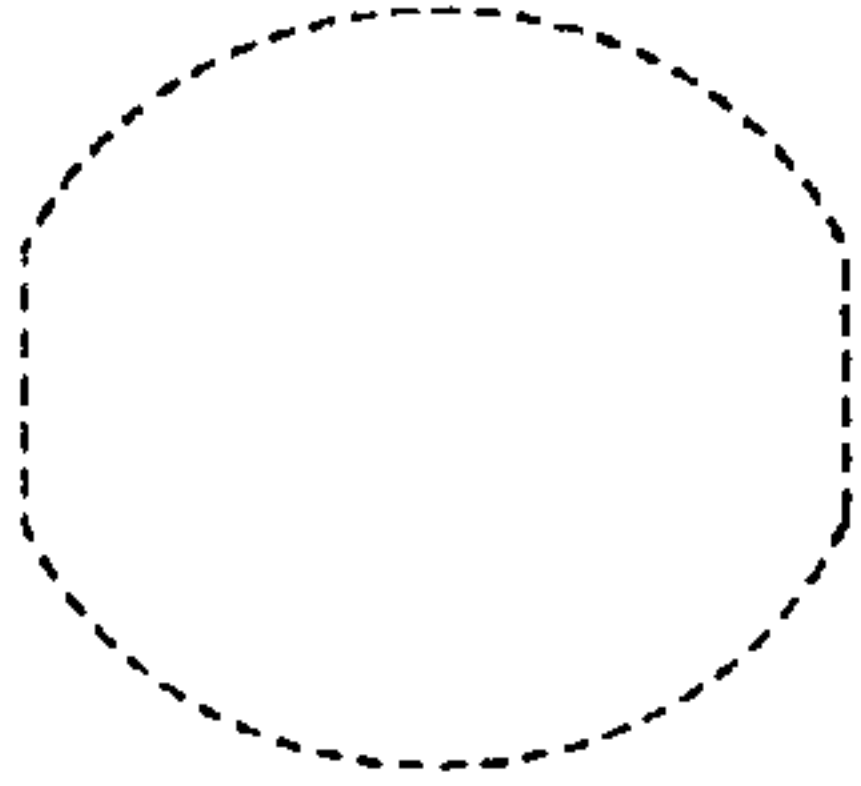


FIG. 19B-8

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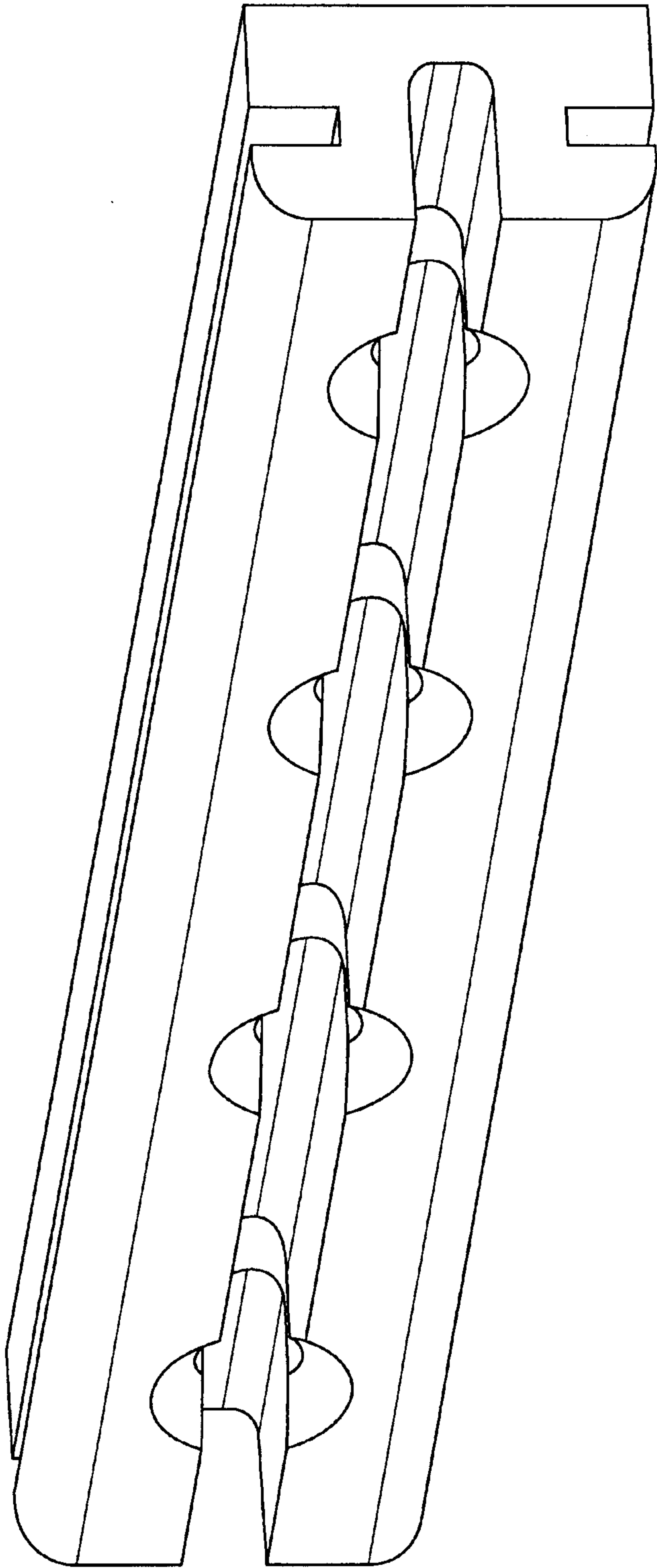


FIG. 20A

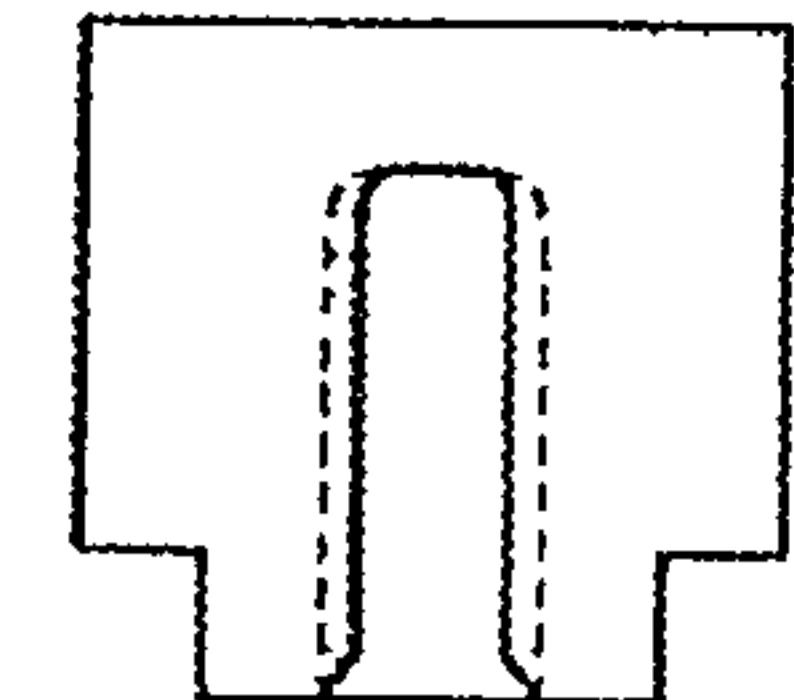


FIG. 20B-2

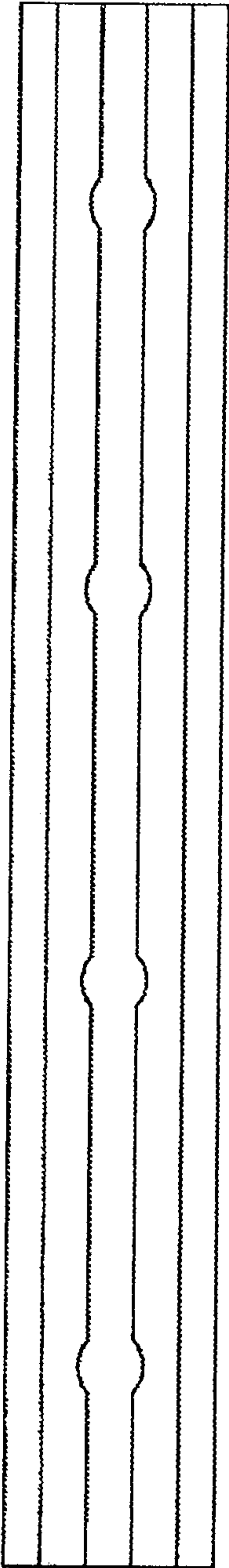


FIG. 20B-1

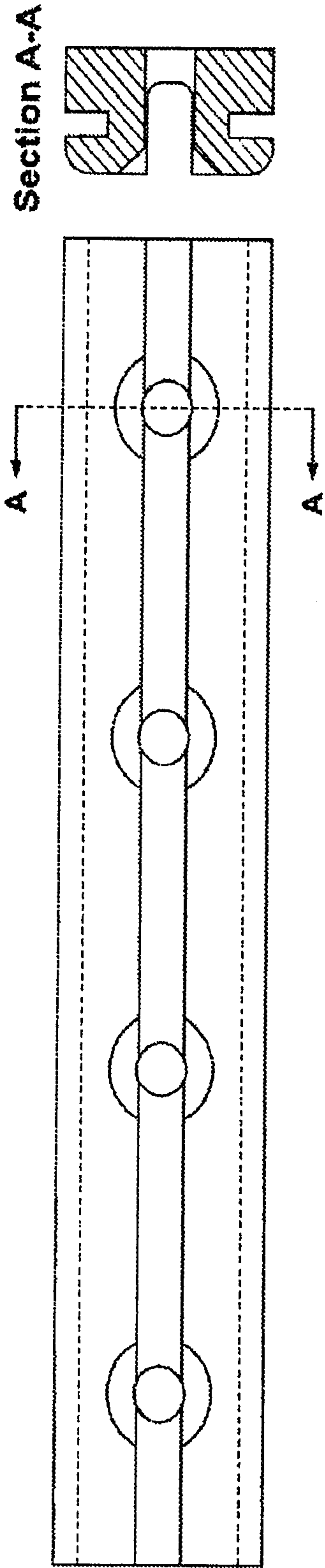


FIG. 20B-4

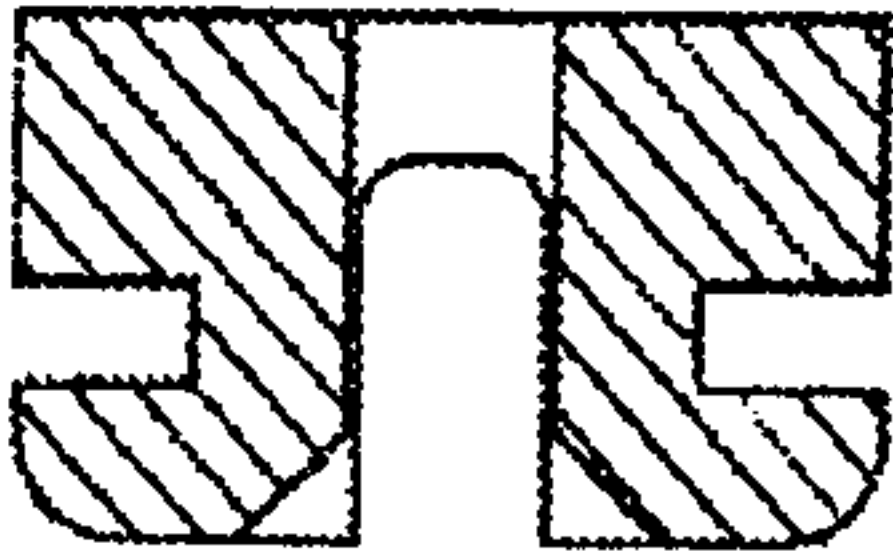


FIG. 20B-5

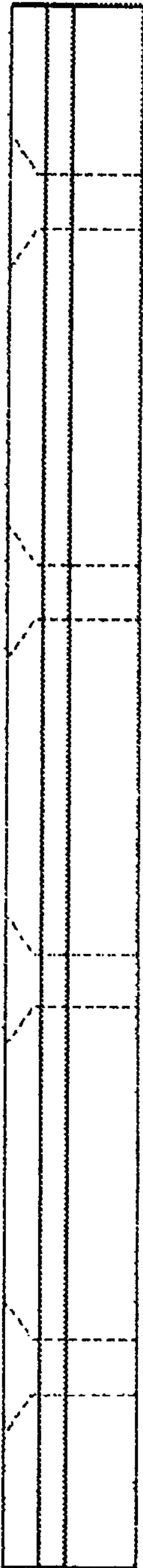


FIG. 20B-5

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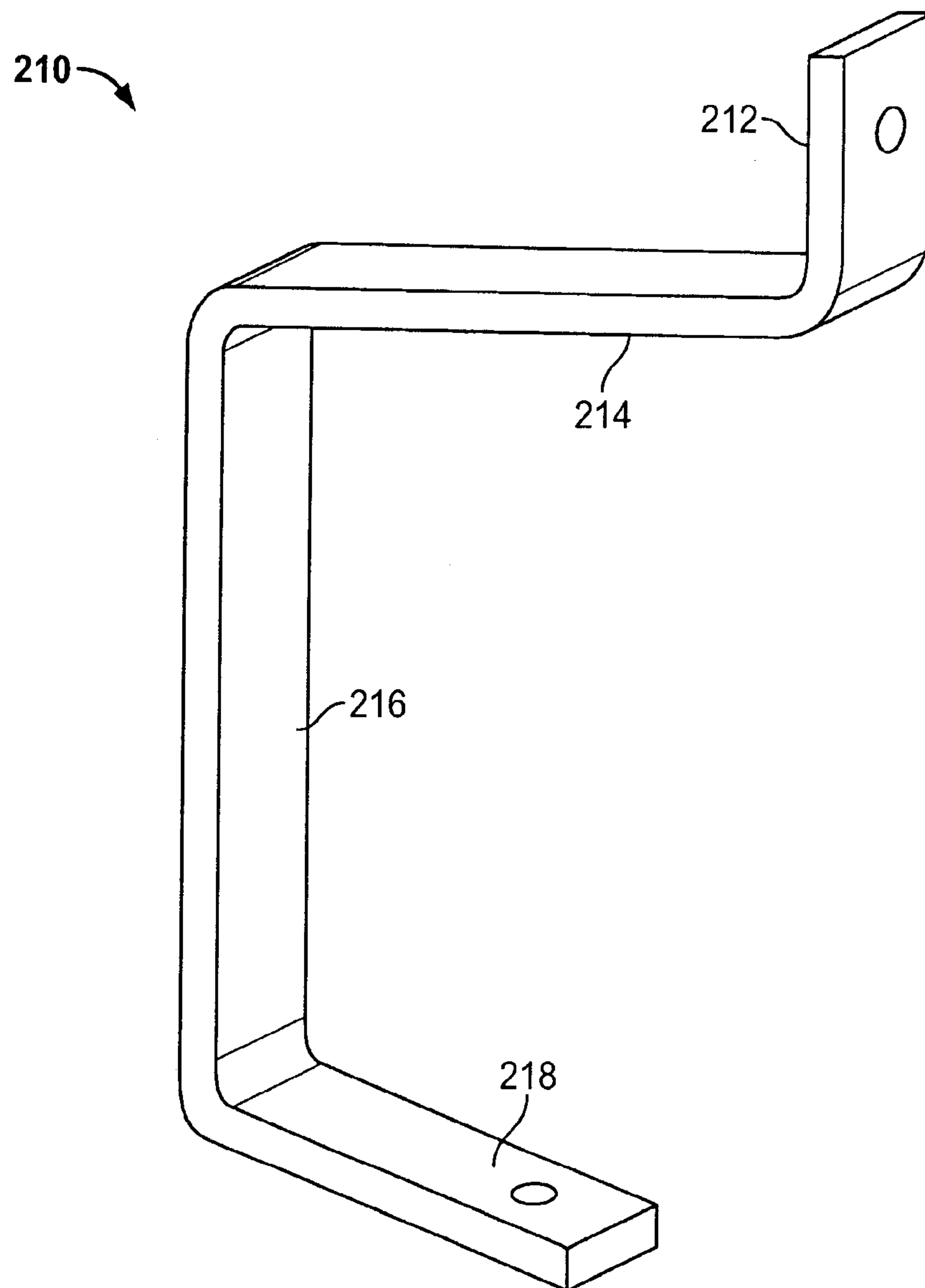


FIG. 21A

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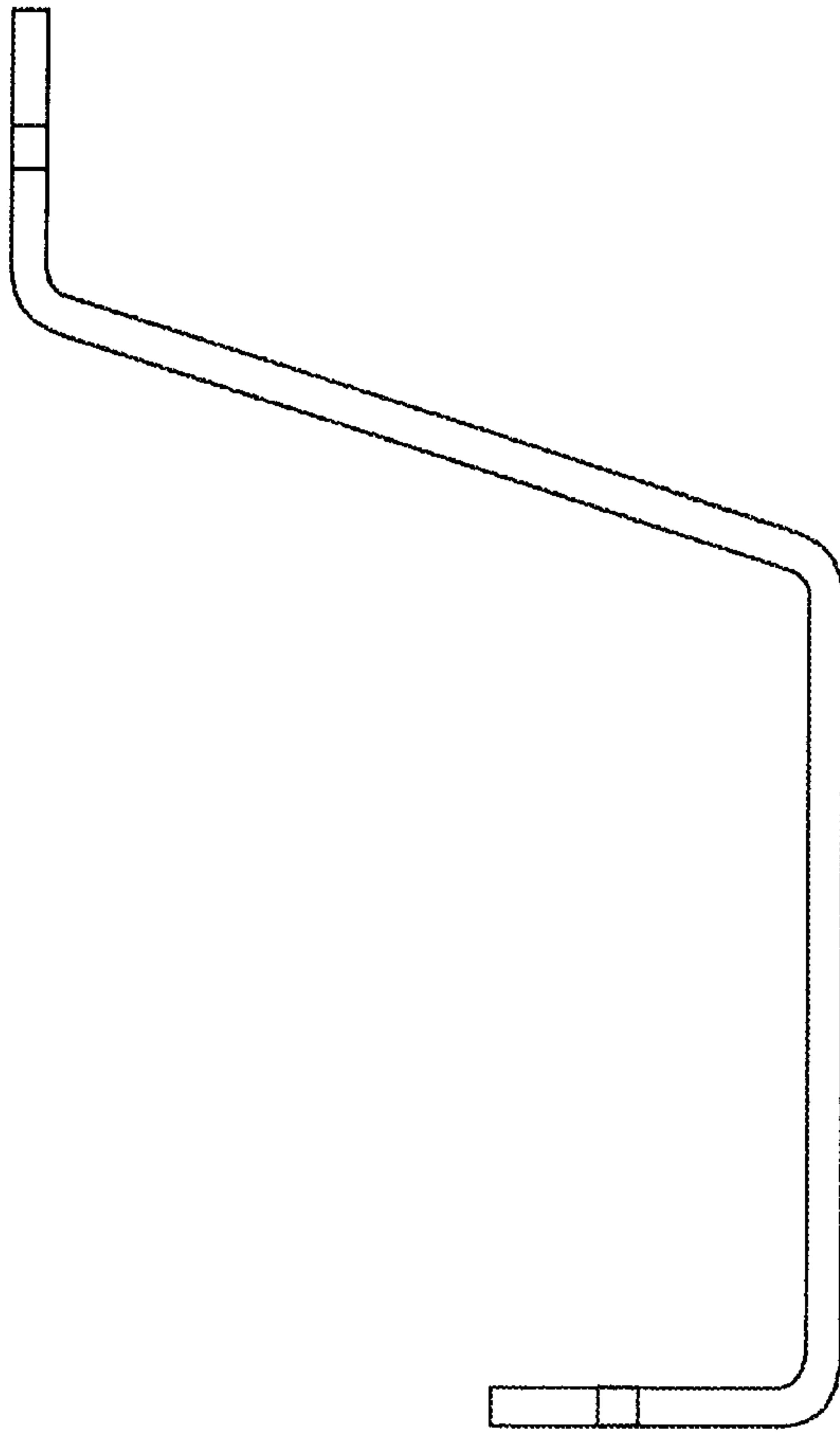


FIG. 21B-1



FIG. 21B-2

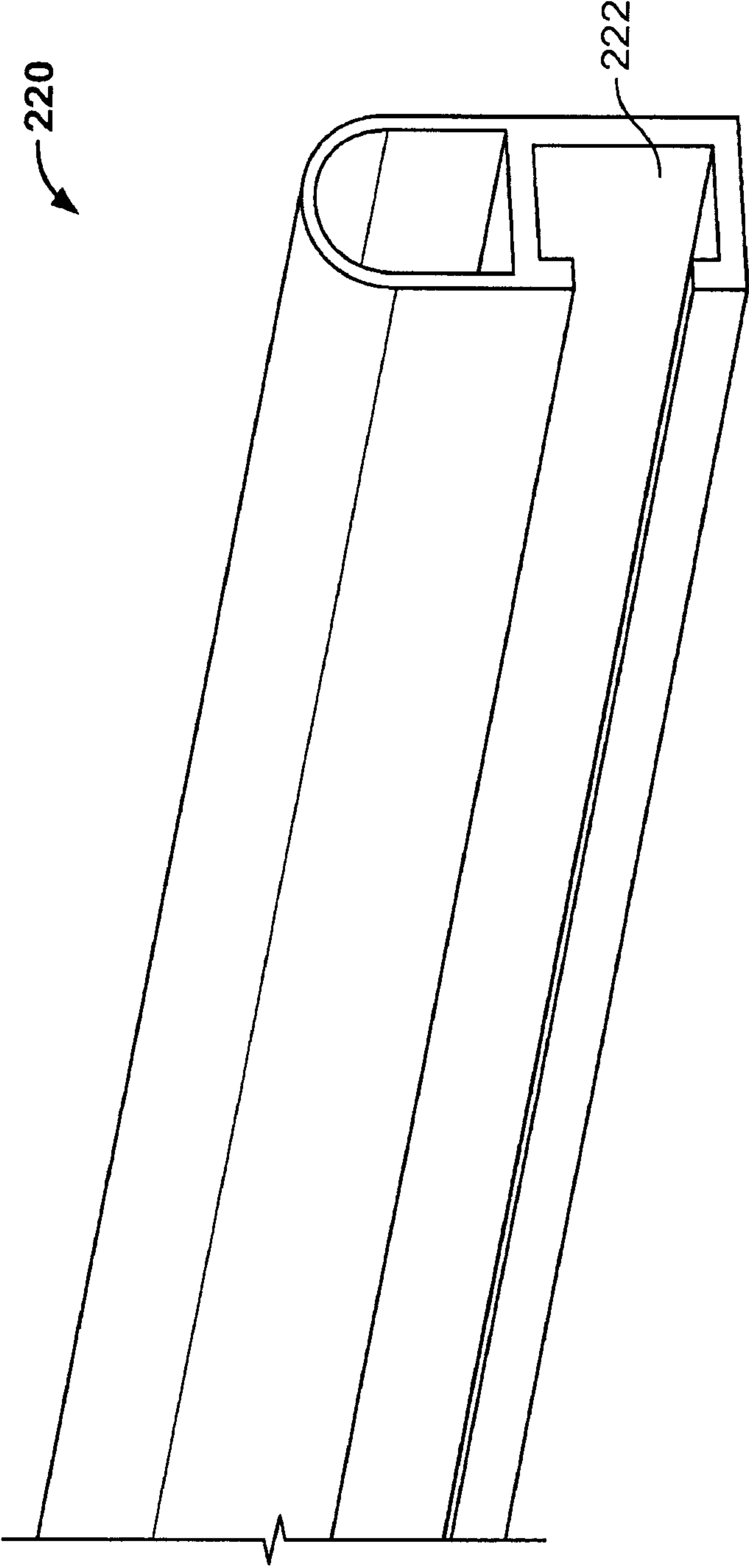


FIG. 22A

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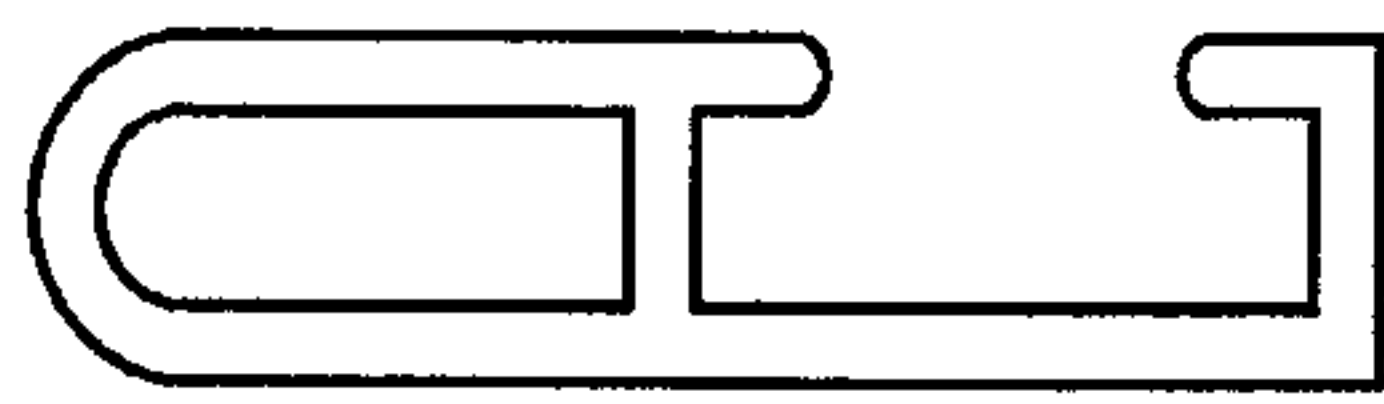


FIG. 22B-2

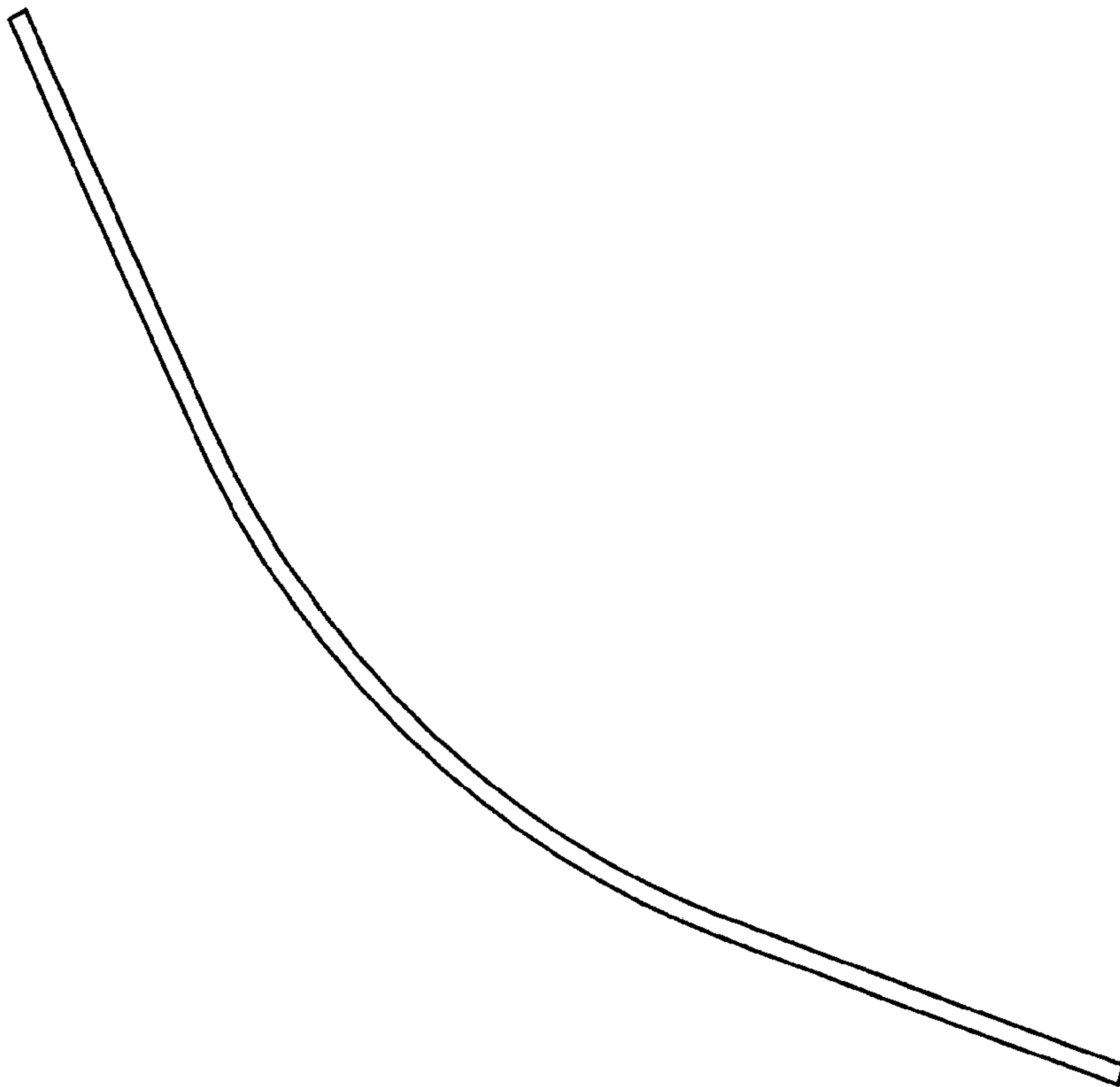


FIG. 22B-1

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FIG. 22B-4

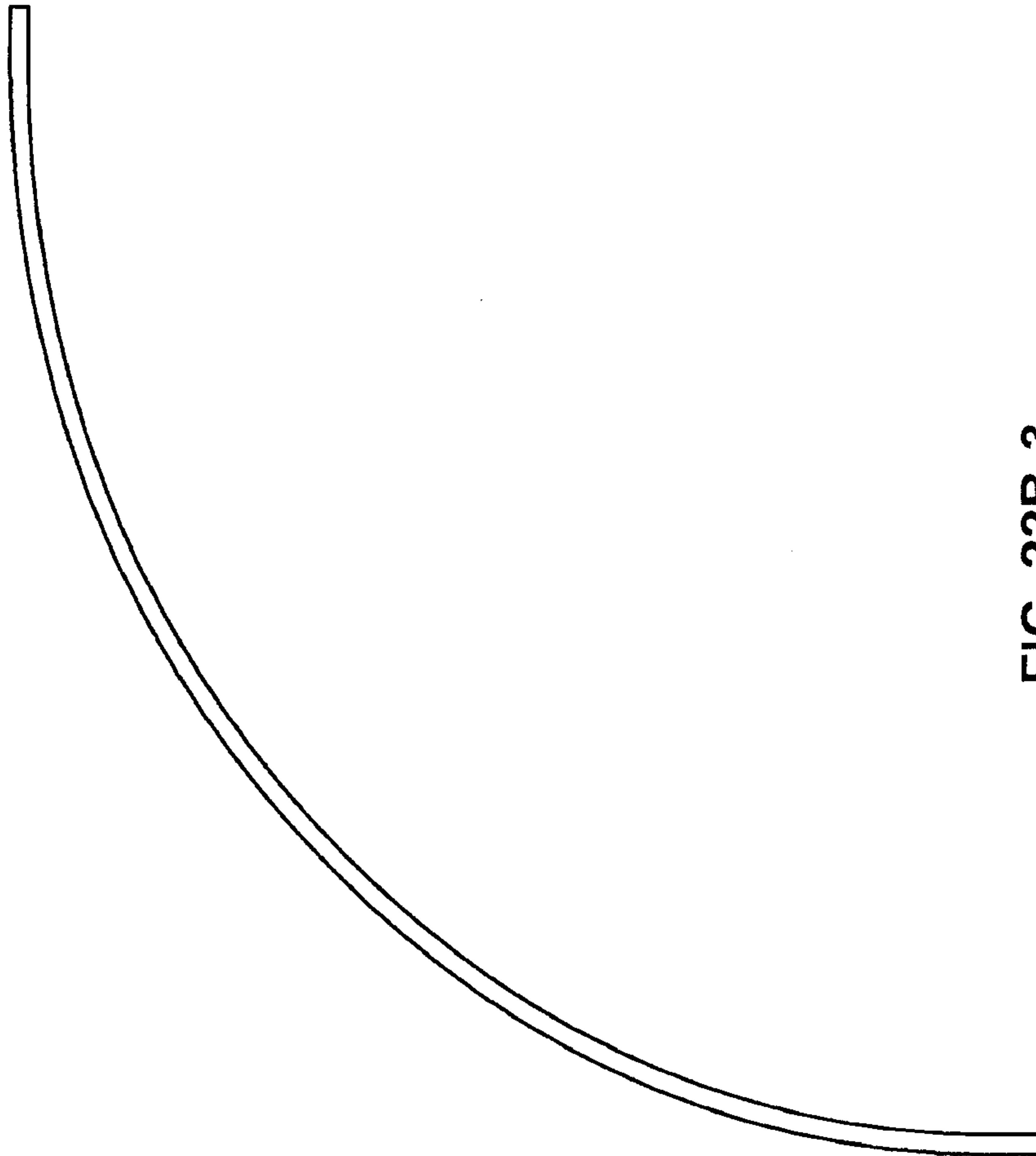


FIG. 22B-3

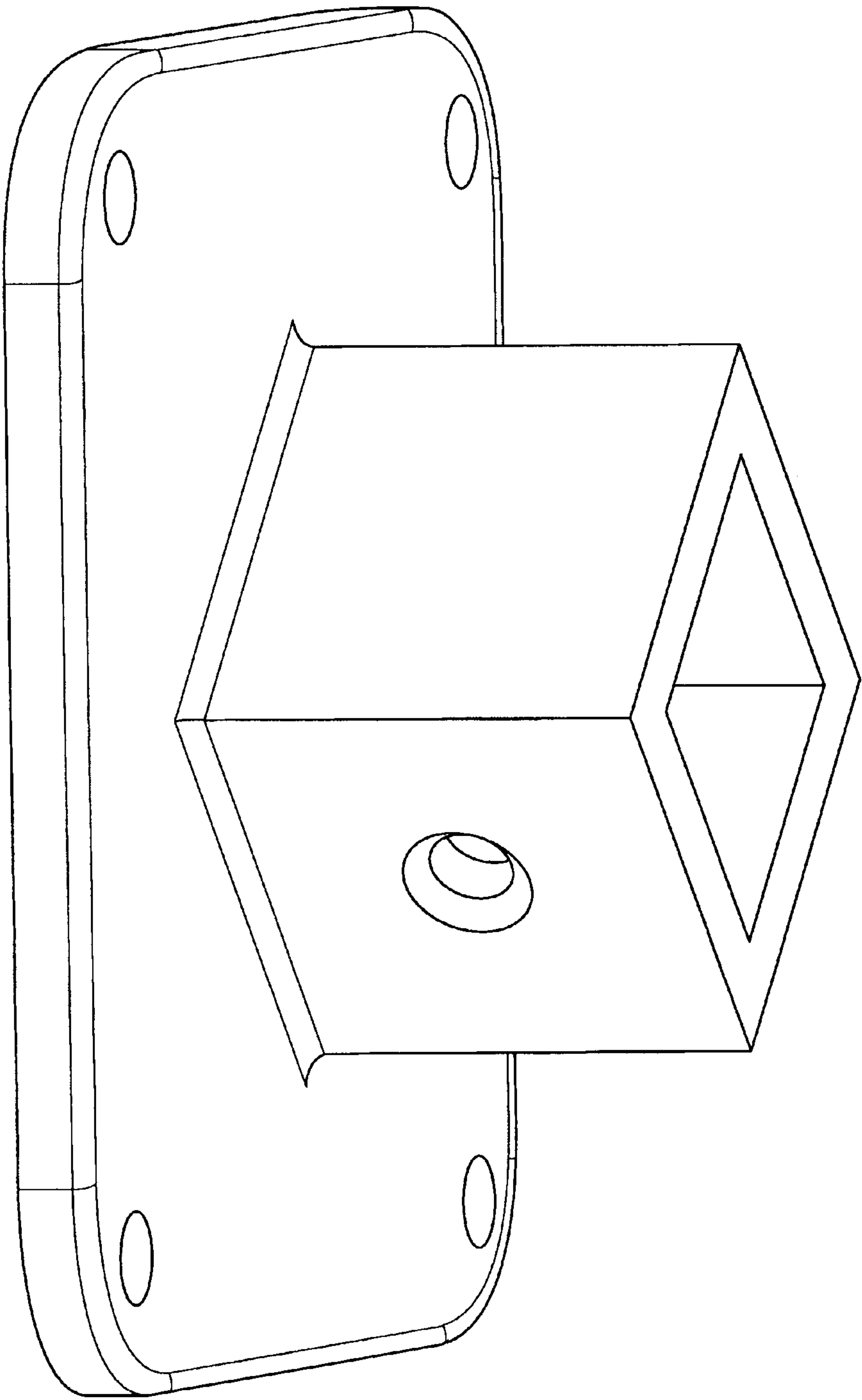


FIG. 23

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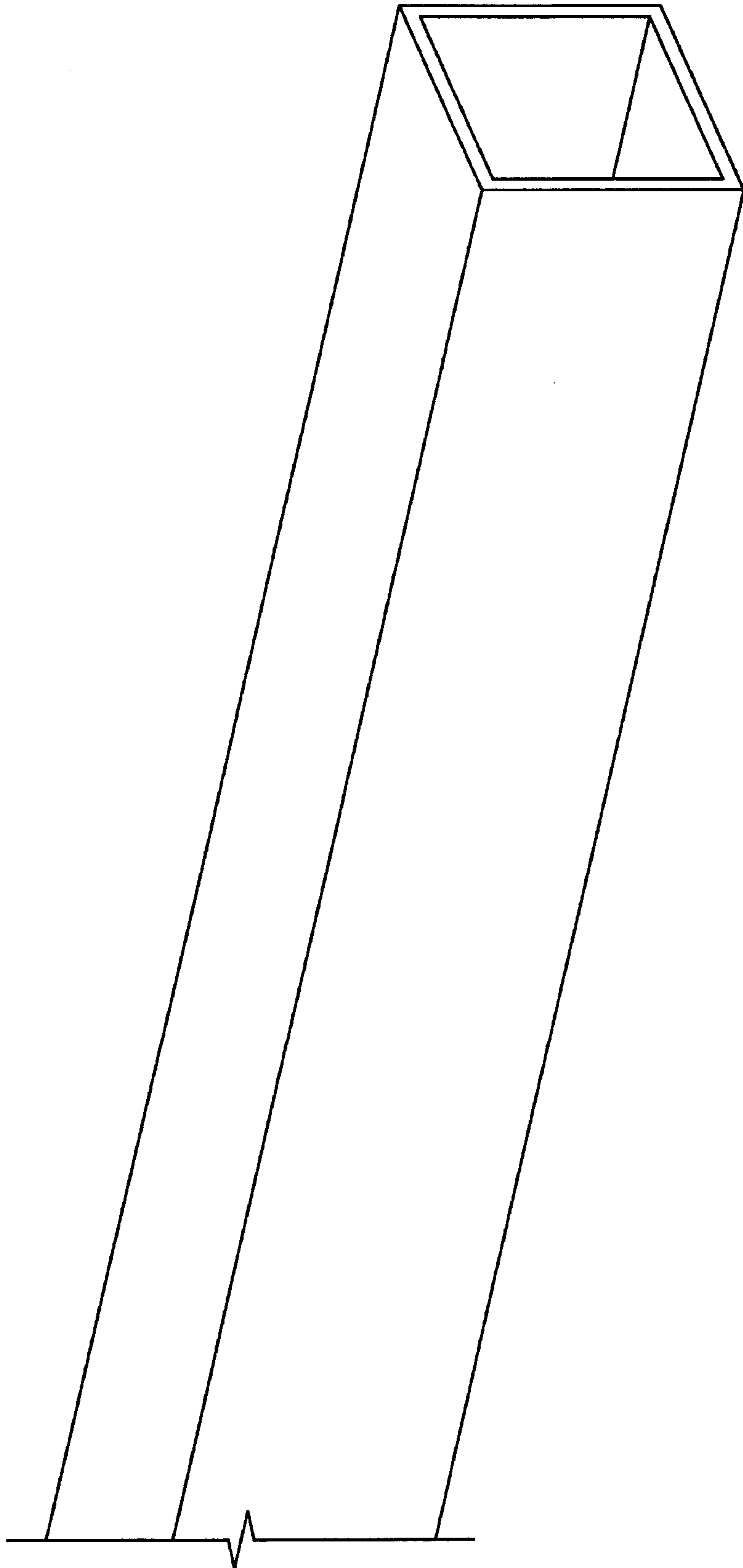


FIG. 24

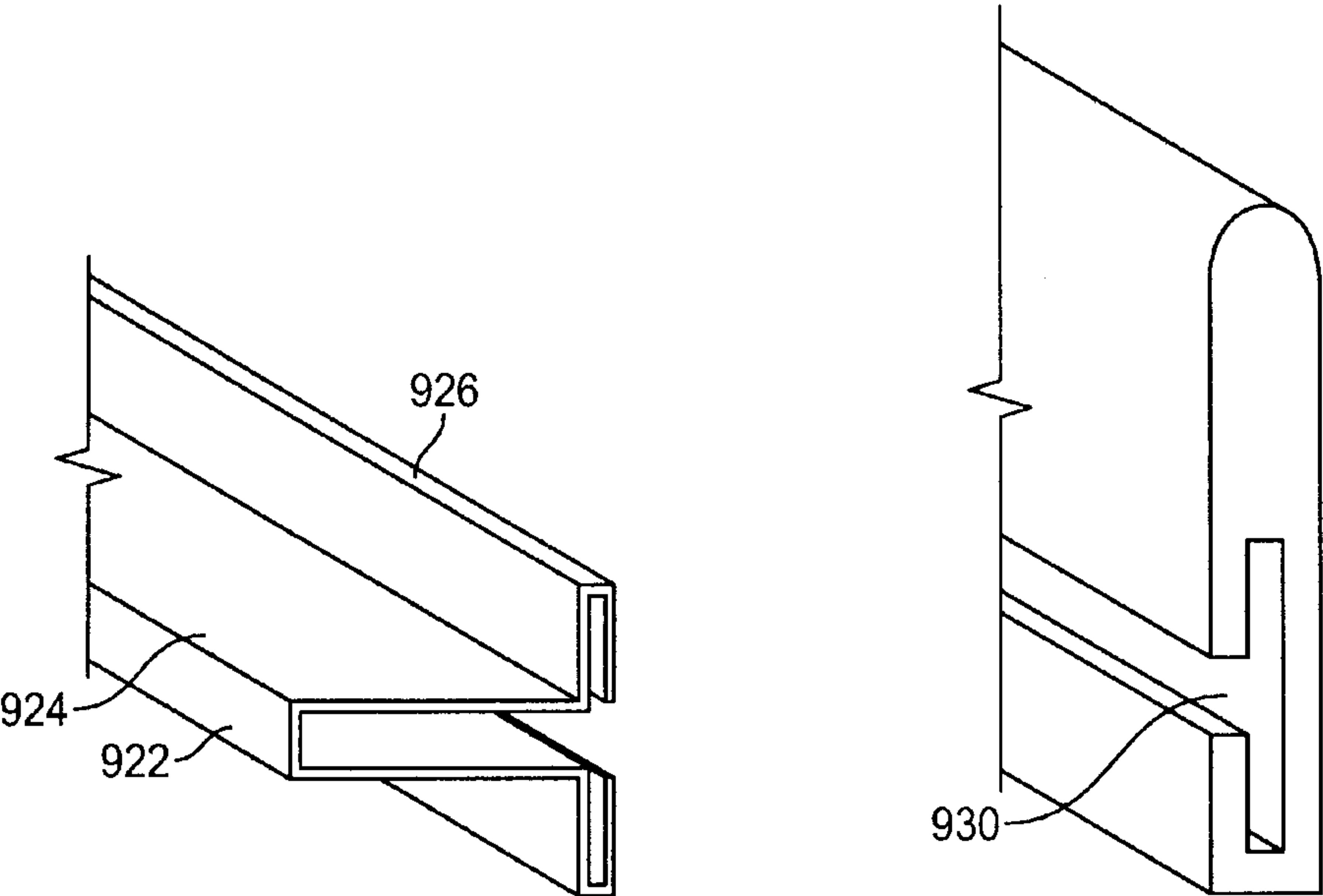


FIG. 25A

FIG. 25B

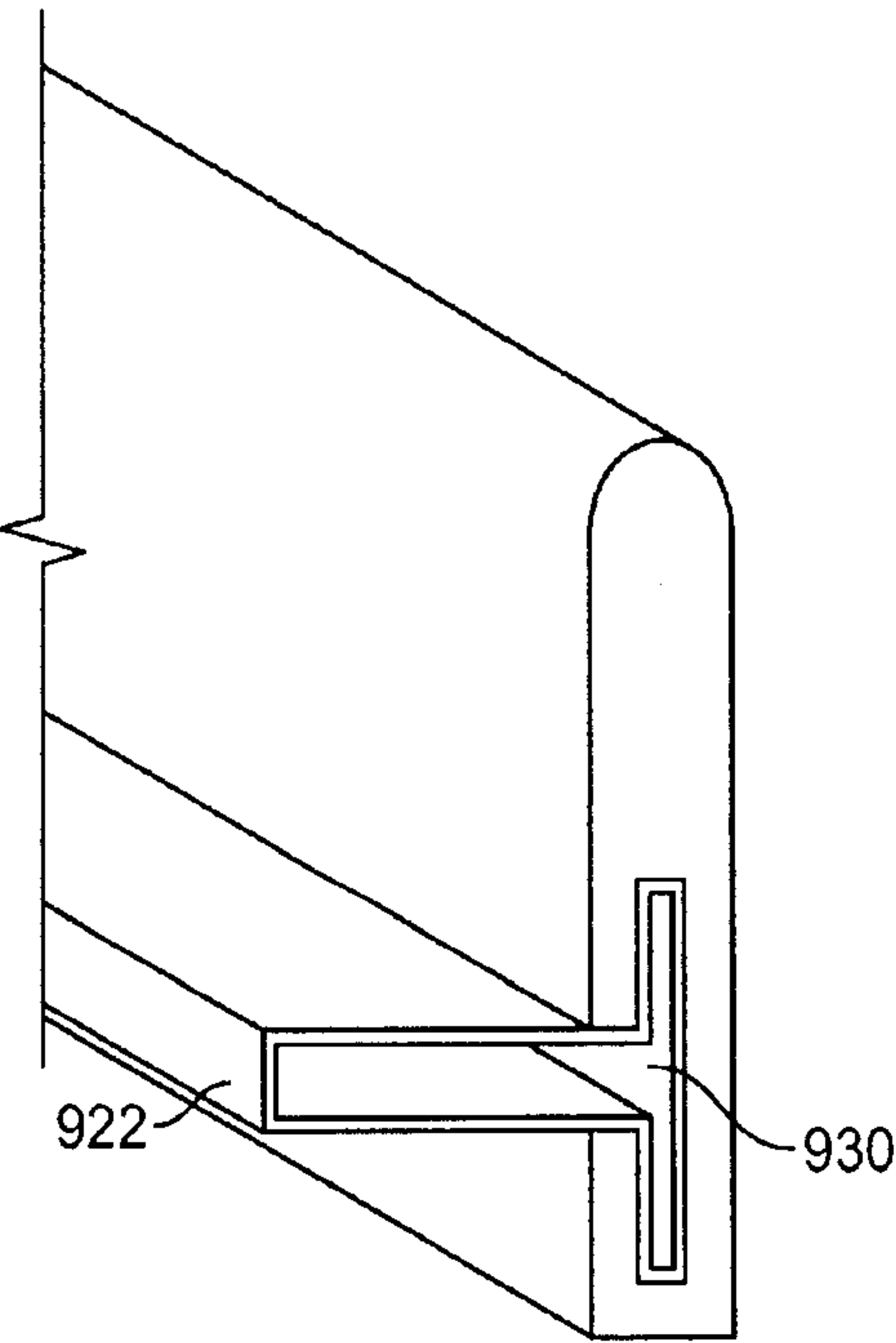


FIG. 25C

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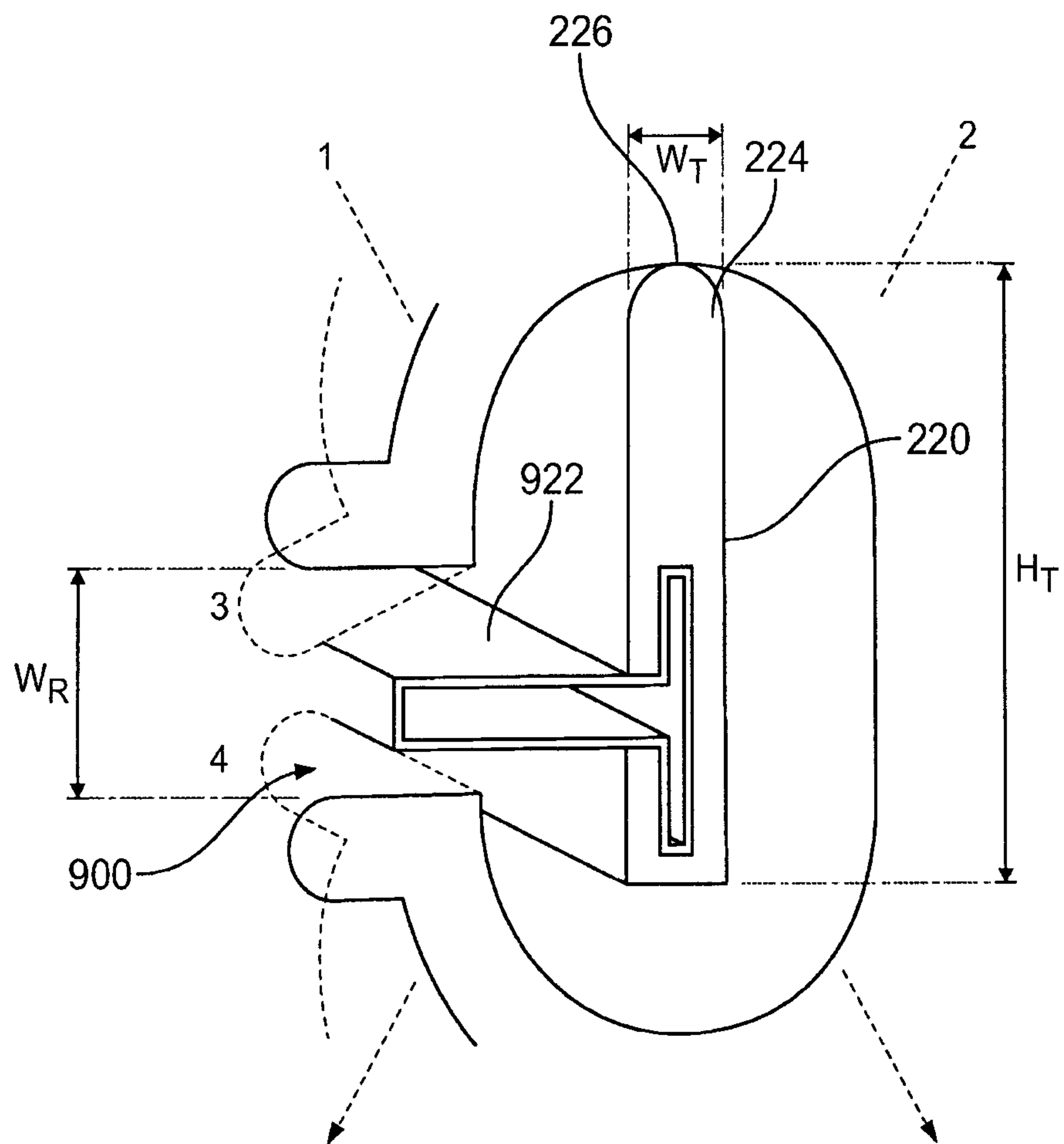


FIG. 25D

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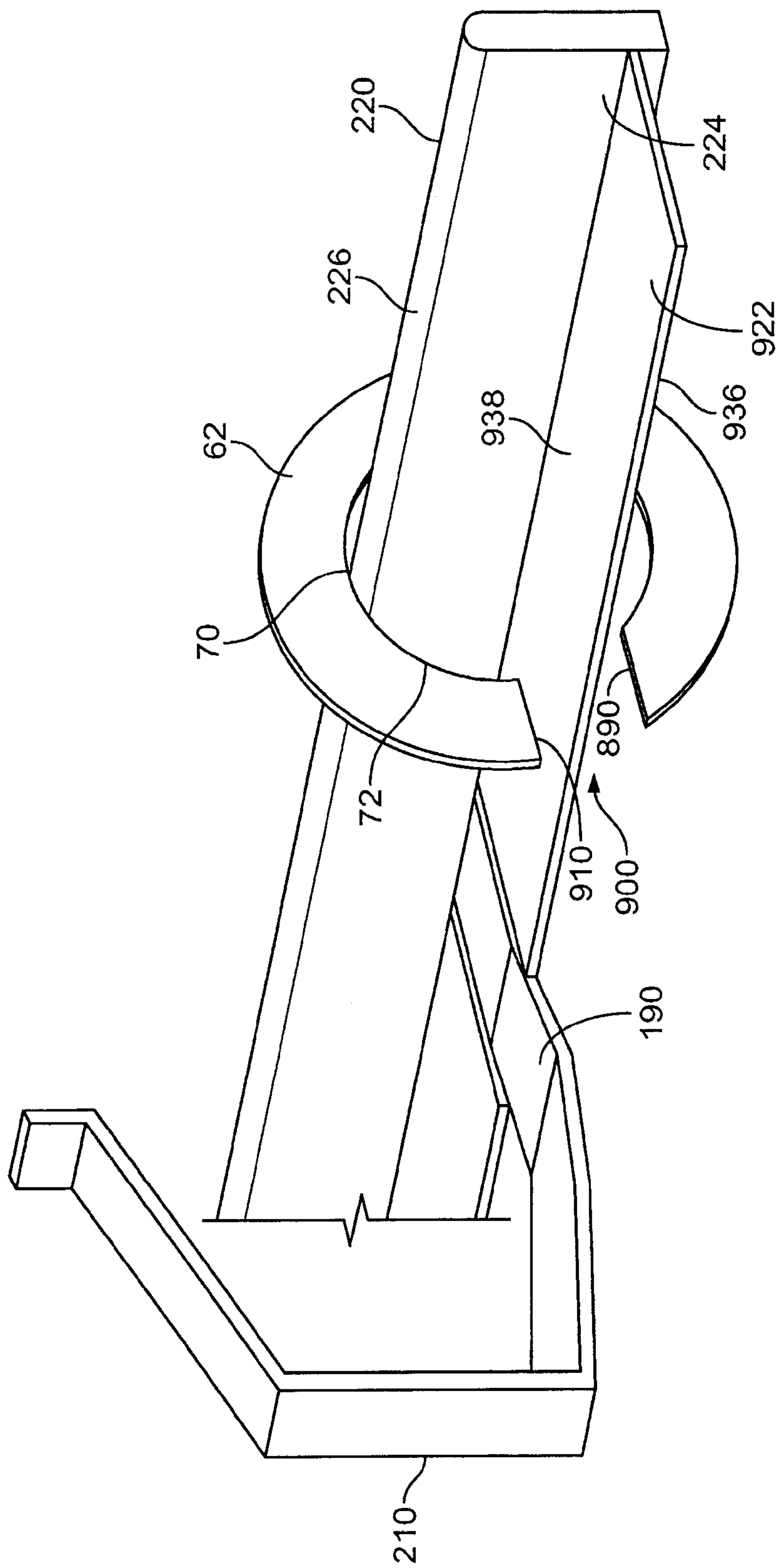


FIG. 25E

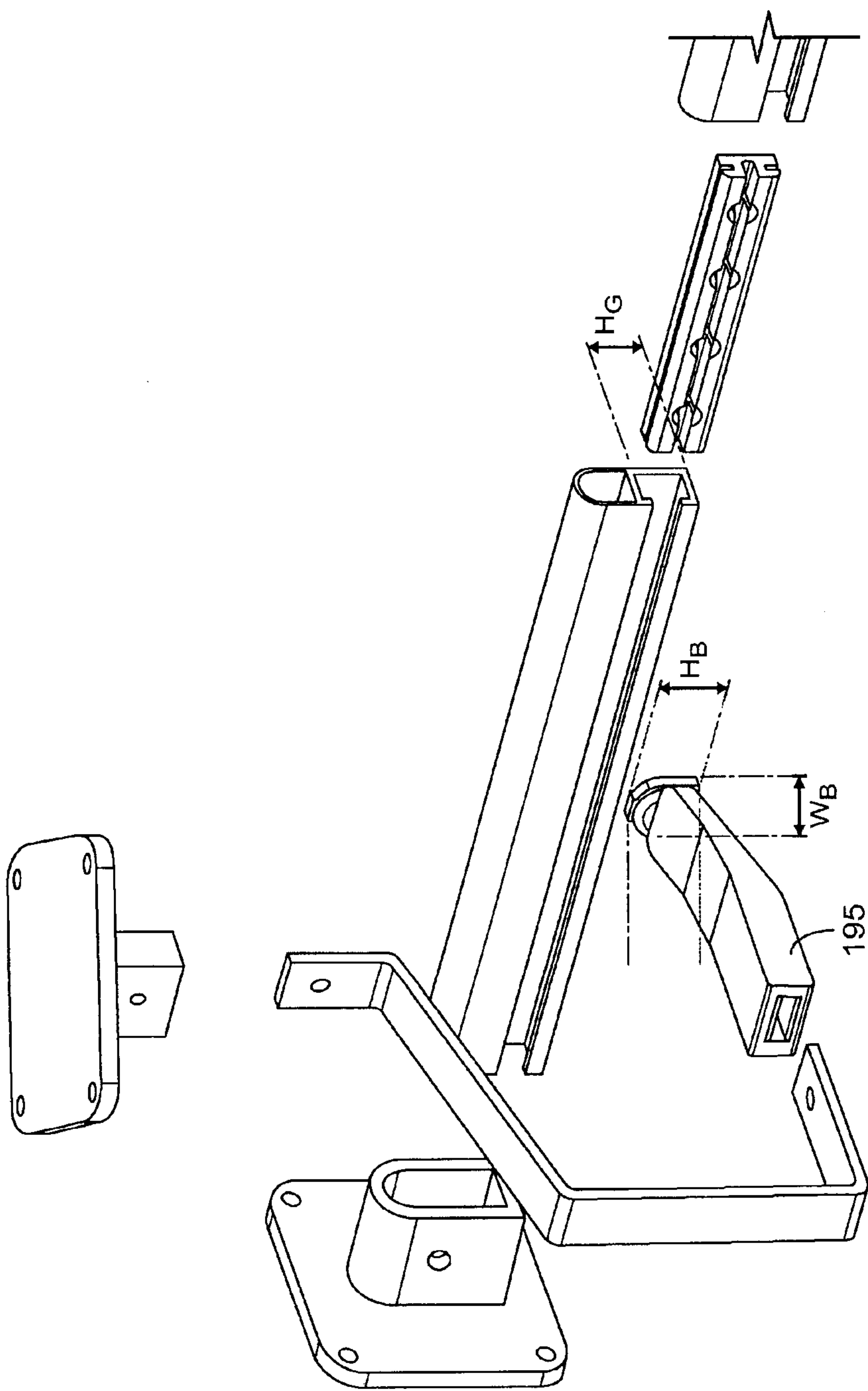


FIG. 26

