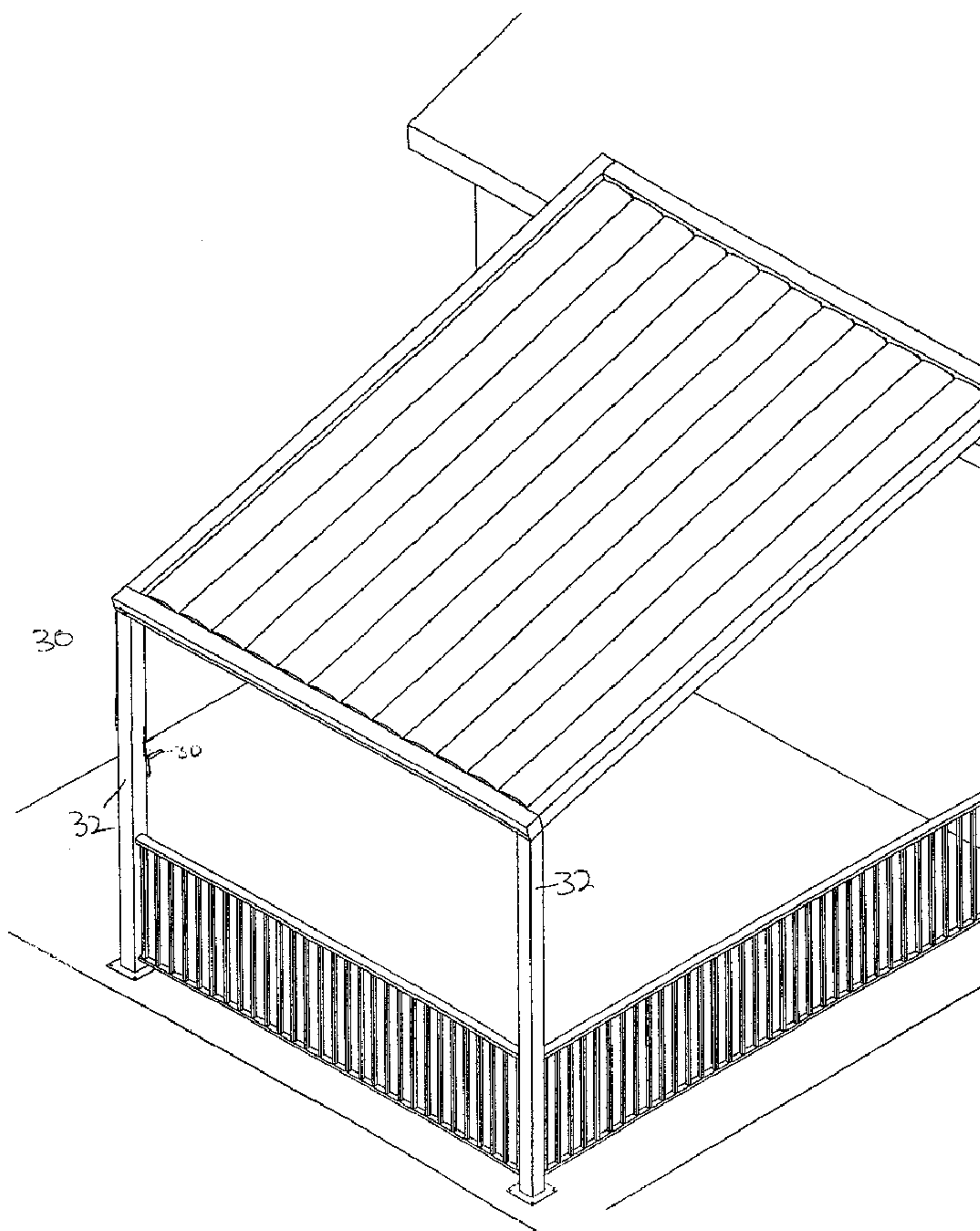




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(54) Titre : TOITURE A PERSIENNES
 (54) Title: LOUVERED ROOF ASSEMBLY



(57) Abrégé/Abstract:

The invention comprises a roof assembly, comprised of a frame and a plurality of louvers rotatably mounted within the frame, each louver having a channel running along its longitudinal axis. The assembly may also include a gutter located at one end of the frame

(57) **Abrégé(suite)/Abstract(continued):**

below the louvers and running perpendicular to the longitudinal axes of the louvers. Also, the assembly further includes a mechanism for rotating the louvers from an open position to a closed position. The result is that liquid can flow along the channels in the louvers and into the gutter.

ABSTRACT

The invention comprises a roof assembly, comprised of a frame and a plurality of louvers rotatably mounted within the frame, each louver having a channel running along its longitudinal axis. The assembly may also include a gutter located at one end of the frame below the louvers and running perpendicular to the longitudinal axes of the louvers. Also, the assembly further includes a mechanism for rotating the louvers from an open position to a closed position. The result is that liquid can flow along the channels in the louvers and into the gutter.

LOUVERED ROOF ASSEMBLY**FIELD OF THE INVENTION**

5 This invention relates to a louvered roof assembly and
in particular to a specific design of louver to be used in
a louvered roof assembly.

BACKGROUND OF THE INVENTION

10

 There are numerous applications where it is desirable
to have a roof, such as a canopy or awning, which can be
removed to expose the area beneath to sunshine and be put
back in place to protect the area from rain. However,
15 given the rapid weather transitions in many locales,
traditional canopies and awnings, which require some time
to set up, are not always the best available option.

 One alternative is to have a permanent or semi-
20 permanent roof structure that can be opened and closed as
desired. While retractable canvas awnings and the like are
often used, another method is to assemble the roof using a
series of louvers that pivot between an open and a closed
position.

25

 A problem with using a louvered roof is ensuring that
the roof does not allow water to leak through when closed

while retaining the louver action for opening and closing. One attempt to address this problem is disclosed in U.S. Patent No. 5,732,507 issued to Edwards. The louvers in Edwards have an up-turned lip along one edge and a down-
5 turned lip on the other edge. When the louvers are closed, the up-turned lip on one louver overlaps the down-turned lip of an adjacent louver to produce a theoretically watertight seal. However, Edwards uses a rubber coating to create the seal between the lips, and the rubber can be
10 subject to deterioration from sun and cold, reducing the effectiveness of the seal over time.

Also, while Edwards attempts to address one problem with louvered roof assemblies, that of making the louvers
15 watertight when closed, a second problem remains. During heavy rains, water can accumulate on the roof and leak through the closed louvers, as the louvers do not provide any guttering effect to channel the water flow, either on the main structure or using the louvers themselves. Even
20 worse, if the roof is flat, water can pool on the closed louvers, spilling into the roof-covered area when the louvers are opened.

Accordingly, there is a need for a louvered roof assembly that provides channels for water flow to prevent water leakage during heavy rainfall. Additionally, there is a need for a louvered roof assembly that can be flat and
5 still allow water to flow off the louvers and the roof.

It is an object of this invention to provide a louvered roof assembly with channels for water to flow off the louvers. It is also an object of this invention to
10 provide a roof assembly that allows water to flow off the louvers even when the roof is flat.

SUMMARY OF THE INVENTION

15 The invention comprises a roof assembly, comprised of a frame and a plurality of louvers rotatably mounted within the frame, each louver having a channel running along its longitudinal axis. The assembly may also include a gutter located at one end of the frame below the louvers and
20 running perpendicular to the longitudinal axes of the louvers. Also, the assembly further includes a mechanism for rotating the louvers from an open position to a closed position. The result is that rain can flow along the channels in the louvers and into the gutter.

The invention further comprises a louver for use in a roof assembly. The louver is comprised of a longitudinally extending channel proximate one elongated edge of the louver and a second elongated edge, positioned to extend over the channel of an adjacent louver.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention itself both as to organization and method of operation, as well as additional objects and advantages thereof, will become readily apparent from the following detailed description when read in connection with the accompanying drawings:

Figure 1 is a top view of a roof assembly with the louvers in a fully open position;

Figure 2 is a sectional view of an individual louver;

Figure 3 is a sectional view of a pair of louvers in a closed position;

Figure 4 is a top view of a roof assembly with the louvers in a fully closed position;

Figure 5 is an end view of the roof assembly of Figure 4;

Figure 6 is a perspective view of a roof assembly installed over a patio deck;

Figure 7 is a sectional view of an individual louver with an inclined channel;

Figure 8 is a sectional view of an alternative form of one half of an individual louver; and

Figure 9 is a sectional view of two halves of Figure 8 joined together to form a single louver.

15

DETAILED DESCRIPTION OF THE INVENTION

As shown in Figures 1 and 4, the invention consists of a roof assembly 10, comprised of a number of louvers 12 that can be moved between an open and a closed position (see Figure 3) and various intermediate positions by rotation about rods 24. At one end of the roof assembly 10 is a gutter 14 that runs along the length of roof assembly 10 below the louvers 12. The louvers 12 are connected to a mechanism 18 that allows the louvers to synchronously pivot between open and closed positions. The mechanism 18 can be

controlled by any means suitable to the application of the roof assembly, ranging from a basic hand crank to a remote electronic switch used to operate an electromechanical actuator.

5

Each louver **12**, as shown in **Figure 2**, has flanges **20** and **22** along respective opposite longitudinal edges and a channel **16** to allow water to flow along the length of the louver **12**. The louver **12** and channel **16** are preferably shaped so that the edge **28** of flange **22** defines a top edge of channel **16** when in the closed position. As a result, when water accumulates on the roof assembly **10**, it flows along the louver channels **16** into the gutter **14** (see Figs. 1, 4 and 5), preventing water from leaking between the louvers **12**.

15

Near an edge of each louver **12** opposite the channels **16** and on the underside is a notch **26** which prevents water from flowing around edge **28** and up the underside of louver **12**. Profile **29** on the underside of the louver **12** matches the curvature of rounded edge **28** forming a water-resistant seal when the two surfaces abut.

20

The opening **11** between the edge of the roof assembly **10** and the louvers **12** that allows water to flow into the gutter **14** is more clearly shown in **Figure 4**. The water flow into the gutter **14** through the opening **11** also helps prevent water from interfering with the opening/closing mechanism **18**. **Figure 5** shows the vertical positioning of gutter **14** relative to mechanism **18**. A standard downspout (not shown) carries water in the gutter **14** to a drain (not shown).

30

Figure 6 shows a roof assembly **10** installed over a patio deck attached to a house. The roof assembly **10** is inclined so the water can flow along the louvers **12** via the channels **16** and into the gutter **14** (not shown). A hand crank **30** located on one of the roof assembly supports **32** controls the opening and closing of the louvers **12**.

While the roof assembly **10** shown in **Figure 6** is inclined such that water can flow freely along the louver channels **16**, this inclined roof may not always be possible or desirable. Therefore, the louvers **12** can alternatively have the channels **16** shaped as shown in **Figure 7** so as to be inclined along the longitudinal axis to allow water to flow freely into the gutter **14** even if the louvers **12** of the roof assembly **10** are horizontally oriented (i.e. both ends of the louver are positioned at the same height). In the embodiment of Fig. 7 the surface of the channel **16** of each of the louvers **12** is sloped from a high point **17** at one end of the louver to a low point **19** at the other end. When the louver **12** is horizontal, water will run from the high point **17** to the low point **19**.

An alternative embodiment of the louver **12** can be formed from two identical halves **38** as shown in **Figures 8** and **9**. Each half **38** has a channel **16** with flange **22** defining the outer edge. Flange **22** allows water to flow off the top surface of the louver **12**, and when in contact with a corresponding flange **22** of an adjacent louver, prevents water from flowing along the underside of the louver **12**. The edge of each half **38** opposite the flange **22** has joint pieces **40** and **42** for attachment to like joint pieces **40** and **42** of a second louver half **38**. The joined halves **38** are shown forming a complete louver **12** in **Figure 9**.

Accordingly, while this invention has been described with reference to illustrative embodiments, this description is not intended to be construed in a limiting sense. Various modifications of the illustrative embodiments, as well as
5 other embodiments of the invention, will be apparent to persons skilled in the art upon reference to this description. It is therefore contemplated that the appended claims will cover any such modifications or embodiments as fall within the scope of the invention.

10

WE CLAIM:

1. A louver for a louvered roof assembly, comprising a longitudinally extending channel on an upper surface thereof, wherein said channel is sloped from a first end of said louver toward a second end of said louver such that when said first and second ends of said louver are positioned at equal height, water in said channel will drain from said first end toward said second end.

10

2. A louver according to claim 1, wherein longitudinal edges of said louver form a water-resistant seal with corresponding edges of adjacent ones of said louvers when said louvers are in a closed position.

15

3. A louver according to claim 1, wherein said upper surface of said louver is shaped to drain water into said channel and into a channel of an adjacent one of said louvers.

20

4. A louvered roof assembly having a plurality of louvers, each of said louvers comprising a longitudinally extending channel on an upper surface thereof, wherein said channel is sloped from a first end of said louver toward a

second end of said louver such that when said first and second ends of said louver are positioned at equal height, water in said channel will drain from said first end toward said second end.

5

5. A louvered roof assembly according to claim 4, wherein longitudinal edges of each of said louvers form a water-resistant seal with corresponding edges of adjacent ones of said louvers when said louvers are in a closed position.

10

6. A louvered roof assembly according to claim 4, further comprising a gutter, wherein said channel is operative to drain water into said gutter.

15

7. A louvered roof assembly according to claim 4, wherein said upper surface of said louver is shaped to drain water into said channel and into a channel of an adjacent one of said louvers.

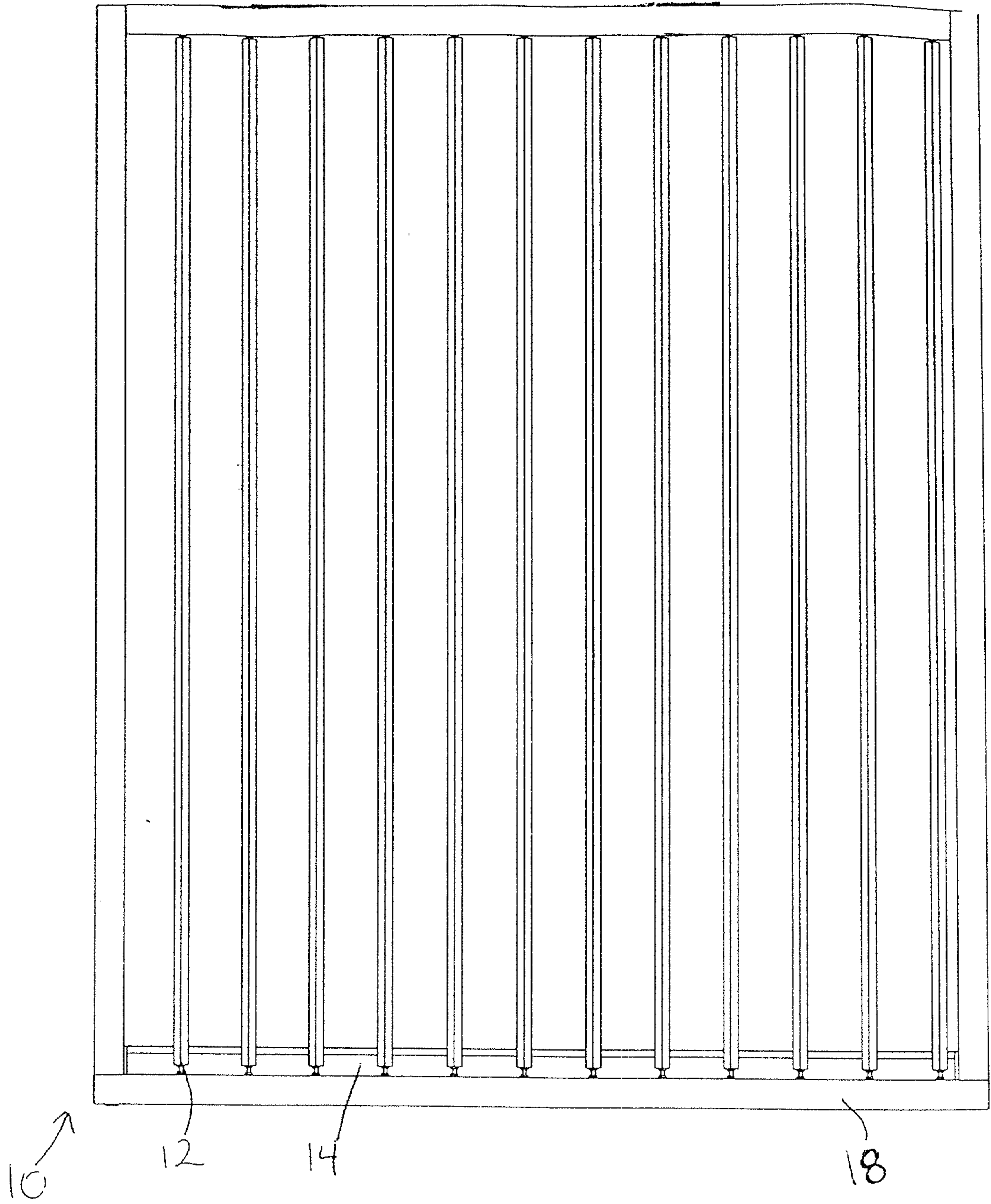


Figure 1

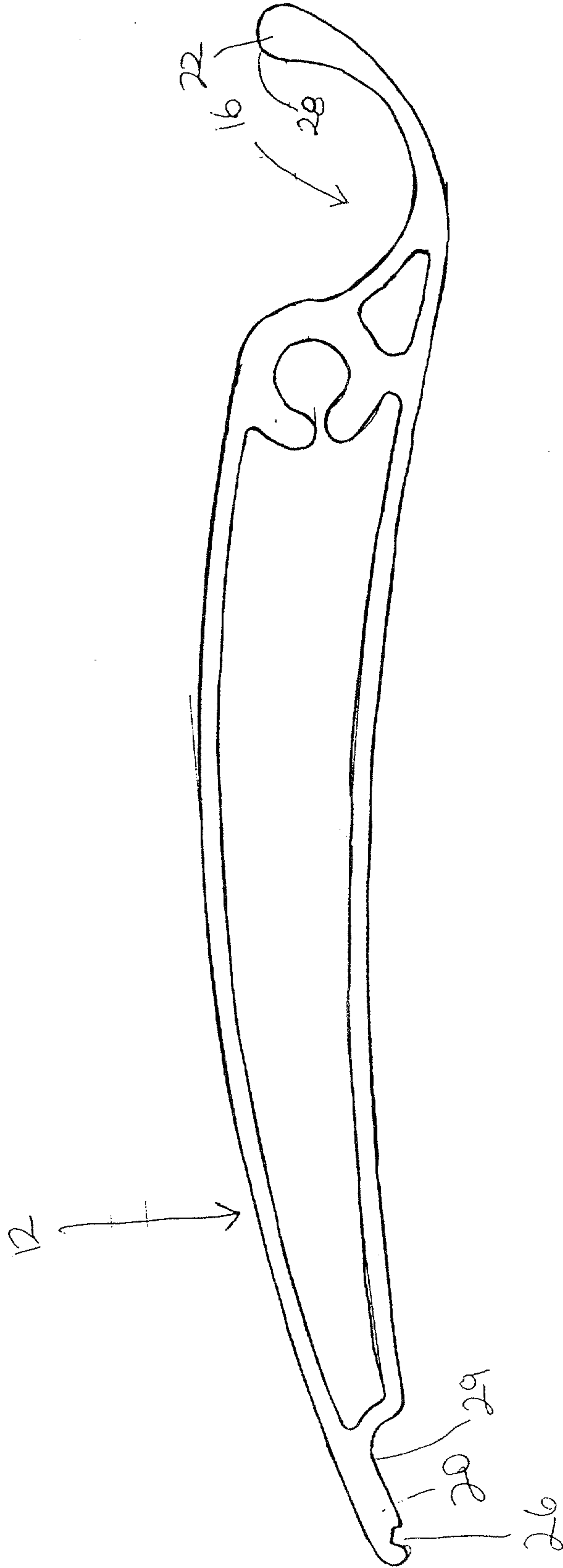


Figure 2

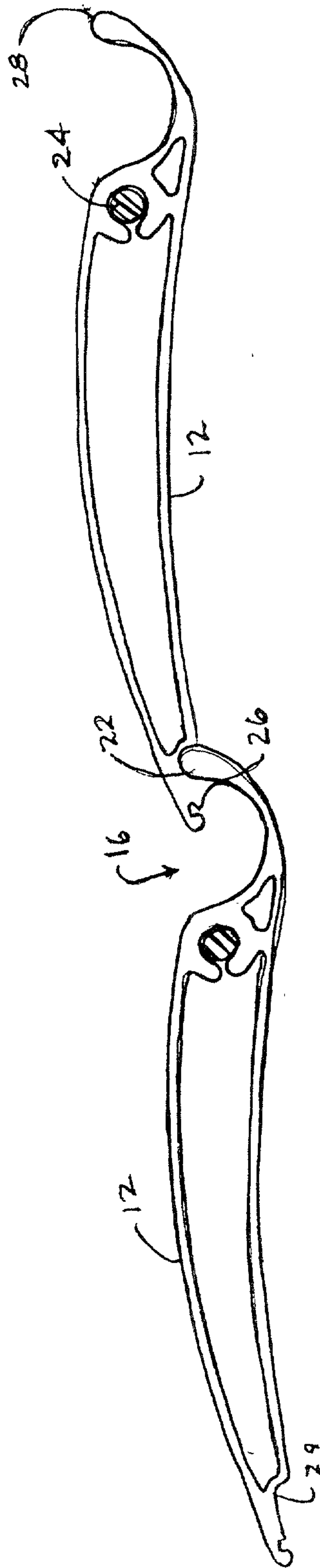


Figure 3

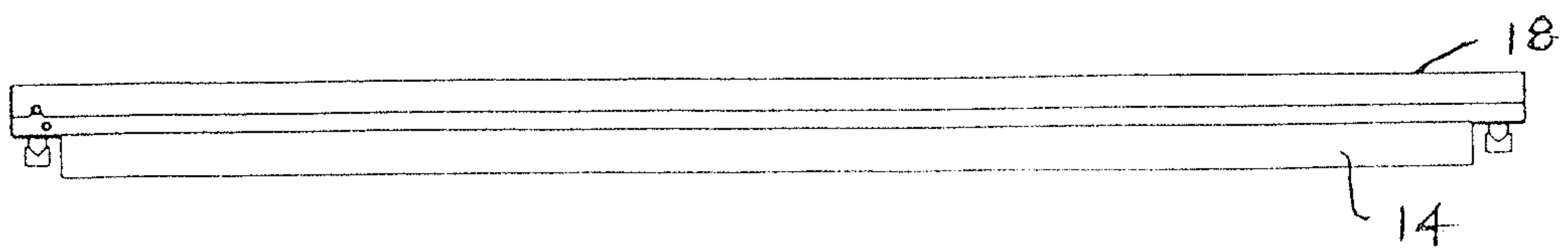
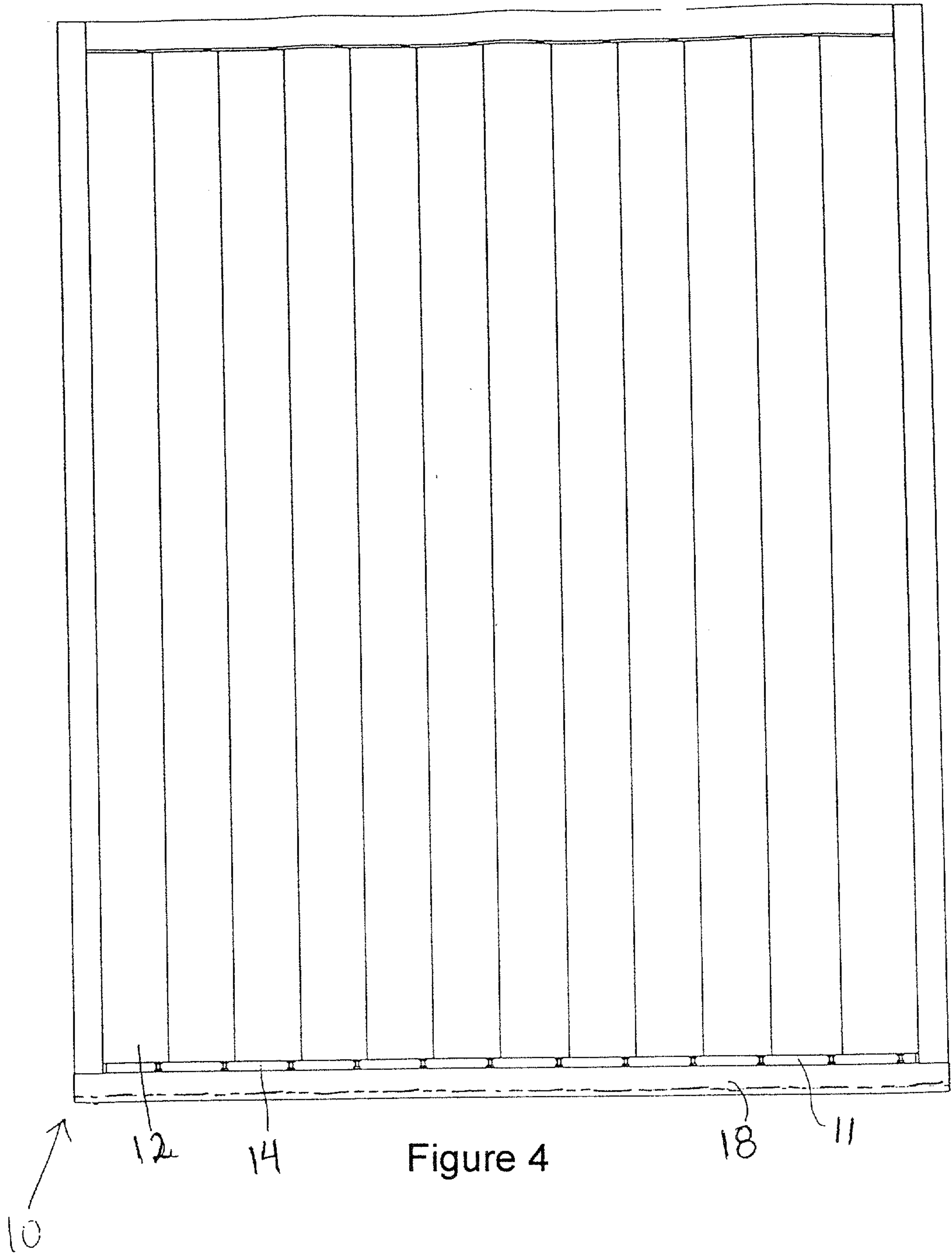


Figure 5

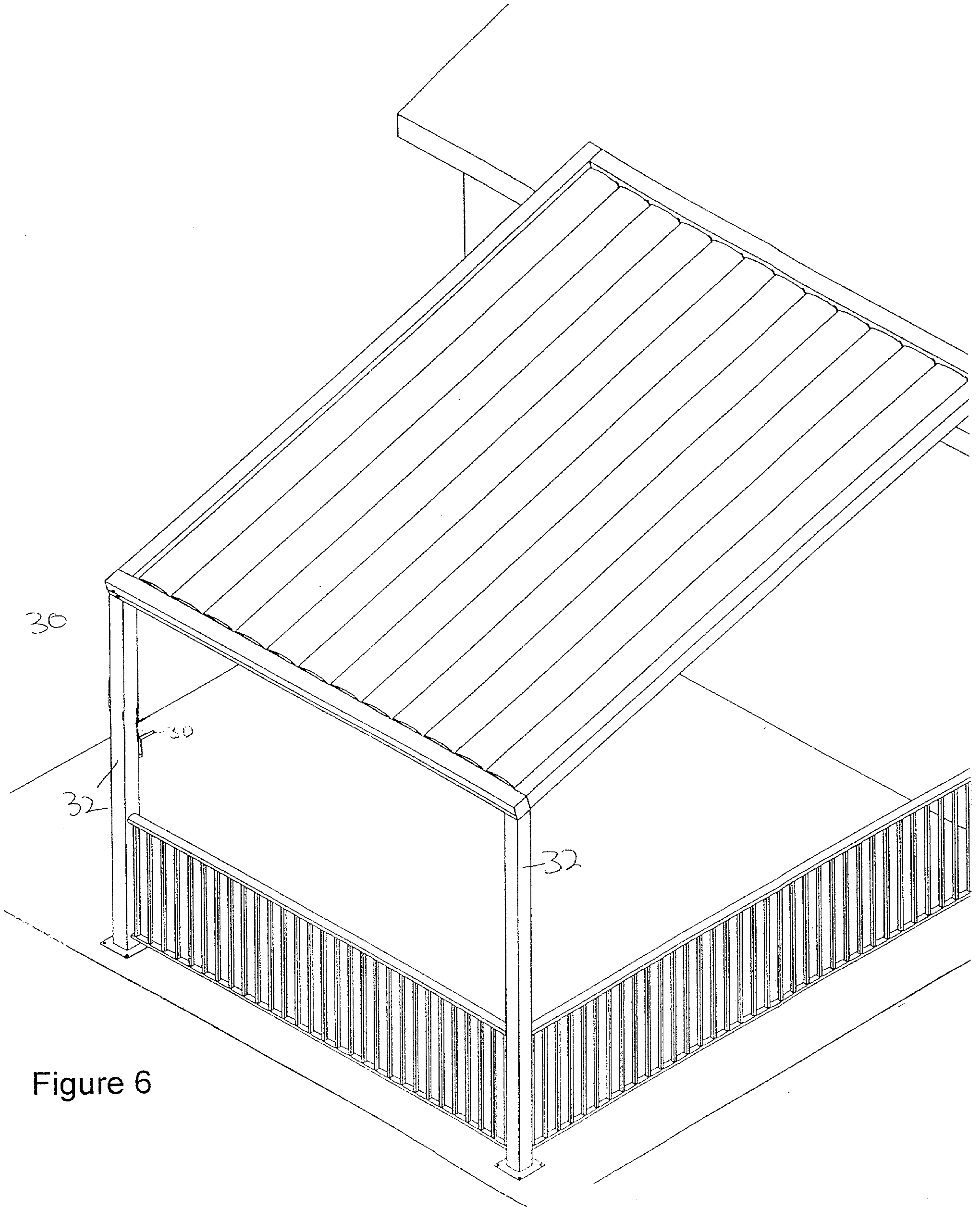


Figure 6

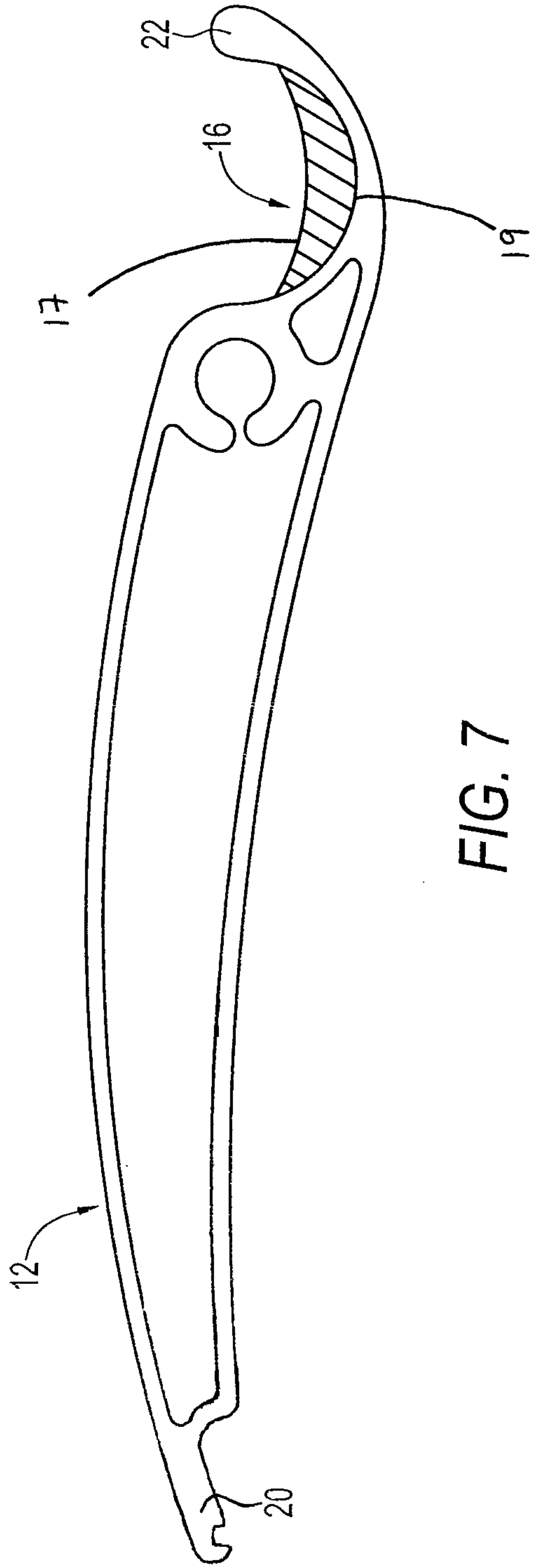


FIG. 7

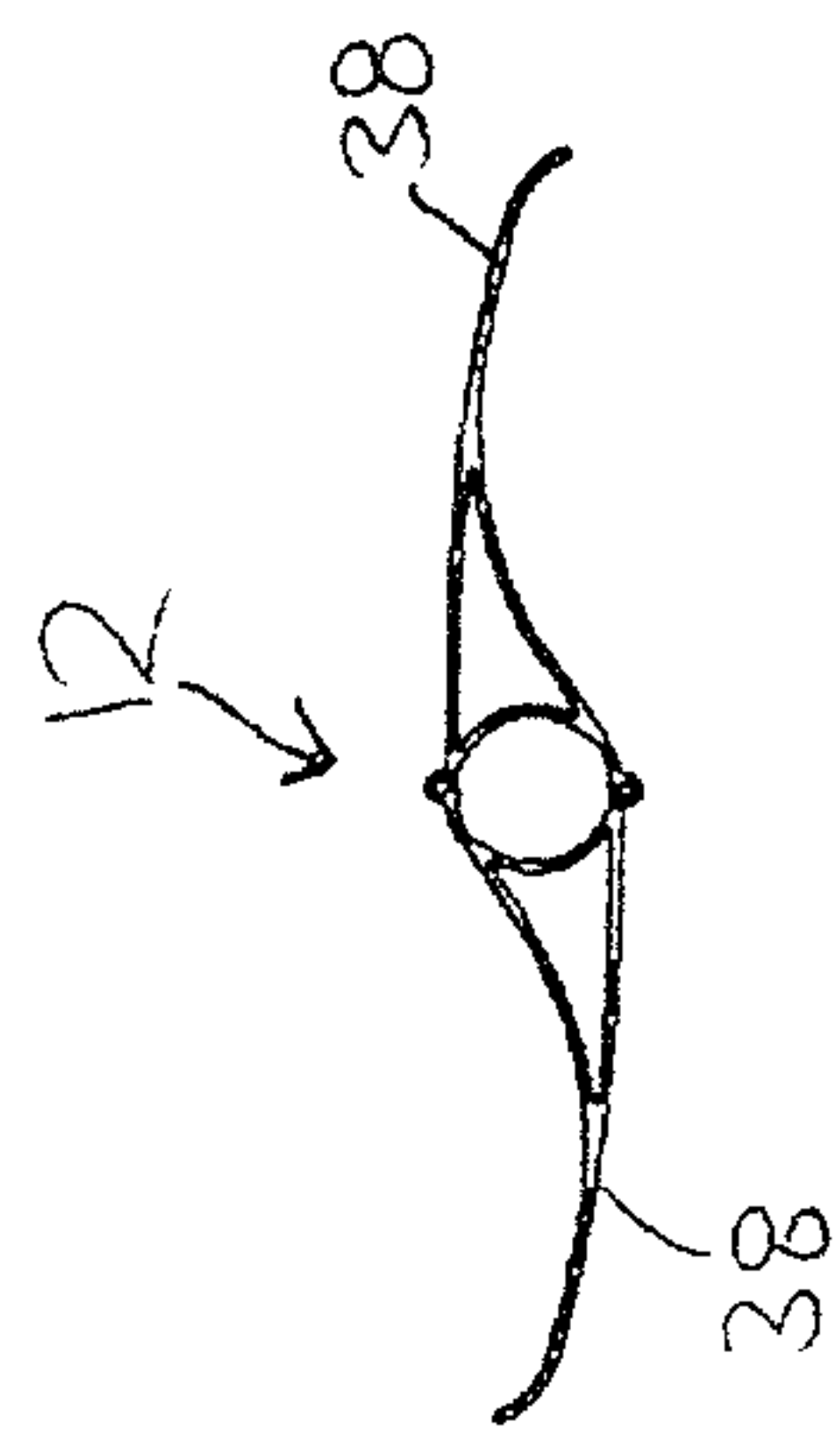


Figure 9

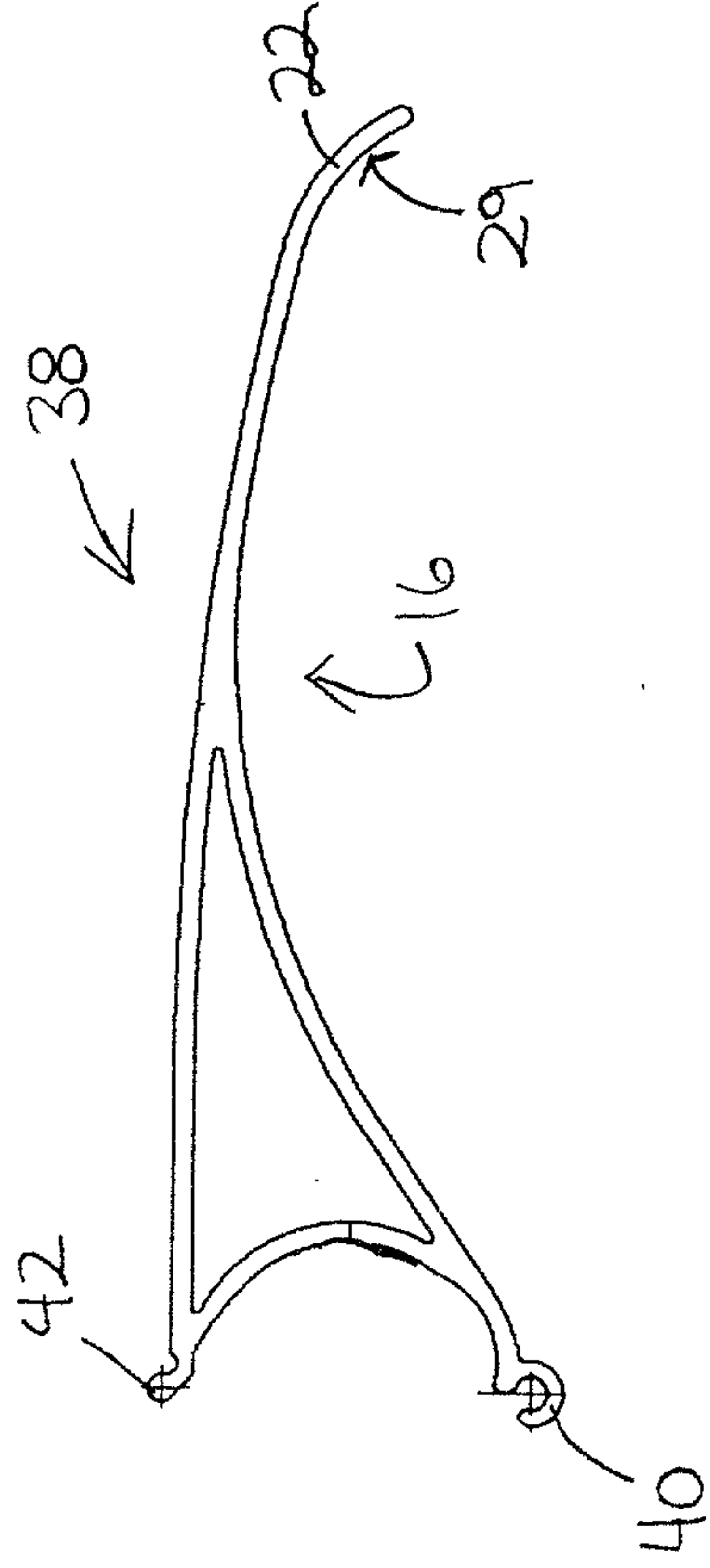


Figure 8

