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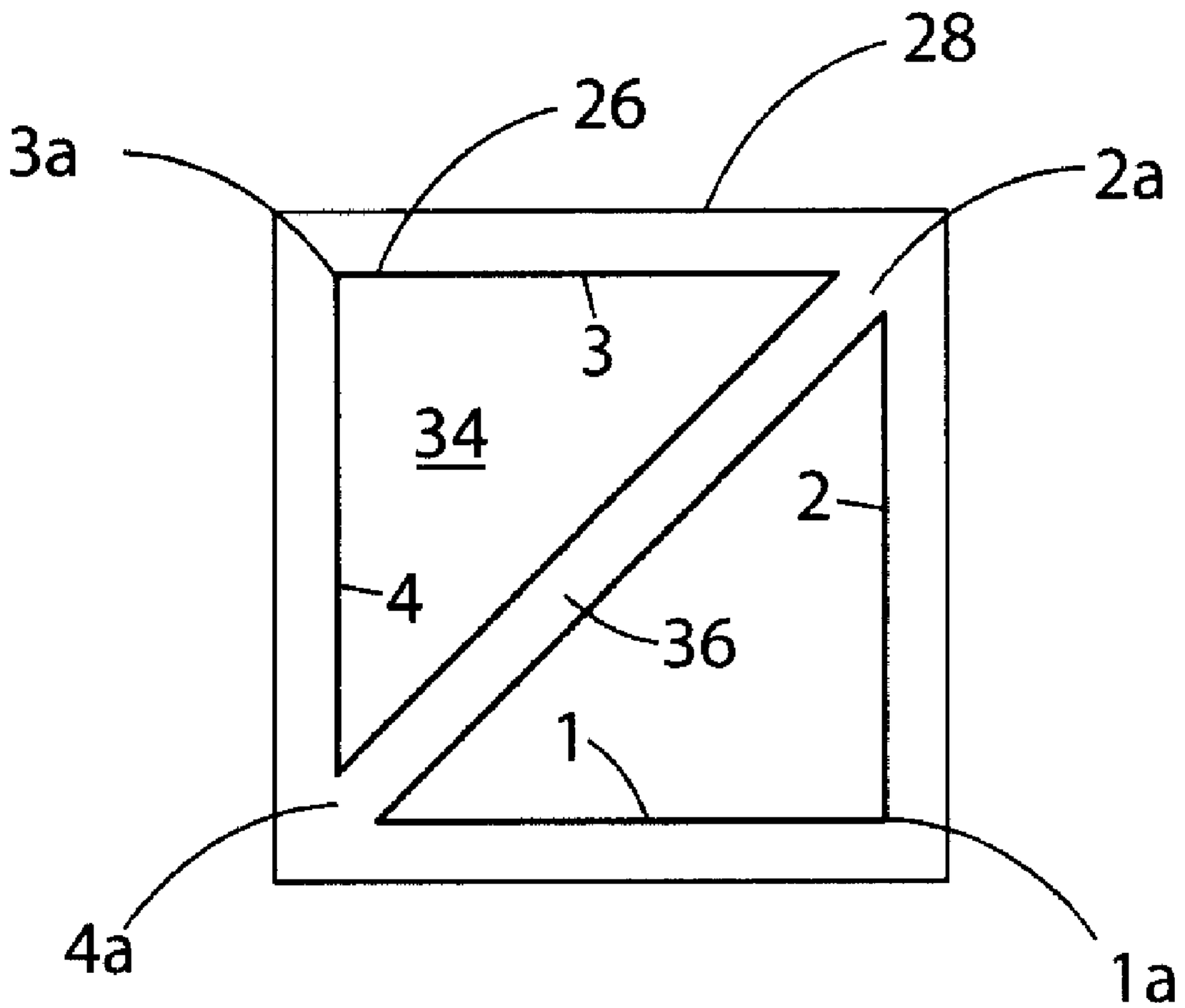


(57) Abrégé/Abstract:
A picket for a railing system having a top rail and a bottom rail, the picket including an elongated tubular body having inner and outer walls and first and second ends for engaging the top and bottom rails, respectively. The inner wall defines a longitudinal bore through the elongated tubular body from the first end to the second end. The picket includes a reinforcing member connected to and extending away from the inner wall of the elongated tubular body.

ABSTRACT

A picket for a railing system having a top rail and a bottom rail, the picket including an elongated tubular body having inner and outer walls and first and second ends for engaging the top and bottom rails, respectively. The inner wall defines a longitudinal bore through the elongated tubular body from the first end to the second end. The picket includes a reinforcing member connected to and extending away from the inner wall of the elongated tubular body.

TITLE OF THE INVENTION

PICKET FOR A RAILING SYSTEM

FIELD OF THE INVENTION

The invention relates to the field of railings and in particular to a picket for a railing system.

BACKGROUND OF THE INVENTION

Railing systems for any number of outdoor applications are well known. For example, residential decks, pool decks, playgrounds, etc., all utilize any number of conventional railing systems. Such railing systems are typically made of pressure treated lumber or aluminum particularly suited for outdoor use.

Typically, railing systems utilize pickets which engage a top and bottom rail. To save material, pickets are generally tubular in shape with a bore extending from one end of the picket to the other.

Building codes have been implemented in various jurisdictions throughout the world. Typically, in order to safeguard the public, these codes set minimum performance requirements. One such requirement relates to railing in-fills i.e. pickets. Here, pickets are required to meet certain horizontal load requirements.

In the past, when such load requirements are applied to traditional pickets, the pickets have been known to fail by either deflecting more than what is allowable under code or by simply disengaging from the top or bottom rails. Consequently, such pickets are undesirable, particularly in the residential railing industry where homeowners frequently install or build their own railing systems.

Accordingly, a need exists for an improved picket for a railing system which overcomes the deficiencies noted above.

SUMMARY OF THE INVENTION

According to one aspect of the present invention there is provided a picket for a railing system having a top rail and a bottom rail. The picket may include an elongated tubular body having inner and outer walls and first and second ends for engaging the top and bottom rails, respectively. The inner wall may define a longitudinal bore through the elongated tubular body from the first end to the second end. A reinforcing member may be connected to and extend away from the inner wall of the elongated tubular body.

The inner wall of the tubular body may include a first, a second, a third and a fourth wall arranged at right angles to one-another to form a first corner, a second corner, a third corner, and a fourth corner.

The reinforcing member may run longitudinally from the first end of the tubular body to the second end and may span the bore defined by the inner wall. The reinforcing member may extend from the first corner to the third corner, the second corner to the fourth corner, or from the first corner to the third corner and from the second corner to the fourth corner.

The elongated tubular body or reinforcing member may be comprised of aluminum.

According to another aspect of the present invention there is provided a picket for a railing system having a top rail and a bottom rail. The picket may include an elongated tubular body having inner and outer walls and first and second ends for engaging the top and bottom rails, respectively. The inner wall may define a bore through the elongated tubular body from the first end to the second

end. A reinforcing member may be connected to and extend away from the inner wall and across the bore defined by the inner wall of the elongated tubular body.

According to yet another aspect of the present invention there is provided a picket for a railing system having a top rail and a bottom rail. The picket may include an elongated tubular body having inner and outer walls and first and second ends for engaging the top and bottom rails, respectively. The inner wall may define a bore through the elongated tubular body from the first end to the second end. A plurality of reinforcing members may be connected to and extend away from the inner wall of the elongated tubular body. Each of the reinforcing members may run longitudinally from the first end of the tubular body to the second end.

Other aspects of the invention will be appreciated by reference to the detailed description of the preferred embodiment and to the claims that follow.

BRIEF DESCRIPTION OF THE DRAWINGS

The preferred embodiment of the invention will be described by reference to the drawings thereof in which:

Fig. 1 is a perspective view of a railing system incorporating a picket in accordance with a first embodiment of the present invention;

Fig. 2 is a perspective view of a representative picket of the railing system of Fig. 1;

Fig. 3 is a cross sectional view along lines 3c-3c of Fig. 2;

Fig. 4 is a cross sectional view along lines 3c-3c of Fig. 2 depicting a second

embodiment of the picket of Fig. 2;

Fig. 5 is a cross sectional view along lines 3c-3c of Fig. 2 depicting a third embodiment of the picket of Fig. 2;

Fig. 6 is a cross sectional view along lines 3c-3c of Fig. 2 depicting a fourth embodiment of the picket of Fig. 2;

Fig. 7 is a top plan view of a fifth embodiment of the picket of Fig. 2;

Fig. 8 is a top plan view of a sixth embodiment of the picket of Fig. 2; and

Fig. 9 is a top plan view of a seventh embodiment of the picket of Fig. 2

DESCRIPTION OF THE PREFERRED EMBODIMENT OF THE INVENTION

Reference will now be made in detail to the presently preferred embodiments of the invention, one or more examples of which are illustrated in the drawings. Each example is provided by way of explanation of the invention, and not meant as a limitation of the invention. For example, features illustrated or described as part of one embodiment can be used on another embodiment to yield still a third embodiment. It is intended that the present invention include such modifications and variations as come within the scope and spirit of the present invention.

Referring to FIG. 1, a railing system 10 is generally shown including top and bottom rails 12 and 14 and end posts 16 and 18. The railing system 10 includes pickets 20. To determine whether an infill or picket will meet local building code requirements, a horizontal load along line 11 is generally applied to the infill.

FIG. 2 illustrates a representative picket 22. Picket 22 comprises an elongated tubular body 24 having inner 26 and outer 28 walls and first 30 and second 32 ends for engaging the top and bottom rails 12 and 14, respectively.

In this embodiment, inner wall 26 is comprised of a first 1, a second 2, a third 3 and a fourth 4 wall arranged at right angles to one-another. First 1 and second 2 walls form a first corner 1a, second and third walls form a second corner 2a, third 3 and fourth 4 walls form a third corner 3a, and fourth 4 and first 1 wall form a fourth corner 4a. As those skilled in the art will appreciate the cross-sectional shape of the picket as viewed from an end may be a circle, oval or any other particular shape suitable for a picket.

Referring to FIGS. 2 and 3 the inner wall 26 defines a longitudinal bore 34 running through the length of elongated tubular body 24 from the first end 30 to said second end 32.

To meet certain building code requirements a reinforcing member 36 is connected to and extends away from the inner wall 26 of the elongated tubular body 24. Reinforcing member 36 may be connected to the inner wall 26 via welding. Preferably, reinforcing member 36 is integrally formed with elongated tubular body 24 via extrusion for instance or by other means known in the art. As shown in FIG. 3, reinforcing member 36 may run the entire length of elongated tubular body 24 from the first end 30 to the second end 32 of the tubular body.

Depending upon local building code horizontal load requirements, several reinforcing members 36 may be applied along inner wall 26 at various strategic positions. For example, as shown in FIG. 4, when a picket is expected to withstand a low horizontal load requirement, a reinforcing member running the length of the picket may not be required. To save material while still meeting horizontal load requirements, it may be advantageous to utilize multiple reinforcing members 36 placed in a staggered linear fashion along inner wall 26.

Alternatively, as illustrated in FIG. 5, a reinforcing member 36 may simply be connected to the middle region of the picket 22 where bending forces may be more pronounced.

On the other hand, as illustrated in FIG. 6, when local building codes require a picket to meet a high horizontal load requirement, multiple parallel reinforcing members 36 may be used along inner wall 26. Depending on local building code requirements, as those skilled in the art will appreciate, any combination or length of reinforcing members may be used.

When additional reinforcement of a picket is required, reinforcing member 36 may span the bore 34. For example, as illustrated in FIGS. 7 and 8, respectively, reinforcing member 36 may extend from the first corner 1a to the third corner 3a or from the second corner 2a to the fourth corner 4a. For even greater internal support, as illustrated in FIG. 9, reinforcing member 36 may extend from the first corner 1a to the third corner 3a and from the second corner 2a to the fourth corner 4a to form an X pattern.

It should be appreciated by those skilled in the art that various modifications and variations can be made in the present invention without departing from the scope or spirit of the invention. It is intended that the present invention include such modifications and variations as come within the scope of the appended claims and their equivalents.

CLAIMS

1. A picket for a railing system having a top rail and a bottom rail, the picket comprising:

an elongated tubular body having four walls each having two sides which together define four inner wall surfaces and four outer wall surfaces, said elongated tubular body having first and second ends for engaging the top and bottom rails, respectively; and

a reinforcing member connected to and extending away from said inner wall surfaces of said elongated tubular body;

said inner wall surfaces of said tubular body comprising a first, a second, a third and a fourth inner wall surface arranged at right angles to one another, said first and second inner wall surfaces forming a first corner, said second and third inner wall surfaces forming a second corner, said third and fourth inner wall surfaces forming a third corner, and said fourth and first inner wall surfaces forming a fourth corner;

said reinforcing member extending in a direct line from said first corner to said third corner, said reinforcing member extending at least partially through said elongated tubular body in a longitudinal direction between said first end and said second end;

in a region where said reinforcing member is present, said first inner wall surface, said fourth inner wall surface and a bottom surface of said reinforcing member defining three sides of a first longitudinal hollow bore of triangular cross section, said first longitudinal bore being hollow and extending at least partially through said elongated tubular body in the longitudinal direction between said first end and said second end;

in the region where said reinforcing member is present, said second inner wall surface, said third inner wall surface and a top surface of said reinforcing member defining three sides of a second longitudinal hollow bore of triangular cross section, said second longitudinal bore being hollow and extending at least partially through said elongated tubular body in the longitudinal direction between said first end and said second end;

said reinforcing member intersecting and filling a center-most portion of said picket; and

wherein said picket is integrally formed and of a single material.

2. The picket of claim 1 wherein said single material is aluminum.

3. The picket of claim 1, said outer wall surfaces each being a flat parallelogram, said flat parallelogram having two long sides each of which is adjacent to another one of said outer wall surfaces, said flat parallelogram having a first short side at said first end, and said flat parallelogram having a second short side at said second end;

a cross-section of said elongated tubular body in a region where the reinforcing member is present defining a square and two isosceles right triangles, said square having said four outer wall surfaces as sides of said square, said square defining the outer perimeter of said picket in said cross section, said two isosceles right triangles each being entirely hollow.

4. A picket for a railing system having a top rail and a bottom rail, the picket comprising:

an integrally formed elongated tubular body having inner and outer wall surfaces and having first and second ends for engaging the top and bottom rails, respectively;

said inner wall surfaces of said tubular body comprising a first, a second, a third and a fourth inner wall surface arranged at right angles to one another, said first and second inner wall surfaces forming a first corner, said second and third inner wall surfaces forming a second corner, said third and fourth inner wall surfaces forming a third corner, and said fourth and first inner wall surfaces forming a fourth corner;

a reinforcing member integrally formed with said tubular body and extending in a direct line from said first corner to said third corner, said reinforcing member extending at least partially through said elongated tubular body in a longitudinal direction between said first end and said second end, said reinforcing member having a top surface and a bottom surface;

in a region where said reinforcing member is present, said first inner wall surface, said fourth inner wall surface and said bottom surface of said reinforcing member defining three sides of a first longitudinal bore of triangular cross section, said first longitudinal bore being hollow and extending in the longitudinal direction at least partially through said elongated tubular body between said first end and said second end;

in the region where said reinforcing member is present, said second inner wall surface, said third inner wall surface and said top surface of said reinforcing member defining three sides of a second longitudinal hollow bore of triangular cross section, said second longitudinal bore being hollow and extending in the longitudinal direction at least partially through said elongated tubular body between said first end and said second end;

said outer wall surfaces each being a flat parallelogram, said flat parallelogram having two long sides each of which is adjacent to another one of said outer wall surfaces, said flat parallelogram having a first short side at said first end and a second short side at said second end;

in the region where said reinforcing member is present, a cross section of said elongated tubular body defining a square and two isosceles right triangles, said square having said outer wall surfaces as four sides of said square, said square defining the outer perimeter of said picket in said cross section, said two isosceles right triangles each being entirely hollow; and

wherein said picket is integrally formed and of a single material.

5. An elongated tubular extruded aluminum picket for a railing system having a top rail and a bottom rail, the picket extending in a longitudinal direction between first and second ends and having, at least in some locations between the first and second ends, a cross section, across its longitudinal dimension, comprising:

a square outer perimeter of four straight outer-wall sides meeting at first, second, third and fourth right-angle corners;

a reinforcing member having first and second sides;

a first bore in the shape of a first right isosceles triangle, said first right isosceles triangle having three sides, namely a first hypotenuse and two first inner-wall sides of equal dimension which meet at a first right-angle corner, said first hypotenuse being said reinforcing member first side;

a second bore in the shape of a second right isosceles triangle, said second right isosceles triangle having a hypotenuse of said reinforcing member second side and having two second inner-wall sides of equal dimension which meet at a second right angle corner;

said reinforcing member intersecting and filling a center-most portion of said picket; and

wherein said picket is integrally formed and of a single material.

6. The picket of claim 5 having only one of said reinforcing members.

7. The picket of claim 6 having only two bores therethrough, namely said first and second bores.

8. The picket of claim 1 wherein the reinforcing member extends completely through the elongated tubular body in the longitudinal direction from the first end to the second end.

9. The picket of claim 1 wherein the reinforcing member comprises a plurality of reinforcing components, each reinforcing component extending partially through the elongated tubular body in the longitudinal direction and each reinforcing component spaced apart, in the longitudinal direction, from adjacent reinforcing components.

10. The picket of claim 1 wherein the reinforcing member extends partially through a central portion of the elongated tubular body in the longitudinal direction, the reinforcing member extending toward the first end to a first a location spaced inwardly in the longitudinal direction from the first end and the reinforcing member extending toward the second end to a second location spaced inwardly in the longitudinal direction from the second end.

11. The picket of claim 1 wherein the picket is fabricated via extrusion.

12. The picket of claim 5 wherein the reinforcing member extends completely through the elongated tubular picket in the longitudinal direction from the first end to the second end.

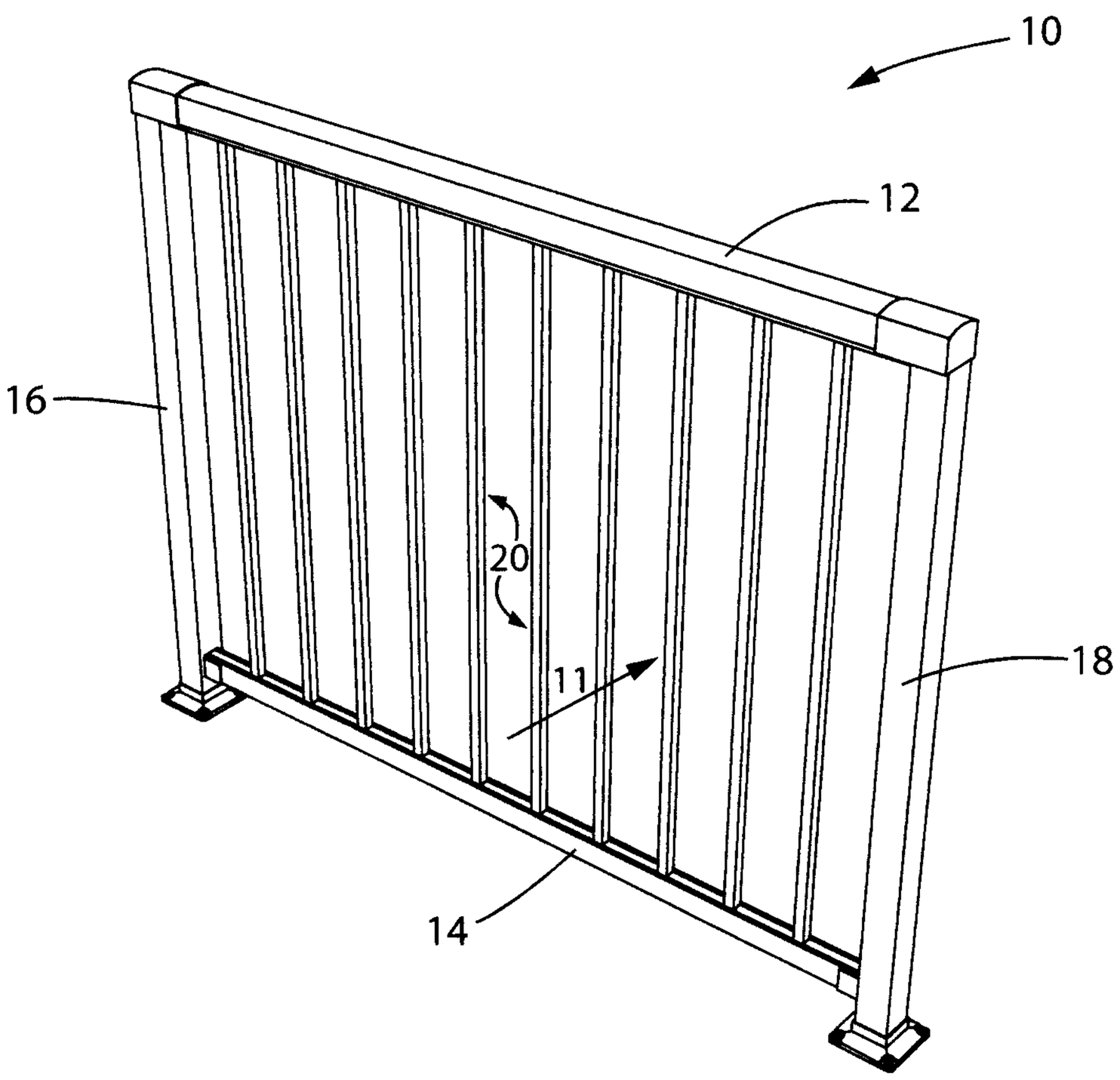


Fig. 1

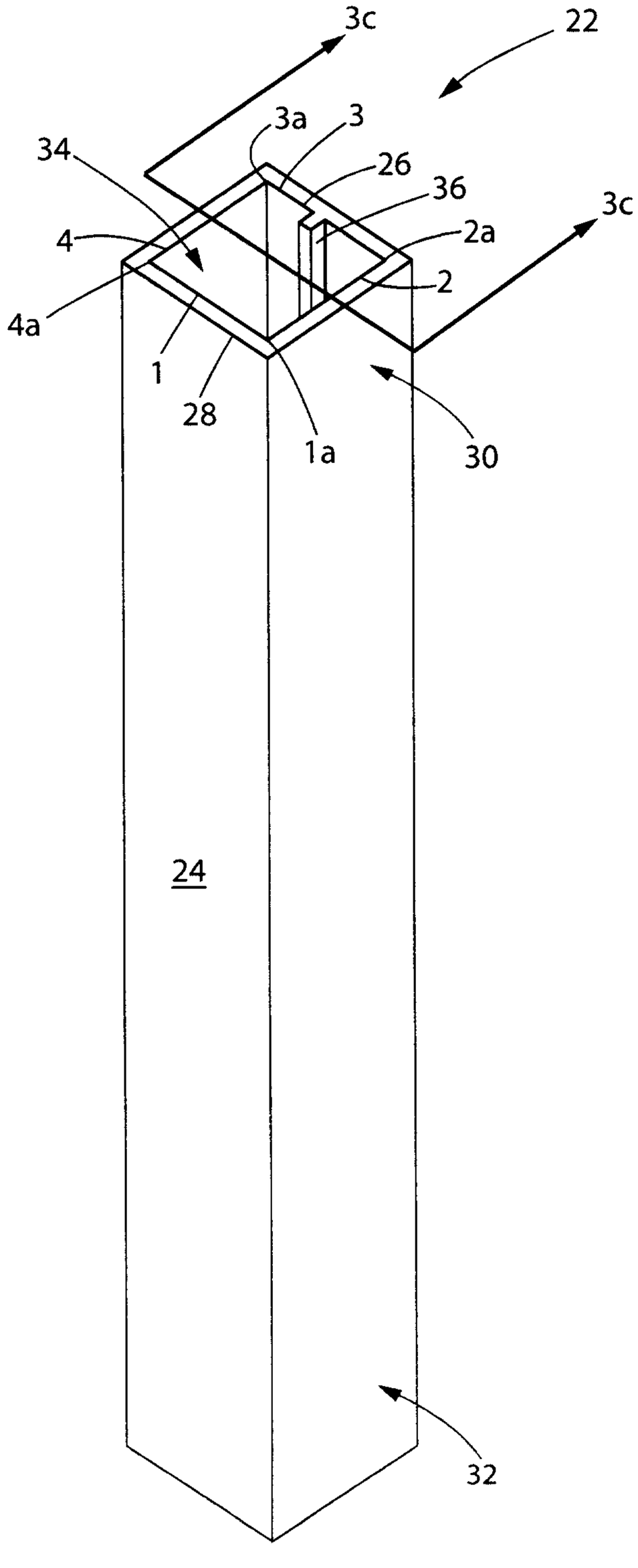


Fig. 2

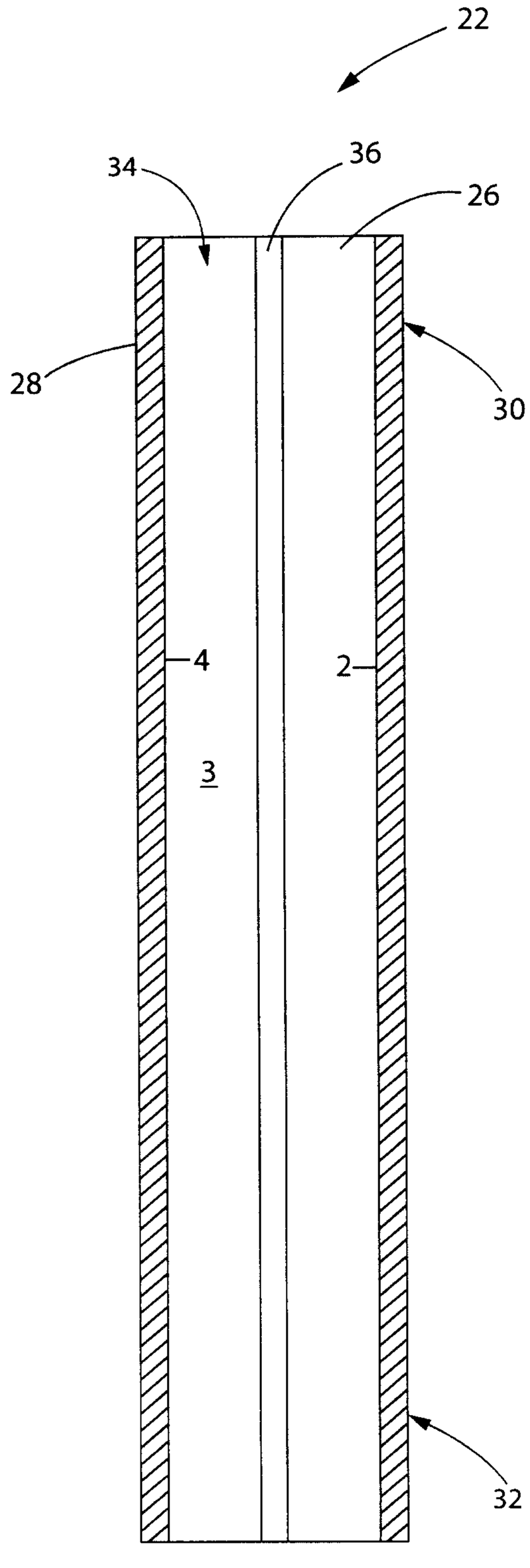


Fig. 3

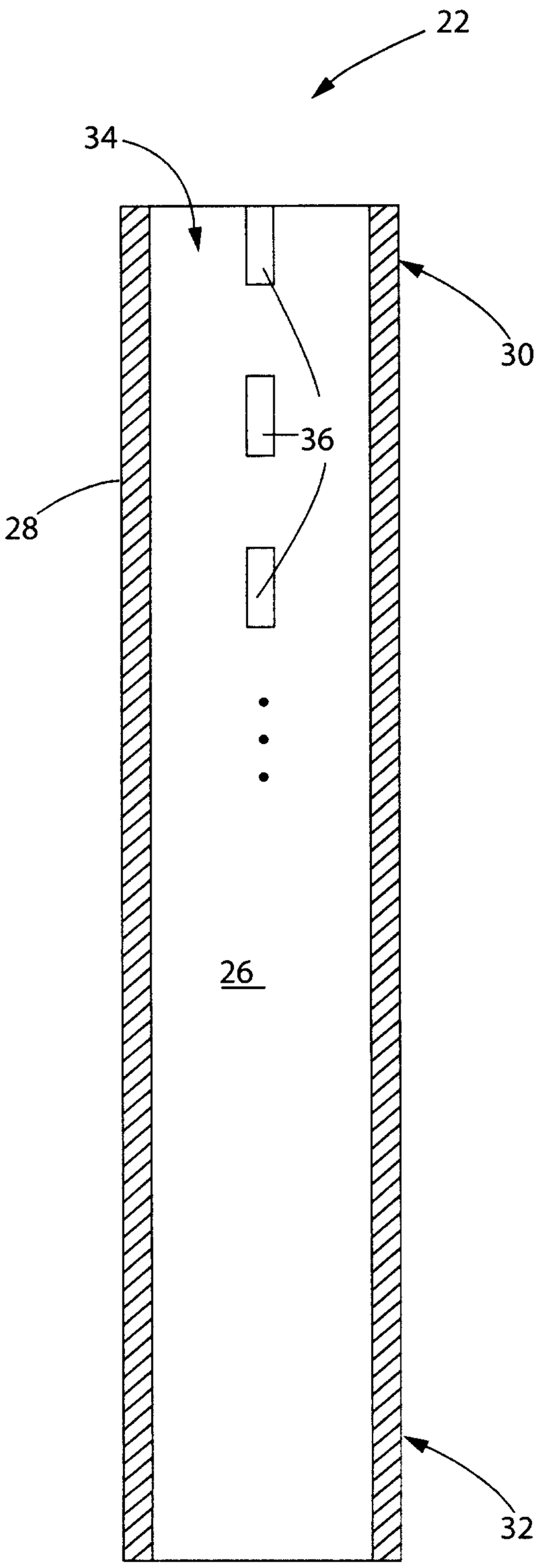


Fig. 4

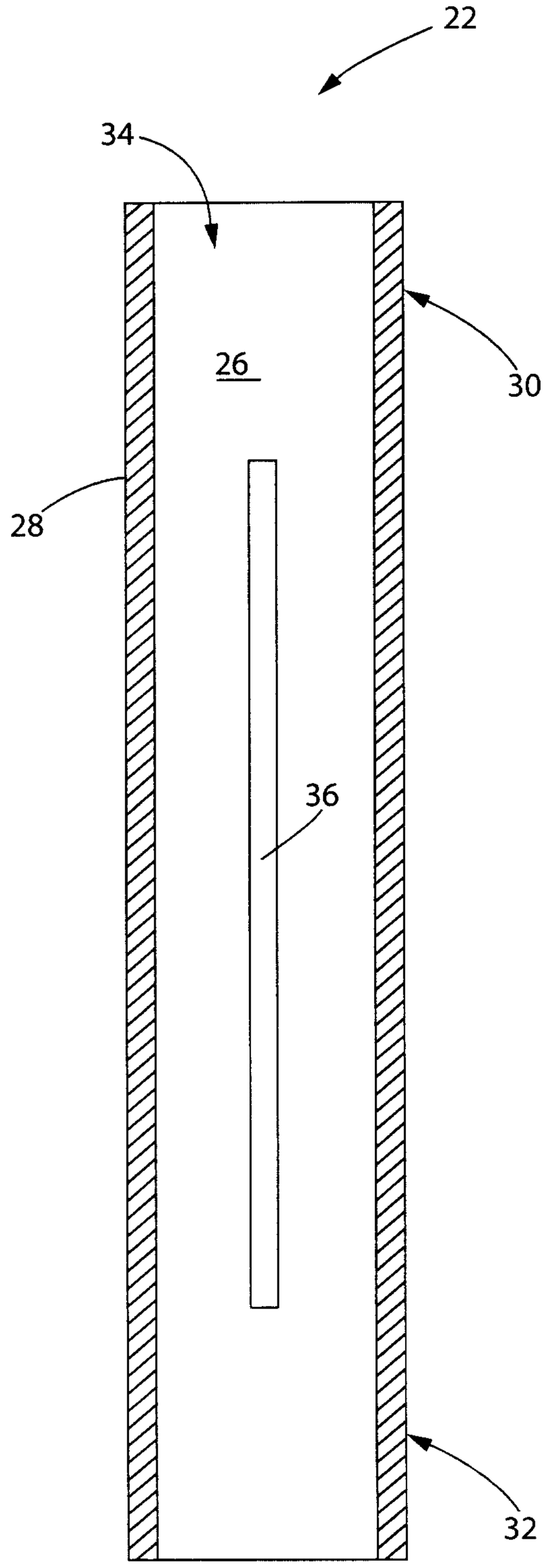


Fig. 5

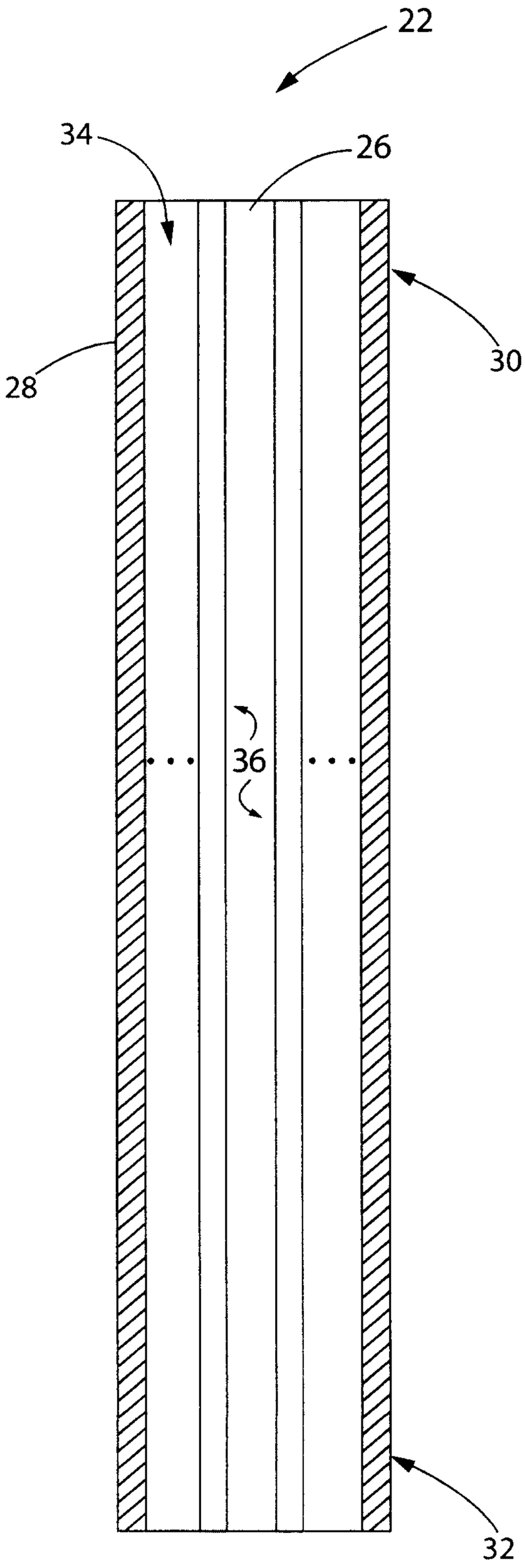


Fig. 6

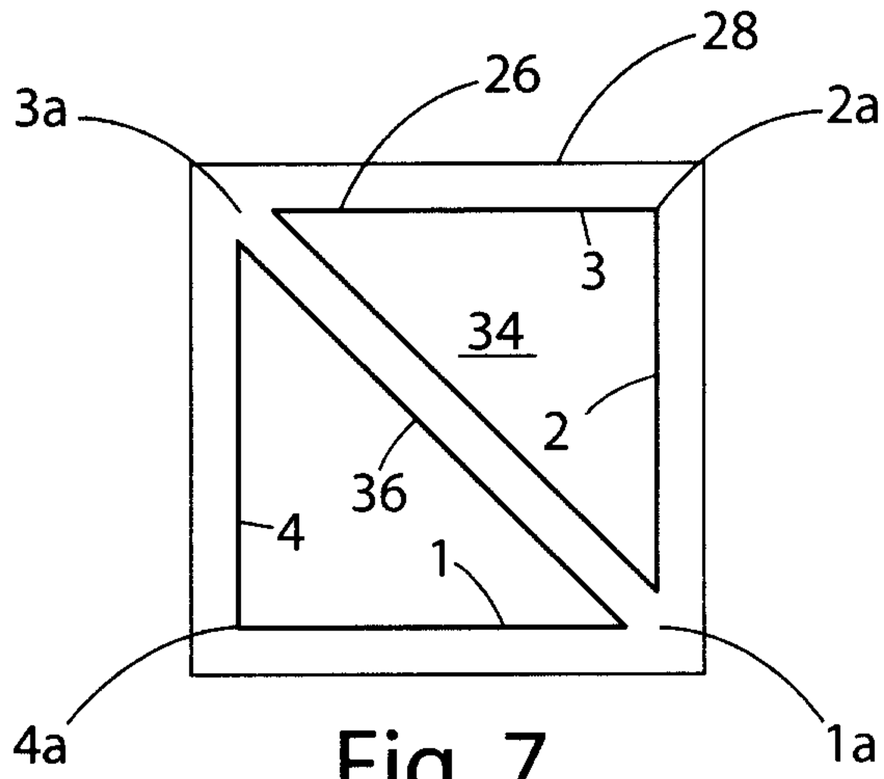


Fig. 7

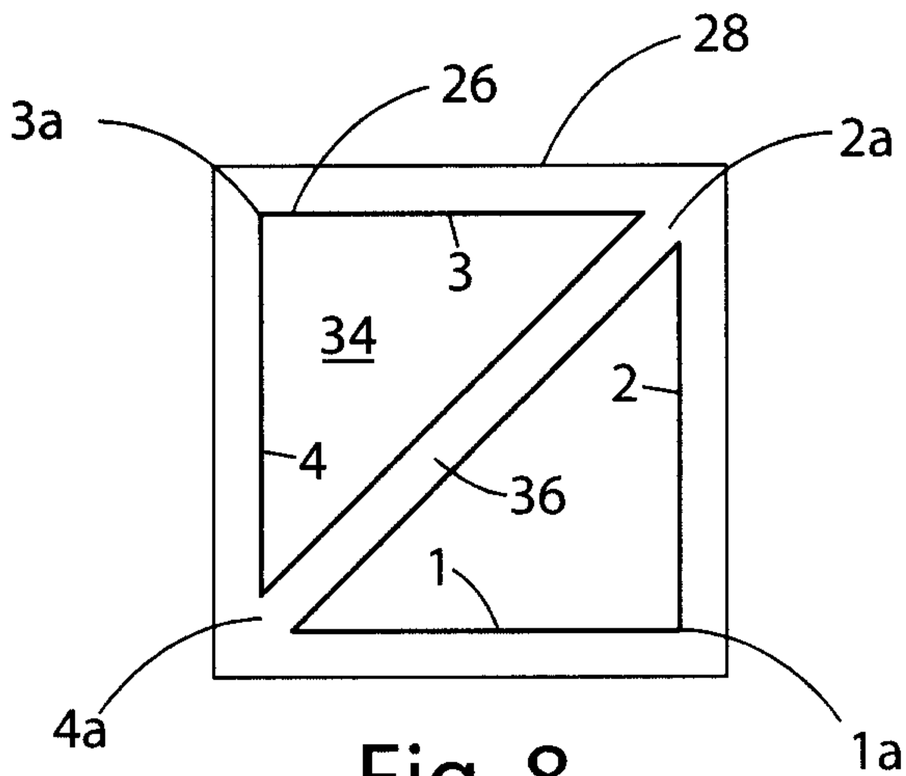


Fig. 8

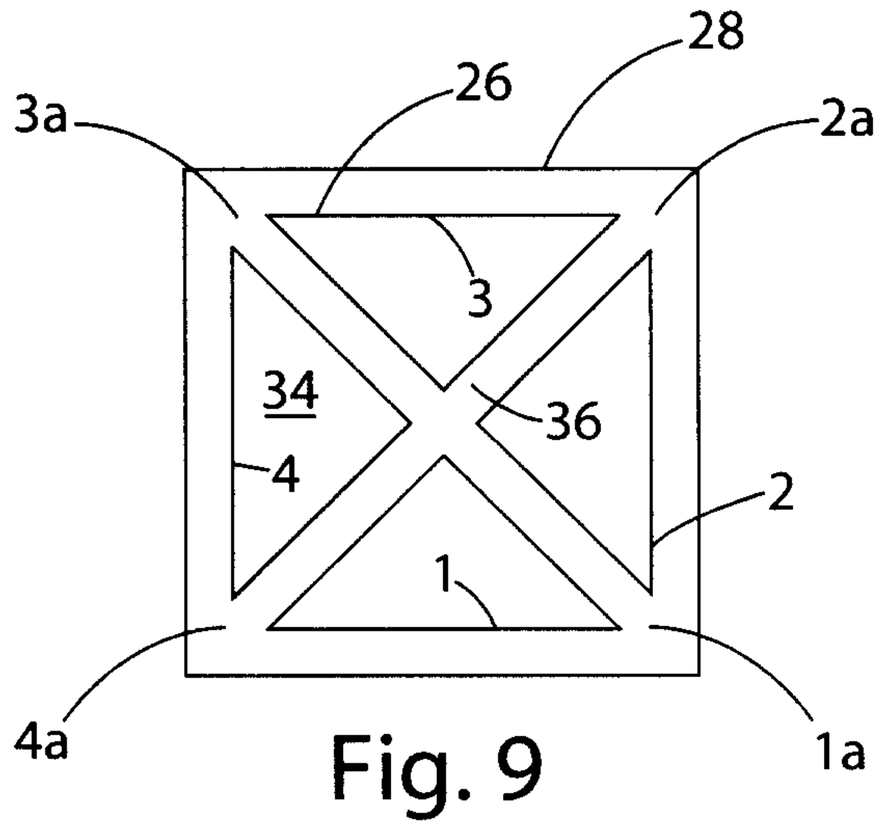
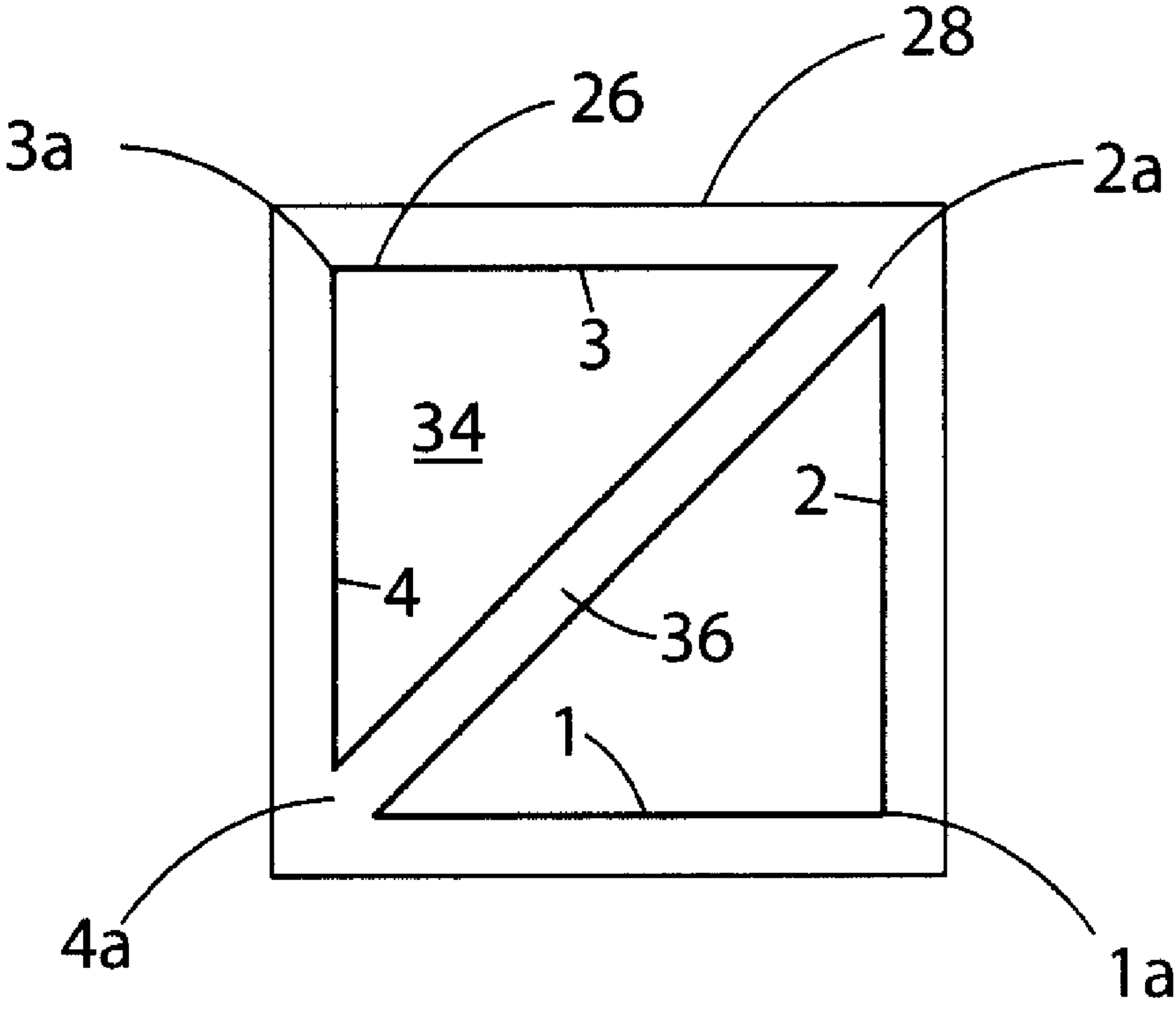


Fig. 9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