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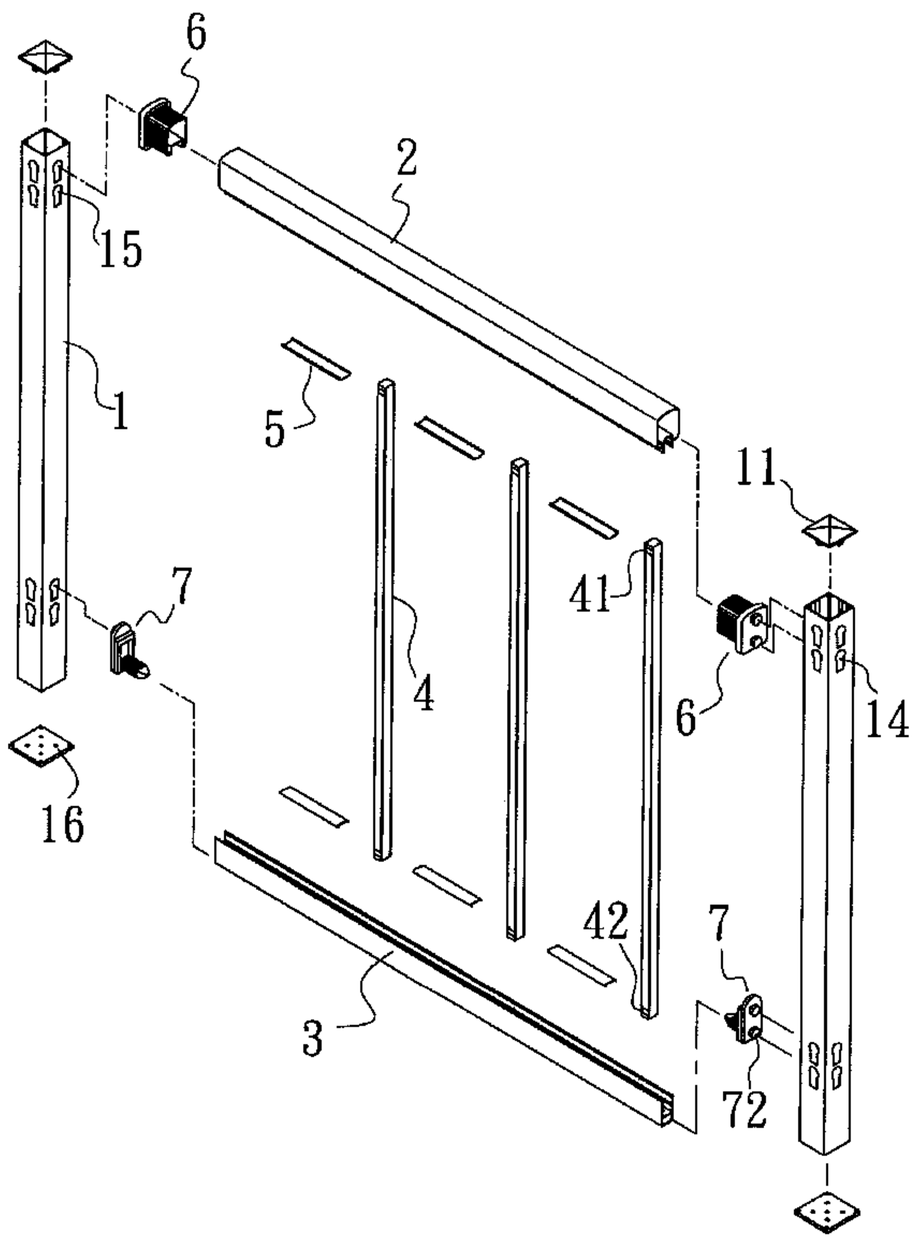
(54) Titre : ENSEMBLE DE CLOTURE-LISSAGE VERTICAL UNITISE
(54) Title: UNITIZED UPRIGHT FENCE/RAILING SET



(57) Abrégé/Abstract:
A unitized upright fence/railing set that comprises of: posts, upper beam, lower beam, and multiple enclosed railings that are placed in between the upper beam and the lower beam. By using the joint components, the posts are joined together with the upper beam and the lower beam. The posts are square tubes, and during production, the surface of the posts are carved with mortises which are to be punctured through during fence assembly by the corresponding tenons on the joint components, so that the beams can be locked and secured in place onto the posts. The configuration of the present invention allows for easy handling and carrying of the dissembled fences/railings, and allows for the subsequent effortless fence/railing assembly.

ABSTRACT OF THE DISCLOSURE

A unitized upright fence/railing set that comprises of: posts, upper beam, lower beam, and multiple enclosed railings that are placed in between the upper beam and the lower beam. By using the joint components, the posts are joined together with the upper beam and the lower beam. The posts are square tubes, and during production, the surface of the posts are carved with mortises which are to be punctured through during fence assembly by the corresponding tenons on the joint components, so that the beams can be locked and secured in place onto the posts. The configuration of the present invention allows for easy handling and carrying of the dissembled fences/railings, and allows for the subsequent effortless fence/railing assembly.

UNITIZED UPRIGHT FENCE/RAILING SET

BACKGROUND OF THE INVENTION

Field of the Invention:

The present invention relates to a unitized upright fence/railing set, in particular, it refers to fence/railing components that are aluminum extruded, and the components are joined with one another by mortises and tenons so that users can easily assemble or dissemble the fences/railings and store them away.

Description of Prior Art:

Fences or railings have become part of our daily lives long time ago. As part of interior designs, fences/railings can be used to segregate different parts of the living quarters. Fences/railings can also be helpful to the elderly or the sick, so that they are able to move around by using them as supports. Fences/railings can also be used to protect babies or young children with the proper enclosures. For the outside of the houses, fences/railings are mostly used in hallways.

In general, most of the existing fences or railings are made of wood. In order to strengthen the overall fence/railing structures, some parts of the structures may be made of metallic material. Nevertheless, whether they are made of wood or metallic material, the different parts are drilled and then locked in place with screws. The resulting structure is not only heavy to carry or to transport, but also difficult to assemble or dissemble.

In view of the technical deficiencies arisen in the prior art, the inventor has dedicated great efforts studying various approaches against the above mentioned deficiencies; after continuously researching and experimenting, the inventor ultimately brings about the formulation and design of the present invention.

SUMMARY OF THE INVENTION

The object of present invention is to provide a unitized upright fence/railing set that comprises of posts, beams and enclosed railings, so to form a structure that is easy to be

assembled /dissembled, and to be stored away.

According to the unitized upright fence/railing set of present invention, after the posts are manufactured, at the locations on the surface of the posts where the posts and the upper beam or the lower beam are to be joined, key-hole shape mortises are carved on the posts. During assembly, these mortises are punctured to allow tenons on the beams to be inserted through the holes and thus the posts and the beams are joined and locked in place. Prior to assembly, the mortises are not punctured so to maintain smoothness of the post surfaces; it also avoids potential rust formation around the mortises, and it avoids unwanted objects to get inside the posts through the mortises; it further avoids potential damages to the edges of the mortises. Therefore, this is the second object of present invention.

A more complete understanding of these and other features and advantages of the present invention will become apparent from a careful consideration of the following detailed description of certain embodiments illustrated in the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a plain view of the assembled unit of present invention.

FIG. 2 is an exploded view of present invention.

FIG. 3 is an enlarged view of the "mortise and tenon" components of present invention.

FIG. 4 is another enlarged view of the "mortise and tenon" components of present invention.

FIG. 5 is a cross sectional view of the assembled unit of present invention with its post, upper beam and lower beam.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

As shown in Fig. 1, the unitized upright fence/railing set of present invention comprises of: posts 1, upper beam 2, lower beam 3 and multiple enclosed railings 4 that are placed between the upper beam 2 and the lower beam 3.

All of the above components are aluminum alloy extrusions.

In reference to Figs. 2, 3 and 4, the posts 1 are placed at both sides of the fence/railing; in the case that the overall fencing is too long, additional post(s) 1 may be added in between along the length of the entire fencing to strengthen the fence/railing structure.

Between two posts, there are an upper beam 2 and a lower beam 3; between the upper beam 2 and the lower beam 3, there are multiple vertical enclosed railings 4, the top ends and the bottom ends of the enclosed railings 4 are individually inserted into the upper beam 2 and the lower beam 3 respectively; between each enclosed railing 4, there is a cap plate 5 that separates and clasps the two enclosed railings in their places.

As shown in the Figures, a top cap 11 is set on top of each post 1, the said top caps 11 can be cone-shaped, round, or in other shapes. At the bottom of top caps 11, there are downwardly extended long tenons 12 that would match themselves with the mortises 13. The mortises 13 are carved at the inside walls of the posts,

and the locations of the mortises 13 are in correspondence with the tenons 12. During assembly, top caps 11 are settled on top of the posts 1 by inserting the tenons 12 into the corresponding mortises 13. Posts 1 are square tubes, after the posts 1 are manufactured, at the locations on the posts 1 where the posts 1 and the upper beam 2 or the lower beam 3 are to be joined, two key-hole shape mortises 14 are carved on each location of the posts 1; the formation of these mortises 14 are wider on the top and narrower on the bottom. During assembly, these mortises 14 are punctured to allow tenons on the beams to be inserted through the holes 15. At the bottoms of the posts 1 are attached with bottom caps 16.

The upper portion of the upper beam 2 is a square casing tube 21. At the bottom interior of the casing tube 21 is an internally protruding convex seat 22. On both sides at the bottom of the convex seat 22 extended downward a set of side panels 23. A strip of tenon 24 is formed on each inner wall of the side panels 23, and at the bottom edges of the side panels 23 are outward tilting brims 25.

The lower portion of the lower beam 3 is a square casing tube 31. Side panels 32 are extended upward from both sides of the casing tube 31. A strip of tenon 33 is formed on each inner walls of the side panels 32, and at the upper edges of the side panels 32 are outward tilting brims 34.

On the bodies near the upper ends and the lower ends of the enclosed railings 4 are respectively mortises 41 and 42. When an enclosed railing 4 is joined to the upper beam 2 and the lower beam 3, as shown in Fig. 5, the upper end and the bottom end of the enclosed railing are inserted respectively in between the side panels 23 of the upper beam 2 and the side panels 32 of the lower beam 3. Under the principle of "mortise and tenon" joint, after insertion, the mortises 41 and 42 on the enclosed railing lock the tenons 24 of side panels 23 of the upper beam 2 and tenons 33 of side panels 32 of the lower beam 3 respectively, such that the enclosed railing is tightly gripped by the upper beam 2 and the lower beam 3. After the enclosed railings 4 are locked in place, cap plates 5 are placed over and thus cover the

openings between each pair of side panels 23 (or 32).

As shown in the Figures, the cap plates 5 are in arch shapes. The grips 51, 52 at both edges of the inward bending sides of the cap plates grip the outward tilting brims 25, 34 at the side panels 23, 32 respectively, thus the cap plates can be locked in their places.

A first joint component 6 is used to join an upper beam 2 and a post 1 together. On one end of the joint component 6 is an insertion plug 61 which has the all-around jagged strip surface. The insertion plug 61 can be fully inserted into the casing tube 21 of the upper beam 2. On the other end of the joint component 6 are two tenons 62. The two tenons 62 are inserted through and secured in place at the punctured mortises 15 that are on post 1, and as such, posts 1 and upper beams 2 are joined and locked in place.

A second joint component 7 is used to join a lower beam 3 and a post 1 together. On one end of the joint component 7 is an insertion plug 71 which has the all-around jagged strip surface. The insertion plug 71 can be fully inserted into

the casing tube 31 of the lower beam 3. On the other end of the joint component 7 are two tenons 72. The two tenons 72 are inserted through and secured in place at the punctured mortises 15 that are on post 1, and as such, posts 1 and lower beams 3 are joined and locked in place.

By using the above unitized upright fence/railing set of present invention, the number of units to be used for fencing can be determined based on the location and the size of enclosure required. The spacing between the enclosed railings can also be determined based on age of the users (e.g. elderly vs. children) or based on the purpose that the fences/railings are to be used for. Since there is no direct exposed opening or hole on the surface of the posts at the time they are being manufactured, when the posts are not in use as part of a fence/railing, the posts would neither be subjected to unwanted objects getting inside the posts, nor be subjected to rust formation. In addition, during assembly, partially completed fence/railing can be fairly steady and stable as the all-around ragged strip surface insertion

plugs are used as parts of the joint components; furthermore, by using the "mortise and tenon" principle-based joint components, the assembly of the entire fencing structure becomes effortless and flexible.

From the above comprehensive illustrations, the unitized upright fence/railing set of present invention, of which each component is aluminum alloy extrusion, the overall finished fence/railing is very light in weight. By using the "mortise and tenon" principle-based component assembly and securing, it allows the application of the fences/railings to be varied or modified freely in accordance with the particular venues that the fences/railings are to be used for. Therefore, the unitized upright fence/railing set of present invention allows flexibility in assembly. Furthermore, the present invention has the structural composition that enables the enclosed railings and posts to be held tightly to the ground. With the above combinations, even the fence is to be located in countryside, the fence would still be sufficiently sturdy to endure heavy wind and/or rain storms, or the attacks of wild animals.

As a result, the present invention can be concluded to be one creative configuration, and therefore the application is made in accordance with the specific provisions regarding inventive patents per stated in the relevant Patent Law.

Although the present invention has been described with a certain degree of particularity, the present disclosure has been made by way of example and changes in details of structure may be made without departing from the spirit thereof.

What is claimed is:

1. A unitized upright fence/railing set, which comprises of:

a set of posts, on the surface of which carved with key-hole shape mortises that can be punctured through by the corresponding tenons for component securing purposes;

a set of beams, which includes an upper beam and a lower beam, and both beams are placed in between a set of posts;

a number of enclosed railings, which are vertically erected in between the upper beam and the lower beam;

a number of cap plates, which are placed in between the enclosed railings, and are located on the upper beam and the lower beam;

a first joint component, which is used for joining the posts with the upper beam; on one end is an insertion plug that has an all-around jagged strip surface and it can be fully inserted into the upper beam, while the other end contains tenons that are inserted through and secured in place at the punctured mortises on the posts;

a second joint component, which is used to join together a lower beam with the posts; on one end is an insertion plug that has an all-around jagged strip surface and it can be fully inserted into the lower beam, while the other end contains tenons that are inserted through and secured in place at the punctured mortises on the posts.

2. The unitized upright fence/railing set as claimed in claim 1, wherein:

the upper portion of the upper beam is a casing tube, at the bottom interior of the casing tube is an internally protruding convex seat, which is to be used for receiving and holding the insertion plug of the first joint component; on both sides at the bottom of the convex seat extended downward a set of side panels, where a strip of tenon is formed on each inner wall of the side panels; and at the bottom edges of the side panels are outward tilting brims;

the lower portion of the lower beam is a casing tube, which is to be used for receiving and holding the insertion plug of the second joint component; side panels are extended upward from both sides of the casing tube, a

strip of tenon is formed on each inner wall of the side panels, and at the upper edges of the side panels are outward tilting brims;

on the bodies near the upper end and the lower end of the enclosed railing are carved with mortises, when an enclosed railing is to be joined to the upper beam and the lower beam, the upper end and the bottom end of the enclosed railing are inserted in between the side panels of the upper beam and the side panels of the lower beam respectively; and after insertion, the mortises on the enclosed railing lock the tenons of side panels of both the upper beam and the lower beam such that the enclosed railing is gripped by the upper beam and the lower beam;

the cap plate is in arch shape, which contains grips at both edges of the inward bending sides of the cap plate that grip the outward tilting brims of the side panels on both the upper beam and the lower beam, and as a result, separates and clasps two enclosed railings in their places.

3. The unitized upright fence/railing set as claimed in claim 1, wherein the posts, the beams, the enclosed railings, and the cap plates are all aluminum alloy extrusions.

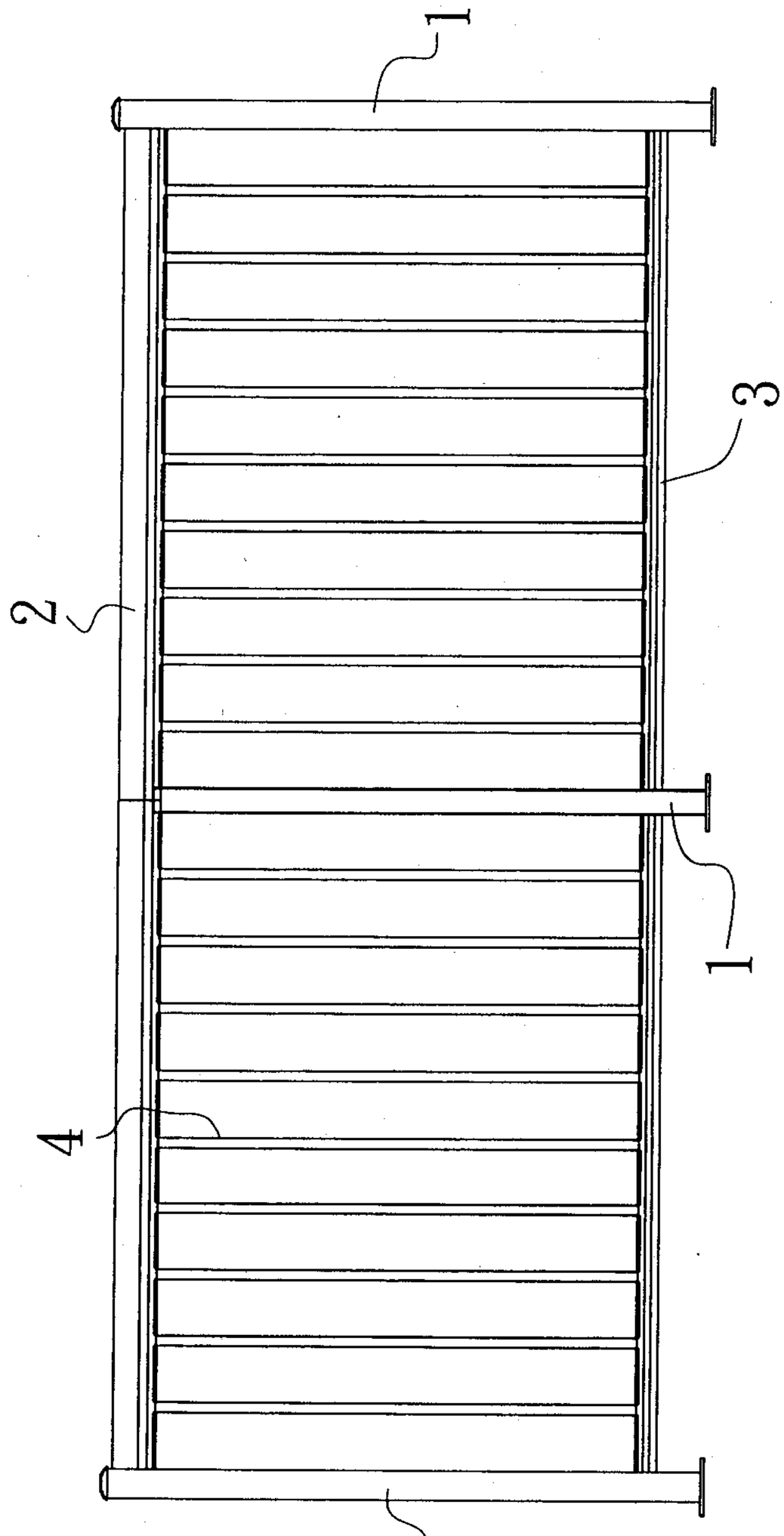


FIG. 1

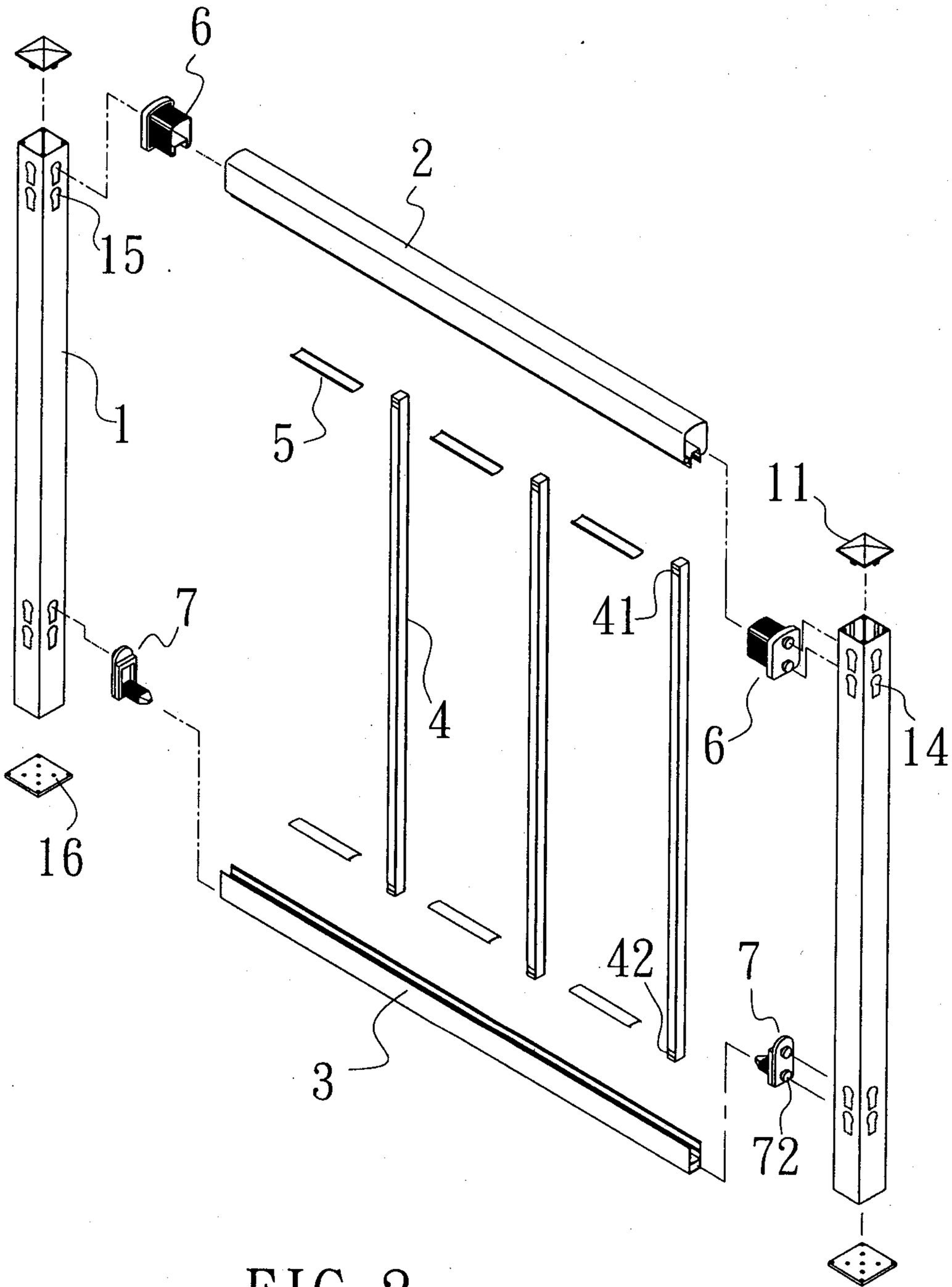


FIG. 2

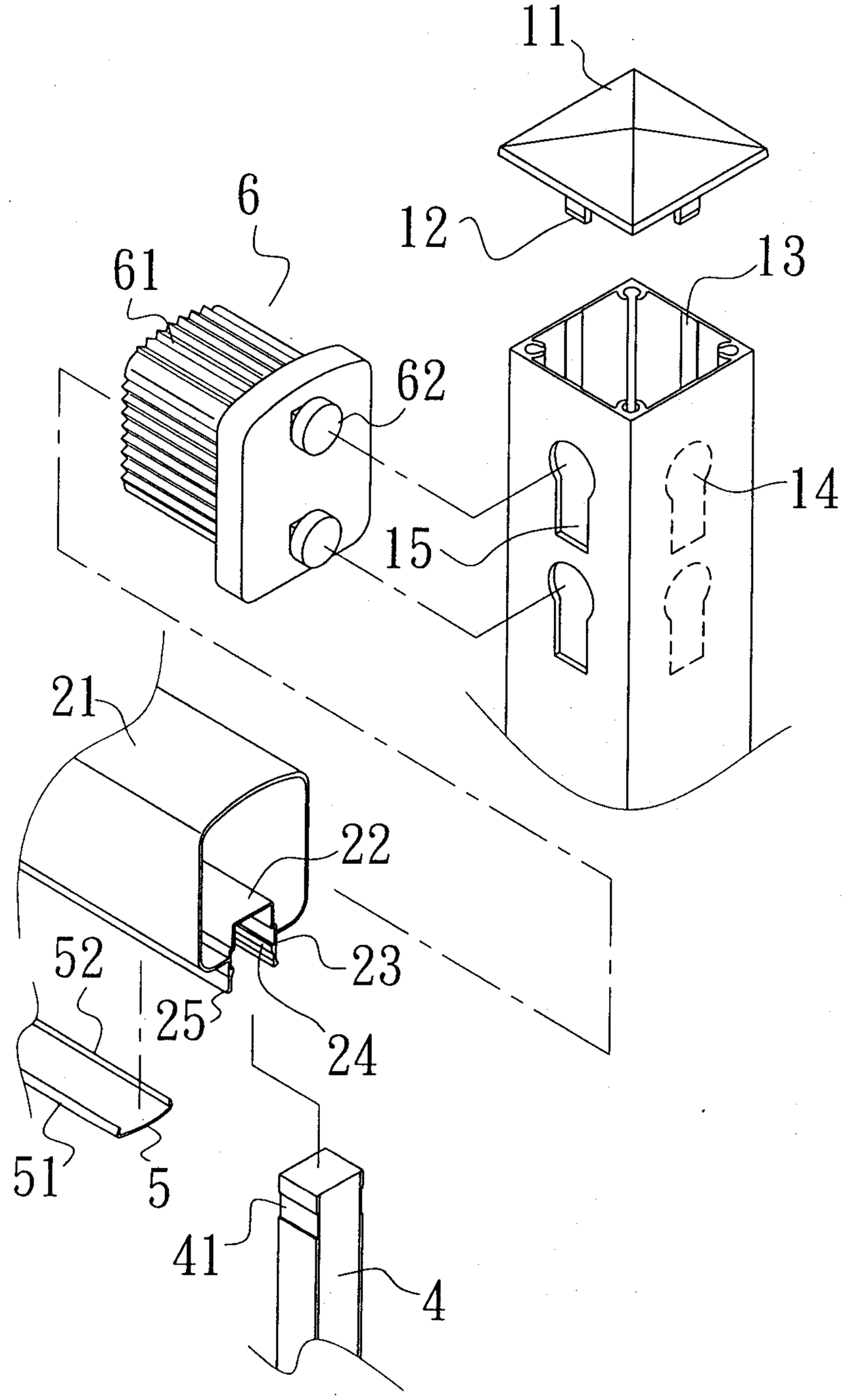


FIG. 3

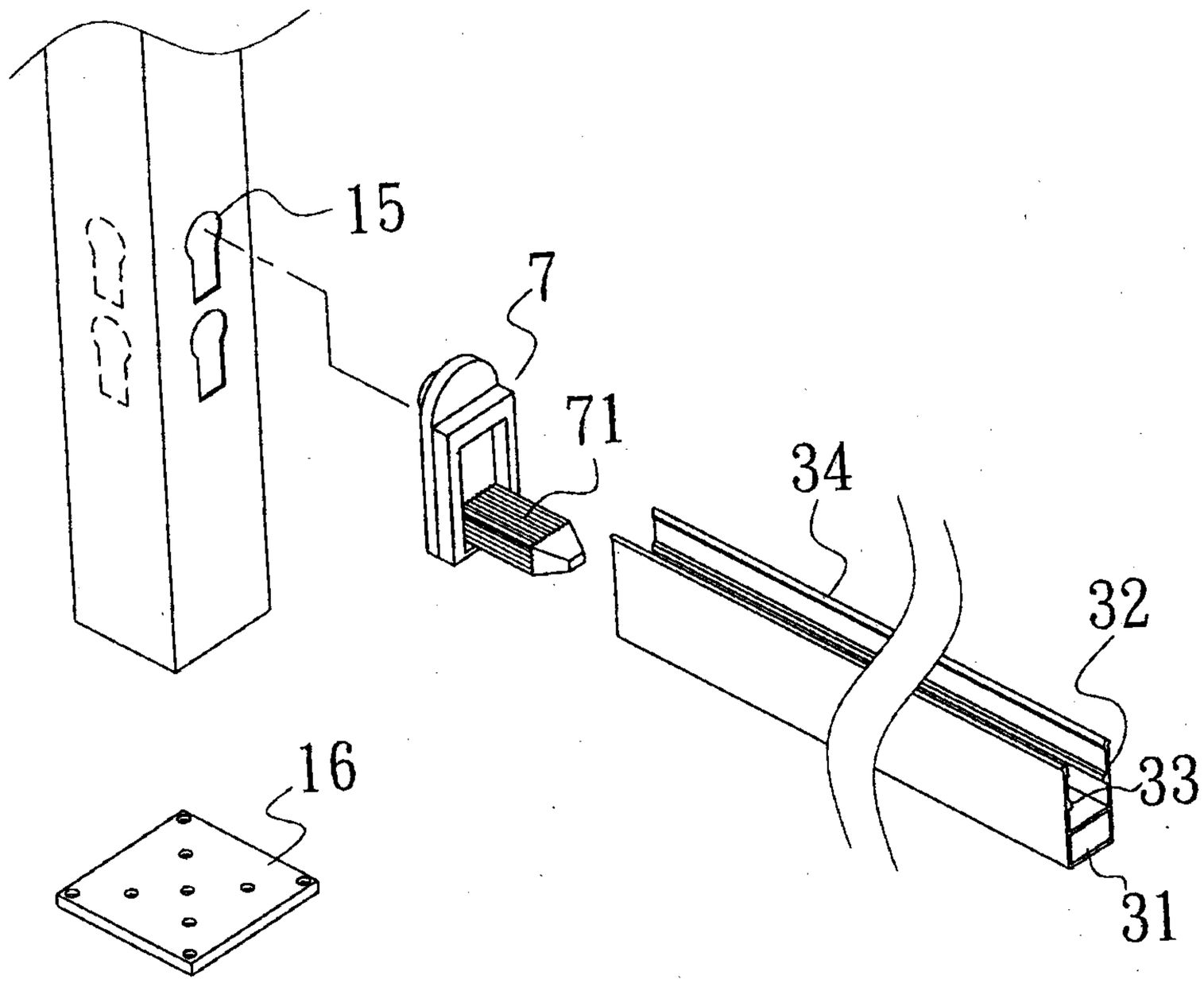


FIG. 4

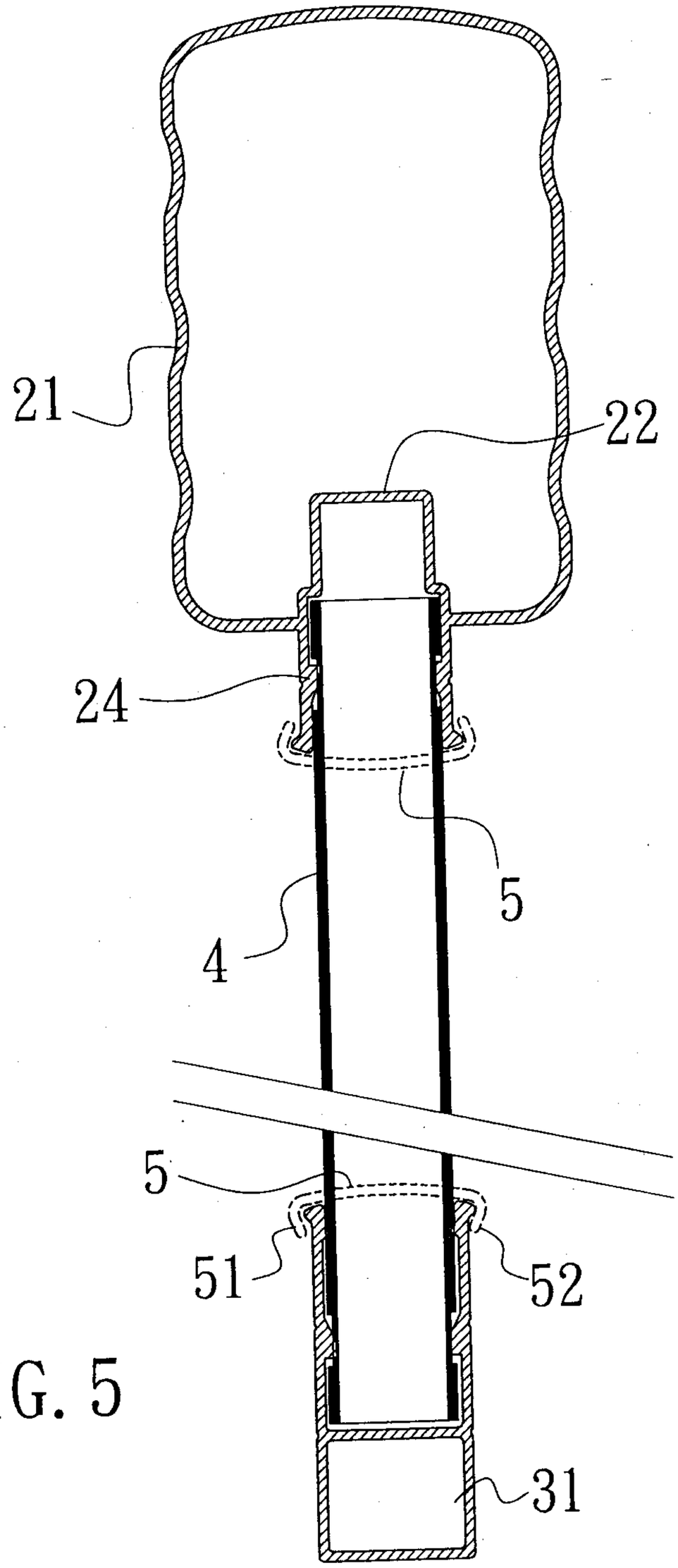
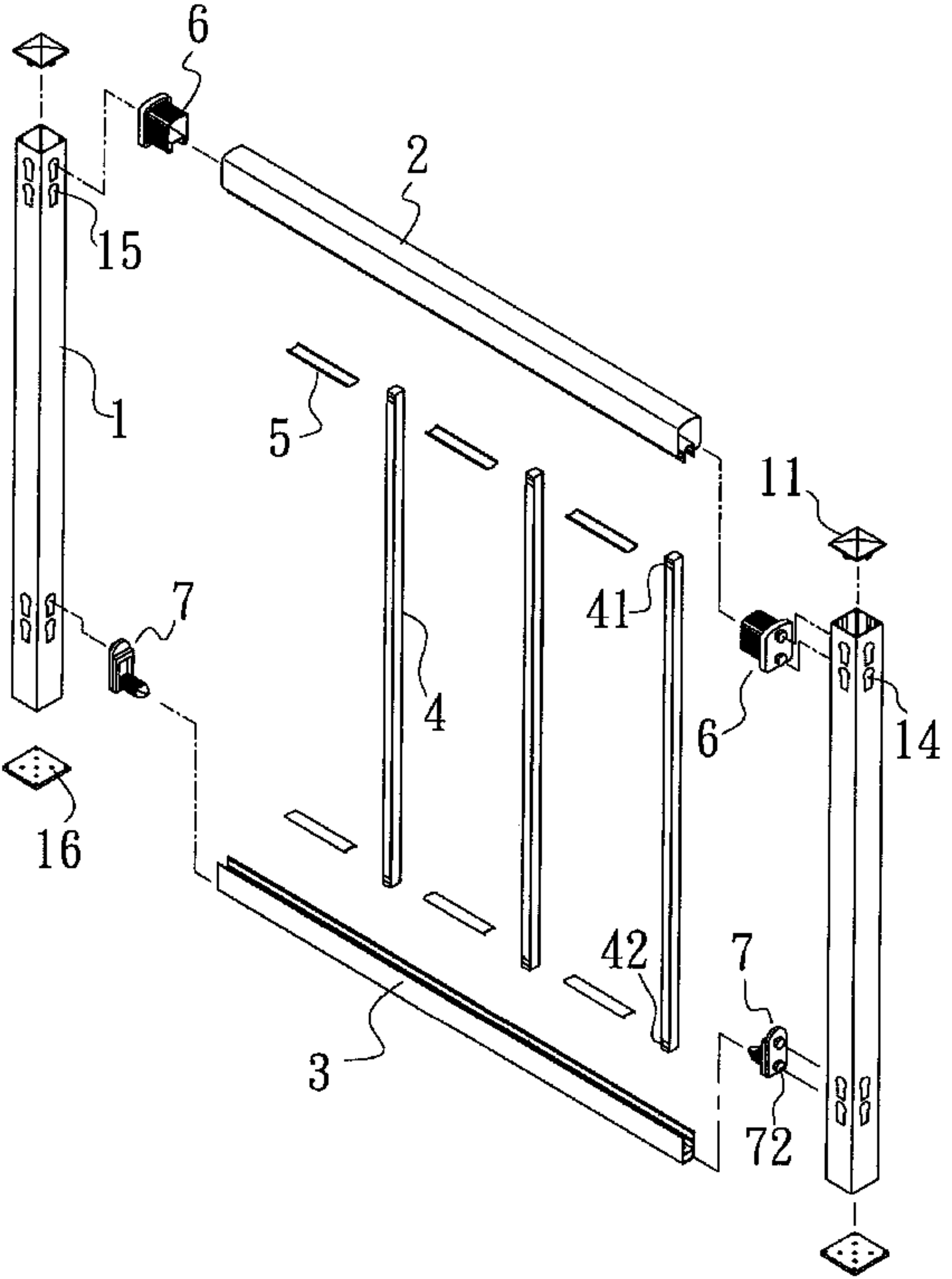


FIG. 5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