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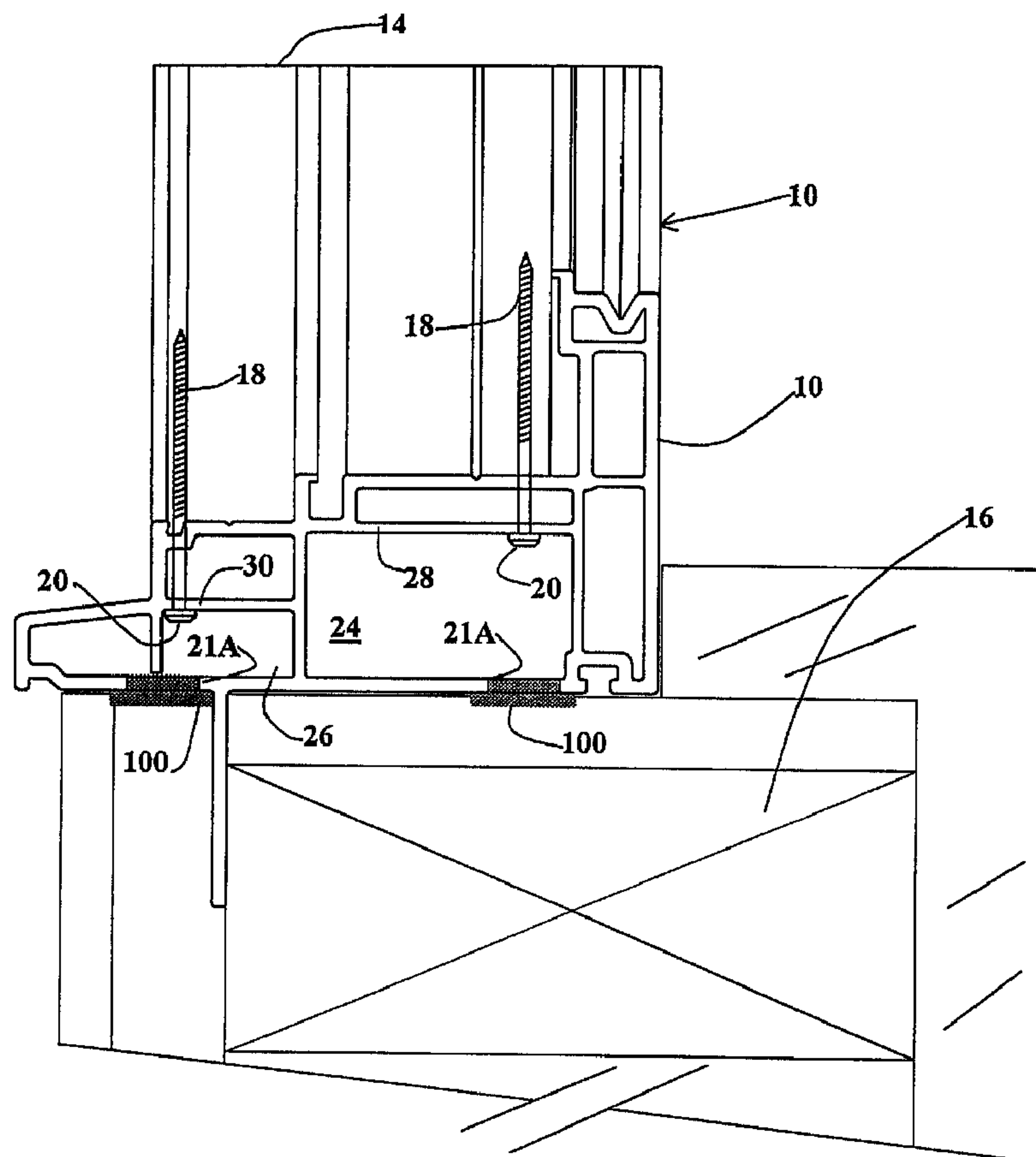
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(54) Titre : STRUCTURE DE CADRE DE FENETRE A L'EPREUVE DES FUITES

(54) Title: NON-LEAKING WINDOW FRAME STRUCTURE



(57) Abrégé/Abstract:

A window frame structure formed from hollow members is formed with access holes through the outer walls through which fasteners are inserted and tightened to bear against an inner wall of the member (opposite the outer wall) and then the access hole is sealed with a sealing plug to prevent moisture from passing through fastener holes in the outer walls and into the supporting wall.



ABSTRACT OF DISCLOSURE**Non-Leaking Window Frame Structure**

A window frame structure formed from hollow members is formed with access holes through the outer walls through which fasteners are inserted and tightened to bear against an inner wall of the member (opposite the outer wall) and then the access hole is sealed with a sealing plug to prevent moisture from passing through fastener holes in the outer walls and into the supporting wall.

Non-Leaking Window Frame Structure

Field of Invention

The present invention relates to widow frame structure with improved seal.

Background of the Invention

5 In the assembly of aluminum or vinyl frame windows the frames are constructed of individual parts (usually extrusions) that are cut to size, assembled and the parts secured together by screws. Normally the extrusions are hollow and the screws pass from the outside or exposed side of the frame through the hollow and into and through the extrusion wall opposite the outside wall on one part and then into the other frame part that is to be
10 secured to the one part (see Figure 1). This structure while relatively simple and easy to fabricate leaves a leaky passage formed by the fastener (screw) receiving hole that passes through the outer wall of the one part. This structure has created problems in the industry for many years because of this leakage since when the leaky hole overlies the inside of the wall any fluid (water) leaking there from passes into and may over time damage the wall
15 structure, but no satisfactory commercial solution had been found (prior to the present invention). Certainly drainage holes are provided through the frame for draining water from the inside of the hollow frame and directing it outside the wall structure, nevertheless water still finds its way to and through the fastener hole through the bottom outside wall of the frame.

20 The use of plugs to seal holes in structures has been known for many years, examples of such plugs are shown in for example US Patents 2, 2886,864 issued May 19 1959 to Boicey et al.; 2,887,737 issued May 26, 1959 to Prescott; 3,851,794 issued December 3, 1974 to Hehl; 4,290,536 issued September 22 1981 to Morel; 4,588,105 issued May 13, 1986 to Schmitz et al.; 5,345,734 issued September 13, 1994 to Tremblay;
25 and/or 5,505.324 issued April 9, 1996 to Danico. US patents 2, 2886,864, 2,887,737 and 5,345,734 are specifically related to windows and provide plugs for sealing glazing for example in double glazed windows.

Brief Description of the Present Invention

It is an object of the present invention to provide a window frame structure wherein
30 water drainage into the supporting wall may be substantially eliminated.

Broadly the present invention relates to a window frame structure form from a plurality of discrete elements at least some of which are hollow elements having an outer

wall and an inner wall on the opposite side of hollow in said hollow element from said outer wall, the improvement comprising a hole through said outer wall of one of said hollow elements, a fastener, said fastener positioned opposite said hole and passing through said inner wall and into a second of said discrete elements to secure said one of said hollow
5 elements to said second discrete element and a sealing plug secured in sealing relationship to said hole to prevent water from passing from inside said hollow through said hole.

Preferably said plug is welded into said hole.

Preferably said widow frame is mounted in a wall structure and where said plug is position on a bottom of said frame over an inside portion of said wall structure.

10 **Brief Description of the Several Views of the Drawing(s)**

Further features, objects and advantages will be evident from the following detailed description of the preferred embodiments of the present invention taken in conjunction with the accompanying drawings in which;

Figure 1 is a section through an assembled window frame constructed in accordance
15 with the prior art.

Figure 2 is a section through an assembled window frame constructed in accordance with the present invention.

Detailed Description of the Invention

Turning first to Figure 1 which illustrates the conventional manner of constructing or
20 assembling widow and/or window frames 10 from discrete elements (generally formed by extrusion from vinyl or aluminum) only two shown, namely a first element in the form of a hollow horizontal element (window sill element) 12 and a second element in the form of a vertical frame element 14. The window is supported in the conventional manner on a wall 16. The frame elements 12 and 14 are secured together by fasteners two of which are
25 shown at 18. Threaded screw fasteners 18 are normally used to secure the frame elements (12 and 14) together. The window or frame 10 as shown in Figure 1 the screw fasteners 18 pass through holes 21 in the outer (lower) wall 22 and through the hollow 24 or 26 of the element 12 and then through the inner walls 26 and 28 of the element 12 opposite the hole 21 in the outer wall 22 and then into the second element 14. Each fastener 18 has a head 20
30 that is forced against an outer wall 22 of the element 12 to tightly bind the two elements 12 and 14 together.

It will be noted that the screw 18 and thus the holes 21 directly overlie the inside of the house or structural wall 16 so that any liquid passing from inside the hollows 24 or 26 drip into the interior of the wall structure 16 and may cause damage. The pressure of the heads 20 against the outside of the wall 22 tends to provide a seal, but leakage has still been
5 found.

Turning to Figure 2 and the present invention, like part in Figures 1 and 2 have the same reference numerals so only the differences in the structures will be describe. In the present invention (Figure 2) the holes 21 have been replaced by significantly larger holes 21A that are sufficiently large so as to permit the head 20 of the fastener 18 to pass there
10 through. Thus in the structure of figure 2 the heads of the fasteners are positioned within the hollows 24 and 26 and bear directly against the inner walls 28 and 30 of the hollow element 12. Positioning the heads closer to the element 14 being secured to the element 12 improves the effectiveness of the fastener(s) 18. The holes 21A provide access to the heads 20 for assembly.

15 When the frame 10 has been assembled the sealing plugs 100 are positioned in their respective holes 21A and are secured therein by any suitable means. For example the plugs may be welded in position sealing their respective hole 21A by solvent welding or vibration welding (depending on the material of the plugs 100 and the frame member 12) or the like.

The plugs have been found to be effective to stop movement of water into or out of
20 the hollows 24 and 26 in the member 12, so that the hole 21A positioned over the inside of the wall 16 do not permit water to pass from the hollows 24 and 26 into the interior of the structural wall 16. Furthermore moving the heads 20 and shafts of the screws 18 to be positioned against the wall 28 or 30 as opposed to the bottom wall 22 ensures that the screws 18 (and heads 20) do not pass through or rest in pool water that may accumulate on
25 the bottom wall such as wall 22.

Having described the invention, modifications will be evident to those skilled in the art without departing from the scope of the invention as defined in the appended claims.

CLAIMS

We claim:

- 5 1. A window frame formed from a plurality of discrete elements at least some of which are hollow elements, each said hollow element having a hollow with an outer wall on one side of the hollow and an inner wall on the opposite side of said hollow from said outer wall, the improvement comprising a hole through said outer wall of one of said hollow elements, a fastener, said fastener positioned opposite said hole and passing through said inner wall and into a second of said discrete elements to secure said one of said hollow elements to said second discrete element and a sealing plug secured in sealing relationship to said hole to prevent water from passing from said hollow through said hole.
- 10 2. A window frame structure as defined in claim 1 wherein said plug is welded into said hole.
- 15 3. A window frame structure as defined in claim 1 wherein said widow frame is mounted in a wall structure so that said window frame has a bottom and a top and where said plug is position on said bottom of said frame over an inside portion of said wall structure.
- 20 4. A window frame structure as defined in claim 2 wherein said widow frame is mounted in a wall structure so that said window frame has a bottom and a top and where said plug is position on said bottom of said frame over an inside portion of said wall structure.

PRIOR ART

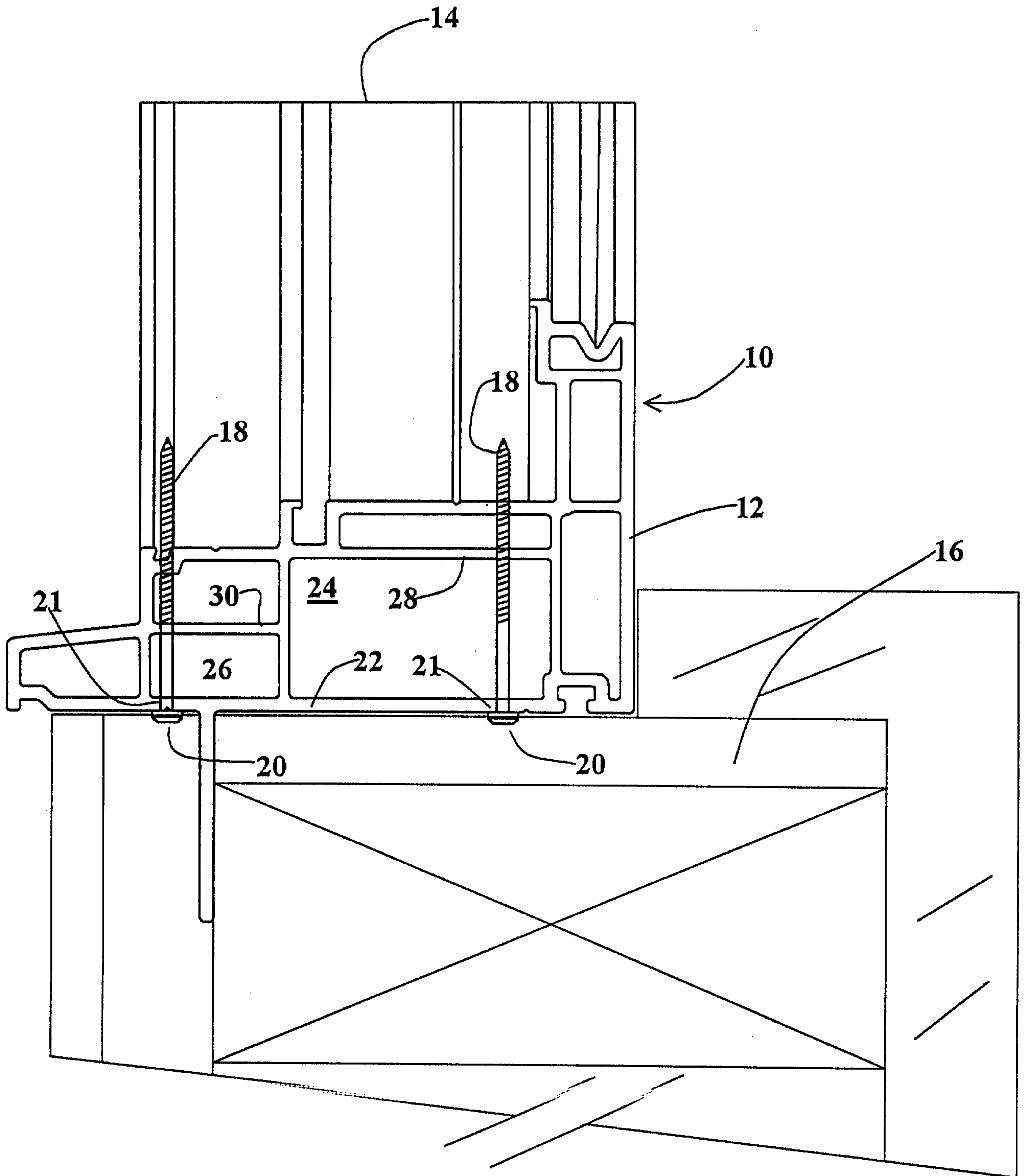


Figure 1

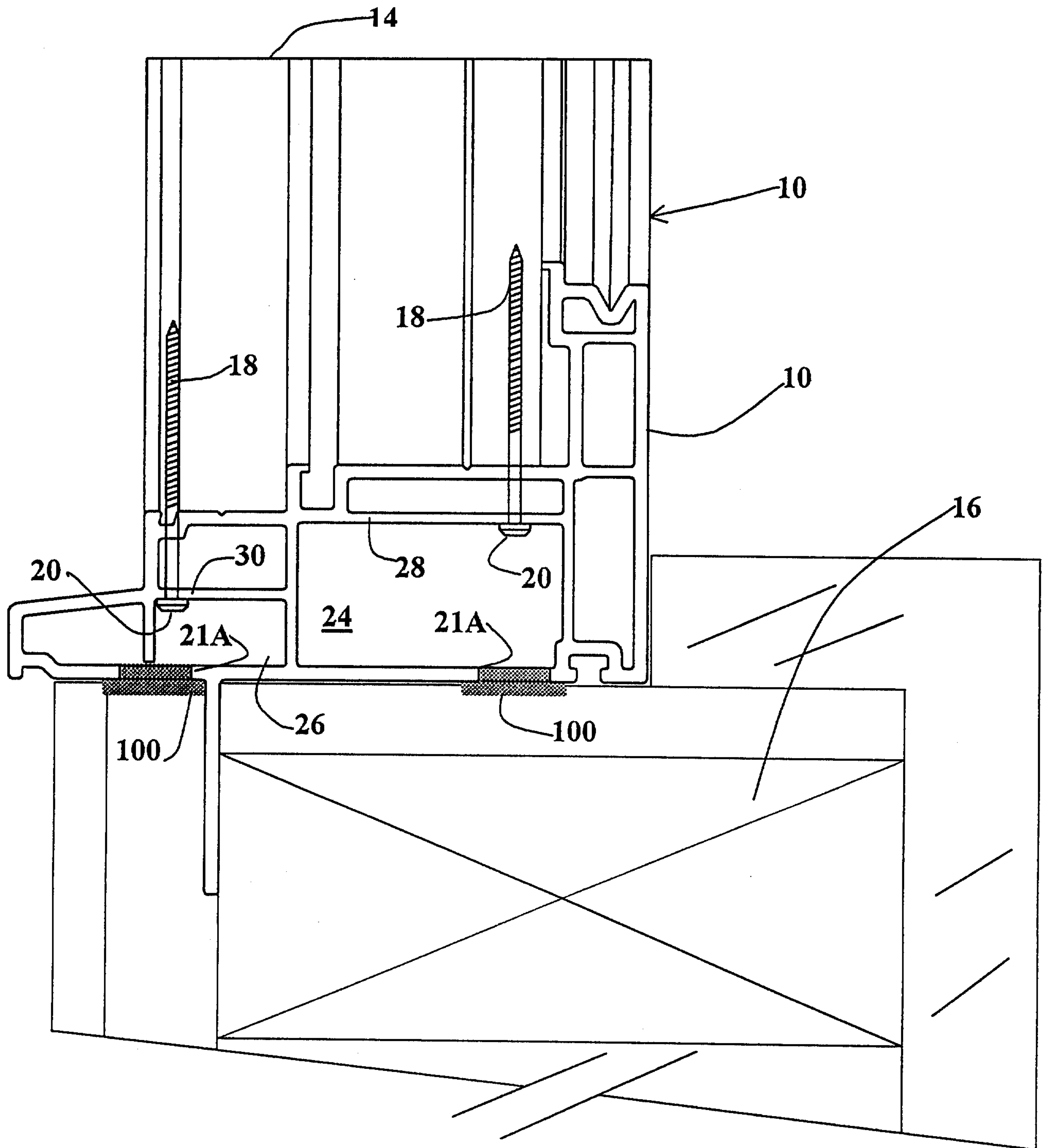


Figure 2

