

(19)



Europäisches Patentamt

European Patent Office

Office européen des brevets



(11)

EP 0 717 164 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention
of the grant of the patent:

04.11.1998 Bulletin 1998/45

(51) Int Cl.⁶: **E06B 3/62**, E06B 3/58

(21) Application number: **95119773.0**

(22) Date of filing: **15.12.1995**

(54) **A method and a device for mounting a glass pane in a window frame**

Befestigungsverfahren und -vorrichtung einer Glasscheibe in einem Fensterrahmen

Procédé et dispositif de fixation d'une vitre dans une cadre de fenêtre

(84) Designated Contracting States:
**AT BE CH DE DK ES FR GB GR IE IT LI LU MC NL
PT SE**

(30) Priority: **16.12.1994 SE 9404401**

(43) Date of publication of application:
19.06.1996 Bulletin 1996/25

(73) Proprietor: **Trelleborg Building Products AB**
Division Värnamo Gummi
331 29 Värnamo (SE)

(72) Inventors:
• **Pettersson, Jörgen**
Jönköpingsvägen 15, S - 331 29 Värnamo (SE)

• **Piekert, Dieter**
Jönköpingsvägen 15, S - 331 29 Värnamo (SE)

(74) Representative:
DIEHL GLAESER HILT & PARTNER
Patentanwälte
Königstrasse 28
22767 Hamburg (DE)

(56) References cited:

EP-A- 0 015 842	AT-B- 391 520
BE-A- 656 767	CH-A- 672 162
CH-A- 684 494	DE-U- 8 804 460
DE-U- 9 405 039	DE-U- 9 410 630
GB-A- 2 204 084	NL-A- 7 504 807

Note: Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

EP 0 717 164 B1

Description

The present invention relates to a device for mounting a glass pane in a window frame, especially to a frame made of wood or a frame of a material which may be fixed by means of nails or staples.

Devices according the introductory part of claim 1 are known (AT-B-391 520, DE-U-9 410 630), however, are not reliable due to insufficient sealing equipment.

In a prior art method and a prior art device for mounting a glass pane in a window frame the glass pane which for example can consist of two panes connected with each other for forming a sealed glazing unit is with its edge portion positioned in a fillister in the window pane. The fillister is formed by a side surface and a bottom surface and the glass pane is positioned in the fillister by positioning and sealing one side surface of the edge portion of the glass pane against the side surface of the fillister and by fixing a fastening strip by means of fastening elements to the bottom surface of the fillister. Thereby, a side surface of the fastening strip faces the other side surface of the edge portion of the glass pane and this side surface of the fastening strip is sealed in relation to said side surface of the edge portion of the glass pane. The fastening strip as well as the window frame consist of wood and the fastening strip is fixed to the bottom surface of the fillister of the frame by means of nails or staples which from the upper surface of the fastening strips are forced through the fastening strip into the window frame. Thus, the prior art method and the prior art device for mounting a glass pane in a window frame requires subsequent treatment by for example filling or flattening for hiding the parts of the nails or the staples positioned at the surface of the fastening strip or at least for making these portions less visible.

A method for mounting a glass pane in a window frame made of wood according to the introductory part of claim 1 is known from EU 0 015 842, however, the nails used for fixing the fastening strip are hit in a manner so that the heads of the nails are visible. Moreover, the hitting procedure is made while the fastening strip has to be pressed against the pane in order to compress the sealing, which does not lead to a reliable sealing.

The object of the invention is to provide a device for mounting a glass pane in a window frame obviating the disadvantages mentioned above.

In order to comply with this object a device for mounting a glass pane in a window frame in accordance with the claims has been invented.

In the device according to the invention the said sealing strip as well as the sealing strip forced into the groove in the fastening strip are subjected to the desired compression.

The device according to the invention can be used when the glass pane consists of a single pane as well as when the glass pane consists of an insulating glass pane consisting of two or more panes sealingly connected with each other.

It is preferred that the sealing strip positioned in the groove is at its side surfaces engaging the edge portion of the glass pane and the opposite side surface of the groove formed with sealing lips for securing an efficient sealing function and facilitating the forcing of the sealing strip into the groove.

In order to secure the drainage of water the sealing strip positioned in the groove is formed with an outer inclined surface forming with the edge portion of the glass pane an angle exceeding 90°.

The invention shall be described in the following with reference to the accompanying drawings.

Fig. 1 is a plan view of a window frame with a glass pane mounted therein in accordance with the invention.

Fig. 2a is a section on line II-II of Fig. 1 through the bottom element of the window frame shown in Fig. 1.

Figs. 2b and 2c are sections through sealing strips included in the window frame as shown in Fig. 1 and 2a.

Fig. 3 is a section corresponding to Fig. 2a of a modified embodiment of a window frame with a glass pane mounted therein in accordance with the method of the invention.

Fig. 4 is a section similar to Fig. 2a, however, directed to an embodiment in which the fastening has no groove.

In Fig. 1 there is shown a plan view of a window frame 2 consisting of wood and comprising side elements 4, an upper element 6 and a bottom element 8. An insulating glass pane 10 is by means of a peripherally extending fastening strip 12 mounted in the window frame 2 by means of the device according to the invention. The fastening strip 12 consists of wood, foamed plastic material or any other material through which nails or staples can be driven.

The sectional design of the side elements 4, upper element 6 and bottom element 8 of the window frame 2 appears from Fig. 2a but it is realized that this sectional shape can be of any other design within the scope of the invention.

The window frame is formed with a fillister 14 which is of angular cross section by being formed with a side surface 16 and a bottom surface 18. The side surface 16 and the bottom surface 18 form a substantially right angle with each other. Grooves 20 are in a conventional way formed at the bottom surface 18.

The insulating glass pane 10 is at its edge surface 22 supported in a conventional way by means of setting blocks 24 in the fillister 14 of the frame. The edge portion of the insulating glass pane 10 has a side surface 26 which is positioned and sealed against the side surface 16 of the fillister, the sealing being provided by means of a sealing strip 28 compressed between the side surface 16 of the fillister 14 and the side surface 26 of the edge portion of the insulating glass pane 10. The cross sectional shape of the sealing strip 28 is in a non-compressed condition shown in Fig. 2b. Thus, the sealing strip 28 is constituted by a cellular rubber profile, consisting for example of EPDM with substantially rectan-

gular cross section having a hollow space 30 and bead shaped projections 32 at the surface adapted to engage the side surface 26 of the edge portion of the insulating glass pane.

The insulating glass pane 10 is locked into the fillister 14 by means of the fastening strip 12. The fastening strip 12 has a side surface 36 facing the side surface 34 of the edge portion of the insulating glass pane and has in addition thereto a groove 38 open towards the edge portion 34 of the insulating glass pane. The groove 38 has a bottom surface 40 and a side surface 42 facing the side surface 34 of the insulating glass pane.

The fastening strip 12 is fixed to the bottom surface 18 of the window frame fillister 14 by means of nails 44 which from the bottom surface 40 of the groove 38 extend through the fastening strip 12 into the wood material of the frame. The fastening strip 12 is fixed to the frame in such a position that the outer side surface 46 of the fastening strip is positioned in the same plane as the adjacent side surface 48 of the window frame. A sealing strip 50 is forced into the groove 38 in the fastening strip 12 and is thus compressed between the side surface 34 of the edge portion of the insulating glass pane and the opposite side surface 42 of the groove 38 in the fastening strip 12. The sectional shape of the sealing strip 50 in a non-compressed condition appears from Fig. 2c. The sealing strip 50 is provided with sealing lips 52 and 54, thus engaging the side surface 34 of the edge portion of the insulating glass pane and the side surface 42 of the groove 38. The sealing strip 50 has an upper bevelled surface 56 forming an angle with the side surface 34 of the edge portion of the insulating glass pane exceeding 90° and thereby providing a satisfying drainage of water from the window pane. The sealing strip 50 completely hides the portions of the nails 44 visible at the bottom 40 of the groove 38, and in accordance with the invention there is provided a completely hidden fixing of the fastening strip 12 to the window frame without any requirement for subsequent treatment of the window frame.

The dimensioning of the fastening strip 12 in relation to the fillister 14 and in relation to the insulating glass pane and the sealing strips 28 and 50 is such that the sealing strips 28 and 50 have the compression necessary for providing the desired sealing function when the side surface 46 of the fastening strip 12 is positioned in the same plane as the side surface 48 of the window frame.

The embodiment of the invention shown in Fig. 3 differs from the embodiment shown in Fig. 2 in the respect that the side surface 26a of the edge portion of the insulating glass pane 10a is sealed towards the side surface 16a of the fillister 14a by means of a bead 60 of silicone positioned in a groove 58 in the window frame instead of by means of the sealing strip 28. For the rest the embodiment according to Fig. 3 is in all essentials formed in agreement with the embodiment according to Fig. 2a.

The mounting of the insulating glass pane 10 in the window frame 2 is conducted substantially in the following way: Initially the sealing strip 28 is applied to the side surface 16 of the fillister 14. It is preferred that the sealing strip 28 is at its surface intended to be connected with the side surface 16 of the fillister 14 provided with an adhesive covered by a removable tape. Thus, after the tape has been removed the sealing strip 28 can in a simple way be fastened to the side surface 16 of the fillister 14. Thereupon, the insulating glass pane 10 is positioned in the fillister, the frame 2 thereby taking a horizontal position which means that the sealing strip 28 which thereby will take up the weight of the insulating glass pane is subjected to a certain precompression. The position of the insulating glass pane 10 in the fillister is thereupon adjusted by means of the setting blocks 24. The fastening strip 12 is nailed in the fillister 14 against the bottom surface 18 of the fillister, the side surface 46 of the fastening strip 12 being positioned in the same plane as the side surface 48 of the frame. Thus, the surfaces 46 and 48 constitute reference surfaces for defining the correct position of the fastening strip 12 in the frame 2. The fastening strip 12 is fastened in the frame by means of nails or staples which are positioned in the fixing strip 12 starting from the bottom 40 of the groove 38.

After the fastening strip 12 has been fixed to the frame the sealing strip 50 is positioned in the groove 38 by being forced into the groove to the position as shown in Fig. 2a. Thereby, the dimensions of the included elements, i.e. the fastening strip 12, the sealing strips 28 and 50 and the insulating glass pane, as well as the groove 38 in the fastening strip 12 and the position of the fastening strip 12 are related so to each other that the sealing strips 28 and 50 are automatically provided with the correct compression when the sealing strip 50 is forced into the groove 38.

In the embodiment according to Fig. 3 the side surface 26a and 34a of the edge portion of the insulating glass pane directly contact the side surface 16a of the fillister and the side surface 36a of the fastening strip 12a, respectively, which means that the positioning of the including elements can be conducted in such a way that the sealing strip 50a is subjected to the desired compression when it is forced into the groove 38a.

The silicone bead 60 is supplied to the groove 58 subsequently to the finalizing of the mounting of the insulating glass pane in the fillister.

The invention can be modified within the scope of the following claims. For example, the sealing strip 28 can be formed with an upper bevelled surface for improving the drainage of water from the glass pane in the case that the window frame is turned so that the sealing strip 28 is positioned at the outside of the frame.

Also for the rest the invention can be modified within the scope of the following claims.

Fig. 4 is showing another embodiment of the present invention, in which the fastening strip 12 has no

groove. Accordingly the nail 44 is hammered into the fastening strip 12 at the edge adjacent the pane 10.

Claims

1. A device for mounting a glass pane in a window frame comprising a fillister (14) arranged in the frame (2) and comprising a bottom surface (18) and a side surface (16) against which one side surface (26) of the edge portion of the glass pane is adapted to be positioned and sealed, a fastening strip (12) which is adapted to be fixed to the bottom surface (18) of the fillister by means of fastening means (44) with a side surface (36) facing the other side surface (34) of the edge portion of the glass pane and a sealing strip (50) for sealing the other side surface (34) of the edge portion of the glass pane in relation to the fastening strip (12), the fastening strip (12, Fig. 2a) is forming a groove (38, Fig. 4) or is formed with a groove (38 Fig. 2a or 3) positioned adjacent the other side surface (34) of the edge portion of the glass pane and open towards said side surface, the fastening means (44) being positioned in said groove for fixing the fastening strip (12) to the bottom surface (18) of the fillister (14), and the device comprises a sealing strip (50) of elastic material positioned in the groove (38) and covering the fastening means (44) positioned at the surfaces of the groove characterized in that the sealing strip (50) is held under compression between the other side surface (34) of the edge portion of the glass pane and an opposite side surface (42) of the groove, the sealing strip (50) positioned in the groove (38) is formed with sealing lips (52, 54) at its side surfaces engaging the other side surface (34) of the edge portion of the glass pane and the opposite side surface (42) of the grooves (38) and that the fastening strip (12) includes a reference surface (46) positioned in a predetermined position in relation to a reference surface (48) of the window frame for defining the position of the fastening strip (12) in such a way that the sealing strip (50) is subjected to a desired compression.
2. A device as claimed in claim 1, **characterized** in that the reference surface (46) of the fastening strip (12) is constituted by the side surface (46) of the fastening strip (12) comprising two or more panes.
3. A device as claimed in claim 1 or 2, **characterized** that said first side surface (26) of the edge portion of the glass pane is sealed in relation to the side surface (16) of the fillister by means of a sealing strip (28) consisting of elastic material and in that the fastening strip (12) is fixed to the bottom surface (18) of the fillister (14) in a position in which the sealing strips (28; 50) are to a desired degree com-

pressed between the side surface (16) of the fillister and said one side surface (26) of the edge portion of the glass pane and between a side surface (42) of the groove (38) in the fastening strip (12) and the other side surface (34) of the edge portion of the glass pane.

4. A device as claimed in any of the claims 1 to 3, **characterized** in that the sealing strip (50) positioned in the groove (38) is formed with an outer bevelled surface (56) forming with the other side surface (34) of the edge portion of the window pane an angle exceeding 90°.
5. A device as claimed in any of the claims 1 to 4, **characterized** in that the fastening strip (12) is fixed to the bottom surface (18) of the fillister by means of nails (44) or staples.

Patentansprüche

1. Vorrichtung zum Befestigen einer Glasscheibe in einem Fensterrahmen, die einen in dem Rahmen (2) angeordneten Falz (14) aufweist und eine Bodenfläche (18) und eine Seitenfläche (16), gegen die eine Seitenfläche (26) des Kantenteils der Glasscheibe positioniert und abgedichtet werden kann, einen Befestigungsstreifen (12), der an der Bodenfläche (18) des Falzes mittels eines Befestigungsmittels (44) befestigt werden kann, wobei eine Seitenfläche (36) der anderen Seitenfläche (34) des Kantenteils der Glasscheibe gegenüberliegt, und einen Dichtungsstreifen (50) zum Abdichten der anderen Seitenfläche (34) des Kantenteils der Fensterscheibe im Verhältnis zum Befestigungsstreifen (12) aufweist, wobei der Befestigungsstreifen (12, Fig. 2a) eine Nut (38, Fig. 4) bildet oder mit einer Nut (38, Fig. 2a oder 3) ausgebildet ist, die angrenzend an die andere Seitenfläche (34) des Kantenteils der Glasscheibe angeordnet ist und zur Seitenfläche hin offen ist, wobei das Befestigungsmittel (44) in der Nut zum Befestigen des Befestigungsstreifens (12) an der Bodenfläche (18) des Falzes (14) angeordnet ist und wobei die Vorrichtung einen in der Nut (38) angeordneten Dichtungsstreifen (50) aus elastischem Material aufweist, der das an den Oberflächen der Nut angeordnete Befestigungsmittel (44) bedeckt, dadurch gekennzeichnet, daß der Dichtungsstreifen (50) zwischen der anderen Seitenfläche (34) des Kantenteils der Glasscheibe und einer gegenüberliegenden Seitenfläche (42) der Nut unter Kompression gehalten wird, daß der in der Nut (38) angeordnete Dichtungsstreifen (50) mit Dichtungslippen (52, 54) an seinen Seitenflächen ausgebildet ist, die die andere Seitenfläche (34) des Kantenteils der Fensterscheibe und die gegenüberliegende Seitenfläche (42)

der Nuten (38) ergreifen, und daß der Befestigungsstreifen (12) eine Bezugsfläche (46) einschließt, die in einer vorbestimmten Position im Verhältnis zu einer Bezugsfläche (48) des Fensterrahmens zum Definieren der Position des Befestigungsstreifens (12) in einer solchen Weise angeordnet ist, daß der Dichtungsstreifen (50) einer gewünschten Kompression ausgesetzt wird.

2. Vorrichtung nach Anspruch 1, dadurch gekennzeichnet, daß die Bezugsfläche (46) des Befestigungsstreifens (12) durch die Seitenfläche (46) des Befestigungsstreifens (12) gebildet wird, die zwei oder mehr Scheiben aufweist.

3. Vorrichtung nach Anspruch 1 oder 2, dadurch gekennzeichnet, daß die erste Seitenfläche (26) des Kantenteils der Glasscheibe im Verhältnis zu der Seitenfläche (16) des Falzes mittels eines Dichtungsstreifens (28) abgedichtet ist, der aus einem elastischen Material besteht, und daß der Befestigungsstreifen (12) an der Bodenfläche (18) des Falzes (14) in einer Position befestigt ist, in der die Dichtungsstreifen (28; 50) bis zu einem gewünschten Ausmaß zwischen der Seitenfläche (16) des Falzes und der einen Seitenfläche (26) des Kantenteils der Glasscheibe und zwischen einer Seitenfläche (42) der Nut (38) im Befestigungsstreifen (12) und der anderen Seitenfläche (34) des Kantenteils der Glasscheibe zusammengedrückt werden.

4. Vorrichtung nach einem der Ansprüche 1 bis 3, dadurch gekennzeichnet, daß der in der Nut (38) angeordnete Dichtungsstreifen (50) mit einer äußeren abgeschrägten Oberfläche (56) ausgebildet ist, die mit der anderen Seitenfläche (34) des Kantenteils der Fensterscheibe einen Winkel über 90° bildet.

5. Vorrichtung nach einem der Ansprüche 1 bis 4, dadurch gekennzeichnet, daß der Befestigungsstreifen (12) an der Bodenfläche (18) des Falzes mittels Nägeln (44) oder Drahtklampen befestigt wird.

Revendications

1. Dispositif destiné au montage d'une vitre de verre dans un cadre de fenêtre, comprenant une feuillure (14) agencée dans le cadre (2) et comprenant une surface inférieure (18) et une surface latérale (16) contre laquelle une surface latérale (26) de la partie de bord de la vitre de verre est prévue pour être positionnée et scellée, une bande de fixation (12) qui est conçue pour être fixée sur la surface inférieure (18) de la feuillure grâce à un moyen de fixation (44), une surface latérale (36) étant face à l'autre surface latérale (34) de la partie de bord de la vitre de verre et une bande d'étanchéité (50) des-

tinée à sceller l'autre surface latérale (34) de la partie de bord de la vitre de verre en relation avec la bande de fixation (12), la bande de fixation (12, figure 2a) formant une gorge (38, figure 4) ou bien est munie d'une gorge (38, figure 2a ou 3) positionnée à proximité de l'autre surface latérale (34) de la partie de bord de la vitre de verre et ouverte en direction de ladite surface latérale, le moyen de fixation (44) étant positionné dans ladite gorge afin de fixer la bande de fixation (12) à la surface inférieure (18) de la feuillure (14), et le dispositif comprend une bande d'étanchéité (50) d'un matériau élastique positionnée dans la gorge (38) et recouvrant le moyen de fixation (44) positionné au niveau des surfaces de la gorge, caractérisé en ce que la bande d'étanchéité (50) est maintenue sous compression entre l'autre surface latérale (34) de la partie de bord de la vitre de verre et une surface latérale opposée (42) de la gorge, la bande d'étanchéité (50) positionnée dans la gorge (38) est formée avec des lèvres d'étanchéité (52, 54) au niveau de ses surfaces latérales, en prise avec l'autre surface latérale (34) de la partie de bord de la vitre de verre et la surface latérale opposée (42) des gorges (38) et en ce que la bande de fixation (12) comprend une surface de référence (46) positionnée à une position prédéterminée en relation avec une surface de référence (48) du cadre de fenêtre afin de définir la position de la bande de fixation (12) de telle manière que la bande d'étanchéité (50) soit soumise à une compression désirée.

2. Dispositif selon la revendication 1, caractérisé en ce que la surface de référence (46) de la bande de fixation (12) est constituée par la surface latérale (46) de la bande de fixation (12) comprenant deux ou plusieurs vitres.

3. Dispositif selon la revendication 1 ou 2, caractérisé en ce que ladite première surface latérale (26) de la partie de bord de la vitre de verre est scellée en relation avec la surface latérale (16) de la feuillure au moyen d'une bande d'étanchéité (28) constituée par un matériau élastique et en ce que la bande de fixation (12) est fixée à la surface inférieure (18) de la feuillure (14) à une position à laquelle les bandes d'étanchéité (28; 50) sont compressées à un degré désiré entre la surface latérale (16) de la feuillure et ladite première surface latérale (26) de la partie de bord de la vitre de verre et entre une surface latérale (42) de la gorge (38) dans la bande de fixation (12) et l'autre surface latérale (34) de la partie de bord de la vitre de verre.

4. Dispositif selon l'une quelconque des revendications 1 à 3, caractérisé en ce que la bande d'étanchéité (50) positionnée dans la gorge (38) est formée avec une surface extérieure en biseau (56) for-

mant avec l'autre surface latérale (34) de la partie de bord de la vitre de la fenêtre un angle dépassant 90°.

5. Dispositif selon l'une quelconque des revendications 1 à 4, caractérisé en ce que la bande de fixation (12) est fixée à la surface inférieure (18) de la feuillure au moyen de clous (44) ou d'agrafes.

5

10

15

20

25

30

35

40

45

50

55

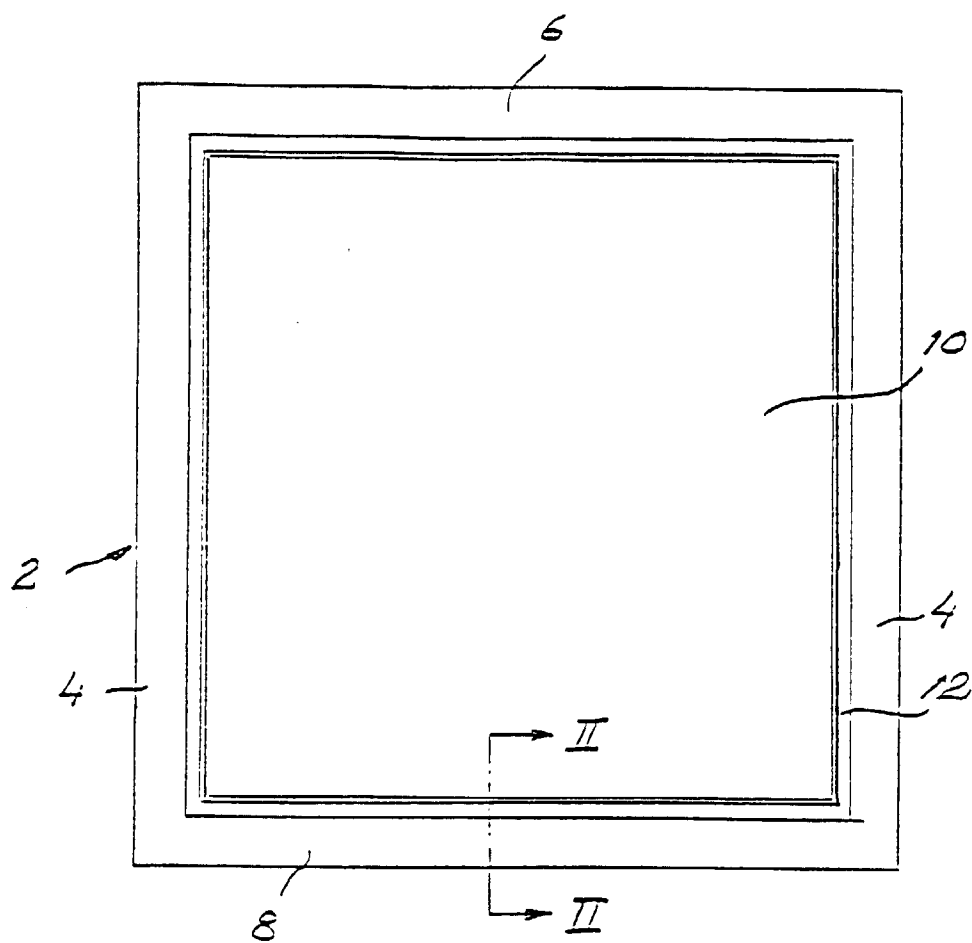


Fig. 1

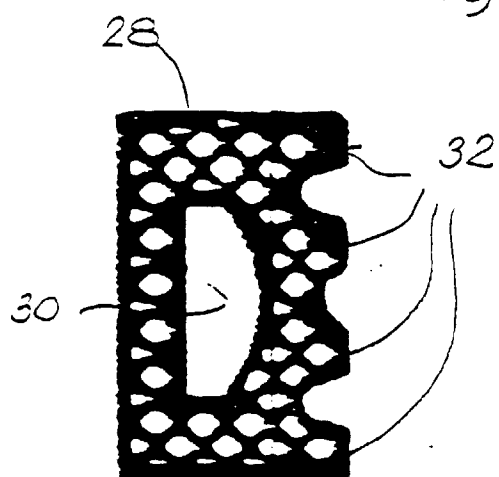


Fig. 2b

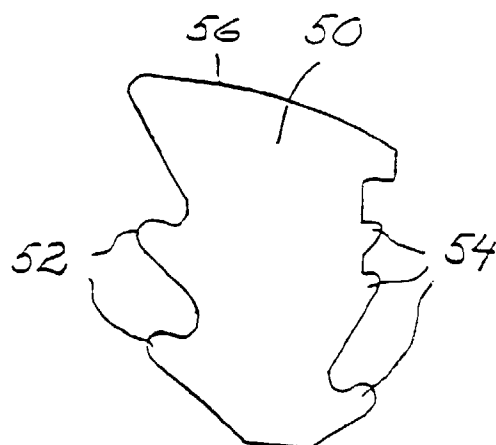


Fig 2c

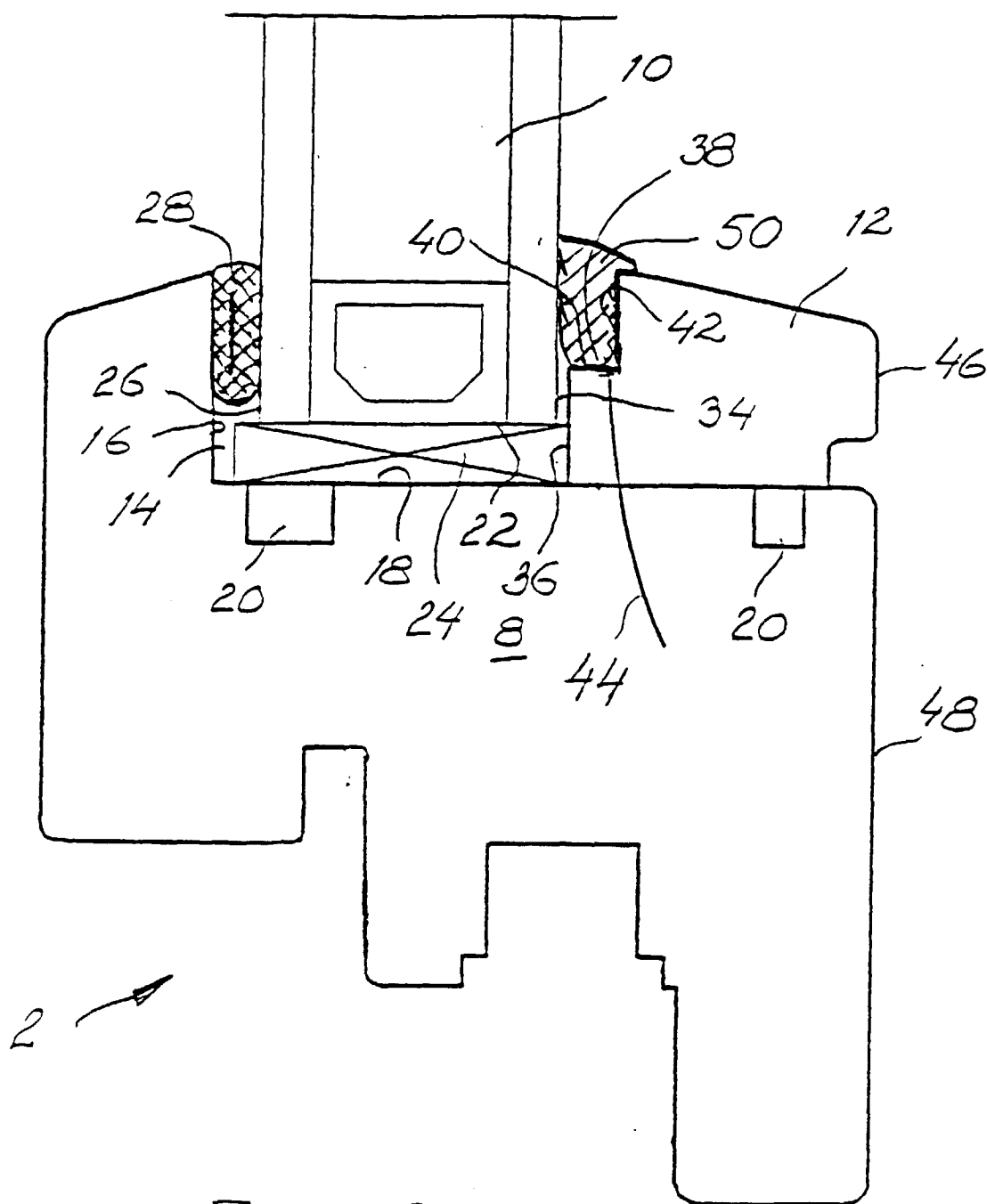


Fig. 2a

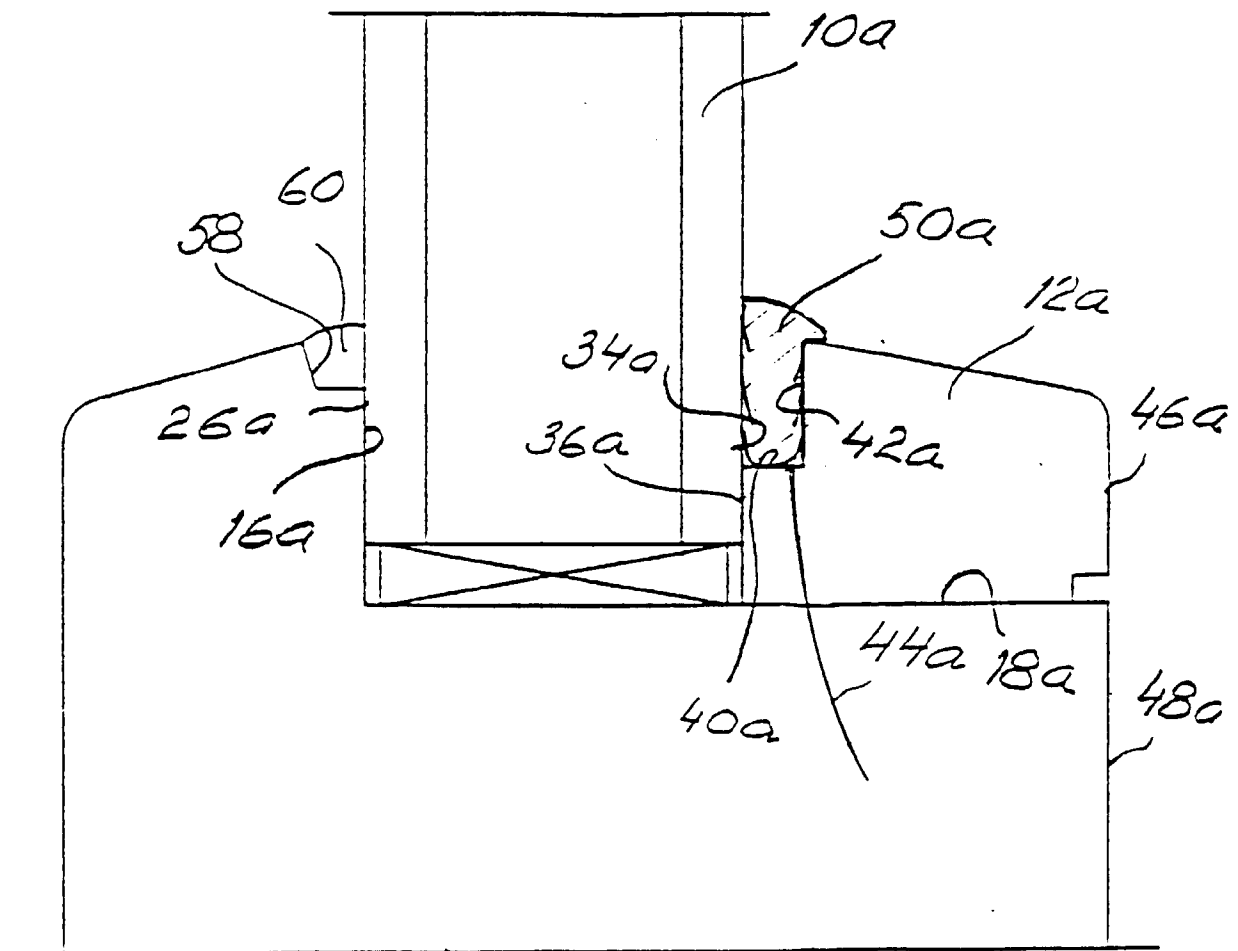


Fig. 3

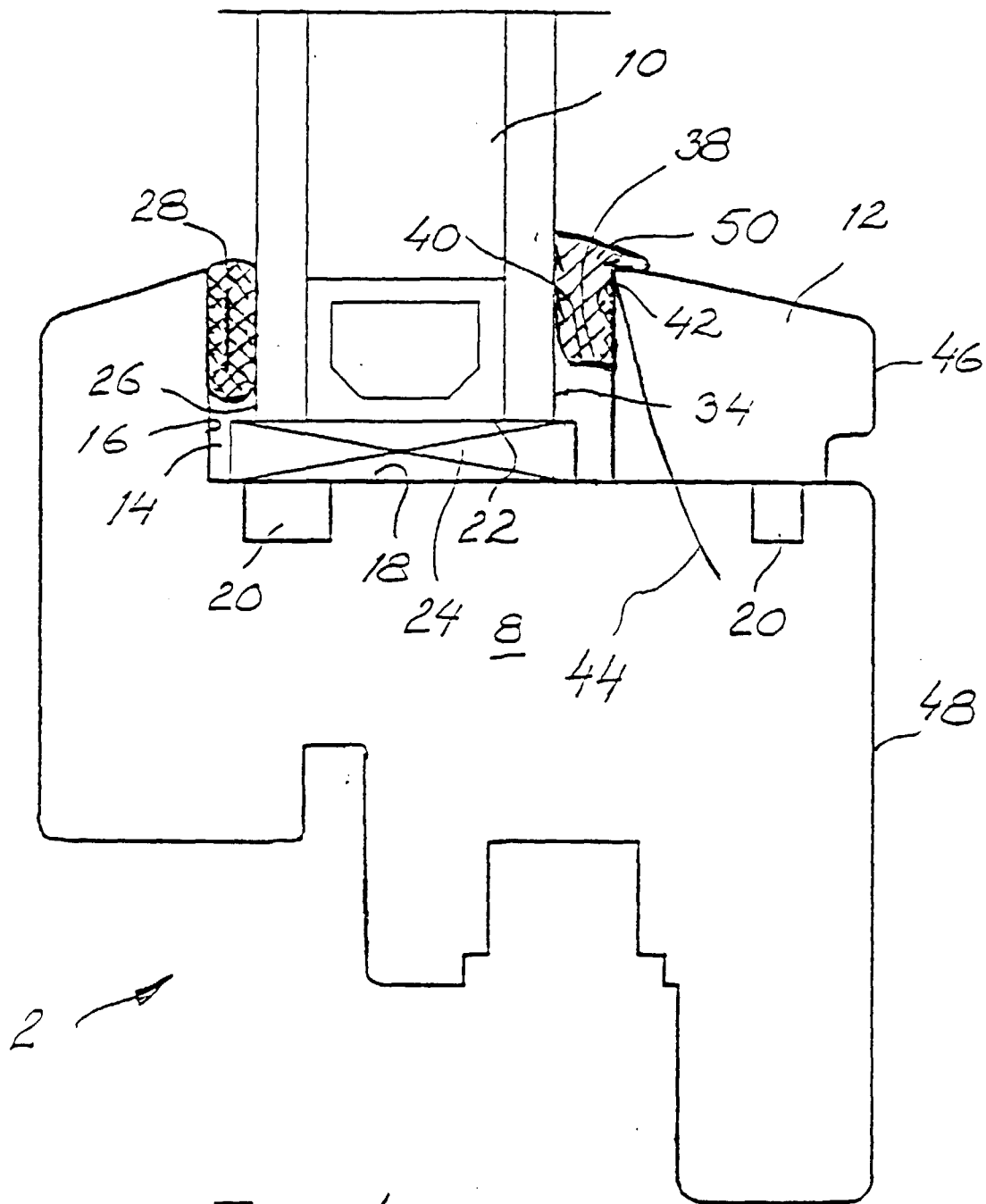


Fig. 4