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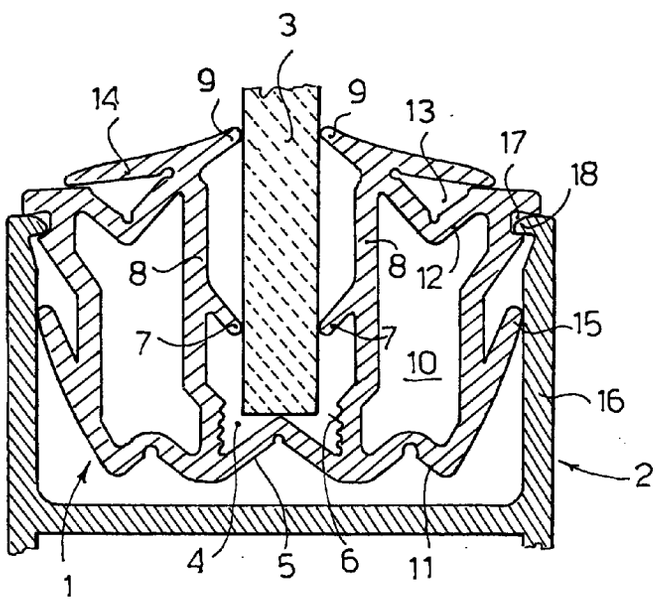
(54) Channel weather strip for window and door frames

(57) A rubber weather strip for window and door frames, to be interposed between a peripheral section (2) and a pane of glass (3) supported by this section, comprising a channel (4) for housing of the windowpane (3) and means (6, 7, 9) for forming a seal with the glass and means (15, 17) for forming a seal with the sides of the section, in which said channel (4) has a bottom wall (5) capable of being deformed to allow a widening of the channel (4) in order to adapt to panes of glass of different thicknesses, respective tubular chambers (10) being provided at the sides of the channel that are capable of being deformed to compensate for the changes in width of said channel (4), whilst maintaining the overall width of the weather strip (1) unchanged

FIG. 2



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Description

The present invention relates to a channel rubber weather strip for window and door frames, particularly for metal frames, able to provide a seal against the glass of the window or door.

As is known, glazed metal windows and doors and the like comprise rectangular frames consisting of sections with a more or less different shape, having an inner peripheral seat to house a pane of glass, in particular double or multiple glazing, after interposition of a rubber weather strip.

Whilst the dimensions of the inner seat of the frame, for housing the glass, are standard, the thickness of the glass can vary according to requirements.

Therefore, the rubber weather strips used to provide a seal between the glass and the section have a channel of a such size as to be able to accommodate a single size of glass, allowing for manufacturing tolerances.

This obviously represents a considerable drawback, in that it makes it necessary to manufacture and maintain stocks of weather strips of different sizes for the different sizes of glass, which results in higher costs.

The aim of the invention is to eliminate this drawback, by providing a weather strip that adapts to glass of different thicknesses, ensuring an excellent seal and a pleasant appearance.

This aim is achieved with the weather strip according to the invention, which has the features described in appended independent claim 1.

Advantageous embodiments of the invention are described in the dependent claims.

Basically, the weather strip according to the invention consists of a rubber section with a channel having a bellows-type base, so that it has a variable width. Correspondingly, on at least one side of the channel, a means of compensating for the variation in width of the channel is provided, consisting in particular of a chamber capable of being deformed.

On the front of the section, at the side of the opening of the central channel, at least one trough-shaped cavity is formed, which is covered with a special flexible flap, acting as a canopy to prevent infiltration and accumulation of external agents.

Further characteristics of the invention will be made clearer by the detailed description that follows, referring to a purely exemplary and therefore non-limiting embodiment, illustrated in the attached drawings in which:

Figure 1 is a view in cross-section of a weather strip according to the invention, when not in use;

Figures 2 and 3 are similar views to that in Figure 1, illustrating the use of the weather strip with two panes of glasses of different thicknesses.

With reference to these figures, reference number 1 indicates the profile of the rubber sealing strip between the frame and the glass of a window or door, according to the invention.

In Figures 2 and 3, 2 indicates part of the cross-section of the section of an aluminium window or door frame, and 3 a generic pane of glass, particularly double glazing, the overall thickness of which is greater in Figure 3.

The profile 1 of the strip has a central channel 4, which is open or can be opened at the top, and has a bottom wall 5 shaped to form a bellows, that is having at least one upside-down V-shaped fold, so that its width can be varied.

At the two sides of the bottom wall 5, a series of protrusions 6 is provided to form a seal on the edge of a pane of glass of a certain thickness (see Figure 3). Other opposite facing flaps 7 are arranged in an intermediate area of the side walls 8 of the channel 4 and are oriented towards said bottom wall 5. The flaps 7 are able to form a seal against the two opposite sides of the glass 3.

The upper wall of the channel 4 comprises two flaps protruding from the top of the walls 8 and directed outwards, also able to form a seal on the two sides of the glass 3 (see Figures 2 and 3).

On the two sides of the channel 4, respective tubular chambers 10 that can be deformed are provided, to compensate for the changes in width of the central channel 4, according to the thickness of the glass 3. Each chamber 10 is delimited at the bottom by an arched wall 11, with its concavity towards the outside of the chamber, and at the top by a wall 12 determining a hollow or outer trough 13, which is covered by a respective flexible flap 14, forming a continuation of the flap 9. On the outer side of each chamber 10 a respective lip 15 is provided to form a seal against a corresponding wall 16 of the metal section 2, whilst near the free edge of the outer side of the chamber 10 a seat 17 is provided into which an inner terminal protrusion 18 of the side of the section 2 fits.

The working of the weather strip according to the invention is made clear by Figures 2 and 3.

The weather strip 1 is housed in the section 2 of the door or window frame, remaining blocked by insertion of the protrusions 18 in the seats 17. Since the inside width in the section 2 is of a standard size, the overall width of the weather strip 1 will remain constant in the different uses.

Figure 2 illustrates use of the weather strip 1 with a pane of glass of a certain thickness, in this case relatively small. Here the thickness of the glass 3 causes only a straightening of the side walls 8 of the channel 4, without any substantial widening of the bottom wall 5. The seal on the glass 3 is made by the intermediate flaps 7 and the outer flaps 9, whilst there is no contact with the lower protrusions 6. There is no substantial narrowing of the side chambers 10 to compensate for a change in width of the central channel 4 of the weather

strip.

In the case shown in Figure 3, a glass double the width of that in Figure 2 is used. As can be seen, in this case there is greater widening of the channel 4, the bottom wall 5 almost being straightened, and the sealing flaps 7 and 9 preferably being disposed parallel to the side walls 8 of the channel. The bottom edge of the glass 3 is also closed between some of the opposite facing protrusions 6. The chambers 10 narrow to compensate for the widening of the central channel 4, producing a flattening of the trough-shaped depressions 13 at the top.

Both in the case in Figure 2 and in the case in Figure 3, these depressions 13 remain covered by the flaps 14 which form a canopy to prevent external agents from accumulating in the depressions, especially in the portion of weather strip situated along the lower horizontal side of the window or door frame.

From the foregoing description the advantages of the invention will be clear, but should not be considered limited to embodiment previously described and illustrated in the appended drawings, but solely by the claims that follow.

Claims

1. A weather strip for window and door frames, to be interposed between a peripheral section (2) of the frame and a pane of glass (3), comprising a central channel (4) to accommodate the glass (3), provided on the inner sides with means (6,7,9) of forming a seal with the glass (3), said weather strip also being provided on the outer sides with means (15, 17) of forming a seal with the sides of the section (2), characterized in that said channel (4) has a flexible bottom wall (5), with a variable thickness, and in that at least on one side of said channel (4), a means that can be deformed (10) is provided to compensate for the variations in width of the channel (4), maintaining the overall width of the strip unchanged.

2. A weather strip according to claim 1, characterized in that two compensating means capable of being deformed (10) are provided, disposed on either side of said channel (4).

3. A weather strip according to claim 1 or 2, characterized in that said bottom wall (5) of the channel (4) is of the bellows type.

4. A weather strip according to any one of the preceding claims, characterized in that said means capable of being deformed (10) to compensate for the width of the channel (4) comprise tubular chambers.

5. A weather strip according to claim 4, characterized in that said tubular chambers (10) have a respective depression (13) on the opposite side to said bottom wall (5) of the channel (4), covered on the outside by a flexible flap (14).

6. A weather strip according to claim 1, in which said inner sealing means (6,7,9) at the sides of the channel (4) comprise, respectively, series of protrusions (6) provided near the bottom wall (5), pairs of flaps (7) provided in respective intermediate areas of the side walls (8) of the channel (4) and oriented towards said bottom wall (5) and pairs of flexible flaps (9) provided at the ends of said side walls (8) and oriented towards the outside of the channel (4).

7. A weather strip according to claim 1 in which said lateral means for forming a seal between the weather strip and the section (2) comprise lips (15) to provide a seal against the intermediate areas of the side walls (16) of the section (2), and respective seats (17) into which corresponding inner terminal protrusions of said side walls (16) fit.

8. A glazed window or door frame, comprising at least one peripheral section (2) that encloses the glass (3) through interposition of a rubber weather strip (1), having a channel (14) for housing of said glass (3), and means of forming a seal against the glass and the inner side walls of said section (2), characterized in that said channel (4) of the weather strip (1) has a bottom wall that can be deformed, to allow changes in the width of the channel (4) in order to adapt to glass panes (3) of different thicknesses, a means that can be deformed being provided on at least one side of said channel (4) to compensate for the changes in width of the channel (4), maintaining a constant overall width of the weather strip (1), corresponding to the inside width of the section (2).

9. A window or door frame according to claim 8, characterized in that said compensating means capable of being deformed (10) comprises a tubular chamber.

FIG. 1

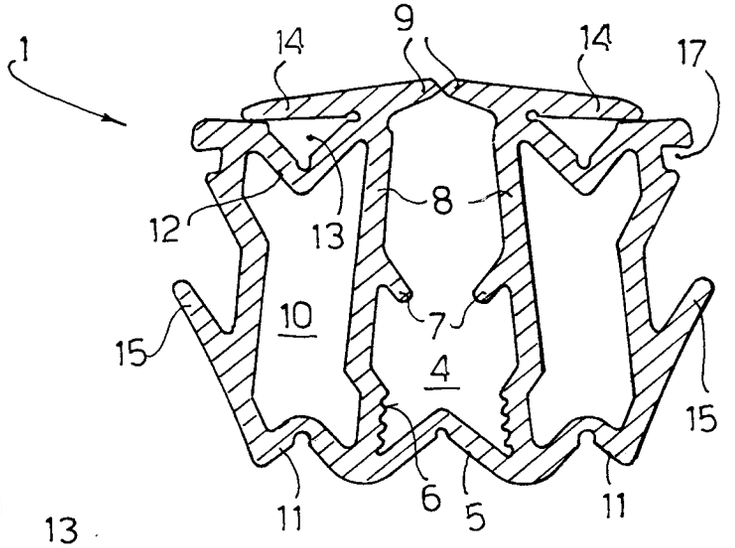


FIG. 2

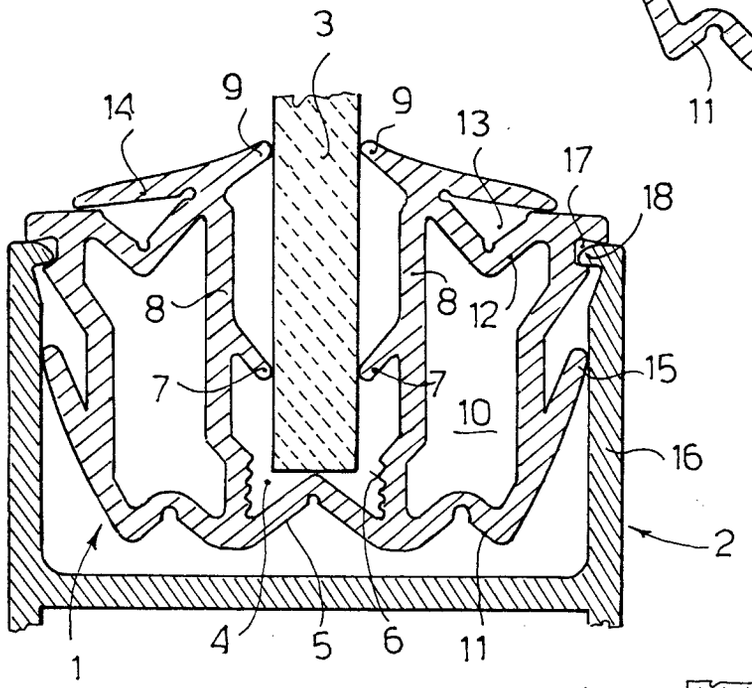
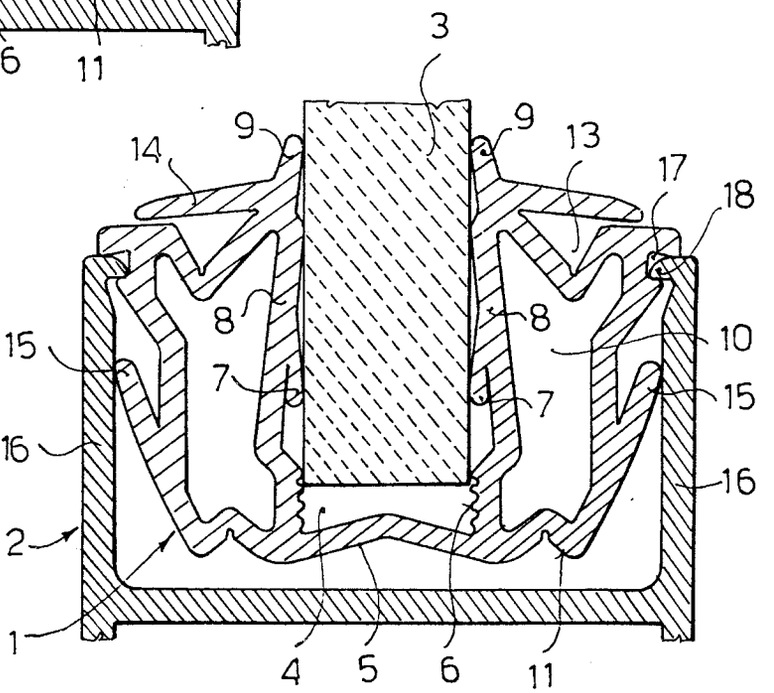


FIG. 3



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EUROPEAN SEARCH REPORT

Application Number
EP 97 10 0558

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X Y	FR 2 245 830 A (FIT-PROFILES ET LE PROFIL ACIER MENUISE) * page 3, line 8 - page 6, line 8; figures * ---	1-5,8,9 6,7	E06B3/62
Y	DE 35 28 388 A (DEVENTER PROFILE) * column 6, line 40 - line 56 * * column 8, line 44 - column 9, line 64 * * figures * ---	6	
Y	EP 0 632 184 A (DOUILLET) * column 2, line 32 - line 49; figures 1,2 * ---	7	
A	EP 0 263 013 A (HUTCHINSON) * column 4, line 29 - column 7, line 4; figures * ---	1,2,4-9	
A	DE 42 41 309 A (BRÜGMANN FRISOPLAST) * column 3, line 57 - column 4, line 53 * * column 5, line 37 - line 58 * * figures * ---	1,4,5,8,9	TECHNICAL FIELDS SEARCHED (Int.Cl.6) E06B
A	NL 9 001 649 A (ZWAAN) * claims 1-4; figures 1-3 * -----	1,3	

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	20 June 1997	Depoorter, F

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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