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(54) **System for joining section bars and fittings to doors and windows**

(57) The present system foresees the joining of two hooking teeth (3.2, 3.3), situated on a flange (3) on the section bars (1, 2) constituting the structure of the shutter and the frame, to elements that are present on one end (5.1, 6.1, 7.1, 8.1, 9.1, 10.1) of an additional section bar (5, 6, 7), an accessory (8) or a trimming (9, 10); each section bar (1, 2) has at least one of the abovementioned flanges (3) on it; each flange (3) bounds an open chamber (4); the two abovementioned hooking teeth (3.2, 3.3) are situated on the wall of the flange (3); one end (5.1, 6.1, 7.1, 8.1, 9.1, 10.1) of an additional section bar (5, 6, 7), of an accessory (8) or of a trimming (9, 10) bearing said joining elements is inserted into each chamber (4); those elements consist in a guide projection (5.2) or a tooth (6.2, 7.2, 8.2, 9.2, 10.2) that will fit together with at least one tooth (3.1, 3.2) inside the chamber (4).

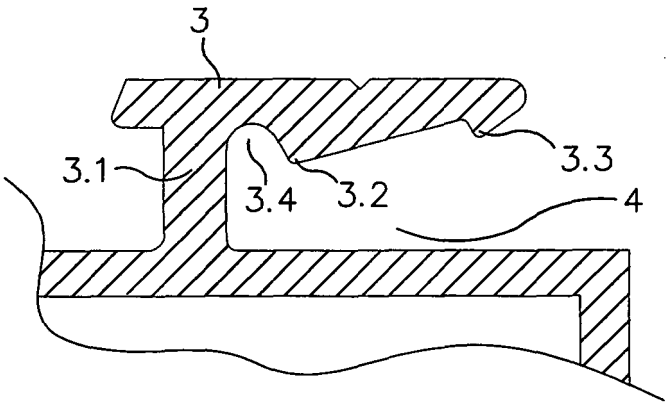

FIG. 3

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Description

[0001] The present invention relates to the sector of fittings and, more particularly, to a system for joining additional fittings, section bars, accessories and trimmings.

State of technology

[0002] Currently, most metal or plastic fittings consist in different systems that combine a number of section bars. Those systems generally involve additional section bars, such as those used in a glazing profile, being fixed by means of a clip-on mechanism onto the door or window shutter or frame.

[0003] To this aim, at least one section bar contained in the structure of the shutter or frame bears arms with flanges on them that are facing each other. Together they form an open chamber called "the European chamber", into which one end of the additional section bar will fit, enabling the pieces to be fastened together. More particularly, each additional section bar bears two teeth that join with the flanges that bound the abovementioned open chamber in the shutter or frame's section bar. However, the base of the chamber always lies orthogonally to the pane or panel, and therefore the additional section bars cannot be joined frontally with regards to the fitting.

[0004] The chamber is also useful for joining a variety of accessories, such as hinges, and trimmings to the structure. For accessories and trimmings to be joined, however, screws or grains must usually be used that operate in contrast with the abovementioned flanges. Furthermore, the use of screws and grains entails higher production costs. Indeed, when screws are used, holes must be drilled into the section bar. This is less of a problem when grains are used, but it remains an inconvenience in that the accessories needed for fitting the grains are complicated in shape. Consequently, their cost increases, both because more materials are involved and because the machines designed specifically for producing them must be purchased.

[0005] In more developed systems, on order to allow for additional section bars, in particular the glazing profile section bar, being clipped on frontally, a chamber has been created that is bounded by a short flange bearing a tooth. Owing to its shape, however, this kind of flange has limited functionality and precise uses, in that it is not versatile enough for accessories or trimmings to be attached onto it.

Summary of the invention

[0006] The aim of the present invention is to provide users with a new, polyvalent joining system for fittings that offers a solution to the problems highlighted above.

[0007] This aim and other objectives are achieved by the system devised in the present invention, wherein all of the section bars that make up the structure of the shutter, the frame, the sash, as well as T-section bars, bear at least one flange that lies parallel to the section bars and is joined to them by means of an arm. Each flange, together with the arm that joins it to the section bar and the wall of the section bar itself that faces the flange, bounds an open chamber that opens either towards the outside or towards the inside. Each flange bears two hooking teeth on its wall that faces the chamber. The width of the flange should preferably decrease going from the arm towards its distal end, and there is a guide between the arm and the flange.

[0008] Thanks to its shape, the hooking system enables a wide range of additional section bars, accessories and trimmings to be joined.

[0009] Indeed, one end of an additional section bar, an accessory or a trimming, bearing the suitable elements for it to be clipped onto the teeth on the flange, is inserted into each of the abovementioned chambers.

[0010] Depending on their function, the additional section bars, the accessories and the trimming can sometimes require the clip to be more solid or more flexible (compensatory) in order for them to work correctly. The system here described functions in both cases. Greater or less elasticity can be achieved so that the additional section bar, the accessory or the trimming can be attached to either one tooth or the other (or both, if need be), by increasing or reducing the contact surface between the pieces, or by increasing or reducing the sizes of the abovementioned required joining elements.

[0011] There are a number of advantages:

- the additional section bars can be joined frontally onto the section bars that make up the fitting;
- production costs are reduced;
- A number of different trimmings can be used (from those for "shutter rabbets" to those for "wall hanging");
- there is a choice of a wide range of additional edgings, which makes this system extremely versatile;
- the accessories that are used are very simple and therefore low-cost;
- the accessories can be attached without using auxiliaries such as screws or grains, and therefore they are practical and quick;
- The glazing profile section bar that is already fixed to the section bar on the shutter or frame can be angled at 45°;
- The system has a neat design, making it noticeably more pleasing to the eye.

Brief description of the drawings

[0012] Further characteristics and advantages will become better apparent from the detailed description of a preferred but not exclusive embodiment of a superstructure, according to invention, illustrated only by way of a non-limitative example in the accompanying drawings, wherein:

- Figure 1 depicts a cross section of a section bar that is suitable for forming the frame of a window, bearing

a flange in accordance with the present invention;

- Figure 2 illustrates a cross section of a section bar that is suitable for forming the shutter of a window, bearing a flange in accordance with the present invention;
- Figure 3 depicts, in more detail, a cross section of the abovementioned flange;
- Figure 4 illustrates a cross section of a shutter-frame cluster;
- Figures 5, 6, 7, 8, 9, and 10 depict more cross sections of the flange and of some additional section bars, accessories and trimmings.

Detailed description of an example of preferred embodiment

[0013] In the following example of embodiment the present system is used in a window.

[0014] At least one flange 3 is placed on both the section bar 1 that forms the frame and on the section bar 2 that forms the shutter. This flange 3 lies parallel to the section bars 1 and 2, and is joined to them by means of an arm 3.1.

[0015] Each flange 3, together with its own arm 3.1 and the wall of the section bar 1, 2 facing it, bounds an open chamber 4 that opens either towards the outside or towards the inside and that therefore has a base that lies parallel to the pane or panel. Two hooking teeth 3.2 and 3.3 are situated on the wall of the flange 3 facing the chamber 4. The width of the flange 3 decreases going from the arm 3.1 towards its distal end, and there is a guide 3.4 between the arm 3.1 and the flange 3.

[0016] The first tooth 3.2, which is closer to the arm 3.1 than the second tooth 3.3, is situated just outside the guide 3.4 and where the flange 3 is widest. The tooth 3.3, which is further from the arm 3.1 than the first tooth 3.2, is situated close to the distal end of the flange 3, where its width is lesser, thus enabling the tooth 3.3 to be more flexible. An inclined plane is situated between the two hooking teeth 3.2 and 3.3.

[0017] The chamber 4 can fit both one end of additional section bars such as glazing profile section bars 5, rabbet section bars 6 or joining section bars 7 for adjoining section bars 1, as well as one end of accessories such as hinges 8 and both shutter rabbet trimmings 9 and wall rabbet trimmings 10. The abovementioned end is inserted frontally to the section bar 1 that forms the frame and the section bar 2 that forms the shutter.

[0018] All of those section bars 5, 6 and 7, hinges 8, and trimmings 9 and 10 have a specifically shaped end that fits into the chamber 4, and bear elements that are suitable for it being clipped onto the section bar 1 forming the frame and onto the section bar 2 forming the shutter.

[0019] Naturally, a variety of joining systems are possible.

[0020] For example, one end 5.1 of a section bar 5 for blocking a pane on the section bar 2 bears a guide projection 5.2 on its top that fits into the guide 3.4 that joins together with he tooth 3.2 found within the chamber 4, thus enabling the two section bars 2 and 5 to be joined together. A second guide projection 5.3, situated opposite the first guide projection 5.2 and in a more central position on the end 5.1 in comparison to the guide projection 5.2, brings the end 5.1 itself to lie in a correct working position, so that the guide projection 5.2 and the internal hooking tooth 3.2 can be clipped together.

[0021] A rabbet section bar 6, however, has one end 6.1 that is arched bearing a tooth 6.2 on its top. The tooth 6.2 comes to lie against the external tooth 3.3 on the flange 3, thus enabling the two section bars 1 and 6 to join together. A guide projection 6.3, situated opposite the tooth 6.2 and more centrally on the end 6.1 in comparison to the tooth 6.2, pushes the end 6.1 towards the flange 3.

[0022] The section bar 7 for joining adjoining section bars 1 has two ends 7.1 bearing the abovementioned elements, therefore both are arched, both have a tooth 7.2 on the top of each arch and a guide projection 7.3 opposite the tooth 7.2 that is positioned more contrary on the end 7.1 in comparison to the tooth 7.2. Each end 7.1 fastens into a chamber 4 formed by two adjoining section bars 1.

[0023] The joining elements are the same for the trimmings 9 and 10 that serve as insulation between the section bar 1 and the structure. At one end 9.1, 10.1, which is arched, these trimmings have a tooth 9.2, 10.2 on the tip, and a guide projection 9.3, 10.3 opposite that tooth 9.2, 10.2 that is situated more centrally on the end 9.1, 10.1 in comparison to the tooth 9.2, 10.2 itself.

[0024] The hinge 8, however, has a tooth 8.2 on the tip of its end 8.1 that does not have a guide projection opposite, in that its lower base is created in such a way that it is constantly in contact with the section bar 1 onto which it is hooked in order to guarantee a maximum of solidity and stability in the fastening.

[0025] The section bars 1 and 2 can, nonetheless, bear one or more "European chambers" 11, bounded by arms 11.1 that have flanges 11.2 suitable for fitting section bars, hinges and trimmings present on the market.

[0026] A number of modifications and variations are possible other than those described above. One example is that the ends 5.1, 6.1, 7.1, 8.1, 9.1, 10.1 of the glazing profile section bars 5, the rabbet section bars 6, the section bars 7 for joining adjoining section bars 1, the hinges 8 on the shutter rabbet trimmings 9 and on the wall rabbet trimmings 10, can bear not only one but two teeth that are suited for fitting together with the hooking teeth 3.2 and 3.3 on the flange 3.

Claims

1. System for joining section bars and accessories to fittings that allows for the attachment of a wide range of additional section bars (5, 6, 7), accessories (8) and trimmings (9, 10) to the section bars (1) that

constitute the structure of the frame, to the section bars (2) that constitute the structure of the shutter (2), to the sash or T-shaped section bars, whatever their shape and whether they are used in chilled or heated systems, **characterised by** the fact that it foresees the joining of two hooking teeth (3.2, 3.3) situated on a flange (3) of said section bars (1, 2) to the elements present on one end (5.1, 6.1, 7.1, 8.1, 9.1, 10.1) of an additional section bar (5, 6, 7), of an accessory (8) or of a trimming (9, 10); each section bar (1, 2) constituting the structure of the shutter, the frame, the sash, or each T-shaped section bar, bears at least one of the said flanges (3), which lies parallel to the section bars (1, 2) and is joined to the section bar (1, 2) itself by means of an arm (3.1); each flange (3), together with its own arm (3.1) and the wall of the section bar (1, 2) facing the flange (3) itself, bounds an open chamber (4) that opens either towards the outside or towards the inside, and that therefore has a base that lies parallel to the pane or panel; the two said hooking teeth (3.2, 3.3) are situated on the wall of the flange (3) facing the chamber (4); an inclined plane is situated between the two hooking teeth (3.2, 3.3); the width of said flange (3) should preferably decrease going from the arm (3.1) towards its distal end, and there is a guide (3.4) between the arm (3.1) and the flange (3); the first tooth (3.2), which is closer to the arm (3.1) than the second tooth (3.3), is positioned of preference on the outside of the guide (3.4) and in a position where the flange (3) is at its widest; the tooth (3.3), which is further from the arm (3.1) than the first tooth (3.2), is placed of preference close to the distal end of the flange (3); one end (5.1, 6.1, 7.1, 8.1, 9.1, 10.1) of an additional section bar (5, 6, 7), an accessory (8) or a trimming (9, 10) bearing the said elements is inserted into each chamber (4), thus enabling the section bars (1, 2) constituting the structure of the shutter, the frame, the sash, and T-shaped section bars, to have said additional section bars (5, 6, 7), accessories (8) or trimmings (9, 10) joined to them; said end (5.1, 6.1, 7.1, 8.1, 9.1, 10.1) is always inserted frontally to the section bars (1, 2) making up the structure of the shutter, the frame, the sash, or to T-shaped section bars.

2. System for joining according to claim 1, wherein said element situated on the end (5.1, 6.1, 7.1) of an additional section bar (5, 6, 7), on the end (8.1) of an accessory (8) or on the end (9.1, 10.1) of a trimming (9, 10), which is suitable for permitting joining to the section bars (1, 2) constituting the structure of the shutter, the frame, the sash, or to T-shaped section bars, consists in a guide projection (5.2) positioned on the tip of the end (5.1) that fits into said guide (3.4) and joins together with the tooth (3.2) that is closer to the arm (3.1) than the second tooth (3.3), inside the chamber (4).

3. System for joining according to claim 1, wherein said element that is present on the end (5.1, 6.1, 7.1) of an additional section bar (5, 6, 7), on the end (8.1) of an accessory (8) or on the end (9.1, 10.1) of a trimming (9, 10), which enables joining to the section bars (1, 2) constituting the structure of the shutter, the frame, the sash or to T-shaped section bars, consists in a tooth (6.2, 7.2, 8.2, 9.2, 10.2) situated on the end (6.1, 7.1, 8.1, 9.1, 10.1) that joins with the tooth (3.3) that is further from the arm (3.1) than the first tooth (3.2).

4. System per il joining according to claims 2 and 3, wherein the said end (5.1, 6.1, 7.1, 9.1, 10.1) bears a second guide projection (5.3, 6.3, 7.3, 9.3, 10.3) opposite the first guide projection (5.2) or the tooth (6.2, 7.2, 9.2, 10.2) and situated in a more central position on the end (5.1, 6.1, 7.1, 9.1, 10.1) than the guide projection (5.2) or the tooth (6.2, 7.2, 9.2, 10.2).

5. System for joining according to claim 3, wherein said end (6.1, 7.1, 9.1, 10.1) is arch-shaped and has said tooth (6.2, 7.2, 9.2, 10.2) on its top.

6. System for joining according to claims 2 and 3, wherein said end (5.1, 6.1, 7.1, 8.1, 9.1, 10.1) bears two teeth or a guide projection (5.2) and a tooth (6.2, 7.2, 8.2, 9.2, 10.2) that fit together with both of the hooking teeth (3.2, 3.3) on the flange (3).

7. System for joining according to claim 6, wherein said end (5.1, 6.1, 7.1, 8.1, 9.1, 10.1) also bears a second guide projection (5.3, 6.3, 7.3, 9.3, 10.3) opposite the two teeth or the first guide projection (5.2) and the tooth (6.2, 7.2, 9.2, 10.2).

8. System for joining according to claims 2 and 5, wherein said end (6.1, 7.1, 9.1, 10.1) is arched and has said guide projection (5.2) on the tip of the end (6.1, 7.1, 9.1, 10.1) itself.

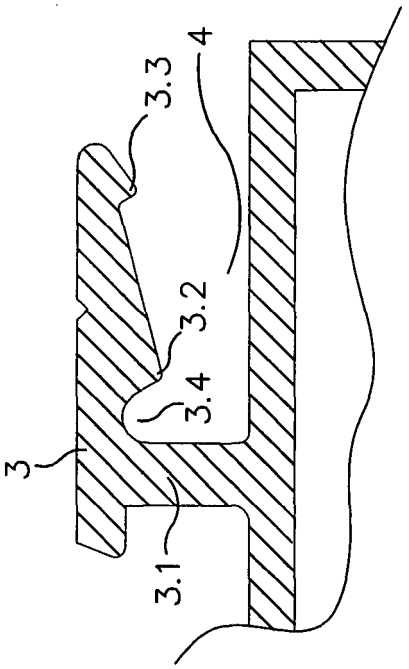

FIG. 3

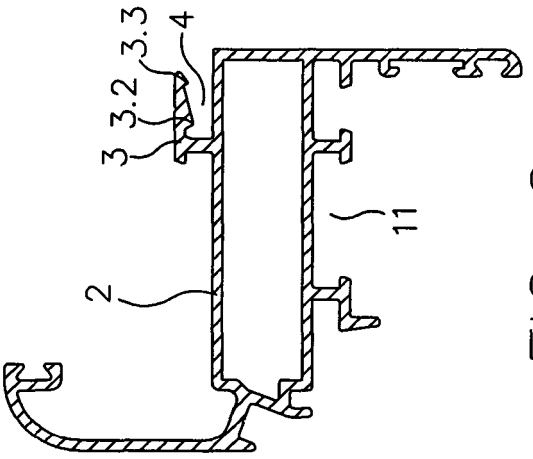

FIG. 2

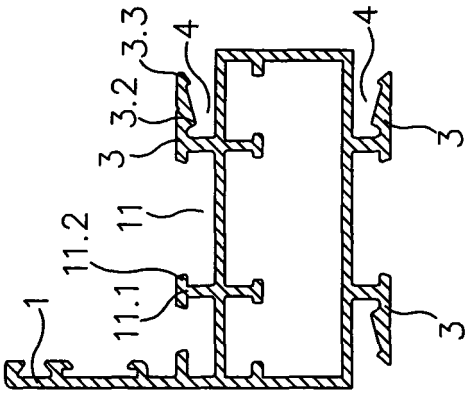

FIG. 1

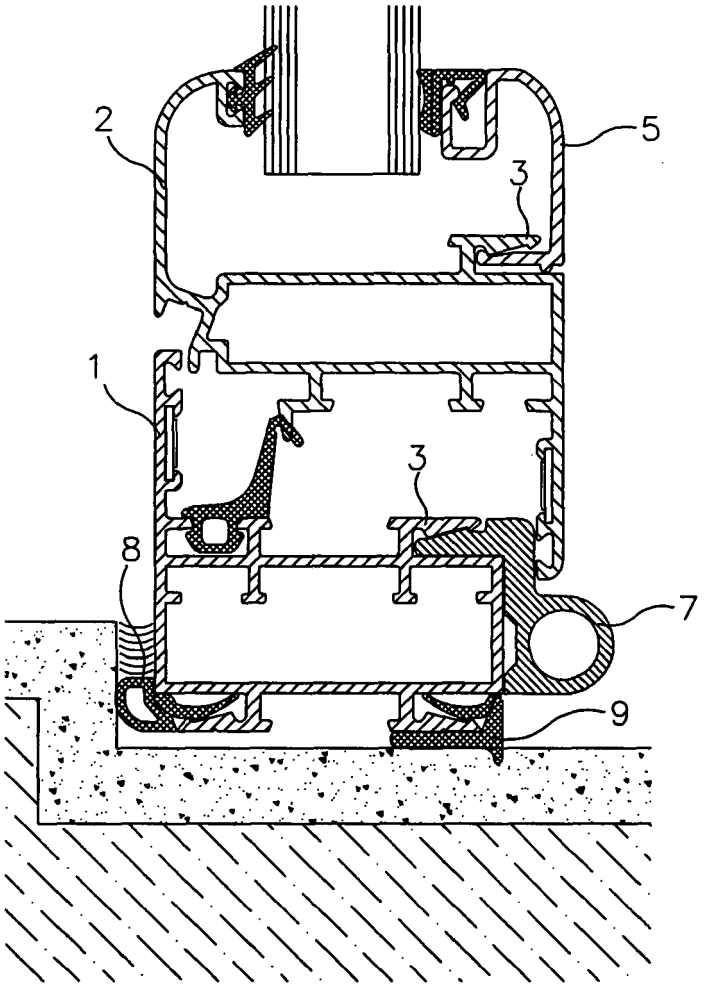

FIG. 4

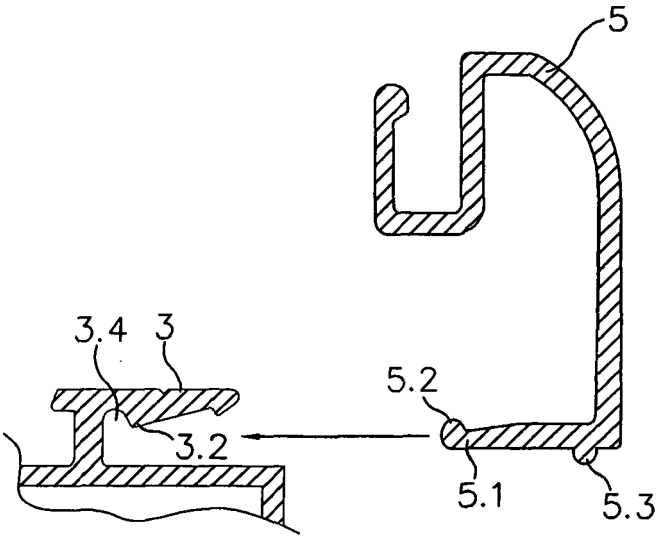

FIG. 5

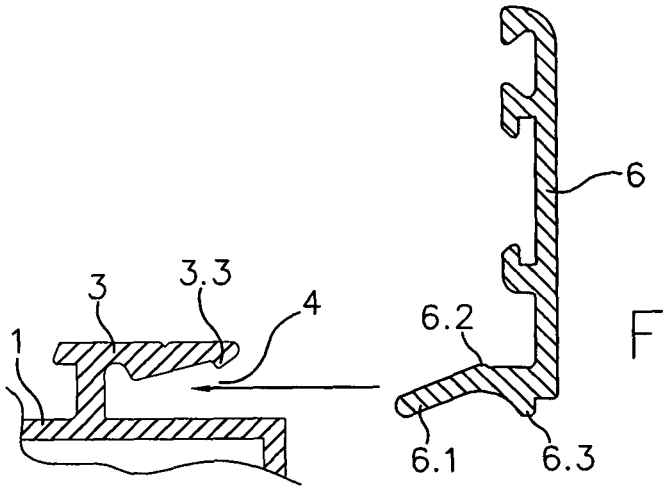

FIG. 6

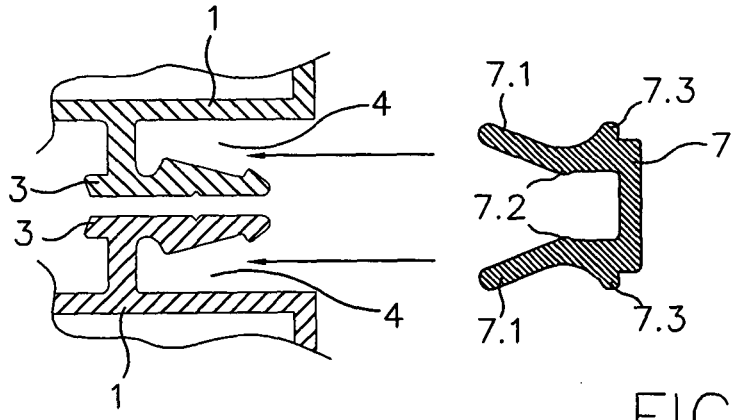

FIG. 7

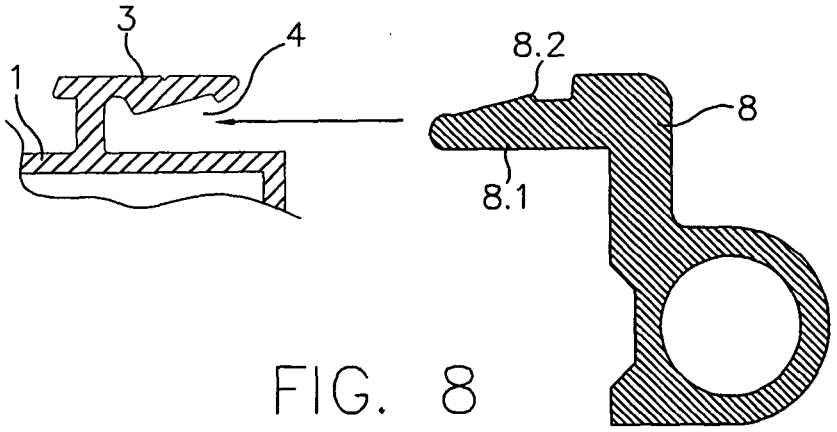

FIG. 8

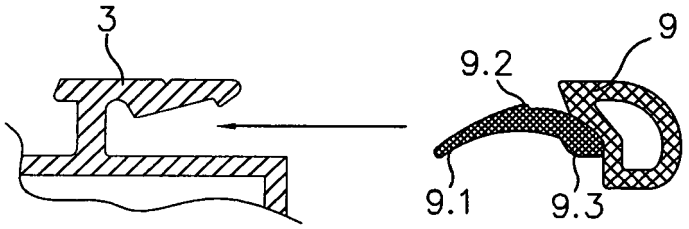

FIG. 9

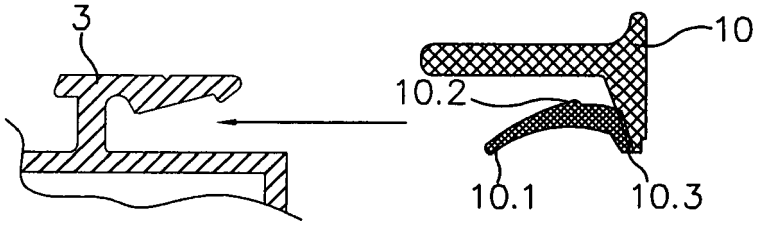

FIG. 10