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(54) Thermally cut section bar

(57) A thermally cut section bar (1 ; 30), particularly for window and door frames (70), comprises an element of internal metal section bar (2 ; 32) and an element of external metal section bar (3 ; 33) connected by means of two insulating bars (4 ; 34, 340). The insulating bars (4 ; 34, 340) are inclined with regard to the elements of internal (2 ; 32) and external (3 ; 33) metal section bars and at least one of these (4 ; 34) has an inverted "L" shaped tongue (20 ; 53). The inverted "L" shaped tongue (20 ; 53) is associated with a "T" shaped tongue (18 ; 48) of the element of internal metal section bar (2 ; 32) to form a central groove (21 ; 54) apt to house an additional component formed by either of a central gasket (22) or an element to support a window pane (23).

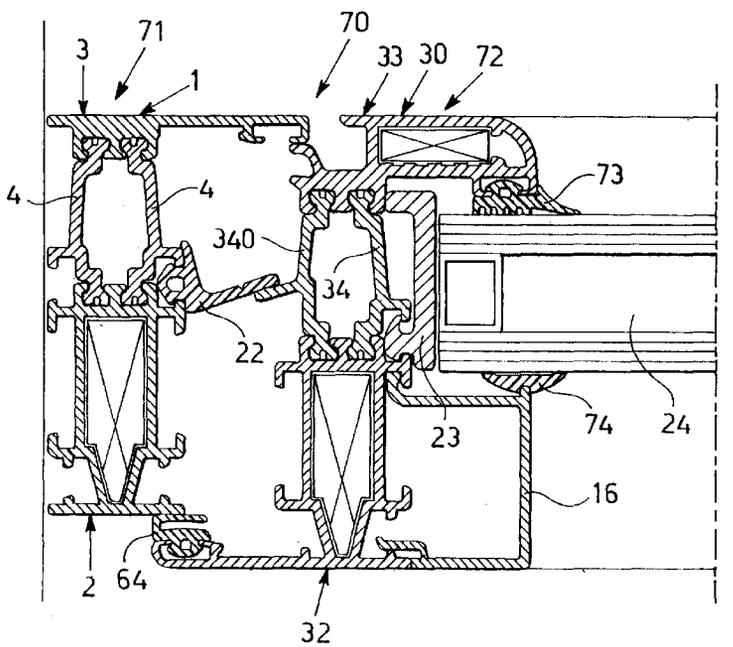


Fig. 3

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Description

This invention relates to a thermally cut section bar of contained dimensions and optimised thermal insulation characteristics.

According to the invention, a thermally cut section bar, particularly for window and door frames, comprises an element of internal metal section bar and an element of external metal section bar connected by means of two insulating bars, said insulating bars being housed in longitudinal grooves of said elements of internal and external metal section bars, and is characterized in that:

a) said insulating bars are inclined with regard to said elements of internal and external metal section bars and converge towards said element of external metal section bar,
b) said element of internal metal section bar has at least one "T" shaped tongue,
c) at least one of the insulating bars has an inverted "L" shaped tongue,
d) said "T" shaped tongue and said inverted "L" shaped tongue are linked to form a central groove apt to house an additional component formed by either of a central gasket or an element to support a window pane.

The thermally cut section bar according to the invention has many advantages.

The convergence of the two insulating bars allows water and condensation which have infiltrated a window and door frame to be directed towards a collection chamber and drainage holes.

Another advantage consists in the possibility of using insulating bars of a length which is suitable to the desired insulation class without altering the overall width of the section bar (distance from the outside front and the inside front of the section bar). In fact, the groove apt to house the central gasket or the window pane support element is formed by associating the "T" shaped tongue of the element of internal metal section bar and the inverted "L" shaped tongue of the insulating bar. This allows the insulating bar to be sized independently of the width of the groove containing the central gasket or the window pane support element.

Finally, in a window and door frame with a movable shutter, an insulating bar with a standard shape can be used either to create the groove for the central gasket, placed between the fixed frame and the movable frame, or to create the groove for the window pane support element of the movable frame.

Characteristics and advantages of the invention will now be illustrated with reference to a form of embodiment shown as non limiting example in the enclosed drawings, of which:

Fig. 1 is a top view of a first thermally cut section bar embodied according to the invention,

Fig. 2 is a top view of a second thermally cut section bar embodied according to the invention,

Fig. 3 is a cross-section view of a window and door frame having a movable shutter, with an open joint connection, formed from the section bars of Figs. 1 and 2.

Fig. 1 shows a thermally cut section bar 1 having a cross-section on the whole "L" shaped. The section bar 1 comprises an element of internal metal section bar 2 and an element of external metal section bar 3, preferably made of an aluminium alloy. The elements of a metal section bar 2 and 3 are connected by means of two insulating bars 4, right and left, housed in their longitudinal "C" grooves, 5 and 6, of the two section bar elements.

The element of internal metal section bar 2 has a tubular section, substantially polygonal, formed by straight longitudinal walls 7 and 8 and straight cross walls 9, right and left. Each cross wall 9 has ends with an inclined portion 10 which converges towards the longitudinal wall 7. There are longitudinal grooves 5 in wall 8.

The longitudinal wall 7 extends into two side tabs 11 which form the internal front of the section bar 1. Each side tab 1 1 has a tooth 12. Each cross wall 9 has a bent tongue 13 at a first end, with an inverted "L" shape. Each tongue 13 has a tooth 14. The inclined portions 10 and the teeth 12 and 14 limit grooves 15 apt to house an additional section bar such as the window pane fixing section bar. Each cross wall 9 has a "T" shaped tongue 18 at a second end. Each cross wall 9 and the tongues 13 and 18 limit a "C" groove 19 apt to house a hinge element, not shown, or a window pane fixing section bar.

Each insulating bar 4 has an inverted "L" shaped tongue 20, which is coupled with the "T" shaped tongue 18 of the element of internal section bar 2 to form a "C" groove 21, right or left. The right groove 21 is apt to house an additional component such as a central gasket 22 of a window and door frame 70 with a movable shutter, with an open joint connection (Fig. 3).

The insulating bars 4 have a specular shape and are made of a suitable plastic material, for example, polyamide, which may be reinforced with glass fibre.

The element of external metal section bar 3 has a longitudinal wall 25, which has inside the longitudinal grooves 6. The longitudinal wall 25 extends into an abutment fin 26 to form the outside front of the section bar 1. The abutment fin 26 has a "C" groove 27 apt to house a seal, not shown. Between the right bar 4 and the abutment fin 26 there is a chamber 28 for the collection of condensation and infiltration water to be drained to the outside through drainage holes, not shown.

Fig. 2 shows a thermally cut section bar 30 with a cross-section on the whole "Z" shaped. The section bar 30 comprises an element of internal metal section bar 32 and an element of external metal section bar 33, preferably made of aluminium alloy. The elements of metal

section bar 32 and 33 are connected by means of two insulating bars 34 and 340, right and left, housed in the longitudinal grooves 35 and 36 of the two section bar elements.

The element of internal metal section bar 32 has a tubular section, substantially polygonal, and is formed by straight longitudinal walls 37 and 38 and straight cross walls 39, right and left. Each cross wall 39 has an inclined end portion 40 which converges towards the longitudinal wall 37. There are longitudinal grooves 35 in the wall 38.

The longitudinal wall 37 extends into a side tab 41 and an abutment fin 51 to form the inside front of the section bar 30. The side tab 41 has a tooth 42 and the abutment fin 51 has a "C" groove 52 apt to house a seal 64 (Fig. 3). The right cross wall 39 has, at a first end, a bent, inverted "L" shaped tongue 43 which has a tooth 44. The inclined right portion 40 and the teeth 42 and 44 limit a groove 45 apt to house an additional section bar (window fixing section bar 16 on Fig. 3). The right cross wall 39 has a "T" shaped tongue 48 at a second end. The right cross wall 39 and the tongues 43 and 48 limit a "C" groove 49 apt to house a hinge element or additional section bar. The left cross wall 39 has, at the ends, bent, inverted "L" shaped tongues 61 and 62 which limit a "C" groove 63 apt to house a hinge element.

The right insulating bar 34 has a bent tongue 53 having an inverted "L" shape, which is coupled with the "T" shaped tongue 48 of the element of internal section bar 32 to form a "C" groove 54. The groove 54 is apt to house a support element 23 for a window pane 24 (Fig. 3). The left insulating bar 34 has a strike tongue 65 against which the central gasket 22 (Fig. 3) abuts. The insulating bars 34 and 340 are also made from a suitable plastic, for example, polyamide, which may be reinforced with glass fibre.

The element of external metal section bar 33 is formed by a longitudinal wall 55 with longitudinal grooves 36 and a strike tongue 56. A section bar 57 with a tubular cross-section is integral with the longitudinal wall 55. The section bar 57 has an arched wall 58 and a "C" groove 59 for a seal 73 (Fig. 3). The wall 55 and the section bar 57 form the outside front of the section bar 30.

Fig. 3 shows a window and door frame 70 with a movable shutter, with an open joint connection, comprising a fixed frame 71 formed by the thermally cut section bar 1 and a movable frame 72 formed by the thermally cut section bar 30. The window pane 24 is supported by the window pane fixing section bar 16 by means of a gasket 74.

Claims

1. A thermally cut section bar (1 ; 30), particularly for window and door frames (70), comprises an element of internal metal section bar (2 ; 32) and an element of external metal section bar (3 ; 33) connected by means of two insulating bars (4; 34, 340), said insulating bars (4 ; 34, 340) being housed in longitudinal grooves (5, 6 ; 35, 36) of said elements of internal (2 ; 32) and external (3 ; 33) metal section bars, and is characterized in that:

   a) said insulating bars (4 ; 34, 340) are inclined with regard to said elements of internal (2 ; 32) and extemal (3 ; 33) metal section bars and converge towards said element of external metal section bar (3 ; 33),
   b) said element of internal metal section bar (2 ; 32) has at least one "T" shaped tongue (18 ; 48),
   c) at least one of the insulating bars (4 ; 34) has an inverted "L" shaped tongue (20 ; 53),
   d) said "T" shaped tongue (18 ; 48) and said inverted "L" shaped tongue (20 ; 53) are associated to form a central groove (21 ; 54) apt to house an additional component formed by either of a central gasket (22) or an element to support a window pane (23).

2. A thermally cut section bar (1 ; 30), according to claim 1, characterized in that between an insulating bar (4) and an abutment fin (26) of said element of external metal section bar (3) there is a chamber (28) for the collection of condensation and infiltration water to be drained to the outside of a window and door frame (70).

3. A thermally cut section bar (1 ; 30) according to claim 1, characterized in that the element of internal metal section bar (2 ; 32) has a tubular cross-section, substantially polygonal, formed by straight longitudinal walls (7, 8 ; 37, 38) and straight cross walls (9, 39), right and left, each cross wall (9 ; 39) having an inclined end portion (10 ; 40) converging towards said longitudinal wall (7 ; 37).

4. A thermally cut section bar (1 ; 30) according to claim 3, characterized in that at least one cross wall (9 ; 39) of said element of internal metal section bar (2 ; 32) has a bent tongue (13 ; 43) having an inverted "L" shape at a first end and a "T" shaped tongue (18 ; 48) at a second end and said cross wall (9 ; 39) and tongue (13 ; 43, 18 ; 48) limit a "C" groove (19 ; 39) apt to house a hinge element or a window pane fixing section bar (16).

5. A thermally cut section bar (1 ; 30) according to claim 1, characterized in that said element of external metal section bar (33) is formed by a longitudinal wall (55) provided with longitudinal grooves (36) and a strike tongue (56), to said longitudinal wall (55) being joined a section bar (57) having a tubular cross-section, provided with an arched wall (58)

and a "C" groove (59) for a seal.

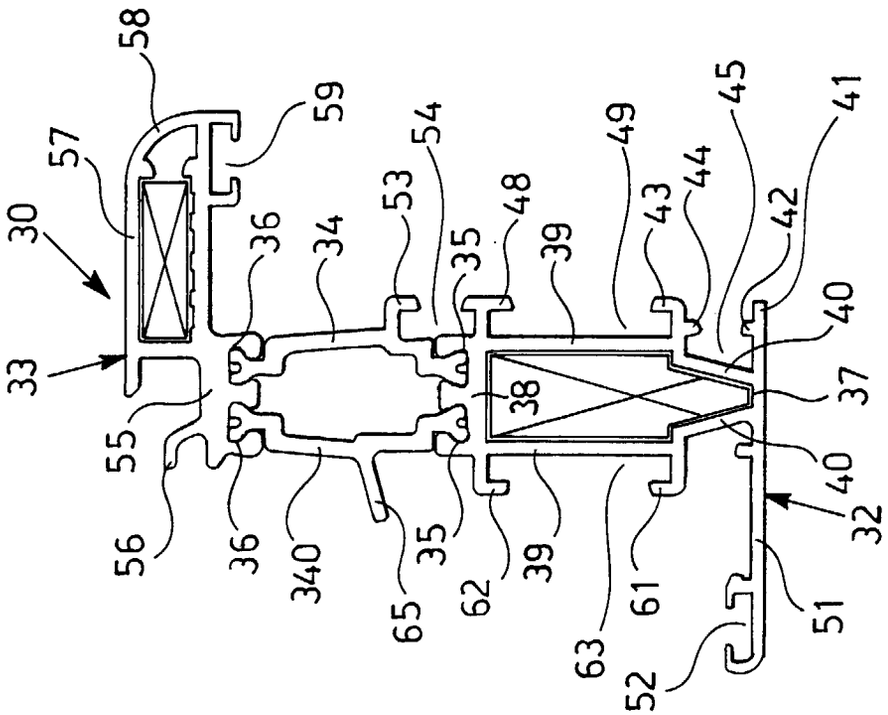

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Fig. 2

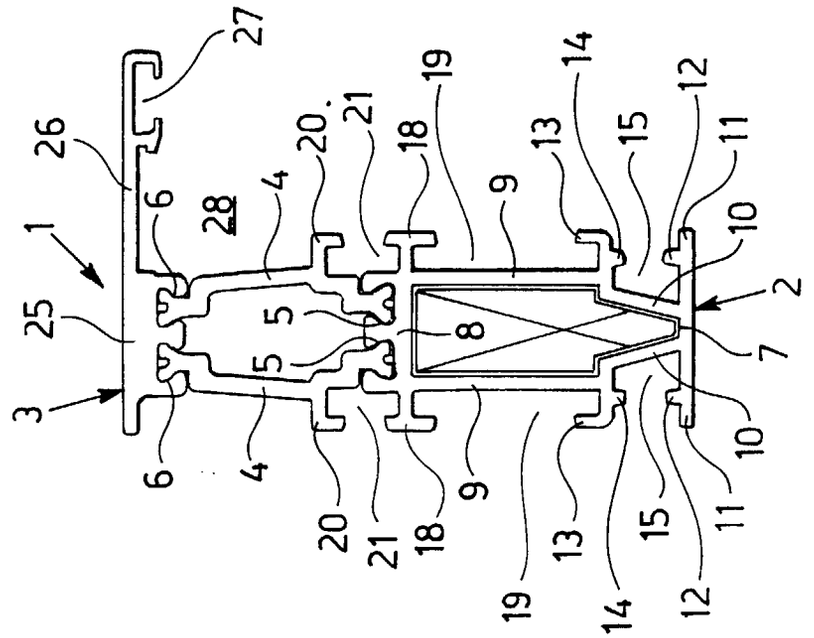

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Fig. 1

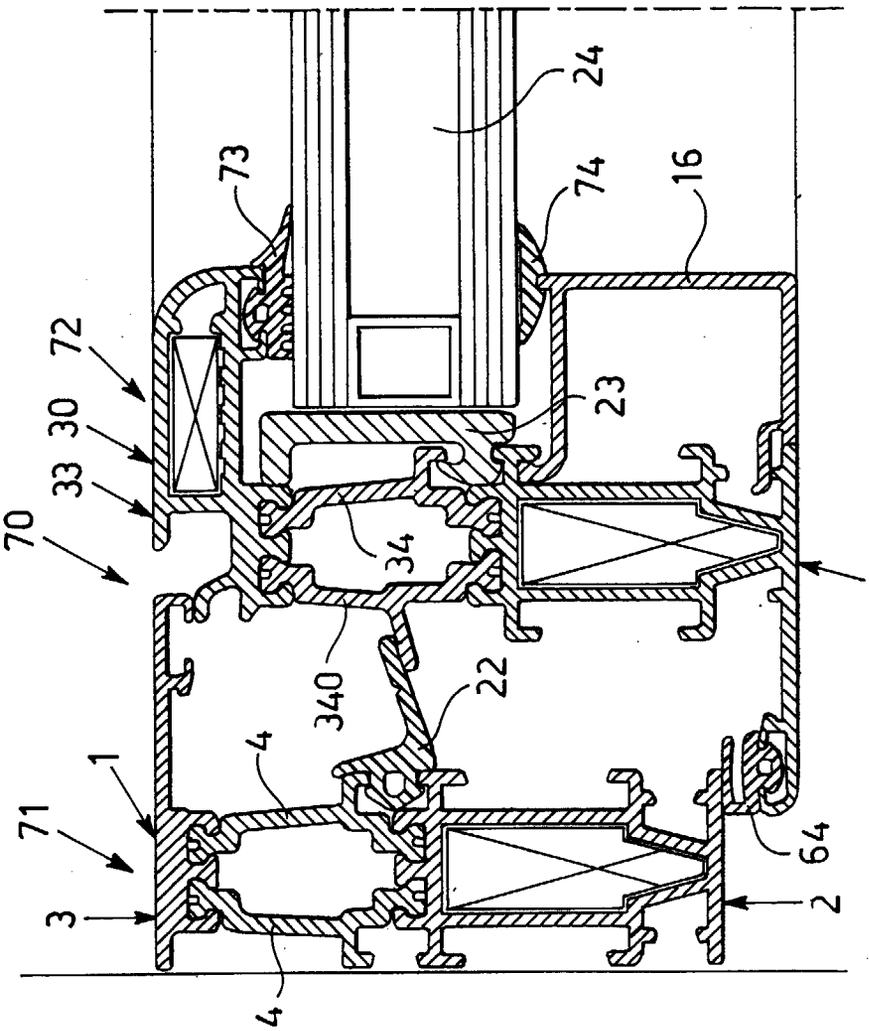


Fig. 3