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(54) **Door and window system consisting of thermally-insulated aluminium profiles with concealed glazing bead, gasket of which is on thereof**

(57) The present invention is a door and window system wherein inner and outer aluminum profiles (1,2,3,4,5,6,7,8) which are mechanically assembled to thermal insulation barrier (21) with special geometric cross-section produced from a polymeric material, and sealing gaskets (18) with special geometric cross-section which are assembled onto these profiles by being adhered onto them and/or produced on them directly, which

are made of a material such as epdm, tpe, and glazing bead profile (15,16) are used as an outer profile differently from standard profiles, thus they are concealed. When the glazing bead profiles (15,16), which are perceived as an outer profiles when viewed from the outside, not as a glazing bead; they consist of narrower frames up to the glazing bead width in comparison with traditional systems and thus more daylight entrance and visual contact can be provided with outdoor.

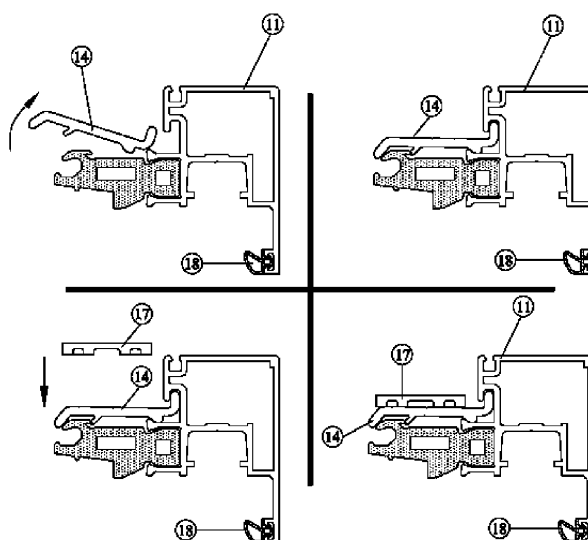


Figure 1

Description

Field of the Invention

[0001] The present invention relates to a door and window system which is produced by using aluminium profiles joined mechanically with the polymeric thermal barriers with a special geometric cross-section and weather sealing gaskets, which are made of epdm (ethylene propylene diene monomer), or tpe (thermoplastic elastomers), produced on the aluminum profiles directly or by being adhered with special geometric cross-section and concealed glazing beads that are used as a outer profile unlike conventional system.

Background of the Invention

[0002] In the state of the art; sealing gaskets and door or window profiles are produced separately and sealing gaskets are attached to the profiles in the form of frame, which are produced using door or window profiles, by being fitted/pushed by means of channels in their geometries. The most significant drawbacks or disadvantages of such applications are that the sealing gasket is produced separately or assembled by being cut in appropriate sizes and installation thereof to the frame profiles, after the frame profiles are produced.

[0003] In another application in the state of the art, thermally-insulated profiles consist of two profiles (such as aluminum, steel, pvc, wooden, etc.) and thermal insulation profiles which are placed usually by sliding between thereof. After producing the frame by using these thermally insulated profile, filling material such as glass, etc. is placed into the frame from the inside or outside and finally, glazing bead profiles are installed onto the frame profile in order that filling material such as glass, etc. is fixed in the frame and/or carried the wind loads. The disadvantages of these type of applications are to mandatorily use the glazing bead primarily and two different profiles (inner and outer profiles) except thermal barrier in order to produce the vent profile

[0004] Especially; other disadvantages of such applications are as follows: labor of assembling the two profiles with thermal barriers due to use of outer profile, the outer profile increases consumption of aluminum, the formation of the small infilling/transparent area due to the large frame width as much as width of the glazing bead for this reason, decreasing on the visible light transmittance and fail to satisfy architectural expectations.

Objective of the Invention

[0005] Objective of the present invention is to be able to use the aluminum profiles (9,10,11,12,13), which are joined with weather seal (18) made from epdm or tpe material by adhering or directly on production method, in the window, door and curtain wall production line such as machining or forming. Thus, there is no need to install

the weather seal (18) to the frame profiles on the manufacturing or assembling steps of the window or door.

[0006] Another objective of the invention is to use of only inner body profile and glazing bead profile (15,16) cut at 45° without using the outer profile in thermally-insulated profiles of door or window system, and thus increase visual contact with outdoor up to the least glazing bead width, and enable the glazing bead profile not to be seen by means of concealed glazing bead as an outer profile when observed from the outside, even when compared with traditional door or window systems.

[0007] A further objective of the invention is to enable the weight of filling material such as glass (20), etc. placed into the frame profiles of the door and window and curtain wall system, to be transferred to the inner body profile (5,6) over local load transferring parts (14) which are mechanically assembled to the inner body profile (5,6).

Figures Illustrating the Invention

[0008] The present invention should be evaluated in conjunction with the figures which are described below, in order that it's configuration and advantages with the additional members are understood best.

Figure 1 is the sectional view of the assembly of window vent and local load transferring part.

Figure 2 is the sectional view of the assembly of door vent and local load transferring part.

Figure 3 is the sectional view of the assembly of window vent and glazing bead of the window vent.

Figure 4 is the sectional view of the assembly of door vent and glazing bead of the door vent.

Figure 5 is the sectional views of assembly of thermal barrier and inner and outer profile of frame and transom/mullion.

Figure 6 is the sectional views of assembly of thermal barrier and inner profile of and door vent.

Figure 7 is the sectional views of assembly of thermal barrier and inner and outer profile of center guide.

Figure 8 is the schematic view of gasket profile installation.

Part numbers

[0009]

- 1-Inner Frame Profile
- 2-Outer Frame Profile
- 3-Inner Profile of Transom/Mullion
- 4-Outer Profile of Transom/Mullion
- 5-Inner Profile of Window Vent
- 6-Inner Profile of Door Vent
- 7-Inner Profile of Center Guide
- 8-Outer Profile of Center Guide
- 9-Frame Profile
- 10-Mullion/Transom Profile

11-Window Vent Profile
 12-Door Vent Profile
 13-Center Guide Profile
 14-Local Load Transferring Part
 15-Glazing Bead of Door Vent
 16-Glazing Bead of Window Vent
 17-Setting Block
 18-Gasket
 19-Inner Glazing Gasket
 20- Thermally Insulated Glass
 21-Thermal Barrier
 22-Profile Router
 23-Cleaner
 24-Brush
 25-Adhesive
 26-Switch
 27-Guide
 28-Attaching Disc
 29-Gasket Pulley
 30-Router
 31-Pulling Discs
 32-Chain
 33-Progress Rollers
 34-Electric Motor

Detailed Description of the Invention

[0010] In this detailed description, preferred embodiments of the inventive fenestration system are described only for better understanding of the subject and in such a manner that it won't produce any limiting effect.

[0011] The inventive thermally-insulated aluminum door, window and curtain wall generally consists of: inner and outer profiles of frame (1) and mullion/transom (3,7) and inner profiles of vent (5,6) with a special geometric cross-section which are produced in extrusion presses in accordance with accessory and assembling grooves; thermal barriers (21) produced from a polymeric material with special geometric cross-section, which are used for producing the frame profiles (or vent, transom/mullion, etc.) (9,10,11,12,13) by being mechanically assembled with inner and outer profiles of the frame (or transom/mullion, etc.) or inner profile of vent and; weather seal (18) which are assembled on frame profiles (transom/mullion, vent, etc.) with methods such as adhesion and/or directly on-production without any requirement for the assembling of the weather seal to the window, door or façade after assembling, load transferring part (14) with special geometric cross-section which transfer the weight of the glass to the inner carrier profiles in order that the glass (20) is carried only over inner carrier profiles; window (or door) glazing bead profiles (15,16) with special geometric cross-section, which are cut at 45° or related angles and are not perceived as glazing bead while the vent is in closed position, with the aim of fixing the filling material such as glass, etc. in frames of door, window or curtain wall system and carrying the filling material against wind loads.

[0012] Inner (1) and outer (2) frame profiles and inner (3,7) and outer (4,8) transom/mullion profiles, inner vent profiles (5,6) of the thermally-insulated aluminum door, window or curtain wall system are produced in extrusion presses such that they have suitable grooves wherein accessories to be used, corner cleats, setting block (17), load transferring part (14), gaskets (18,19) will be installed. Frame (9), vent (11,12) and transom/mullion (10) profiles are produced by mechanically assembling the inner (1) and the outer (2) frame profiles and the inner (3,7) and the outer (4,8) transom/mullion profiles, the inner vent profiles (5,6) with the thermal insulation barriers (21) produced from a polymeric material.

[0013] Process of adhering the sealing materials (18) (gaskets) onto the profiles (9-10-11-12-13) or producing them is carried out using the production machine shown in the Figure 8. Firstly, the profiles are put on the machine for production process. The profiles are progressed by means of rollers moved by the electric motor (34). The profile routers (22) and the top routers (35) prevent the profiles to slide right/left and up/down. At first, cleaner (23) is applied to the grooves wherein the sealing material of the profiles will be adhered or produced. Afterwards, excess cleaner (23) is taken by means of brushes (24). Then, adhesive (25) or sealing material is injected to the same groove. Adhesive injection process starts automatically by means of switch (26) when the profile arrives in front of the adhesive (25). The sealing material (gaskets) (18), which is positioned by being passed through the guide (27) while the profile continues to move, is installed to the grooves on the profile (9-10-11-12-13) by means of attaching disc (28). By means of the adhesive (25) applied before the installation process and the profile geometry, the sealing material (gasket) (18) is assembled in an undetachable way without applying an extra force on the profile. The sealing materials (gaskets) (18) are ready wrapped on the gasket pulley (29) under the machine and they pass through the pulling discs (31) by being passed from inside the router (30). The electric motor (34), which drives the progress rollers (33), provides synchronous progress by driving the pulling discs (31) by means of the chain (32) as well.

[0014] The frame (9), vent (11,12) and transom/mullion (10) profiles adhered onto the sealing materials (gaskets) (18) and/or produced on thereof are assembled with the corner cleats with special geometric cross-section by being cut at 45° and/or related angles, in order to form the rectangular shape of the frame (9), vent (11,12) or transom/mullion (10) profiles, and being exposed to plastic deformation in accordance with the dimensions of the fenestration produced. It is provided that the profiles pull towards each other during the assembly process, and thus, rectangular shaped frame (9), vent (11,12) and mullion/transom (10,13) can be produced mechanically without any gap at the contact surfaces. Load transferring part (14) and setting block (17) are placed to the related corners in a local way to the vent (11, 12) or transom/mullion (10) profiles that are frame-shaped, depending

on the opening direction of the vent. By placing filling material such as glass, etc. onto the setting block (17); the window or door glazing bead profile (15,16) which is cut at 45° and/or related angles, has a special geometric cross-section and gasket of which is on thereof is installed to the related grooves on the vent (11,12) by rotating the glazing bead integrated with gasket (19); filling material such as glass, etc. is fixed between the vent profile (11,12) and the vent glazing bead profile (15,16) by means of locating the glazing bead profile to the suitable groove of the vent (11,12). Frame (9) and vent (11,12) installation is carried out by installing hinge or an accessory suited for the related opening function onto the vent profiles (11,12) and the frame profiles (9).

Claims

1. The present invention is a door, window system consisting of: inner and outer aluminum, etc. profiles (1,3,7) or only inner profiles (5,6) which are mechanically assembled with polymeric thermal insulation profiles (21); and sealing gaskets with special geometric cross-section (18) which are assembled onto these profiles by being adhered onto them and/or produced on them directly, which are made of a material such as epdm, tpe etc.; glazing bead profiles (15,16) which are perceived as an outer profile, not as a glazing bead when observed from outside, and which can be obtained the visible (transparent) area as much as width of the glazing bead; and wherein these glazing bead profiles can be directly installed onto the thermal insulation profile (21) by being cut at desired angles.
2. An aluminum door, window system according to Claim 1, **characterized by** thermal insulation profiles with special geometric cross-section (11,12) which enable installation of glazing bead (15,16) and load transferring part (14) and which are mechanically assembled to inner and outer aluminum etc. profiles (1,3,7) or only inner aluminum etc. profile (5,6) by means of rotating cylinders.
3. An aluminum door, window system according to Claim 1, **characterized by** profiles of frame (9), transom/mullion (10), vent (11,12), vent glazing bead (15,16) which are assembled with gasket produced from epdm or other materials with special geometric cross-section (18) by adhesion method or on-production method.
4. An aluminum door, window system according to Claim 1, **characterized by** applying the cleaner (23) to the special groove of the profile, which are guided by router (22, 35) and are being driven on the rotating rollers (33) by electric motor (34); excess cleaner (23) is taken by means of brush (24); and then ad-

hesive or sealing material is injected automatically by means of switch (26); afterwards sealing materials (gaskets) (18) are progressed synchronously by means of pulling discs (31) by being passed through router (30) and guides (27); and gasket (18) is placed between attaching disc (28) and profile by being passed through another guide (27); sealing material (gasket) (18) is attached to a special groove on profile by means of attaching disc (28); the adhesive adhered onto the profile previously and the gasket (18) are enabled to contact at the same time and thus sealing material (gasket) (18) and profile (9,10,11,12,13) are assembled.

5. An aluminum door, window system according to Claim 1, **characterized by** load transferring part (14) which enable the weight of filling material such as glass (20), etc. to be carried only over inner carrier profiles (5,6), have special geometric cross-section and which are applied locally.

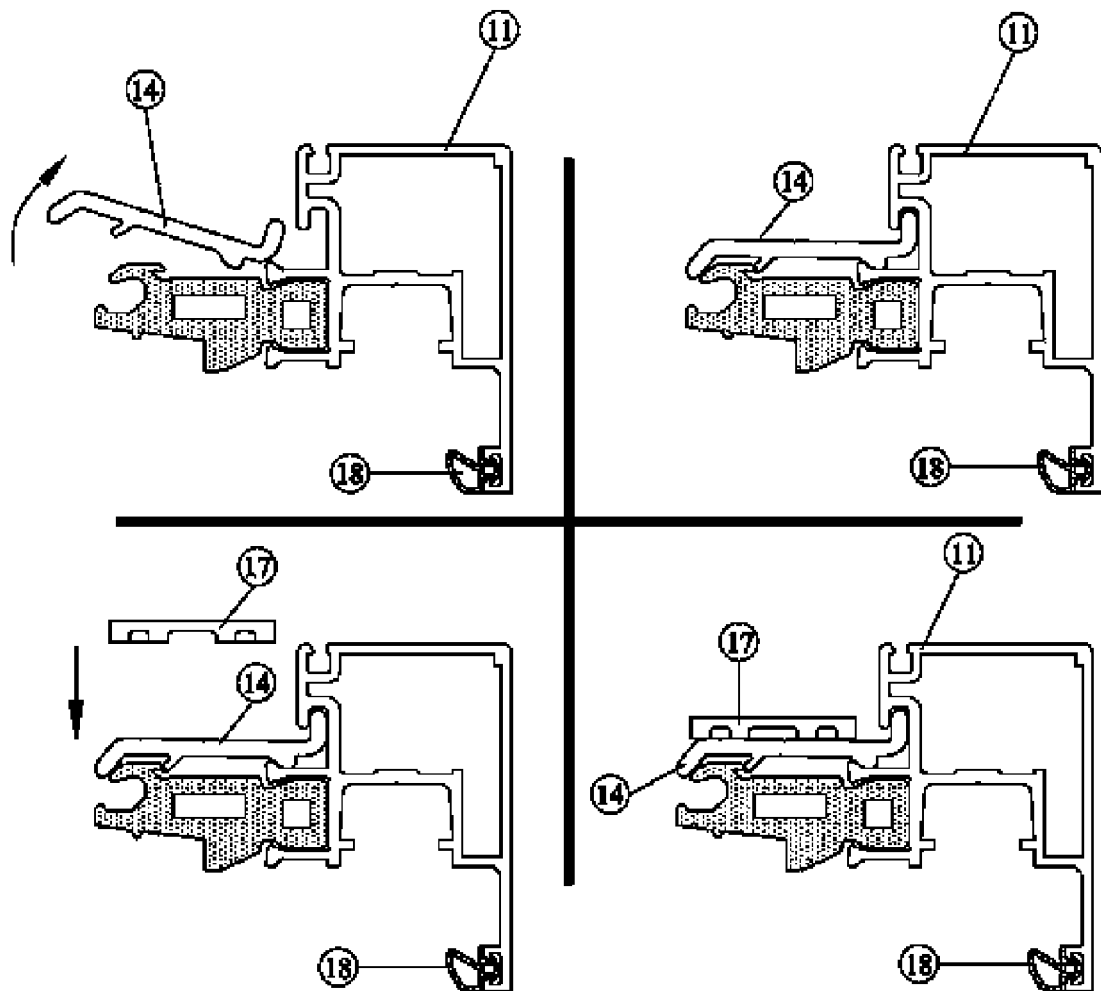


Figure 1

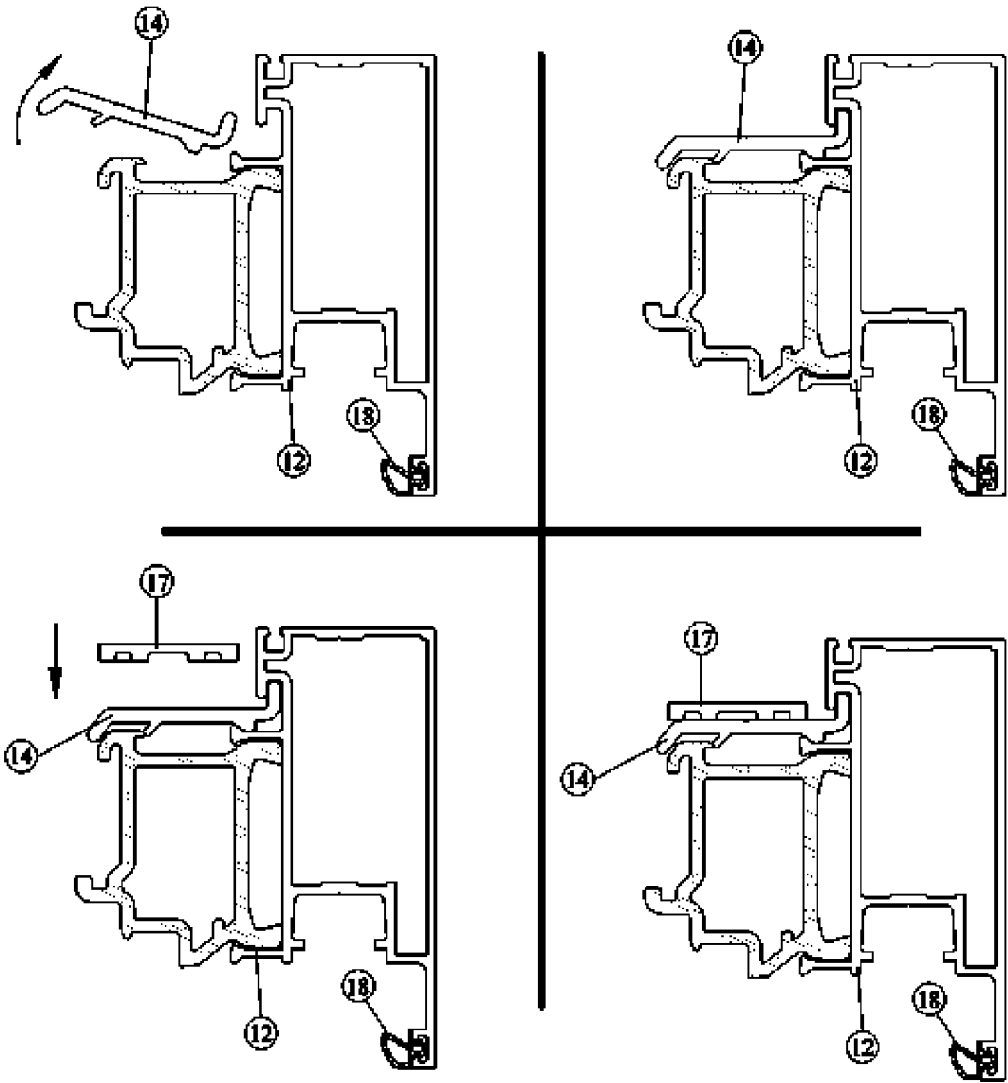


Figure 2

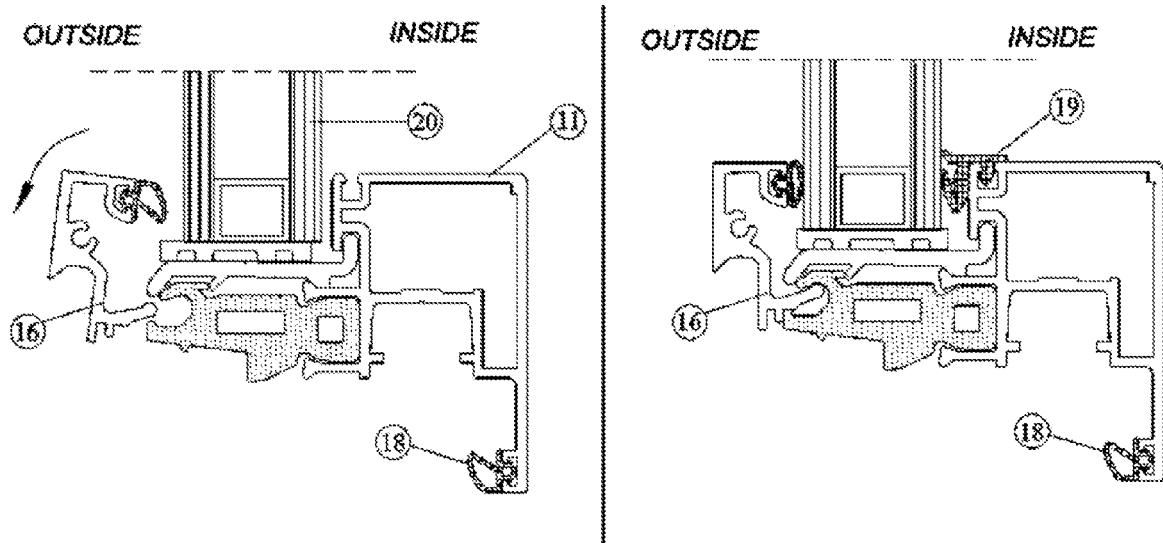


Figure 3

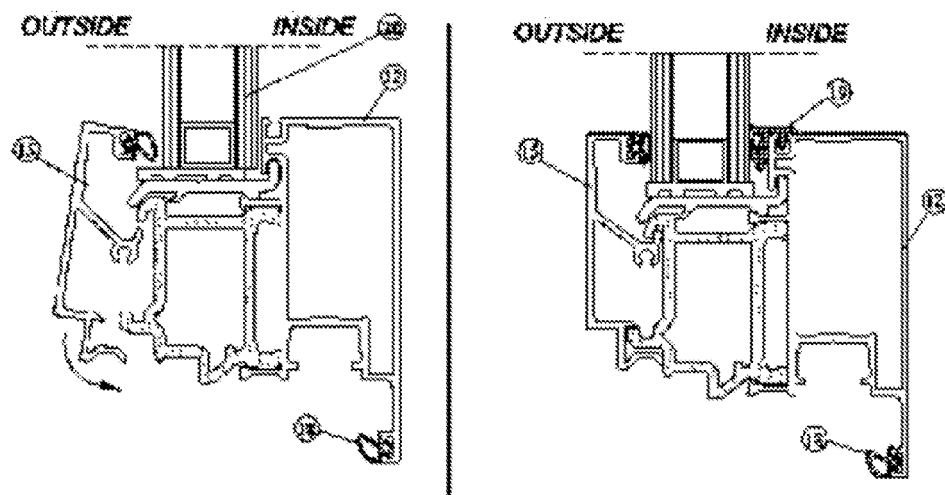


Figure 4

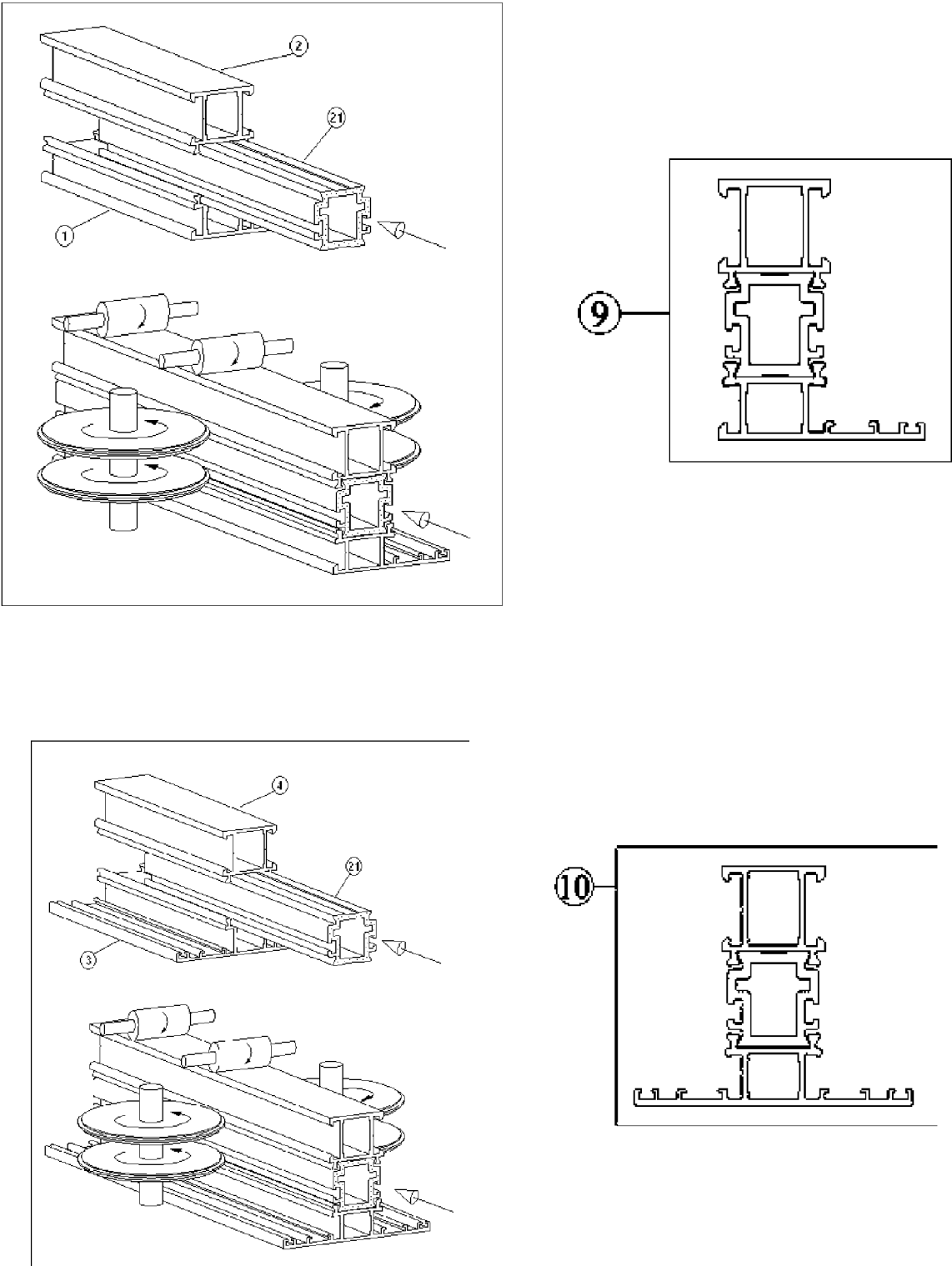


Figure 5

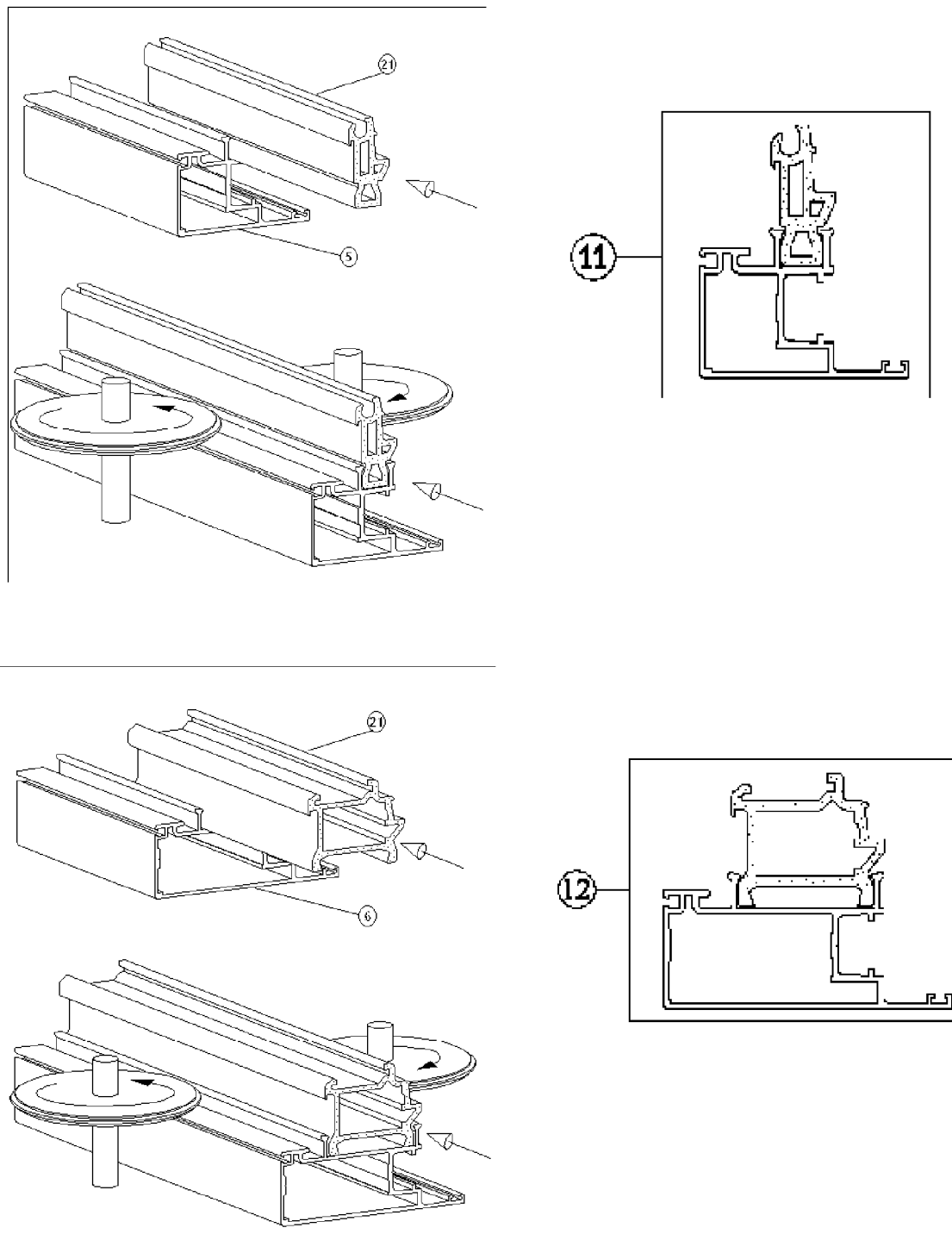


Figure 6

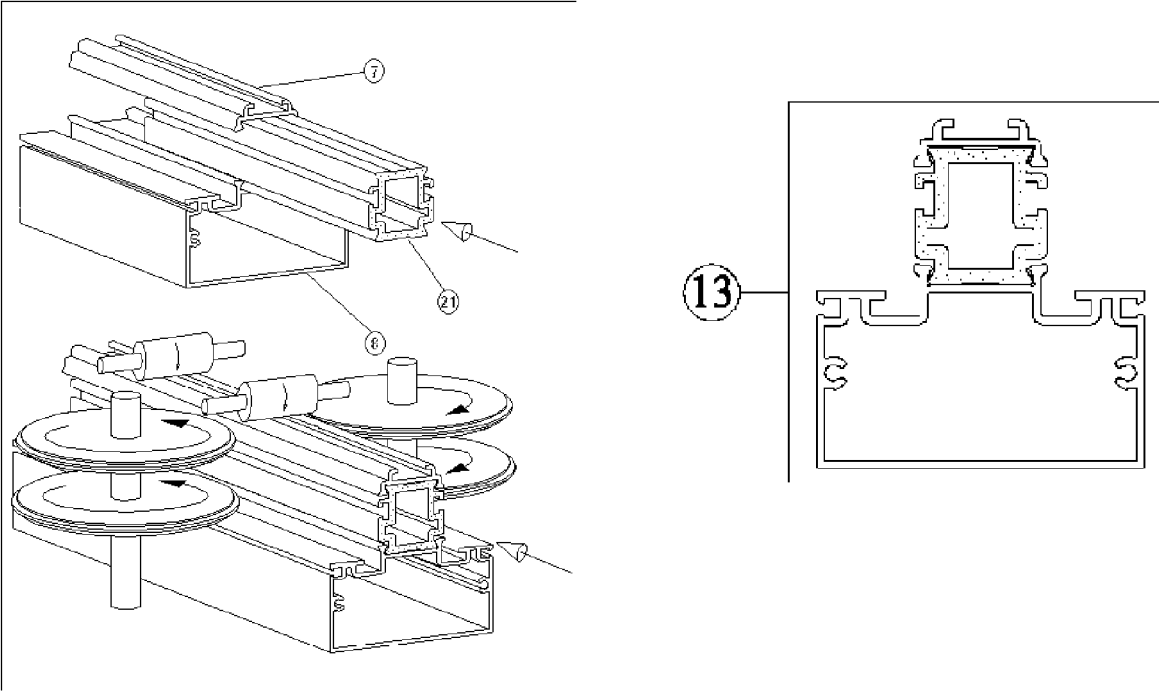


Figure 7

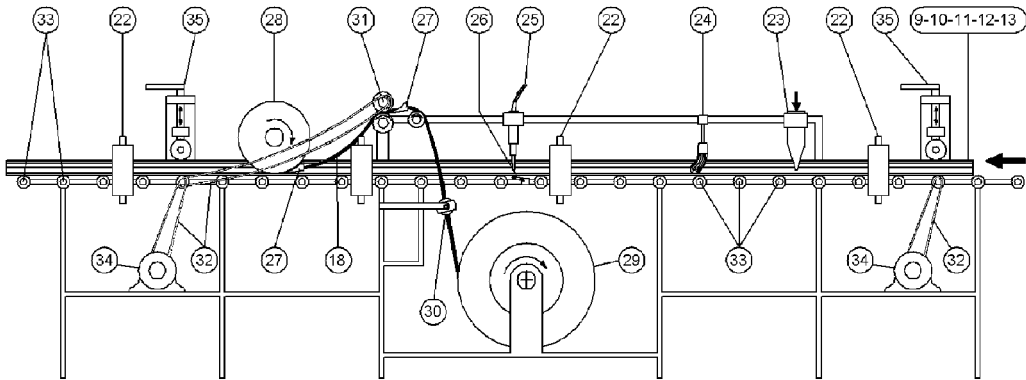


Figure 8



EUROPEAN SEARCH REPORT

Application Number
EP 10 18 9778

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Place of search		Date of completion of the search	Examiner
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CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 10 18 9778

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