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(54) **Doorsill structure for in-swinging type door**

(57) A doorsill structure for in-swinging hinged door having excellent waterproof effect formed by snap-in assembling of a doorsill base (20) and a rain shielding plate (30) without using any fastening part, and specifically the main-body of the doorsill base (20) of the doorsill structure has a water drainage canal (25) for guiding

and draining off the rainwater and a protruding rib (23) which functions as wind shield and dam-wall is formed on its top surface, and serves as a multiple purpose protective structure for preventing the rainwater from seeping into the room.

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Description**BACKGROUND OF THE PRESENT INVENTION****1. Field of the Present Invention**

[0001] The invention relates to a doorsill structure, particularly a doorsill structure for in-swinging type door having the effect of shielding off winds and stopping seepage of rainwater.

2. Description of Prior Art

[0002] The hinged-door conventionally used by the public up to the present, when closed, always leaves gap between the bottom edge of the door and the doorsill which is easy for the rainwater to seep into the room to cause trouble under stress of weather.

[0003] Although, in order to solve the aforesaid problem, modifications and improvements of the doorsill have been made by installing waterproof equipment or water baffle on the doorsill, there is still the drawback of gap exiting between the bottom edge of the door and doorsill, and actually the existing problem of unsatisfied effect of wind shielding and water-seeping prevention still remain unimproved.

SUMMARY OF THE PRESENT INVENTION

[0004] The major purpose of the invention is disclosed a doorsill structure for in-swinging type door having excellent waterproof effect formed by snap-in assembling of a doorsill base and a rain shielding plate without using any fastening part.

[0005] Another purpose of the invention is disclosed a doorsill structure for in-swinging type door assembled by a doorsill base and a rain shielding plate, and the doorsill base is particularly provided with a protruding rib functioned as a protecting wall for effectively preventing the winds and rainwater from seeping into the room, and a canal-shaped drainage canal having a function to rapidly guide water drained away to provide further effect of preventing water from seeping into the room.

BRIEF DESCRIPTION OF THE DRAWING FIGURES**[0006]**

Figure 1 is a schematic drawing of the first embodiment of doorsill structure of the invention.

Figure 2 is a disassembly drawing of the doorsill as depicted in Figure 1 including a doorsill base (20) and a rain shielding plate (30).

Figure 3 is a schematic drawing of the doorsill as depicted in Figure 1 formed by connecting the doorsill base (20) and the rain shielding plate (30) by snap-in method without using any fastening part.

Figure 4 is an enlarged reference drawing to illus-

trate the first embodiment of doorsill structure of the invention applicable in practical use.

Figure 5 is a schematic drawing of the second embodiment of doorsill structure of the invention.

Figure 6 is a disassembly drawing of the doorsill as depicted in Figure 5 including a doorsill base (20) and a rain shielding plate (30').

Figure 7 is a schematic drawing of the doorsill as depicted in Figure 5 formed by connecting the doorsill base (20) and the rain shielding plate (30') by snap-in method without using any fastening part.

Figure 8 is an enlarged reference drawing to illustrate the second embodiment of doorsill structure of the invention applicable in practical use.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0007] The present invention has invented two preferred embodiments of doorsill structure for in-swinging type door particularly under stress of weather having the effect of shielding the winds and keeping off the water to prevent the water from seeping into the room.

[0008] The first embodiment of doorsill (10) of the invention is depicted as in Figure 1 through 4 which comprises a doorsill base (20) and a rain shielding plate (30), and those two components of doorsill base (20) and rain shielding plate (30) are assembled by using snap-in connecting means to form a complete assembly without using any fastening part.

[0009] In the invention the doorsill base (20) is formed by thermoplastic foam material or thermoplastic material by extruding forming techniques to form an integral structure which has a main-body seat (21) of greater height and a front-plate (22) connected to and extended from the front lower side of the main-body seat (21). Besides, a tenon-slot (26) for tenon connection purpose is formed at the junction position of the main-body seat (21) and the front-plate (22) of the doorsill base (20).

[0010] Further, on the top surface of the main-body seat (21) has a canal-shaped drainage canal (25) with proper depth formed along the longitudinal direction of the top surface of the main-body seat (21).

[0011] And, a protruding rib (23) having the effect similar to a dam-wall is formed on the top surface of the main-body seat (21) with proper height, and positioned with one side serving as the bank of the drainage canal (25) while the other side adjoining the front-plate (22). On the top side of the protruding rib (23) is an inclined rib (24) sloping down to the front-plate (22).

[0012] The purpose of forming the protruding rib (23) and the drainage canal (25) on the top surface of the main-body seat (21) is depicted as in Figure 4 which shows that when the hinged door (40) is closed, the bottom edge of the hinged door (40) is lower than the top edge of the protruding rib (23) of the main-body seat (21), therefore, as for the interior of the room (50), the protruding rib (23) functioned as a protecting wall for

keeping off the winds and rainwater that shall effectively prevent the water from seeping into the room (50), meanwhile, the soft packing (45) installed on the hinged door (40) and positioned between the hinged door (40) and the protruding rib (23) are pressed by each other to form a tight contact, and on the top surface of the protruding rib (23) is a inclined rib (24) arranged to incline down to the front plate (22) which has the effect of draining off the rainwater rapidly and the effect of minimizing the seepage of water into the room (50).

[0013] Accordingly, if by any chance there is a gap existed between the contacting surface of the protruding rib (23) and the soft packing (45) through which water seep into the room (50), the water will flow into the drainage canal (25), and will be guided and drained away from the drainage canal (25), especially, another soft packing (46) is tightly pressed against the edge of the bank on another side of the drainage canal (25) which provides further effect of preventing the water from seeping into the room (50). Therefore the structure of the main-body seat (21) of the doorsill base (20) of the invention possesses the effect of completely preventing the water from seeping into the room (50).

[0014] The front-plate (22) of the doorsill base (20) is a plate-shaped portion with its top surface inclined down toward the front direction, and on the bottom surface of the front end of the front-plate (22) a part of the thickness is cut away, and a tenon-slot (27) for tenon connection purpose is formed in proper position i.e. the edge of the tenon-slot (27) serves as a wedge shaped rib (28) which enables the front part of the front-plate (22) to be connected with another part by way of snap-in.

[0015] The rain shielding plate (30) is made of aluminum alloy or thermoplastic material by extruding forming method, and formed by a cover plate (31), a baffle plate (34) and a snap-in connecting plate (37), or further comprising a side-plate (32), so that the rain shielding plate (30) provides the effects of moisture-proof and water-proof.

[0016] The cover plate (31) of the rain shielding plate (30) is an inclined plate with the inclination angle same as that of the front plate (22) of the aforesaid doorsill base (20), the cover plate (31) has a reverse hook-rib (36) formed on the end position in greater height for the purpose of snap-in connection. When the rain shielding plate (30) is assembled together with the doorsill base (20) the reverse hook rib (36) will snap into the tenon-slot (26) of the doorsill base (20) to form a snap-in connecting structure, and the cover plate (31) is then placed on the top side of the front-plate (22) of the doorsill base (20).

[0017] The snap-in connecting plate (37) of the rain shielding plate (30) is a L-shaped plate which has a vertical portion formed on the bottom side of the front part of cover plate (31) and a horizontal section with a small part of its front edge bent upwardly to form a reverse hook-rib (38) to be used for snap-in connection purpose.

[0018] When the rain shielding plate (30) is assembled

together with the doorsill base (20), the space in between the cover plate (31) and the snap-in connecting plate (37) is for accommodating the front part of the front plate (22) of the doorsill base (20), and in the meantime the reverse hook-rib (38) of the snap-in connecting plate (37) shall snap with the wedge shaped rib (28) of the front plate (22) to form a snap-in assembled structure.

[0019] The baffle plate (34) of the rain shielding plate (30) is a vertical plate with proper height formed on the cover plate (31), and at the middle position of the baffle plate (34) is extended a tongue rib (35). When the rain shielding plate (30) is assembled with the doorsill base (20), the baffle plate (34) is positioned to stand in front of the protruding rib (23) of the main-body seat (21) of the doorsill base (20), and is higher than the bottom edge of the inclined rib (24) of the protruding rib (23) that makes the baffle plate (34) as a protecting wall for shielding off the winds and keeping off the water to provide the effect of initially preventing the water from entering the doorsill base (20).

[0020] And, when the rain shielding plate (30) is assembled with the doorsill base (20), the tongue rib (35) of the rain shielding plate (30) is positioned near the main-body seat (21) of the doorsill base (20) to provide the effect of reinforcing the structure of the main-body seat (21).

[0021] The side plate (32) of the rain shielding plate (30) is a L-shaped plate with vertical part joined to the lower end of the cover plate (31), and a sliding rail (33) is formed upwardly on the horizontal surface of the side plate (32) for mounting a screen door (not shown in the drawings) which can slide on the sliding rail (33).

[0022] Therefore, by using the snap-in structure of the aforesaid doorsill base (20) and the rain shielding plate (30), the first embodiment of doorsill (10) of the invention shall be easily and rapidly assembled and installed without using any fastening part.

[0023] The second embodiment of doorsill (10) of the invention is depicted as in Figure 5 through 8 which also comprises an identical structure of doorsill base (20) as that of aforesaid on the first embodiment of doorsill (10), and a rain shielding plate (30') with almost the same structure as that of the rain shielding plate (30) of the first embodiment of doorsill (10) of the invention.

[0024] And, those two components of doorsill base (20) and rain shielding plate (30') are assembled to form a complete assembly by using snap-in connecting means without using any fastening part.

[0025] The detailed structure of the doorsill base (20) of the second embodiment of doorsill (10), due to same as that of the doorsill base (20) of the first embodiment of doorsill (10) of the invention, may refer to and understand from the aforesaid description to that of doorsill base (20) of the first embodiment of doorsill (10) of the invention.

[0026] In addition, the rain shielding plate (30') is made of aluminum alloy or thermoplastic material by extruding forming method, and formed by a cover plate

(31), a baffle-cap plate (39) and a snap-in connecting plate (37), or further comprising a side plate (32), so that the rain shielding plate (30) provides the effects of moisture-proof and waterproof.

[0027] The function and detailed structure of the cover plate (31), the snap-in connecting plate (37), and the side plate (32) of the rain shielding plate (30') of the second embodiment of doorsill (10), due to same as that of the rain shielding plate (30) of the first embodiment of doorsill (10) of the invention, may refer to and understand from the aforesaid description to that of the cover plate (31), the snap-in connecting plate (37), and the side plate (32) of the rain shielding plate (30) of the first embodiment of doorsill (10) of the invention.

[0028] The baffle-cap plate (39) of the rain shielding plate (30') has a vertical plate (39a) with proper height formed on the cover plate (31), an inclined plate (39b) extended outward from the top end of the vertical plate (39a), and a claw-shaped plate (39c) connected to the inclined plate (39b) with the shape similar to that of the top side of the protruding rib (23) of the doorsill base (20).

[0029] Accordingly, as shown in Figure 7 and 8, when the rain shielding plate (30') is assembled with the doorsill base (20), the claw-shaped plate (39c) of the baffle-cap plate (39) of the rain shielding plate (30') shall be positioned and covered onto the top side of the protruding rib (23) of the main-body seat (21) of the doorsill base (20), so that the baffle-cap plate (39) of the rain shielding plate (30') due to including the vertical plate (39a), the inclined plate (39b) and the claw-shaped plate (39c) shall be functioned as a sealing means to the protruding rib (23) of the doorsill base (20), and shall has a function for shielding off the winds and keeping off the water to provide the effect of initially preventing the water from entering the doorsill base (20).

[0030] Therefore, by using the snap-in structure of the aforesaid doorsill base (20) and the rain shielding plate (30'), the second embodiment of doorsill (10) of the invention shall be easily and rapidly assembled and installed without using any fastening part.

PRACTICAL APPLICATION OF THE INVENTION

[0031] As shown in Figure 4 and 8, the first or second embodiment of doorsill (10) of the invention may be assembled with two jamb (15) installed on both sides of the doorsill (10) and a transom (not shown in the drawings) installed above and parallel to the doorsill (10) to form a doorframe assembly for installing an in-swinging hinged door (40), and by this way to separate the interior (50) and exterior (60). Therefore, the manner to open the in-swinging hinged door (40) is to push the in-swinging hinged door (40) from the exterior (60) to the interior (50), or to pull the in-swinging hinged door (40) from the interior (50).

[0032] Particularly, the rain shielding plate (30) or (30') of the doorsill (10) is made of aluminum alloy and

possesses the effect of moisture-proof and waterproof. Besides, the baffle plate (34) of the rain shielding plate (30), or the baffle-cap plate (39) of the rain shielding plate (30'), and the protruding rib (23) of the doorsill base (20) all are higher than the bottom side of the in-swinging hinged door (40) to form two walls for shielding off the winds and keeping off the water when the in-swinging hinged door (40) is closed.

[0033] In addition, when the in-swinging hinged door (40) is closed, the doorsill base (20) of the invention and the soft packing (45), (46) installed on the in-swinging hinged door (40) may form a tight contact to effectively seal up the gap between the bottom edge of the in-swinging hinged door (40) and the floor surface of the interior (50).

[0034] Further, a drainage canal (25) is formed on the top side of the main-body seat (21) of the doorsill base (20) to form a multiple purpose protecting structure which enables the first or second embodiment of doorsill (10) of the invention to provide the effect of preventing the water from seeping into the room (50) under stress of weather.

Claims

1. A doorsill structure for in-swinging type door formed by snap-in connecting a doorsill base and a rain shielding plate, wherein the doorsill base is formed by a longitudinal main-body seat and a front-plate extended from the lower end of the main-body seat; on the top side of which main-body seat are formed a drainage canal and a protruding rib used as a wall for shielding winds and keeping off water; and the front-plate is an inclined plate with part of its thickness on the front bottom side cut away and has a tenon slot formed on the bottom side; and the rain shielding plate is at least formed by a cover plate and a connecting plate, wherein the cover plate is an inclined plate with the inclination angle same as that of the front plate of the doorsill base, and the connecting plate is shaped as L shape with its vertical part joining to the cover plate and at front edge of its horizontal part bended backwardly to form an upward reverse hook-rib.
2. The doorsill structure as defined in claim 1, wherein the rain shielding plate further comprise a L-shaped side plate which vertical part joining to the front end of the cover plate of the rain shielding plate and on its horizontal part has a sliding rail.
3. The doorsill structure as defined in claim 1 or claim 2, wherein the rain shielding plate further comprises a baffle plate vertically joining to the cover plate and standing in front of the protruding rib of the main-body seat of the doorsill base.

4. The doorsill structure as defined in claim 1, claim 2 or claim 3, wherein the protruding rib of the main-body seat of the doorsill base has an inclined surface on the top edge. 5
5. The doorsill structure as defined in claim 1, claim 2, claim 3 or claim 4, wherein the baffle plate has a tongue rib formed and extended from its side surface. 10
6. The doorsill structure as defined in claim 1 or claim 2, wherein the protruding rib of the main-body seat of the doorsill base has an inclined surface on the top edge, and the rain shielding plate further comprises a baffle-cap plate which has a vertical plate formed on the cover plate, an inclined plate extended outward from the top end of the vertical plate, and a claw-shaped plate connected to the inclined plate with the shape similar to that of the top edge of the protruding rib of the doorsill base. 15 20
7. The doorsill structure as defined in any of claim 1 to 6, wherein the doorsill base has a tenon slot formed at the junction of the main-body seat and the front-plate. 25
8. The doorsill structure as defined in any of claim 1 to 6, wherein the doorsill base is formed by thermoplastic foam material or thermoplastic material. 30
9. The doorsill structure as defined in any of claim 1 to 6, wherein the rain shielding plate is made of aluminum alloy or thermoplastic material. 35

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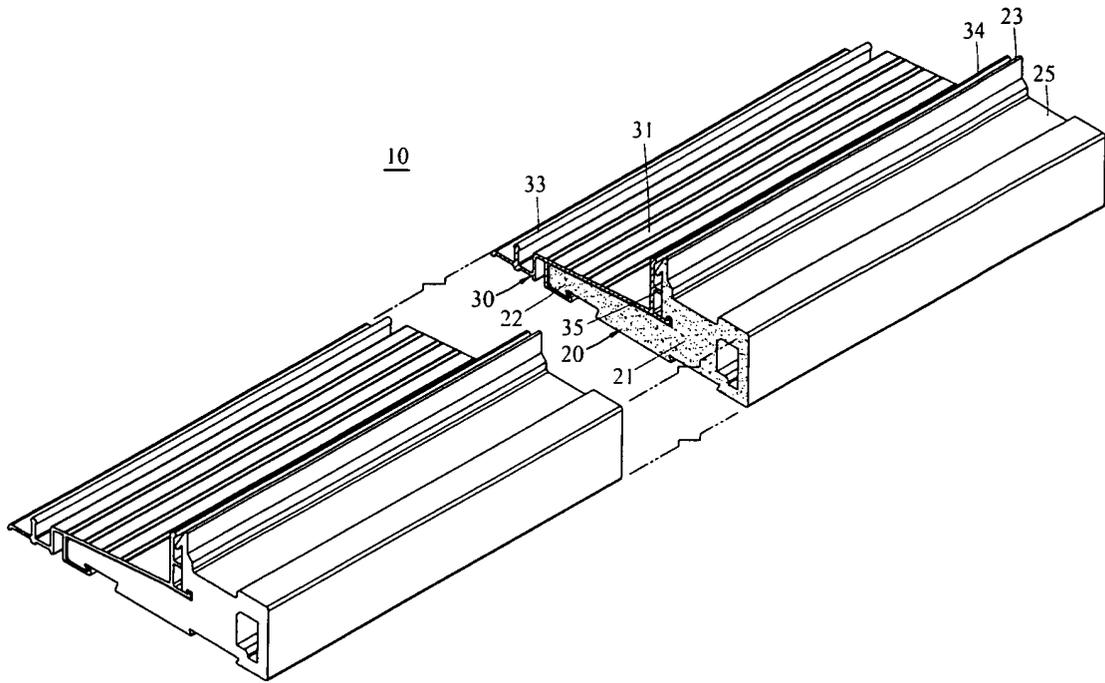


Fig. 1

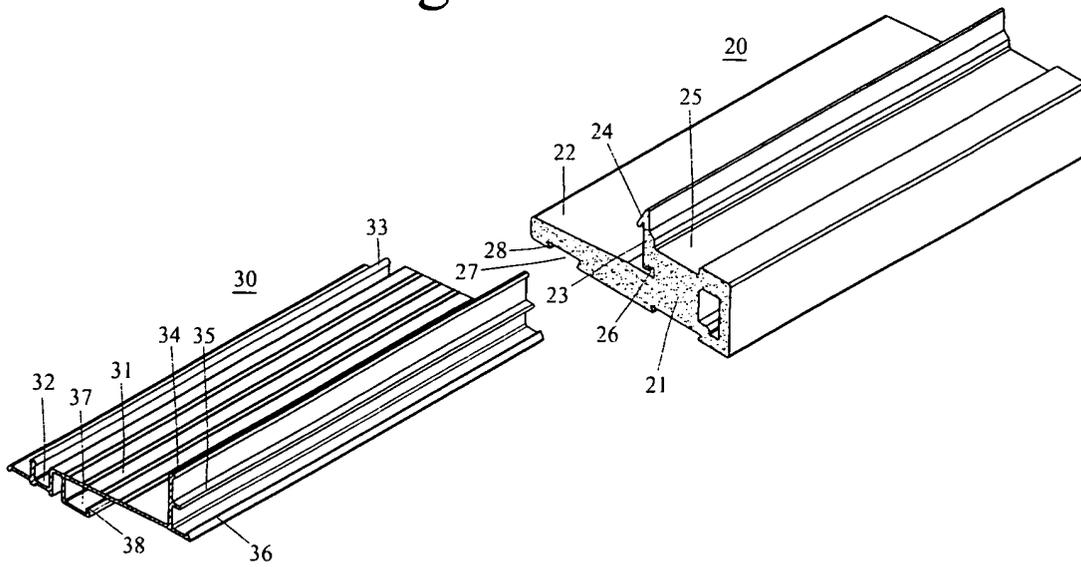


Fig. 2

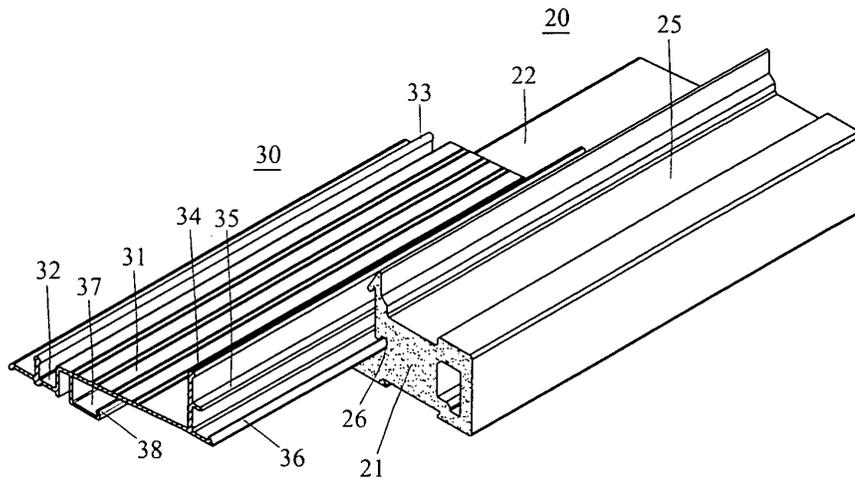


Fig. 3

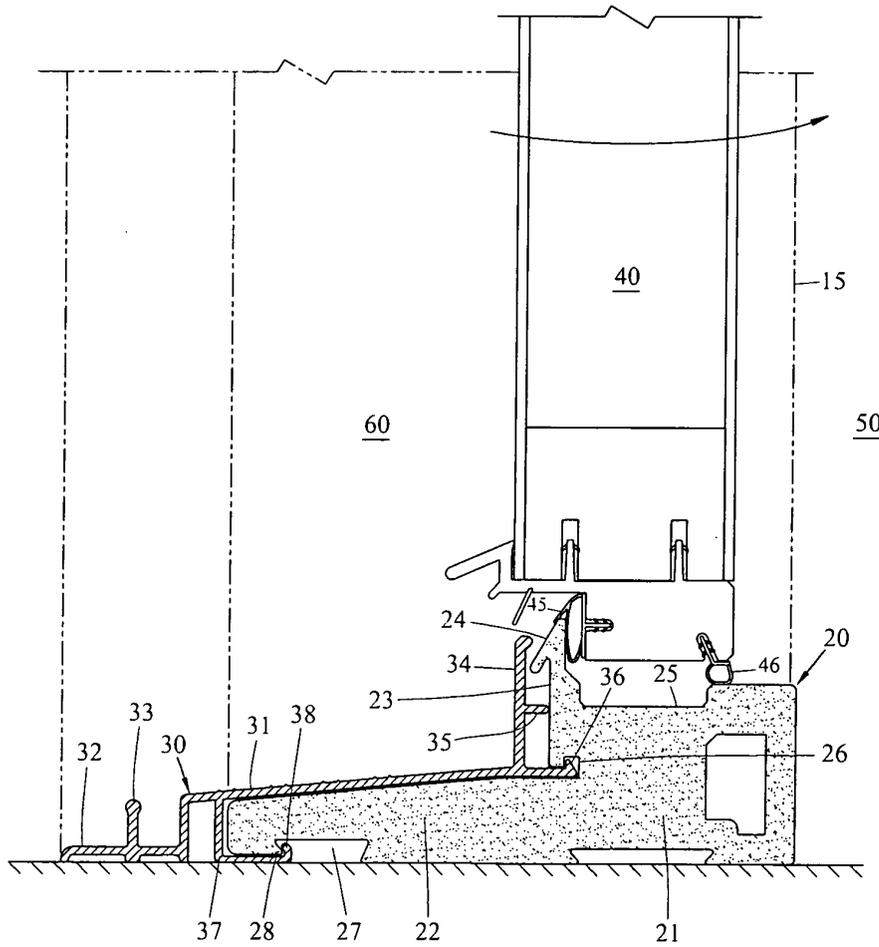


Fig. 4

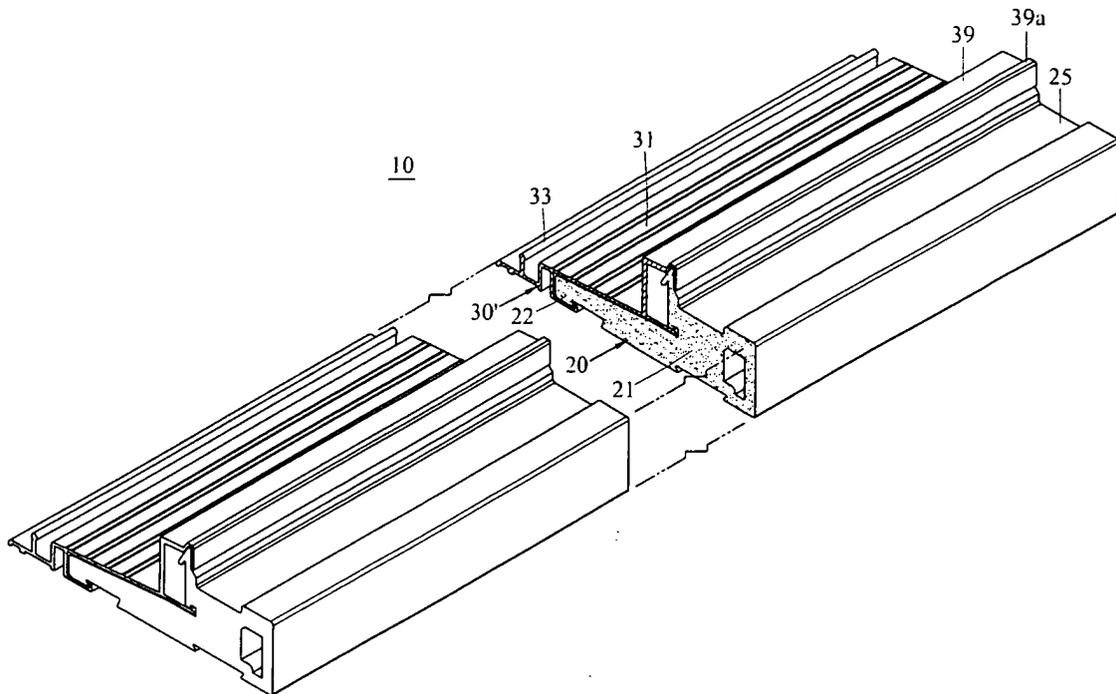


Fig. 5

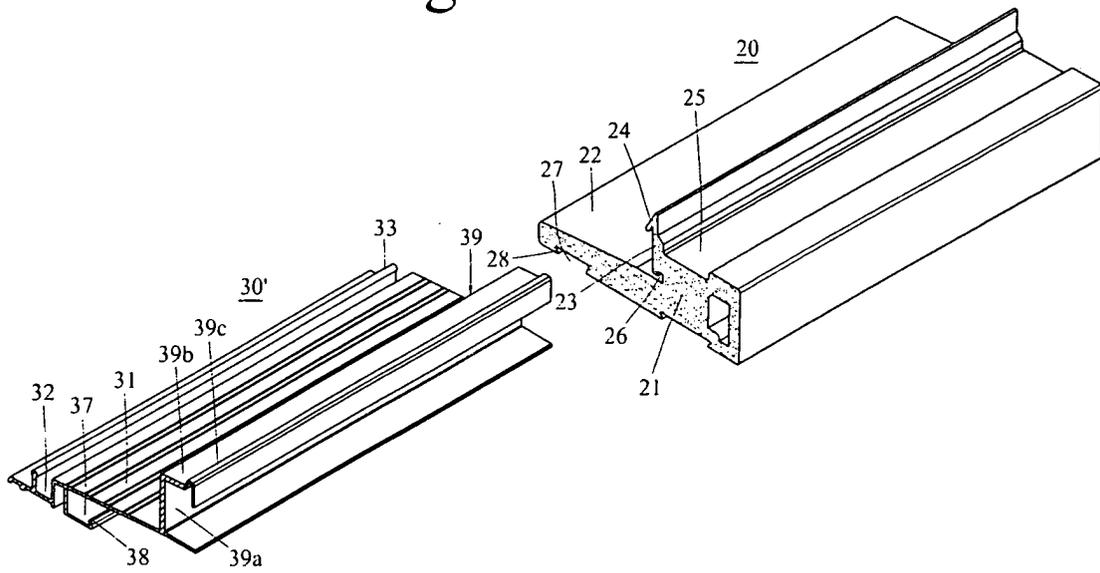


Fig. 6

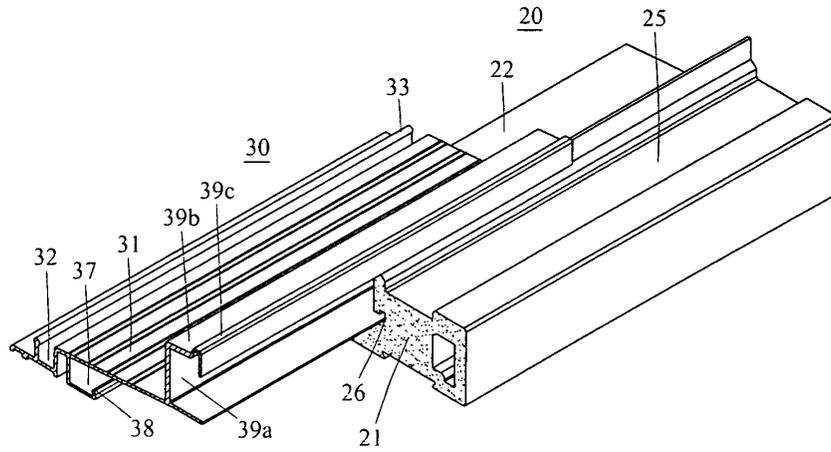


Fig. 7

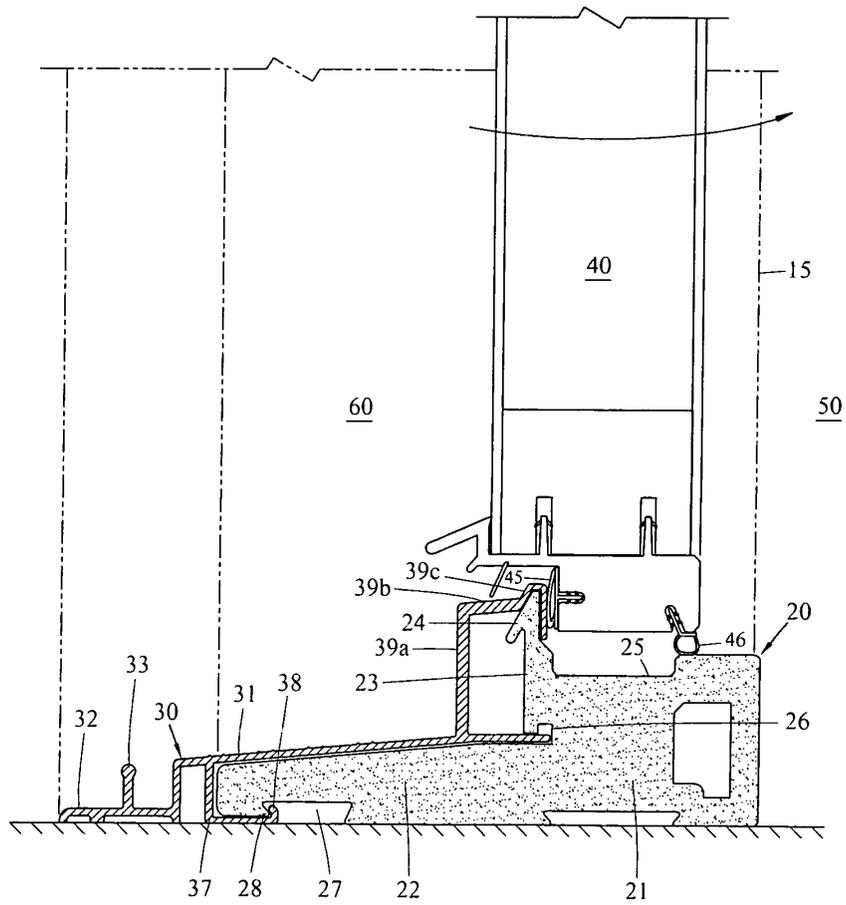


Fig. 8