Sept. 20, 1966 D. H. PEASE, JR 3,273,287

SILL AND THRESHOLD ASSEMBLY

Filed June 29, 1964

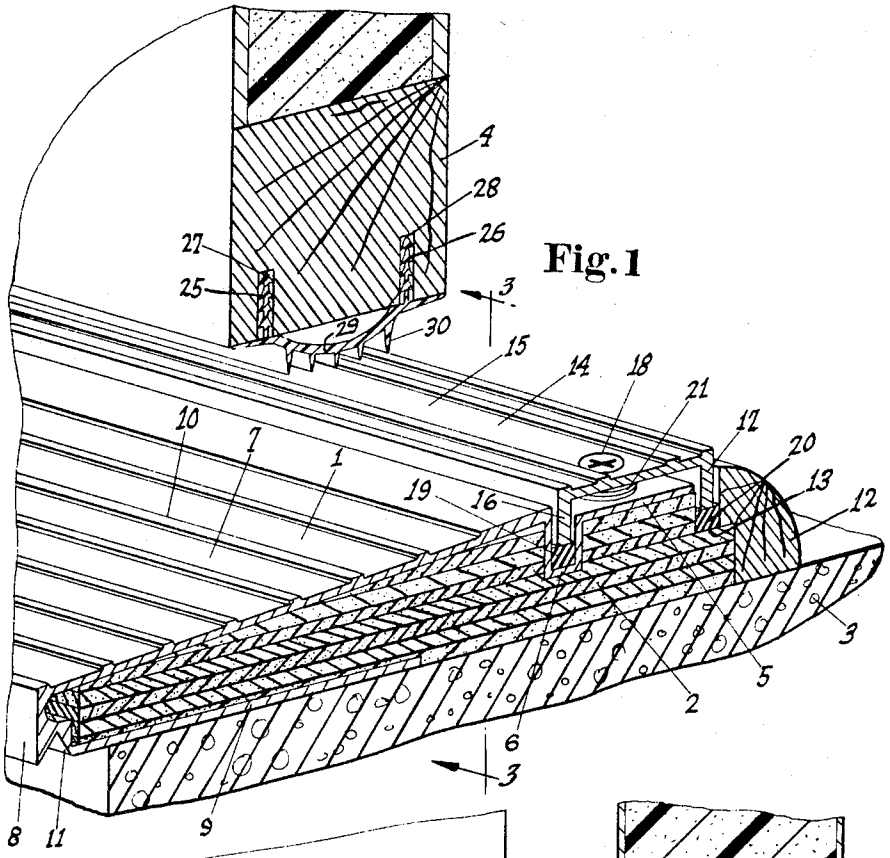


Fig. 1

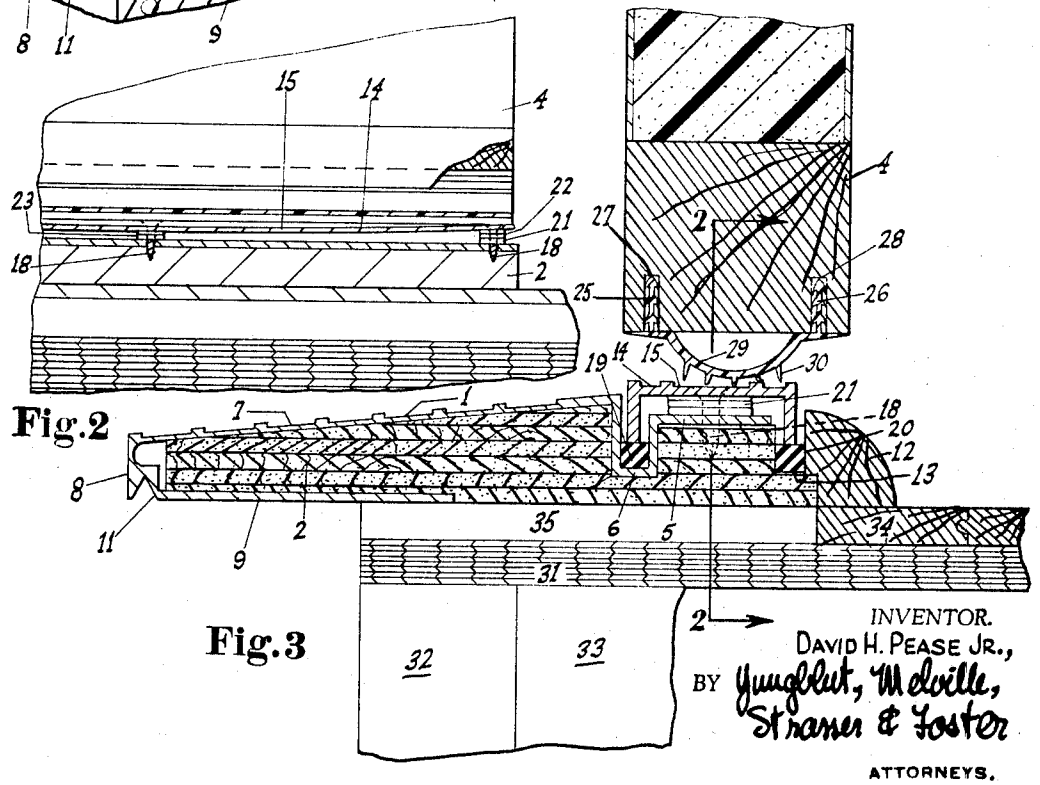


Fig. 2

Fig. 3

INVENTOR.
DAVID H. PEASE JR.,
BY Yungblut, Melville, Strasser & Foster
ATTORNEYS.

United States Patent Office 3,273,287 Patented Sept. 20, 1966

3,273,287

SILL AND THRESHOLD ASSEMBLY

David H. Pease, Jr., Cincinnati, Ohio, assignor to Pease Woodwork Company, Inc., Hamilton, Ohio, a corporation of Ohio

Filed June 29, 1964, Ser. No. 378,566
12 Claims. (Cl. 49—468)

The invention relates to a sill and threshold assembly, and more particularly to an aluminum clad sill provided with an adjustable threshold.

In a door or entrance assembly for buildings, homes, and the like, it is often desirable to provide a metallic sill and threshold structure. Such structures are durable, weather resistant, and capable of maintaining a good appearance in spite of weather and wear. The provision of such a sill and threshold assembly, however, involves a number of problems. In the first place, a suitable seal should be maintained between the threshold and the door. To accomplish this, initial and subsequent adjustments are often required. In some instances, this has led to the provision of a threshold incorporating a resilient deformable member capable of maintaining a seal between the threshold and the door in spite of relative changes in position of these elements with respect to each other due to expansion, contraction, and the like. However, provision of a resilient material in connection with the threshold results in a threshold which is subject to wear and deterioration, and which must be periodically replaced. In other instances, the door itself is provided with an adjustable member for maintaining the desired seal, but such means often detract from the appearance of the door.

Another problem often encountered in the provision of a metallic sill and threshold structure relates to temperature condition. In cold weather, that portion of a metallic sill and threshold structure located out of doors will become cold. And that portion of the structure located within the house or building will also become cold by conduction. Such a condition will result in the formation of moisture on that portion of the threshold and sill structure located within the house or building, which is not only unsightly but also may result in damage to floors, rugs, and the like.

It is therefore a primary object of the present invention to provide a combination sill and threshold structure wherein the threshold is easily adjustable.

It is an object of the present invention to provide a metal clad sill with an adjustable metallic threshold and of such construction that outside temperatures are not communicated to an indoors portion of the sill.

It is an object of the present invention to provide such a sill and threshold structure having a full flush bottom portion enabling the use of any desired outside finish for the building or dwelling, and the use of any desired type of inside flooring.

It is an object of the present invention to provide such a sill and threshold assembly having a smooth, low, non-trip profile.

It is an object of the present invention to provide such a sill and threshold assembly characterized by sufficient rise to permit the use of wall-to-wall carpeting, throw rugs, or the like.

It is an object of the present invention to provide a metal clad sill with an adjustable metal threshold member whereby no natural wood is exposed where it cannot be easily maintained.

It is an object of the present invention to provide such a sill and threshold structure which is easy and inexpensive to manufacture, and which is characterized by a pleasing appearance.

It is an object of the present invention to provide such a sill and threshold structure which may be easily and conveniently pre-assembled with the door frame structure to provide a prefabricated package.

These and other objects of the invention which will be described hereinafter or which will be apparent to one skilled in the art upon reading this specification, are accomplished by that structure and arrangement of parts of which an exemplary embodiment will now be described. Reference is made to the drawings wherein:

FIGURE 1 is a perspective cross-sectional view of the sill and threshold assembly mounted on a concrete slab foundation;

FIGURE 2 is a cross-sectional view of the sill and threshold assembly taken along section line 2—2 of FIGURE 3, and illustrating the means by which the threshold may be adjusted.

FIGURE 3 is a transverse cross-sectional elevation of the sill and threshold assembly taken along the section line 3—3 of FIGURE 1, but illustrating its application to a floor and sub-floor construction.

Referring first to FIGURE 1, the sill of the present invention comprises a hollow, generally wedge-shaped metallic member 1 provided with a core generally indicated at 2. As shown, the sill assembly is affixed in any suitable manner to a concrete slab foundation 3. FIGURE 1 further illustrates a door 4 of any suitable and well known construction.

The metallic member 1 comprises a sill bearing portion 5, a generally U-shaped groove portion 6, a downwardly and outwardly sloping tread portion 7, an outer vertical edge portion 8, and an inwardly extending base portion 9. The member just described may be extruded of any suitable material such as aluminum or the like, and may be of any length suitable for the particular entrance way with which it is to be used. The tread portion 7 may be provided with longitudinally extending ribs 10, or any other suitable non-skid surfacing. That portion of the base 9 adjacent the edge 8 may be of adequate thickness for the provision of a drip-notch 11 more fully described hereinafter.

The remainder of the sill structure is made up of the core 2 and a decorative nosing or finishing strip 12 affixed thereto. The finishing strip forms the inside edge of the sill structure. It will be noted that a second longitudinally extending groove 13, similar to the groove 6, is formed by the core 2 and the rear surface of the finishing strip 12.

As is clearly shown in FIGURE 1, the above described sill structure is provided with an adjustable threshold member 14. The threshold member 14 comprises an elongated channel-shaped member having an upper surface 15 and downwardly depending side portions 16 and 17. The threshold member 14 may be made of any suitable material, and in the preferred embodiment it comprises an aluminum extrusion. The threshold member 14 is affixed to the sill structure by means of screws 18 passing through mating perforations in the upper surface 15 of the threshold member and the portion 5 of the sill member 1, into the core 2. It will be noted that, when the sill member is in place, the downwardly depending portions 16 and 17 extend into the grooves 6 and 13 respectively. The grooves 6 and 13 may be provided with strips of deformable material 19 and 20 respectively. The strips 19 and 20 may be made of any suitable material including plastic, rubber, mastic and the like. The lower edges of the portions 16 and 17 of the threshold member will engage the strips 19 and 20 when the threshold member is in place. The strips 19 and 20 not only serve to form a weather-tight seal between the threshold member and the sill structure, but

also tend to prevent temperature conduction between the sill member 1 and the threshold member.

There are many reasons why it is important to have an adjustable threshold to insure a weather-tight seal between the threshold and the bottom edge of the door. For example, there may be irregularities in the door assembly, or the door may be hung on a pitch. Furthermore, due to contraction, expansion, or settling, there may be relative movement of the door and threshold.

The threshold of the present invention is so mounted with respect to the sill as to permit easy vertical adjustment throughout its length. As is most clearly shown in FIGS. 1 and 3, the mounting screws 18 may be provided with a plurality of washer or shim elements 21 between the portion 15 of the threshold member and the portion 5 of the sill member 1. The vertical height of the threshold member with respect to the sill structure will be determined by the number of washers 21 used with each screw 18.

With this structure, the elevation or vertical height of the threshold with respect to the sill may be adjusted differently throughout the length of the threshold member. This is best illustrated in FIG. 2. In this figure, it will be noted that one of the screws 18 is provided with four of the washer elements 21 as at 22. The other screw 18 is provided with three of the washer elements as at 23. As a result, the threshold member 14 may not only be adjusted as to its vertical height, but may even be made to bow or bend so as to conform to any irregularities between the door 4 and the threshold whereby to insure a proper weather-tight seal therebetween.

Referring particularly to FIGS. 1 and 3, the door 4 may be provided at its lower edge with a resilient, deformable sealing means 24, adapted to cooperate with the surface 15 of the threshold member. The sealing means comprises an elongated member of rubber, plastic, or the like, having upwardly extending barbed portions 25 and 26 adapted to engage in slots 27 and 28 respectively in the bottom edge of the door. Between the barbed portions 25 and 26, the sealing member includes a downwardly depending arcuate portion 29 provided with downwardly depending continuous ribs 30 adapted to seal against the threshold surface 15. It will be understood by one skilled in the art that the sealing means 24 is exemplary, and any suitable sealing means for contacting the threshold member when the door is in closed position may be used. It is preferable, however, to have such sealing means affixed to the bottom edge of the door rather than on the threshold member, so that the sealing means is not subject to undue wear from traffic passing through the door.

That portion of the sill structure hereinabove referred to as the core 2, may be made of any suitable material. It has been found preferable, however, to form the core from plywood. It will be noted both from FIGURES 1 and 3, that the front edge 8 of the sill structure overhangs the foundation whereby the sill is subject to a cantilever action. The use of material such as plywood insures adequate strength of the sill structure since the various laminations of the plywood may have their grains oriented in different directions. The plywood core also serves as a strong medium into which the mounting screws 18 may be turned.

The combination sill and threshold structure of the present invention is readily adaptable to installation in any well known form of building construction. This is true by virtue of the full flush bottom configuration of the sill and threshold structure. It will be noted that the inwardly extending portion 9 of the sill member 1, the bottom surface of the core 2, and the bottom surface of the edging 12 are coplanar.

As an example, FIGURE 1 illustrates the sill and threshold structure of the present invention mounted directly on a concrete slab. The portion 9 of the sill member 1 insures that none of the plywood core 2 is exposed to the elements. Furthermore, the V-shaped notch 11 collects moisture and causes it to drip downwardly rather than seep inwardly between the sill structure and the slab.

FIGURE 3 shows another means of mounting the sill and threshold structure. In this instance, the sill and threshold structure is mounted on a sub-flooring 31, the sub-flooring, as is common in the art, being supported by a box girder 32 and a plurality of joists one of which is indicated at 33. FIGURE 3 further illustrates the hardwood flooring as at 34. When the sill and threshold structure of the present invention is to be used with this type of construction, it will be provided with a shim board 35. The shim 35 may be permanently affixed to the sill and threshold structure by any suitable means including screws, nails or the like. The shim 35 will be of a thickness equal to the thickness of the finished hardwood floor 34.

It will be noted from FIGURES 1 and 3 that in both constructions illustrated the forwardmost portion of the sill structure overhangs the concrete slab 3 or the box girder 32. By virtue of the fact that the bottom of the sill and threshold structure is throughout its width flush with the top of the concrete slab or the finished flooring 34 and shim 35, any kind of outside finish may be applied to the building or dwelling. Thus frame, brick veneer, or stonework facing or concrete slabs or stairways may be located adjacent the slab 3 or box girder 32 and brought up to the level of the sill and threshold structure adjacent the portion 9.

The sill and threshold combination of the present invention may be used as a part of a pre-fabricated door frame package. The vertical members of the door frame may be nailed to the sill sides, the nails extending into the core 2. This sort of construction also enables the installation of a sill and threshold without the necessity of notching the sill and threshold structure.

Modifications may be made in the invention without departing from the spirit of it.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A threshold and sill combination comprising a sill member and a threshold element affixed thereto, said sill member being elongated and having inner and outer edge portions, said sill member shaped to provide a surface sloping downwardly toward said outer edge and having at least one longitudinal groove positioned at said threshold on said sill, said threshold element having a horizontal body and a depending leg for entering said groove and for being sealed therein with a deformable substance, and means adjustable in height for affixing said threshold element to said sill member.

2. The structure claimed in claim 1 including a finishing molding adapted to be positioned adjacent said inner edge of said sill member.

3. The structure claimed in claim 2 wherein said sill member comprises a metallic sheathing element and a core underlying said sloping surface.

4. The structure claimed in claim 2 wherein said sill member comprises a metallic sheathing element and a core underlying said sloping surface, said sheathing element being of extruded metal.

5. The structure claimed in claim 1 wherein said adjustable means which affix said threshold member to said sill member are located at a plurality of spaced points along the length of said threshold member whereby said threshold member can be variably adjusted to a non-rectilinear conformation along its length.

6. The structure claimed in claim 4, in which said sheathing element is shaped to form said outer edge portion of said sill member and includes an inwardly extending portion lying beneath part at least of said core, the bottom surface of said inwardly extending portion of

said sheathing element and the bottom surface of the remainder of said core being co-planar.

7. The structure claimed in claim 6, in which said outer edge portion of said sheathing element includes a drip notch extending longitudinally thereof.

8. The structure claimed in claim 6 wherein two grooves are provided in said sill member, said sheathing element being shaped to provide the first groove and to terminate short of said inner molding, the second groove being located in said core between said inner edge of said sheathing member and said molding, said threshold member being substantially U-shaped in configuration, and having a depending leg for entering each of said grooves, and a sealing substance in each of said grooves.

9. The structure claimed in claim 8, in which said threshold member is also of extruded metal.

10. The structure claimed in claim 9 wherein said finishing molding is a wooden member attached to an edge portion of said core.

11. The structure claimed in claim 10 wherein the adjustable means for holding said threshold member in

position comprises screws passing through said threshold member and said sheathing element and shim means located around said screws and between said threshold member and said sheathing element whereby said threshold member may be adjusted in height to contact with weather sealing means on the bottom edge of a door.

12. The structure claimed in claim 11 wherein the upper surfaces of said threshold member and said sheathing element are provided with raised portions for traction.

References Cited by the Examiner

UNITED STATES PATENTS

2,829,405	4/1958	Huff	20—64
2,872,714	2/1959	Odegaard et al.	20—64
2,911,688	11/1959	Osten	20—11
3,123,870	3/1964	Coe	20—64

HARRISON R. MOSELEY, *Primary Examiner.*

A. I. BREIER, *Assistant Examiner.*