Aug. 1, 1939. P. R. OFTEDAL ET AL 2,167,958

THRESHOLD

Filed July 7, 1937 2 Sheets-Sheet 1

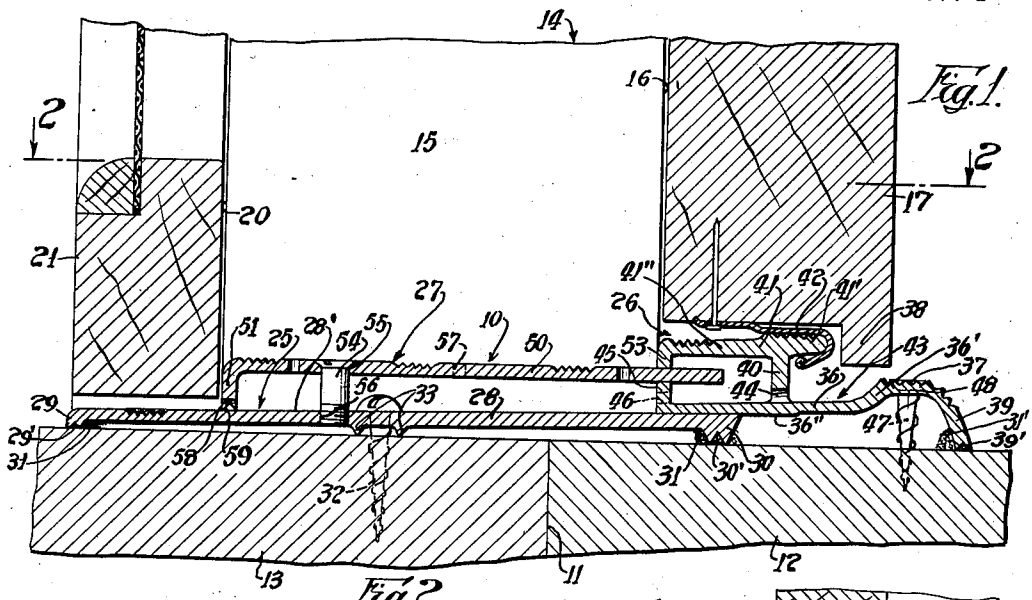


Fig. 1.

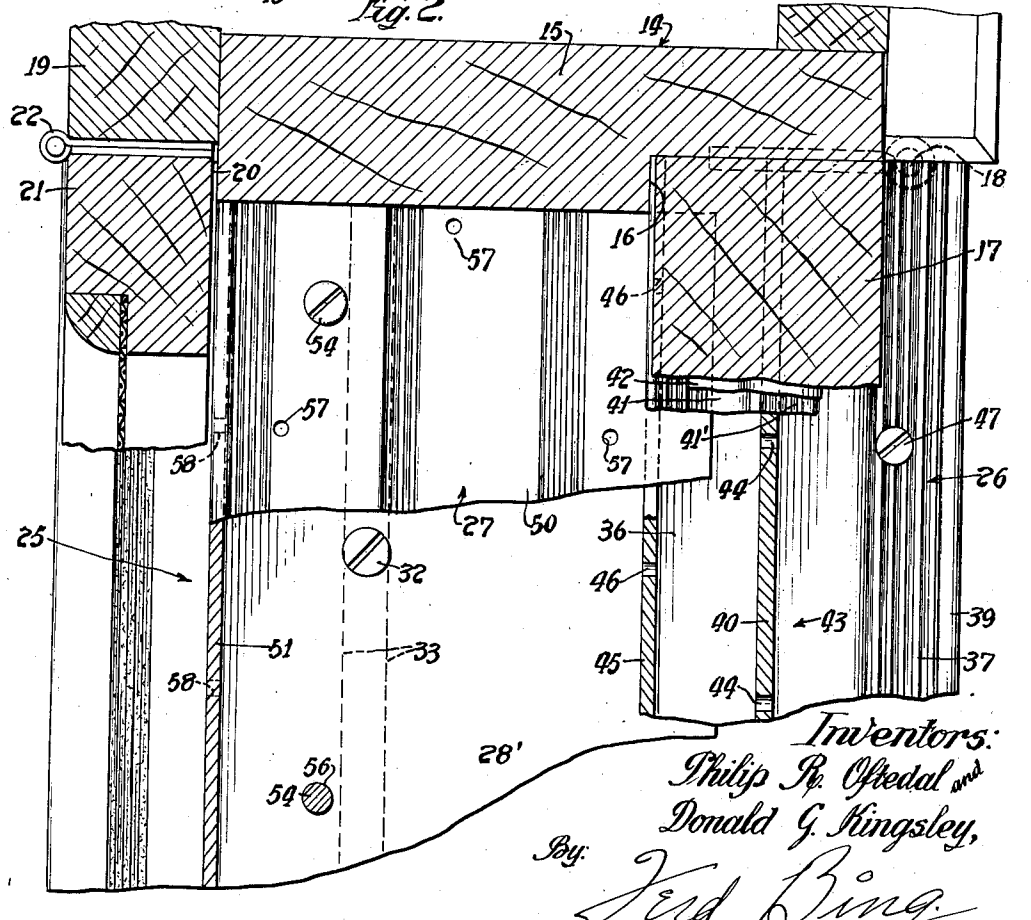


Fig. 2.

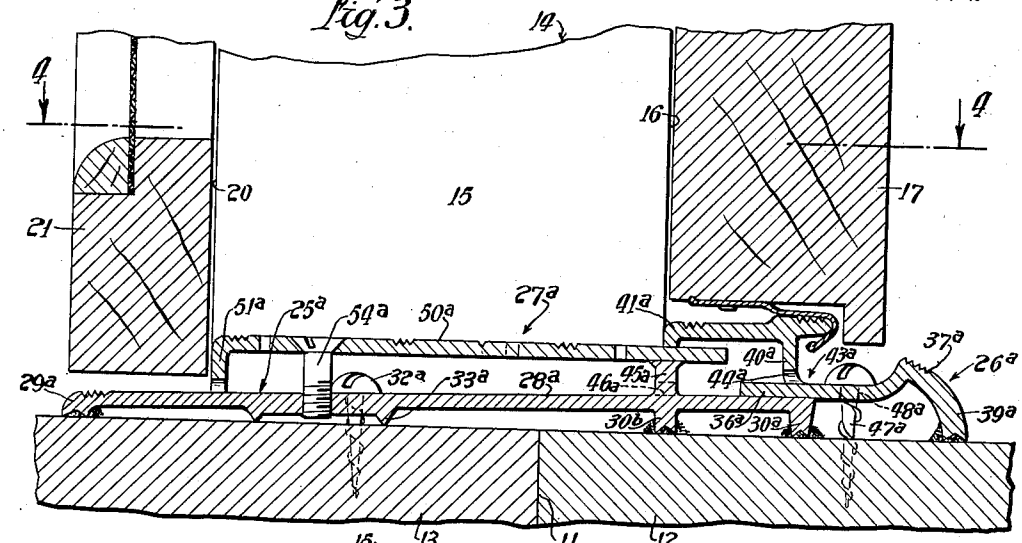
Inventors:
Philip R. Oftedal and
Donald G. Kingsley,
By: Ferd Bing.
Attorney.

Aug. 1, 1939. P. R. OFTEDAL ET AL 2,167,958

THRESHOLD

Filed July 7, 1937 2 Sheets-Sheet 2

Fig. 3.



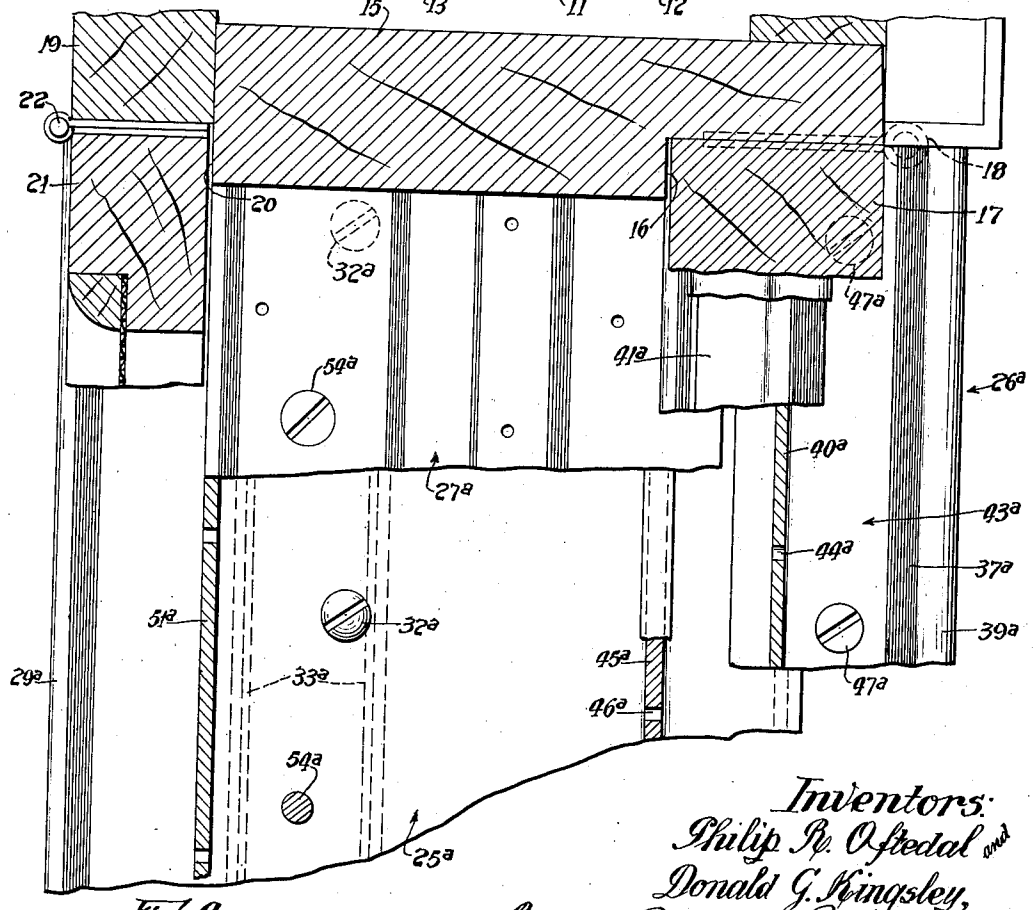


Fig. 4.

Inventors:
Philip R. Oftedal and
Donald G. Kingsley,
By: Jerd Bing.
Attorney.

Patented Aug. 1, 1939

2,167,958

UNITED STATES PATENT OFFICE

2,167,958

THRESHOLD

Philip R. Oftedal and Donald G. Kingsley,
Chicago, Ill.

Application July 7, 1937, Serial No. 152,388

11 Claims. (Cl. 20—64)

The invention relates generally to thresholds, and more particularly to such devices intended primarily for use on exterior or outside door openings and which are adapted to cooperate with a weatherstrip to provide an effective seal against the elements.

In the practical use of thresholds of this character it has been found that in different sections of the country there is a marked variation in the outside to inside dimensions of door frames, so that a threshold of a given width cannot be satisfactorily used throughout the entire building trade.

An important object, therefore, of the present invention is to provide a threshold constructed and arranged so as to be universally applicable to give full floor coverage throughout the range of varying frame dimensions usually encountered in the building trade.

A further object is to provide such a transversely adjustable threshold constructed to provide an efficient drainage system in all of its adjusted relations.

Another object is to provide such a transversely adjustably threshold wherein one adjustable element is arranged to provide an outer-door abutment or stop face corresponding with the varying dimensions of frame and outer-door thickness normally encountered.

Other objects and advantages will become apparent from the following description, taken in connection with the accompanying drawings, in which:

Fig. 1 is a transverse vertical sectional view showing, in installed position, a threshold embodying the features of the invention in one of its forms.

Fig. 2 is a fragmental plan view of the threshold taken generally along the line 2—2 of Fig. 1 so as to show some of the parts in section.

Figs. 3 and 4 are views similar to Figs. 1 and 2 respectively showing another form of the invention.

While we have shown in the drawings and will herein describe in detail two embodiments of our invention, it is to be understood that we do not thereby intend to limit the invention to the specific forms disclosed, but aim to cover all modifications and alternative constructions falling within the spirit and scope of the invention as expressed in the appended claims.

In the form selected for disclosure in Figs. 1 and 2 the invention is embodied in a threshold 10, preferably formed by extrusion from a metal such as brass, and mounted in a door opening so as to overlie, conceal and protect a joint 11 formed between the inner and outer floor elements 12 and 13.

The door opening in which the threshold is mounted is defined by a door frame 14 having vertical door jambs 15 (only one shown) which along their inner edges are formed with a rabbeted groove 16 sized to correspond with the desired thickness of an inner or main door 17 which is to be hinged thereon as at 18. At their outer edges the door jambs 15 are formed, preferably by means of a separate vertical member 19, to provide a similar groove 20 for an outer door such as a screen door 21 which is hinged thereto as at 22.

In various sections of the country it is found that there is a substantial variation in the dimensions between the grooves 16 and 20, and also a variation in the thickness of the outer doors 21, so that full coverage of the floor space between the inner side of the door jamb 15 and the outer face of the frame member 19 cannot be obtained with a given size or width of threshold in all instances without resort to make-shift arrangements or objectionable projections of the threshold in many installations. To avoid these objectionable results and yet provide a universally applicable construction, the present threshold is constructed from a plurality of inter-fitted members 25, 26 and 27 which are so formed and related as to provide in all of their varying relationships a properly calked and efficiently drained construction having properly and safely stepped tread surfaces.

As herein shown the member 25 constitutes the outer member of the threshold 10, and in the installation of the threshold, is the first element to be placed in position. The member 25 therefore constitutes the principal water-drainage element of the threshold and comprises in its preferred form, an elongated flat plate 28 having downwardly extending mounting flanges 29 and 30 formed along its inner and outer edges. These flanges 29 and 30 are preferably continuous throughout the length of the threshold and are formed with downwardly facing grooves 29' and 30' therein so as to facilitate and provide for the application of calking 31 along both edges of the member 25. To secure the member 25 in position, a plurality of screws 32 extend tightly through suitable holes formed in the member 25 adjacent to the transverse centerline thereof, and if desired, longitudinal calking and supporting ridges 33 may be formed on the bottom of the

plate portion 28 on opposite sides of the holes through which the screws 32 project.

The member 25 is, in accordance with the present invention, formed to provide a top surface 28' on the plate 28 which slopes outwardly of the door opening, whereby to insure drainage of water outwardly, and this result is preferably attained by forming the inner flange 30 slightly higher than the outer flange 29. In mounting the outer member 25, the member may be continued under the jam 15 to the depth of the grooves 16 and 20, if desired, or may be notched to conform with these grooves. The preferred position of the outer edge of the member 25 is shown herein as being substantially alined with the outer face of the frame member 19.

The next element of the threshold to be placed in position is the member 26 which, in the present form, constitutes the inner member of the threshold, and is arranged to underlie the door 17 and to cooperate therewith in providing an effective closure of the door opening. The member 26 preferably comprises a relatively flat, elongated plate portion 36 which at its inner edge slopes upwardly at 36' for a short distance to merge with a flat inner tread portion 37, the outer edge of which is located beneath the lower inner corner of a lip 38 depending from the inner side of the door 17. The inner tread portion 37 is relatively narrow and merges with an inner mounting flange 39 which extends downwardly and inwardly at an angle to rest upon the floor 12 and thereby support the inner edge of the member 26. The flange 39 may have a calking groove 39' in its lower edge to cooperate with calking material 31'. The other or outer edge of the member 26 is preferably supported by resting the outer edge portion of its plate 36 upon the upper inner surface of the outer member 25, and the member 26 as a whole is proportioned so that when so mounted, the upper face of the plate 36 slopes outwardly of the door opening, or transversely outwardly toward the member 25.

To cooperate with lower edge of the door 17 in providing an effective seal of the door opening, the member 26 has an upstanding, longitudinally extending wall 40 located between the inner tread portion 37 and the outer edge of the member 26, and from the top of the wall 40 an upper tread wall 41 projects, extending inwardly toward the lip 38 to provide a projecting ledge 41', and outwardly as at 41'' to a point immediately over the outer edge of the plate portion 36. Thus the ledge 41' may cooperate with a weatherstrip 42 fixed to the lower edge of the door 17 outwardly of the lip 38.

With the member 26 thus formed it will be evident that the plate 36 and its portion 36' cooperate with the wall 40 to form a trough 43, so that any water which may be driven, as by excessive wind, past or around the ledge 41', will be drained by the weatherstrip 42 into the trough 43. To dispose of this water, drainage ports 44 are provided in the wall 40 at the level of the upper surface of the plate portion 36, whereby such water is drained forwardly on the plate portion 36. At the outer edge of the plate portion 36 is an upstanding ledge 45 which serves a supporting function in the mounting of the member 27, as will be hereinafter more fully explained, and similar drain ports 46 are formed therein so as to discharge water from the trough onto the sloping surface 28 of the member 25, over which surface such water drains so as to be discharged over the outer edge of the member 25 and onto the outside floor 13.

In mounting the inner member 26, the member is cut to such a length as to extend into the grooves 16 at opposite sides of the door opening, and the outer edge of the upper tread 41 and the plate portion 36 are placed in abutment with the forward side of the groove 16 as shown. The member 26 is then secured in position by means of screws 47 which extend through countersunk holes 48 formed in the inner head 37. This location of the screw holes 48 is preferred in order to provide the maximum clearance outwardly of the screws 47. Thus by making the lower face of the plate portion 36 free from obstructions or projections as herein shown, the member 25 may be located inwardly a considerable distance from the relation herein shown, thereby permitting proper adjustment of the threshold to conform with door frames which provide a smaller dimension between the groove 16 and the outer face of the outer door 21. To preserve the proper relation of the member 26 in such adjustment, a horizontal surface 36'' may be provided on the lower forward side thereof as shown in Fig. 1.

The final step in the installation of the present threshold is the mounting of the third or intermediate member 27, a major function of which is to cooperate with the member 25 in providing a proper, gradually stepped tread inwardly and upwardly to the wall 41. Another desirable function of the third member 27, as herein shown, is to provide an adjustable stop or abutment for the lower edge of the outer door 21. To accomplish these purposes the member 27 preferably comprises an elongated relatively flat plate or tread portion 50 at the outer edge of which a downwardly projecting flange 51 is formed which may rest upon the plate portion 28 of the member 25, the inner edge of the member 27 being supported by resting upon the ledge 45. For the sake of appearance, and to afford better support for the upper tread 41, a downward flange 53 may be formed on the upper tread portion 41'' to rest on the upper face of the plate 50, the flange 53 and the ledge 45 being spaced apart to provide a longitudinally extending slot of a vertical width corresponding to the thickness of the plate 50.

It being noted that the ledge 45 is spaced a substantial distance from the wall 40, it will be evident that the member 27 may be mounted in varying transverse positions within the limits of adjustment determined by this spacing, and in practice the member 27 is located so that its forward flange 51 corresponds with the rear face of the groove 20, thereby providing a properly positioned outer door stop. The member 27 is fixed in this position by means such as screws 54 which extend through countersunk holes 55 in the plate 50 and are secured as by being screwed into threaded holes 56 which are drilled and tapped in the plate 28 of the member 25 after the transverse relationship of the members 25 and 27 has been determined.

To facilitate drainage of water from the top of the plate 50, a plurality of spaced holes 57 are provided therein to permit water to pass downwardly onto the drain plate 28. Such water, as well as water from the trough 43 passes under the flange 51 through ports or weep holes provided by downwardly facing notches 58 formed in the lower edge of the flange 51, which edge may for the purpose of securing a transverse

locking action, be grooved as at 59 to provide sharp edges for engagement with the plate 28.

Present experience indicates that a range of adjustment of the member 27 to position its outer flange 51 at any selected distance between 3 and 3¾ inches from the edge of the tread 41'' is sufficient to adapt the threshold for most installations, while the members 25 and 26 should be adjustable to provide for varying the over-all width of the threshold between 6⅜ and 7⅛ inches. Accordingly, the embodiment disclosed herein, and illustrated full size in the drawings, has been shown in Figs. 1 and 2 as being proportioned to provide for adjustment between these limits. It will be understood, however, that this proportioning is merely illustrative and may be varied as dictated by marketing experience or changes in building practice.

As illustrative of a slightly different range of adjustment, another form of the invention has been illustrated in full size in Figs. 3 and 4, this second embodiment of the invention being proportioned to provide for adjustment of the over-all dimension between 6¾ and 7⅜ inches, and for adjustment of the screen door stop positioning between 3⅛ and 3¾ inches from the outer edge of the upper tread.

This second form of the invention is illustrated in Figs. 3 and 4 in association with a door frame 14 of the same size and construction shown in Figs. 1 and 2, and the threshold comprises three inter-fitted and adjustably related members 25a, 26a and 27a which are mounted and adjusted relatively to the door opening in generally the same manner as the corresponding elements of Figs. 1 and 2. The outer member 25a is similarly formed with a sloping plate 28a, supported on inner and outer grooved flanges 29a and 30a, and secured in place by screws 32a. On opposite sides of the screw holes, longitudinally extending supporting ribs 33a may be formed, and preferably a supplemental supporting flange 30b is provided outwardly of the inner flange 30a. Above the flange 30b a supporting ledge 45a is formed on the member 25a to perform the function of the ledge 45 of the other embodiment, a similar port 46a being provided therein.

The second or inner member 26a has a main plate 36a with an upstanding wall 40a, an inner tread and an inner supporting flange 39a generally like the form of Fig. 1, with this exception however, that the tread 37a is narrow and slopes inwardly, and the screw holes 48a are formed in the bottom of the trough 43a rather than in the inner tread. An upper tread 41a is also provided, carried on the upstanding wall 40a, the wall 40a forming part of the trough 43a and having drain ports 44a therein.

In the form illustrated in Figs. 3 and 4, the plate 36a terminates short of, or inwardly of the outer edge of the upper tread 41a, the supporting ledge 45a being formed, as above pointed out, on the member 25a so as to support the forward or outer edge of the tread 41a. With this formation of the plate 36a, water from the trough 43a is discharged over the outer edge of the plate 36a onto the upper surface of the plate 28a, and passes outwardly through ports 46a, it being noted that the outer edge of the plate 36a is supported by resting on the inner edge of the outer member 25a. If desired, the upper face of the plate 28a inwardly of the ledge 45a may be made substantially level so as to preserve the desired positioning of the member 26a in its various transversely adjusted relations, or a flat bottom surface may be provided on the plate 36a for this purpose.

The member 27a is substantially the same as the member 27 of Fig. 1, and rests with its grooved and ported outer flange 51a on the plate 28a, the inner edge portion of the plate 50a resting on the ledge 45a. A similar screw 54a holds the member 27a in position. The threshold, in the form illustrated in Figs. 3 and 4, is such as to embody all the elements of adjustability, full floor protection, and proper drainage which are embodied in the form of Figs. 1 and 2, and in addition, is so formed and constructed as to facilitate extrusion of the parts, thereby providing greater economy in manufacture.

From the foregoing it will be evident that the present invention provides a new and improved threshold which is adaptable to meet varying dimensions in door frames and doors, whereby to insure, in its various installations, an effective protecting action, together with neatness in appearance. The arrangement is such that proper drainage is insured in every instance while its adjustability permits the dealer to satisfy the needs of his customers without excessive stocking requirements.

We claim as our invention:

1. An adjustable threshold comprising, in combination, an elongated outer member comprising a flat plate with grooved mounting flanges projecting downwardly along its opposite edges, said flanges being of different heights so as to support said member on a floor in a door space with a definite transverse slope toward one edge, said member being adapted to be secured in place with said one edge adjacent to the outer side of said door space, an elongated inner member comprising a flat plate adapted at one edge to rest on the inner edge of said outer member and having an inner supporting flange along its other edge, said inner flange being of such a height as to support the flat plate of said inner member with a definite outward slope, said inner member being adapted to be secured to the floor and being formed with an upstanding wall intermediate its edges and cooperating with the plate of said member to form a trough, an upper tread wall formed on the top of said wall and projecting inwardly over said trough and outwardly to the outer edge of said inner member, the outer edge of said inner member having an upstanding ledge formed thereon and the outer edge of said upper tread having a downwardly projecting flange extending toward but terminating short of said ledge to define with said ledge a horizontally extending slot, and an intermediate member comprising an elongated flat plate member with one edge adapted to project into said slot and with a downwardly projecting flange along its other edge adapted to rest on the flat portion of said outer member, said inner member having drain ports formed in said upstanding wall and ledge to discharge water from said trough onto said sloping plate of said outer member, and the flange of said intermediate member having a downwardly facing notch in its lower edge providing for drainage of such water from beneath said intermediate member.

2. A transversely adjustable threshold comprising, in combination, an outer member comprising an elongated flat plate adapted to extend along the floor across a door opening and having inner and outer flanges projecting downwardly along its opposite edges, said inner flange being

higher than said outer flange whereby to position said plate with a definite outward slope, and an elongated inner member having a drainage trough formed therein intermediate its inner and outer edges and being adapted along its outer edge to rest upon the inner edge of said outer member, said inner member having a downwardly extending flange along its inner edge to rest on the floor and support said inner member with the bottom of said trough above the level of said outer member, said inner member being formed with water-discharge ports from said trough onto said outer member, and said inner member having holes therein adjacent to its inner edge whereby said inner member may be secured in position relatively to said outer member.

3. A transversely adjustable self-draining threshold comprising, in combination, inner and outer members, said outer members having inner and outer supporting flanges along its opposite edges and a top surface arranged to slope toward the outer edge of said outer member, said inner member having an upwardly facing trough formed therein and an upper tread wall bordering the outer edge of said trough, said inner member having a supporting flange along its inner edge and being adapted along its outer edge to rest on the inner edge of said outer member, said inner member being formed with drain ports to discharge water from said trough onto said sloping top surface of said outer member, and an intermediate member adapted to be positioned over said outer member and formed to provide an outer door-abutment spaced inwardly from the outer edge of said outer member and also formed to provide intermediate tread surfaces between said abutment and said upper tread at a level above said sloping surface and below said upper tread, said intermediate member being formed to provide ports for the passage of water outwardly along said sloping surface.

4. A threshold as defined in claim 3 wherein said intermediate member is supported in part by said outer member and in part by said inner member.

5. A threshold as defined in claim 3 wherein said intermediate tread surface is formed with drain ports discharging onto the sloping surface of said outer member.

6. A threshold as defined in claim 3 wherein said intermediate member is supported conjointly by said inner and outer members and wherein the forward edge of said upper tread wall is supported on said intermediate member.

7. A threshold comprising, in combination, three inter-fitting elongated members adapted to extend across a door space, a first one of said members constituting an outer member having a top surface arranged to slope outwardly of the door opening when said member is mounted on the floor, a second one of said members constituting an inner member and having an upwardly facing drainage trough adapted to be positioned under an inside door in such a door opening, said second one of said members being adapted for mounting in varying transverse relationships to said first member as determined by the dimensions of the door frame and being formed to discharge water from said trough onto said top surface, and the third one of said members being adapted to be mounted over said first member in varying transverse relationships to provide a stop face for an outer door and also to provide an intermediate tread surface elevated above the surface of said first member.

8. A transversely adjustable self-draining threshold comprising, in combination, an outer member having a plate with inner and outer supporting flanges extending downwardly along its opposite edges and an upwardly projecting ledge extending longitudinally thereof parallel to but spaced outwardly of the inner edge thereof, said ledge having a drain port therein, an inner member comprising a plate adapted at its outer edge to rest on the plate of said outer member inwardly of said ledge and having a supporting flange along its inner edge, means on said inner member cooperating with the plate thereof to form a trough and an upper tread bordering the outer edge of said trough, an intermediate member comprising a plate having a flange at its outer edge adapted to rest on said outer member and being adapted at its inner edge to rest on said ledge, said flange of said intermediate member being formed to cooperate with said outer member to provide a drain port for outward discharge of water from the top of said outer member, said inner member being formed with a drain port discharging from said trough onto said outer member.

9. A threshold as defined in claim 8 wherein said upper tread at its outer edge rests upon the plate of said intermediate member.

10. In a threshold, the combination of an inner member defining the inner edge of the threshold, an outer member defining the outer edge of the threshold, and an intermediate member formed to define an outer stop for an outer door, said three members being formed to cooperate in providing a gradually stepped tread surface, and being relatively adjustable, in a generally horizontal direction, each relatively to the others, to provide varying dimensions between said inner and outer edges and between said inner edge and said outer stop.

11. A threshold comprising, in combination, inner and outer members, one of which has inner and outer mounting flanges along its opposite edges and the other of which has a mounting flange along one edge and is adapted at its other edge to be supported on said one of said members, said inner member having an upwardly facing drainage trough formed therein and having an upper tread bordering the outer side of the trough, said members being formed for mounting in different transverse relationships whereby to vary the transverse over-all width of the threshold, and an intermediate member adapted to overlie said outer member and in part to underlie said upper tread, said intermediate member being adapted to be adjustably related in a transverse direction and in a generally horizontal plane with respect to both said inner and outer members.

PHILIP R. OFTEDAL.
DONALD G. KINGSLEY.