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(54) Shower Screen

(57) The present invention relates to a shower screen, and in particular to a shower screen having a water seal beneath a lower edge of a door for retaining water inside a shower enclosure. The shower screen comprises a door (5) which may be opened and closed when gaining access to the enclosure (2), and a water barrier (20) for retaining water within the shower enclosure. The water barrier (20) includes a first barrier feature (22) mounted on a base (12) of the shower enclosure (2) beneath the line of the door (5), and which includes a first flexible tongue (24) that projects substantially upwards towards a lower surface (16) of the door (5). The water barrier also includes a second barrier feature (23) mounted along a lower edge (16) of the door (5) and which includes a second flexible tongue (25) that projects downwards towards a base of the shower enclosure. The first flexible tongue (24) cooperates with the second tongue (25) to retain water within the shower enclosure (2). The base of the shower enclosure may be the rim of a shower tray, or may be a floor surface if the floor itself is waterproof.

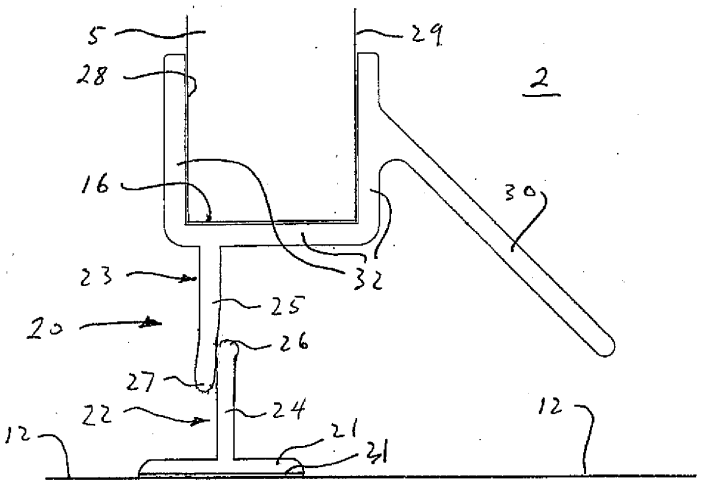

Fig. 2

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Description

BACKGROUND

a. Field of the Invention

[0001] The present invention relates to a shower screen, and in particular to a shower screen having a water seal beneath a lower edge of a door for retaining water inside a shower enclosure.

b. Related Art

[0002] Shower screens formed from glass panels often have a hinged door that can be swung or slid open in order to gain access to the interior of a shower compartment, cubical, or other such enclosure. The door may be a sliding panel or a hinged panel that can be moved or swung open when a person enters or leaves the shower enclosure.

[0003] In order to retain water within the enclosure, it is in general necessary to provide some type of a water barrier beneath a shower enclosure door, which is often a glass panel door. A water barrier may be a raised rim beneath the line of the door, which may optionally have a surface which slopes downwards and in towards the shower enclosure and which therefore has as a high point a lip that is positioned outside the outer face of the door, so that water dripping down the inside face of the door, or flowing on the base of the shower enclosure, is retained by the raised rim. Usually the raised rim will be part of a shower tray having a central floor area on which the showering person stands. Whether or not the raised rim is part of a shower tray or has an upper surface that slopes inwards to the shower enclosure, the rim is higher than the central floor area of the enclosure so that pooled water on the shower enclosure floor area is retained within the enclosure.

[0004] In order to be fully effective, the water barrier should retain not just water dripping down the inside of the door and water on the shower enclosure floor, but also water spray and mist generated as falling water hits the base of the shower enclosure. Spray and mist can be driven by air currents generated within the enclosure by the falling water and can thus be carried through any gaps underneath the door.

[0005] Therefore, a shower door usually has a sealing strip affixed to a lower edge of the door. The strip may be a flexible flap that projects downwardly from the lower edge of the door. The flap may need to brush over a lip or other high point on the rim of a shower tray as the door is closed and opened. In this case, there may remain a gap beneath the sealing strip when the door is closed, through which mist and water can escape the enclosure. It is therefore desirable to minimise the size of any remaining gap as far as possible, but this requires precise control of the alignment and positioning of the door and rim, which is often not possible.

[0006] Alternatively, if the rim has no outer lip and is relatively flat, the sealing strip may make a sliding contact with the rim beneath the line of the door as the door is opened and closed. This sliding contact also has to be precisely controlled, for if there is too much contact, then the door may not close easily or properly, and if the contact is too loose or absent, then water spray and mist can find a way through any gaps beneath the sealing strip. This can be a real problem if the rim is flat, as then water can flow off the edge of the rim onto the surrounding bathroom floor.

[0007] Precise control of the alignment and positioning of the door and rim to minimise or eliminate any gap beneath the door is difficult to achieve. In practice, this requires close control of the vertical spacing and parallel alignment between the lower edge of the door and the rim beneath the door.

[0008] Particular problems relate to the uneven shape of some shower trays, the difficulty of hanging shower doors correctly, and the unpredictable or uneven shapes and orientations of the walls and floor to which the shower enclosure is fitted. Pressed steel or cast iron shower trays tend to have rims which do not always have straight sides. As most shower components have some adjustability in their fitting, there is usually some ability to adjust the way a shower door is hung and so it can be difficult to hang a shower door perfectly square with the rim and at the correct height to achieve a fully effective seal. Adjacent walls and floor surfaces, particularly in older buildings, may not be not straight or flat or have 90° corners with respect to each other, making it difficult to fit a shower screen and door correctly.

[0009] It is an object of the present invention to provide a more convenient means for retaining water within a shower enclosure having a door.

SUMMARY OF THE INVENTION

[0010] According to the invention, there is provided a shower screen for retaining water within a shower enclosure, comprising a door which may be opened and closed when gaining access to the enclosure, and a water barrier for retaining water within the shower enclosure, wherein the water barrier includes a first barrier feature mounted on a base of the shower enclosure beneath a lower edge of the door and extending along the width of the door, and a second barrier feature mounted along a lower edge of the door and which includes a second flexible tongue that projects downwards towards a base of the shower enclosure, characterised in that said first feature includes a first flexible tongue that projects substantially upwards towards a lower surface of the door and which, in use, cooperates with the second tongue to retain water within the shower enclosure.

[0011] Each flexible tongue will, in general, have an inner surface and an outer surface relative to an interior of the shower enclosure. In a preferred embodiment of the invention, the outer surface of the first tongue coop-

erates with the inner surface of the second tongue to retain water within the shower enclosure.

[0012] The first barrier feature may extend along the full width of the door, although in a preferred embodiment of the invention there are one or more gaps in the barrier proximiate the left and right sides of the door to permit any water on the outside of the barrier to drain along an inwardly sloping surface back into the shower enclosure. In any event, the water barrier should ideally extend substantially fully the width of the door.

[0013] The first barrier feature is mounted directly beneath the lower edge of the door. Alternatively, the first barrier may extend along a line that is spaced outside the line of the inner face of the door relative to the interior of the shower enclosure, or may extend along a line that is spaced outside the line of the outer face of the door relative to the interior of the shower enclosure.

[0014] The base of the shower enclosure may be the rim of a shower tray, or may be a floor surface if the floor itself is waterproof. The tongue projects substantially upwards in the sense that the upwards projection is greater than any lateral projection, if any. Preferably, the first tongue projects substantially vertically upwards, which term includes exactly vertically upwards. Therefore, when the first barrier is mounted directly beneath the lower edge of the door, the first barrier may extend substantially vertically upwards towards a lower surface of the door.

[0015] The first tongue serves in use to help prevent water from escaping from the shower enclosure. Because the first tongue is flexible, a person's foot may rest on the tongue, which will then bend, and so damage to the tongue or discomfort to the foot is thereby avoided.

[0016] In a preferred embodiment of the invention the first tongue is a planar feature that extends substantially the full width of the door.

[0017] The second tongue may also be a planar feature that extends substantially the full width of the door, and may project substantially vertically downwards towards the base of the shower enclosure.

[0018] The second barrier feature is preferably mounted along a lower edge of the door by means of a U-shaped channel which wraps around a lower edge of the door. Then, the second tongue may be co-moulded with the U-shaped channel, preferably as an integral elongate strip. For example, the second tongue may be moulded from a first material, and the U-shaped channel may be moulded from a second material, the first material having a higher modulus of elasticity than the second material. This helps the U-shaped channel provide a solid fixing to the door, while the second tongue remains flexible so as not to be damaged in normal use.

[0019] Also in a preferred embodiment of the invention, the second barrier feature includes a third flexible tongue that projects both inwards to the enclosure and downwards towards a base of the shower enclosure and which, in use, serves to direct water dripping down an inner face of the door away from the first tongue.

[0020] The first tongue may be co-moulded with the footing, preferably as an integral elongate strip. For example, the first tongue may be moulded from a first material, with the footing being moulded from a second material, the first material having a higher modulus of elasticity than the second material. This helps the footing provide a solid base, while the first tongue remains flexible so as not to be damaged in normal use.

[0021] The footing may be adapted to be adhered directly to the base of the shower enclosure by means of an adhesive.

[0022] Alternatively, the first barrier feature may include a rail for mounting on a base of the shower enclosure, the rail including a channel from which the tongue projects.

[0023] When the first barrier feature includes a footing, the footing may be seated in the channel. Then, the channel and footing preferably include respective retention features that serve to hold the footing in the channel.

[0024] The footing may have an upper surface which, in use, slopes downwards towards the inside of the shower enclosure.

[0025] In any event, the first barrier feature can include a base surface above which the first tongue is supported, this base surface sloping, in use, downwards towards the inside of the shower enclosure. The first tongue may then be provided with one or more gaps so that, in use, if water collects on this sloping surface on a side of the first tongue away from the shower enclosure, such water may drain through the gap or gaps into the shower enclosure.

BRIEF DESCRIPTION OF THE DRAWINGS

[0026] The invention will now be further described, by way of example only, with reference to the accompanying drawings, in which:

Figure 1 is a perspective view of a shower enclosure having a water barrier beneath the line of a closed swing door, according to a preferred embodiment of the invention;

Figure 2 is a cross-section showing a first embodiment of the water barrier, having a flexible tongue that projects upwardly from an integral base section that is affixed directly to a floor of the enclosure;

Figure 3 is a cross-section showing a second embodiment of the water barrier, having a flexible upwardly projecting tongue that is affixed to a separate base section which is itself seated in a channel of a rail that extends beneath the line of the shower enclosure door; and

Figure 4 is a cross-section similar to Figure 3, in which the upwardly projecting tongue is integrally moulded with the base section.

DETAILED DESCRIPTION

[0027] Figure 1 shows a shower screen 1 for retaining water within a shower enclosure 2. The shower screen in this example is formed from three glass panels 3, 4, 5, two of which 3, 4 are rigidly affixed to two parallel side walls 6, 7, and a third one of which 5 is a swing door held by hinges 8, 9 to one of the fixed panels 3. In this example, the door 5 is arranged to swing outwards as indicated by dashed arrow 10 however, as will be explained below, the invention is applicable to doors that swing inwards into the shower enclosure 2, as well as sliding doors. The invention is also applicable to panels made from materials other than glass.

[0028] The base of the shower enclosure 2 is a wet floor area 12 that extends also outside the enclosure itself. The two fixed glass panels 3, 4 extend fully down to the floor 12, and are sealed along lower edges 14, 15 by means of a silicon sealant (not shown). The door 5 has a lower edge 16 which is raised relative to the lower edges 14, 15 of the side panels 3, 4. This is so that the door can be swung open without interfering with the floor 12, and also so that a water barrier 20 can be provided directly beneath the lower edge 16 of the door 5.

[0029] As shown in Figure 2, the water barrier 20 includes a first barrier feature 22 mounted directly to the floor 12 by means of a base section 21, and a second barrier feature 23 fixed to the lower edge 16 of the door 5. The first barrier feature 22 includes a first flexible tongue 24 that projects vertically upwards towards the lower edge 16 of the door 5, and the second barrier feature 23 includes a second flexible tongue 25 that projects vertically downwards towards the floor 12. As shown in Figure 2, when the door 5 is closed, these tongues 24, 25 come into abutting contact, with the downwardly extending tongue 25 being on the outside of the upwardly extending tongue 25 relative to the interior of the shower enclosure 2. Furthermore, the first tongue 24 has a first rounded tip 26 and the second tongue 25 has a second rounded tip 27, the first tip 26 being higher than the second tip 27 so that the tongues overlap fully along their length. The tongues are essentially planar strips, and may be formed in a translucent or transparent plastic or silicone material.

[0030] Also to help retain water inside the shower enclosure 2, the tongues 24, 25 are both aligned closer to an outside surface 28 than to an inside surface 29 of the door 5. Also, the second barrier feature 23 has a further tongue 30 that projects both downwardly and inwardly into the enclosure 2 from the inner surface 29 of the door 5. Therefore, water running down the inside surface 29 will be deflected inwards and away from the first barrier feature 22 by the inwardly projecting tongue 30. Spray and mist generated by water falling on the floor 12 will also tend to be deflected upwards by the tongue 30. The positioning of the first and second tongues 24, 25 further away from the inner door surface 29 also helps to prevent any mist or spray from escaping past the first barrier feature, if this is not held in perfect contact with the second barrier feature.

[0031] The base section 21 and first tongue 24 are, in this example, preferably formed from co-moulded plastics, with the base section 21 being relatively more rigid than the first tongue 24. An adhesive layer 31 holds the base section 21 to the floor 12.

[0032] The second barrier feature 23 is held to the door by means of an approximately square U-shaped section 32 that grips the door lower edge 16 and adjacent outside and inside surfaces 28, 29. The U-shaped section 32 and second tongue 25 are formed from co-moulded plastics, with the U-shaped section 32 being relatively more rigid than the second tongue.

[0033] The flexibility of the tongues 24, 25 protects these from damage should anything knock against the tongues, or should anyone step on the first tongue.

[0034] Figure 3 shows a second embodiment 120 of the invention, in which the same features are labelled using the same reference numbers and similar features are labelled using reference numbers incremented by 100.

[0035] The second barrier feature 23 is the same as that described above. The first barrier feature 122 differs mainly in that the upwardly extending tongue 124 is seated in a channel 40 in a rail 42 that extends the full length of the door 5. Preferably, the rail 42 also extends between both the fixed side panels 3, 4 and the floor 12 so that the rail 42 provides a continuous base for the shower screen panels 3, 4, 5.

[0036] The rail 42 has an upper surface 44 that slopes downwards into the shower enclosure 2. This is so that any water which collects on the rail upper surface will drain back in towards the shower enclosure 2, and for this reason, the upwardly extending tongue 124 has a pair of gaps (not shown) at the left and right sides of the door 5 through which water may drain.

[0037] The channel 40 extends at least the full width of the door 5, and optionally also the full width of the adjacent side panels 3, 4. The channel 40 receives a flexible insert 46 which has its own channel 48 for receiving a plug 49 that extends downwardly from a base section 121 of the first tongue 124. The base section 121 is sufficiently wide to conceal the sides of the channel 49. It should be noted that, although not illustrated, the channel 40 in the region of the fixed side panels 3, 4 would be filled by a similar insert not including the channel 49.

[0038] The rail channel 40 has in its side walls 50, 51 a pair of recesses 52, 53 into which a pair of corresponding projections 54, 55 of the insert 46 are seated in order to retain the insert in the rail channel 40. The plug 48 has a series of sharp ribs 56 that press into the flexible material of the insert channel 48 in order to help retain the plug 49 inside the channel 48. The rail 42 may be retained to the floor 12 by any conventional means, for example by screws or by silicon adhesive (not shown).

[0039] Figure 4 shows a third embodiment 220 of the invention, in which the same features are labelled using

the same reference numbers as above, and features similar to those of Figure 2 are labelled using reference numbers incremented by 100. The third embodiment 220 differs from the second embodiment 120 in that the channel insert 146 is integrally co-moulded with the upwardly extending tongue 224. The insert 146 has a pair of flexible legs 60, 61 each, of which runs the full length of the channel 140, and which have at their lower ends a pair of outwardly projecting angular retention features 154, 155, which are seated in corresponding angular recesses 152, 153 in the side walls 150, 151 of the channel 140.

[0040] The insert 146 has a top surface 221 which also doubles as the base for the upwardly projecting tongue 224. The insert 146 and upwardly projecting tongue 224 are co-moulded in plastic, with the insert 146 being relatively more rigid than the tongue 224. The base 221 has a surface 144' that slopes inwardly to the shower enclosure 2 so that water can drain away from the upwardly extending tongue 224.

[0041] In both the second and third embodiments 120, 220, the upwardly extending tongue 124, 224 cooperates with the downwardly extending tongue 25, and also the third downwardly and inwardly projecting tongue 30, in the same manner as described above, in relation to the first embodiment 20. In all the embodiments, the upwardly projecting tongue 24, 124, 224 is flexible enough to avoid damage from contact or by being stepped on by a user entering or leaving the shower enclosure 2.

[0042] A particular benefit of the invention is that the sealing arrangement provided by the tongues does not hinder in anyway the opening and closing motion of the door 5, particularly a swing door. This is because the sealing arrangement does not involve any sort of sliding friction in a lower edge seal to the door 5. In the case of a sliding door, a small gap may be provided between the opposed tongues. If desired for aesthetic reasons, the downwardly projecting tongue 25, or indeed the entire second barrier feature 23, can be omitted, in which case the upwardly projecting tongue 24, 124, 224 could be extended to come into near contact with the door lower edge 16, positioned relatively outwards relative to the glass inner surface 29, so that water dripping down the glass inner surface 29 falls inside the enclosure relative to the upwardly projecting tongue.

[0043] It should be noted that if the door 5 was arranged to swing inwards into the enclosure 2, then the order of the upper and lower tongues would be reversed, with the upper tongue being innermost to the enclosure 2. The order may also be reversed in the case of a sliding door, in which case water will be unable to drip through any gap between the opposed tongues.

[0044] Although not illustrated, it should also be noted that the second tongue, and optionally also the first tongue, may lie outside the line of the outer face of the door, relative to the interior of the shower enclosure. For example, the second tongue could extend downwards from a lip that projects outwardly from the lower edge of the door, in which case the first tongue could also be outside the line of the outer face of the door. However, for aesthetic reasons, it may be preferred if both the first and second tongue are directly beneath the lower edge of the door, which will then help to conceal both these features when the door is closed.

[0045] It should also be noted that although the invention has been described in terms of a first barrier feature 20, 120, 220 mounted directly to a wet floor area 12, the first barrier feature could alternatively be mounted on any other type of shower base, such as the rim of a moulded shower tray. The invention therefore provides a convenient and reliable arrangement for providing a water seal along a lower edge of an access door to a shower enclosure.

Claims

1. A shower screen (1) for retaining water within a shower enclosure (2), comprising a door (5) which may be opened and closed when gaining access to the enclosure (2), and a water barrier (20) for retaining water within the shower enclosure (2), wherein the water barrier (20) includes a first barrier feature (22) mounted on a base of the shower enclosure beneath a lower edge of the door (16) and extending along the width of the door, and a second barrier feature (23) mounted along a lower edge (16) of the door (5) and which includes a second flexible tongue (25) that projects downwards towards a base of the shower enclosure, **characterised in that** said first feature (22) includes a first flexible tongue (24) that projects substantially upwards towards a lower surface of the door (16) and which, in use, cooperates with the second tongue (25) to retain water within the shower enclosure (2).

2. A shower screen (1) as claimed in Claim 1, in which each flexible tongue (24, 25) has an inner surface and an outer surface relative to an interior of the shower enclosure, the outer surface of the first tongue (24) cooperating with the inner surface of the second tongue (25) to retain water within the shower enclosure (2).

3. A shower screen (1) as claimed in Claim 1 or Claim 2, in which the first barrier feature (22) is mounted directly beneath the lower edge of the door (16).

4. A shower screen (1) as claimed in Claim 1 or Claim 2, in which the door (5) has an inner face (29) and an outer face (28), relative to an interior of the shower enclosure (2), and first barrier (22) extends along a line that is spaced outside the line of the inner face (29) of the door (5) relative to the interior of the shower enclosure (2).

5. A shower screen (1) as claimed in Claim 1 or Claim

2, in which the door (5) has an inner face (29) and an outer face (28), relative to an interior of the shower enclosure (2), and first barrier (22) extends along a line that is spaced outside the line of the outer face (28) of the door (5) relative to the interior of the shower enclosure (2).

6. A shower screen (1) as claimed in any preceding claim, in which said first tongue (24) projects substantially vertically upwards.

7. A shower screen (1) as claimed in any preceding claim, in which said second tongue (25) projects substantially vertically downwards towards the base of the shower enclosure (2).

8. A shower screen (1) as claimed in any preceding claim, in which the second barrier feature (23) is mounted along a lower edge (16) of the door (5) by means of a U-shaped channel (32) which wraps around a lower edge (16) of the door (5).

9. A shower screen (1) as claimed in any preceding claim, in which the second barrier feature (23) includes a third flexible tongue (30) that projects both inwards to the enclosure (2) and downwards towards a base of the shower enclosure and which, in use, serves to direct water dripping down an inner face (29) of the door (5) away from the first tongue (24).

10. A shower screen (1) as claimed in any preceding claim, in which the first tongue (24) has a first tip (26) and the second tongue (25) has a second tip (27), the first tip (26) being higher than the second tip (27).

11. A shower screen (1) as claimed in Claim 10, in which the first and second tongues (24, 25) come into abutting contact when the shower door (5) is closed to make a watertight seal.

12. A shower screen as claimed in any preceding claim in which the first barrier feature (22) includes a footing (21) for supporting the first tongue (24), both the first tongue (24) and said footing (21) being co-moulded as an integral elongate strip.

13. A shower screen (1) as claimed in any preceding claim in which the first barrier feature (22) includes a rail (42) for mounting on a base of the shower enclosure (2), the rail (42) including a channel (40) from which the tongue (24) projects.

14. A shower screen (1) as claimed in Claim 12, in which the first barrier feature (22) includes a rail (42) for mounting on a base of the shower enclosure (2), the rail (42) including a channel (40) in which the footing (21) is seated.

15. A shower screen (1) as claimed in Claim 14, in which the footing (21) has an upper surface (144) which, in use, slopes downwards towards the inside of the shower enclosure (2).

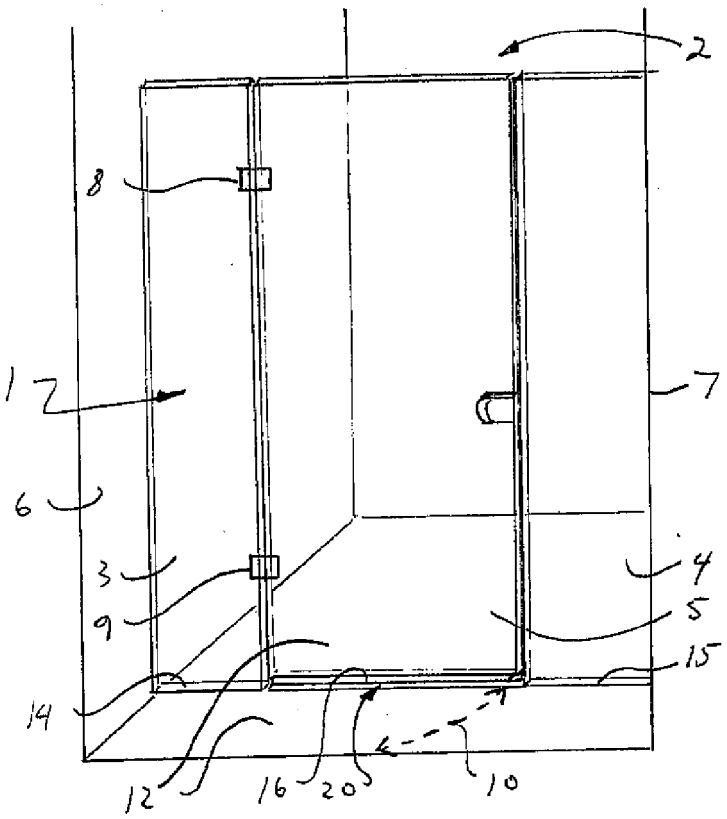
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Fig. 1

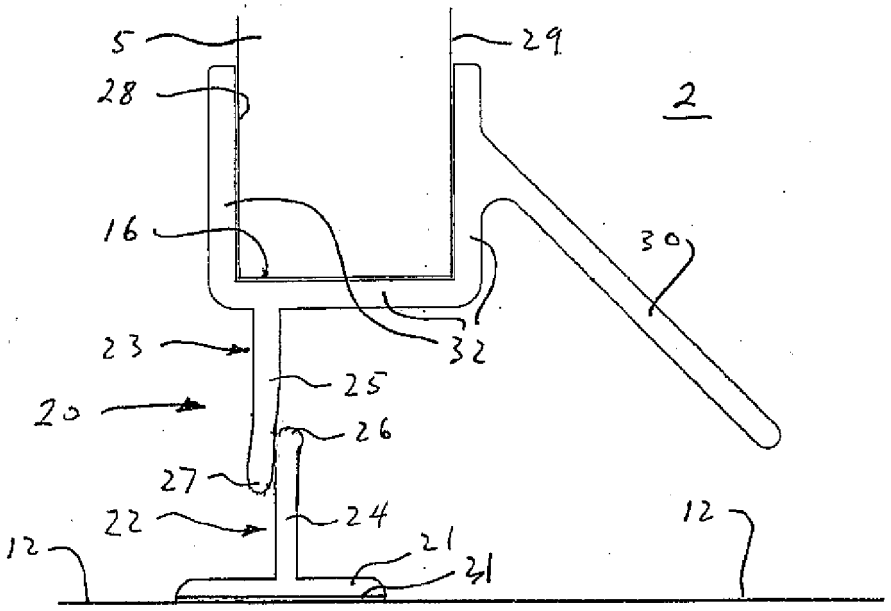
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Fig. 2

Fig. 3

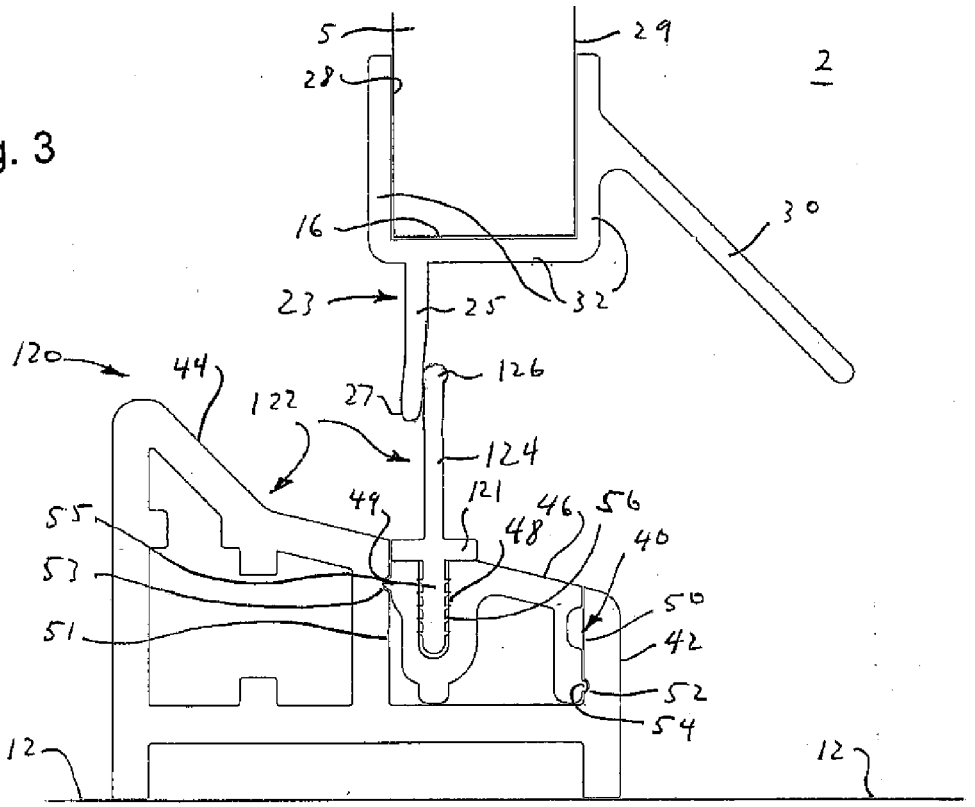
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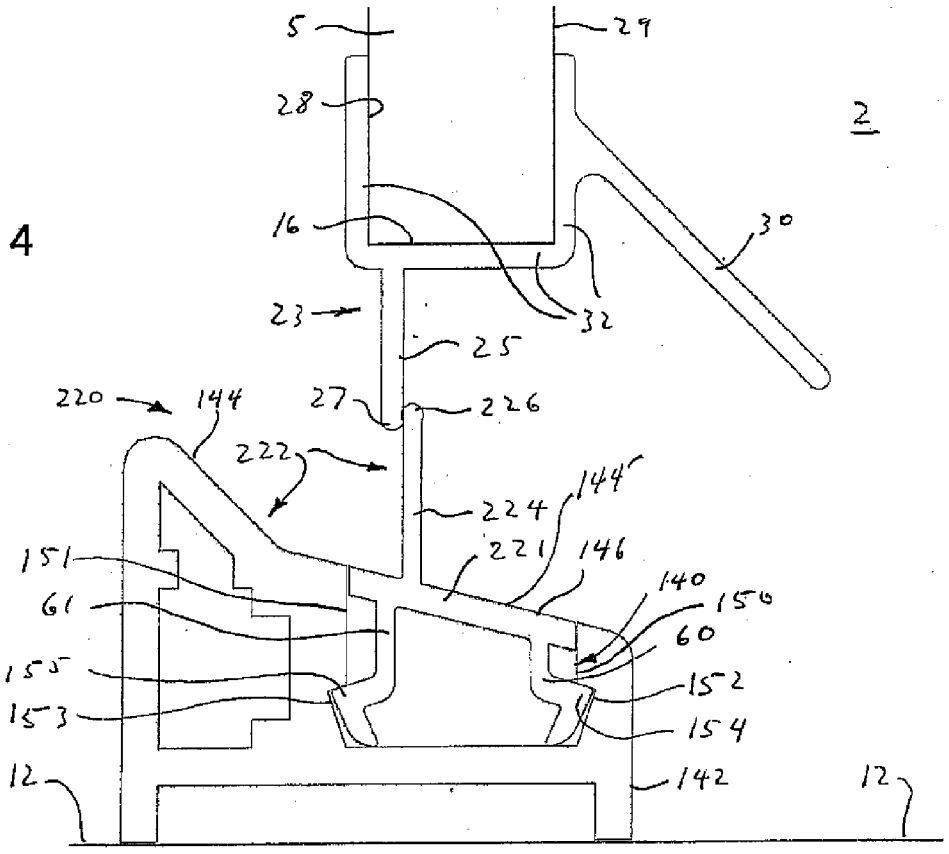
Fig. 4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