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(11) **EP 1 095 608 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention
of the grant of the patent:
16.03.2005 Bulletin 2005/11

(51) Int Cl.7: **A47K 3/36**

(21) Application number: **00123056.4**

(22) Date of filing: **24.10.2000**

(54) **Bath screen**

Duschabtrennung

Ecran de douche

(84) Designated Contracting States:
BE DE FR NL

(72) Inventor: **Caffrey, Matthew Robert**
Brewood, Staffordshire ST19 9ED (GB)

(30) Priority: **27.10.1999 GB 9925247**

(74) Representative: **Lally, William et al**
FORRESTER & BOEHMERT
Pettenkoflerstrasse 20-22
80336 München (DE)

(43) Date of publication of application:
02.05.2001 Bulletin 2001/18

(73) Proprietor: **Coram Showers Limited**
Bridgnorth, Shropshire WV15 5HP (GB)

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Description

Description of Invention

[0001] This invention relates to a bath screen.

[0002] A bath screen may be used in association with a bath which is provided with a shower attachment, with the object of preventing splashed water from the bath or shower from reaching the floor beyond the bath. Typically a bath screen extends approximately to head height and to about 1/3 the length of the bath. In order not to hinder access to the bath and cleaning of the end part of the bath at which the screen is provided, screens are known which comprise a number of panels which are pivotally connected to one another so as to be able to be folded in zigzag fashion to occupy a small space. If the screen extends from the wall, when folded the panels overlie one another substantially parallel to the wall.

[0003] Such multiple panel folding bath screens as known hitherto (e.g. as shown in FR 2615091 A, FR 2617034 A and DE 7735882 U) have disadvantages. They tend to leak, due to the large number of parts involved and the inevitable gaps which exist between them, and this is an increasing problem especially with the wide spread use of pump-fed "power showers" in which water is discharged from a shower head with considerable force. Further, when such screens are deployed for use they rarely stay in the intended position, tending to rest in a shallow zigzag shape along the rim of the bath rather than extending straight therealong. When not in use, they tend to unfold themselves from the fully folded condition. Aesthetically, the large number of parts involved in previously known screens has given them a "cluttered" appearance, with the frames relatively thick compared with the width of the glass or transparent plastic panels held thereby. This also makes them difficult to clean. A bath screen having a single panel is disclosed in GB 2317108 A, including a "living hinge" as a means of providing a leak-proof connection between the screen panel and a supporting member, but as there is only the single panel there is no requirement for holding adjacent panels in alignment with one another.

[0004] It is broadly the object of the present invention to address one or more of these disadvantages of known screens. Other features and advantages of screens in accordance with the present invention are referred to hereafter.

[0005] It is to be appreciated that, although we refer herein to a bath screen and describe the use of a screen in accordance with the invention in relation to a bath, the screen is in practice useable in other situations, whether or not similar or analogous requirements exist.

[0006] According to the present invention, a bath screen comprises a plurality of panels pivotally connected to one another, for folding in zigzag fashion and deployment in alignment with one another, and detent means operable between each pair of adjacent panels

to hold the panels in alignment with one another, the panels being connected by mounting portions along adjacent edges thereof and respective living hinge elements of flexible material joining the mounting portions and providing a seal therebetween, wherein the detent means includes an undercut recess along one mounting portion and two spaced generally parallel projecting limbs, having enlarged heads, along the adjacent mounting portion, and the projecting limbs are able to deflect by resilient deformation thereof as their heads pass opposed lips at the entrance to the undercut recess.

[0007] The mounting portions preferably are extrusions of a plastics material, and preferably are extrusions of a first plastics material co-extruded with a second material which constitutes the hinge element.

[0008] It will be appreciated that certain types of plastics material are highly flexible and able, when utilised as living hinges, to withstand a large number of cycles of hinging without suffering damage. Preferably such a material is used for the hinge element; by way of example, the hinge element may be of "Hytrell" (trade mark).

[0009] For fixing the screen to a vertical surface adjacent the bath, a free end of an end one of the panels of the screen may be provided with a fixing means which comprises a mounting portion and living hinge element as for one of the connecting means, but having, instead of the other mounting portion, a fixing portion adapted to be connected to the fixing surface, and with a detent means as aforesaid for holding the screen in a deployed position.

[0010] One or more of the living hinge elements provided in the screen may be extruded in the configuration it adopts when the screen is folded, so that the screen tends to stay in the folded condition naturally. When deployed, the detent means resists the natural tendency for it to return to the folded condition.

[0011] A lower edge of the screen may carry a seal element engageable with the rim of a bath with which the screen is to be used. Such a seal element may comprise an extrusion of a flexible material, connected along the lower edge of the panels at a number of spaced positions so that folding of the screen is accommodated.

[0012] The seal extrusion may be offset outwardly from the centre line of the screen panels, when they are deployed in alignment with one another, with a gap being defined between the seal extrusion and the lower edge of the panels beneath the mounting portions sufficiently large to prevent capillary transmission of water outwardly of the screen between the seal extrusion and the panels.

[0013] By "outwardly" we mean to the side of the screen panels remote from the interior of the bath.

[0014] The invention will now be described by way of example with reference to the accompanying drawings, of which:-

Figure 1 is a diagrammatic side elevation of an em-

bodiment of bath screen in accordance with the invention;

Figure 2 is a horizontal section through the screen; Figure 3 is a further section but showing the screen in the folded condition and in relation to a bath;

Figures 4 and 5 are vertical sections through part of the screen, illustrating a seal element at the lower edge thereof.

Figures 6 and 7 are horizontal sections through a bath screen not in accordance with the present invention.

[0015] Referring firstly to Figures 1 and 2 of the drawings, a bath screen comprises three panels indicated generally at 10, 11, 12. The panels 10 and 11 are connected to one another along adjacent vertically extending edges by a connecting means indicated generally at 13, while the panels 11 and 12 are similarly connected to one another by a connecting means 14. The connecting means 13, 14 are the same as one another in section, but are oppositely oriented to one another to permit the screen to fold in zigzag fashion as shown in Figure 3. The panel 10 is fixed, in use, to a vertical surface, e. g. a wall surface, adjacent the head of a bath by a fixing means indicated generally at 15.

[0016] Each of the panels 10, 11, 12 comprises a pane 16, 17 of transparent or translucent sheet material, e.g. toughened glass or a suitably strong plastics material. The connecting means 13 which joins such panes 16, 17 in the panels 10, 11 comprises two mounting portions 18, 19 which are extrusions of a material such as PVC. The mounting portion 18 comprises a base 20 affording a recess 21 in which the extreme edge of the pane 16 is received, and walls 22 which extend away from the base 20 and converge to hold the pane 16 between them at a small distance from the base. Similarly the mounting portion 19 comprises a base 23 affording a recess 24 and walls 25 extending therefrom to grip the pane 17 therebetween at a distance from its edge. The mounting portions 18, 19 are joined to one another by a "living hinge" element 26 of flexible material extending between the base parts 20, 23 of the mounting portions. The living hinge element 26 is co-extruded with the mounting portions 19, 18 so that it is firmly bonded thereto, and is, for example, of a material such as "Hytrel" (trade mark) which has the necessary flexibility and permits a large number of cycles of pivoting between the mounting portions without failure. It will also be appreciated that it provides an effective seal between the mounting portions, preventing water from passing from one side to the other of the screen therebetween when in use.

[0017] Detent means are provided for holding the panels 10, 11 in alignment with one another when the bath screen is deployed. The base 20 of the mounting portion 18 is provided with two spaced projecting generally parallel limbs 27 which at their free ends have enlarged heads 28 with opposite outwardly directed nose

portions. The base 23 of the mounting portion 19 is provided, adjacent its recess 24, with an undercut recess 29 which at its entrance has opposed inwardly facing lips 30. The dimensions are such that the limbs 27 are able to enter the recess 29, deforming slightly towards one another as the nose portions at their ends pass the lips 30 as the panels of the screen approach their aligned fully deployed condition. The effect is that the screen is held in such condition until sufficient force is applied thereto to disengage the limbs 27 from the recess 29 when the screen is to be folded. Preferably the hinge 26 is moulded in the condition in which it is shown in Figure 3, i.e. with the screen folded so that when set in its folded condition the screen will tend to stay there.

[0018] As above referred to, the connecting means 14 is identical to the connecting means 13, but is assembled to the panes forming the screen in the opposite orientation so that the screen folds in zigzag fashion as shown in Figure 3.

[0019] For fixing the screen to a surface such as a wall surface at the head of a bath, the fixing means 15 comprises a mounting portion 32 whose configuration is analogous to that of the mounting portion 19 of the connecting means 13, and which holds the pane 16 of the panel 10. The mounting portion 32 is of a slightly elongated shape in cross-section compared with the mounting portion 18, so that the pane 16 is spaced somewhat from a base part 33 of the fixing means. The fixing means further comprises a fixing portion 34 which is flat for fixing to a wall surface by fasteners 35 as seen in Figures 1 and 2. The base 33 of the mounting portion 32 and the fixing portion 34 are joined by a co-extruded living hinge element 36. The fixing portion 34 and mounting portion 32 of the fixing means have cooperating detent means, constituted by headed projections 37 on the fixing portion 34 engageable, with some resilient deflection, in an undercut recess 38 defined by a pair of projections 39 from the base 33, the projections 39 having opposed inwardly facing lips at their free ends.

[0020] Thus the cooperating detent means in the fixing means 15 ensures the panel 10 is normally held in a deployed orientation at right angles to the wall surface to which the fixing means 15 is secured, but if required the panel 10 may be pivoted to lie parallel to such wall surface.

[0021] Figures 4 and 5 of the drawings show in detail the configuration of a seal 40 provided along the lower edge of the bath screen, for engaging the rim indicated at 41 of the bath when the screen is deployed. A flexible hollow rubber extrusion 42 having a T-section rib 43 on its upper surface is held by respective lugs 45 on lengths of a rigid plastics extrusion 44 which are held at the bottom edges of the glass panes of the panels 10 to 12. The extrusion 44 affords a recess in which the panes are received, and in this recess there are small deformable lugs 46 which grip the glass but which allow the bottom seal assembly to be adjusted vertically relative to the pane. This ability to adjust the seal is necessary

to ensure that the extrusion 42 satisfactorily engages the bath rim: in practice the wall to which the screen is fixed is unlikely to be exactly perpendicular to the rim of the bath.

[0022] Figure 5 is a vertical section through the middle of one of the connecting means 13, 14, with details of the connecting means omitted for clarity. Extrusion 44, which has of course ended at the connecting means, is also omitted. It will be noted that a gap 47 is defined between the extrusion 42 and the pane 16 (or 17, etc, as the case may be). Vertically between the panels forming the screen the "living hinges" incorporated in the connecting means provide a permanent barrier to the passage of water. However, because the hinges are offset from the centre line of the screen the sealing extrusion 42 must move relative to the vertical extrusions while the screen is being folded, and hence the seal cannot be rigidly fixed to the bottom of these extrusions, giving rise to a potential gap for leakage of water. It has been found that water will tend to be drawn through a small gap by capillary action, whilst the provision of a larger gap as 47 prevents this effect from taking place. It will also be noted that the seal extrusion 42 is offset from the centre line of the screen, away from the "wet" side thereof. This substantially reduces leakage.

[0023] Referring now to figures 6 and 7 of the drawings, these show, in horizontal sections analogous to those appearing in figures 2 and 3, a modified embodiment of bath screen. The following description will be confined to the differences from the embodiment above described. In this embodiment, the connecting means as 13 is different in that, instead of the two spaced generally parallel limbs 27 with oppositely outwardly directed enlarged heads 28 adjacent their three ends, there is only a single limb 127 with an enlarged head 128. The limb 127 is able to deform as the head 128 passes lip 30 at the entrance to recess 29, to provide a detent action for holding the adjacent panels of the screen in their aligned fully deployed condition. This arrangement provides a somewhat "easier" detent action than when there are two such limbs.

[0024] The fixing means indicated generally at 115 is also different from the fixing means 15 described above. It comprises a panel-mounting portion 132 which holds the edge of the first pane of the screen, and a fixing portion 134 which is generally T shaped in cross-section, comprising a part 134a for lying against a wall surface and a part 134b extending at right angles therefrom. The part 134b and mounting portion 132 are joined by a co-extruded living hinge element 136. There is no co-operating detent means by which the first panel of the screen can be held in a deployed orientation at right angles to the wall surface to which the fixing means 115 is secured: maintenance of the panel in such position is dependant on the resilience of the material forming the living hinge element 136, returning to its as-extruded configuration.

[0025] For concealing fasteners used to secure the

fixing portion 134 to a wall surface, the outer edges of the base part 134a thereof are provided with relatively thin cover parts 150 joined to the part 134a by thin hinge sections. The free edges of the cover parts 150 are provided with retaining formations 151 engagable with lugs 152 behind the end of the part 134b where the living hinge element 136 is attached. Thus with the cover parts in the position wherein they are as shown in figure 6 fasteners can be passed through the part 134a to secure it to a wall surface, after which the cover parts can be moved to the position shown in figure 7 and the formations 151, 152 engaged to hold the cover parts in such position, so that the fasteners are concealed.

[0026] Thus the invention provides a bath screen which is simple in construction, utilising a minimal number of separate parts. At the same time, it achieves a high degree of effective sealing against water leakage when in use, while maintaining a "clean" and attractive appearance.

[0027] In the present specification "comprise" means "includes" and "comprising" means "including".

Claims

1. A bath screen comprising a plurality of panels (10, 11, 12) pivotally connected to one another, for folding in zigzag fashion and deployment in alignment with one another, and detent means operable between each pair of adjacent panels (10, 11; 11, 12) to hold the panels (10, 11, 12) in alignment with one another, the panels (10, 11, 12) being connected by mounting portions (18, 19) along adjacent edges thereof, wherein the detent means includes an undercut recess (29) along one mounting portion (18, 19) **characterized in that** the panels (10, 11, 12) are further connected by respective living hinge elements (26) of flexible material joining the mounting portions (18, 19) and providing a seal therebetween, wherein the detent means further includes two spaced generally parallel projecting limbs (27), having enlarged heads (28), along the mounting portion (18, 19) adjacent to the one including the undercut recess (29), and the projecting limbs (27) are able to deflect by resilient deformation thereof as their heads (28) pass opposed lips (30) at the entrance to the undercut recess (29).
2. A bath screen according to Claim 1, wherein the mounting portions (18, 19) are extrusions of a plastics material.
3. A bath screen according to Claim 2, wherein the mounting portions (18, 19) are of a first plastics material co-extruded with a second material which constitutes the hinge element (26).
4. A bath screen according to any one of the preceding

claims wherein the free end of an end one of the panels (10) of the screen is provided with fixing means (15) comprising a mounting portion (32), a fixing portion (34) adapted to be connected to an upright fixing surface, a living hinge element (36) connecting said mounting portion (32) and fixing portion (34), and detent means operable between the mounting portion (32) and fixing portion (34) of the fixing means (15), for holding the screen in a deployed position, the detent means comprising an undercut recess (38) and two spaced generally parallel headed projections (37) which are able to deflect by resilient deformation as they pass opposed lips at the entrance to the recess (38).

5. A bath screen according to any one of the preceding claims wherein at least one of the living hinge elements (26; 36) provided in the screen is extruded in the configuration it adopts when the screen is folded.
6. A bath screen according to any one of the preceding claims wherein a lower edge of the screen carries a seal (40) engageable with the rim (41) of a bath with which the screen is to be used.
7. A bath screen according to Claim 6, wherein said seal (40) comprises an extrusion (42) of flexible material connected along the lower edge of the panels (10, 11, 12) at a number of spaced positions, to accommodate folding of the screen.
8. A bath screen according to Claim 7, wherein said seal extrusion (42) is offset outwardly from the centre line of the screen panels (10, 11, 12), when they are deployed in alignment with one another, and wherein a gap is defined between the seal extrusion and the lower edge of the panels beneath the mounting portions sufficiently large to prevent capillary transmission of water outwardly of the screen between the seal extrusion (42) and the panels (10, 11, 12).

Patentansprüche

1. Duschwand mit einer Anzahl von Feldern (10, 11, 12), die gelenkig miteinander verbunden sind, um diese zickzackartig zu falten und in Ausrichtung miteinander auszufalten, und mit Feststellmitteln, die zwischen jedem Paar von einander benachbarten Feldern (10, 11; 11, 12) in Funktion sind, um die Felder (10, 11, 12) in Ausrichtung miteinander zu halten, wobei die Felder (10, 11, 12) durch Montageabschnitte (18, 19) entlang benachbarter Ränder davon miteinander verbunden sind, wobei die Feststellmittel eine hinterschnittene Ausnehmung (29) entlang eines Montageabschnitts (18, 19) aufwei-

sen, **dadurch gekennzeichnet, daß** die Felder (10, 11, 12) weiterhin durch entsprechende Folienscharnierelemente (26) aus einem flexiblen Material verbunden sind, die die Montageabschnitte (18, 19) verbinden und eine Dichtung dazwischen bereitstellen, wobei die Feststellmittel weiter zwei beabstandete, im wesentlichen parallele vorstehende Glieder (27) aufweisen, mit vergrößerten Köpfen (28), entlang des Montageabschnitts (18, 19) benachbart zu demjenigen, der die hinterschnittene Ausnehmung (29) aufweist, wobei die vorstehenden Glieder (27) durch eine elastische Deformation davon ablenkbar sind, wenn ihre Köpfe (28) an einander gegenüberliegenden Lippen (30) an dem Zugang zu der hinterschnittenen Ausnehmung (29) vorbeigehen.

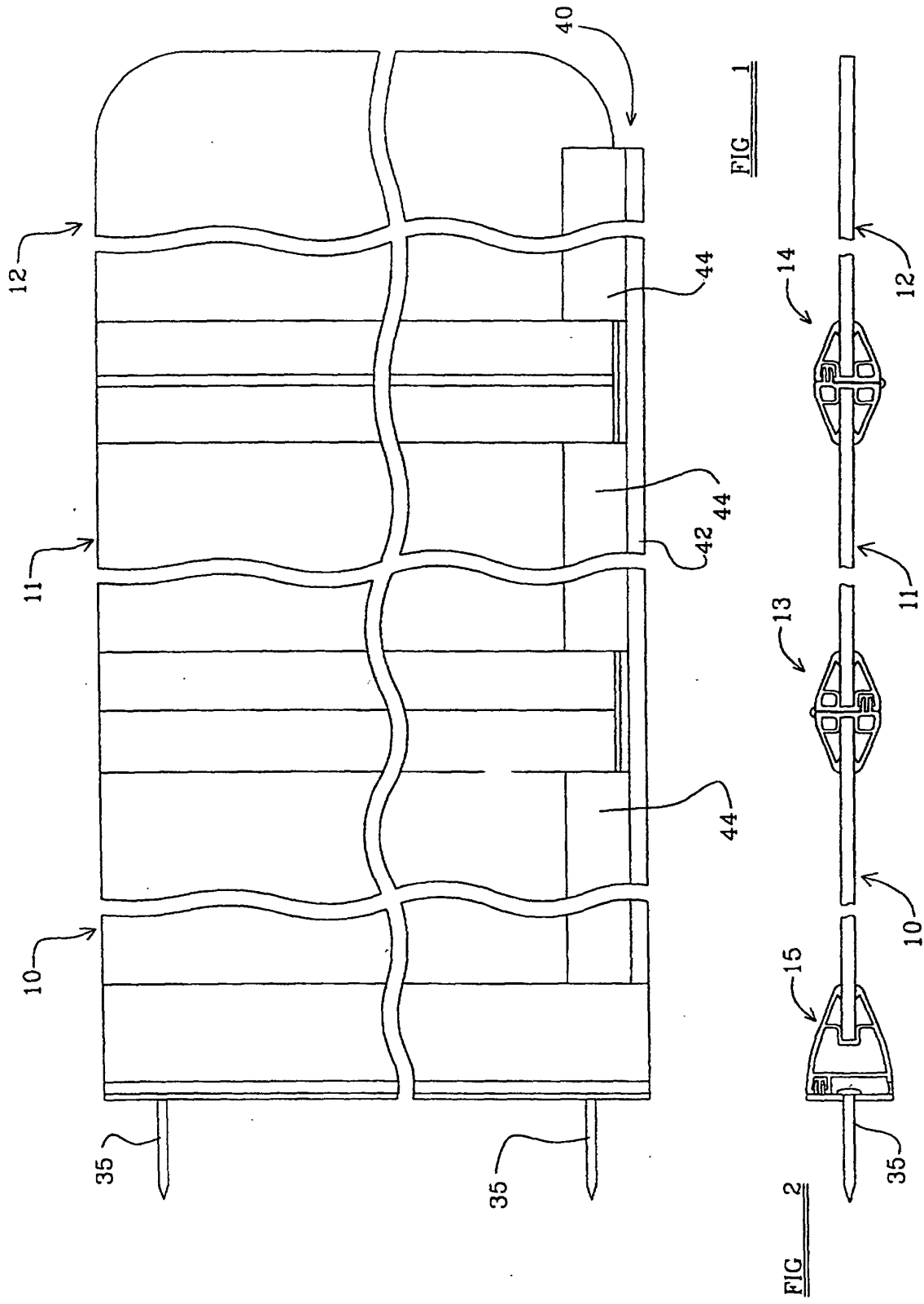
2. Duschwand nach Anspruch 1, **dadurch gekennzeichnet, daß** die Montageabschnitte (18, 19) Extrusionsteile aus einem Kunststoffmaterial sind.
3. Duschwand nach Anspruch 2, **dadurch gekennzeichnet, daß** die Montageabschnitte (18, 19) aus einem ersten Kunststoffmaterial bestehen, das mit einem zweiten Kunststoffmaterial koextrudiert ist, das das Scharnierelement (26) bildet.
4. Duschwand nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, daß** das freie Ende eines endständigen Felds (10) der Wand mit einem Befestigungsmittel (15) versehen ist, das einen Montageabschnitt (32), einen Befestigungsabschnitt (34), der dazu bestimmt ist, an eine aufrechte Befestigungsfläche angeschlossen zu werden, ein Folienscharnierelement (36), das den Montageabschnitt (32) und den Befestigungsabschnitt (34) miteinander verbindet, und Feststellmittel umfaßt, die zwischen dem Montageabschnitt (32) und dem Befestigungsabschnitt (34) des Befestigungsmittels (15) in Funktion sind, um die Wand in einer ausgefalteten Stellung zu halten, wobei die Feststellmittel eine hinterschnittene Ausnehmung (38) und zwei beabstandete, im wesentlichen parallele, mit Köpfen versehene Vorsprünge (37) aufweisen, die durch eine elastische Deformation ablenkbar sind, wenn sie an einander gegenüberliegenden Lippen an dem Eingang zu der Ausnehmung (38) vorbeigehen.
5. Duschwand nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, daß** zumindest eines der Folienscharnierelemente (26; 36), die in der Wand vorgesehen sind, in der Konfiguration extrudiert ist, die es annimmt, wenn die Wand gefaltet ist.
6. Duschwand nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, daß** ein unte-

rer Rand der Wand eine Dichtung (40) trägt, die mit dem Rand (41) einer Badewanne in Eingriff bringbar ist, mit der die Duschwand verwendet werden soll.

7. Duschwand nach Anspruch 6, **dadurch gekennzeichnet, daß** die Dichtung (40) ein Extrusionsteil (42) aus einem flexiblen Material aufweist, das entlang des unteren Rands der Felder (10, 11, 12) an einer Anzahl von beabstandeten Positionen angegeschlossen ist, um ein Falten der Wand zu ermöglichen.
8. Duschwand nach Anspruch 7, **dadurch gekennzeichnet, daß** das genannte Extrusionsteil (42) von der Mittellinie der Wandfelder (10, 11, 12) nach außen versetzt ist, wenn diese in Ausrichtung miteinander ausgefaltet sind, wobei ein Spalt zwischen dem dichtenden Extrusionsteil und dem unteren Rand der Felder unterhalb der Montageabschnitte gebildet ist, der ausreichend groß ist, um einen kapillaren Übergang von Wasser nach außerhalb der Wand zwischen dem dichtenden Extrusionsteil (42) und den Feldern (10, 11, 12) zu verhindern.

Revendications

1. Un pare-douche comprenant une pluralité de panneaux (10, 11, 12) reliés en pivotement les uns aux autres, pour se plier en zigzag et se déployer en alignement les uns avec les autres, et un moyen de détente fonctionnant entre chaque paire de panneaux adjacents (10, 11 ; 11, 12) pour maintenir les panneaux en alignement les uns avec les autres, les panneaux (10, 11, 12) étant reliés à des parties de montage (18, 19) le long de bords adjacents de ces derniers, dans lequel le moyen de détente inclut une cavité en renforcement (29) le long d'une partie de montage (18, 19), **caractérisé en ce que** les panneaux (10, 11, 12) sont en outre reliés par des éléments d'articulation active respectifs (26) de matière flexible reliant les parties de montage (18, 19) et fournissant un joint entre celles-ci, dans lequel le moyen de détente inclut en outre deux branches en saillie (27) espacées généralement en parallèle, ayant des têtes élargies (28), le long de la partie de montage (18, 19) adjacente à celle incluant la cavité en renforcement (29), et les branches en saillie (27) sont susceptibles de fléchir par déformation élastique de celles-ci lorsque leurs têtes (28) passent des lèvres opposées (30) à l'entrée de la cavité en renforcement (29).
2. Un pare-douche selon la revendication 1, dans lequel les parties de montage (18, 19) sont des extrusions de matière plastique.
3. Un pare-douche selon la revendication 2, dans lequel les parties de montage sont d'une première matière plastique co-extrudée avec une deuxième matière qui constitue l'élément d'articulation (26).
4. Un pare-douche selon l'une quelconque des revendications précédentes dans lequel l'extrémité libre d'un des panneaux d'extrémité (10) du pare-douche est munie d'un moyen de fixation (15) comprenant une partie de montage (32), une partie de fixation (34) destinée à être reliée à une surface de fixation verticale, un élément d'articulation active (36) reliant ladite partie de montage (32) et partie de fixation (34), et d'un moyen de détente fonctionnant entre la partie de montage (32) et la partie de fixation (34) du moyen de fixation (15), pour maintenir le pare-douche dans une position déployée, le moyen de détente comprenant une cavité en renforcement (38) et deux saillies orientées (37) espacées généralement en parallèle qui sont susceptibles de fléchir par déformation élastique lorsqu'elles passent des lèvres opposées à l'entrée de la cavité (38).
5. Un pare-douche selon l'une quelconque des revendications précédentes dans lequel au moins un des éléments d'articulation active (26; 36) prévus dans le pare-douche est extrudé dans la configuration que le pare-douche adopte lorsqu'il est plié.
6. Un pare-douche selon l'une quelconque des revendications précédentes dans lequel un bord inférieur du pare-douche porte un joint (40) capable d'engager le bord (41) d'une baignoire avec laquelle le pare-douche doit être utilisé.
7. Un pare-douche selon la revendication 6, dans lequel ledit joint (40) comprend une extrusion (42) de matière flexible fixée le long du bord inférieur des panneaux (10, 11, 12) en un certain nombre de positions espacées, pour accepter le pliage du pare-douche.
8. Un pare-douche selon la revendication 7, dans lequel ladite extrusion de joint (42) est décalée vers l'extérieur par rapport à la ligne centrale des panneaux (10, 11, 12) du pare-douche, quand ils sont déployés en alignement les uns avec les autres, et dans lequel un jeu est défini entre l'extrusion de joint et le bord inférieur des panneaux sous les parties de montage suffisamment large pour empêcher une transmission d'eau par capillarité à l'extérieur du pare-douche entre l'extrusion de joint (42) et les panneaux (10, 11, 12).



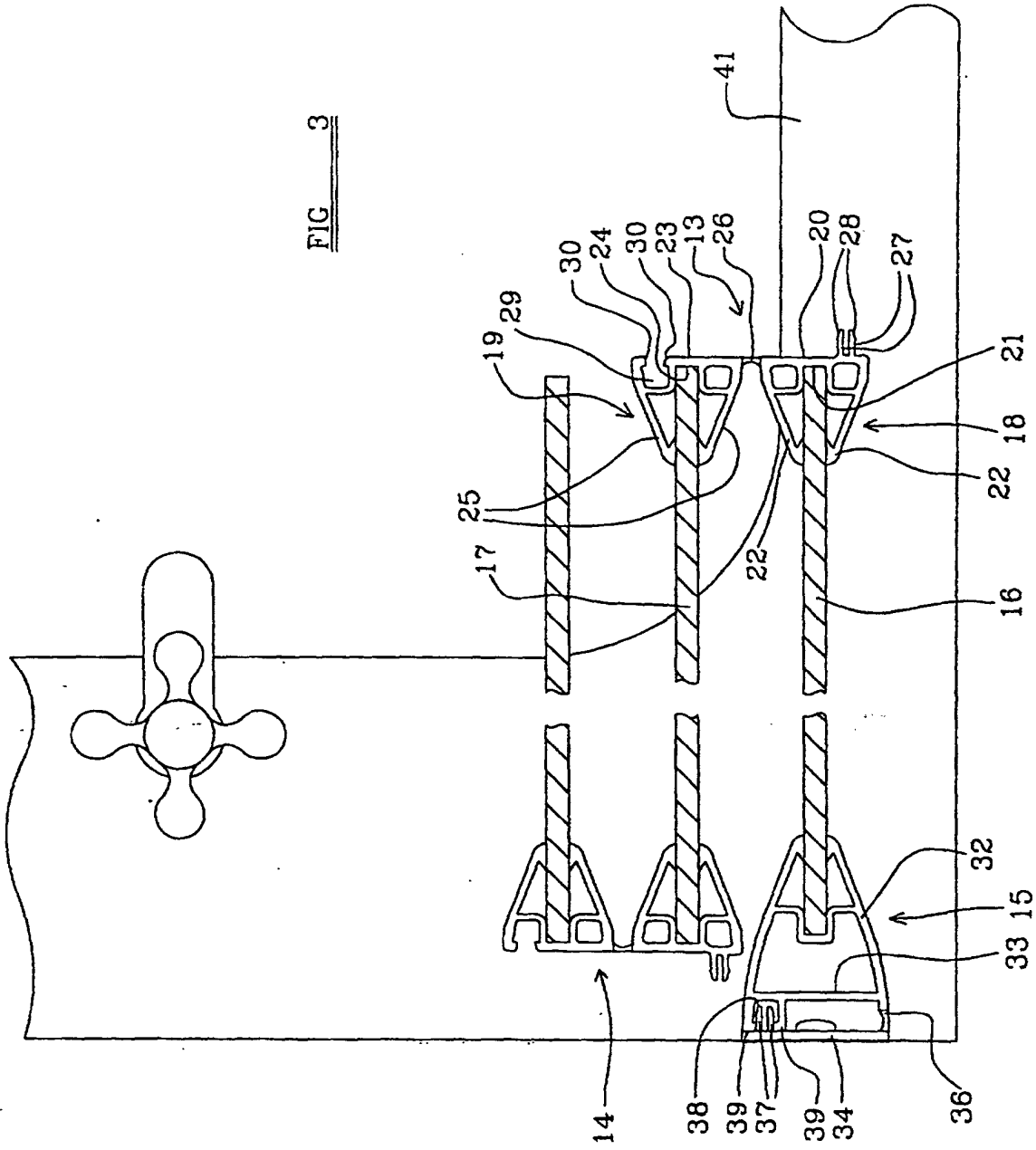
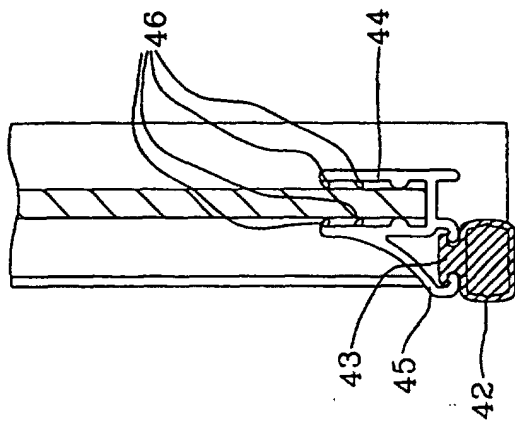
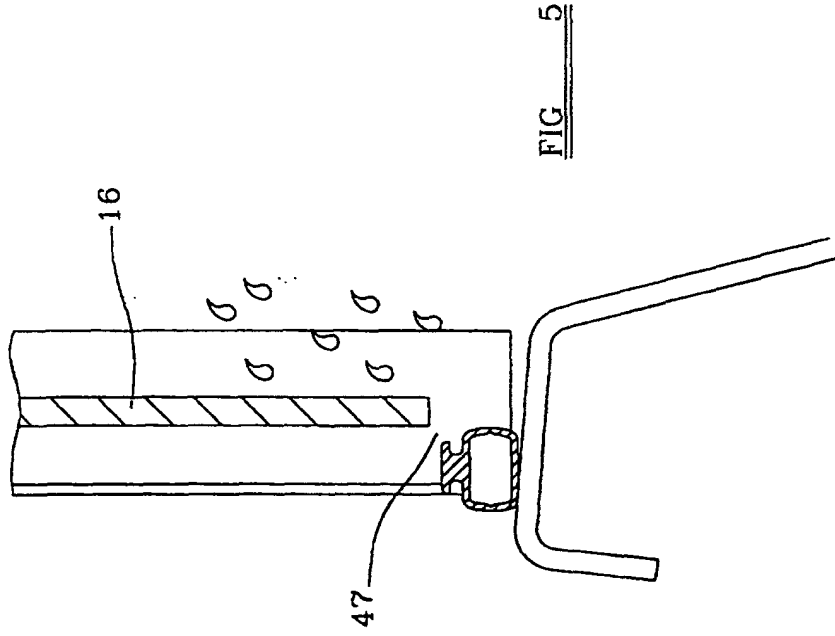


FIG 3



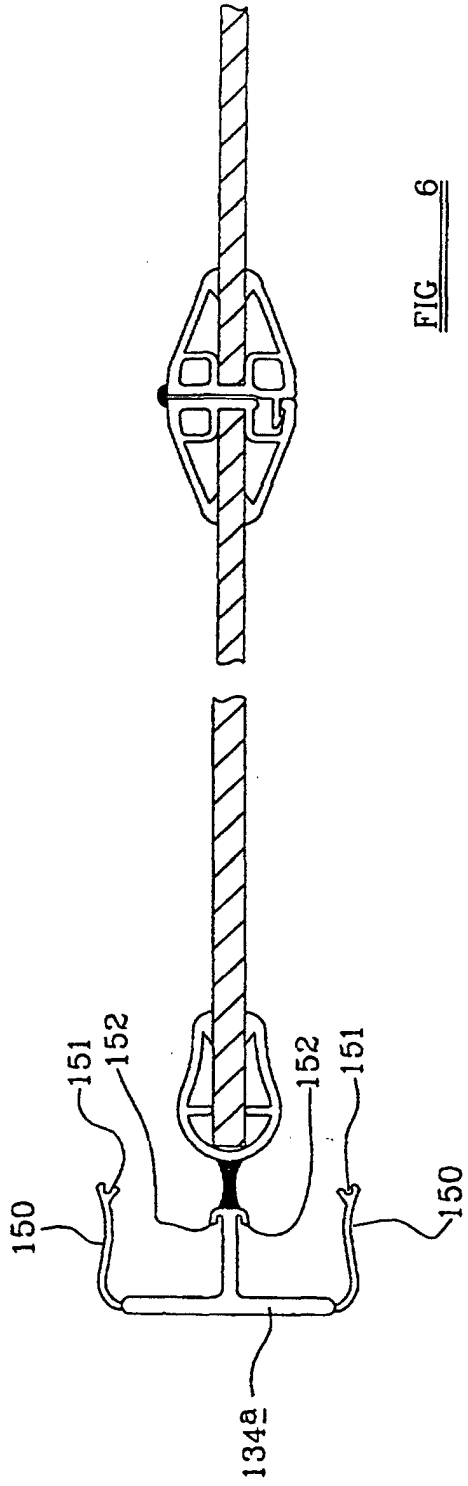


FIG 6

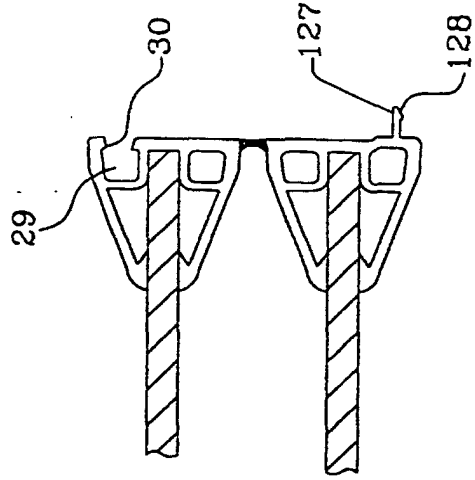


FIG 7

