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(54) Closure device

(57) A closure device for a door (2) which abuts against a door frame (3), in particular for a walk-in bath (1), the device comprising a base member (7) for placement on one face of the door (2), a bar (9) supported substantially at its centre to rotate relative to the base member (7), and a pair of wedges (10,11) mounted adjacent either side of the door frame (3), whereby, when the door (2) is generally closed, rotation of the bar (9) causes the end of the bar (9) to engage with said wedges (10,11) thus abutting the door (2) firmly against the frame (3).

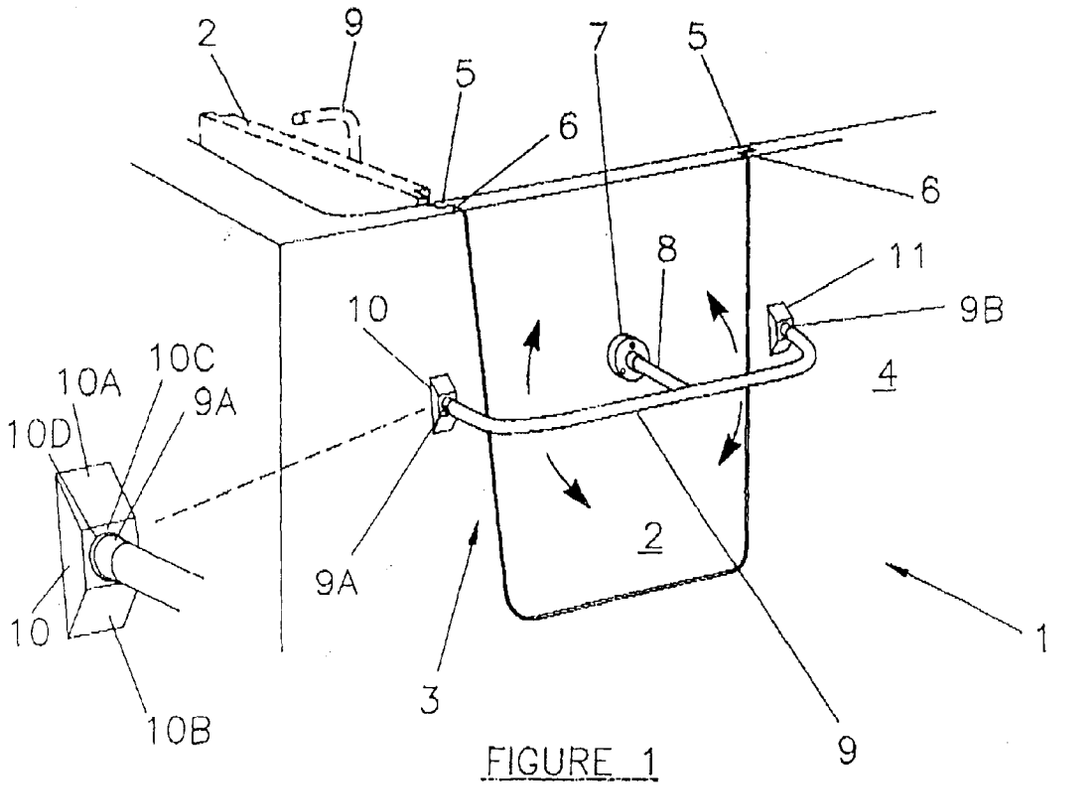

FIGURE 1

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Description

[0001] The present invention relates to a closure device for doors, particularly for doors of "walk-in" baths, and to a door hinge for doors of "walk-in" baths.

[0002] Walk-in baths are well known. Some have doors which open outwards and others have doors which open inwards. An important requirement of this type of bath is that the door seals well, otherwise it can leak. This type of bath has a seal around the door which needs compressing to make it watertight. Some such baths have "over centre" catches to close the door and to compress the seal, but elderly people often find these difficult to operate.

[0003] A problem with "walk-in" baths with doors which open inwardly, is that if the occupant should become unwell (e.g incapacitated), it can be difficult to get them out of the bath since their body can prevent the door from being opened.

[0004] The invention seeks to provide a solution to these problems.

[0005] The present invention is a closure device for a door which abuts against a door frame comprising a base member for placement on one face of the door, a bar supported substantially at its centre to rotate relative to the base member, and a pair of wedges for mounting adjacent either side of the door frame, whereby, when the door is generally closed, rotation of the bar causes the end of the bar to engage with said wedges thus abutting the door firmly against the frame.

[0006] Preferably each wedge includes opposed inclined surface rising to a flat portion. Preferably the flat portion includes a cut out. Preferably the ends of the bar include a raised portion to engage in each cut out. The ends of bar may include a projection to engage in recesses in the wedges to support the door frame.

[0007] The invention also provides a door and door frame with the above defined closure device.

[0008] The door and door frame may be hinged together by one or more elongate hinges. Preferably each elongate hinge comprises a pair of members, one member including a projection which engages in an elliptical aperture in another member whereby the door can be removed by lifting the door disengaging the or each projection from its respective aperture.

[0009] The invention also extends to a walk-in bath with a door and door frame hinged together by one or more elongate hinges.

[0010] The present invention will now be described, by way of example, with reference to the accompanying drawings in which:-

Figure 1 shows a perspective view of part of a walk in bath having a door frame and door with a closure device; and

Figure 2 shows a perspective view of the bath of Figure 1 showing one hinge.

[0011] Referring to Figure 1 there is shown a part of a walk in bath 1 having a door 2 hinged to a door frame 3 formed integrally into the side wall 4 of the bath 1. The door 2 includes a flange 5 around three sides which abuts against a flange 6 around the three sides of the door frame when the door is closed. A seal (not shown) is provided between these flanges 5, 6 as is well known in the art.

[0012] Attached to the face of the door 2, is a base member in the form of a cylindrical disc 7. A post 8 rotates in a bearing in the disc 8 and supports the centre of a generally U-shaped bar 9 so it can rotate relative to the disc 8. The bar 9 may have raised portions at its ends, such as semi-hemispherical ends 9A, 9B.

[0013] A pair of wedges 10, 11 are mounted adjacent either side of the door frame 3, e.g with screws or rivets (not shown). The wedge 10 includes a pair of opposed inclined surfaces 10A, 10B, rising to a flat portion 10C. The flat portion includes a cut out 10D into which the semi-hemispherical end 9A engages (see inset). The wedge 11 is identical to the wedge 10.

[0014] In use, when it is desired to close the door from the open position (shown in dotted lines), the door is first swung closed manually against the door frame with the bar rotated generally vertical so that it passes through the door frame. The bar is then rotated so that the ends of the bar rise up the inclined surfaces of the wedges 10, 11 and locate in the wedge cut-out.

[0015] This action "pulls" the door flange 5 firmly into engagement with the door frame flange 6 compressing the seal and making the door watertight. When the bath is full of water the pressure of water further acts to compress to the seal. To open the door after use, once the water has been emptied, the bar is rotated so that the bar ends slide off the wedges.

[0016] It will be appreciated that the bar can be rotated in either direction and the ends of the bar will still rise up one inclined surface of the wedges. A person locking or opening the bath door can thus choose whether to pull or push one end of the bar to rotate it. The bar is thus easy to operate by an elderly or infirm person.

[0017] Referring now to Figure 2, the door 2 and door frame 3 may be hinged together by one or more elongate hinges 12. Each elongate hinge 12 comprises a pair of co-operating hinge members 13, 14. The member 13 includes a projection 13A which engages in an elliptical aperture 14A in the hinge member 14. In normal use the door is opened and closed in the conventional way. When the door is closed by the bar 9, the projection 13A obviously slides to the end of the aperture 14A adjacent the door frame. If however when attempting to open the door it is found that the seal is difficult to break, the seal can be broken by pushing the door into the bath so that the projection slides to the end of the elliptical aperture remote from the door frame.

[0018] If the occupant of the bath is unable to remove him or herself, e.g if he or she has become incapacitated, and it is not possible to open the door due to the

occupant blocking the swing of the door, the door can be lifted out with the projection 13A disengaging from the elliptical aperture 14A of each hinge.

[0019] When the bath is full of water, the pressure of water tends to push the vertical sides of the door frame 3 apart. If desired, the ends of bar 9 may include a projection to engage in recesses in the wedges to support the door frame, whereby the bar effectively provides a brace for the door frame.

[0020] The closure device of the invention may be used on doors other than baths.

[0021] The closure device may take a different form to that specifically described. For example, the wedges could have only a single inclined surface, in which case the bar could only be rotated in one direction to lock the door and a stop would provided to limit the rotation of the bar. The bar could be mounted on the other side of the door to that shown, with the wedges being provided by slots with an inclined surface, in which case the door would be pushed against the door frame.

[0022] Further modifications will be apparent to those skilled in the art without departing from the scope of the present invention.

Claims

1. A closure device for a door which abuts against a door frame comprising a base member for placement on one face of the door, a bar supported substantially at its centre to rotate relative to the base member, and a pair of wedges for mounting adjacent either side of the door frame, whereby, when the door is generally closed, rotation of the bar causes the end of the bar to engage with said wedges thus abutting the door firmly against the frame.

2. A closure device as claimed in claim 1, in which each wedge includes opposed inclined surface rising to a flat portion.

3. A closure device as claimed in claim 2, in which the flat portion includes a cut out.

4. A closure device as claimed in claim 3, in which the ends of the bar include a raised portion to engage in each cut out.

5. A closure device as claimed in any preceding claim, in which the ends of bar include a projection to engage in recesses in the wedges to support the door frame.

6. In combination, a door frame, a door which abuts against the door frame, and a closure device as claimed in any preceding claim.

7. A combination as claimed in claim 6, in which the door and door frame are hinged together by one or more elongate hinges.

8. A combination as claimed in claim 7, in which each elongate hinge comprises a pair of members, one member including a projection which engages in an elliptical aperture in another member whereby the door can be removed by lifting the door disengaging the or each projection from its respective aperture.

9. A walk-in bath including the combination claimed in any of claims 6 to 8.

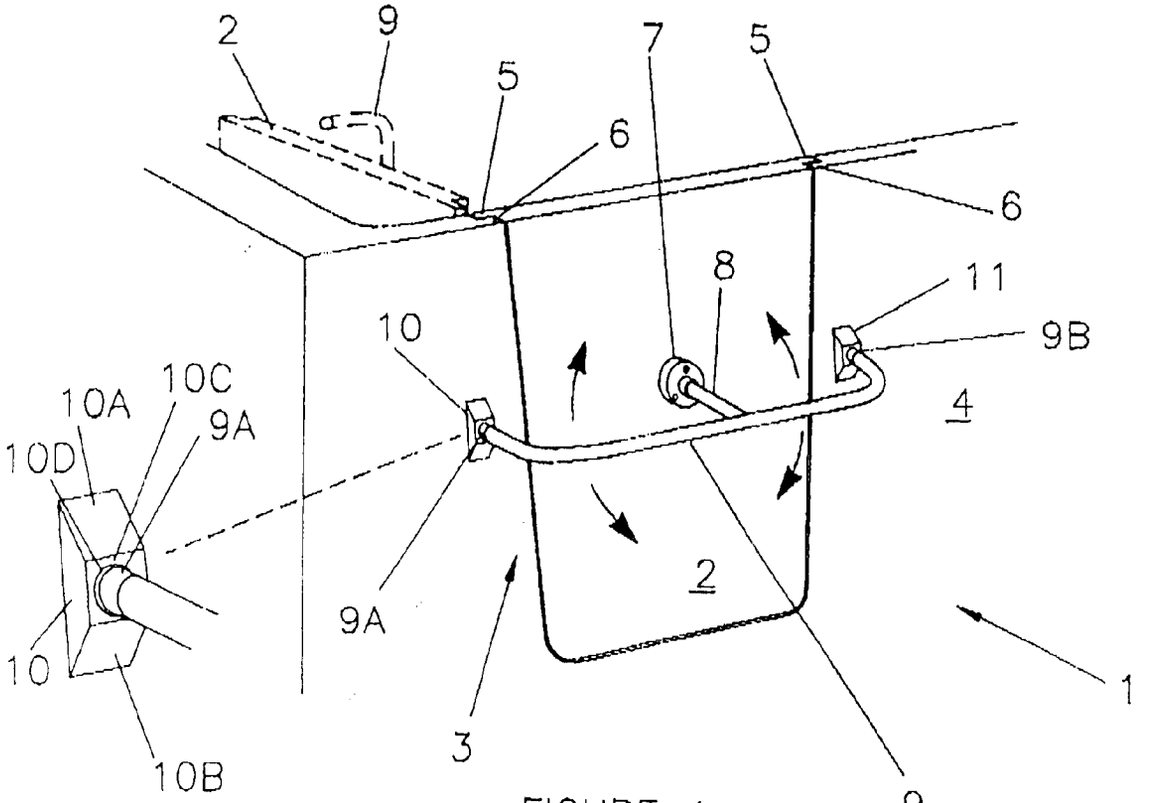

FIGURE 1

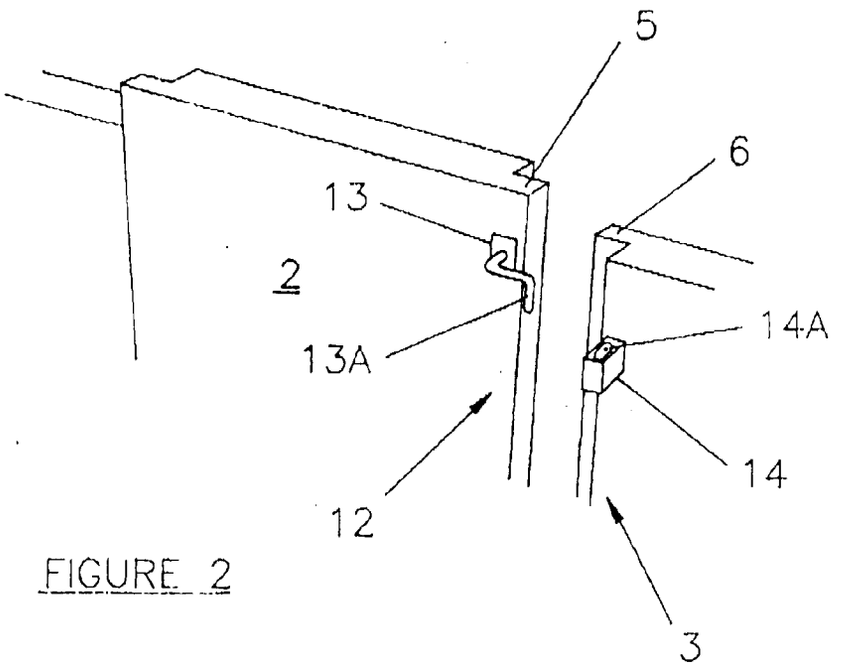

FIGURE 2