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⑤④ **Baths.**

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**DE - A - 2 348 349**  
**DE - C - 21 746**  
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## Baths

This invention relates to baths, particularly but not exclusively for use by disabled people.

When using a conventional bath a disabled person has to be bodily lowered into and lifted out of the bath; in hospitals this is often done with lifting tackle, which can be very uncomfortable or even dangerous for the patient, whilst in domestic surroundings where no mechanical assistance is available the procedure is very difficult if not impossible.

German Patent Specification No. 21746 discloses a bath incorporating a seat for a user, the bath being tippable rearwardly from an upright position to place a seated user in a reclined position with his body substantially immersed in water. However this bath is not readily usable by a disabled person because it is necessary for the user to climb over, or be lifted over, the very high side wall of the bath in order to enter and leave the same. The same disadvantage is present, although to a lesser extent because the side wall is not so high, in the bath described in German Offenlegungsschrift No. 2348349; the embodiments of Figures 4 and 5 have a removable end wall part to facilitate access but it is still necessary for a user to step into the bath from the end.

Modified baths are known, for example as shown in United States Specification No. 4099272, which comprise a box-like, open-topped container provided with a closable side door and containing a seat for a disabled user, which can be filled to a level at which about half of the seated user's body is immersed. However here again it is necessary for the user to walk into, or be carried into, the bath because there is no unobstructed lateral access to the seat. Moreover such a bath has the disadvantage as compared with a conventional bath that it is difficult if not impossible for an assistant to reach the lower part of the user's body, particularly the legs and feet, because of the depth of the container.

It is therefore an object of the present invention to provide a bath suitable for disabled people, in which most of the user's body can be immersed in a substantially reclined position without his having to be bodily lowered into and lifted out of that position, and furthermore which a disabled user can enter and leave without any assistance.

According to the invention there is provided a bath incorporating a seat for a user, the bath being tippable rearwardly from an upright position to place a seated user in a reclined position with his body substantially immersed in water, and having a wall part which is movable to facilitate access by a user, and means operable by a user in the bath to move it between its upright and reclined positions, characterised in that the bath is provided with a side access opening arranged to be sealingly closed

by said wall part and which, when open, provides unobstructed lateral access to the said seat whereby a disabled user may enter and leave the bath by lateral sliding movement of his body between the bath seat and for example a chair.

Such an arrangement enables a disabled user to be washed in a reclined and immersed condition, with ready access to all parts of the user's body, without his having to be bodily lowered into and lifted out of that position. Furthermore it enables a disabled user to enter and leave the bath without assistance simply by sliding his body directly between the bath seat and for example a chair.

The bath may be arranged to be tippable in any convenient fashion. In whatever manner the tipping is effected, however, it may readily be arranged that the movement of water in the bath aids the tipping movement in both directions, whilst the presence of that water stabilises the bath in both positions, for example by mounting the bath for pivotal movement about a transverse axis approximately midway of its length.

Preferably mechanical means are provided to move the bath between its upright and reclined positions. One such means comprises a lever-operated mechanism having its operating lever mounted alongside the bath for convenient operation by a user in the bath.

If desired, means may be provided for positively securing the bath in the upright and/or the reclined position, for example one or more mechanical latches acting between the bath and a stationary base structure, or a mechanical or hydraulic jack which may be arranged to effect the movement of the bath as well as hold it in its respective positions. Preferably however the arrangement is such that the bath is stable when the user is reclined and immersed, rather than having to be held in that position. Preferably also the bath is arranged to be stable when the user is seated upright with his lower legs and feet immersed in water.

Preferably the foot end of the bath which contains the user's feet when he is seated upright is arranged to house enough water to immerse most of the user's body when the bath is tipped back to the inclined position, so that no more water need then be added. Indeed the preferred manner of use of the bath is to fill the foot end with sufficient water, before the bath is tipped back, to achieve immersion when it is so tipped. The weight of that water then counterbalances the weight of the user to provide stability in the seated position, whilst the movement of the water when the bath is tipped back assists in moving it to the reclined position. The said side access opening is preferably located wholly above the said foot end when the bath is upright so as to enable the user to enter and

leave the bath with the foot end full of water. The said wall part for closing the side access opening may be a removable panel, or a hinged door, or of any other convenient nature.

Preferably a hand grip is provided in the form of a bar extending across the bath in front of the seat for a user. One function of such a bar is to restrain a user against slipping towards the foot of the bath. Such a bar is however particularly useful when provided in conjunction with a drop-down panel for closing the side access opening. Such a hand bar may then have one of its ends hingedly connected to such a panel and its other end engageable with a catch on the opposite side wall of the bath, thus providing both a convenient part for a user to grip in order to close the said panel without having to lean out of the bath, and a means of securing the panel in its closed position. The said catch for the free end of the hand bar may be an over-centre type spring catch which when engaged applies a substantial inward force to the said panel via the bar, to achieve a water-tight seal between the latter and the side of bath. Alternatively or in addition the bar may comprise two parts connected end to end by a double-threaded connector of the bottle-screw type which is rotated by a user to tighten the side panel in its closed position.

The bath may be mounted on a wheeled base so as to be positionable next to a user's bed when needed. Whether or not the base is wheeled, the bath may be mounted for vertical adjustment on the base, e.g. by means of a screw or a mechanical or hydraulic jacking device, to enable the height of its seat to be varied, e.g. to suit different bed heights. In a preferred embodiment the bath is mounted on a vertical pillar slidably adjustably in a base structure to adjust the height of the bath above floor level, suitable cooperating apertures for the reception of a locking pin being provided in the pillar and the base.

The bath may be made of any suitable material, but is preferably a glass-reinforced-plastics moulding.

An embodiment of the invention is illustrated by way of example in the accompanying drawings, in which:—

Figure 1 is a diagrammatic side view of a bath according to the invention in its upright position;

Figure 2 is a similar view showing the bath tipped back to its reclined position;

Figures 3 and 4 are more detailed illustrations similar to Figures 1 and 2;

Figure 5 is a diagrammatic transverse cross-section;

Figure 6 is an enlarged view of the top end of the operating lever;

Figure 7 is a plan view with the side access opening open; and

Figure 8 is a similar view with the side access opening closed.

The general arrangement and operation of

the bath will first be described with reference to Figures 1 and 2.

The bath comprises a glass-reinforced-plastics body 1 mounted for pivotal movement about a transverse horizontal axis 2 on an upright pillar 3 itself mounted for up and down sliding movement in a base structure 4. Suitable cooperating apertures (not shown) are provided in the pillar and in the base structure to receive a locking pin for securing the bath at a desired height above the floor level. The bath is formed with a seat 5 and has a wall part in the form of a drop-down hinged panel 6 (see Figure 5) closing an access opening in one of its side walls 7.

In use, the bath in the upright position shown in Figure 1 has its foot end 8 filled with water up to the level 9 which is judged to be sufficient water to immerse most of a user's body when the bath is tipped back as described below. The bath is now positioned alongside the user's bed with the panel 6 dropped down to form a bridge between the bath and the bed. The user's legs are swung across into the foot end of the bath and his body is then slid across into a sitting position on the seat 5. The panel 6 is now closed. In this condition the bath is stabilised by the weight of the water in the foot end, but the user's weight counterbalances the water sufficiently to make it easy for the bath now to be tipped gently into the position shown in Figure 2 by means of mechanism to be described below. As a result the user is placed in a reclined position with most of his body immersed in water, whose new level 10 is indicated in Figure 2. The whole of the user's body is now readily accessible for washing by an assistant. Once this has been done the bath is gently tipped back to the Figure 1 position so that the water drains back into the foot end 8 and the user is once more sitting upright ready to be returned to bed.

Referring now particularly to Figures 3 to 8, a lever 11 for enabling a user to move the bath between its upright position shown in Figures 1 and 3 and its reclined position shown in Figures 2 and 4 is pivotally mounted at 12 on an extension 13 of the pillar 3 and an arm 14 integral with the lever 11 is pivotally connected to a link 15 itself pivotally connected to a downwardly extending portion 16 (Figure 5) of the bath body 1. It will be understood that movement of the lever 11 to the right from the position shown in Figure 3 has the effect of pulling the link 15 downwardly and thus tipping the bath rearwardly about its pivotal axis 2 to the reclined position of Figure 4. Reverse movement of the lever of course returns the bath to its upright position shown in Figure 3.

The top end of the lever 11 is received in a slot 17 (Figure 6) formed in a side flange 18 of the bath body 1 and provided with terminal recesses 19 and 20 for securing the lever, which is resiliently biased towards the recessed side of the slot 17 in each of its terminal positions so as releasably to secure the bath

body in its respective upright and reclined positions.

A manually grippable hand bar 21 extends across the bath in front of the seat 5 for a user. The bar 21 is pivotally connected to the panel 6 which closes the access opening already mentioned. The free end of the bar 21 is engageable in an over-centre type spring catch 22 so as to hold the panel 6 in its closed position and thus provide a water-tight seal between the panel and the side wall 7 of the bath. When in the position shown in ghost lines in Figure 7 (and in full lines in Figures 5 and 8) the bar 21 provides a convenient lever for the user to open and close the access panel 6. The position of the bar shown in full lines in Figure 7 is an out of the way position to enable the bath to be placed immediately alongside a user's bed.

Preferably, a resilient, e.g. rubber, sealing member is provided between the access panel 6 and the bath body, for example in the form of a compressible rubber tube received in a groove formed in the side wall of the bath around the access opening.

It has been found that the lever mechanism described above, which in the illustrated embodiment provides a mechanical advantage of about  $7\frac{1}{2}$  to 1, enables a user in the bath to move the bath between its upright and reclined positions with very little effort, which is of course of great importance to a disabled user. As already described, such movement of the bath is intended to be carried out with the appropriate quantity of water already in the bath, the water in the foot part of the bath counterbalancing the weight of the user when the bath is upright and the movement of the water lengthwise of the bath assisting the movement of the bath between its upright and reclined positions, in both directions.

The location of the panel 6 well above the foot end 8 which initially receives the water means that all of the water can be added before the user enters the bath, as compared with the box-like baths previously mentioned in which the water can only be added with the side door closed. The advantage of this is that the temperature of the water can be adjusted in simple fashion before the user enters, as compared with the box-like bath just mentioned in which a mixer tap has to be used because the user is already in the bath.

The bath body is formed with a recess 23 (Figures 7 and 8) below the crotch region of a user to facilitate washing. Such a recess may be of channel-like configuration to assist flow of water lengthwise of the bath during its movement from one position to another.

A bath according to the invention can of course be used at any desired location. As well as being positioned adjacent a user's bed as described above, it can be located elsewhere in for example a bedroom or a bathroom, for use by a user in a wheelchair or on a stretcher or indeed

by a user who is able to walk. When used adjacent a bed the access panel does not have to be used as a bridge as described above, but can alternatively be dropped right down to an out of the way position and the bath then placed in side by side contact with the bed, or indeed alongside a wheelchair or stretcher.

## Claims

1. A bath incorporating a seat (5) for a user, the bath being tippable rearwardly from an upright position to place a seated user in a reclined position with his body substantially immersed in water, and having a wall part (6) which is movable to facilitate access by a user, and means (11) operable by a user in the bath to move it between its upright and reclined positions, characterised in that the bath is provided with a side access opening arranged to be sealingly closed by said wall part and which, when open, provides unobstructed lateral access to the seat (5) whereby a disabled user may enter and leave the bath by lateral sliding movement of his body between the bath seat and for example a chair.

2. A bath as claimed in claim 1, having a foot end (8) which is arranged to accommodate sufficient water, with the bath upright, to achieve immersion of a user's body when reclined.

3. A bath as claimed in claim 2, wherein the said side access opening is located wholly above the said foot end when the bath is upright.

4. A bath as claimed in any of claims 1 to 3, which is pivotally mounted for movement between its upright and reclined positions about a pivotal axis (2) transverse to its length and located approximately at the centre of gravity of the bath when it contains a user and an appropriate quantity of water.

5. A bath as claimed in any of the preceding claims, which is arranged to be stable in both its upright and reclined positions when it contains a user and an appropriate quantity of water.

6. A bath as claimed in any of the preceding claims, having means for positively securing the bath in both its upright and reclined positions.

7. A bath as claimed in any of the preceding claims, having a channel-shaped recess (23) extending lengthwise of the bath in its said seat (5), to assist flow of water along the bath during movement between its upright and reclined positions.

8. A bath as claimed in any of the preceding claims, which is mounted for height adjustment on a base structure (4).

9. A bath as claimed in any of the preceding claims, wherein said means operable by a user comprises mechanical means (11—15) providing a mechanical advantage.

10. A bath as claimed in claim 9, wherein the said mechanical means comprises a lever (11) mounted for movement along one side of the bath.

11. A bath as claimed in any of the preceding claims, including a hand grip in the form of a bar (21) arranged to extend across the bath in front of the said seat (15).

12. A bath as claimed in claim 11, wherein the said bar (21) is connected or connectible to the said wall part (6) and is operative to hold the latter closed.

13. A bath as claimed in any of the preceding claims, which is mounted on a wheeled base (4).

#### Patentansprüche

1. Badewanne mit einem Sitz (5) für einen Benutzer, die von einer aufrechten Stellung nach rückwärts neigbar ist, so daß ein sitzender Benutzer in eine zurückgeneigte Stellung versetzbar ist, bei der sein Körper im wesentlichen unter wasser getaucht ist, die ein Wandteil (6) aufweist, das beweglich ist, um für einen Benutzer den Zugang zu erleichtern, und in der eine vom Benutzer betätigbare Einrichtung (11) zum Bewegen der Badewanne zwischen ihrer aufrechten und zurückgeneigten Stellung vorgesehen ist, dadurch gekennzeichnet, daß die Badewanne mit einer seitlichen Zugangsöffnung versehen ist, die so angeordnet ist, daß sie durch das besagte Wandteil dicht verschließbar ist, und die geöffnet einen ungehinderten seitlichen Zugang zu dem Sitz (5) ermöglicht, wodurch ein behinderter Benutzer durch eine gleitende Bewegung seines Körpers zwischen dem Sitz des Bades und beispielsweise einem Stuhl sich in die Badewanne begeben und diese verlassen kann.

2. Badewanne nach Anspruch 1, mit einem Fußende (8), das so angeordnet ist, daß es bei aufrechter Badewanne ausreichend Wasser faßt, so daß bei zurückgeneigter Stellung ein Untertauchen des Körpers eines Benutzers erzielt wird.

3. Badewanne nach Anspruch 2, wobei die seitliche Zugangsöffnung bei aufrechter Badewanne sich ganz über dem Fußende befindet.

4. Badewanne nach einem der Ansprüche 1 bis 3, die zur Bewegung zwischen ihrer aufrechten und zurückgeneigten Stellung um eine Drehachse (2) drehbar befestigt ist, die sich quer zur Längsrichtung der Badewanne erstreckt und annähernd beim Schwerpunkt der Badewanne angeordnet ist, wenn diese einen Benutzer und eine richtige Menge Wassers enthält.

5. Badewanne nach einem der vorhergehenden Ansprüche, die so angeordnet ist, daß sie sowohl in ihrer aufrechten als auch in ihrer zurückgeneigten Stellung stabil ist, wenn sie einen Benutzer und eine richtige Menge Wassers enthält.

6. Badewanne nach einem der vorhergehenden Ansprüche, mit einer Einrichtung zum zwangsweisen Sichern der Badewanne sowohl in ihrer aufrechten als auch in ihrer zurückgeneigten Stellung.

7. Badewanne nach einem der vorhergehenden Ansprüche, mit einer längs der Badewanne in deren Sitz (5) sich erstreckenden kanalförmigen Vertiefung (23) zur Unterstützung des Wasserflusses längs der Badewanne während der Bewegung zwischen ihrer aufrechten und ihrer zurückgeneigten Stellung.

8. Badewanne nach einem der vorhergehenden Ansprüche, die zur Höheneinstellung auf einer Basiskonstruktion (4) montiert ist.

9. Badewanne nach einem der vorhergehenden Ansprüche, wobei die durch einen Benutzer betätigbare Einrichtung eine mechanische Einrichtung (11—15) umfaßt, welche einen mechanischen Vorteil oder einer mechanische Benutzung erzeugt.

10. Badewanne nach Anspruch 9, wobei die mechanische Einrichtung einen Hebel (11) umfaßt, der für eine Bewegung längs einer Seite der Badewanne montiert ist.

11. Badewanne nach einem der vorhergehenden Ansprüche, mit einem Handgriff in Form einer Stange (21), die so angeordnet ist, daß sie sich vor dem Sitz (15) quer über die Badewanne erstreckt.

12. Badewanne nach Anspruch 11, wobei die Stange (21) mit dem Wandteil (6) verbunden oder verbindbar ist und so wirkt, daß sie letzteres geschlossen hält.

13. Badewanne nach einem der vorhergehenden Ansprüche, die auf eine mit Rädern versehene Basis (4) montiert ist.

#### Revendications

1. Baignoire comprenant un siège (5) pour un utilisateur, la baignoire étant basculante vers l'arrière à partir d'une position debout pour amener un utilisateur assis dans une position couchée, son corps étant pratiquement immergé dans l'eau, et comprenant une paroi (6) mobile pour faciliter l'accès d'un utilisateur, et des moyens (11) pouvant être actionnés par un utilisateur situé dans la baignoire pour déplacer celle-ci entre ses position debout et couchée, caractérisée en ce qu'elle est pourvue d'une ouverture d'accès latérale agencée pour être fermée de façon étanche par ladite paroi et qui, lorsqu'elle est ouverte, procure un accès latéral sans obstacle au siège (5), un utilisateur handicapé pouvant ainsi entrer dans, et quitter la baignoire par un coulissement latéral de son corps entre le siège de la baignoire et, par exemple, un fauteuil.

2. Baignoire selon la revendication 1, comprenant une extrémité côté pieds (8) agencée pour recevoir une quantité d'eau suffisante, la baignoire étant debout, pour réaliser l'immersion du corps d'un utilisateur lorsqu'elle est en position couchée.

3. Baignoire selon la revendication 2, dans laquelle ladite ouverture d'accès latérale est entièrement située au-dessus de ladite extrémité côté pieds lorsque la baignoire est debout.

4. Baignoire selon l'une des revendications 1

à 3, qui est montée pivotante pour se déplacer entre ses positions debout et couchée autour d'un axe de pivotement (2) transversal à sa longueur et situé approximativement au centre de gravité de la baignoire lorsque celle-ci contient un utilisateur et une quantité d'eau appropriée.

5 5. Baignoire selon l'une des revendications précédentes, agencée pour être stable à la fois dans ses positions debout et couchée lorsqu'elle contient un utilisateur et une quantité d'eau appropriée.

10 6. Baignoire selon l'une des revendications précédentes, comportant des moyens pour la fixation positive de la baignoire dans ses positions debout et couchée.

15 7. Baignoire selon l'une des revendications précédentes, comportant un renforcement en forme de canal (23) s'étendant dans le sens de la longueur de la baignoire dans son siège (5), afin d'aider à l'écoulement de l'eau le long de la baignoire pendant son déplacement entre ses positions debout et couchée.

20 8. Baignoire selon l'une des revendications

précédentes, qui est montée réglable en hauteur sur une structure de base (4).

5 9. Baignoire selon l'une des revendications précédentes, dans laquelle lesdits moyens actionnables par un utilisateur comprennent des moyens mécaniques (11—15) procurant un avantage mécanique.

10 10. Baignoire selon la revendication 9, dans laquelle lesdits moyens mécaniques comprennent un levier (11) monté de manière à être mobile le long d'un côté de la baignoire.

15 11. Baignoire selon l'une des revendications précédentes, comprenant une poignée présentant la forme d'une barre (21) agencée pour s'étendre en travers de la baignoire devant ledit siège (15).

20 12. Baignoire selon la revendication 11, dans laquelle ladite barre (21) est, ou peut être reliée à ladite paroi (6) et agit pour maintenir cette dernière fermée.

25 13. Baignoire selon l'une des revendications précédentes, montée sur une base (4) à roulettes.

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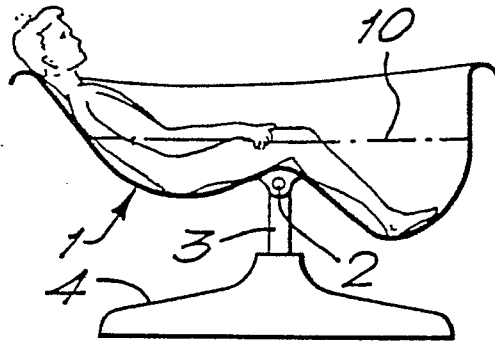
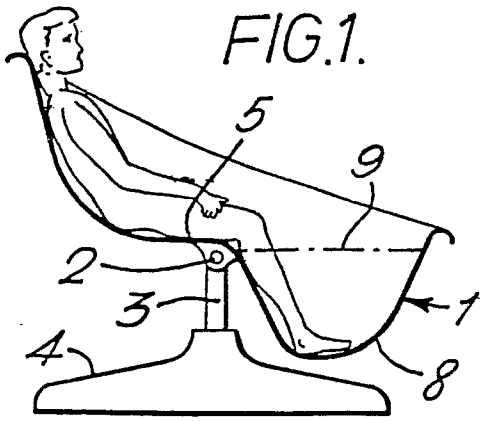


FIG.2.

FIG.3.

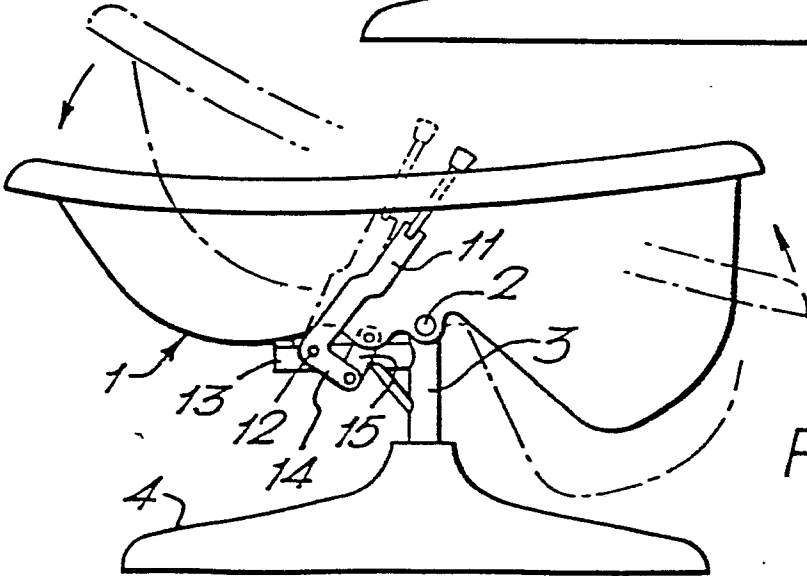
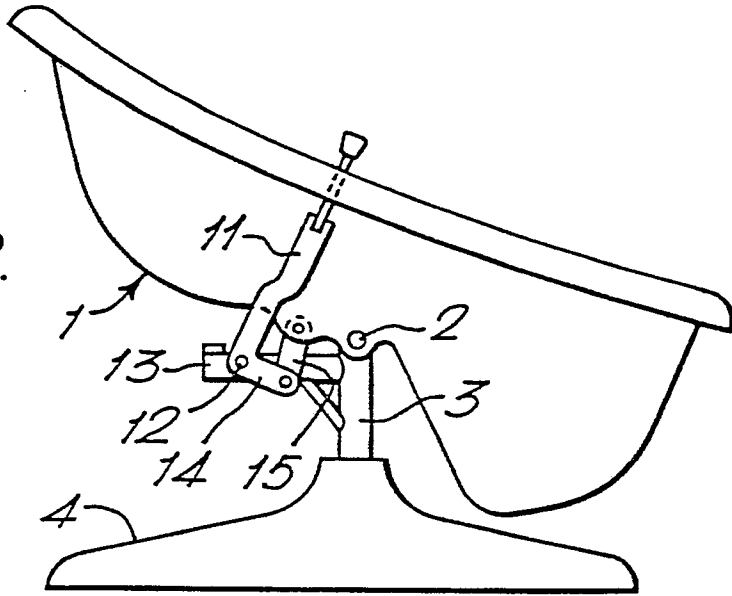


FIG.4.

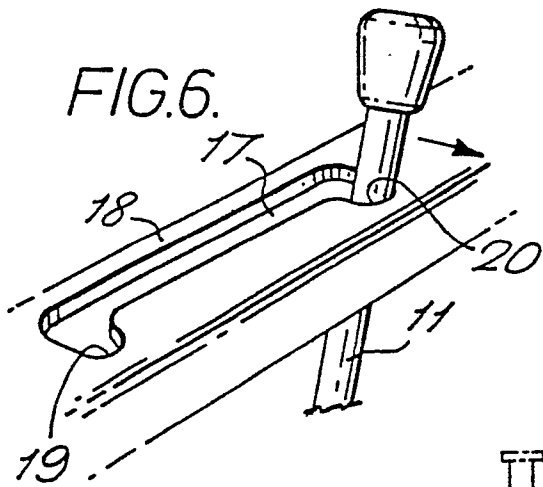


FIG. 6.

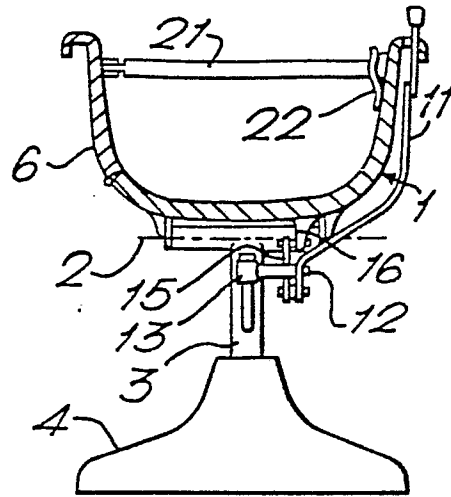


FIG. 5.

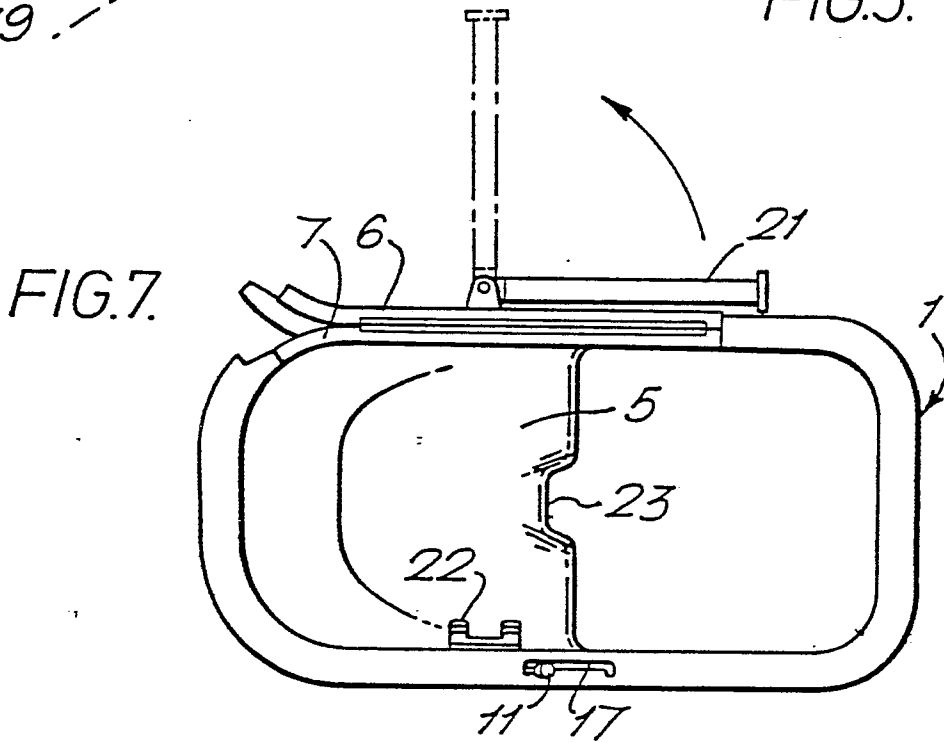


FIG. 7.

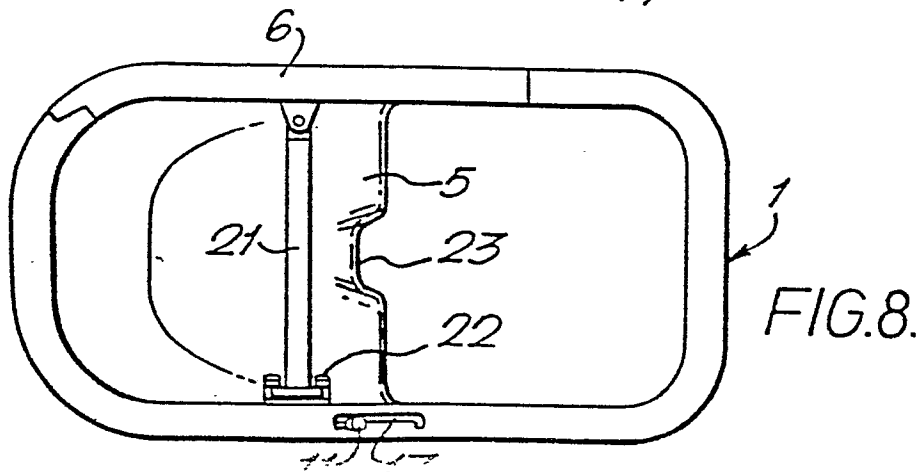


FIG. 8.