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(54) **Shower chair**

(57) A foldable shower chair (1) comprising at least four legs (3-6) connected to a seat surface support structure (7), said chair having a first, unfolded and stable position of use and a second, folded position in which the chair occupies less space than in said first position, wherein said legs (3-6) can be pivoted to change from said first to said second position and vice versa. A pair of lateral, left and/or right side legs (3,4;5,6) are

rigidly connected to each other by way of a connection profile (39,40), said connection profile (39,40) being pivotally connected to a lower surface of the seat surface support structure (7) and said legs (3-6) are fixed and stabilised in said unfolded position of use by way of at least one locking mechanism (8-23), said locking mechanism rigidly fixing said legs to said seat surface support structure (7).

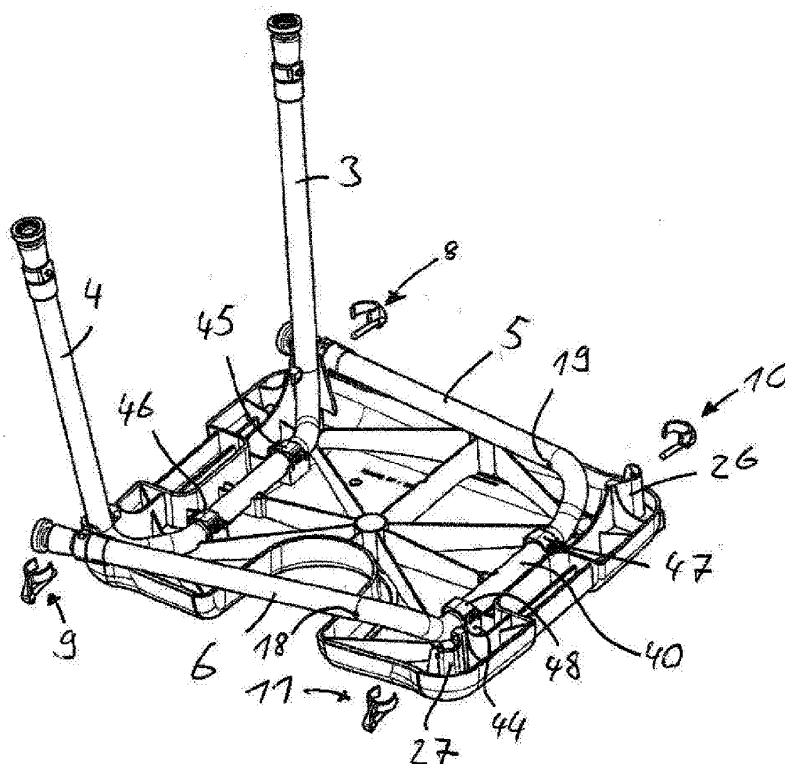


Figure 9

Description

Technical Field

[0001] The present invention relates to a chair with pivotable legs. The chair of the invention is particularly suitable as a shower chair in shower rooms.

Prior Art and the Problem Underlying the Invention

[0002] Currently available seating furniture for bathrooms and shower rooms are supplied with rigidly mounted legs or with separately supplied legs. This situation has the disadvantage that these products require a lot of space during transport or, in the second case, need to be mounted by the customer with tools. When the seating furniture is stored because it is not needed, it again occupies a lot of space.

[0003] Elderly person and persons suffering from any kind of disablement may require seating furniture for bathrooms in different situations requiring different properties. For example, when taking a shower, a stool devoid of arm- and backrests may be most appropriate. In some situations, for example when taking a bath, a seat surface that can be placed on a frame structure fixedly arranged in the bathing tube is preferable. Accordingly, it is an objective of the invention to provide a shower chair that can be easily adapted to a specific use or to the preferences of the user.

[0004] The present invention addresses the problems depicted above.

Summary of Invention

[0005] The present invention relates to a foldable chair with pivotable legs.

[0006] In an aspect, the present invention relates to a foldable shower chair comprising at least four legs connected to a seat surface support structure, said chair having a first, unfolded and stable position of use and a second, folded position in which the chair occupies less space than in said first position, wherein said legs can be pivoted to change from said first to said second position and vice versa, said chair being characterized by the features defined in claim 1.

[0007] Further important features of the shower chair of the present invention are defined in the claims depending of claim 1.

Brief Description of the Drawings

[0008]

Figure 1 shows an embodiment of a chair of the present invention in a front perspective view.

Figure 2 shows the same chair in the same view as shown in Figure 1, with the removable backrest being

removed.

Figure 3 shows the same chair in the same view as shown in Figure 2, with the removable armrests being removed.

Figure 4 shows the chair of Figure 3 up-side-down in a front perspective view, showing the attachment of the legs of the chair to the seat surface support structure.

Figure 5 shows in greater detail the left side of Figure 4 in a partially exploded view.

Figure 6 is as Figure 5, with further elements shown in an exploded view.

Figure 7 is as Figure 4, with the left side of the Figure being shown in an exploded view.

Figure 8 is as Figure 4, with the clip holder elements of the locking mechanism being disengaged from the legs of the chair. The legs of the chair can now be pivoted resulting in the folding of the chair.

Figure 9 is as Figure 8, with the legs on the right side of the figure (the left side of the chair) being pivoted downwards. This figure shows the chair of the invention in a half folded position.

Figure 10 is as Figure 9, with in addition the legs of the left side of the figure (right side of the chair) being pivoted downwards. This figure shows the chair of the invention in a completely folded position suitable for transport or storage of the chair.

Figure 11 is as Figure 10, with the clip holder elements being clipped back onto the legs of the chair.

Detailed Description of the Preferred Embodiments

[0009] The invention will be illustrated and described herein below by way of the exemplary embodiment shown in the figures.

[0010] For the purpose of the present specification, situations and directions of the chair and elements thereof are determined by the perspective of a user seated in the chair. Accordingly, the left side of the chair corresponds to the right side of Figure 1 and vice versa. The situations or directions "up" or "top" and "down" or "bottom", "rear" or "back" and "front", "behind" and "in front", "distal" and "proximal", "lateral" and "central" follow the same rule. The term "longitudinal" indicates a direction of an element, such as a tube, having, as a major direction component, the rear-to-front direction. Such an element may also to some or to a minor extent be skewed laterally and or towards the bottom or the top.

[0011] **Figure 1** shows the chair of the invention com-

prising four legs 3-6 carrying a seat surface support structure 7. The upper surface of the seat surface support structure forms the seat surface 28. The chair comprises left and right lateral armrests 60, 70 and a backrest 80, all of which are independently removable, as will be seen in the following figures. The seat surface support structure and thereby also the seat surface 28 comprises a central recess 90, in the front, central part of the seat surface support structure 7. The recess may extend over at least one quarter, for example at least one third of the breadth and at least one quarter, for example at least one third of the rear to front length of the seat surface support structure. The recess is provided in order to facilitate cleaning of the intimate areas of a user, in particular for elderly or disabled persons suffering from a reduced mobility.

[0012] The legs 3-6 of the chair shown in Figure 1 are provided in the form of telescopically guided, inner and outer tubes, allowing the adjustment of the height of the chair by way of a lockable telescope mechanism. The bottom of each leg designed to reside on the floor when the chair is put in place comprises a cap 61-64, which is preferably made from a material that is suitable to prevent gliding and/or improve adhesion of the chair on smooth and/or wet surfaces as is often the case in bathrooms, shower cabins or bathing tubes. In this way, the danger of slipping or falling down is reduced. The cap's material may comprise rubber.

[0013] Figures 2 and 3 show the chair of Figure 1 with the backrest and both armrests, respectively, being removed. In the wheelchair of the invention, back- and armrests 60, 70, 80 are all attached by way of a click mechanism to the seat surface support structure 7. The click mechanism is preferably such that said arm and backrests can be manually removed without need of any tool and/or without the need of performing any unscrewing. The click mechanism of the arm and backrests may be based on the flexibility of the material of the back- and/or armrests and/or of the seat surface support structure. A preferred material possessing these flexibility characteristics is plastic.

[0014] As can be seen in Figure 3, the seat surface support structure 7 comprises a pair of left and right openings 61, 71, suitable to receive structures provided on the left and right armrests 60, 70 (Figure 1) accurately and snugly fitting into these openings. For the backrest, openings are provided in the rear end of the seat surface support structure 7, which cannot be seen in the figures, but which follow the same principle as the armrests.

[0015] The removability of the back- and/or armrests of the chair of the invention provide several advantages in terms of adaptability and user friendliness. The chair can be adapted to more situations given in specific shower rooms and to the preferences and capacities of a user.

[0016] For example, in a narrow shower cabin, the chair as shown in Figure 3 with arm- and backrests removed may be advantageously used, because it does not hinder any movement of the user sitting on the chair

in the cabin.

[0017] Figures 4-10 show the chair of Figure 3 (arm- and backrests removed) in an up-side-down situation, thereby revealing the way the legs 3-6 of the chair are attached to the seat surface support structure 7.

[0018] Figure 5 shows in greater detail the rear and front right side legs 3, 4 of the left side of the chair. It is noted that the right side is arranged in a mirror imaged manner and that the discussion below with respect to the left side seen in Figure 5 also applies to the right side. It can in particular be seen that the rear and front right side legs 3 and 4 are rigidly connected with each other by way of a connection profile 39 extending in a longitudinal rear-to-front direction in parallel to the seat surface 28. The connection profile 39 is straight and connected, as illustrated at the front end of Figure 5, by way of two successive bends in different directions 29, 30 to the profile of the front right leg 4 of the chair. The same applies to the connection of the rear end of the connection profile 39 with the rear right leg 3. The pair of rear and front legs of one side 3, 4 thus form a U-shaped profile together with the connection profile 39 of the right side of the chair.

[0019] The structural elements allowing the pivoting movement of the legs of the chair 1 will now be explained with reference to Figures 4 to 6. The folding process as such is illustrated in Figures 8-11.

[0020] In the position of use of the chair the legs 3-6 are unfolded and rigidly secured to the seat surface support structure 7 (Figure 4). As also understood with a view to Figure 5, the elements that rigidly fix the two legs of one side of the chair are on the one hand two brackets 41 provided in a rigid manner on the seat surface support structure 7, in which the left connection profile 39 connecting the left rear and front legs 3, 4 is placed. On each of the two brackets 41, 42 a clamp 45, 46 is provided, which constrains the tubular connection profile 39 to the seat surface support structure. The clamps 45 and 46 can be removed, as illustrated in Figure 6. In this way, (and by also removing the holder elements 8 and 9 of the left side as discussed below) the entire structure comprising the left rear and front legs 3 and 4 and the connecting profile can be completely removed from the chair. However, such a complete removal is not envisaged to be conducted by the user and cannot be easily done by hand for security reasons. In some situation such a removal of the legs may, however be useful as discussed further below.

[0021] At the same time, on each leg a clip holder element 8-11 is provided, which will be described further below. The clip holder elements 8-11 are retained in their position by way of a clip-mechanism 31-34, which allows the manual detachment of the holder element from its position. In Figure 5 (and 6), the holder elements 8, 9 of the legs 3 and 4, respectively, of the left side of the chair, are shown in exploded form, that is detached from their usual position as shown in Figure 4.

[0022] Each holder element 8-11 comprises two functional parts, namely a clip mechanism 31-34 and an el-

ement forming part of a locking mechanism. This latter element is, in the embodiment shown, provided in the form of a pin 12-15, which engages with structures provided in the respective leg and the seat support structure thus locking these together, as will be described hereinafter. Although in Figures 5 and 6 only the left side of the chair is shown, the same situation applies on the right side, and reference numerals are generally indicated for the structural elements of all legs of the chair, some of which can thus only be seen in other figures. However, the functioning of the holder element will now be detailed at the example of front leg 4 and the corresponding holder element 9 as seen in Figures 5 and 6.

[0023] In Figure 5, the holder element 9 of the left front leg 4 is shown in a disengaged position. A pin 13 can be seen as well as a band 32 having the shape of an open circle. The band 32 and the pin are rigidly connected by way of a connecting bridge, which does not carry a reference number. The entire holder element 9 is a one-piece element. The band 32 constitutes at the same time the clip-mechanism 32, since it can be engaged in a clip-like manner around the leg 4, as shown, for example, in Figure 4. This clip 32 can be removed by hand from the leg and replaced around the leg by hand, too. The clip mechanism is thus realized by the elasticity of the band 32, which is made, for example, of an elastic metal or plastic material, and which is such that little force only is required to unclip the holder element 9 from the leg 4 or to clip it onto the leg, respectively. Still, the clip 32 is sufficiently rigid to prevent spontaneous falling off from the leg without specific and directed manual drawing force being applied by the user.

[0024] From the position of the disengaged holder element 9 in Figures 5 and 6, it can be seen that the pin 13 has been removed from a hole in the form of a bore 21 provided in a retainer structure 25. The retainer structure 25 is rigidly connected to the seat surface support structure 7 and may be made as a one piece element with the latter, or may be fixed by ways of screws or welding. The retainer structure 25 has a shape that partially surrounds and thus harbours the upper end of the left front leg 4 when the latter is in the unfolded position. The leg 4 also comprises a bore 17, which cannot be seen in Figure 5 and 6, because it is covered by the retainer structure 25 in this position. The bores 16, 17 in the legs 3 and for of the left side of the chair can, for example be seen in Figure 7.

[0025] As can be understood from comparing Figure 4 with Figure 5, showing the holder element 9 in a clipped-on and in a disengaged position, respectively, the pin 13 can be placed through bores 21 and 17 in the retainer structure 25 and the leg 4, respectively, and is sufficiently long to extend into a second bore in a reinforced part 36 of the retainer structure 25. Therefore, when the holder element 9 is placed on the leg 4 as shown in Figure 4, the pin 13 is stably harboured and locked within said bores 21 and 17 and thus rigidly locks the leg 4 within or to the retainer structure 25 of the seat surface support

structure 7. Due further to the bracket and clamps 41, 42; 45, 46, respectively, fixing the connection profile 39 as described above, the leg 4 is rigidly retained or fixed and the chair is stabilised in Figure 4. The chair of Figure 4, being the same chair as shown in Figure 3 in an upside-down position, is thus stable and can be used. The chairs as shown in Figures 1-4 thus all relate to the position of use of the chair.

[0026] Identical holder elements 8, 10, 11, retainer structures 24, 26, 27, bores 20, 22, 23 in the respective retainer structures and bores 16, 18 19 are provided with respect to the three other legs 3, 5, 6 of the chair 1 in identical manner as can be seen from the various figures. Since pairs of left and right lateral legs 3, 4; 5, 6 are rigidly connected with each other, it is necessary to remove the two clip holder elements 8, 9; 10, 11 of one side in order to be able to pivot the legs of one side downwardly, as described further below.

[0027] From the way a pair of lateral legs 3, 4; 5, 6 are connected to each other by way of the connection profile 39 and 40, respectively, by the way said connection profiles 39, 40 are secured to the lower surface of the seat surface support structure 7 and by the way the legs 3-6 are individually locked by way of a manually removable clip holder elements 8-11 to retainer structures 24-27 applied rigidly in the four corners of the seat surface support structure 7, as all discussed above, the mechanism of folding and unfolding the legs 3-6 becomes apparent.

[0028] Figure 8 shows the entire chair 1 corresponding to the extract of Figure 5, with the clip holder elements 8-11 being removed, for example by the user of the chair. Each pair of legs 3, 4 and 5, 6, respectively, is now pivotable, with the axis of pivoting being the tubular connecting profile 39, 40, of the left and right side of the chair, respectively. Since, for example, legs 5 and 6 of the right side are rigidly connected via the connecting profile 40, they can be pivoted only together. Furthermore, due to the situation and form of the retainer structures 26, 27, an outward pivoting movement of the legs 5 and 6 is prevented by said retainer structures, which not only stabilise the legs, but also block them in the outward direction. The pivoting movement by rotation of the tubular connection profiles 39 and 40 is further enabled by the way the latter are fixed by brackets 41-44 and clamps 45-48 to the seat surface support structure 7, as described above. In particular, said brackets and clamps surround the respective connection profile and thus allow for a rotational movement of the tubular connection profiles 39, 40.

[0029] In Figure 9, the right side pair of legs 5 and 6 are pivoted downwardly, resulting in the chair 1 being in a partially (or half-) folded position. Since the legs 5 and 6 are not exactly in a parallel arrangement, but slightly diverge in the rear and front direction, respectively, the bottom ends of the downwardly pivoted legs 5 and 6 do not interfere with the legs 3 and 4 of the left side of the chair, but come to lie on the front and rear borders of the seat surface support structure 7.

[0030] In Figure 10, the left side pair of legs 3 and 4 are pivoted downwardly, resulting in the chair being in a completely folded position. As can be seen, the legs 3 and 4 abut against legs 5 and 6, respectively.

[0031] Figure 11 differs from Figure 10 only in that the clip-holders 8-11 are clipped again on their respective legs 3-6. Of course, in the folded position the upper ends of the legs 3-4 are not harboured or in contact with the retaining structures 24-27 and the pins of the clip holders do thus not pass through the bores 20-23 provided in said retaining structures. The pins 12-15 are simply placed in the bores 16-19 of the legs 3-6. This can best be understood from comparing Figure 10, where the bores 16-19 are visible, with Figure 11, where the clip-holders 8-11 are provided at the positions of said bores.

[0032] As can be understood from the above described folding process that the chair of the present invention can easily and conveniently be folded by hand without the need of any tool and/or without the need of any particular skills.

[0033] Thanks further to the removable back- and armrests, the folded shower chair can be stored and transported in a particularly space-efficient manner.

[0034] The chair of the invention is particularly useful as a shower chair, that is a chair that is preferably to be used in bath-rooms, including shower cabins, and the like. It is noted that the seat surface support structure 7 and also the seat surface 28 is preferably made from plastic material.

The caps 61-64 may be part of a screw-based mechanism, which allows slight modification of the length of the legs, so that all legs can be optimally placed on the floor even on uneven ground.

[0035] As has been mentioned above with reference to Figure 6, the legs 3-6 can be completely removed from the chair by opening the clamps 45, 46; 47, 48 provided on each side of the chair and retaining the legs at the connection profiles 39, 40 on brackets 41, 42; 43, 44 (the brackets 43, 44 of the left side of the chair can be seen in Figure 4). With the pivotable legs being removed, the seat surface support structure can be fixed on a different support than legs, for example onto a support frame that is provided on a bathing tube or on a wheelchair. The same brackets 41-48 and clamps can be used for fixing the seat surface support structure to such a support frame.

[0036] For example, a rigid frame (not shown) can be installed on a bathing tube and the chair of the invention can then be fixed on this frame. The user can then freely add or remove each of the armrests and/or the backrest independently, as desired.

Claims

1. A foldable shower chair (1) comprising at least four legs (3-6) connected to a seat surface support structure (7), said chair having a first, unfolded and stable

position of use and a second, folded position in which the chair occupies less space than in said first position, wherein said legs can be pivoted to change from said first to said second position and vice versa, **characterized in that** a pair of lateral, left and/or right side legs (3, 4; 5, 6) are rigidly connected to each other by way of a connection profile (39, 40), said connection profile (39, 40) being pivotally connected to a lower surface of the seat surface support structure (7) and **in that** said legs (3-6) are fixed and stabilised in said unfolded position of use by way of at least one locking mechanism (8-23), said locking mechanism rigidly fixing said legs to said seat surface support structure (7).

2. The shower chair according to claim 1, wherein said locking mechanism (8-23) is configured so as to be unlocked and locked by hand by a user without the need of any tool.
3. The shower chair according to claim 1 or 2, wherein said locking mechanism comprises at least one pin (12-15), said pin being guided through at least one bore (16-19) formed in at least one leg and through at least one bore (20-23) formed in at least one retaining structure (24-27) provided on said seat surface support structure (7).
4. The shower chair according to claim 3, wherein said at least one pin (12-15) is arranged so as to be movable by hand and without the need of any tool from a locked position used in the unfolded position of use of the chair to a disengaged position, wherein in said disengaged position said pin is disengaged from said bore (16-19) of said leg and/or from said bore (20-23) of said retainer structure (24-27), wherein in said disengaged position, said at least pair of lateral legs is pivotable.
5. The shower chair according to claim 4, wherein said locking mechanism (8-23) comprises a clip holder element (8-11), in which said pin (12-15) is rigidly connected to a clip mechanism (31-34), said clip mechanism (31-34) being configured so as to be engaged in a clip-like manner around said leg (3-6) when said pin (12-15) is in its locked position.
6. The shower chair according to claim 5, wherein a pair of lateral, left and/or right side legs (3, 4; 5, 6) can be pivoted upon manual manipulation of at least two lateral clip-mechanisms (31-34) of said pair of legs.
7. The shower chair according to any one of the preceding claims, wherein said pair of legs (3, 4; 5, 6) connected by a connection profile (39, 40) forms a U-shaped profile.

8. The shower chair according to any one of the preceding claims, wherein said connection profile (39, 40) is pivotably harboured in at least one bracket (41-44) and retained by a clamp (45-48). 5
9. The shower chair according to any one of the preceding claims comprising a pair or lateral, removable arm rests and/or a removable backrest.
10. The shower chair according to any one of the preceding claims, wherein the seat surface structure (7) comprises a recess (90) in its front, central part, said recess extending over at least one quarter of the breadth and at least one quarter of the rear to front length of the seat surface support structure (7). 10 15
11. The shower chair according to any one of the preceding claims, wherein said seat surface support structure (7), and, if applicable, said lateral armrests (60, 70) and said backrest (80) substantially consist of plastic material. 20
12. The shower chair according to any one of the preceding claims, wherein at the end of each leg (3-6), designed to come in contact with the floor on which the chair is placed, a cap (61-64) is provided, said cap being made of a material suitable to minimize gliding of the chair. 25

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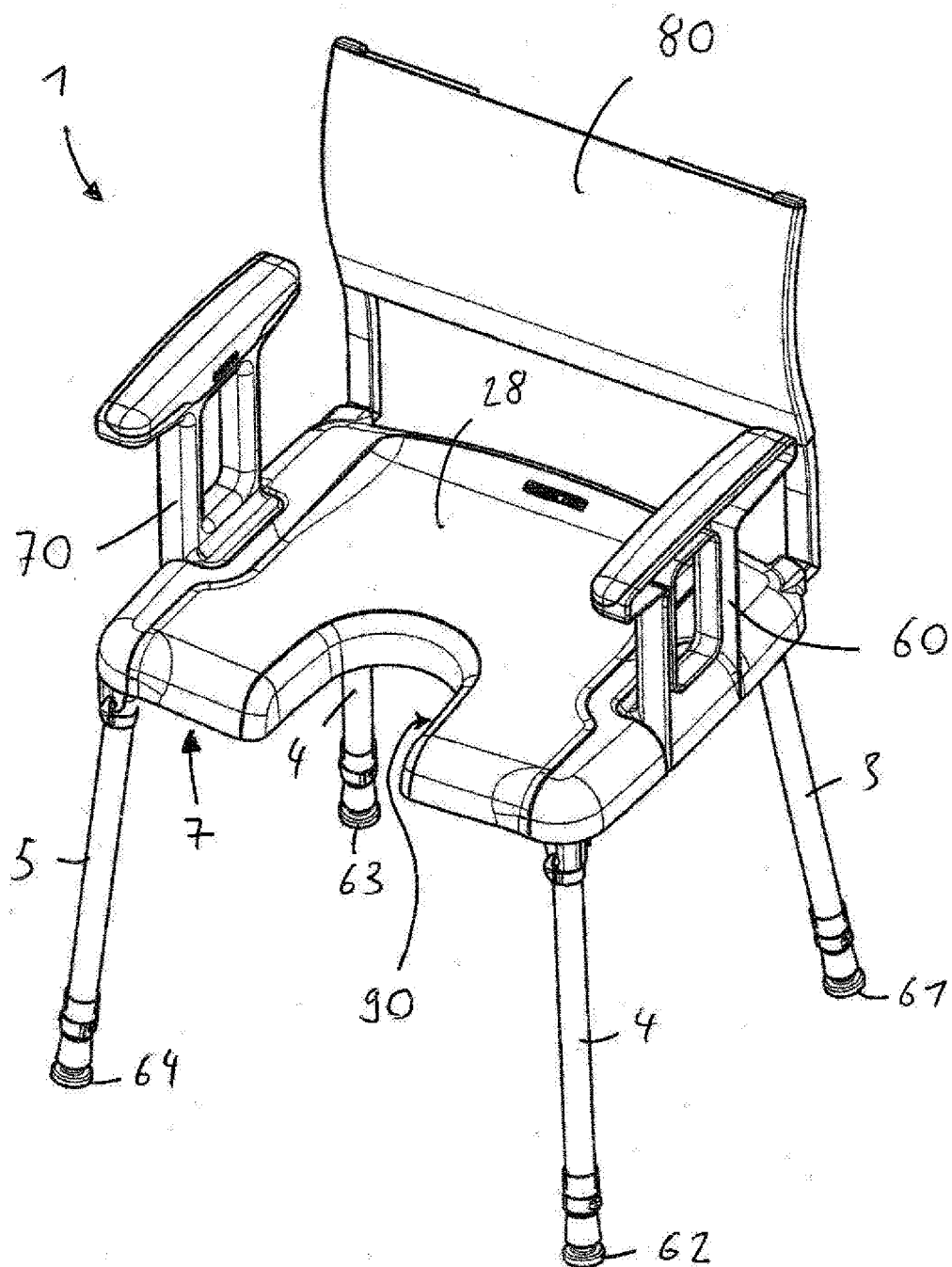


Figure 1

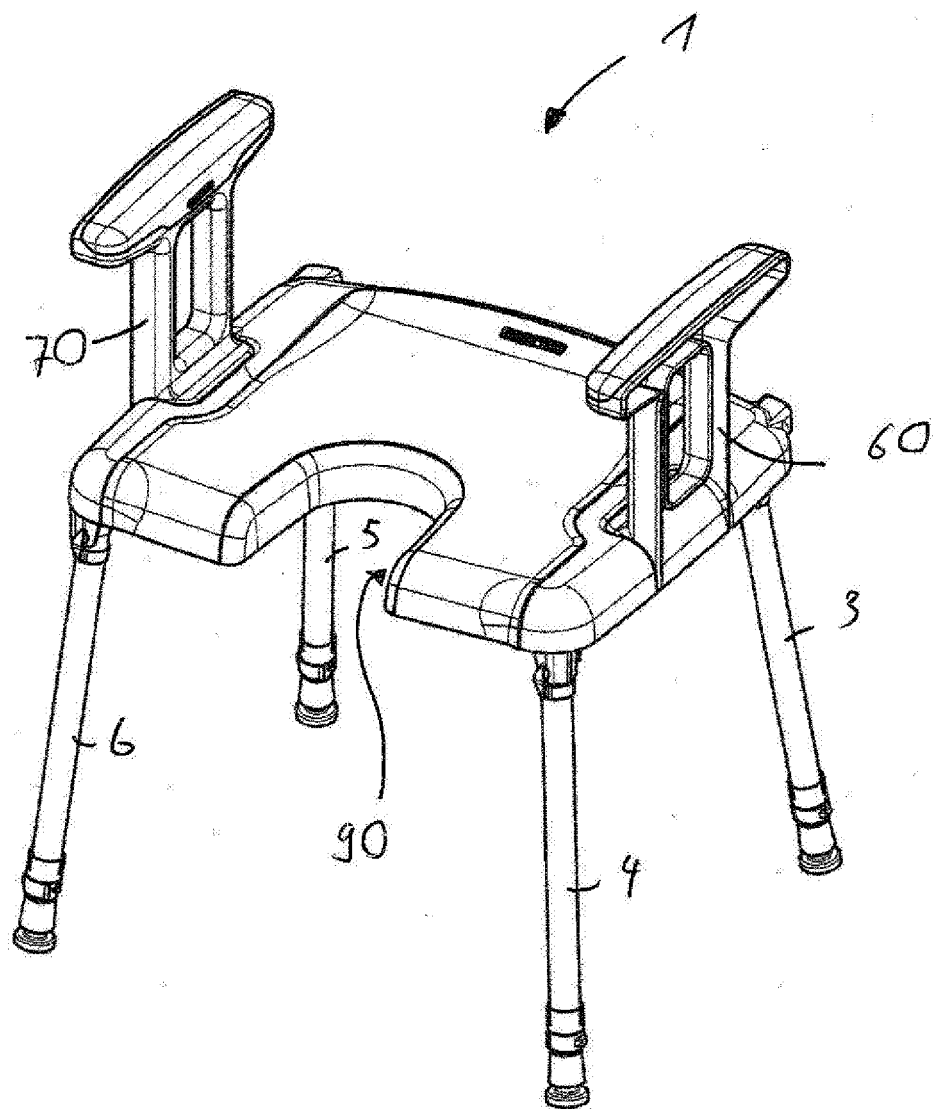


Figure 2

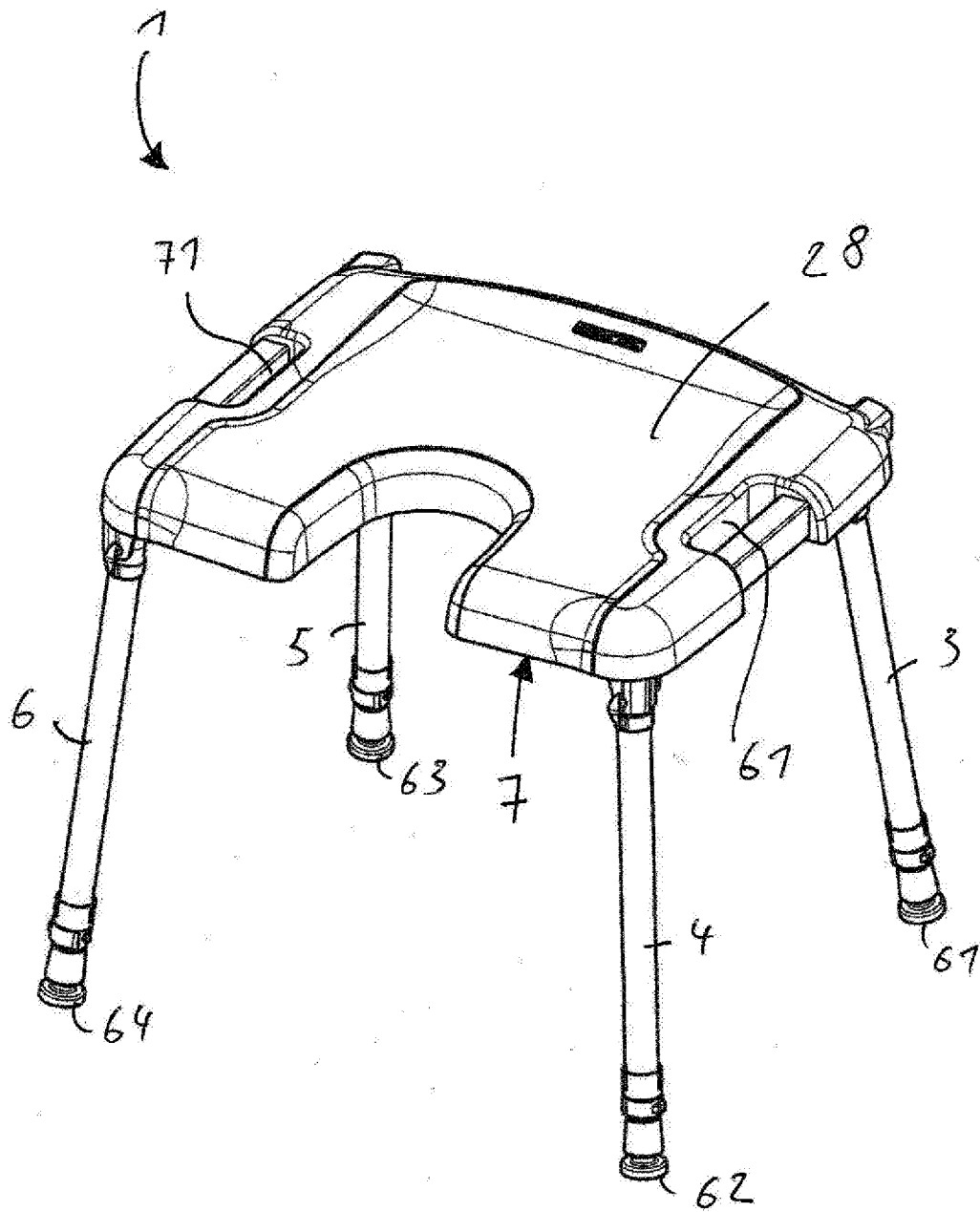


Figure 3

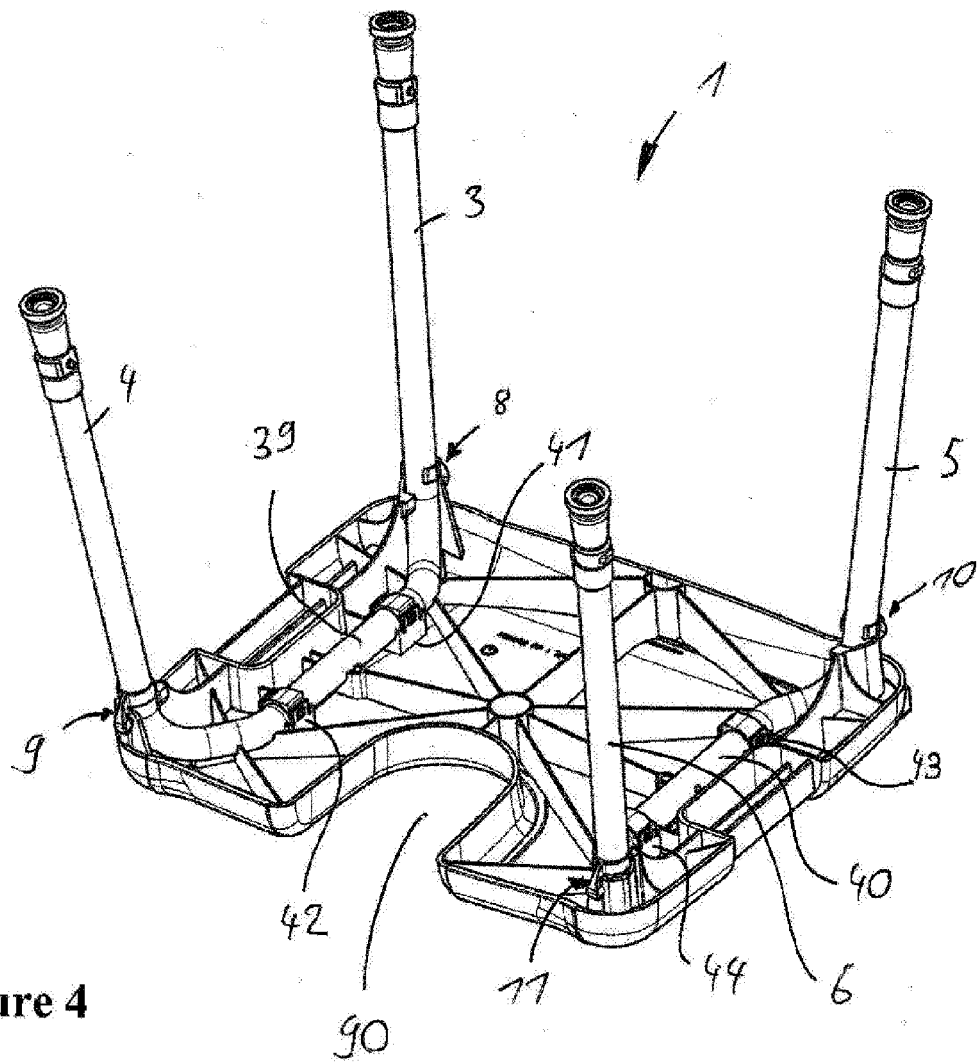


Figure 4

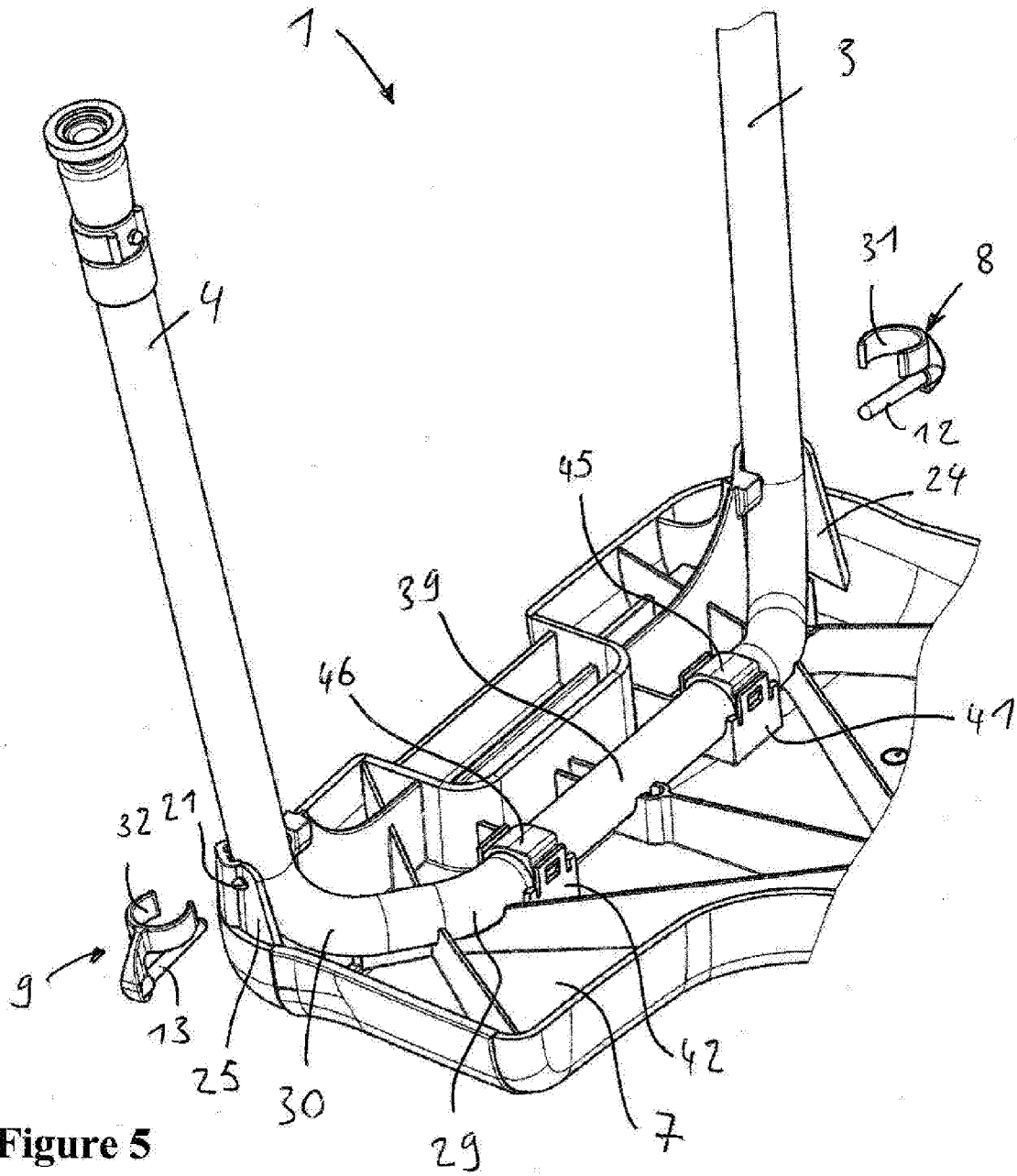


Figure 5

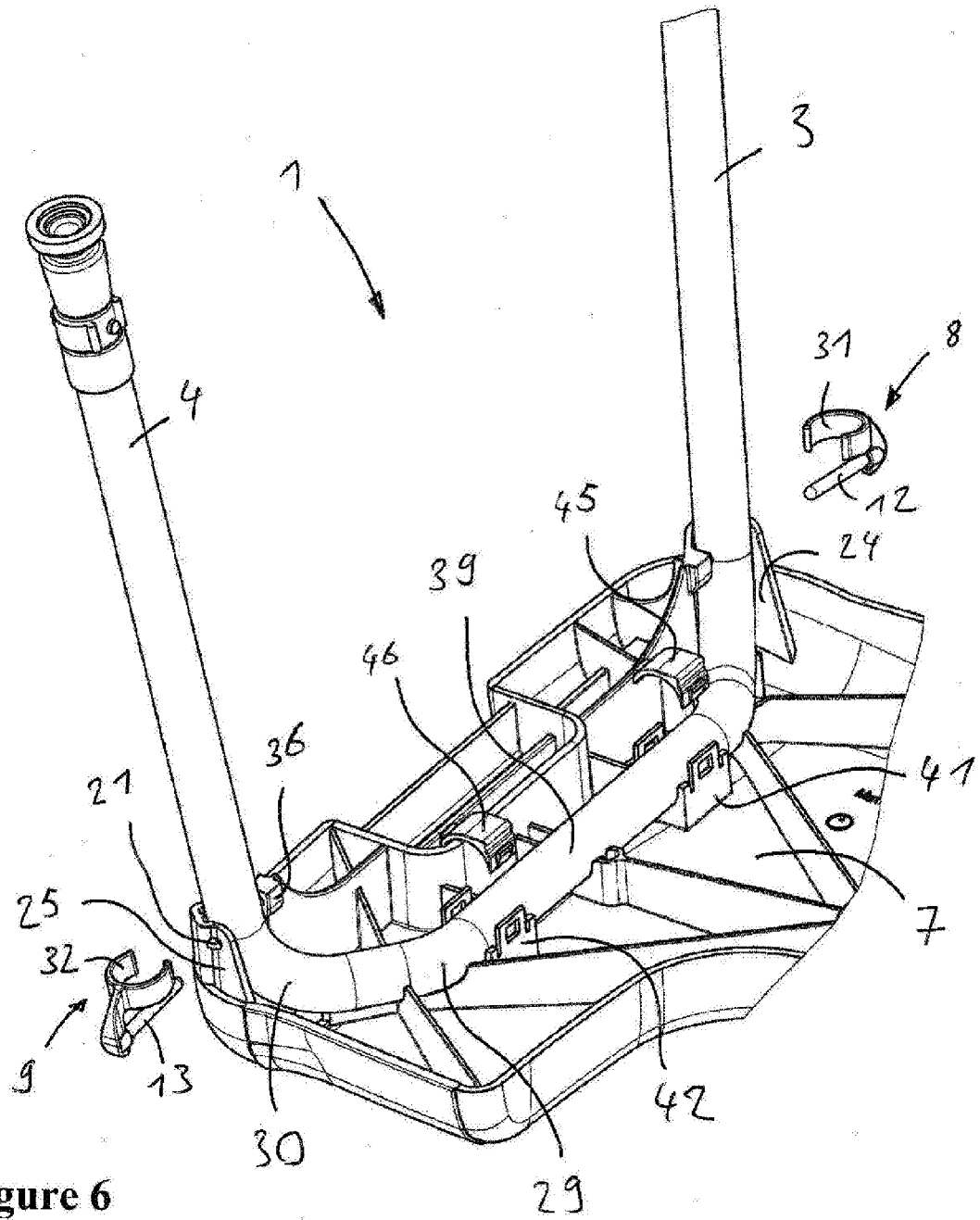


Figure 6

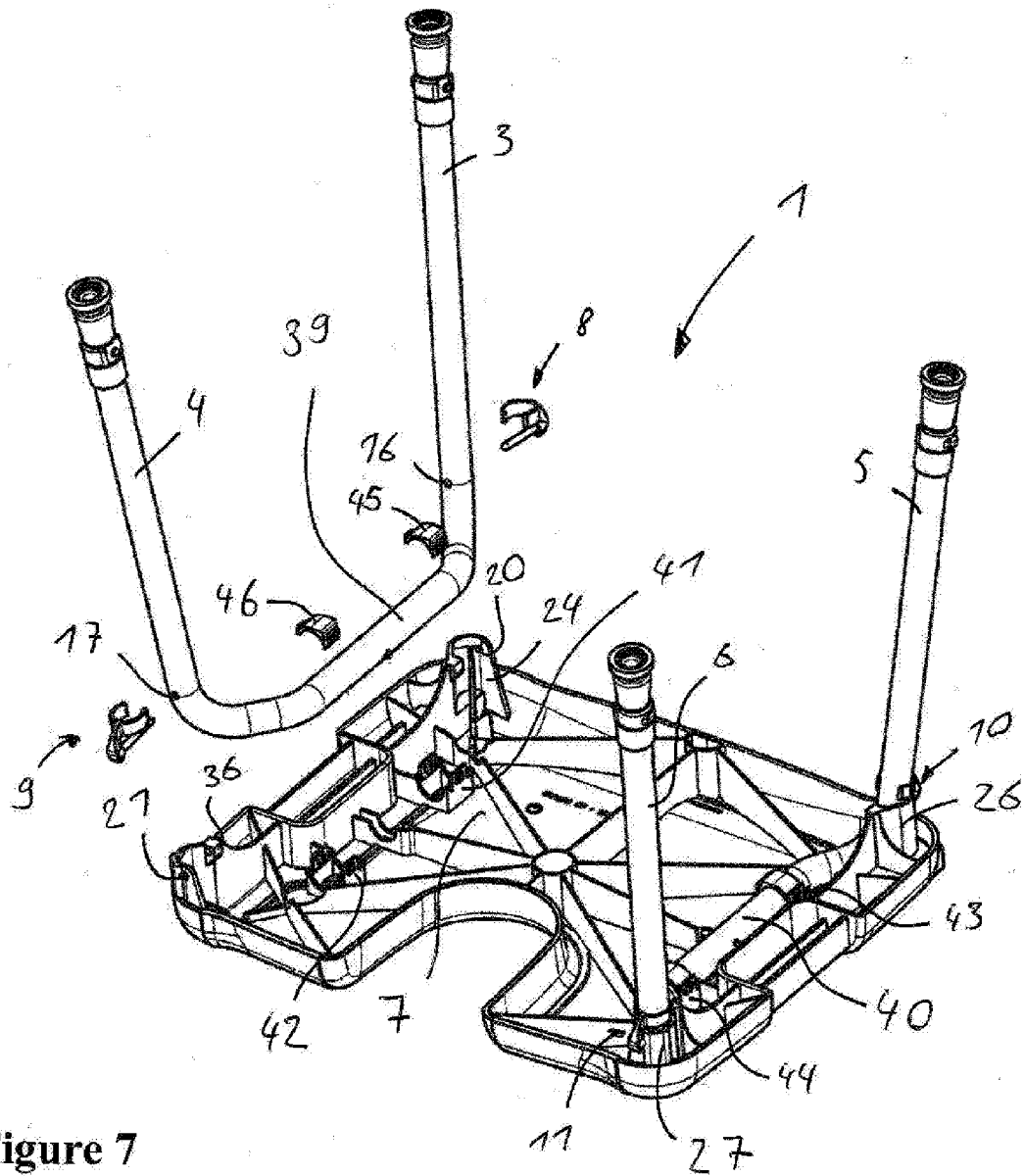


Figure 7

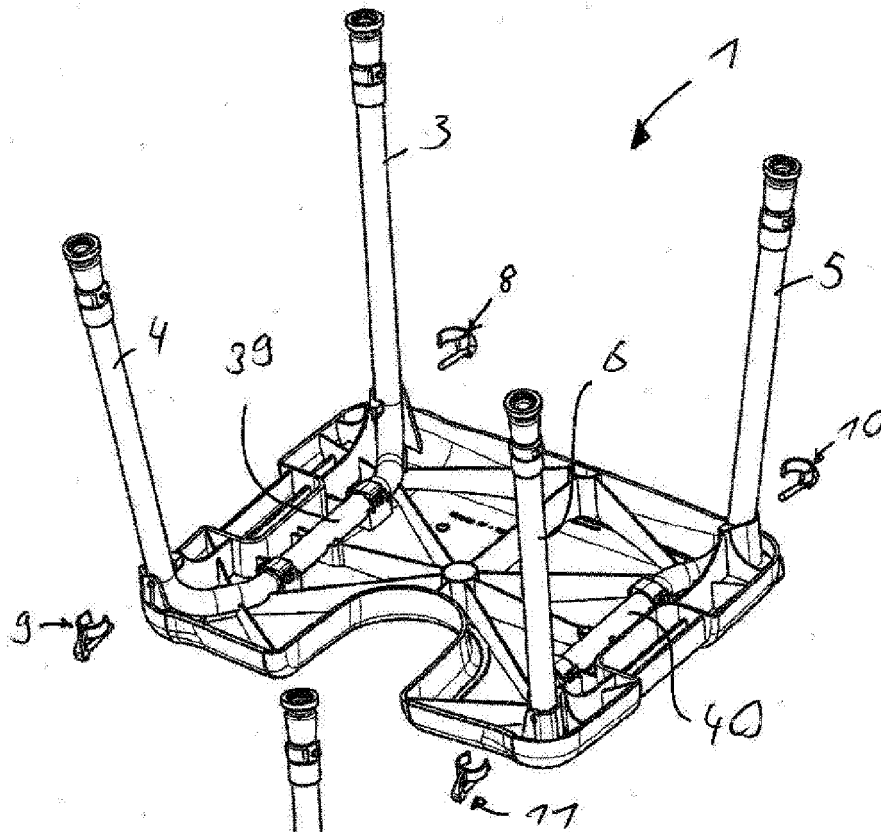


Figure 8

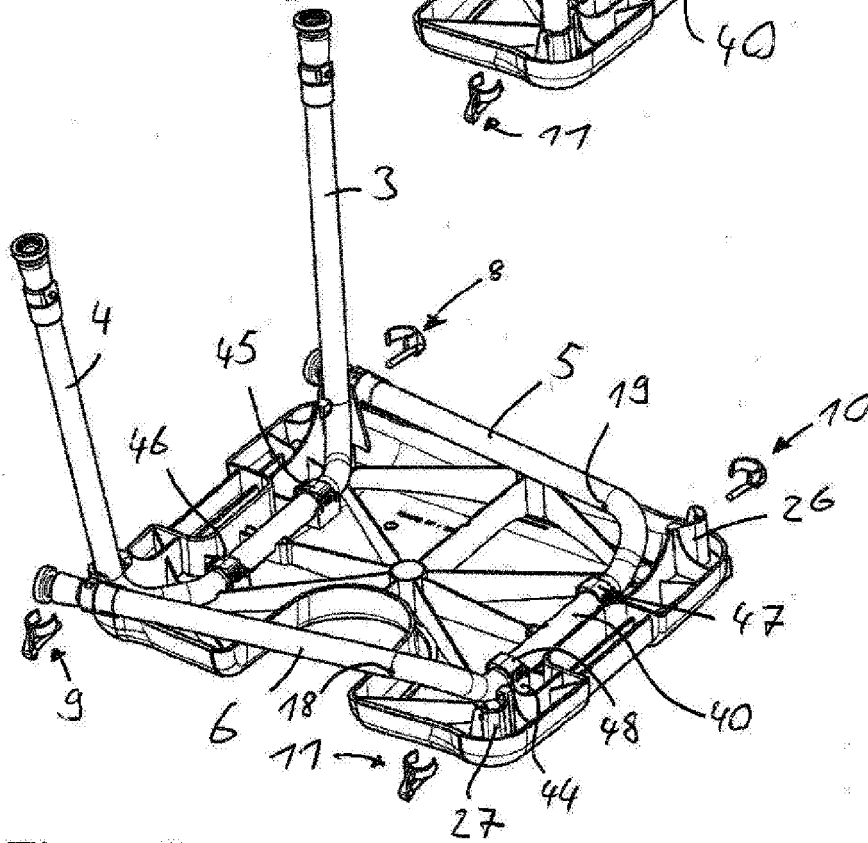


Figure 9

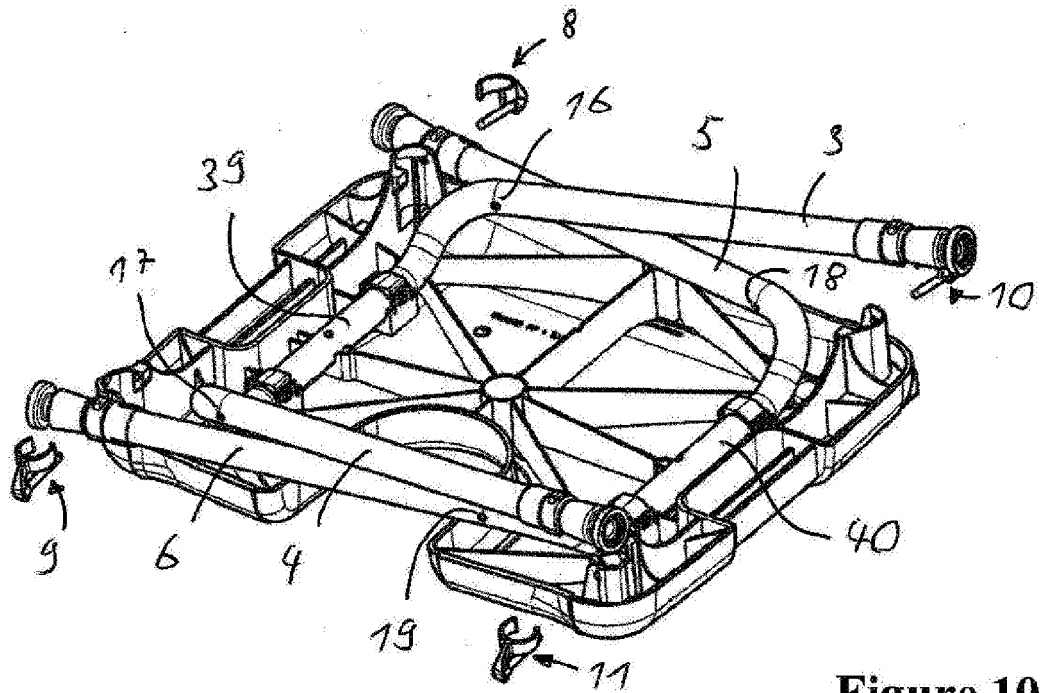


Figure 10

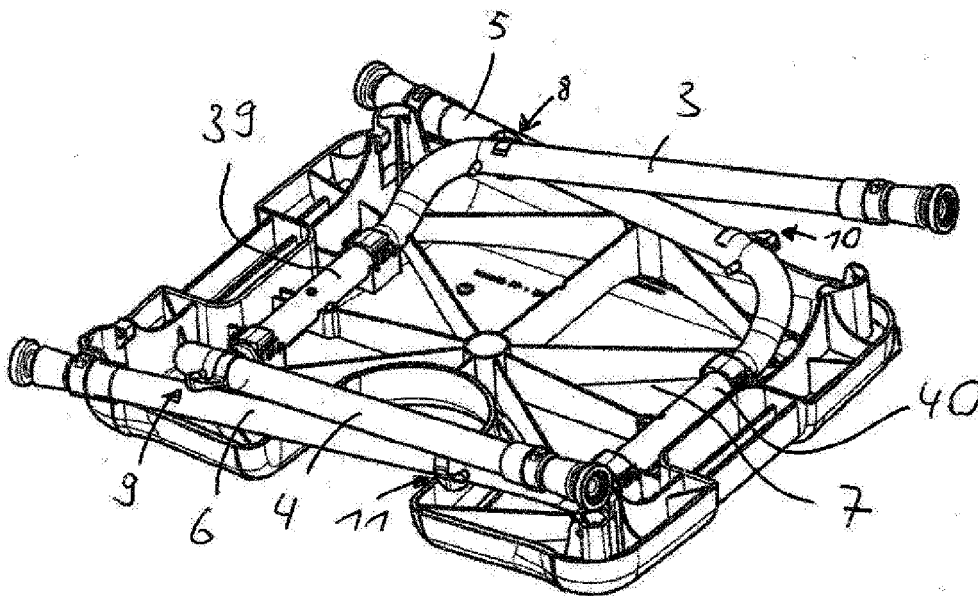


Figure 11



EUROPEAN SEARCH REPORT

Application Number
EP 09 18 0458

DOCUMENTS CONSIDERED TO BE RELEVANT			
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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 9 April 2010	Examiner Fajarnés Jessen, A
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 09 18 0458

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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