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(54) Toiletseat.

(57) The invention provides a toilet seat comprising a seating (1) and means for mounting the seat to a toilet bowl (16), wherein the mounting means are provided with mounting elements and at least one shaft hole (8) formed by a ring (7) partially interrupted at least at one position, which shaft hole co-acts with a shaft (12) for pivoting of the seating (1) relative to the mounting means, the shaft being formed by at least two fragments (13,14) of a ring with a diameter smaller than the diameter of the shaft hole, wherein at least one of the fragments is smaller than the interruption in the shaft hole and the other fragment(s) is (are) larger than or equal to the interruption in the shaft hole. At least one set of three contact points can preferably be defined between the shaft hole and the physically present part of the shaft, wherein the triangle formed by the three contact points encloses the centre of the shaft. The toilet seat can further comprise a lid (11).

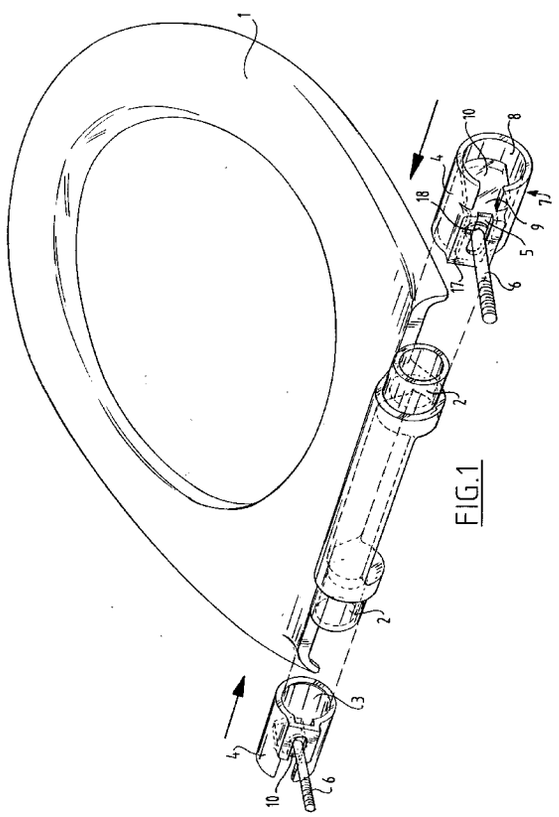

FIG.1

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The present invention relates to a toilet seat.

In the designing of toilet seats the aspect of hygiene is always an important consideration. Poorly accessible nooks and crannies are difficult to clean and therefore undesirable from the point of view of hygiene.

In addition, both seating and lid are regularly raised and lowered. This makes great demands of the hinges as well as the mounting. It has therefore been found that the hinges and the mounting elements of a toilet seat are often the first parts to fail.

The present invention has for its object to provide a toilet seat which is designed such that it does not contain any poorly accessible places, while an optimal hinging function with a long lifespan is nevertheless obtained.

This is achieved in the invention by a toilet seat comprising a seating and means for mounting the seat to a toilet bowl, wherein the mounting means are provided with at least one shaft hole formed by a ring partially interrupted at least at one position, which shaft hole co-acts with a shaft for pivoting of the seating relative to the mounting means, the shaft being formed by at least two fragments of a ring with a diameter smaller than the diameter of the shaft hole, wherein at least one of the fragments is smaller than the interruption in the shaft hole and the other fragment(s) is (are) larger than or equal to the interruption in the shaft hole.

In one embodiment of the invention the mounting means are formed by a tube provided on either side with a shaft hole and the shafts co-acting therewith form an integral part of the seating. In another embodiment the mounting means are formed by two end pieces provided with a shaft hole and the shafts co-acting therewith form an integral part of the seating. The end pieces are fixed on the toilet bowl after the fragmented shafts of the seating are hooked into the shaft holes of the end pieces and the end pieces are rotated relative to the seating.

When the toilet seat also comprises a lid, the mounting means are preferably formed by two sleeves which are releasably connected to the seating and in which the shaft holes are arranged, and the shafts co-acting therewith form an integral part of the lid. In this preferred embodiment the sleeves receive on one side a shaft connected integrally to the seating. This is generally a conventional shaft which co-acts with a conventional shaft hole in the sleeve. On its other side the sleeve comprises a shaft hole formed by a ring which is interrupted at one position and which is an integrally formed component of the sleeve.

Because the lid is a rigid component and the shaft is formed integrally therewith, it is not possible to slide the shaft axially into the shaft hole. However, the interruption in the shaft hole and the special shape of the shaft enable radial insertion of the shaft into the shaft hole. The shaft is formed for this purpose by at least two fragments of a ring with a diameter smaller than the diameter of the shaft hole, wherein at least one of the fragments is smaller than the interruption in the shaft hole and the other fragment(s) is (are) larger than or equal to the interruption in the shaft hole.

During mounting of the toilet seat the large fragment is first hooked through the interruption into the shaft hole. Once this fragment is situated in the shaft hole and almost makes contact with the wall of the shaft hole opposite the interruption, the small fragment, which lies in register with the interruption, can be pushed in through this interruption. When the sleeve with the shaft hole is now rotated relative to the fragmented shaft, the small fragment comes to lie out of reach of the interruption and the shaft is enclosed.

In order to prevent a tilting of the shaft in the shaft hole it must be possible to define at least one set of three contact points between the shaft hole and the physically present part of the shaft, wherein the triangle formed by the three contact points encloses the centre of the shaft. It has been found that when this condition is fulfilled no tilting is possible at any moment in the situation of use. Raising and lowering of the seating and the lid relative to each other and relative to the toilet bowl will therefore always proceed smoothly.

The sleeve also contains an opening for receiving a fastening element, such as for instance a screw. In the fastened situation the axis of the screw lies substantially perpendicularly of the longitudinal direction of the toilet seat. The interruption in the shaft hole lies substantially in the same line as the passage for the screw. In the mounted position it will therefore not be possible to take the fragmented shafts of the lid out of the shaft hole. This prevents undesired release of the lid.

In other embodiments of the invention the lid is for instance provided with conventional shafts and the fragmented shafts form an integral part of the seating. The sleeves are then positioned in a manner precisely opposed to the above described embodiment. The conventional shaft holes can also form a component of the lid while the conventional shafts form part of the sleeves. Other combinations are of course also conceivable and therefore also fall within the scope of the present invention. It is however important here that both the mounting means, such as the screw, and the shaft hole according to the invention are situated in a rotatable component.

The present invention has a number of advantages. Because the hinging function is spread over a plurality of components (sleeve and seating, or sleeve, seating and lid), the durability thereof will be increased. Due to their smooth and compact form the hinges are easy to clean and therefore more hygienic than in conventional toilet seats.

During transport the sleeves with the screws already received therein can be swung to the underside of the seating. The toilet seats thereby take up no extra space.

It has been found that due to its shape the toilet seat according to the invention is simple to produce. Because the hinge components also form part of the seating, sleeve and/or lid they can be directly co-moulded, for instance by injection moulding and the like.

Because the toilet seats can be supplied already fully assembled, time is saved during installation.

Because the mounting point, i.e. the interruption in the shaft hole, is blocked during use, the seat cannot be removed once it is mounted on the toilet bowl. This prevents the different components of the seat from becoming defective.

The toilet seat according to the invention is preferably provided with spring elements in order to absorb play in the longitudinal direction of the shaft. The construction has the advantage that the hinge can be made leak-tight for water.

It is possible to provide the sleeves with a decoration, such as a brand name of the manufacturer and the like. Such a decoration will be visible in all situations of use, i.e. with open and closed lid as well as with raised or lowered seating.

The present invention will be further elucidated on the basis of the annexed drawings, wherein corresponding reference numerals refer to corresponding components, and wherein:

figure 1 shows a perspective view of a toilet seating according to the invention, with the sleeves not yet mounted;

figure 2 shows a partly broken away perspective view of a part of the toilet seating with sleeves pushed thereon and a part of a not yet mounted toilet lid;

figure 3 is a partly broken away perspective view of a toilet seat according to the invention after mounting; and

figure 4 shows a partly broken away perspective view of a toilet seat according to the invention after fixing to a toilet bowl.

Figure 1 shows a toilet seating 1, which is provided on its rear side with conventional shafts 2, which are received in conventional shaft holes 3 in a sleeve 4. The sleeves 4 are provided on their other side with a ring 7 which is provided with an interruption 9 and which defines a shaft hole 8. The conventional shaft hole 3 and the shaft hole 8 are mutually separated by a dividing wall 10. The conventional shaft hole 3 has a bulge 17 in which is arranged an opening 5 for receiving a fastening element such as a screw 6. Due to the bulge 17 the head of the screw 18 can remain out of reach of the shaft 2. In this way the screw 6 is also enclosed after the shaft 2 has been placed.

The sleeves 4 are pushed in conventional manner onto the shafts 2 in the direction of the arrows.

Figure 2 shows a partly broken away toilet lid 11 provided with shafts 12. The shafts are constructed from a fragment of a ring 13, which fragment is smaller than the interruption 9 in sleeve 4, and a fragment 14 which is larger than or equal to the interruption 9. Both fragments 13 and 14 are mutually connected via a connecting part 15. The lid 11 is mounted on seating 1 in the direction of the arrow. The fragments 14 are hooked for this purpose into the openings 9. When the fragments 14 reach the wall of the shaft holes 8 lying opposite the interruptions 9, the fragment 13 will just have passed through the interruption 9 (see figure 3). When the sleeves 4 are now rotated relative to shafts 12 the lid 11 is mounted fixedly to the seating 1.

As shown in figure 4, the screws can subsequently be fixed to the toilet bowl 16 by means of nuts 19. The interruption in the ring of shaft hole 8 is now situated relative to shaft 12 such that dismantling is not possible without removing the screws.

The invention provides a toilet seat which is formed such that a rapid, secure mounting is possible. Due to its smooth and compact shapes the seat is moreover easy to clean, even without removal of the seat from the toilet bowl, which enhances hygiene.

Claims

1. Toilet seat comprising a seating (1) and means for mounting the seat to a toilet bowl (16), wherein the mounting means are provided with mounting elements and at least one shaft hole (8) formed by a ring (7) partially interrupted at least at one position, which shaft hole (8) co-acts with a shaft (12) for pivoting of the seating (1) relative to the mounting means, the shaft being formed by at least two fragments (13, 14) of a ring with a diameter smaller than the diameter of the shaft hole (8), wherein at least one of the fragments is smaller than the interruption in the shaft hole and the other fragment(s) is (are) larger than or equal to the interruption (9) in the shaft hole.

2. Toilet seat as claimed in claim 1, **characterized in that** at least one set of three contact points can be defined between the shaft hole and the physically present part of the shaft, wherein the triangle formed by the three contact points encloses the centre of the shaft.

3. Toilet seat as claimed in claim 1 or 2, **characterized in that** both the shaft hole and the mounting elements are situated in a rotatable component.

4. Toilet seat as claimed in claim 1, 2 or 3, further comprising a lid (11).

5. Toilet seat as claimed in claim 4, **characterized in that** the mounting means are formed by two sleeves (4) which are releasably connected to the seating (1) and in which the shaft holes (8) are arranged, and the shafts (12) co-acting therewith form an integral part of the lid (11).

6. Toilet seat as claimed in claim 4, **characterized in that** the mounting means are formed by two sleeves which are releasably connected to the lid and in which the shaft holes are arranged, and the shafts co-acting therewith form an integral part of the seating.

7. Toilet seat as claimed in claim 1, 2 or 3, **characterized in that** the mounting means are formed by a tube provided on either side with a shaft hole and the shafts co-acting therewith form an integral part of the seating.

8. Toilet seat as claimed in claim 1 or 2, **characterized in that** the mounting means are formed by two end pieces provided with a shaft hole and the shafts co-acting therewith form an integral part of the seating.

9. Toilet seat as claimed in any of the claims 1-8, **characterized in that** the mounting means are provided with a hole (5) for insertion therethrough of the fastening element.

10. Toilet seat as claimed in claim 9, **characterized in that** the hole for the fastening element lies substantially in one line with the interruption (9) of the shaft hole (8).

11. Toilet seat as claimed in claim 9 or 10, **characterized in that** the fastening element is a screw (6).

12. Toilet seat as claimed in any of the claims 1-11, **characterized in that** at least one of the fragments has at least one interruption.

13. Toilet seat as claimed in any of the claims 1-12, **characterized in that** the fragments are mutually connected by means of a connecting part (15).

14. Toilet seat as claimed in any of the claims 1-13, **characterized in that** the sleeves are provided with spring elements.

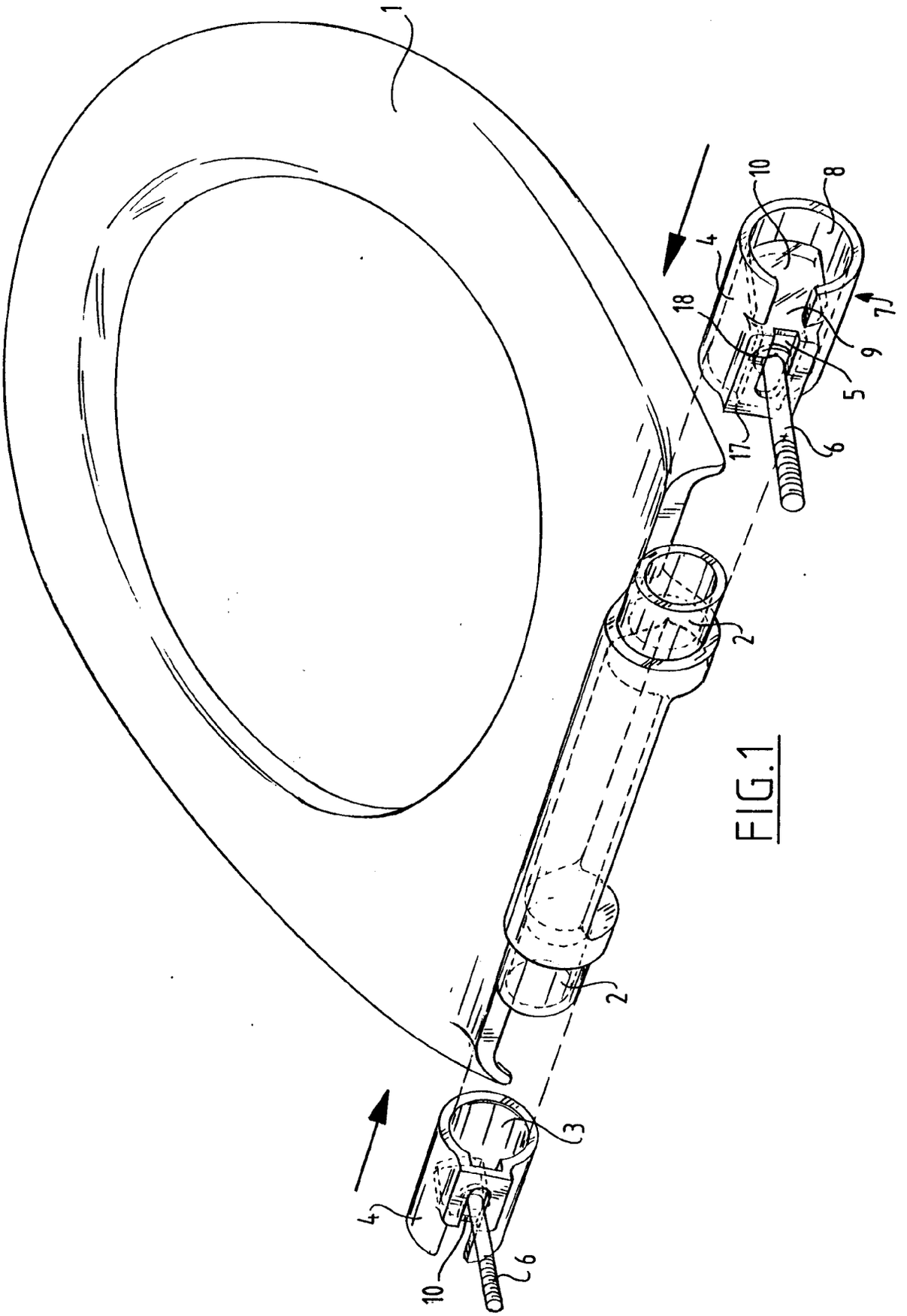

FIG.1

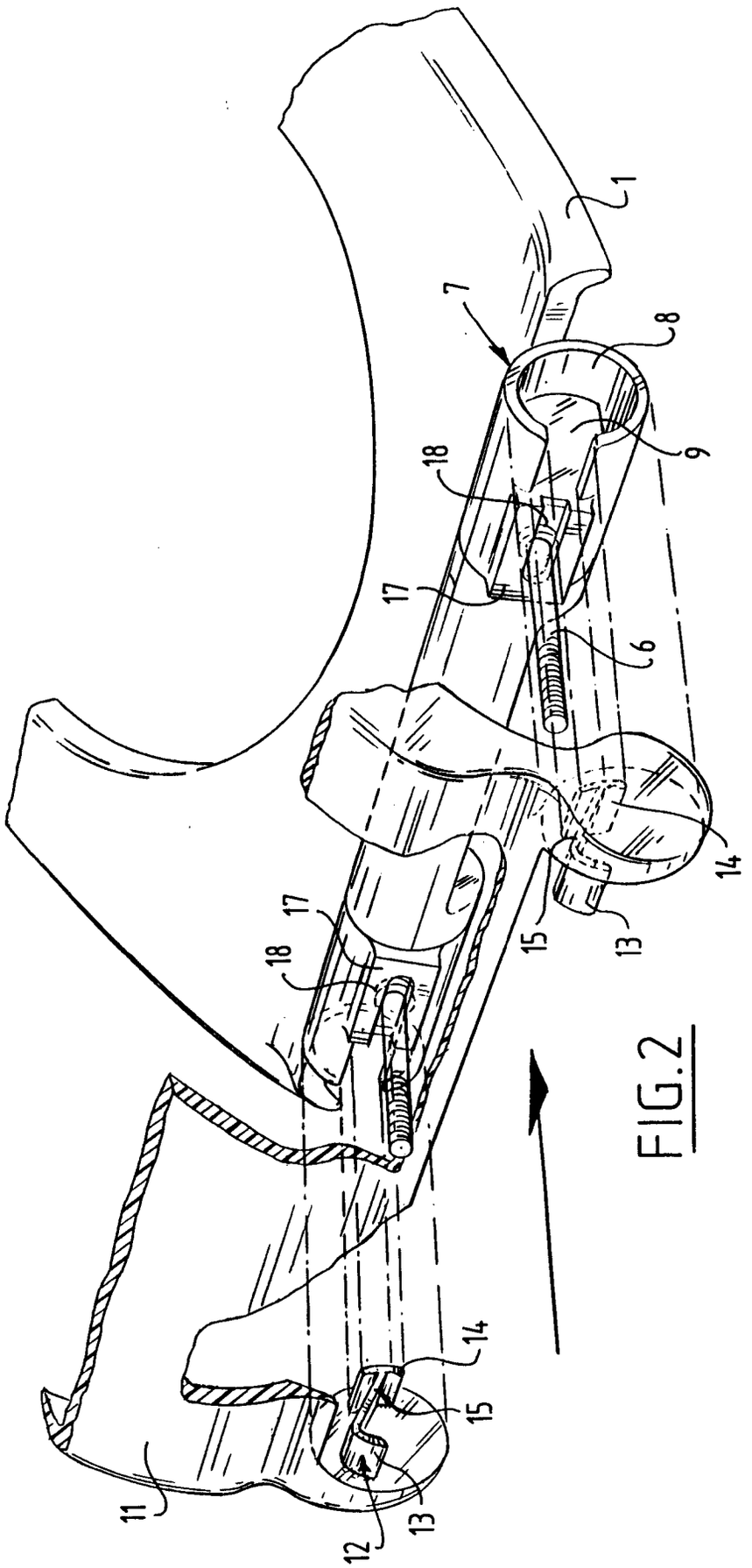

FIG.2

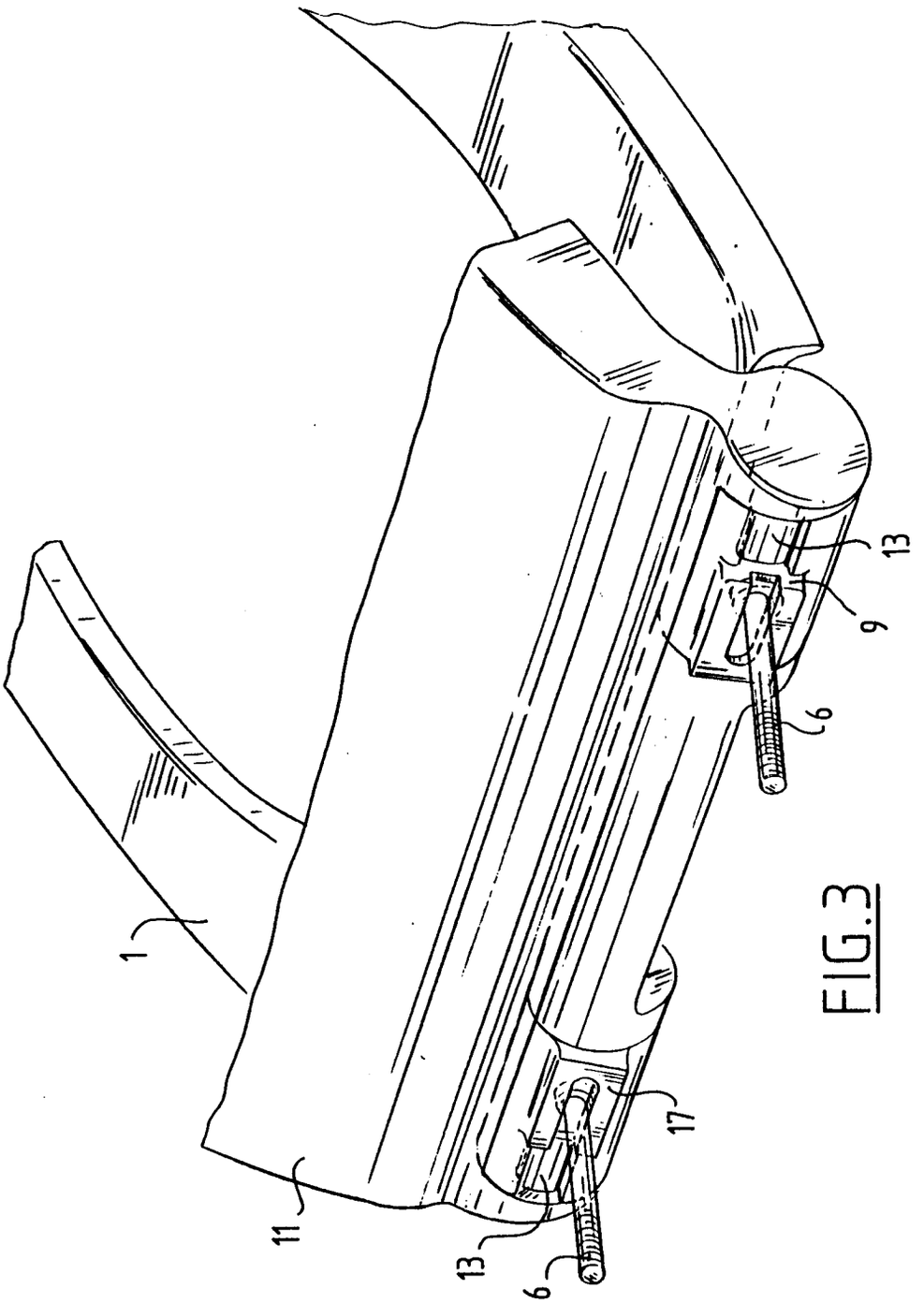

FIG.3

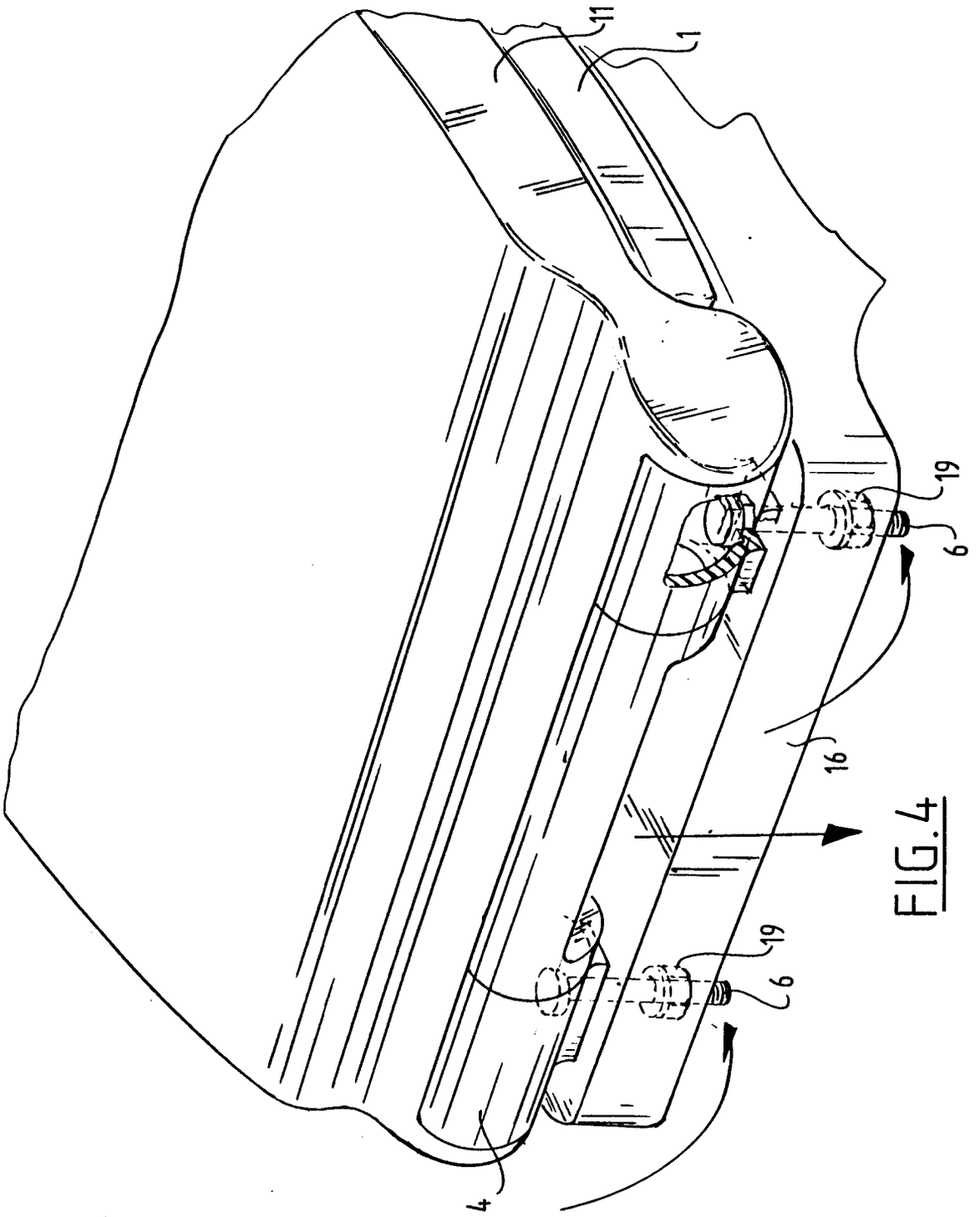

FIG.4

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EUROPEAN SEARCH REPORT

Application Number
EP 95 20 0888

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
A	GB-A-922 795 (IDEAL-STANDARD LIMITED) 3 April 1963 * page 2, line 99 - page 4, line 3; figures 1-9 *	1	A47K13/12 E05D1/06
A	US-A-3 471 874 (DIXON) 14 October 1969 * column 3, line 9 - line 40; figures 1-6 *	1	
A	FR-A-1 200 475 (COMPAGNIE GENERALE DE CONSTRUCTION DE FOURS ET COMPAGNIE FRANÇAISE DU) 22 December 1959 * the whole document *	1	
A	DE-A-22 41 376 (CAROMA SALES PROPRIETARY LTD.) 7 March 1974		

TECHNICAL FIELDS SEARCHED (Int.Cl.6)
A47K E05D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	18 July 1995	Clasing, M

CATEGORY OF CITED DOCUMENTS

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