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(71) Applicant: **Frezza S.p.A.**
31020 Vidor TV (IT)

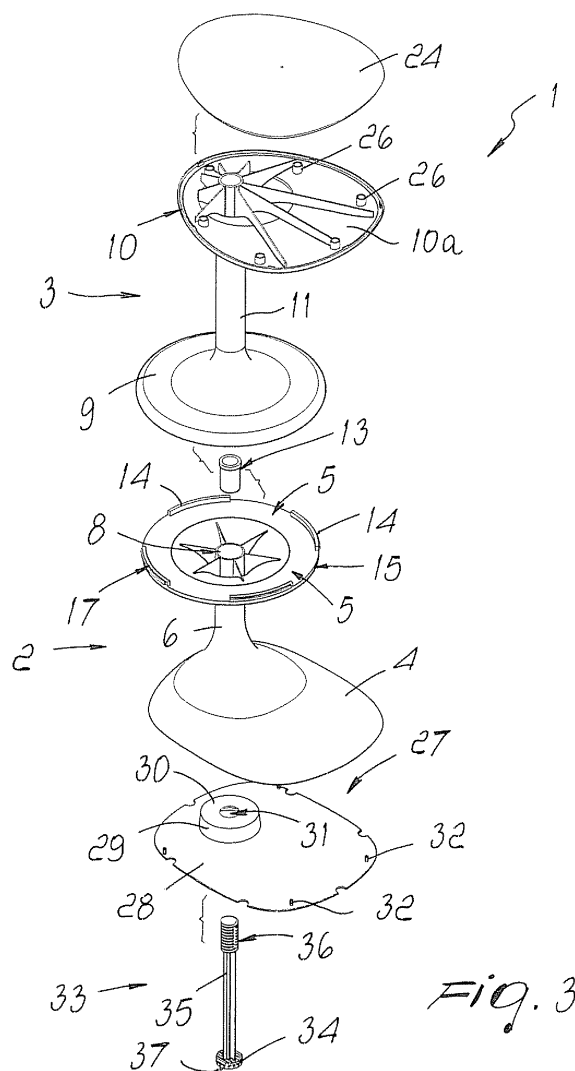
(72) Inventor: **Tessaro, Loris**
31020, Vidor TV (IT)

(74) Representative: **Modiano, Micaela Nadia**
Dr. Modiano & Associati SpA
Via Meravigli 16
20123 Milano (IT)

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(54) **Modular stool**

(57) A modular stool (1), constituted by a pedestal (2) and a separate seat (3), which can be mutually associated by way of bayonet engagement means.



Description

[0001] The present invention relates to a modular stool.

[0002] Stools are currently in use which are constituted by a monolithic body obtained by molding plastic material; such stools offer the advantage of having a low weight, of being mass-producible and of having a chosen geometry.

[0003] However, these known types of stool have a drawback: they are bulky and therefore require considerable space for their storage, since they cannot be stacked together, for example.

[0004] Further, again due to their bulk, such known types of stool occupy a preset volume which increases transport costs.

[0005] The aim of the present invention is to solve the above-mentioned problems, eliminating the drawbacks of the cited background art, by providing a modular stool which has a reduced weight, a chosen shape and a modest volume, which simplifies its storage and reduces its transport costs.

[0006] Within this aim, an object of the invention is to provide a modular stool which can be carried easily.

[0007] Another object is to provide a modular stool which can be installed easily and rapidly.

[0008] Another object is to provide a modular stool which is structurally simple and has low manufacturing costs.

[0009] This aim and these and other objects, which will become better apparent hereinafter, are achieved by a modular stool, characterized in that it is constituted by a pedestal and a separate seat, which can be mutually associated by way of bayonet engagement means.

[0010] Further characteristics and advantages of the invention will become better apparent from the following detailed description of a particular but not exclusive embodiment thereof, illustrated by way of non-limiting example in the accompanying drawings, wherein:

Figure 1 is a front view of a stool according to the invention;

Figure 2 is a side view of the stool of Figure 1;

Figure 3 is a perspective exploded view of the stool of Figure 1;

Figure 4 is a perspective view of the pedestal of the stool of Figure 1;

Figure 5 is a perspective view of the seat of the stool of Figure 1;

Figure 6 is a bottom view of the seat of Figure 5;

Figure 7 is a top view of the pedestal of Figure 4;

Figure 8 is a side view of the seat of the stool of Figure 1;

Figure 9 is a perspective view of the screw of the stool of Figure 1;

Figure 10 is a sectional view of the stool according to the invention, taken along a diametrical plane;

Figure 11 is an enlarged-scale view of a detail of

Figure 10.

[0011] In the exemplary embodiments that follow, individual characteristics, given in relation to specific examples, may actually be interchanged with other different characteristics that exist in other exemplary embodiments.

[0012] Moreover, it is noted that anything found to be already known during the patenting process is understood not to be claimed and to be the subject of a disclaimer.

[0013] With reference to the figures, the reference numeral 1 designates a modular stool, which is constituted by a pedestal 2 and by a separate seat 3, which can be mutually associated by way of bayonet engagement means.

[0014] The pedestal 2 comprises a foot 4, which is constituted preferably by an approximately frustum-shaped hollow box-like body, which is open in a lower region and has a preferably approximately rectangular plan shape with rounded edges.

[0015] The pedestal 2 further comprises a first ledge 5, which has a substantially circular plan shape and is constituted by an approximately frustum-shaped hollow box-like body which is open in an upper region so as to form a first end face 5a, which is approximately flat and directed in the opposite direction with respect to the foot 4.

[0016] The foot 4 and the first ledge 5 are mutually connected by a first tubular element 6, which is provided with a first lower portion 7, which is arranged inside the foot 4, and a second upper portion 8, which is arranged inside the first ledge 5.

[0017] Advantageously, the total height of the first tubular element 6 is such that it does not protrude below the foot 4 and above the first ledge 5.

[0018] Advantageously, the seat 3 that can be associated with the pedestal 2 is provided, in a lower region, with a second ledge 9, which is constituted by a substantially frustum-shaped hollow box-like body, which is open in a lower region so as to form a second end face 9a, which is approximately flat and directed toward the pedestal 2.

[0019] Advantageously, the diameter of the second base 9a is greater than the diameter of the first end face 5a of the pedestal 2.

[0020] The seat 3 further comprises a third ledge 10, which is constituted preferably by a substantially frustum-shaped hollow box-like body, which is open in an upper region so as to form a third end face 10a, which is approximately flat and directed away from the pedestal 2 and has an approximately triangular plan shape with rounded edges.

[0021] The second ledge 9 and the third ledge 10 are connected by a second tubular element 11, which has a third lower portion 12 which has a smaller diameter than the second portion 8 of the first tubular element 6 and lies inside the second ledge 9, protruding externally from

it so as to be arranged inside the second portion 8 in the assembled condition of the pedestal 2 and the seat 3.

[0022] Advantageously, the third portion 12 is threaded internally; as an alternative, a bush 13, for example a metallic one which is internally threaded, is fixed coaxially to said portion.

[0023] Advantageously, the bayonet engagement means comprise two or more tangs 14, which protrude flush from the first perimetric edge 15 of the first end face 5a of the first ledge 5; said two or more tangs 14 protrude on the opposite side with respect to the foot 4 and have, in plan view, an arc-like profile which follows partially the profile of the first perimetric edge 15.

[0024] In the example shown in the accompanying figures, four tangs 14 are provided and are advantageously arranged in a cross-like configuration.

[0025] Advantageously, the tangs 14 have an approximately rectangular transverse cross-section.

[0026] A first protrusion 17 protrudes from the lateral surface 16 of the tangs 14 that is directed toward the outside of the first ledge 5, approximately radially to said ledge and along part of its height, and affects part of the longitudinal extension of the respective tang 14 starting from a first end 18 thereof up to the vicinity of its second end 19.

[0027] The first protrusions 17 therefore protrude beyond the first perimetric edge 15.

[0028] The second end face 9a has a second perimetric edge 20, which is shaped like an annular lip 21 and is sized to so as to be arranged so as to wrap around the first perimetric edge 15 of the first ledge 5 in the assembled condition of the pedestal 2 and the seat 3.

[0029] Advantageously, two or more second protrusions 22 protrude from the annular lip 21 toward the third portion 12: said protrusions are equal in number to the first protrusions 17, are arranged approximately in a cross like configuration, and have an arc-like profile which partially follows, in plan view, the profile of the annular lip 21.

[0030] Advantageously, the mutual distance between two adjacent second protrusions 22 is such as to allow the passage between them of a tang 14 of the pedestal 2.

[0031] Advantageously, the second protrusions 22 have an approximately rectangular transverse cross-section, whose length is approximately equal to the length of the tangs 14 of the pedestal 2 and whose thickness is approximately equal to the thickness of the first protrusions 17.

[0032] The size of the second protrusions 22 is such that they can be positioned, in the assembled condition of the pedestal 2 with respect to the seat 3, below the first protrusions 17 and adjacent to the first perimetric edge 15.

[0033] A tab 23 which has an approximately rectangular plan shape protrudes toward the second end face 9a inside each of the second protrusions 22 and at one of their ends and is adapted to be arranged, during use, in abutment against one end of a first protrusion 17.

[0034] The stool 1 further comprises a seat 24, which is shaped approximately complementarily to the third ledge 10 and can be associated therewith by way of appropriately provided pins 25, which protrude below the seat 24 and can be inserted by pressing in appropriately provided receptacles 26 formed at the third end face 10a of the third ledge 10.

[0035] Advantageously, the foot 4 of the pedestal 2 can be closed in a lower region by means of an appropriately provided plug 27, which is constituted by a lamina 28 which is substantially flat and approximately complementarily shaped, in plan view, with respect to the foot 4, and from which a dome 29 protrudes at the overlying first tubular element 6; said dome can engage by abutment, by means of its upper end face 30, the perimetric edge of the first portion 7 of the first tubular element 6.

[0036] Advantageously approximately centrally to the upper end face 30 of the dome 29 there is a through hole 31 at the opening of the overlying first tubular element 6.

[0037] Advantageously, the plug 27 can be fixed to the foot 4 by inserting appropriately provided pins 32, which protrude upward from the lamina 28, in appropriately provided receptacles, not illustrated in the accompanying figures, provided in the internal surface of the foot 4.

[0038] Advantageously, the stool 1 comprises means for locking in the assembled condition the pedestal 2 and the seat 3, which comprise for example a screw 33 which has an approximately cylindrical head 34 whose diameter is larger than the inside diameter of the first tubular element 6 and of the hole 31.

[0039] A stem 35 protrudes from the head 34, and its free end 36 is threaded complementarily to the third portion 12 of the second tubular element 11 or to the bush 13, so that it can be engaged therein in the assembled condition of the pedestal 2 and the seat 3.

[0040] Advantageously, a lever 37 protrudes from the head 34 of the screw 33 on the opposite side with respect to the stem 35 and can be gripped by a user in order to allow the rotation of the screw 34.

[0041] Operation is therefore as follows: with reference to the accompanying figures, the pedestal 2 and the seat 3 can be mutually assembled by arranging the tangs 14 of the pedestal 2 in the interspaces provided between the second protrusions 22 of the seat 3.

[0042] By turning the seat 3 in an appropriate direction (clockwise if with reference to the accompanying figures), the first protrusions 17 of the pedestal 2 are moved into engagement with the second protrusions 22 of the seat, arranging themselves above them, so as to prevent the separation in an axial direction of the pedestal 2 and the seat 3.

[0043] The mutual rotation between the pedestal 2 and the seat 3 is limited by the abutment of the tabs 23 of the latter against the transverse edge of the first protrusions 17.

[0044] After positioning the plug 27 so as to close the foot 4 in a lower region, it is possible to insert in the hole 31 the screw 33, until the free end 36 thereof is located

within the third portion 12 of the second tubular element 11; by acting on the lever 37 it is possible to screw the free end 36 of the screw 33 into the second tubular element 11 or into the optional bush 13 which is fixed thereto.

[0045] In this manner, the pedestal 2 and the seat 3 are rigidly coupled to each other and the seat 24 can be applied to the third ledge 10.

[0046] By unscrewing the screw 33 and turning the seat 3 with respect to the pedestal 2 in the opposite direction with respect to the preceding one, the seat and the pedestal can be separated again.

[0047] It has thus been found that the invention has achieved the intended aim and objects, a modular stool having been provided which, being composed of a pedestal and a seat having a reduced volume, which therefore can be carried and stored easily and can be assembled at a chosen time, allows to reduce transport and storage costs with respect to the background art.

[0048] Further, the pedestal and the seat may be assembled or separated very easily and quickly.

[0049] Moreover, the presence of the means for locking in the assembled condition the pedestal and the seat ensure that they do not separate accidentally, thus ensuring safety in the use of the stool.

[0050] Moreover, the possibility to remove the seat allows for example to use different seats according to the aesthetic and/or comfort characteristics that one wishes to obtain.

[0051] Further, the production costs of the stool according to the invention remain low, since it is provided only by means of components which are easy to manufacture and/or assemble.

[0052] The invention is of course susceptible of numerous modifications and variations, all of which are within the scope of the appended claims.

[0053] The materials used, as well as the dimensions that constitute the individual components of the invention, may of course be more pertinent according to specific requirements.

[0054] The various means for performing certain different functions need not certainly coexist only in the illustrated embodiment but can be present per se in many embodiments, including ones that are not illustrated.

[0055] The characteristics indicated as advantageous, convenient or the like may also be omitted or be replaced with equivalents.

[0056] The disclosures in Italian Patent Application No. TV2005A000052 from which this application claims priority are incorporated herein by reference.

[0057] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A modular stool, **characterized in that** it comprises a pedestal and a separate seat, which can be mutually associated by way of bayonet engagement means.
2. The stool according to claim 1, **characterized in that** it comprises means for locking said pedestal and said seat in the assembled condition.
3. The stool according to one or more of the preceding claims, **characterized in that** said pedestal comprises a foot which is preferably constituted by an approximately frustum-shaped box-like body which is hollow and open in a lower region and a first ledge which has a substantially circular plan shape and is constituted by an approximately frustum-shaped hollow box-like body, which is open in an upper region so as to form a first end face, which is approximately flat and directed away from said foot, said foot and said first ledge being mutually connected by a first tubular element.
4. The stool according to claims 1 and 3, **characterized in that** said first tubular element has a first lower portion which is arranged inside said foot and a second upper portion which is arranged inside said first ledge, the total height of said first tubular element being such that it does not protrude below said foot and above said first ledge.
5. The stool according to one or more of the preceding claims, **characterized in that** said seat has, in a lower region, a second ledge, which is constituted by a substantially frustum-shaped hollow box-like body, which is open a lower region so as to form a second approximately flat end face directed toward said pedestal.
6. The stool according to claims 1 and 5, **characterized in that** the diameter of said second end face is greater than the diameter of said first end face of said pedestal.
7. The stool according to one or more of the preceding claims, **characterized in that** said seat comprises a third ledge, which is constituted preferably by a substantially frustum-shaped hollow box-like body, which is open in an upper region so as to form a third end face, which is approximately flat and directed away from said pedestal, said second and third ledges being connected by a second tubular element.
8. The stool according to claims 1 and 7, **characterized in that** said second tubular element has a third lower portion, which has a smaller diameter than said second portion of said first tubular element, said third

portion being arranged inside said second ledge and protruding externally from it so as to be arranged, in the assembled condition of said pedestal and said seat, within said second portion of said first tubular element.

9. The stool according to claims 1 and 8, **characterized in that** said third portion is threaded internally.

10. The stool according to claims 1 and 8, **characterized in that** an internally threaded bush is fixed coaxially to said third portion.

11. The stool according to one or more of the preceding claims, **characterized in that** said bayonet engagement means comprise two or more tangs, which protrude flush from the first perimetric edge of said first end face of said first ledge, said two or more tangs protruding on the opposite side with respect to said foot and having in plan view an arc-like profile which follows partially the profile of said first perimetric edge.

12. The stool according to claims 1 and 11, **characterized in that** said tangs are four and are arranged in a cross-like configuration.

13. The stool according to one or more of the preceding claims, **characterized in that** said two or more tangs have an approximately rectangular transverse cross-section.

14. The stool according to one or more of the preceding claims, **characterized in that** a first protrusion protrudes from the lateral surface of said two or more tangs that is directed toward the outside of said first ledge, approximately radially thereto and along part of its height, said protrusion affecting part of the longitudinal extension of the respective tang starting from a first end thereof up to the vicinity of its second end, said first protrusions protruding beyond said first perimetric edge.

15. The stool according to one or more of the preceding claims, **characterized in that** said second end face of said second ledge is provided with a second perimetric edge which is shaped like an annular lip and is sized so as to be arranged so as to wrap around said first perimetric edge of said first ledge in the assembled condition of said pedestal and said seat.

16. The stool according to claims 1 and 15, **characterized in that** two or more second protrusions protrude from said annular lip toward said third portion, are equal in number to said first protrusions, and have an arc-like profile which follows partially, in plan view, the profile of said annular lip.

17. The stool according to claims 1 and 16, **characterized in that** the mutual distance between two of said second adjacent protrusions is such as to allow the passage between them of one of said tangs provided in said pedestal.

18. The stool according to one or more of the preceding claims, **characterized in that** said second protrusions have, in a transverse cross-section, an approximately rectangular shape, whose length is approximately equal to the length of said tangs and whose thickness is approximately equal to the thickness of said first protrusions.

19. The stool according to one or more of the preceding claims, **characterized in that** the size of said second protrusions is such that they can be positioned, in the assembled condition of said pedestal and said seat, below said first protrusions and adjacent to said first perimetric edge.

20. The stool according to one or more of the preceding claims, **characterized in that** a tab having an approximately rectangular plan shape protrudes toward said second end face inside each of said second protrusions and at one of their ends and is adapted to be arranged, during use, in abutment against one end of one of said first protrusions.

21. The stool according to one or more of the preceding claims, **characterized in that** said foot can be closed in a lower region by means of a plug constituted by a substantially flat lamina which is approximately shaped complementarily, in plan view, with respect to said foot, and from which a dome protrudes at the overlying said first tubular element, said dome being able to engage by abutment, with its upper end face, the perimetric edge of said first portion of said first tubular element, a through hole being provided approximately centrally with respect to the upper end face of said dome at the opening of the overlying said first tubular element.

22. The stool according to claims 1 and 21, **characterized in that** said plug can be fixed to said foot by inserting appropriately provided pins, which protrude upward from said lamina, into appropriately provided receptacles formed in the internal surface of said foot.

23. The stool according to one or more of the preceding claims, **characterized in that** said means for locking said pedestal and said seat in the assembled condition comprise a screw which has an approximately cylindrical head whose diameter is larger than the inside diameter of said first tubular element and of said hole, a stem protruding from said head, its free end being threaded complementarily with respect to

said third portion of said second tubular element or to said bush, so that it can engage in said third portion or in said bush in the assembled condition of said pedestal and said seat.

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24. The stool according to claims 1 and 23, **characterized in that** a lever protrudes from said head on the opposite side with respect to said stem and can be engaged by a user in order to allow the rotation of said screw.

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25. The stool according to one or more of the preceding claims, **characterized in that** it comprises a seat, which is shaped approximately complementary with respect to said third ledge and can be associated therewith by way of appropriately provided pins which protrude in a lower region with respect to said seat and can be inserted in appropriately provided seats formed at said third end face of said third ledge.

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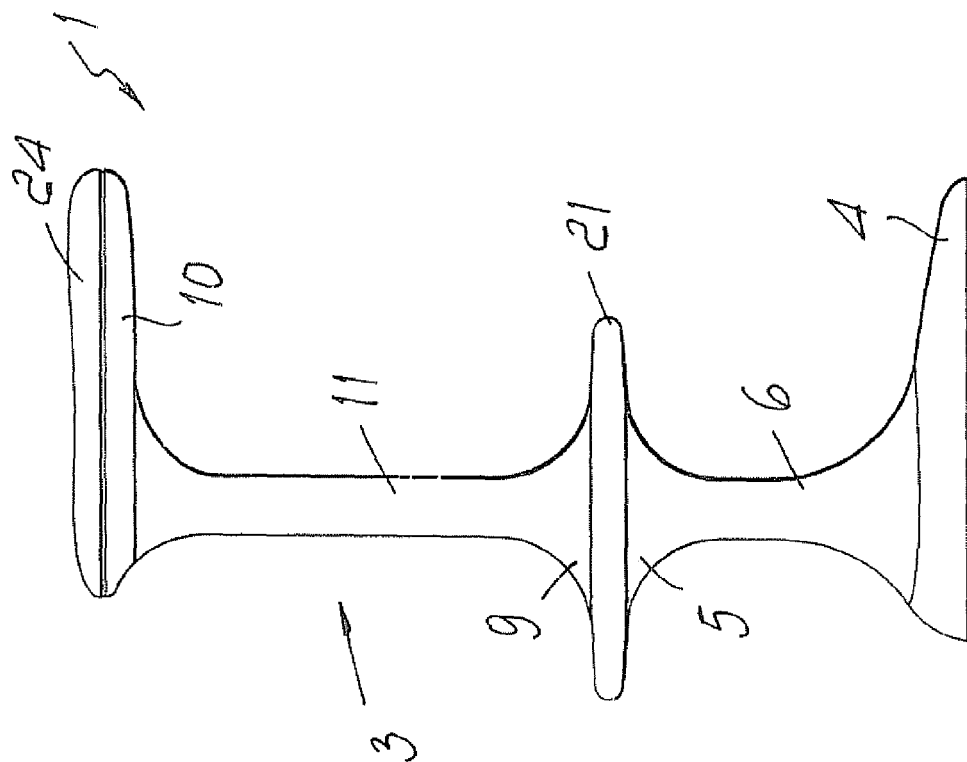


Fig. 2

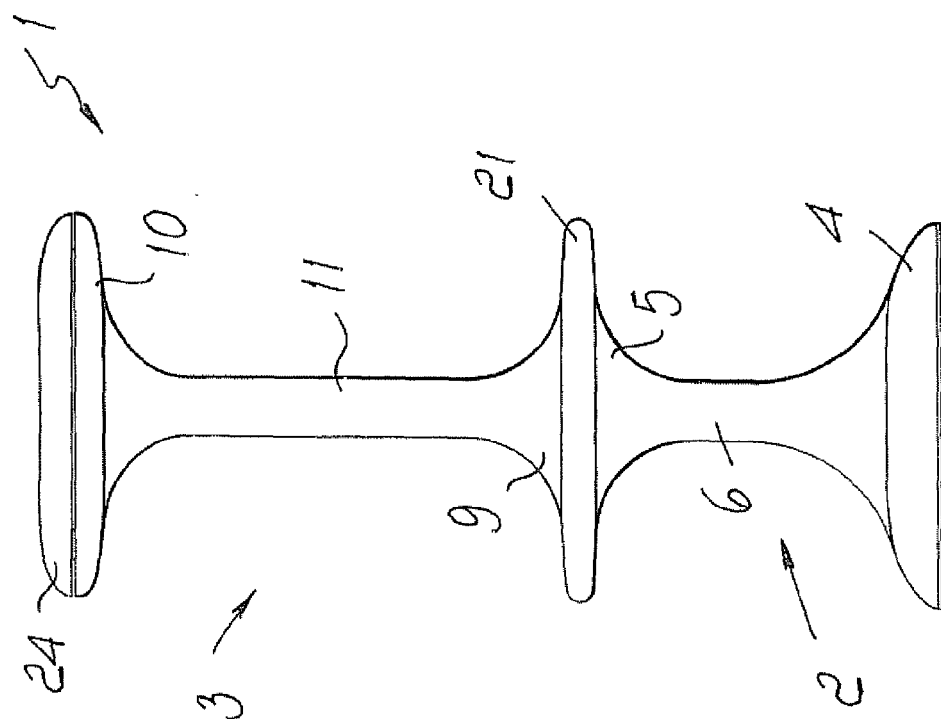
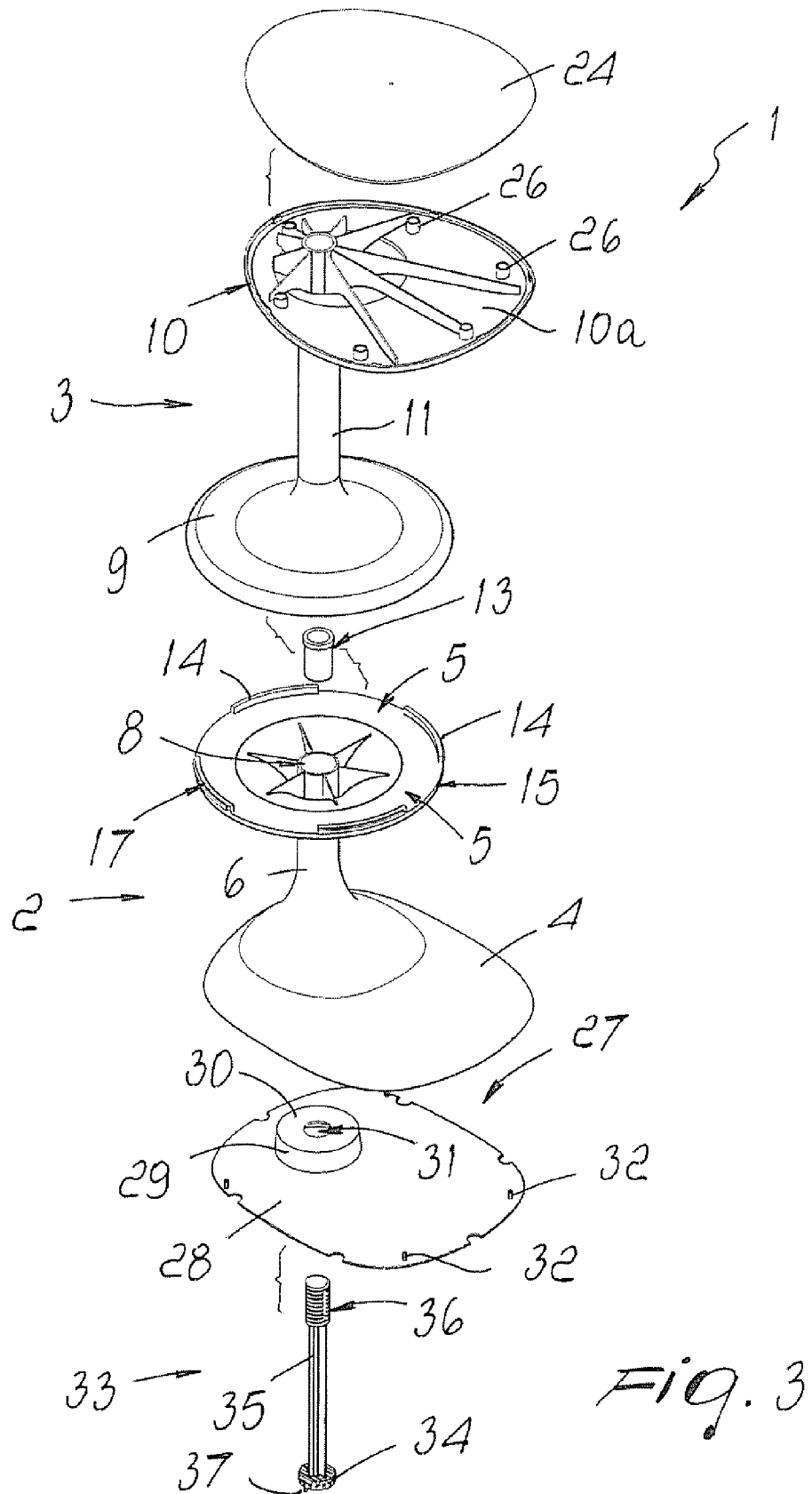


Fig. 1



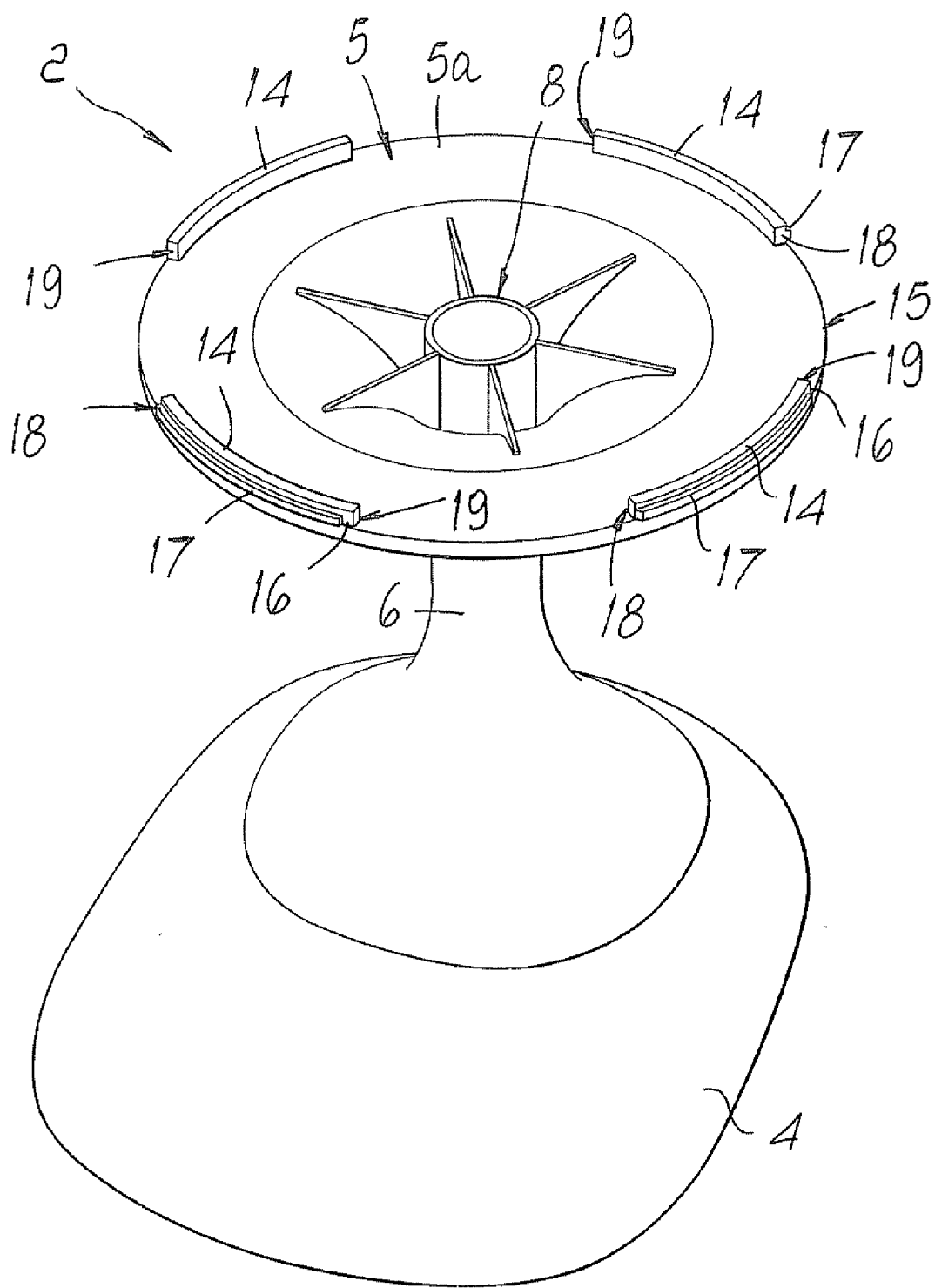


Fig. 4

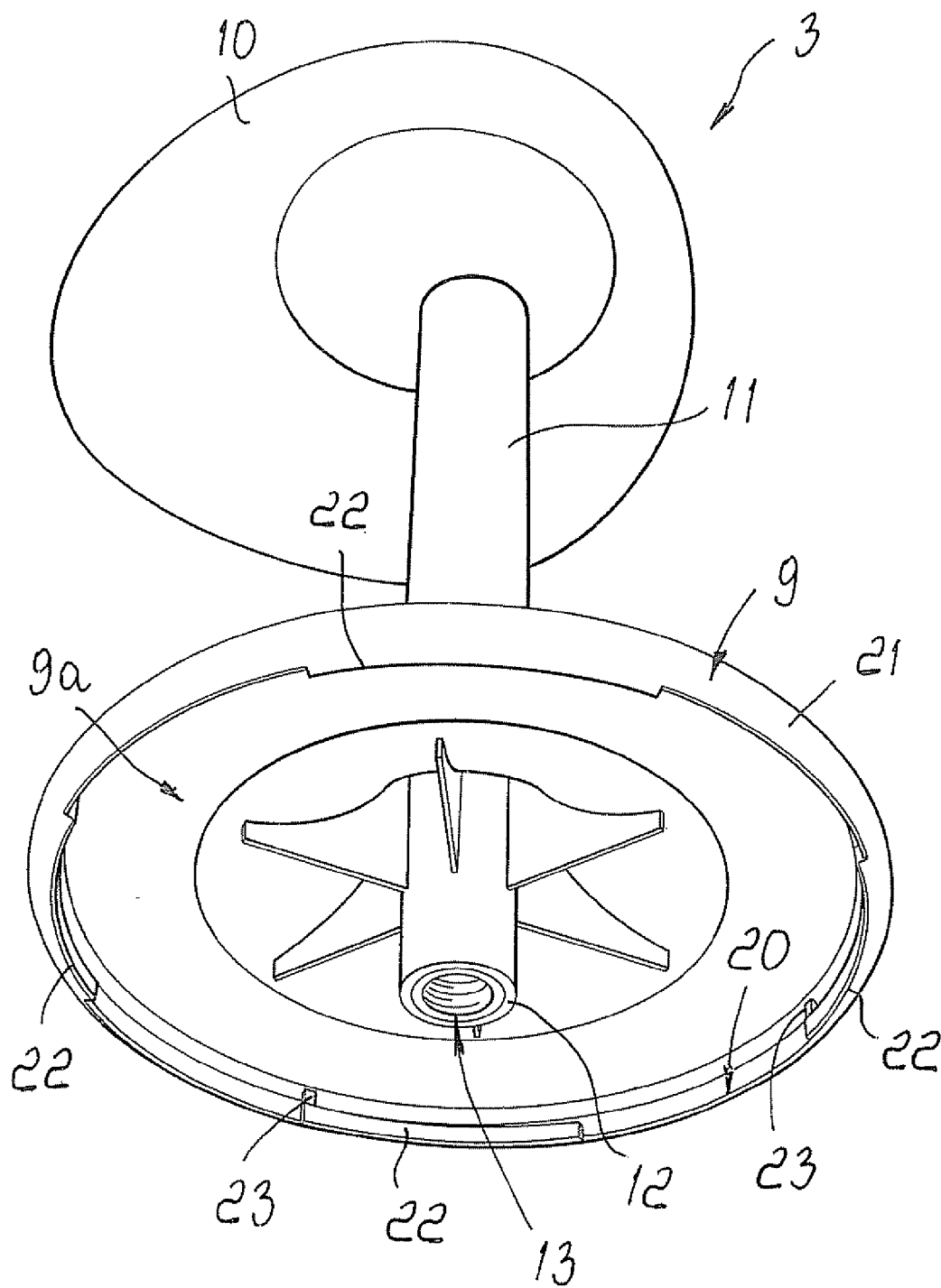


Fig. 5

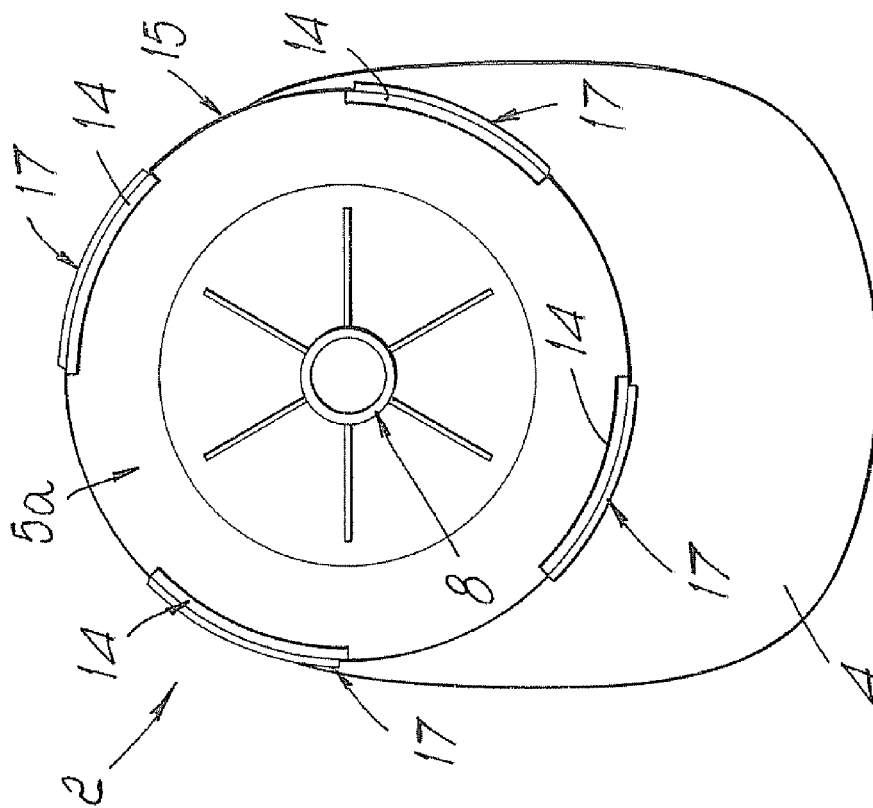


Fig. 7

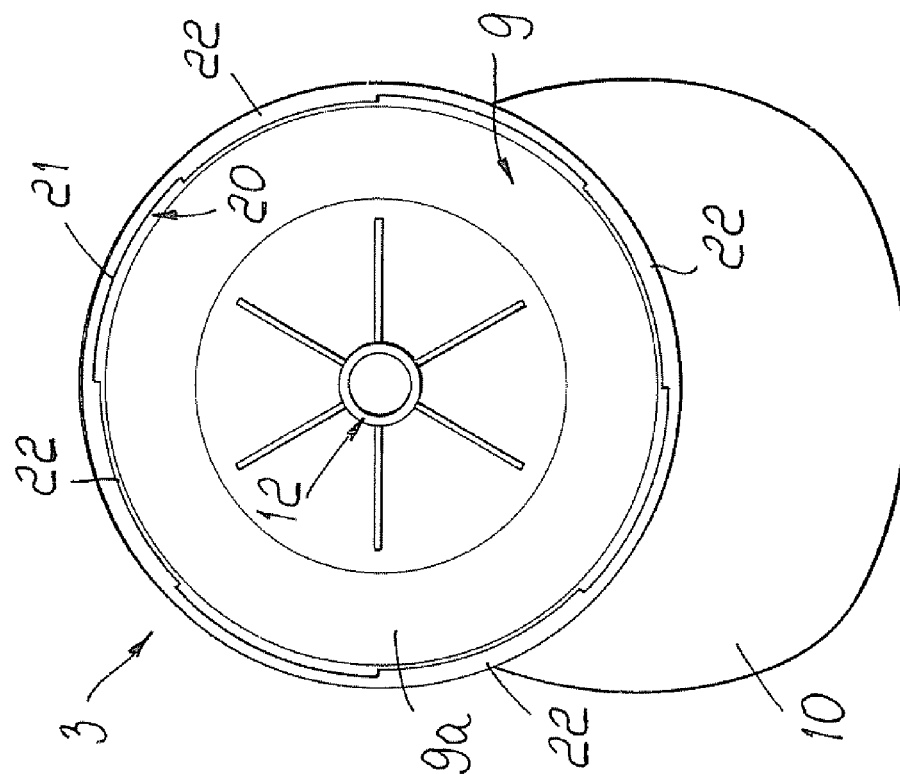


Fig. 6

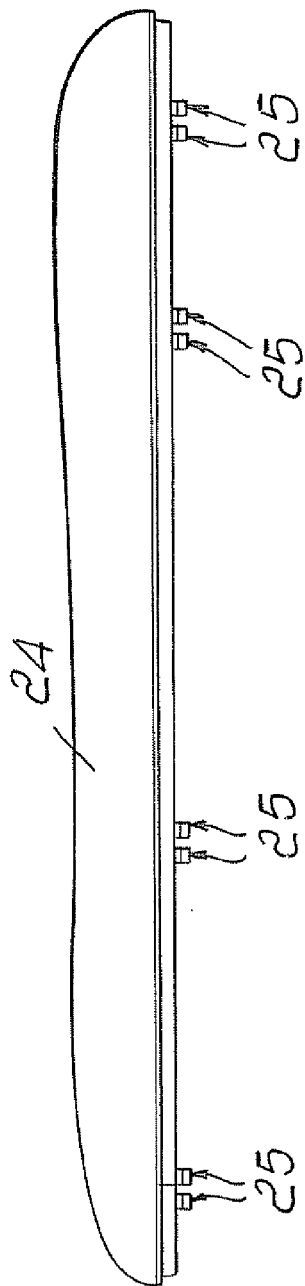


Fig. 8

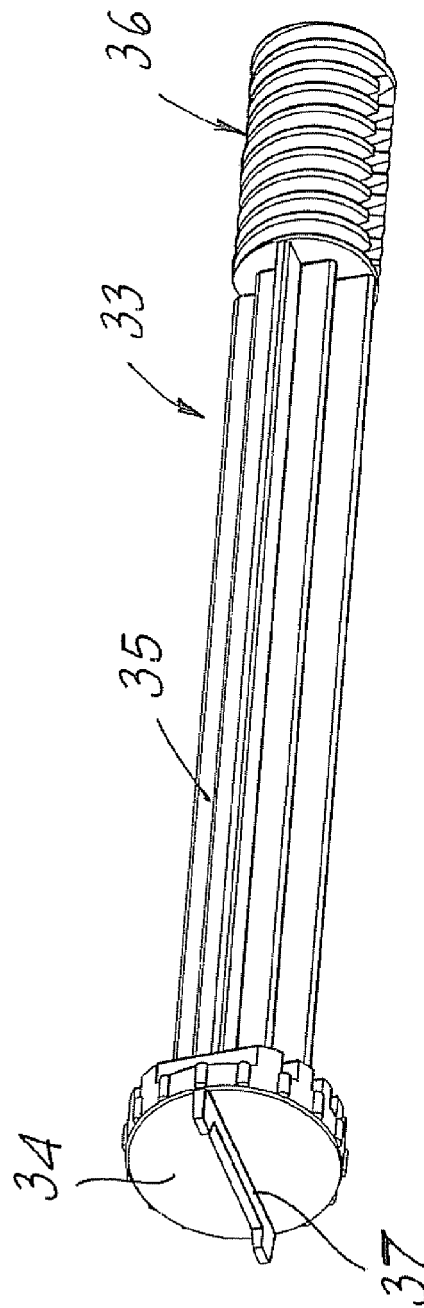
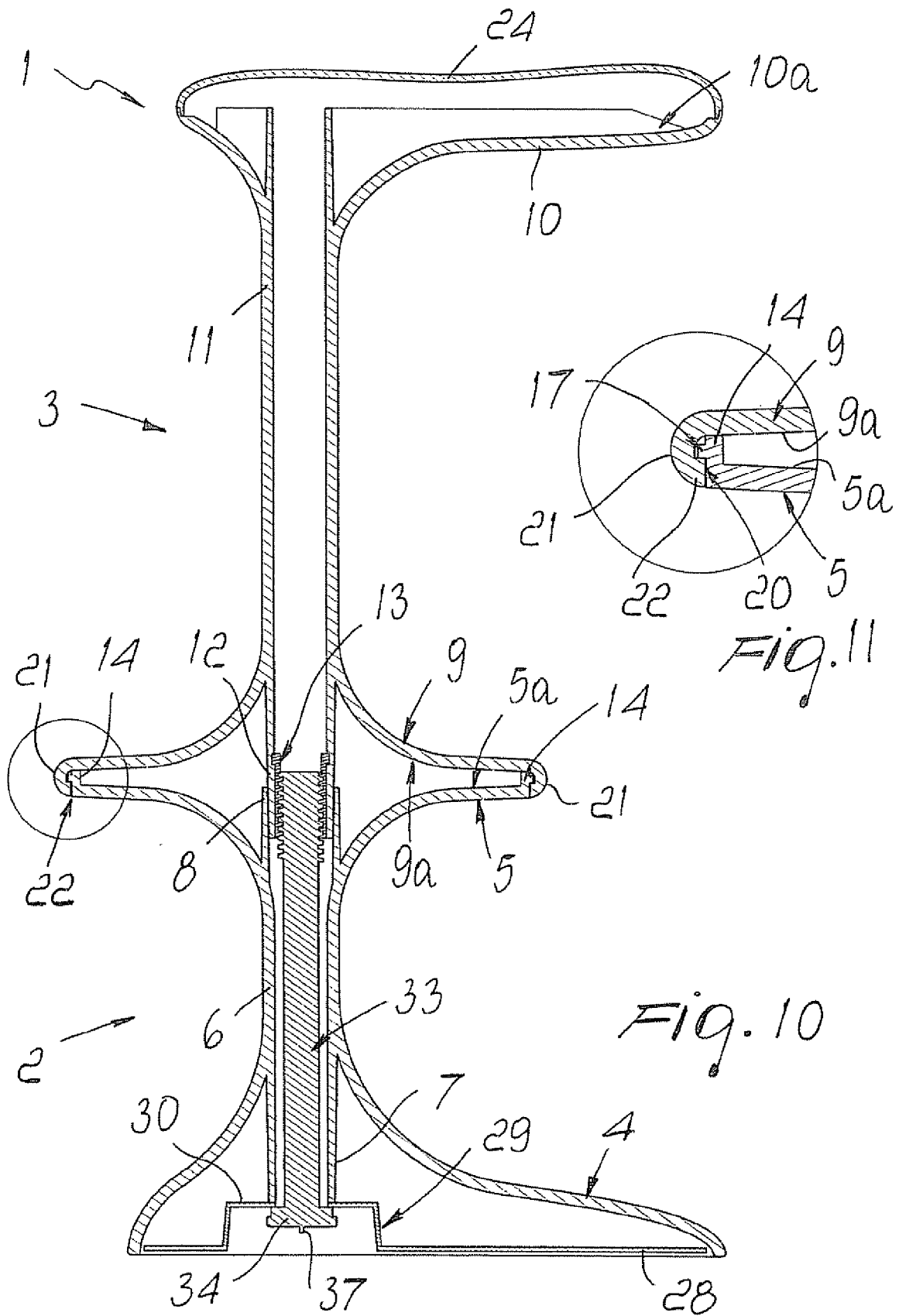


Fig. 9





DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	GB 273 054 A (EDMUND HASELDEN BRAMALL; KATHARINE BRIDGET BRAMALL) 30 June 1927 (1927-06-30) * page 1, lines 18-26,58-81; figures 1-6 *	1	INV. A47C4/02 A47C9/00
Y	-----	1,2	
Y	US 6 467 843 B1 (ROSSBOROUGH W NEIL [US]) 22 October 2002 (2002-10-22) * column 4, lines 9-22 * * column 5, lines 12-25; figure 2 *	1	
Y	----- GB 10482 A A.D. 1914 (MINER HIRUM WILLSON [US]) 7 January 1915 (1915-01-07) * the whole document *	2	
A	----- FR 2 146 892 A (LUSCH KG FERD) 2 March 1973 (1973-03-02) * the whole document *	1	
A	----- US 3 467 033 A (SIENKIEWICZ MARVIN M ET AL) 16 September 1969 (1969-09-16) * the whole document *	1	TECHNICAL FIELDS SEARCHED (IPC)
A	----- GB 2 418 354 A (LEATHLEY REBECCA [GB]) 29 March 2006 (2006-03-29) * the whole document *	1	A47C
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 22 May 2007	Examiner Lassen, Steen D.
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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ON EUROPEAN PATENT APPLICATION NO.**

EP 06 12 1091

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22-05-2007

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
GB 273054	A	30-06-1927	NONE	
US 6467843	B1	22-10-2002	NONE	
GB 191410482	A	07-01-1915	NONE	
FR 2146892	A	02-03-1973	GB 1351097 A IT 963090 B	24-04-1974 10-01-1974
US 3467033	A	16-09-1969	NONE	
GB 2418354	A	29-03-2006	NONE	

EPO FORM P0459

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Patent documents cited in the description

- IT TV20050052 A [0056]