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(54) **SUPPORTING DEVICE FOR A POLE AND FOOTREST OF A STOOL**

(57) The present invention relates to a supporting device for a pole and footrest of a stool. The device comprises a lower body that is joined to a complementary upper body by securing means. According to the invention, the lower body comprises an upper part and a lower part, the upper part comprising a recess configured for inserting the pole and grooves slots disposed in lateral walls for coupling spokes that act as a support for footrest, and the upper body comprises lateral walls and is perforated by a through-hole aligned with the recess for inserting the pole.

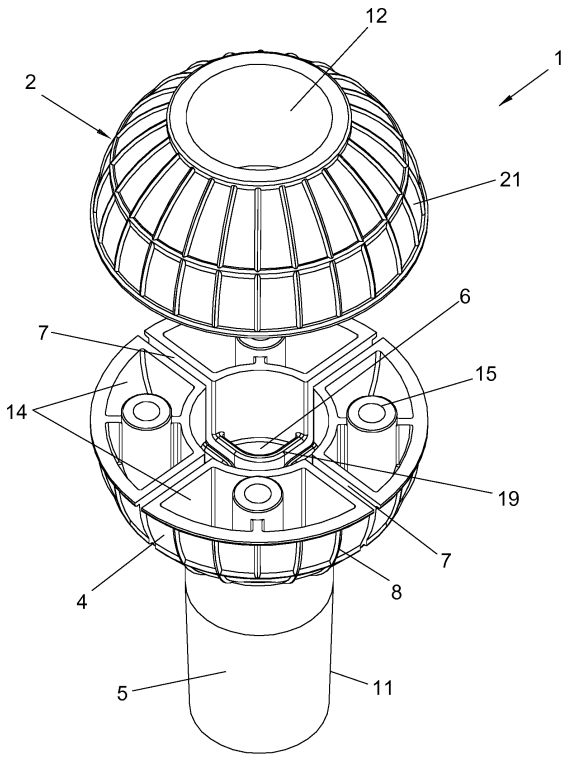


FIG. 2

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Description

OBJECT OF THE INVENTION

[0001] The object of the present invention relates to a supporting device for a pole and footrest of a fixed or swivel stool, with a fixed or variable height, which acts as a support for the pole of the seat and, in turn, as a support for the footrest. This device facilitates the final assembly of the piece of furniture and considerably optimises the packaging thereof for transport.

[0002] The invention is especially applicable to the furniture industry.

TECHNICAL PROBLEM TO BE RESOLVED AND BACKGROUND OF THE INVENTION

[0003] It is generally known that existing stools on the market have the drawback that they are formed from a solid piece or from large pieces welded together, which makes it impossible to optimise the packaging thereof for transport, a factor of significant importance.

[0004] In certain stool designs, the footrest is supported on spokes which are welded directly to the pole, which prevents the optimisation of the packaging elements since the footrest cannot be disassembled, or on spokes joined to a ring that encircles the pole and is attached to said pole through one or several clamping bolts, wherein the system ends up failing and the footrest is no longer functional. There are other designs wherein the footrest begins from a fixed element at the base of the stool, which is also welded and requires more assembly elements from a construction standpoint.

[0005] Therefore, the present invention will resolve the aforementioned problems existing in the state of the art by providing a supporting device for a pole and footrest of a stool, wherein the stool assembly is formed by small, robust pieces to optimise the packaging and make it more practical. In addition, these pieces make it possible to assemble the stool easily and without additional tools.

DESCRIPTION OF THE INVENTION

[0006] This invention relates to a supporting device for a pole and footrest of a stool comprising a lower body that is joined to a complementary upper body by securing means. The lower body comprises in turn an upper part and a lower part. The upper part comprises a recess configured for inserting the pole and grooves slots disposed in lateral walls of said upper part configured for coupling spokes that act as a support for footrest.

[0007] The upper part and the upper body are shaped like complementary semi-spheres. The lower part is a cylindrical body.

[0008] The upper body comprises lateral walls and is perforated by a through-hole aligned with the recess for inserting the pole, wherein the supporting device is configured to be placed on a base of the stool and support the pole and footrest of the stool.

[0009] The recess of the upper part is centred and surrounded by compartments separated from each other by the grooves slots, wherein each compartment comprises a hollow lug in the centre. The grooves slots are disposed vertically in the lateral walls of the upper part and are equidistant from each other.

[0010] The through-hole of the upper body is centred and surrounded by compartments, wherein each compartment comprises a hollow negative in the centre configured to fit into the hollow lugs of the lower body.

[0011] The supporting device comprises four grooves slots, four compartments, four hollow lugs and four hollow negatives.

[0012] The securing means of the lower body to the upper body are screws configured to be inserted through the hollow lugs of the upper part from the bottom up and to pass through the hollow negatives of the upper body.

[0013] Both the through-hole and the cylindrical body have a cross section of the lower end that is narrower than the cross section of the upper end.

[0014] The cylindrical body internally comprises a central threaded tubular body connected to three threaded tubular bodies disposed in lateral walls of the cylindrical body by means of ribs.

[0015] The lower and upper bodies are manufactured by injection, machining or additive manufacturing, and can be made of metal or plastic.

[0016] The recess of the upper part of the lower body and the through-hole of the upper body are circular in shape. The recess comprises a wing-shaped projection.

[0017] Another object of the invention relates to the stool incorporating the supporting device, wherein the stool comprises a seat, a backrest, a pole, and a base. The stool may also comprise an armrest.

BRIEF DESCRIPTION OF THE FIGURES

[0018] To supplement the description that is being made and in order to aid a better understanding of the features of the invention, a set of drawings has been attached to this specification as an integral part thereof, which represents the following by way of illustration and not limitation:

Figure 1a.- Shows a front view of the supporting device.

Figure 1b.- Shows a top view of the supporting device.

Figure 2.- Shows an exploded view of the supporting device.

Figure 3.- Shows another exploded view of the supporting device.

Figure 4.- Shows a top view of the lower body of the supporting device.

Figure 5a.- Shows a view of the upper body of the supporting device.

Figure 5b.- Shows a sectioned view of the upper

body of the supporting device.
Figures 6, 7, 8.- Show different types of stools with different designs of the supporting device.

[0019] The following is a list of the different elements represented in the figures that make up the invention:

1. Supporting device.
2. Upper body.
3. Lower body.
4. Upper part of the lower body.
5. Lower part of the lower body.
6. Recess.
7. Grooves slots.
8. Lateral walls of the upper part of the upper body.
9. Spokes.
10. Footrest.
11. Cylindrical body.
12. Through-hole.
13. Base of the stool.
14. Compartments.
15. Hollow lug.
16. Hollow negative.
17. Tubular body.
18. Ribs.
19. Wing-shaped projection.
20. Holes.
21. Lateral walls of the upper body.
22. Pole.
23. Stool.

DETAILED DESCRIPTION

[0020] An object of the invention relates a supporting device (1) for a pole (22) and footrest (10) for a piece of furniture for seating, and specifically for a stool (23), which may be used for a fixed or swivel chair or armchair, with a fixed or variable height, which acts as a support for the pole (22) of the seat and backrest, and in turn as a support for footrest (10), as seen in Figures 6, 7 and 8. The supporting device (1) is placed on the base (13) of the stool, after which the rest of the stool (23) can be assembled.

[0021] The supporting device (1) comprises an upper body (2) that is joined to the lower body (3) by securing means, where both bodies (2, 3) are manufactured by injection, machining or additive manufacturing, and are preferably made of metal, although they can also be made of plastic.

[0022] The lower body (3) comprises an upper part (4) and a lower part (5). Preferably, both parts (4, 5) are joined together, wherein the upper part (4) has the shape of a semi-sphere and comprises a circular central recess (6) surrounded by four compartments (14) separated from one another by preferably four grooves slots (7), disposed vertically and equidistant to each other in the lateral walls (8) of the semi-sphere to which the spokes (9) that serve as a support for the 360° perimeter frame of the footrest (10) are coupled.

[0023] As shown in Figure 1a, the grooves slots (7) do not reach the bottom of the upper part (4). The upper part (4) also comprises four hollow lugs (15), each hollow lug (15) of which is disposed in the centre of each compartment (14) and reinforced with ribs to provide them with greater stiffness.

[0024] The central recess (6) comprises a wing-shaped projection (19) on its surface that helps secure the spokes (9) that support the pole (22).

[0025] The lower part (5) is a tapered cylindrical body (11), i.e. the cross section of the lower end of the cylindrical body (11) is slightly narrower than the cross section of the upper end, which allows the lower part (5) to better adapt to the base (13) of the stool (23) shown in Figure 3.

[0026] The base (13) of the stool (23) can have different designs, such as a flat base as shown in Figure 6, a conical base of sheet metal as shown in Figure 7, or a legged base as shown in Figure 8, etc. Only when a flat base (13) is used, the cylindrical body (11) internally comprises threaded tubular bodies (17), namely one central threaded tubular body (17) connected to three other threaded tubular bodies (17) disposed in the lateral walls of the cylindrical body (11) by means of ribs (18), wherein said threaded tubular bodies (17) are used to secure the base (13) of the stool (23) to the lower body (3) by means of screws. The ribs (18) provide stiffness and consistency to the supporting device (1).

[0027] The upper body (2) is complementary to the lower body (3) and finishes the supporting device (1), closing and securing the spokes (9). Like the lower body (3), the upper body (2) has the shape of a semi-sphere and comprises four compartments (14) with four hollow negatives (16) that fit into the hollow lugs (15) of the lower body (3). The upper body (2) comprises a cylindrical cross-sectional through-hole (12) that is aligned with the recess (6) of the upper part (4) of the lower body (3), wherein the through-hole (12) perforates the upper body (2) from the upper end to the lower end, the cross section of the lower end of the through-hole (12) being slightly narrower than the cross section of the upper end (tapered shape) shown in Figure 5b. This design secures the pole (22) more tightly. The upper body (2) is also ribbed to provide greater stiffness.

[0028] Preferably, the securing means that join the lower body (3) to the upper body (2) are screws that are inserted from the bottom up through the hollow lugs (15) of the lower body (3) and pass through the hollow negatives (16) of the upper body (2). Figure 3 shows the holes (20) of the upper part (4) of the lower body (3) through which the screws are inserted, while Figure 5b shows how far the screws go into the upper body (2).

[0029] Obviously, the supporting device (1) can be provided in different shapes as long as it supports the pole (22) of the seat and the footrest (10). The same design can also have a different number of compartments (14), lugs (15) and hollow negatives (16).

[0030] Figures 6, 7 and 8 show how the external design

of the supporting device (1) may vary, which may be smooth or exhibit different drawings.

[0031] Another object of the invention relates to the stool (23) incorporating the supporting device (1), wherein the stool (23) comprises a seat, a backrest, a pole (22), and a base (13). The stool may also comprise an armrest.

[0032] The present invention should not be limited to the embodiment described herein. Other arrangements may be carried out by those skilled in the art based on the present description. Accordingly, the scope of the invention is defined by the following claims.

Claims

1. A supporting device (1) for a pole (22) and footrest (10) of a stool (23), **characterised in that** it comprises:

   - a lower body (3) that is joined to a complementary upper body (2) by securing means, wherein the lower body (3) in turn comprises an upper part (4) and a lower part (5):
   ◦ the upper part (4) comprises a recess (6) configured for inserting the pole (22) and grooves slots (7), disposed in lateral walls (8) of said upper part (4), configured for coupling spokes (9) that act as a support for footrest (10),
   - the upper body (2) comprises lateral walls (21) and is perforated by a through-hole (12) aligned with the recess (6) for inserting the pole (22);
   wherein said supporting device (1) is configured to be placed on a base (13) of the stool (23) and support the pole (22) and footrest (10) of that stool (23).

2. The supporting device (1) for a pole (22) and footrest (10) of a stool (23) according to claim 1, **characterised in that** the recess (6) of the upper part (4) is centred and surrounded by compartments (14) separated from each other by the grooves slots (7), where each compartment comprises a hollow lug in the centre (15).

3. The supporting device (1) for a pole (22) and footrest (10) of a stool (23) according to claim 2, **characterised in that** the through-hole (12) of the upper body (2) is centred and surrounded by compartments (14), wherein each compartment (14) comprises a hollow negative (16) in the centre configured to fit into the hollow lugs (15) of the lower body (3).

4. The supporting device (1) for a pole (22) and footrest (10) of a stool (23) according to claims 2 and 3, **characterised in that** it comprises four grooves slots (7), four compartments (14), four hollow lugs (15) and four hollow negatives (16).

5. The supporting device (1) for a pole (22) and footrest (10) of a stool (23) according to claim 1, **characterised in that** the upper part (4) and the upper body (2) are complementary semi-spheres.

6. The supporting device (1) for a pole (22) and footrest (10) of a stool (23) according to claim 1, **characterised in that** the securing means of the lower body (3) to the upper body (2) are screws configured to be inserted through the hollow lugs (15) of the upper part (4) from the bottom up and to pass through the hollow negatives (16) of the upper body (2).

7. The supporting device (1) for a pole (22) and footrest (10) of a stool (23) according to claim 1, **characterised in that** the lower part (5) is a cylindrical body (1).

8. The supporting device (1) for a pole (22) and footrest (10) of a stool (23) according to claims 1 and 7, **characterised in that** the through-hole (12) and the cylindrical body (1) have a cross section of a lower end that is narrower than the cross section of an upper end.

9. The supporting device (1) for a pole (22) and footrest (10) of a stool according to claim 7, **characterised in that** the cylindrical body (11) internally comprises a central threaded tubular body (17) connected to three threaded tubular bodies (17) disposed in lateral walls of the cylindrical body (11) by means of ribs (18).

10. The supporting device (1) for a pole (22) and footrest (10) of a stool (23) according to claim 1, **characterised in that** the lower body (3) and the upper body (2) are manufactured by injection, machining or additive manufacturing.

11. The supporting device (1) for a pole (22) and footrest (10) of a stool (23) according to claim 1, **characterised in that** the lower body (3) and the upper body (2) are made of metal or plastic.

12. The supporting device (1) for a pole (22) and footrest (10) of a stool (23) according to claim 1, **characterised in that** the grooves slots (7) are disposed vertically in the lateral walls (8) of the upper part (4) and are equidistant from each other.

13. The supporting device (1) for a pole (22) and footrest (10) of a stool (23) according to claim 1, **characterised in that** the recess (6) of the upper part (4) of the lower body (3) and the through-hole (12) of the upper body (2) are circular in shape.

14. The supporting device (1) for a pole (22) and footrest (10) of a stool (23) according to claim 1, **characterised in that** the recess (6) comprises a wing-shaped

projection (19).

15. A stool (23) incorporating the supporting device (1) described in any one of claims 1 to 14.

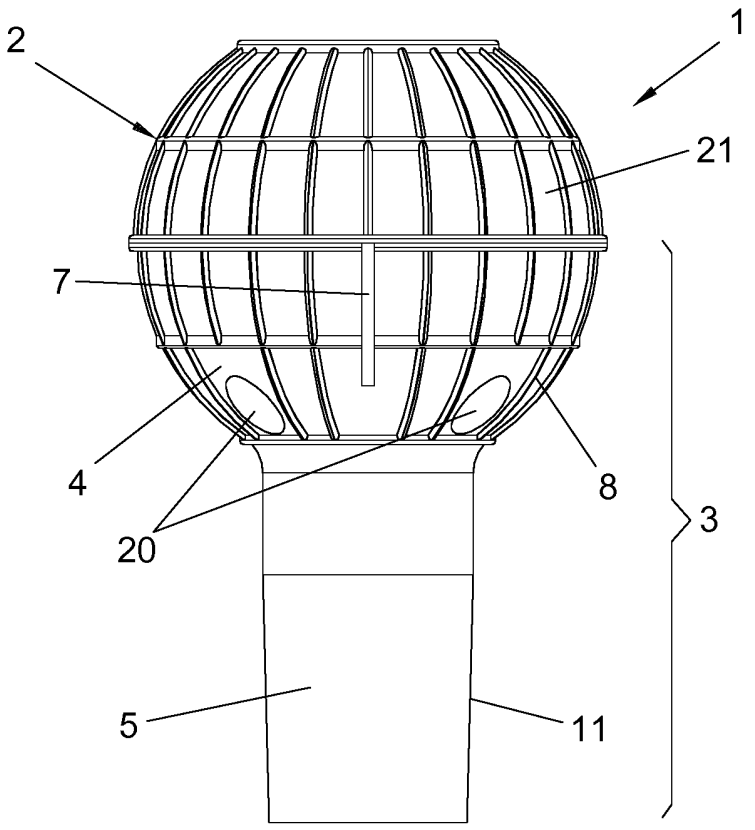


FIG. 1a

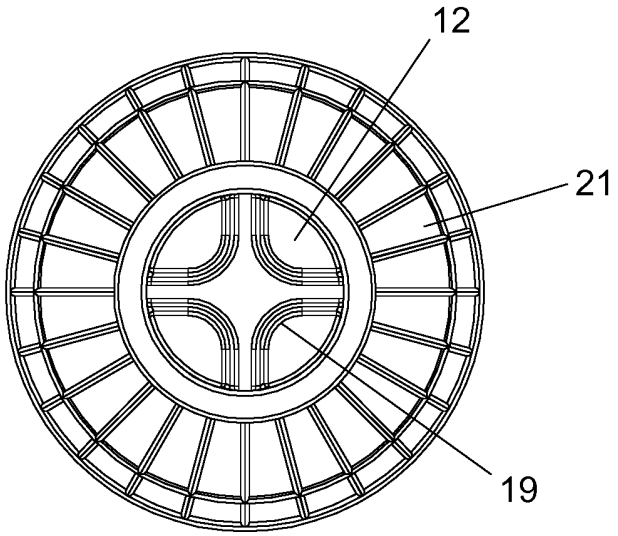


FIG. 1b

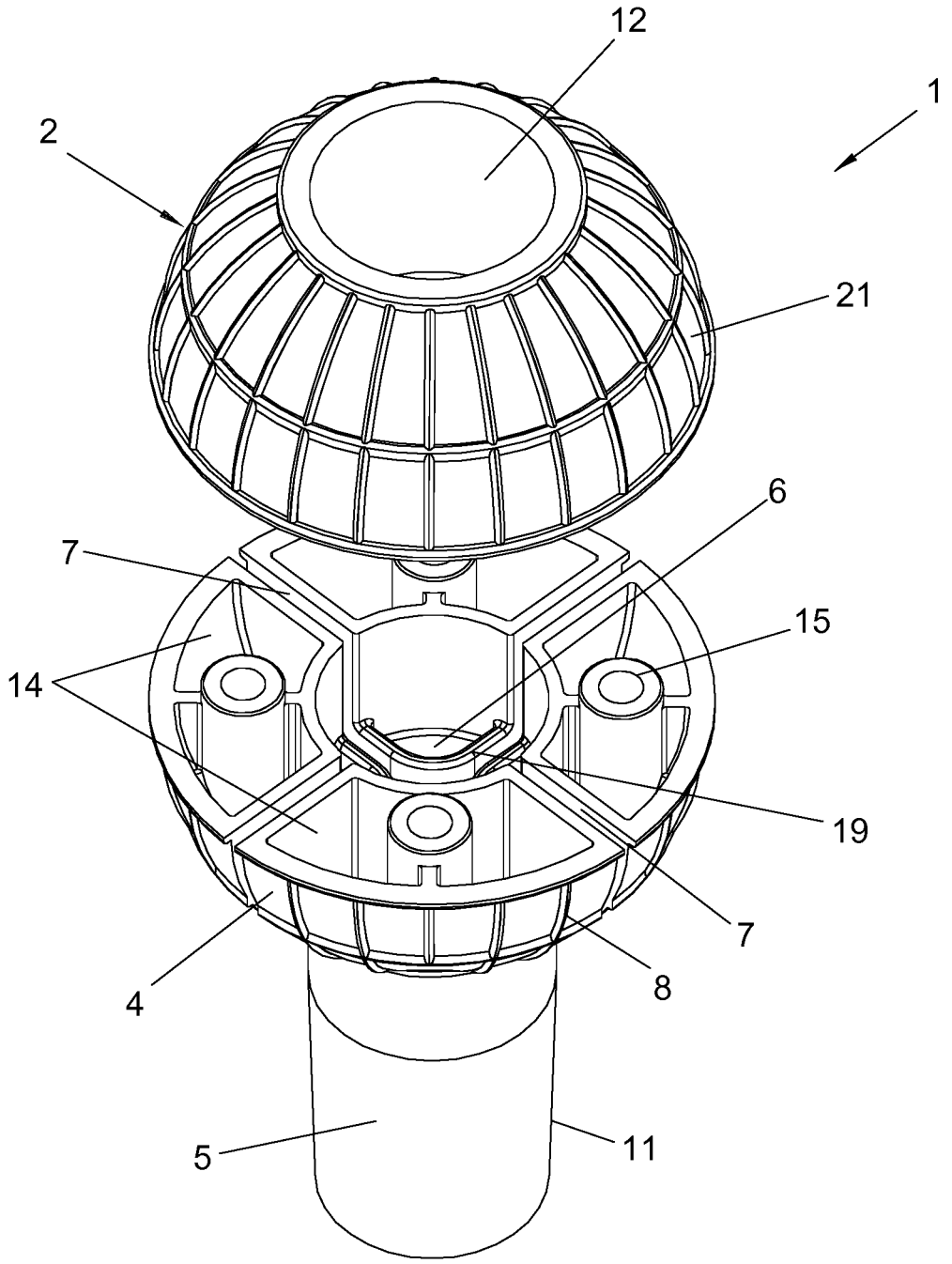


FIG. 2

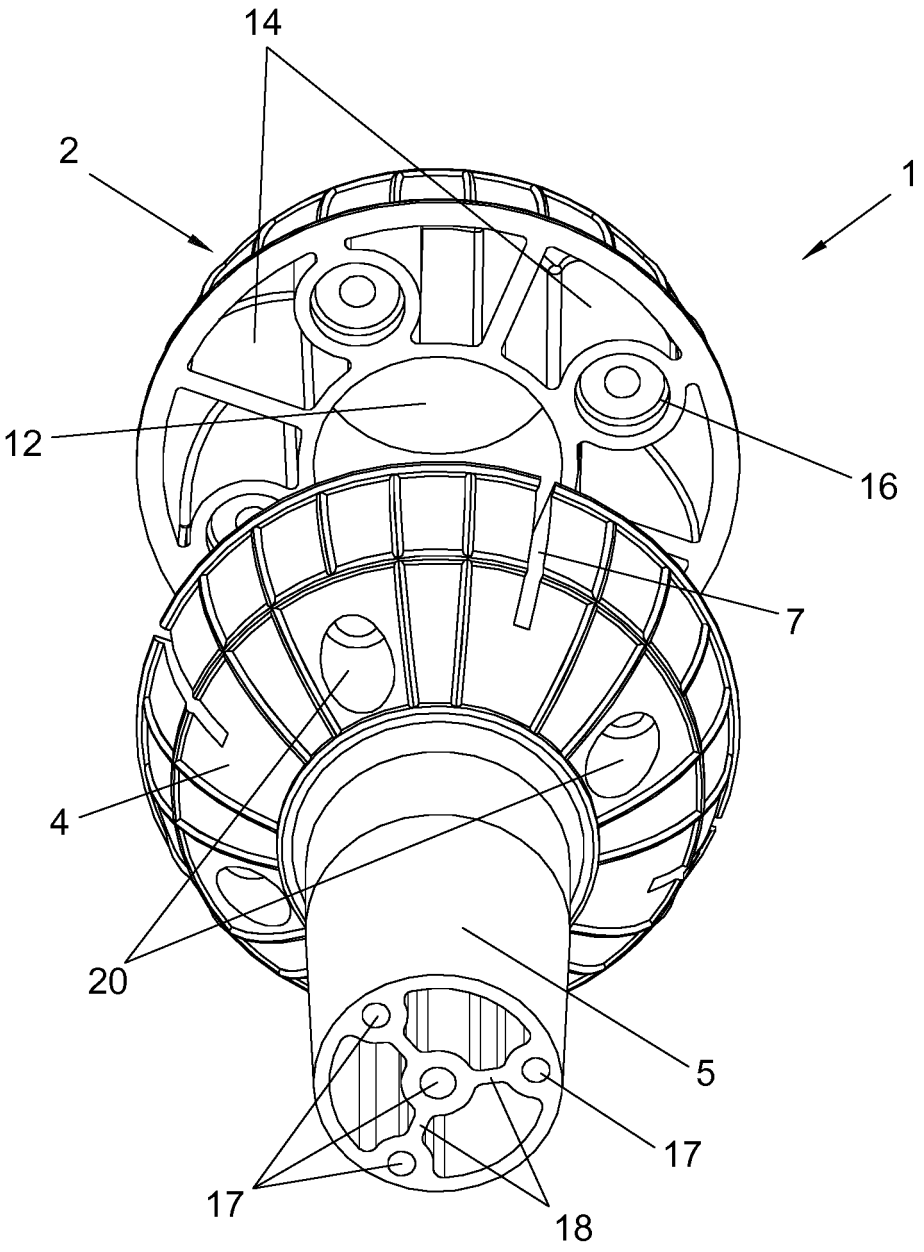


FIG. 3

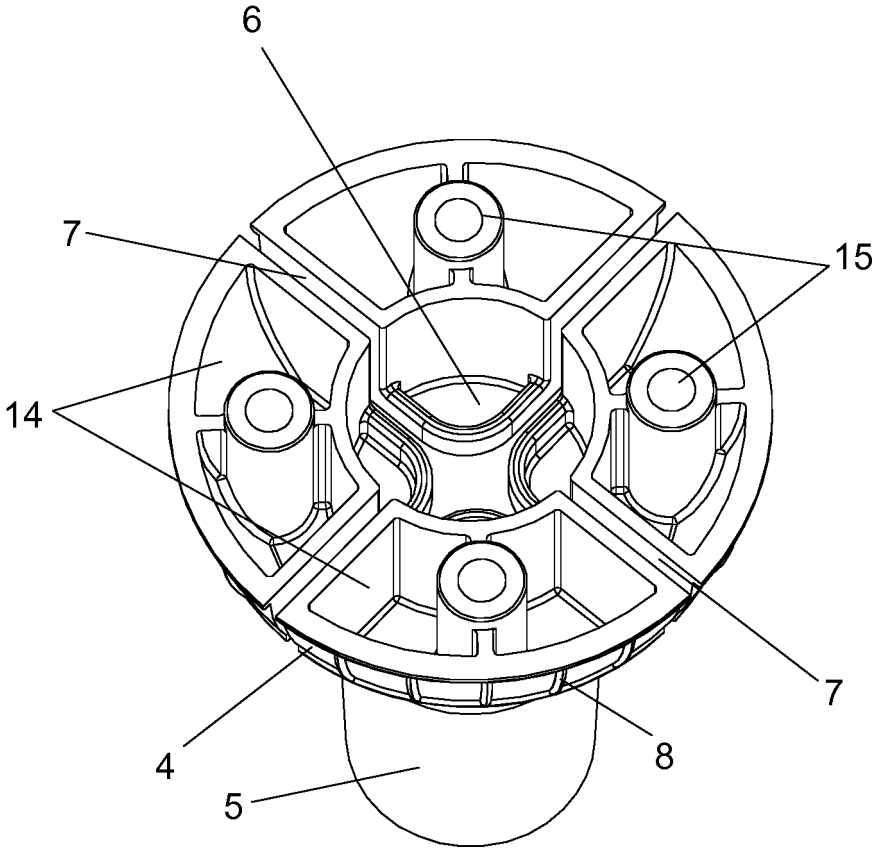


FIG. 4

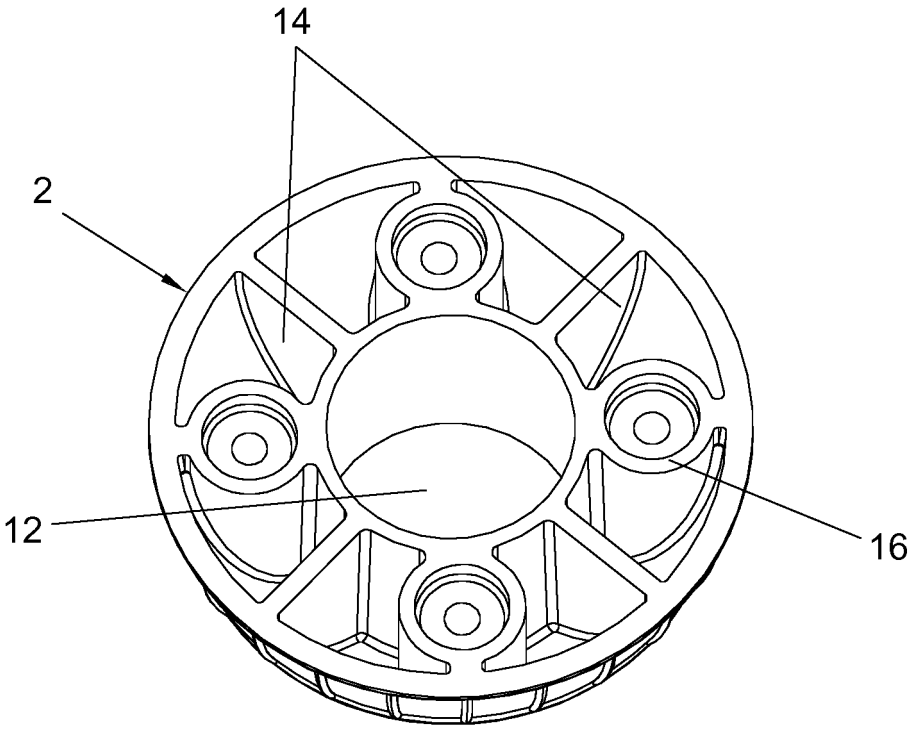


FIG. 5a

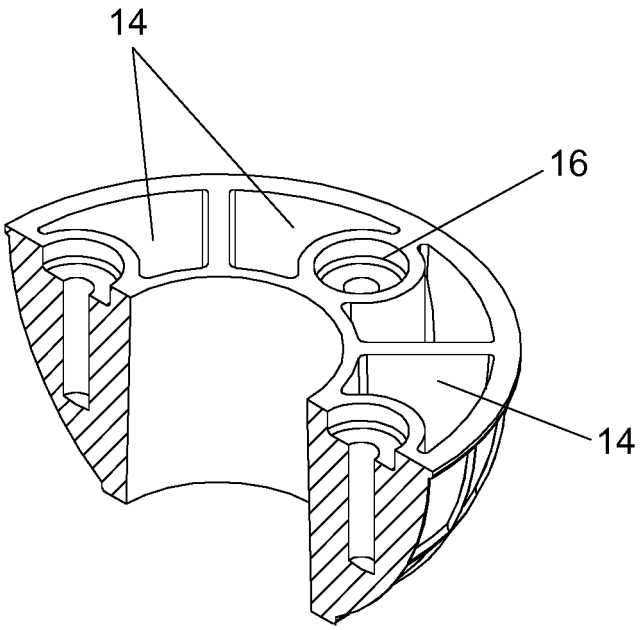


FIG. 5b

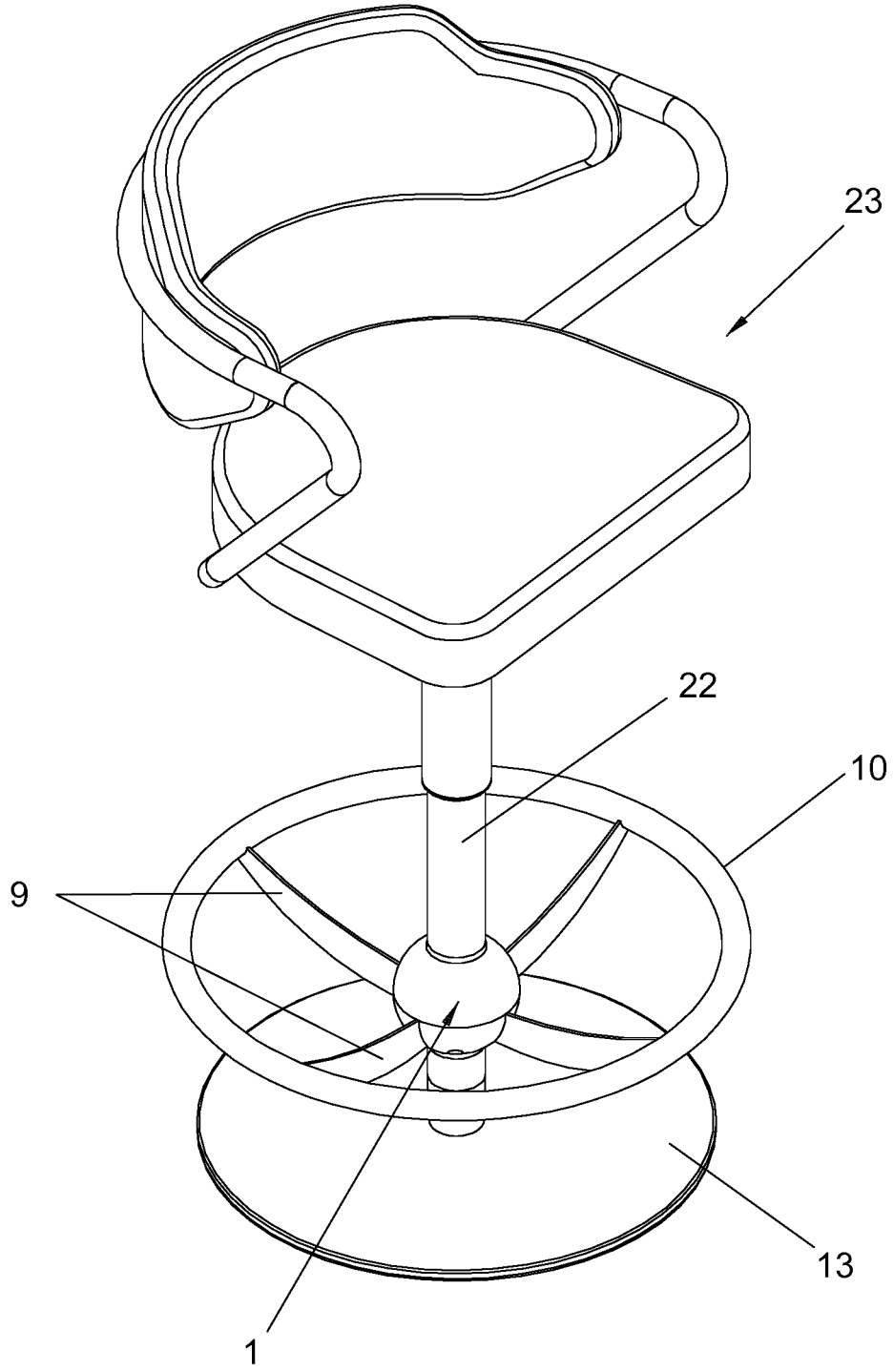


FIG. 6

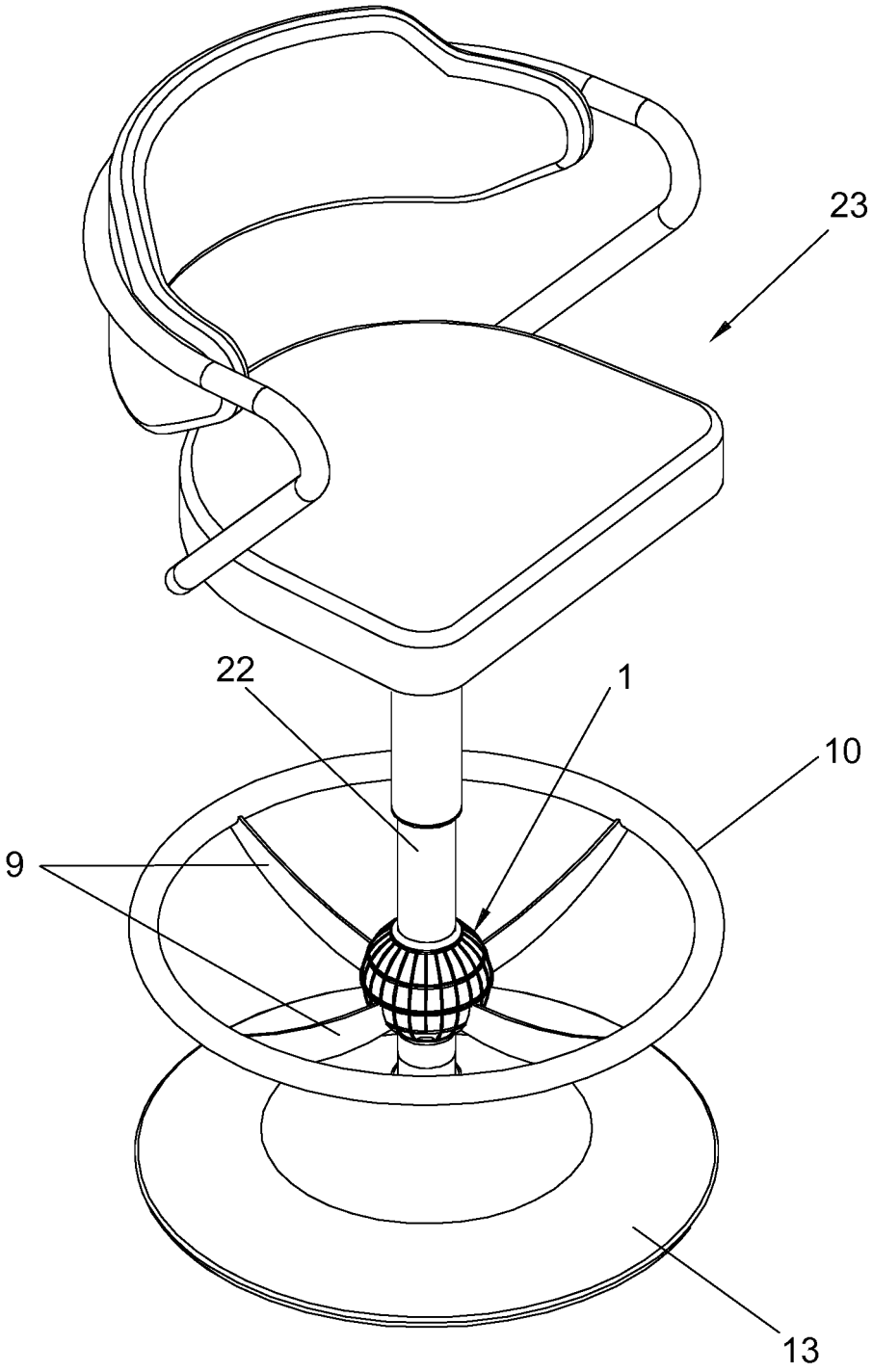


FIG. 7

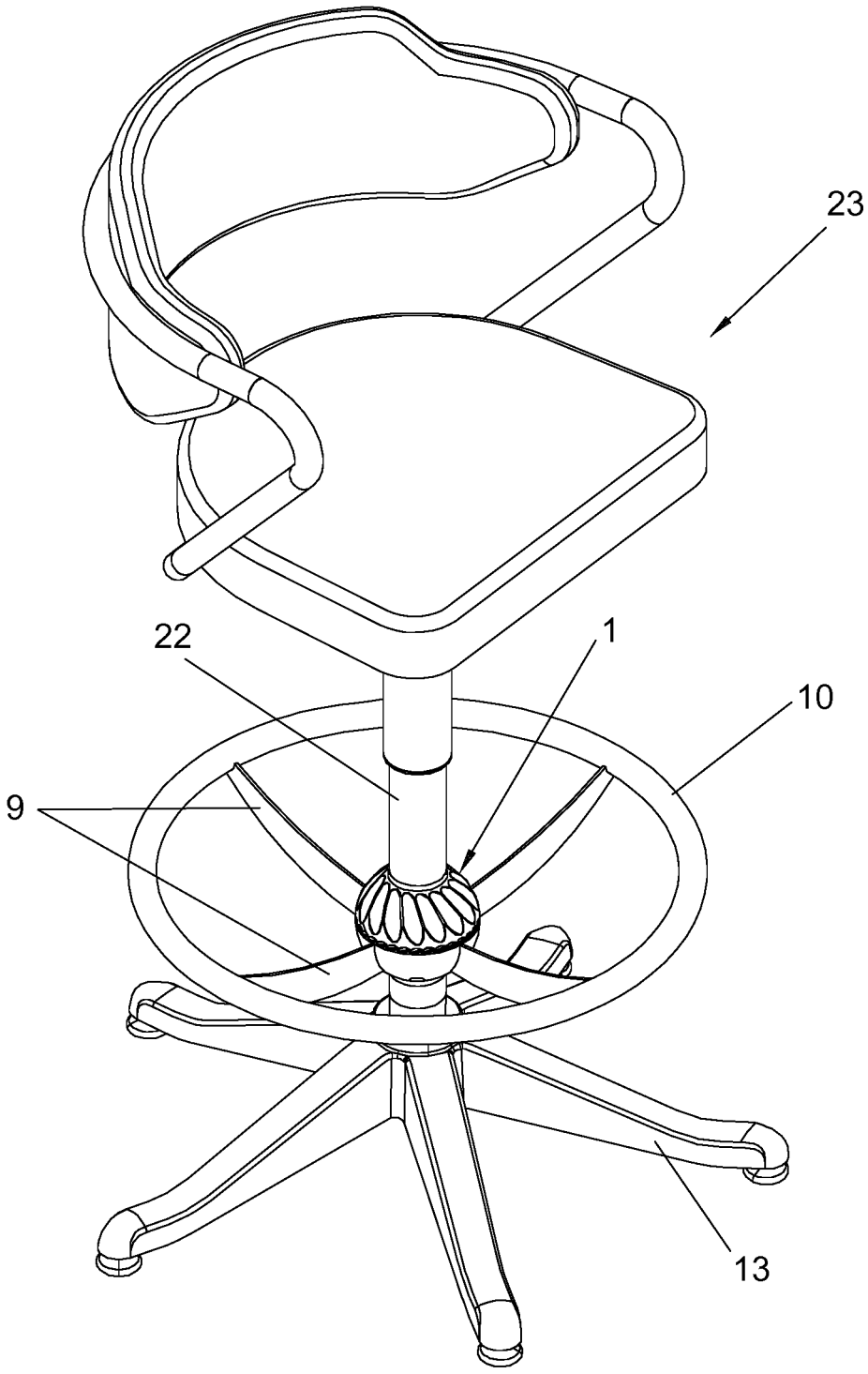


FIG. 8

INTERNATIONAL SEARCH REPORT

International application No.
PCT/ES2018/070189

A. CLASSIFICATION OF SUBJECT MATTER

A47C7/00 (2006.01)
A47C7/52 (2006.01)
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A47C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPODOC, INVENES

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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A	US 7387343 B1 (HSIEH KUN-YU) 17/06/2008, the whole document.	1-15
A	US 2011226925 A1 (TSAI PO-CHUAN) 22/09/2011, the whole document.	1-15
A	JP 2014046127 A (ITOKI CORP) 17/03/2014, figures & Abstract from DataBase WPI. Retrieved of EPOQUE; AN 2014-E57651 .	1-15
A	US 2017105534 A1 (SU CHIH-CHENG) 20/04/2017, the whole document.	1-15

☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

* Special categories of cited documents:
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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
08/06/2018	**(11/06/2018)**
Name and mailing address of the ISA/ OFICINA ESPAÑOLA DE PATENTES Y MARCAS Paseo de la Castellana, 75 - 28071 Madrid (España) Facsimile No.: 91 349 53 04	Authorized officer M. Castañón Chicharro Telephone No. 91 3493261

Form PCT/ISA/210 (second sheet) (January 2015)

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.
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