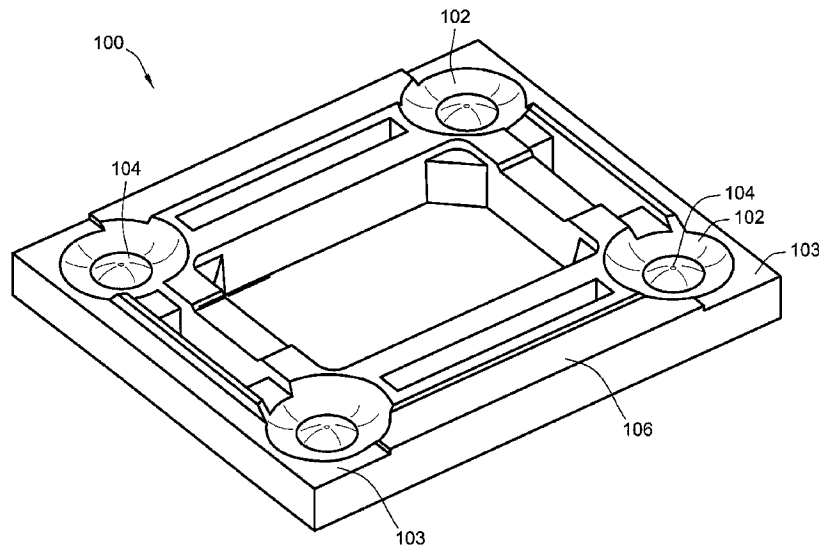




(86) **Date de dépôt PCT/PCT Filing Date:** 2017/11/08
(87) **Date publication PCT/PCT Publication Date:** 2018/05/17
(45) **Date de délivrance/Issue Date:** 2020/09/08
(85) **Entrée phase nationale/National Entry:** 2019/05/02
(86) **N° demande PCT/PCT Application No.:** US 2017/060651
(87) **N° publication PCT/PCT Publication No.:** 2018/089503
(30) **Priorités/Priorities:** 2016/11/08 (US62/419,019);
2016/11/09 (US62/419,755); 2017/11/07 (US15/806,035)

(51) **Cl.Int./Int.Cl.** **B62B 3/16** (2006.01)
(72) **Inventeurs/Inventors:**
STAHL, EDWARD L., US;
MAY, ERIC P., US;
THOMPSON, BENJAMIN JOEL, US;
BUSS, SCOTT JAMES, US
(73) **Propriétaire/Owner:**
ORBIS CORPORATION, US
(74) **Agent:** ROBIC

(54) **Titre : POCHE DE ROULETTE PIVOTANTE BOMBEE POUR PLATE-FORME OU CHARIOT**
(54) **Title: DISHED CASTER WHEEL POCKET FOR A PLATFORM OR DOLLY**



(57) **Abrégé/Abstract:**

The present invention provides a dolly having a polygonal-shaped platform having an upper surface, a lower surface, a peripheral edge having four corners, a torus-shaped pocket positioned at each corner and dimensioned to receive a wheel from an adjacent dolly, and a plurality of wheels extending from the lower surface and attached thereto.

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
17 May 2018 (17.05.2018)



(10) International Publication Number
WO 2018/089503 A1

(51) International Patent Classification:
B62B 3/16 (2006.01)

(21) International Application Number:
PCT/US2017/060651

(22) International Filing Date:
08 November 2017 (08.11.2017)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
62/419,019 08 November 2016 (08.11.2016) US
62/419,755 09 November 2016 (09.11.2016) US
15/806,035 07 November 2017 (07.11.2017) US

(71) Applicant: **ORBIS CORPORATION** [US/US]; 1055 Corporate Center Drive, Oconomowoc, Wisconsin 53066 (US).

(72) Inventors: **STAHL, Edward L.**; 7070 Calumet Drive, Tyler, Texas 75703 (US). **MAY, Eric P.**; 8003 Diamond Park Ave. NE, Canton, Ohio 44721 (US). **THOMPSON, Benjamin Joel**; 118 Pheasant Run Unit B, Johnson Creek,

Wisconsin 53038 (US). **BUSS, Scott James**; W2363 Northside Drive, Watertown, Wisconsin 53094 (US).

(74) Agent: **FUCHS, Joseph A.**; Greensfelder Hemker & Gale P.C., 200 W. Madison Street, Suite 3300, Chicago, Illinois 60606 (US).

(81) Designated States (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK,

(54) Title: DISHED CASTER WHEEL POCKET FOR A PLATFORM OR DOLLY

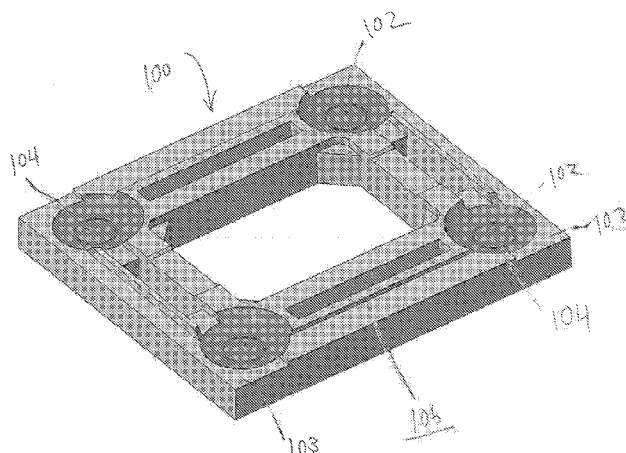


FIG. 7

(57) Abstract: The present invention provides a dolly having a polygonal-shaped platform having an upper surface, a lower surface, a peripheral edge having four corners, a torus-shaped pocket positioned at each corner and dimensioned to receive a wheel from an adjacent dolly, and a plurality of wheels extending from the lower surface and attached thereto.

[Continued on next page]



WO 2018/089503 A1

WO 2018/089503 A1



EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV,
MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM,
TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,
KM, ML, MR, NE, SN, TD, TG).

Published:

— with international search report (Art. 21(3))

DISHED CASTER WHEEL POCKET FOR A PLATFORM OR DOLLY

FIELD

- 5 The present invention provides a mobile platform with a dished pocket for receiving a wheel from an adjacent mobile platform to form a stack of mobile platforms.

BACKGROUND

- 10 The ability to stack dollies when not in use is an important feature meant to save space and reduce return cost. Due to the mobile nature of a dolly, stacking can be difficult and unsafe if a means of safe stacking is not incorporated into the design. Today the stacking of dollies, or similar wheeled devices, is accomplished by capturing the wheels. This capturing is accomplished by either raised features, such as a perimeter lip on the deck, or a recessed pocket in the deck.

- 15 These features create barriers meant to prevent a wheel from rolling off the deck below destabilizing the stack.

- 20 These pockets vary in shapes and sizes from clover-shaped sold by Schoeller Allibert to a square-shaped sold by Loadhog.

- 25 The present invention provides a caster pocket that locates the wheels of a mobile platform more precisely than previous solutions. This results in safer stacking with straighter stacks and less movement throughout. This new pocket design maintains precision for both fixed and swivel casters with no repositioning required, regardless of where the wheel is located in its 180° or 360° of rotation.

SUMMARY

- 30 According to a broad aspect, the present invention provides a dolly comprising a platform having an upper surface, a lower surface, a peripheral edge, a torus-shaped pocket dimensioned to receive a wheel from an adjacent dolly and mounted for rotational movement about an axis generally perpendicular to the upper surface, and a plurality of wheels extending from the lower surface and attached thereto.

According to another broad aspect, the present invention provides a dolly comprising a polygonal-shaped platform having an upper surface, a lower surface, a peripheral edge having four corners, a torus-shaped pocket positioned at each corner and dimensioned to receive a wheel from an adjacent dolly and mounted for rotational movement about an axis generally perpendicular to the upper surface, and a plurality of wheels extending from the lower surface and attached thereto.

BRIEF DESCRIPTION OF THE DRAWINGS

To understand the present invention, it will now be described by way of example, with reference to the accompanying drawings and attachments in which:

FIG. 1 is a perspective view of a prior art dolly with a clover-shaped caster pocket.

FIG. 2 is a perspective view of a prior art dolly with a square-shaped pocket.

FIG. 3 is an isometric view of a dolly with a caster pocket of the present invention.

FIG. 4 is an isometric view of a caster wheel in a caster pocket of the present invention.

FIGS. 5 and 6 are isometric views of an alternate embodiment of a dolly with a caster pocket of the present invention.

FIG. 7 is a perspective view of a platform with dished caster pockets of the present invention.

FIG. 8 is a perspective view of a stack of wheeled platforms.

FIG. 9 is a side view in partial cross section of a stack of wheeled platforms.

FIG. 10 is an enlarged view of a caster wheel within a dished pocket of the present invention.

FIG. 11 is a perspective view of a ring torus, a horn torus and a spindle torus.

DETAILED DESCRIPTION OF EMBODIMENTS

Variants, examples and preferred embodiments of the invention are described hereinbelow. While this invention is susceptible of embodiments in many different forms, there is shown in the drawings and will herein be described in detail preferred embodiments of the invention with the understanding that the present disclosure is to be considered as an exemplification of the principles of the invention and is not intended to limit the broad aspect of the invention to the embodiments illustrated.

FIGS. 1 and 2 show prior art dollies having a clover-shaped caster pocket and a square-shaped caster pocket respectively.

5 FIG. 3 shows a dolly 10 with a polygonal-shaped platform 12 having an upper surface 14, a lower surface 16, and a peripheral edge 18. In one preferred aspect, the peripheral edge will have corners and preferably, in parallelepiped shaped surfaces, four corners 20. A torus-shaped pocket 22 is positioned on the upper surface 14, preferably on the peripheral edge 18, and more preferably at the corners 20. The torus-shaped pocket 22 is dimensioned to receive a wheel 24
10 from an adjacent dolly to form a stack of dollies as shown in FIG. 8. A more detailed description of a dolly can be found in commonly assigned U.S. Patent Publication No. 2017/0151974.

In one aspect, a pair of vertically upstanding stop walls 40 are provided at each corner on separate peripheral edges. The stop walls have faces 42 that are oriented orthogonally. The stop walls 40
15 can be moveable from a deployed position (as shown) to a stowed position where a top surface 44 is flush with the upper surface 14 or slightly above or below. The stop wall 40 can be spring loaded and can be moved between the stowed position to the deployed position by pressing downward on the top surface 44.

20 A torus is a surface formed by a circle having a minor axis r is rotated about a second circle having a major axis R . The ratio of the major axis to the minor axis is known as the aspect ratio. If R is greater than r the torus is known as a ring torus. (FIG. 11) This is essentially a doughnut shape. If R is equal to r than the torus is known as a horn torus. (FIG. 11) If R is less than r the torus is known as a spindle torus. The aspect ratio of the torus will be in the range of from 3:2 to 2:3, and
25 preferably is 3:3 (1:1), or a horn torus. FIG. 4 shows the torus has two concave impressions 30, 32 and a central, upstanding point 34.

The polygonal shape can have from 3 to 8 or more sides and includes triangles, parallelepipeds, squares, rectangles, trapezoids, rhombi, pentagons, hexagons, heptagons, and octagons. Most
30 preferably, the platform is square or rectangular in shape.

FIGS. 5 and 6 show an alternate caster pocket 50, a truncated torus having essentially a D-shape as shown with a semi-circular-shaped pocket 52 with a diametrically extending wall 54, and a

raised edge 56. The raised edge 56 has two lobes 58 each having a semicircular shape sloping downward from the top surface to a low point then back upward to a raised center segment 60.

FIGS. 7-10 show another mobile platform 100, with wheels removed, having a polygonal-shaped platform, in this case rectangular, with four torus-shaped pockets 102 positioned at the four corners 103 and recessed below the upper surface 106. The pockets have a raised, circular shaped disk 104, centrally disposed in the pocket and mounted for rotational motion about an axis through the center of the pocket and perpendicular to an upper surface 106 of the platform 100. The circular disk 104 is below the upper surface 100.

As shown in FIG. 10, the caster wheel 110 is connected to the lower surface 107 of the dolly by a caster bracket 112 with two legs 114 spaced from one another to accommodate the caster wheel and having aligned through holes for an axle 116 to support rotation thereabout. The caster bracket 112 is pivotally mounted by a second axle 120 to a pivot plate 122 and a top plate 124. The caster bracket 112 and the pivot plate 122 are free to rotate about an axis 126 that extends through the second axle 120 and the top plate 124 is stationary and is bolted to the lower surface 107 of the dolly 100. Caster wheels 110 can be mounted for varying degrees of rotational freedom, for example, from 90° to 360°. The rotating disk 104 eases stacking of dollies by accommodating caster wheels being inserted into the pockets in any orientation. In one aspect, the rotating disk is supported by ball bearings (not shown).

Many modifications and variations of the present invention are possible in light of the above teachings. It is, therefore, to be understood within the scope of the appended claims the invention may be protected otherwise than as specifically described.

CLAIMS

1. A dolly comprising a platform having an upper surface, a lower surface, a peripheral edge, a torus-shaped pocket dimensioned to receive a wheel from an adjacent dolly and
5 mounted for rotational movement about an axis generally perpendicular to the upper surface, and a plurality of wheels extending from the lower surface and attached thereto.
2. The dolly of claim 1, wherein the torus-shape has an aspect ratio within the range of from 3:2 to 2:3.
- 10 3. The dolly of claim 1, wherein the torus-shape has an aspect ratio of 1:1.
4. The dolly of any one of claims 1 to 3, comprising a stop wall positioned proximate the pocket.
- 15 5. The dolly of claim 4, wherein the stop wall extends above the upper surface.
6. The dolly of claim 4 or 5, wherein the stop wall is moveable from a deployed position to a stowed position.
- 20 7. The dolly of any one of claims 1 to 6, wherein the pocket is generally D-shaped.
8. The dolly of claim 7, comprising a raised edge in the pocket.
- 25 9. The dolly of any one of claims 1 to 8, comprising a plurality of corners and a plurality of pockets one of each of the plurality of pockets being positioned at one of each of the plurality of corners.
10. The dolly of any one of claims 1 to 9, wherein at least one of the plurality of wheels is a
30 caster wheel attached to the lower surface with a swivel for rotation about a first axis perpendicular to the lower surface and the wheel is mounted for rotation about a second axis perpendicular to the first axis.

11. The dolly of claim 10, wherein the first axis of rotation is coaxially disposed with a centerline of the pocket.

12. The dolly of claim 11, wherein the first axis of rotation if extended through the wheel is spaced from a diameter line through the wheel to define a swivel radius.

13. The dolly of any one of claims 1 to 9, wherein the wheels are caster wheels mounted for rotation about an axis from 180° to 360°.

14. A dolly comprising a polygonal-shaped platform having an upper surface, a lower surface, a peripheral edge having four corners, a torus-shaped pocket positioned at each corner and dimensioned to receive a wheel from an adjacent dolly and mounted for rotational movement about an axis generally perpendicular to the upper surface, and a plurality of wheels extending from the lower surface and attached thereto.

15

15. The dolly of claim 14, comprising a first stop wall positioned proximate the pocket.

16. The dolly of claim 15, wherein the first stop wall is moveable between a deployed position and a stowed position.

20

17. The dolly of claim 16, comprising a second stop wall spaced from the first stop wall.

18. The dolly of claim 17, wherein the second stop wall is moveable between a deployed position to a stowed position.

25

19. The dolly of claim 18, wherein the pocket is mounted for rotational motion about an axis perpendicular to the top surface.

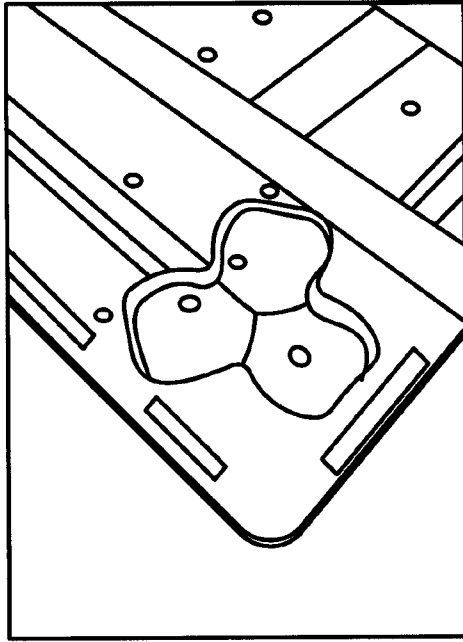


FIG. 1

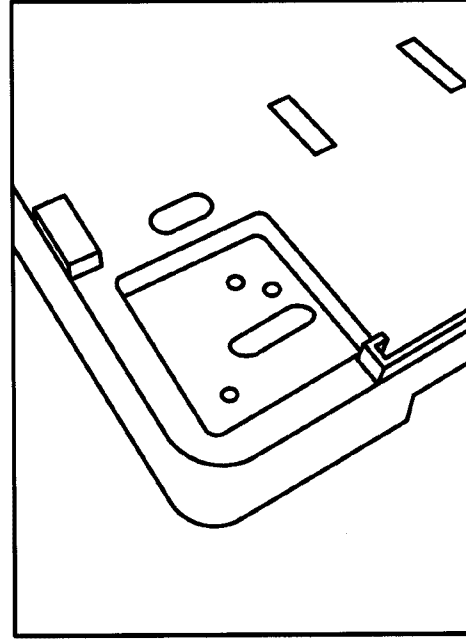


FIG. 2

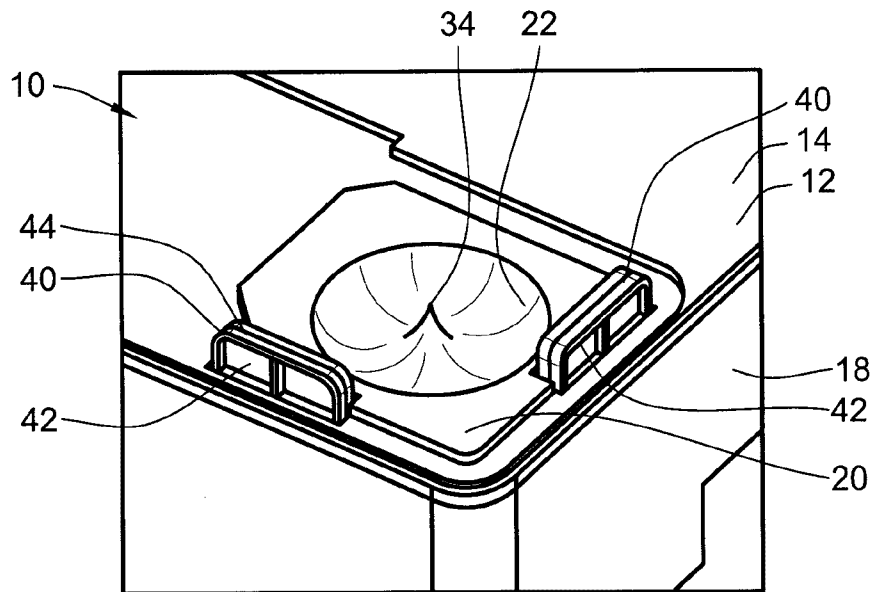


FIG. 3

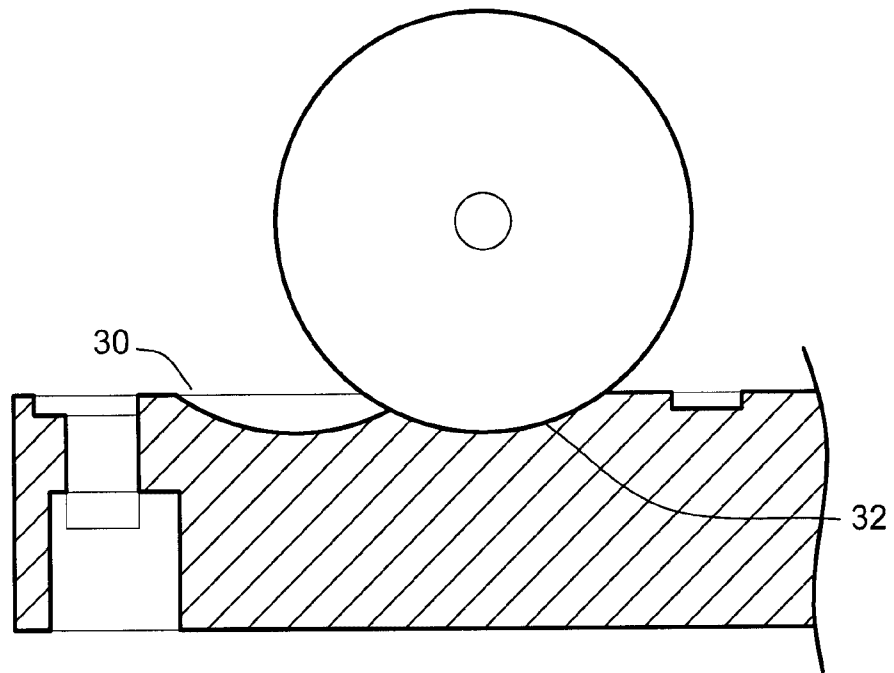


FIG. 4

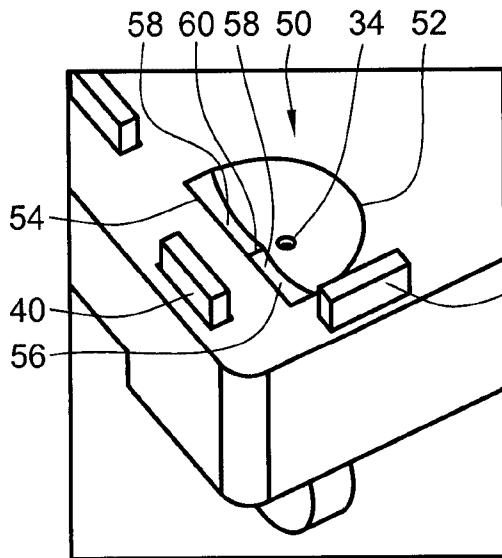


FIG. 5

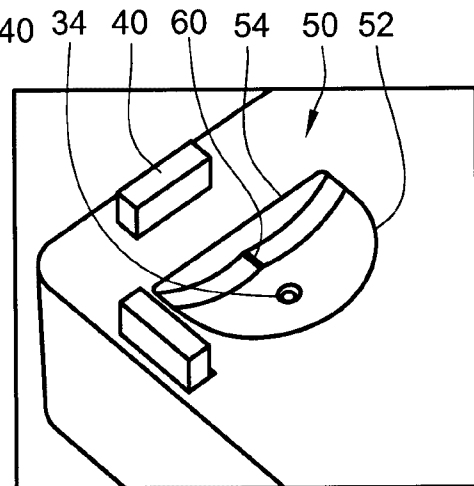


FIG. 6

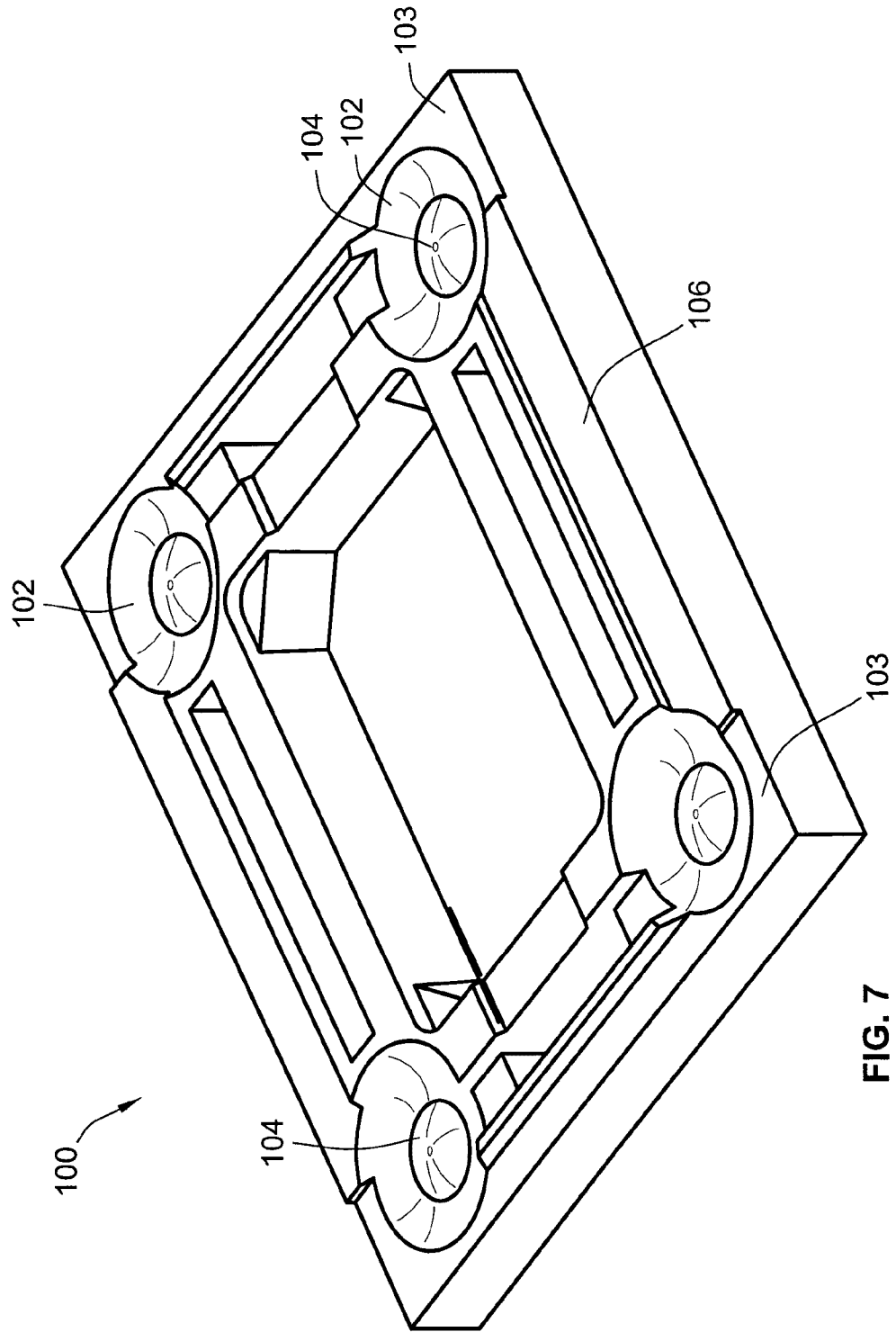


FIG. 7

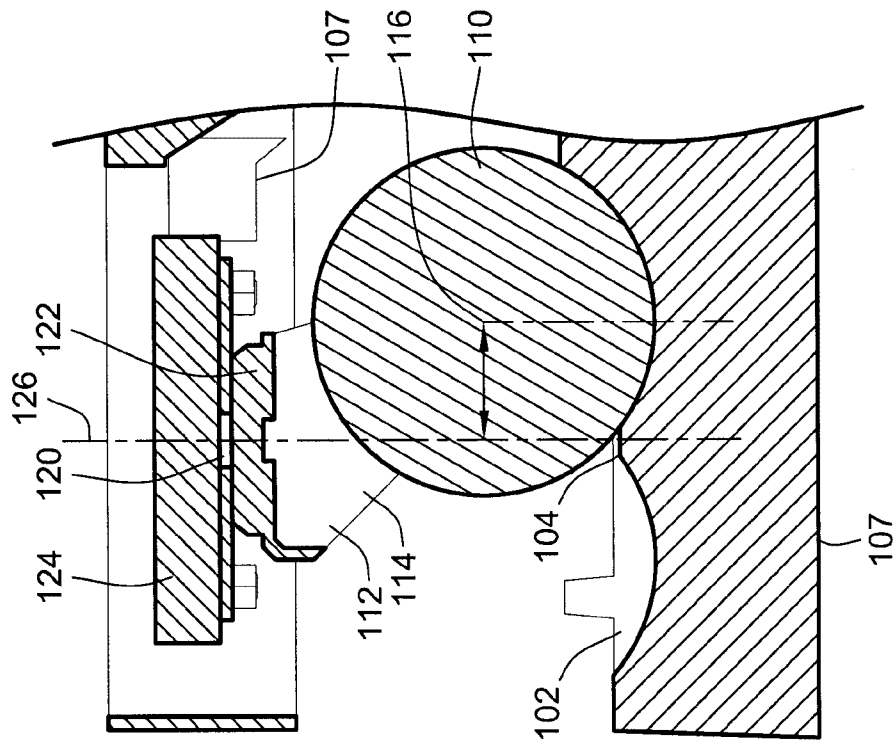
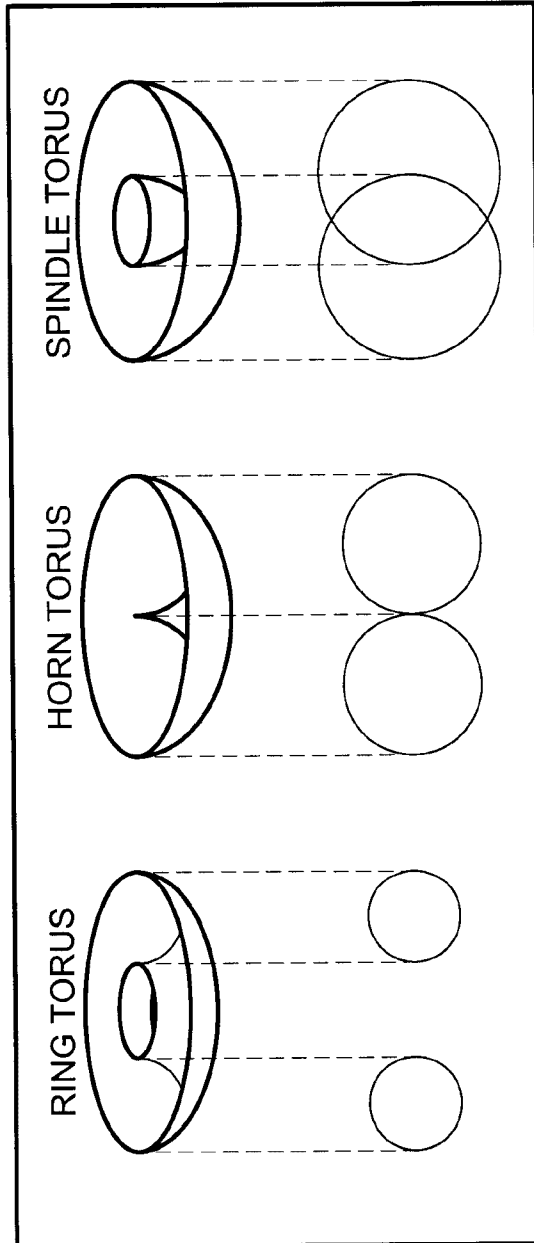


FIG. 10

**FIG. 11**

