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(54) FLEXIBLE DISPENSING DEVICE

(57) It is proposed a dispensing device configured for dispensing a composition into a toilet bowl; the dispensing device comprising a first container (20) having a chamber adapted for housing a first composition, a second container (30) having a chamber adapted for housing a second composition and a bridge (40) extending lon-

gitudinally between the first container (20) and the second container (3); wherein the bridge (4) comprises at least one groove extending substantially perpendicular to the longitudinal axis (A) forming a flexible region between the first container (20) and the second container (30).

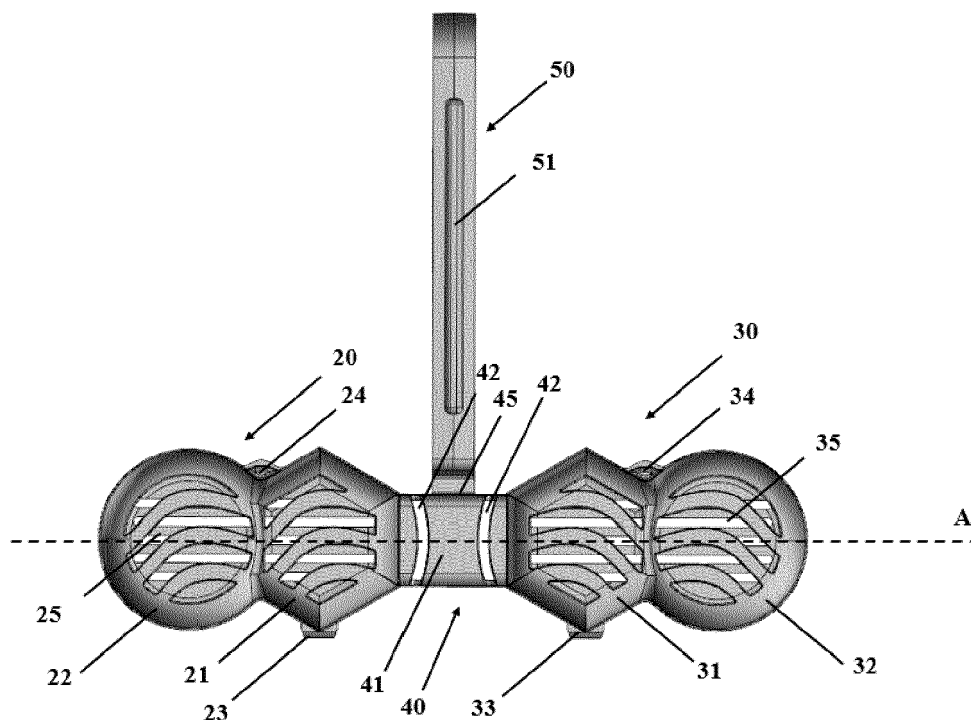


Fig. 1

Description

FIELD OF THE INVENTION

[0001] The present invention pertains to the field of devices useful in dispensing a composition (e.g. a cleaning and/or deodorizing and/or colouring composition) to a toilet bowl. More specifically, the present invention relates to a flexible dispensing device which may be conformed to the configuration of a toilet bowl.

BACKGROUND OF THE INVENTION

[0002] Several solutions exist for dispensing compositions to a toilet bowl. Generally, the dispensing devices comprise at least one dispenser body, including a body cavity adapted to contain at least one composition, which is suspended from the rim of the toilet bowl and which is placed at or near the interior sidewall of the toilet bowl.

[0003] Such dispensing devices are designed to release the composition into the toilet bowl when contacted with flushing water coming from under the rim of the toilet bowl.

[0004] Most of the dispensing devices of the prior art are rigid elongated devices whose two endpoints abut against the toilet bowl. Due to the curvature of the toilet bowl, the central region of the dispensing device does not remain beneath the rim and protrudes inwardly. Consequently, the central region of the dispensing device receives insufficient flushing water to dispense a composition.

[0005] In order to ensure that sufficient water enters the body cavity during a flushing cycle, it is important to position the whole length of the dispensing device beneath the rim of the toilet bowl.

[0006] It is known from GB2416785A to provide a dispensing device comprising two dispenser bodies flexibly connected so that the dispensing device may approximately conform to the configuration of the toilet bowl and remain beneath the rim of the toilet bowl. According to GB2416785A, the dispensing device comprises hinges, such as knuckle-type hinges, to pivotably link the dispenser bodies. Such embodiment requires dispenser bodies with complex geometry, additional mechanical parts (hinge pins) and complex manufacturing process.

[0007] Accordingly there is still a need to provide a dispensing device without suffering from the above-described drawbacks. In particular, it is an object of the present invention to provide an easy-to-manufacture, simple, and inexpensive dispensing device which conforms to the shape of the toilet bowl. It is also an object of the invention to provide a dispensing device which may be adapted to all toilet bowls, whatever the curvature of the toilet bowl. It is further an object of the invention to provide a dispensing device which may fit closely under the toilet rim to remain unnoticed.

SUMMARY OF THE INVENTION

[0008] According to the present invention there is provided a dispensing device configured for dispensing a composition into a toilet bowl; the dispensing device comprising:

- a first container having a chamber adapted for housing a first composition;
- a second container having a chamber adapted for housing a second composition; and
- a bridge extending longitudinally between the first container and the second container;

wherein the bridge comprises at least one groove extending substantially perpendicular to the longitudinal axis forming a flexible region between the first container and the second container.

[0009] Preferably, the flexible region between the first container and the second container is flexible so that the first container, the second container and the bridge conform to the toilet bowl curvature. Preferably, the flexible region between the first container and the second container is flexible so that the first container, the second container and the bridge conform to the toilet bowl curvature while the hanger remains parallel or close to the interior sidewall of the rim of the toilet bowl. In particular, the flexible region is flexible so that the first container, the second container and the bridge remain beneath the rim of the toilet bowl.

[0010] According to one embodiment, the at least one groove is a through groove.

[0011] According to one embodiment, the first container, the second container and the bridge are integral, preferably the first container, the second container and the bridge are made of one piece.

[0012] According to one embodiment, the bridge comprises a front side and a rear side.

[0013] According to one embodiment, the flexible region comprises at least one groove on the front side and at least one groove on the rear side.

[0014] According to one embodiment, the bridge comprises a front side, a rear side, an upper side and a lower side.

[0015] According to one embodiment, the flexible region comprises at least one groove on the front side, at least one groove on the rear side, at least one groove on the upper side and at least one groove on the lower side.

[0016] According to one embodiment, the at least one groove on the front side and the at least one groove on the rear side extend at the same height along the longitudinal axis.

[0017] According to one embodiment, the at least one groove on the front side and the at least one groove on the rear side are symmetrical about a vertical plane containing the longitudinal axis.

[0018] According to one embodiment, each groove is symmetrical about a vertical plane perpendicular to the

longitudinal axis and containing the bottom of the groove.

[0019] According to one embodiment, the flexible region of the bridge comprises a groove pattern, preferably a groove pattern of the front side and a groove pattern on the rear side. According to one embodiment, said groove pattern comprises a sinusoidal groove pattern. According to another embodiment, said groove pattern comprises a triangle groove pattern such as a sawtooth pattern.

[0020] According to one embodiment, the bridge is a solid element and the at least one groove does not pass through the bridge.

[0021] According to one embodiment, the bridge is a hollow element.

[0022] According to one embodiment wherein the bridge is a hollow element, the at least one groove passes through the front side and/or rear side of the bridge.

[0023] According to one embodiment, the depth of the at least one groove is ranging from 1 to 6mm, preferably about 4mm.

[0024] According to one embodiment, the width of the at least one groove is ranging from 0.5 to 5mm, preferably about 1.5mm.

[0025] According to one embodiment, the dispensing device further comprises a hanger extending from the bridge adapted for removably hanging the dispensing device upon the toilet bowl.

[0026] According to one embodiment, each container comprises at least one opening allowing the entry and egress of flushing water into the chambers.

[0027] According to one embodiment, each container is formed from two parts connected by a hinge about which the two parts may be moved and fitted together; preferably the hinge is positioned above or below each container.

BRIEF DESCRIPTION OF THE DRAWINGS

[0028] The invention will be more clearly understood from the following description, given by way of example only, with reference to the accompanying drawings, in which:

Figure 1 illustrates a front view of the dispensing device according to a first embodiment of the invention.

Figure 2 illustrates a side view of the dispensing device according to the first embodiment of the invention.

Figure 3 illustrates a bottom view of the dispensing device according to the first embodiment of the invention.

Figure 4 illustrates an enlarged front view of the bridge of the dispensing device according to the first embodiment of the invention.

Figure 5 illustrates a front view of the dispensing device according to a second embodiment of the invention.

Figure 6 illustrates an enlarged front view of the dispensing device according to the second embodiment of the invention.

Figure 7 illustrates an enlarged rear view of the dispensing device according to the second embodiment of the invention.

Figure 8 illustrates a front view of the dispensing device according to a third embodiment of the invention.

Figure 9 illustrates an enlarged front view of the dispensing device according to the third embodiment of the invention.

Figure 10 illustrates a front view of the dispensing device according to a fourth embodiment of the invention.

Figure 11 illustrates an enlarged front view of the dispensing device according to the fourth embodiment of the invention.

Figure 12 illustrates a front view of the dispensing device according to a fifth embodiment of the invention.

Figure 13 illustrates an enlarged front view of the dispensing device according to the fifth embodiment of the invention.

Figure 14 illustrates a sectional view, along a horizontal plane containing the longitudinal axis A, of the dispensing device according to the fifth embodiment of the invention.

DETAILED DESCRIPTION OF THE INVENTION

[0029] Figures 1 to 4 illustrate a first embodiment of the dispensing device of the invention. As shown in figure 1, the dispensing device comprises a first container 20. The first container 20 has a chamber adapted for housing a first composition, for instance a cleaning composition, a bleaching composition, a deodorizing composition, a colouring composition and/or a disinfecting composition. The first composition is preferably a water soluble solid composition. The first container 20 may comprise a plurality of compositions. For instance, in the embodiment depicted in figure 1, the first container 20 comprises two compartments 21, 22, each comprising a composition, preferably a different composition. The first container is preferably formed from two parts connected by a hinge 23 about which the two parts may be moved and fitted

together; preferably the hinge 23 is positioned above or below each container and the container comprises respectively below of above the container fastening means 24 keeping the container closed during use. The first container comprises at least one opening 25, preferably a plurality of openings 25 allowing the entry and egress of flushing water into the chamber. In particular, the at least one opening 25 allows entry of flushing water and egress of flushing water mixed with the water-soluble first composition. According to one embodiment, the first container 20 comprises at least one opening 25 on each part.

[0030] Figure 1 also shows a second container 30. The second container 30 has a chamber adapted for housing a second composition, for instance a cleaning composition, a bleaching composition, a deodorizing composition, a colouring composition and/or a disinfecting composition. The second composition is preferably a water soluble solid composition. The second container 30 comprises a plurality of compositions. In the embodiment depicted in figure 1, the second container 30 comprises two compartments 31, 32, each comprising a composition, preferably a different composition. According to one embodiment, the first composition(s) and the second composition(s) are the same. According to another embodiment, the first composition(s) and the second composition(s) are different. The second container 30 is preferably formed from two parts connected by a hinge 33 about which the two parts may be moved and fitted together; preferably the hinge 33 is positioned above or below each container and the container comprises respectively below of above the container fastening means 34 keeping the container closed during use. The second container comprises at least one opening 35, preferably a plurality of openings 35 allowing the entry and egress of flushing water into the chambers. In particular, the at least one opening 35 allows entry of flushing water and egress of flushing water mixed with the water-soluble second composition. According to one embodiment, the second container 30 comprises at least one opening 35 on each part.

[0031] The first container 20 and the second container 30 are connected by a bridge 40 extending longitudinally along a longitudinal axis A between the two containers 20, 30. The bridge 40 has the shape of a rectangular parallelepiped, preferably a rectangular parallelepiped whose edges where chamfered. Preferably, the first container 20, the second container 30 and the bridge 40 are integrally formed.

[0032] The bridge 40 comprises at least one groove 42. Said at least one groove 42 enables the bridge 40 to conform to the curvature of the toilet bowl. In particular, the bridge 40 comprises a front side 41, a rear side 43, an upper side 45 and a lower side 46. The bridge comprises two grooves 42 on the front side 41 and two grooves 44 on the rear side 43. It is indeed a preferred embodiment of the invention to provide at least one groove on the front side and at least one groove on the rear side to enhance flexibility. The grooves 42, 44 extend substantially perpendicularly to the longitudinal axis A. By

"substantially perpendicularly to the longitudinal axis", it is to be understood that the line joining the endpoints of the groove extends perpendicularly to the longitudinal axis or at an angle ranging from plus or minus 10° relative to the line perpendicular to the longitudinal axis, preferably plus or minus 5° relative to the line perpendicular to the longitudinal axis. The shape of the groove between the endpoints may be indifferently a straight line or a curved line. For instance in figure 1, the grooves are arcuated while in figure 6, the grooves are straight.

[0033] The grooves 42, 44 are through grooves in order to enhance flexibility. By "through groove" it is to be understood a groove that passes all the way through the surface, thus having its ends open; i.e. a groove starting from the upper side 45 up to the lower side 46.

[0034] Figure 1 also shows a hanger 50 extending from the bridge 40, in particular from the upper side 45 of the bridge 40. Alternatively, the hanger may extend from any other side, i.e. the front side 41, the rear side 43 or the lower side 46 of the bridge 50. The hanger 50 is integrally formed with the bridge 40, preferably formed in one piece. According to another embodiment, (not shown), the bridge 40 comprises a hanging hole for engaging, removably or not, the hanger 50. The hanger 50 may comprise a reinforcing member 51 in order to enhance the mechanical properties of the hanger, especially the flexural strength.

[0035] Figure 2 depicts a side view of the dispensing device wherein the hanger is clearly shown. The hanger is foldable and comprises a flexible hook. The hanger 50 is shown in a closed and folded configuration. In use, the hanger is unfolded and attached to the rim of the toilet bowl so that the containers may be suspended beneath the toilet bowl.

[0036] Figure 3 shows a bottom view of the container with a clear view of the hinges 23, 33 of the first and second containers 20, 30.

[0037] Figure 4 is an enlarged view of the bridge 40. As depicted, the bridge 40 is hollow and each groove 42, 44 passes through the front side 41 and the rear side 43 towards the hollow area. In order to enhance flexibility, the dispensing device comprises at least one groove between the hanger and each container. As depicted for instance in figure 4, the bridge 40 comprises two grooves 42, 44 between the hanger 50 and the first container 20 and two grooves 42, 44 between the hanger and the second container 30. Also, as depicted in figure 4, the grooves on the front side 42 and the groove on the rear side 44 extend at the same height along the longitudinal axis A. By "extending at the same height along the longitudinal axis" it is to be understood that the orthogonal projection on the longitudinal axis of the bottom of one groove 42 of the front side 41 overlap with the orthogonal projection on the longitudinal axis of the bottom of one groove 44 of the rear side 43. Said embodiment enhances the flexibility while decreasing the manufacturing costs. The manufacturing process is also simpler. Also, in order to decrease the manufacturing costs, the

grooves 42 on the front side 41 and the grooves 44 on the rear side 43 are symmetrical about a vertical plane containing the longitudinal axis. In the first embodiment depicted in figures 1 to 4, the depth of the grooves 42, 44 is ranging from 1 to 6mm, preferably about 4mm and the width of the grooves 42, 44 is ranging from 0.5 to 5mm, preferably about 1.5mm.

[0038] Figures 5 to 7 illustrate another embodiment of the dispensing device according to the present invention. This embodiment differs from previous embodiment only by the bridge 140. The bridge 140 comprises a front side 141, a rear side 143, an upper side and a lower side and extends longitudinally between the first container 120 and the second container 130. As shown, the bridge 140 is a solid bridge 140 and comprises a plurality of grooves 142 only on the front side 141. The grooves extend substantially perpendicular to the longitudinal axis A. Each groove 142 is symmetrical about a vertical plane perpendicular to the longitudinal axis and containing the center of the bottom of the groove 142. The grooves 142 are positioned on each side of the hanger 150; i.e. between the hanger 150 and the first container 120 and between the hanger 150 and the second container 130. The hanger 150 is connected to the bridge on the front side 140. As clearly depicted in figure 7, the rear side 143 is flat and does not comprise any groove. In this second embodiment, the grooves 142 form a groove pattern, especially a square groove pattern. By "square groove pattern", it is to be understood that the front side 141 of the bridge, viewed from the above, has the shape of a square function.

[0039] Figures 8 and 9 illustrate another embodiment of the dispensing device according to the present invention. This embodiment differs from previous embodiments only by the bridge 240. The bridge 240 comprises a front side 241, a rear side 243, an upper side and a lower side and extends longitudinally between the first container 220 and the second container 230. As shown, the bridge 240 is a solid bridge and comprises a plurality of grooves 242 on the front side 241 and a plurality of groove 244 on the rear side 243. The grooves extend substantially perpendicular to the longitudinal axis A. Each groove 242, 244 is symmetrical about a vertical plane perpendicular to the longitudinal axis and containing the bottom of the groove 242, 244. The grooves 242, 244 are positioned on each side of the hanger 250; i.e. between the hanger 250 and the first container 220 and between the hanger 250 and the second container 230. The hanger 250 is connected to the bridge on the front side 241. As clearly depicted in figure 9, the grooves 242, 244 form a groove pattern, especially a triangle groove pattern. By "triangle groove pattern", it is to be understood that the front side 241 and/or the rear side 243 of the bridge 240, viewed from the above, have the shape of a triangle function; i.e. a sequence of triangles. According to another embodiment (not shown), the grooves 242 of the front side 241 or the grooves 244 of the rear side 243 form a triangle groove pattern and the other side (respec-

tively the rear side 243 or the front side 241) is flat and does not comprise any groove.

[0040] Figures 10 and 11 illustrate another embodiment of the dispensing device according to the present invention. This embodiment differs from previous embodiments by the bridge 340. The bridge 340 comprises a front side 341, a rear side 343, an upper side and a lower side and extends longitudinally between the first container 320 and the second container 330. As shown, the bridge 340 is a solid bridge and comprises a plurality of grooves 342 on the front side 341 and a plurality of groove 344 on the rear side 343. The grooves extend substantially perpendicular to the longitudinal axis A. Each groove 342, 344 is symmetrical about a vertical plane perpendicular to the longitudinal axis and containing the bottom of the groove 342, 344. The grooves 342, 344 are positioned on each side of the hanger 350; i.e. between the hanger 350 and the first container 320 and between the hanger 350 and the second container 330. The hanger 350 is connected to the bridge on the front side 341. As clearly depicted in figure 11, the grooves 342, 344 form a groove pattern, especially a sinusoidal groove pattern. By "sinusoidal groove pattern", it is to be understood that the front side 341 and/or the rear side 343 of the bridge 340, viewed from the above, have the shape of a sinusoid. According to another embodiment (not shown), the grooves 342 of the front side 341 or the grooves 344 of the rear side 343 form a sinusoidal groove pattern and the other side (respectively the rear side 343 or the front side 341) is flat and does not comprise any groove.

[0041] Figures 12 and 14 illustrate another embodiment of the dispensing device according to the present invention. This embodiment differs from previous embodiments by the bridge 440. The bridge 440 comprises a front side 441, a rear side 443, an upper side and a lower side and extends longitudinally between the first container 420 and the second container 430. As shown, the bridge 440 is a hollow bridge and comprises a plurality of grooves 442 on the front side 441, a plurality of groove 444 on the rear side 443. The bridge 440 also comprises a plurality of grooves on the upper side and a plurality of grooves on the lower side. The grooves extend substantially perpendicular to the longitudinal axis A. In this embodiment, the grooves 442 on the front side and the grooves 444 on the rear side 443 does not pass through the front and rear sides 441, 443 respectively. The grooves 442 on the front side 441 and the grooves 444 on the rear side 443 are symmetrical about a vertical axis containing the longitudinal axis A. Each groove 442, 444 is also symmetrical about a vertical plane containing the bottom of the groove 442, 444. The grooves on the upper side and the grooves on the lower side also does not pass through the upper and lower sides respectively. The grooves on the upper side and the grooves on the lower side are symmetrical about a vertical axis containing the longitudinal axis A. Each groove on the upper side and on the lower side is also symmetrical about a vertical

plane containing the bottom of the groove. The grooves are positioned on each side of the hanger 450; i.e. between the hanger 450 and the first container 420 and between the hanger 450 and second container 430. The hanger 450 is connected to the bridge on the front side 441. As clearly depicted in figure 11, the grooves form a groove pattern, especially a triangle groove pattern.

Claims

1. A dispensing device comprising:

- a first container (20, 120, 220, 320, 420) having a chamber adapted for housing a first composition;
- a second container (30, 130, 230, 330, 430) having a chamber adapted for housing a second composition; and
- a bridge (40, 140, 240, 340, 440) extending longitudinally between the first container and the second container;

wherein the bridge comprises at least one groove (42, 44; 142, 144; 242, 244; 342, 344; 442, 444) extending substantially perpendicular to the longitudinal axis (A) forming a flexible region between the first container and the second container.

2. The dispensing device according to claim 1, wherein the at least one groove (42, 44; 142, 144; 242, 244; 342, 344; 442, 444) is a through groove.

3. The dispensing device according to claim 1 or claim 2, wherein the first container (20, 120, 220, 320, 420), the second container (30, 130, 230, 330, 430) and the bridge (40, 140, 240, 340, 440) are integral, preferably the first container, the second container and the bridge are made of one piece.

4. The dispensing device according to anyone of claims 1 to 3, wherein the bridge (40, 240, 340, 440) comprises a front side (41, 241, 341, 441) and a rear side (43, 243, 343, 443); and wherein the flexible region comprises at least one groove (42, 242, 342, 442) on the front side (41, 241, 341, 441) and at least one groove (43, 243, 343, 443) on the rear side (42, 243, 343, 443).

5. The dispensing device according to claim 4, wherein the at least one groove (42, 442) on the front side (41, 441) and the at least one groove (44, 444) on the rear side (43, 443) extend at the same height along the longitudinal axis (A).

6. The dispensing device according to claim 4 or claim 5, wherein the at least one groove (42, 442) on the front side (41, 441) and the at least one groove (44,

444) on the rear side (43, 443) are symmetrical about a vertical plane containing the longitudinal axis (A).

7. The dispensing device according to anyone of claims 1 to 6, wherein the flexible region of the bridge (140, 240, 340, 440) comprises a groove pattern, preferably a groove pattern on the front side and a groove pattern on the rear side.

8. The dispensing device according to claim 7, wherein the groove pattern comprises a sinusoidal groove pattern.

9. The dispensing device according to claim 7, wherein the groove pattern comprises a triangle groove pattern such as a sawtooth pattern.

10. The dispensing device according to anyone of claims 1 to 9, wherein the bridge (140, 240, 340) is a solid element wherein the at least one groove does not pass through the bridge.

11. The dispensing device according to anyone of claims 1 to 9, wherein the bridge (40, 440) is a hollow element.

12. The dispensing device according to claim 11, wherein the at least one groove (42, 44) passes through the front side (41) and/or rear side (43) of the bridge (40).

13. The dispensing device according to anyone of claims 1 to 12, wherein the depth of the at least one groove (42, 44; 142, 144; 242, 244; 342, 344; 442, 444) is ranging from 1 to 6mm, preferably about 4mm.

14. The dispensing device according to anyone of claims 1 to 13, wherein the width of the at least one groove (42, 44; 142, 144; 242, 244; 342, 344; 442, 444) is ranging from 0.5 to 5mm, preferably about 1.5mm.

15. The dispensing device according to anyone of claims 1 to 14, further comprising a hanger (50, 150, 250, 350, 450) extending from the bridge (40, 140, 240, 340, 440) adapted for removably hanging the dispensing device upon the toilet bowl.

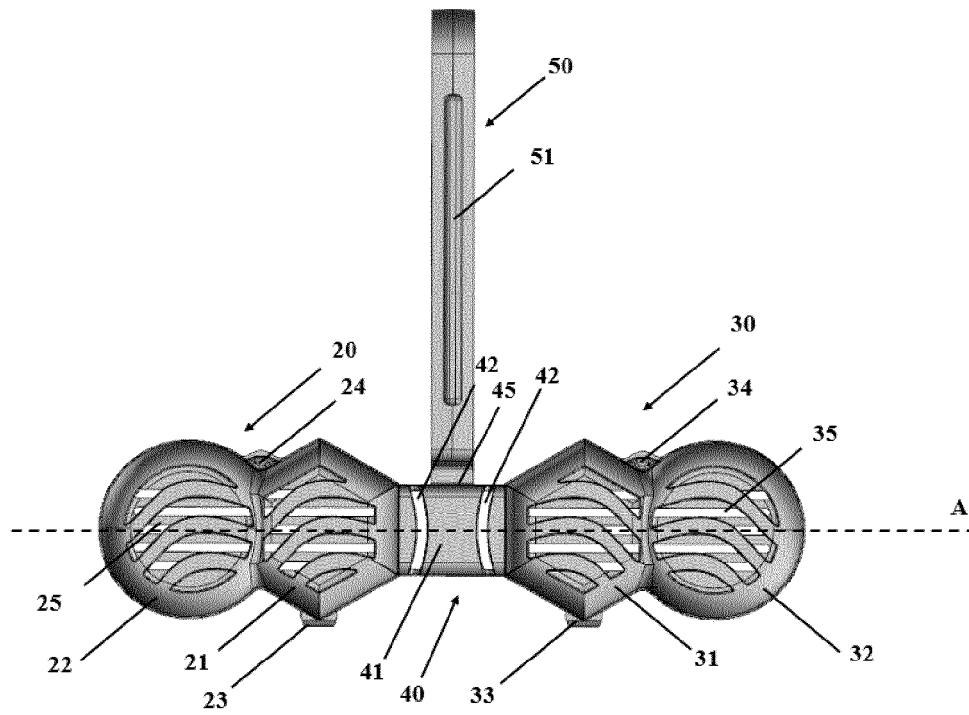


Fig. 1

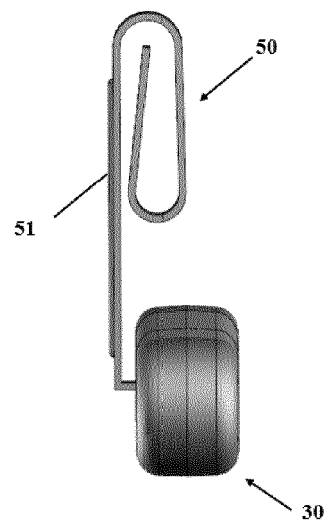


Fig. 2

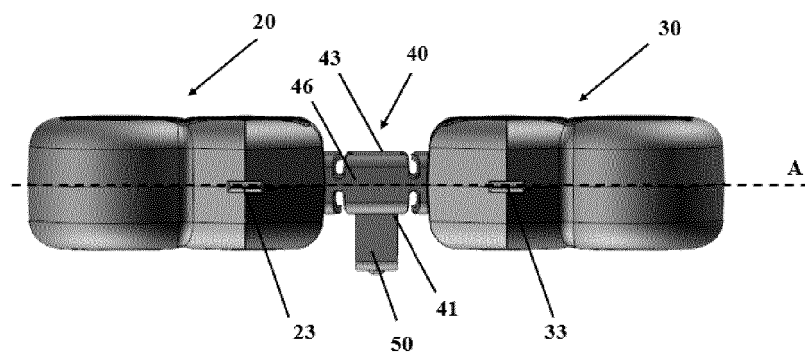


Fig. 3

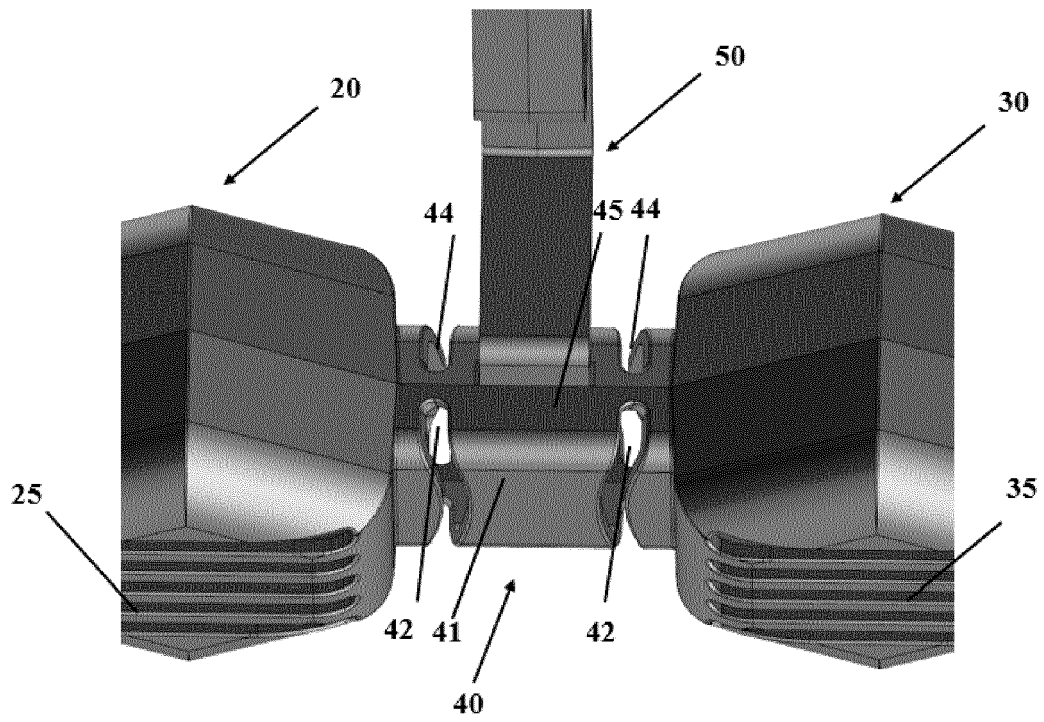


Fig. 4

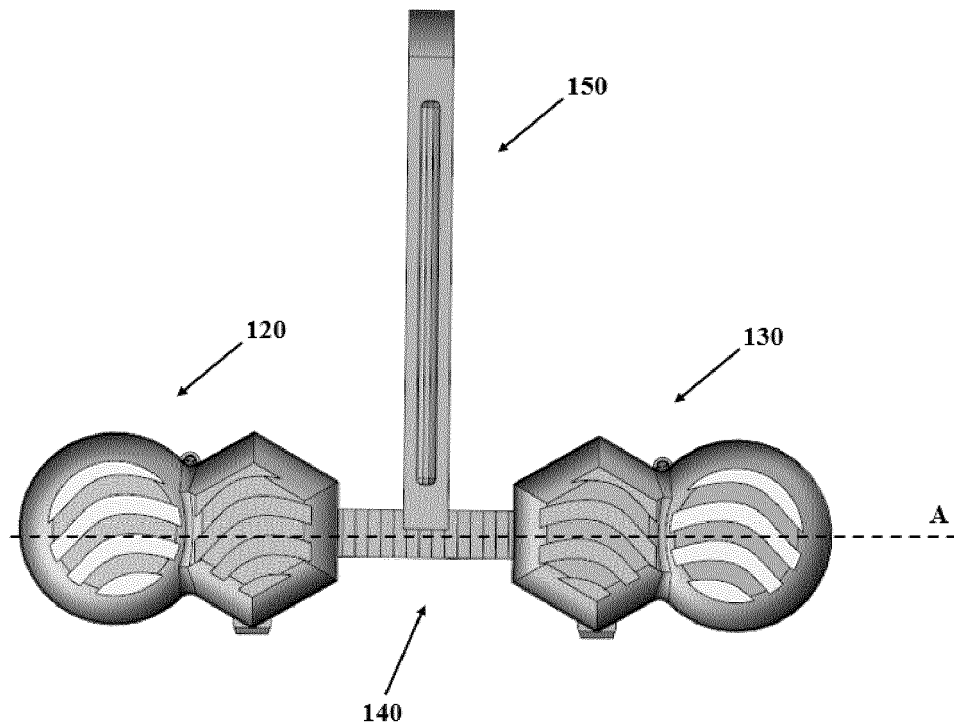


Fig. 5

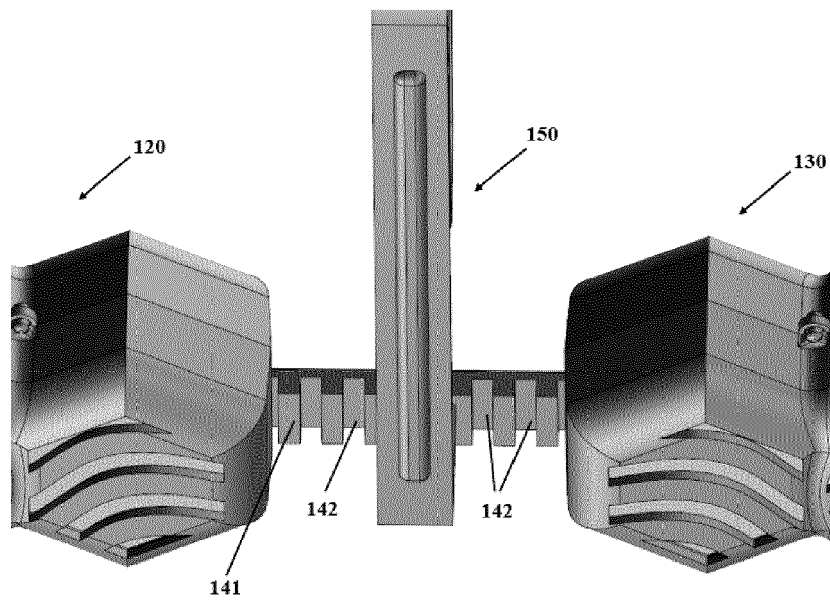


Fig. 6

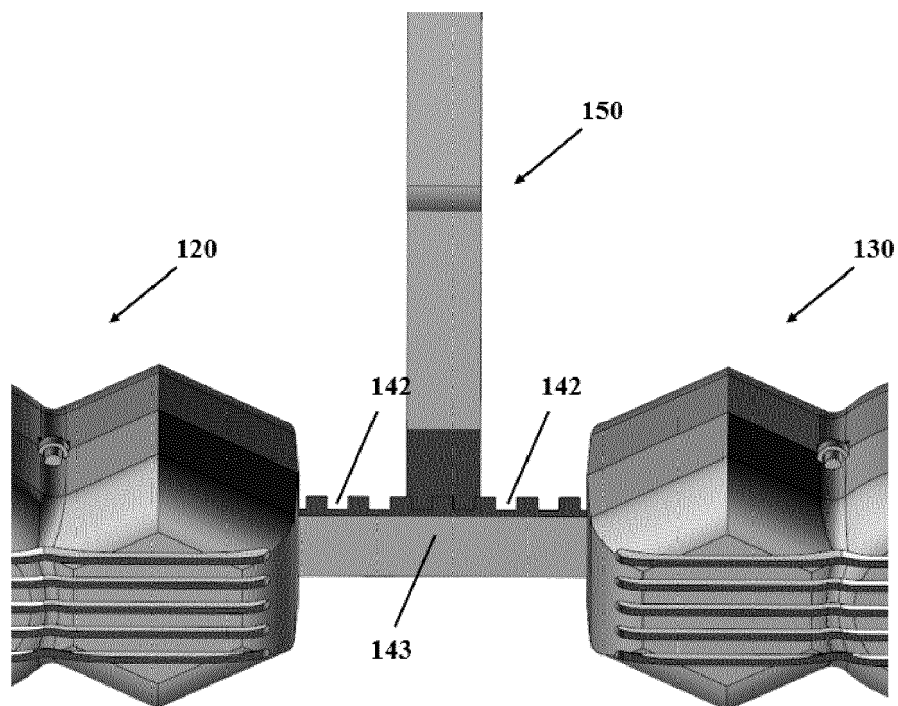


Fig. 7

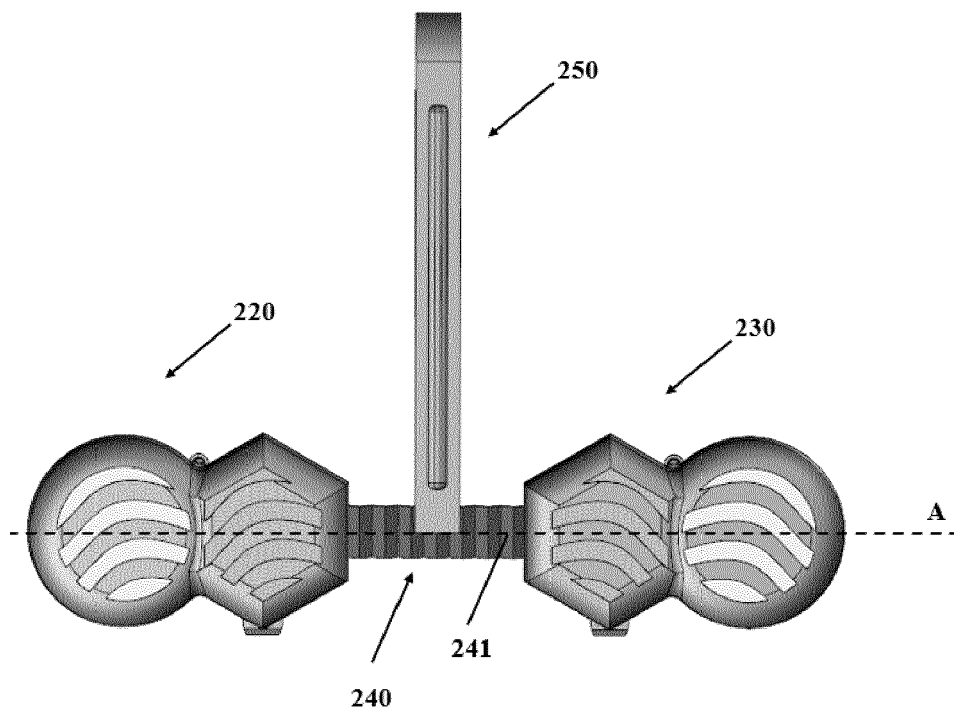


Fig. 8

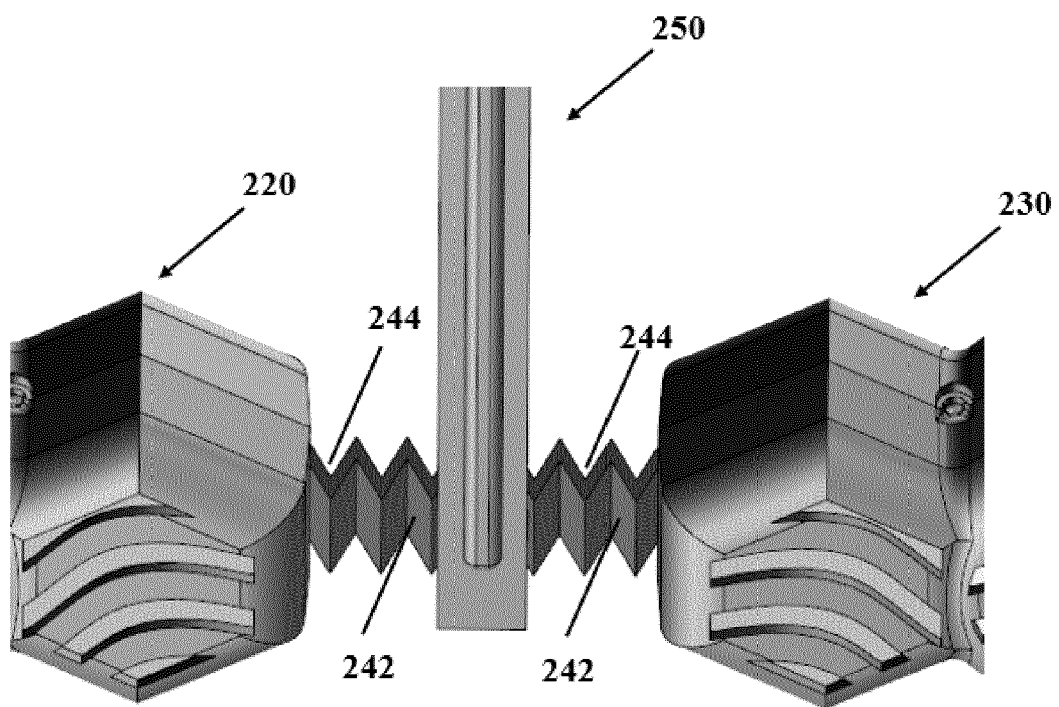


Fig. 9

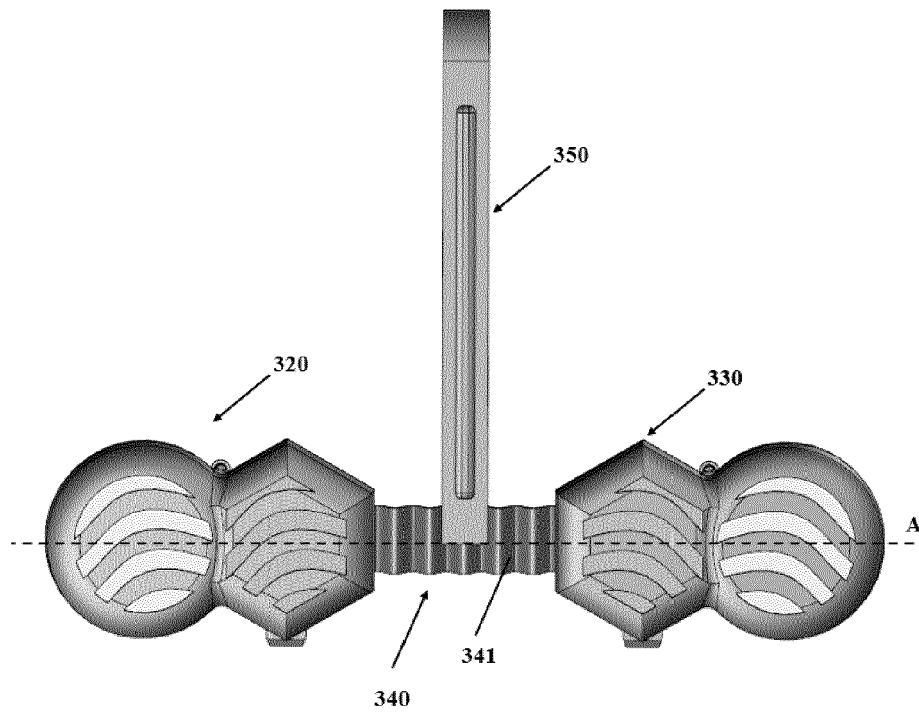


Fig. 10

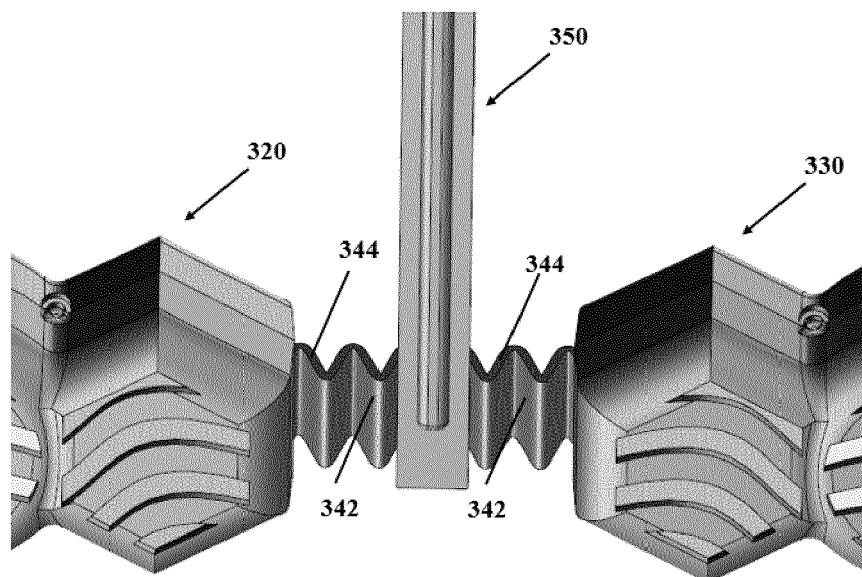


Fig. 11

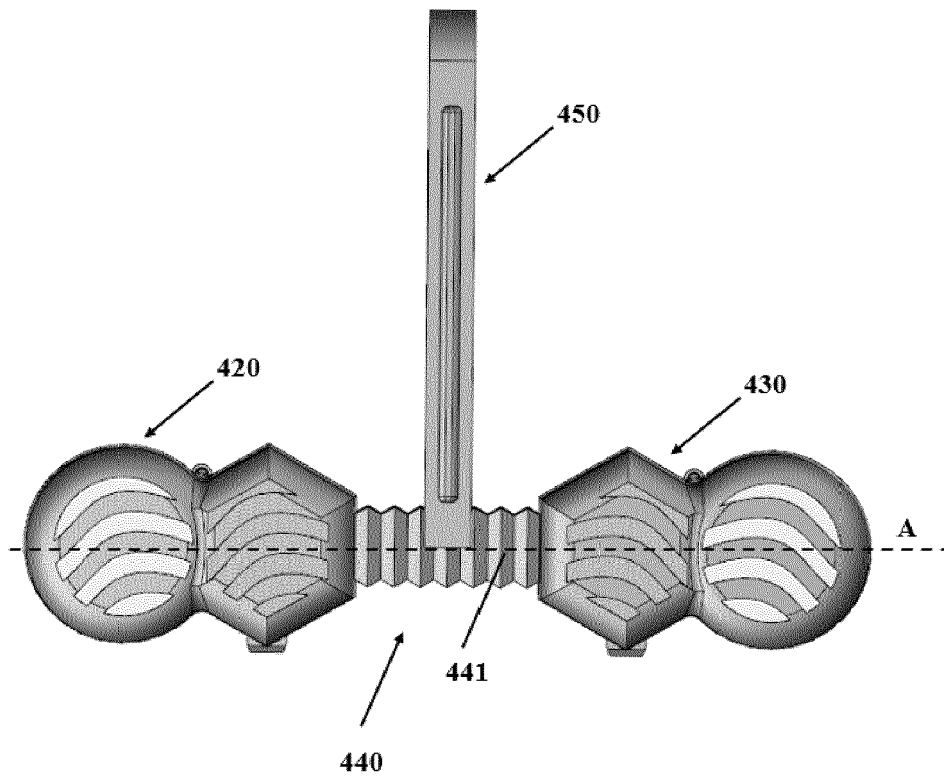


Fig. 12

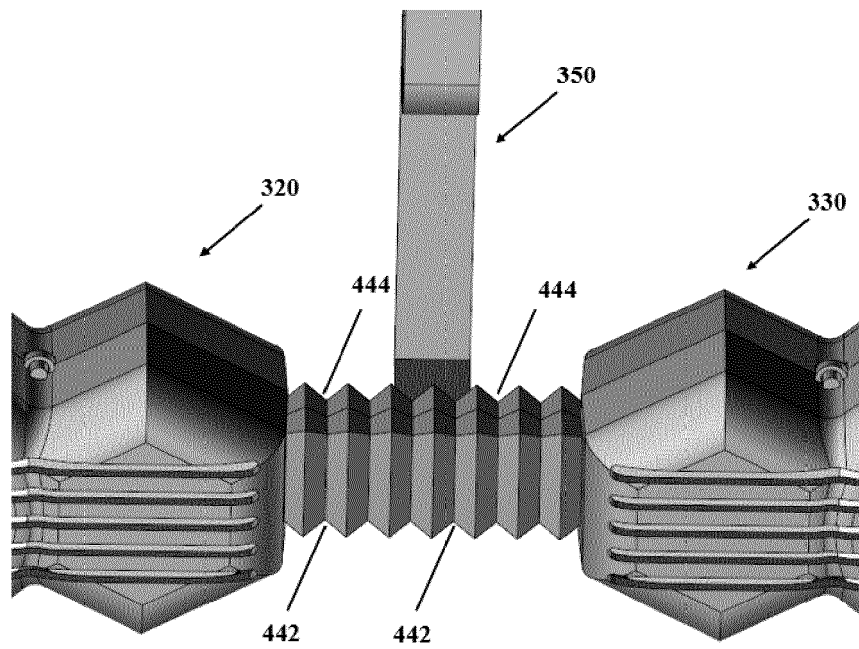


Fig. 13

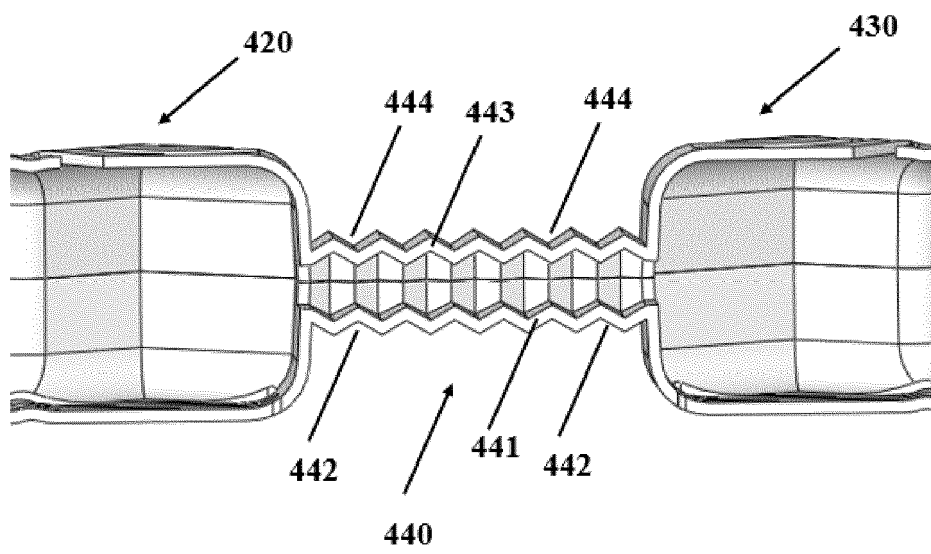


Fig. 14



EUROPEAN SEARCH REPORT

 Application Number
 EP 18 18 2668

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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Y	* figures 1,19,21 *	8	
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X	WO 2006/119992 A1 (NOVARTIS AG [CH]; NOVARTIS PHARMA GMBH [AT]; JEANNIN LIONEL [FR]; ACKE) 16 November 2006 (2006-11-16) * figures 13-15 *	1,3,4	
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			TECHNICAL FIELDS SEARCHED (IPC)
			E03D B65D
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
Munich		6 December 2018	Leher, Valentina
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 03/02 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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06-12-2018

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