US012390391B1

(12) **United States Patent**
Yan et al.

(10) **Patent No.: US 12,390,391 B1**
(45) **Date of Patent: Aug. 19, 2025**

(54) **MASSAGE DEVICE**

(71) Applicants: **Dongguan Qunan Technology Co., Ltd.**, Guangdong (CN); **Shenzhen Zhonghongtian Technology Co., Ltd**, Shenzhen (CN)

(72) Inventors: **Bo Yan**, Guangdong (CN); **Hong Zhang**, Shenzhen (CN)

(73) Assignees: **Dongguan Qunan Technology Co., Ltd**, Dongguan (CN); **Shenzhen Zhonghongtian Technology Co., Ltd.**, Shenzhen (CN)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **18/666,796**

(22) Filed: **May 16, 2024**

(30) **Foreign Application Priority Data**

Feb. 21, 2024 (CN) 202420331832.0
Mar. 1, 2024 (CN) 202420402674.3

(51) **Int. Cl.**
A61H 19/00 (2006.01)
A61H 11/00 (2006.01)
A61H 15/00 (2006.01)

(52) **U.S. Cl.**
CPC ***A61H 19/44*** (2013.01); ***A61H 11/00*** (2013.01); ***A61H 15/0085*** (2013.01); ***A61H 19/32*** (2013.01); ***A61H 19/34*** (2013.01); *A61H 2015/0028* (2013.01); *A61H 2015/0071* (2013.01); *A61H 2201/1481* (2013.01); *A61H 2201/1695* (2013.01)

(58) **Field of Classification Search**
CPC A61H 19/44; A61H 19/32; A61H 2201/1215; A61H 2205/087; A61H 19/50; A61H 21/00; A61H 19/30; A61H 23/0254; A61H 23/00; A61H 7/005; A61H 2201/10; A61H 19/00; A61H 15/00; A61H 2015/0014; A61H 2015/0071
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

2011/0133910 A1* 6/2011 Alarcon G06F 3/016 340/407.1

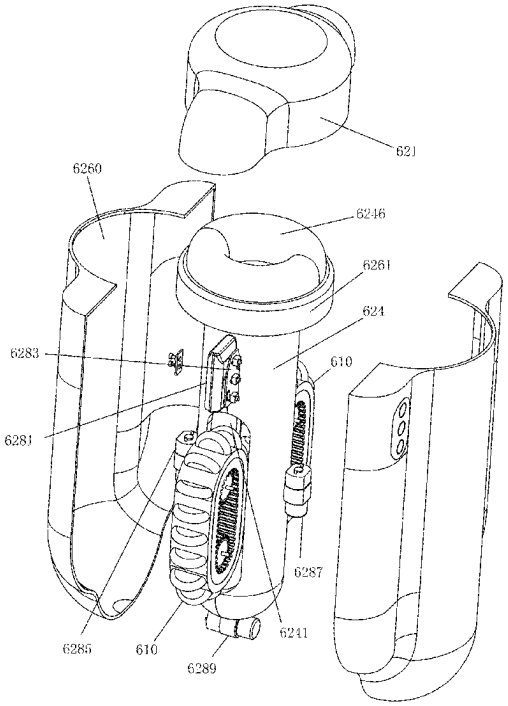
* cited by examiner

Primary Examiner — Christine H Matthews

(57) **ABSTRACT**

A massage device includes a housing and at least one massage assembly provided on the housing. The massage assembly includes a driving assembly disposed in the housing and a massage member engaged with the driving wheel and the at least one driven wheel. The driving assembly includes a driving source, a driving wheel connected to the driving source and at least one driven wheel for cooperating with the driving wheel. The driving source is configured to drive the massage member to rotate through the driving wheel.

18 Claims, 35 Drawing Sheets



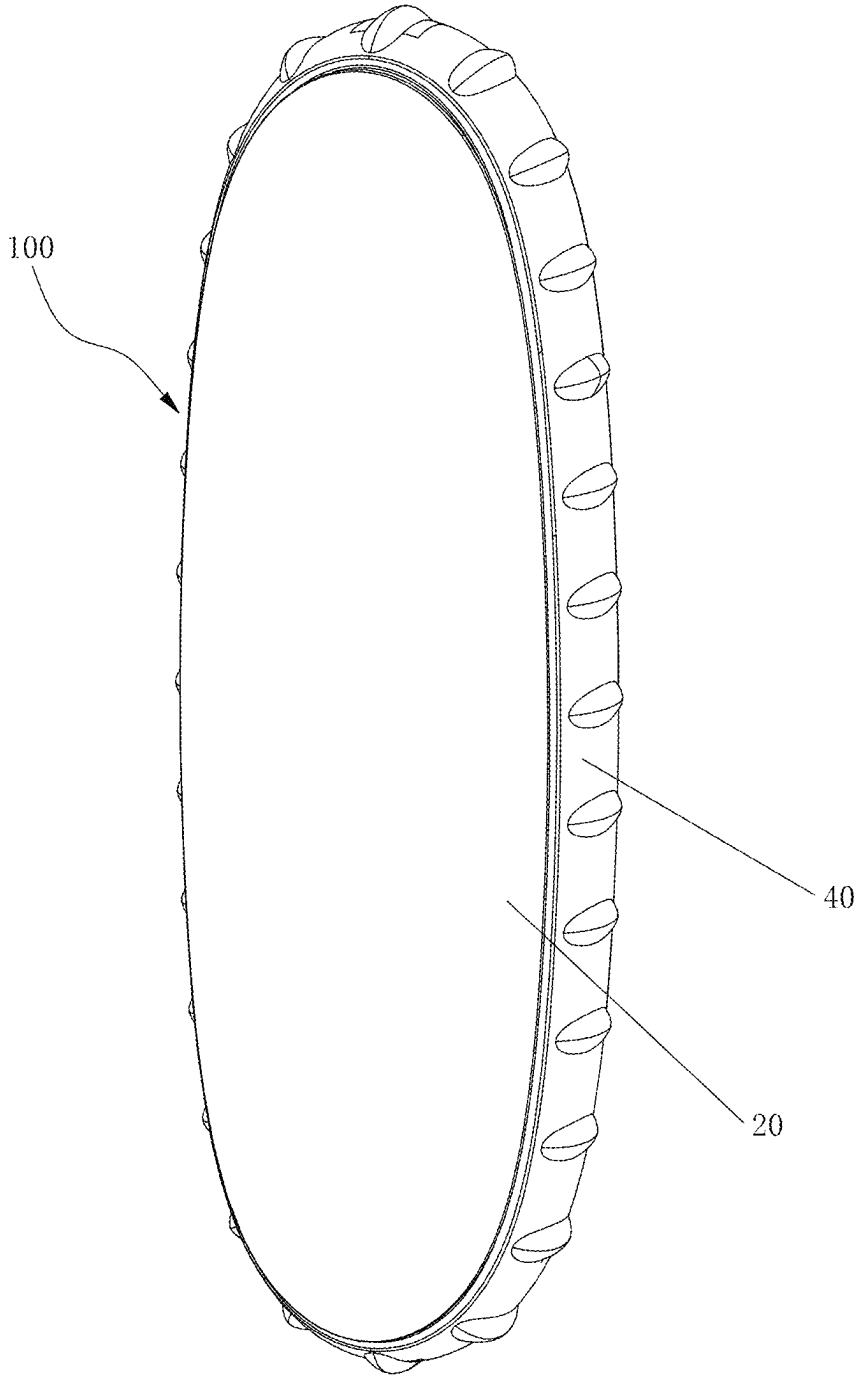


FIG. 1

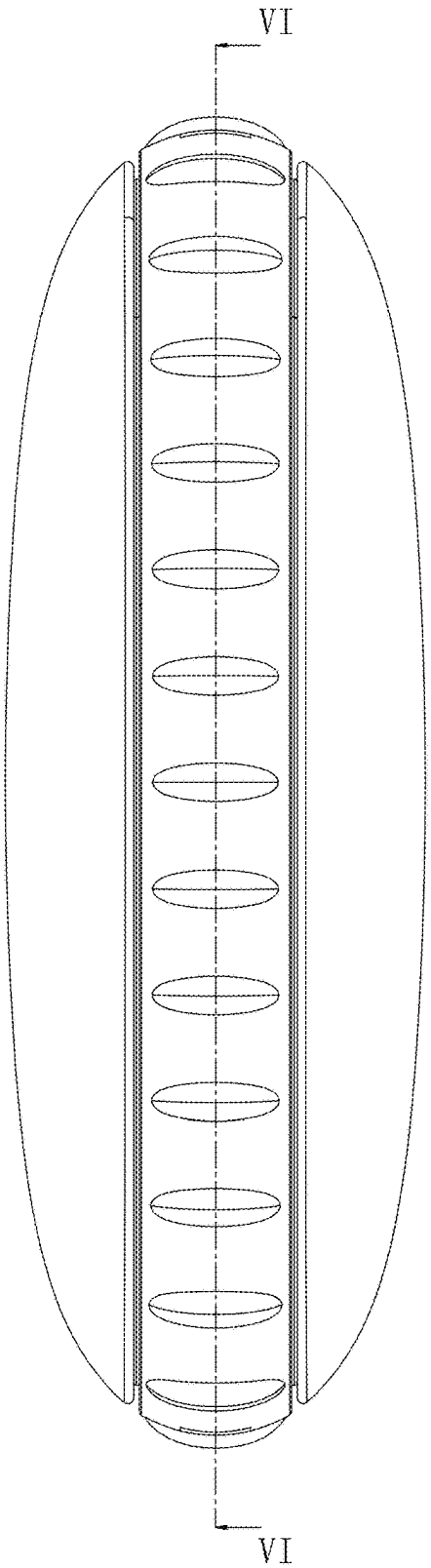


FIG. 2

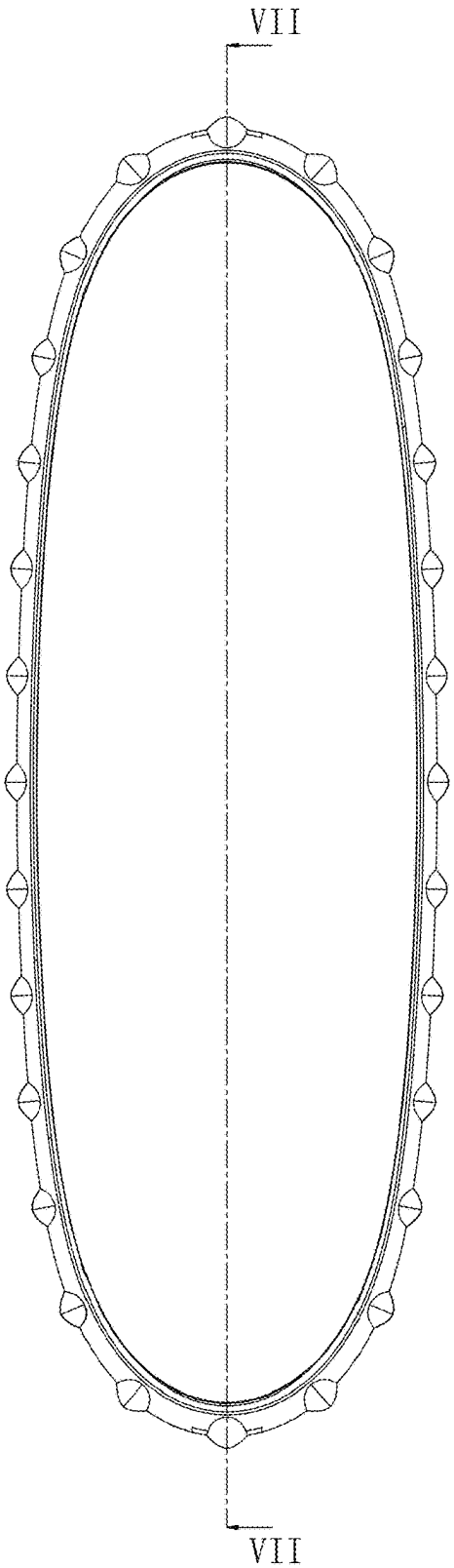


FIG. 3

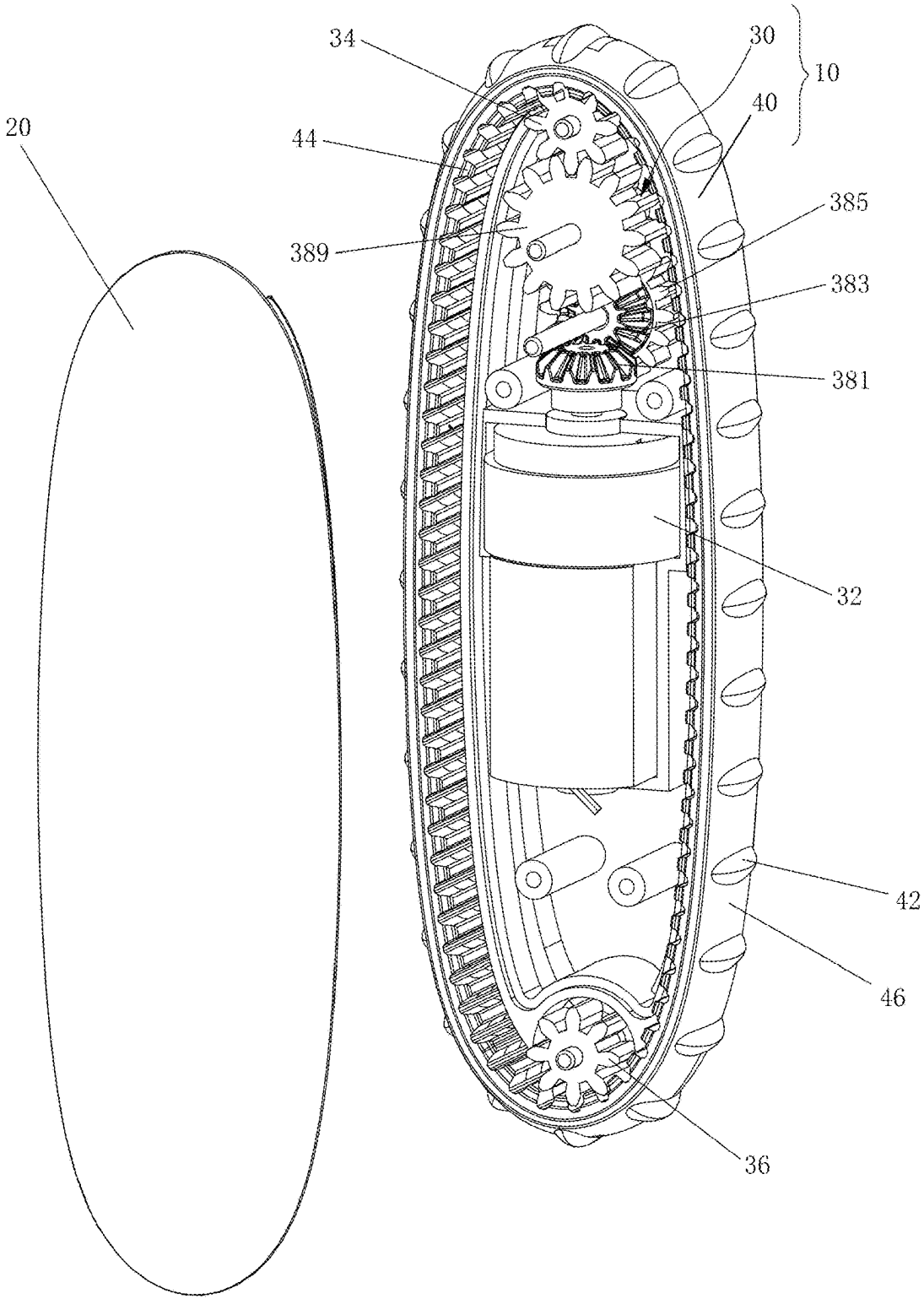


FIG. 4

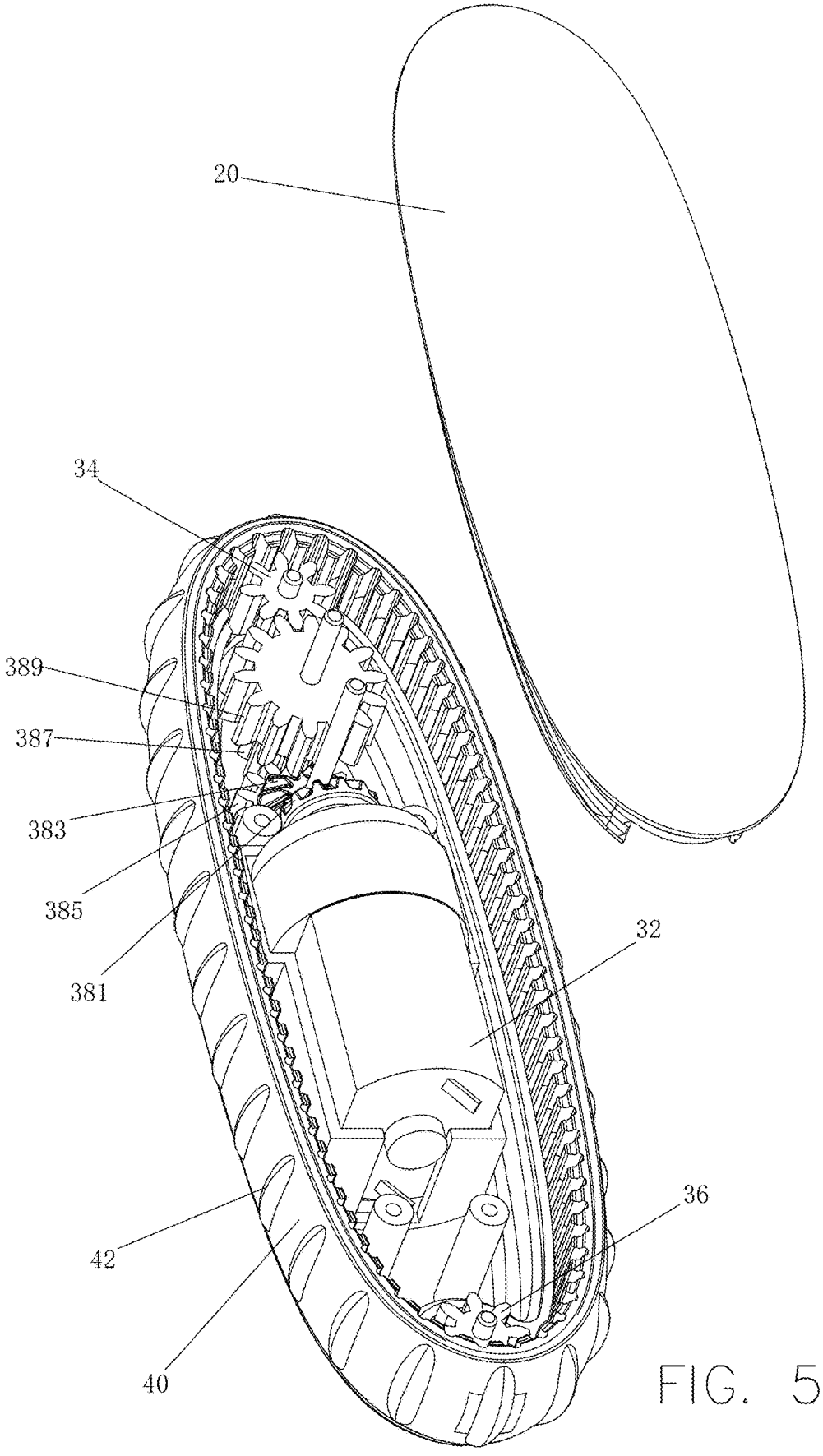


FIG. 5

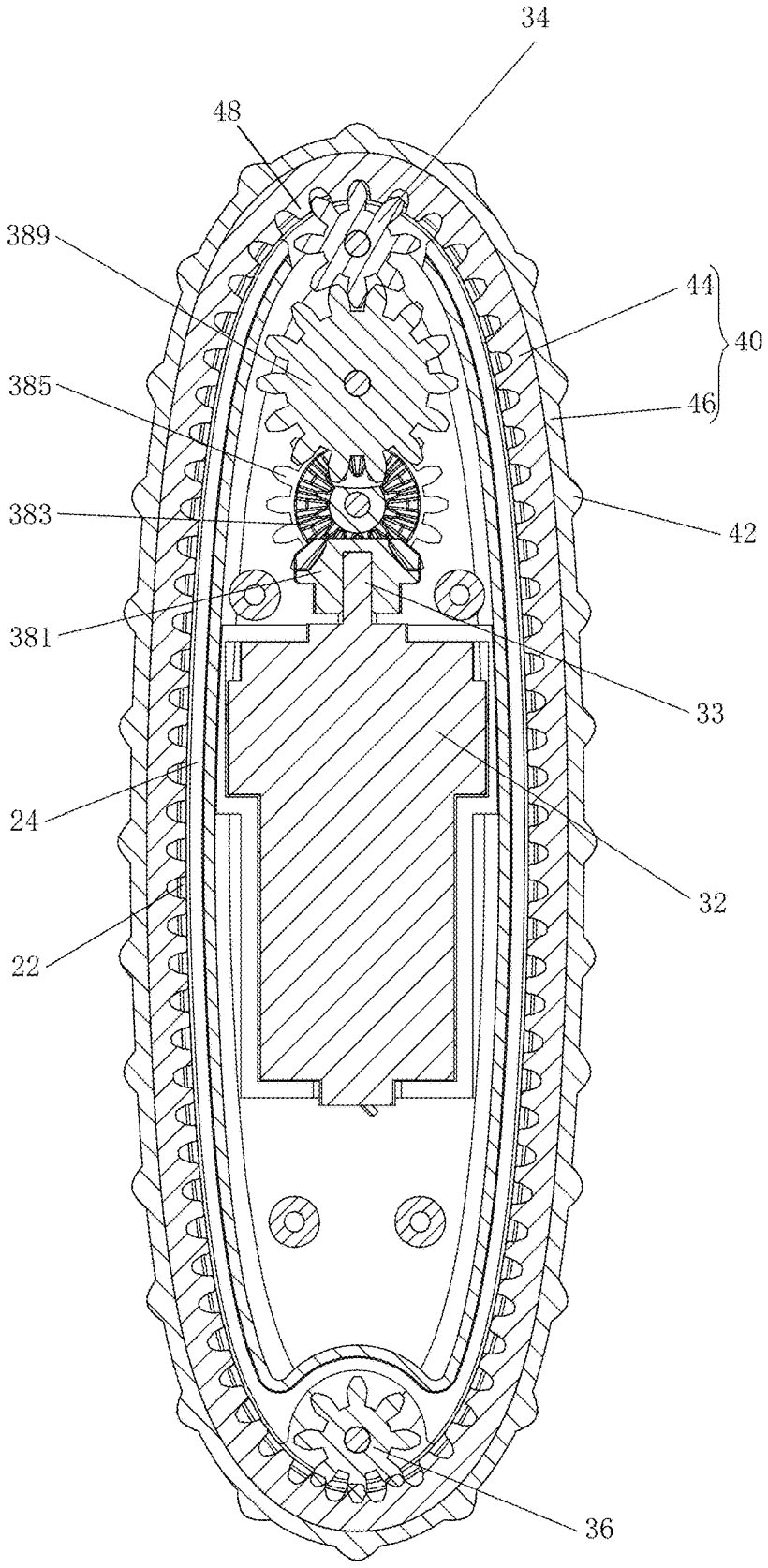


FIG. 6

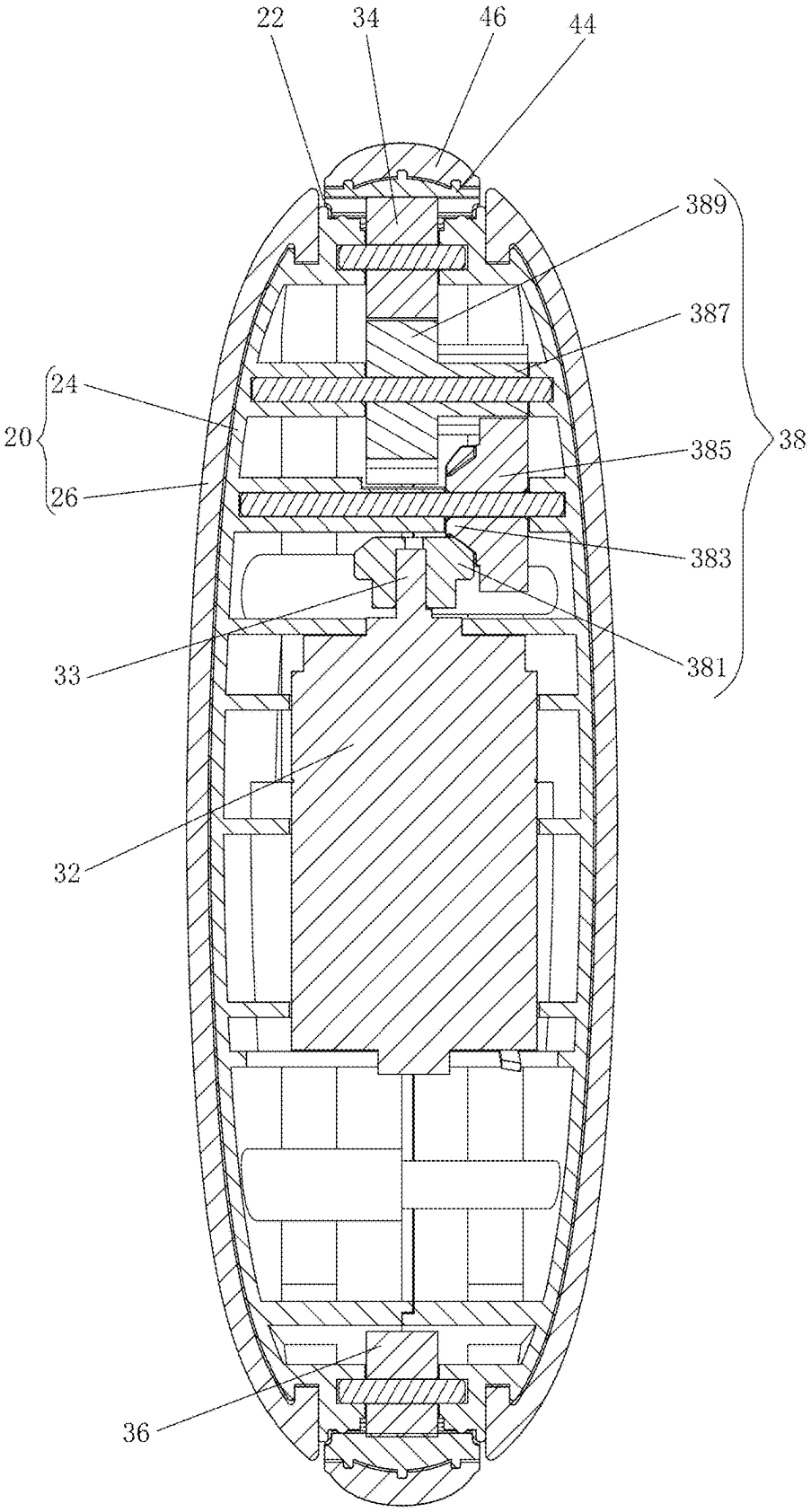


FIG. 7

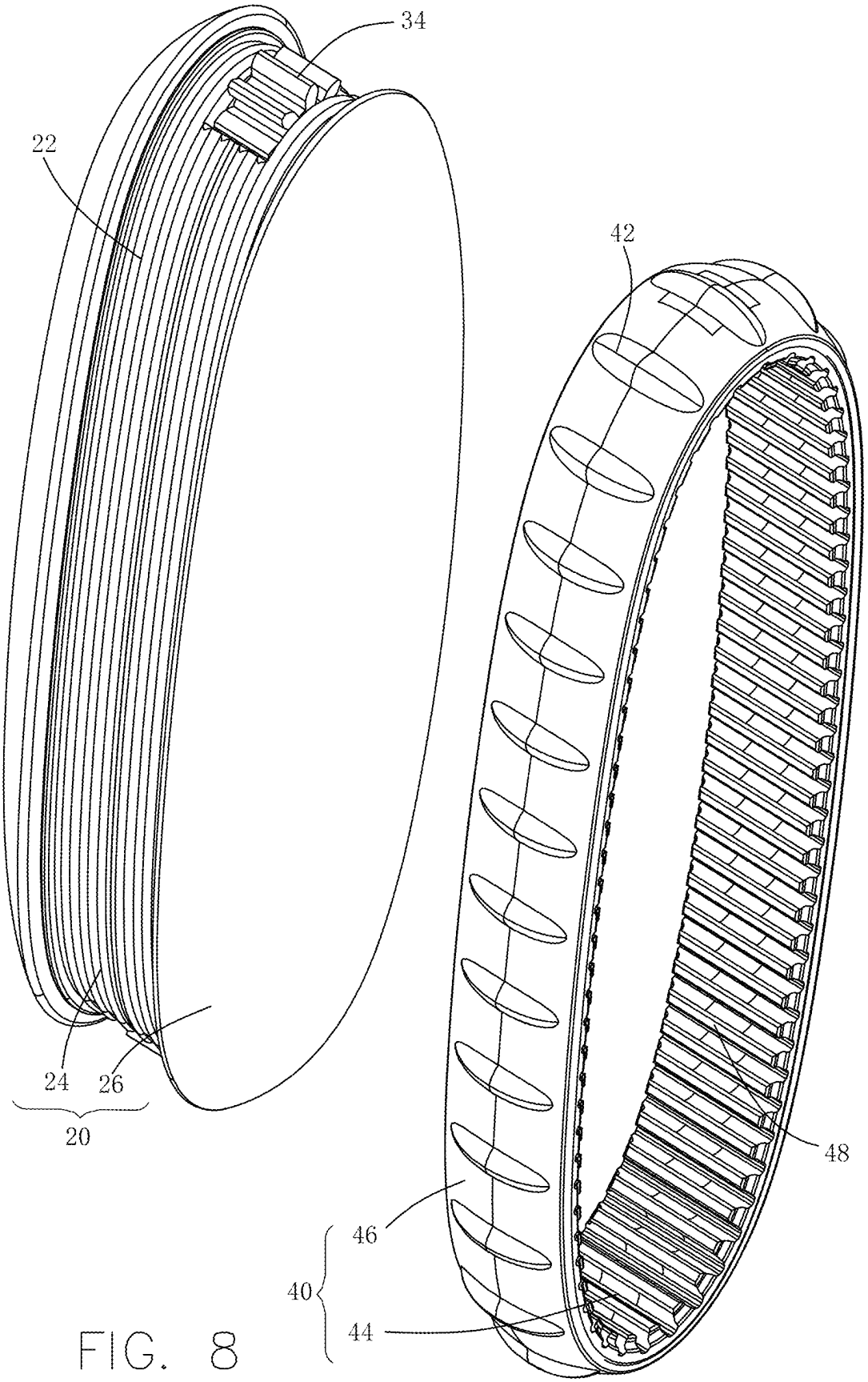


FIG. 8

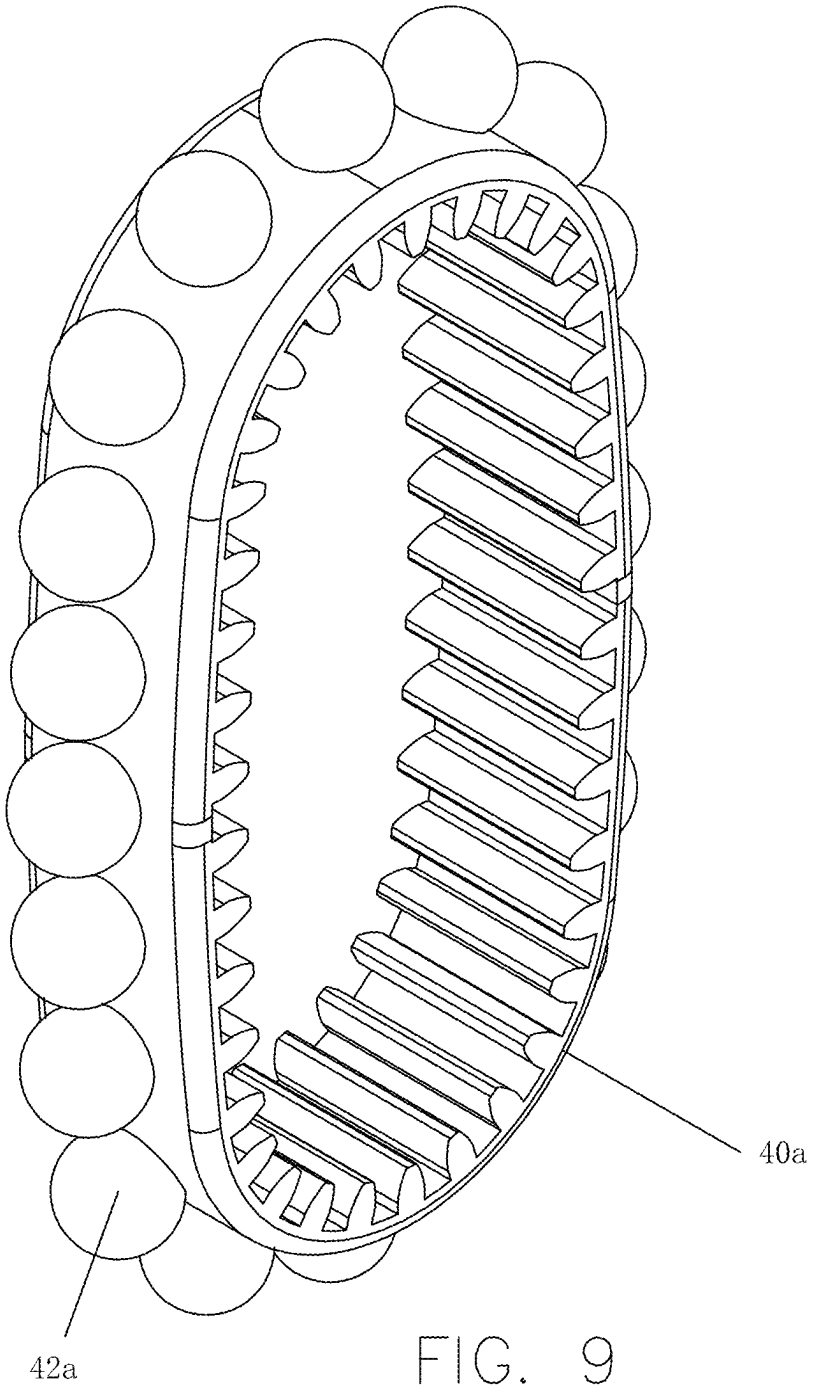


FIG. 9

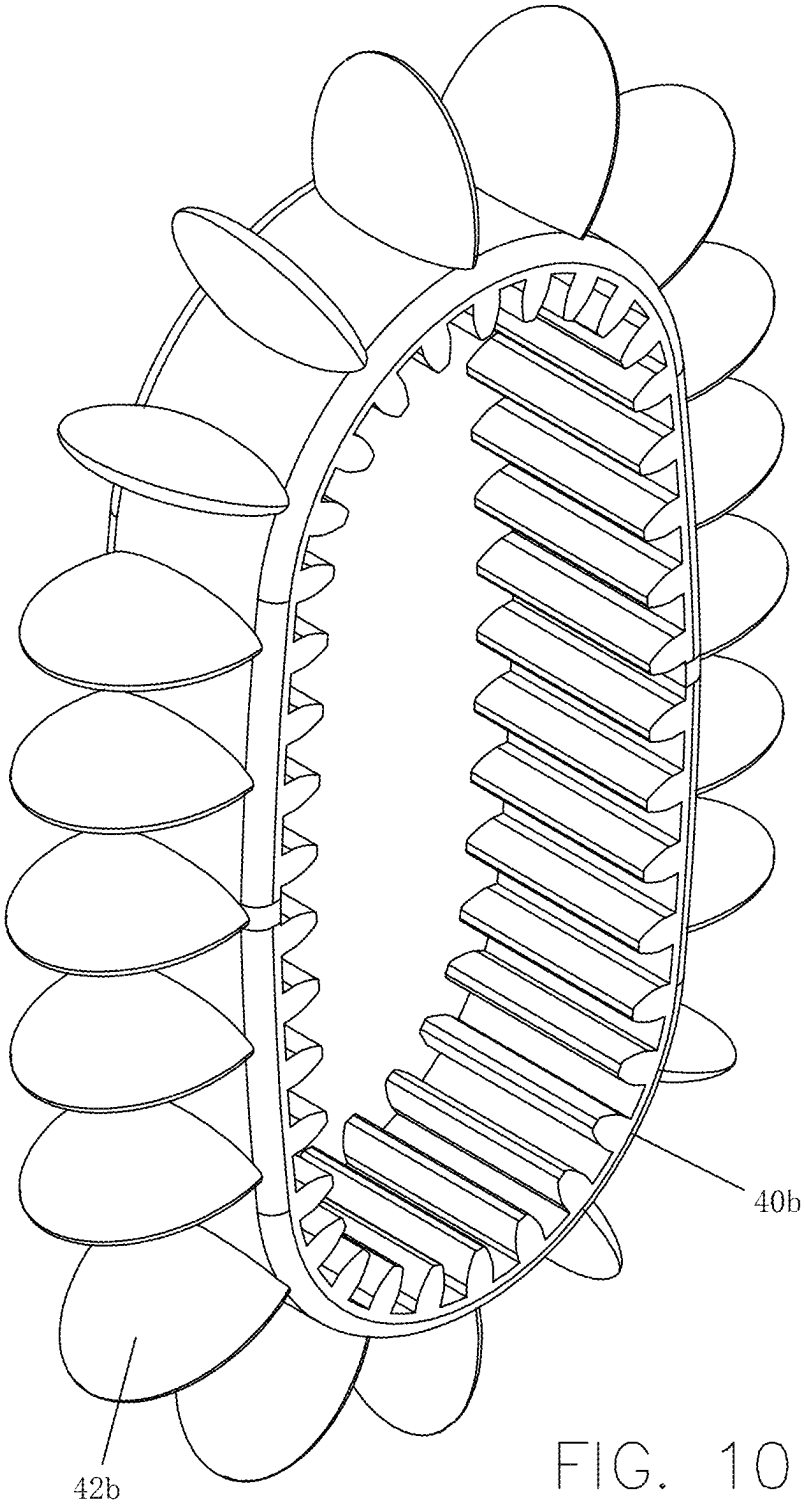


FIG. 10

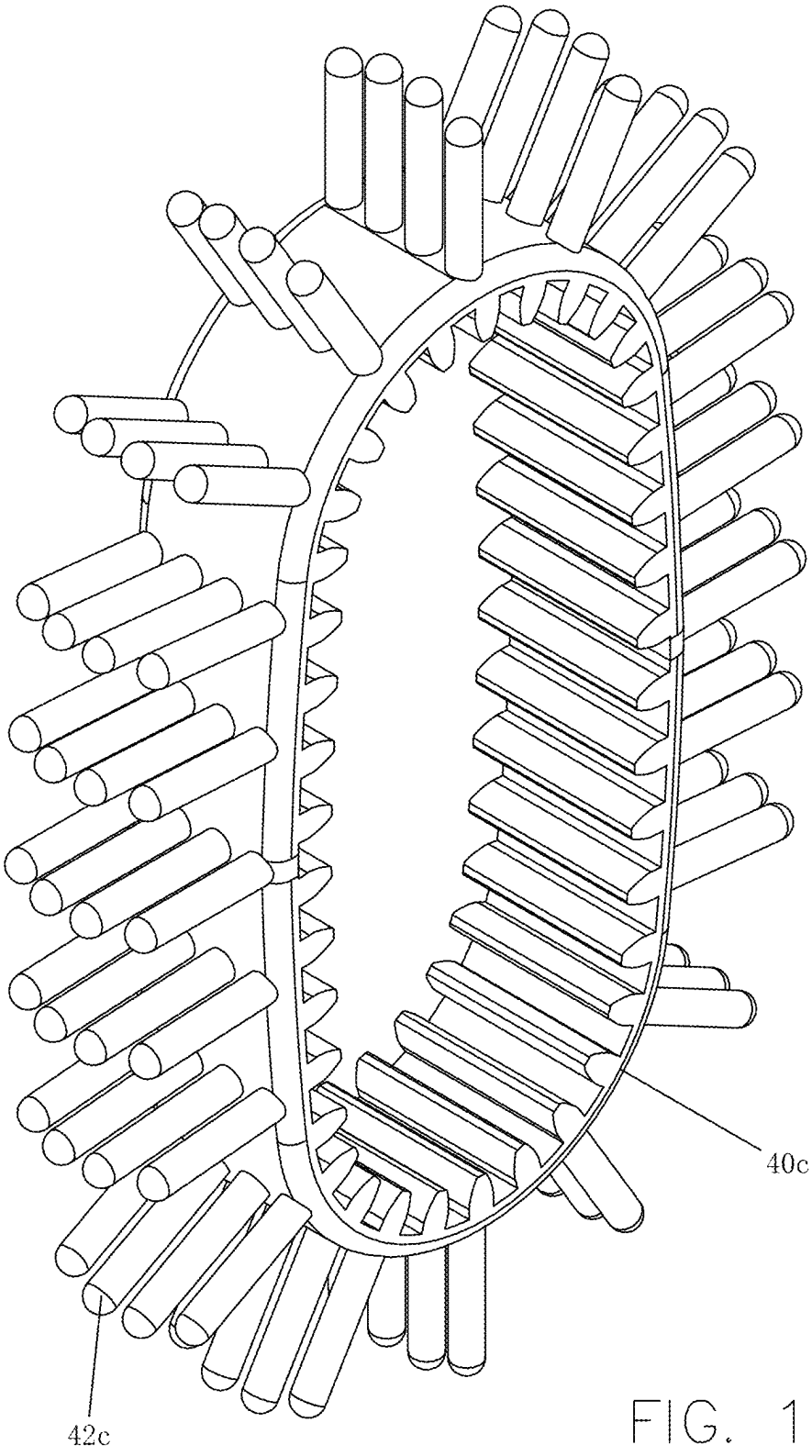


FIG. 11

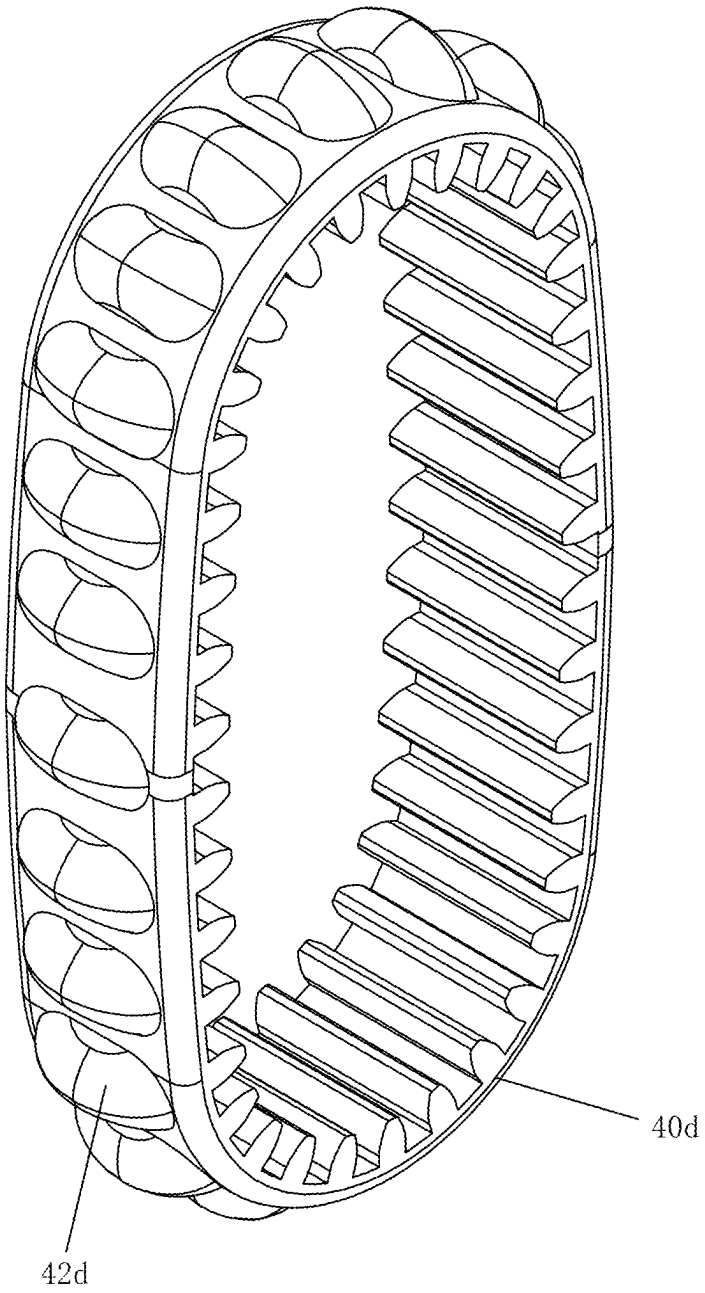


FIG. 12

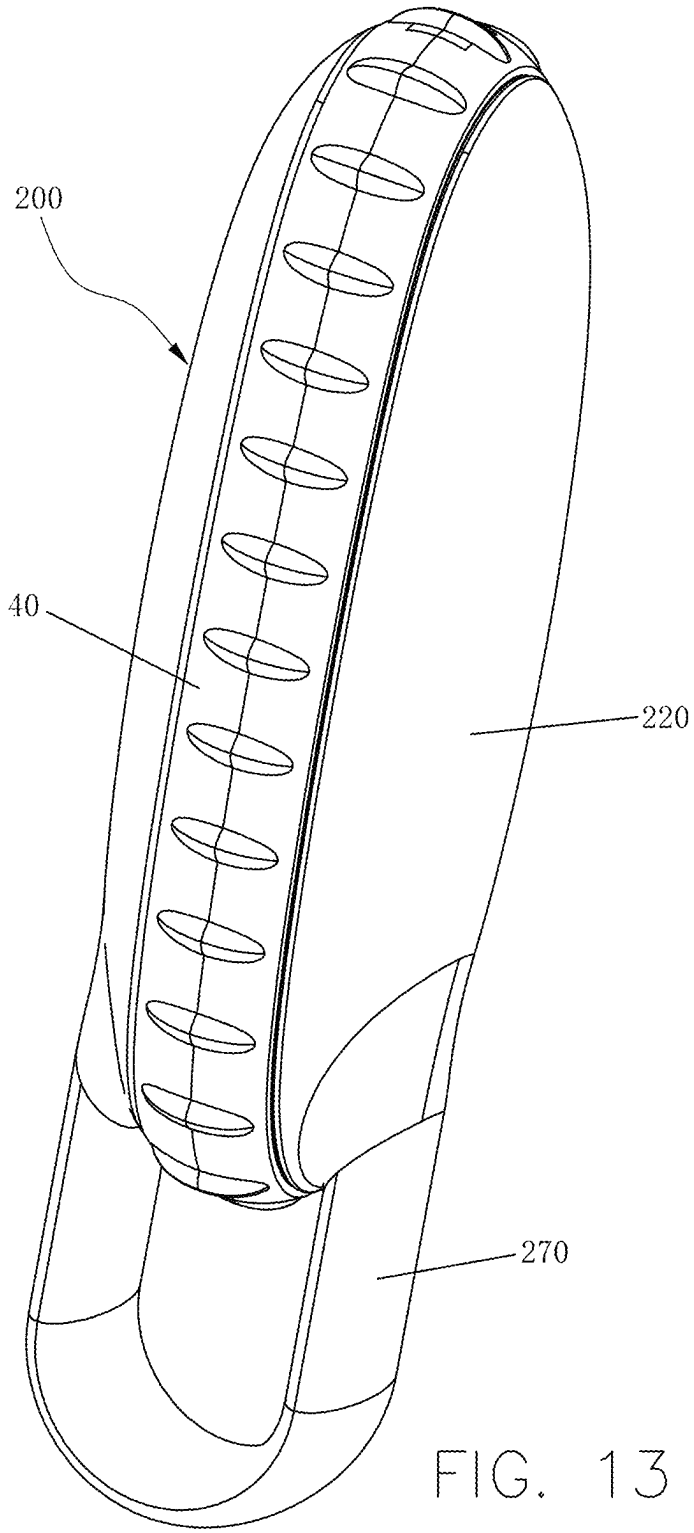


FIG. 13

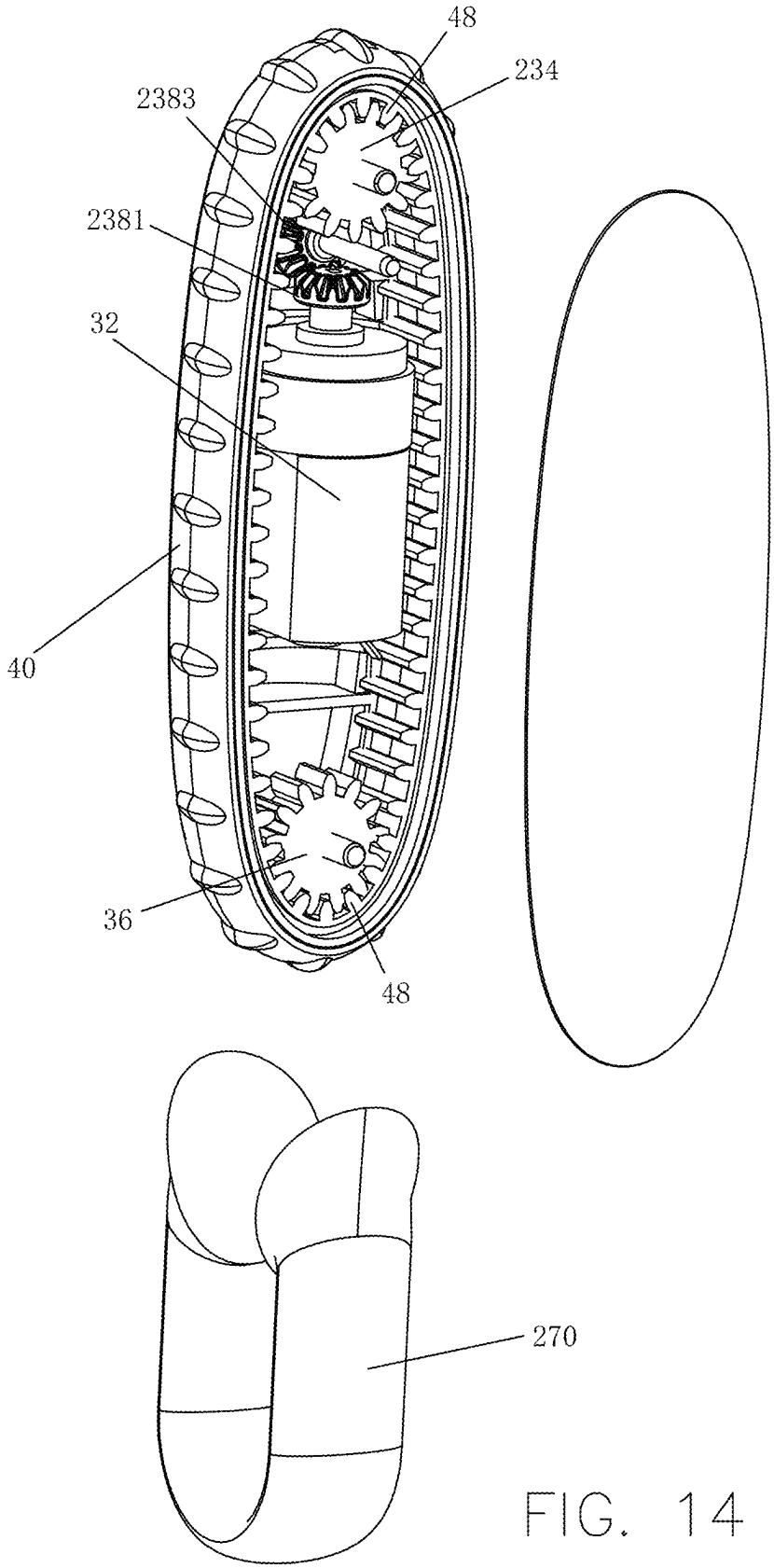


FIG. 14

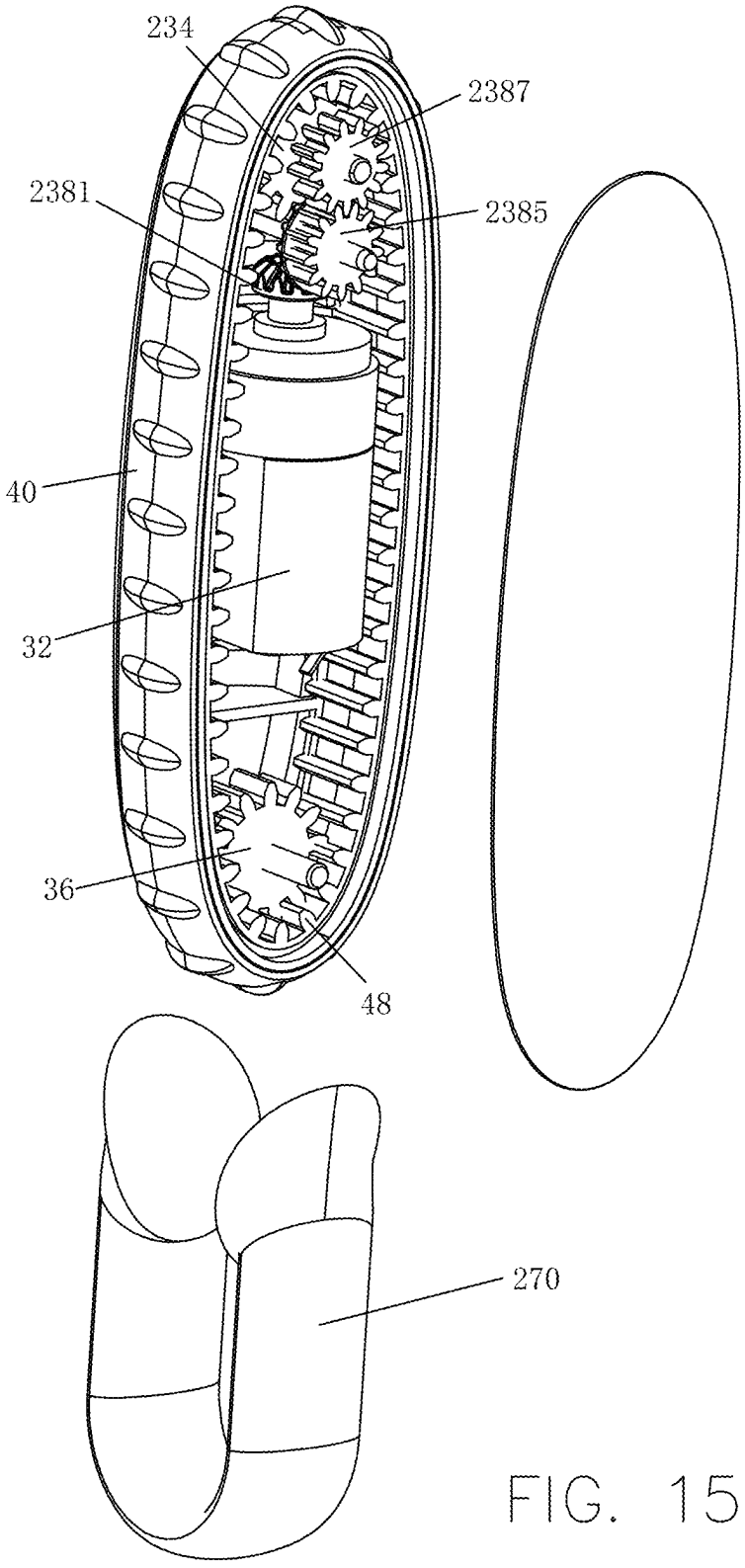


FIG. 15

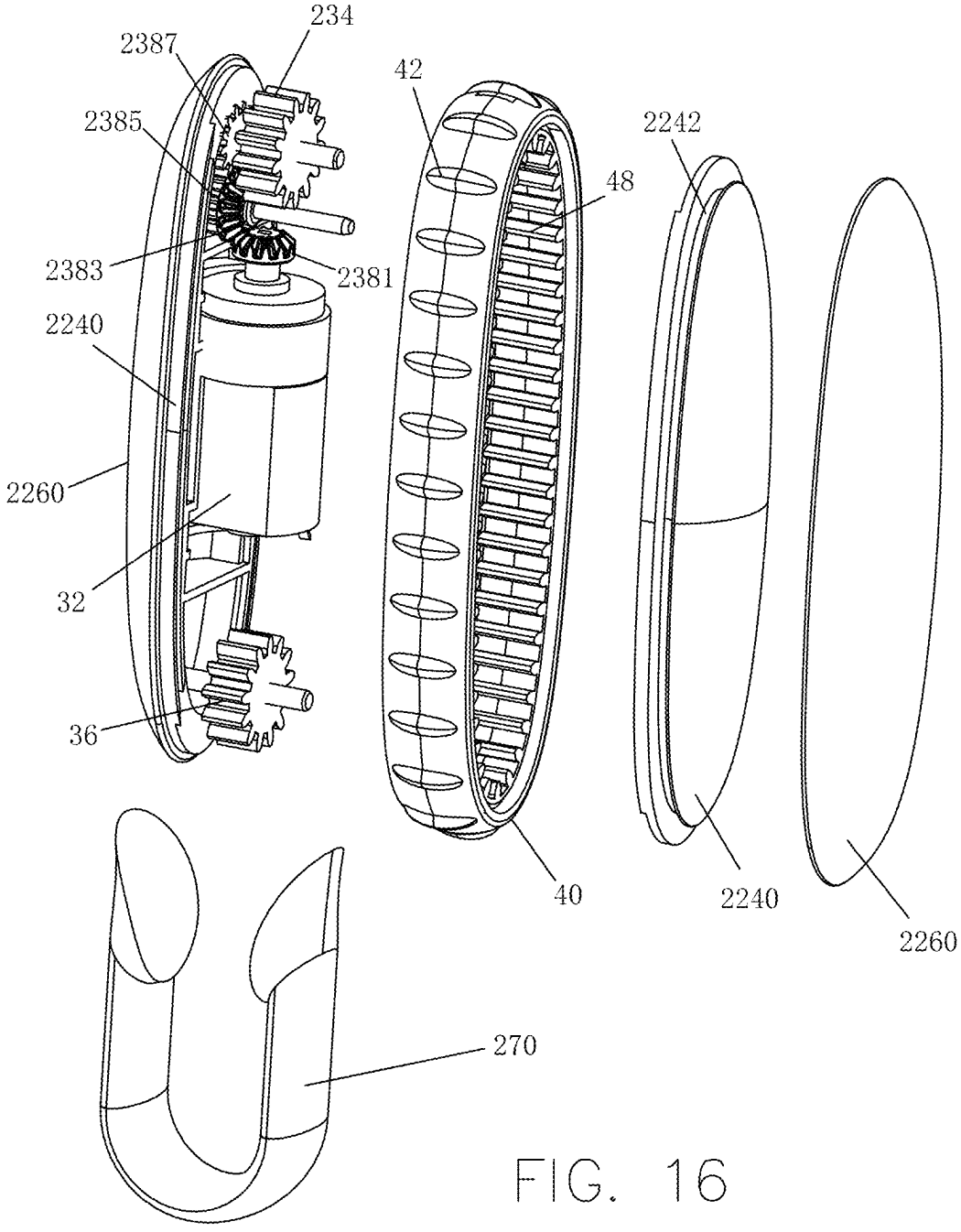

234
2387
2385
2383
2381
2240
2260
32
36
42
48
40
2242
2240
2260
270

FIG. 16

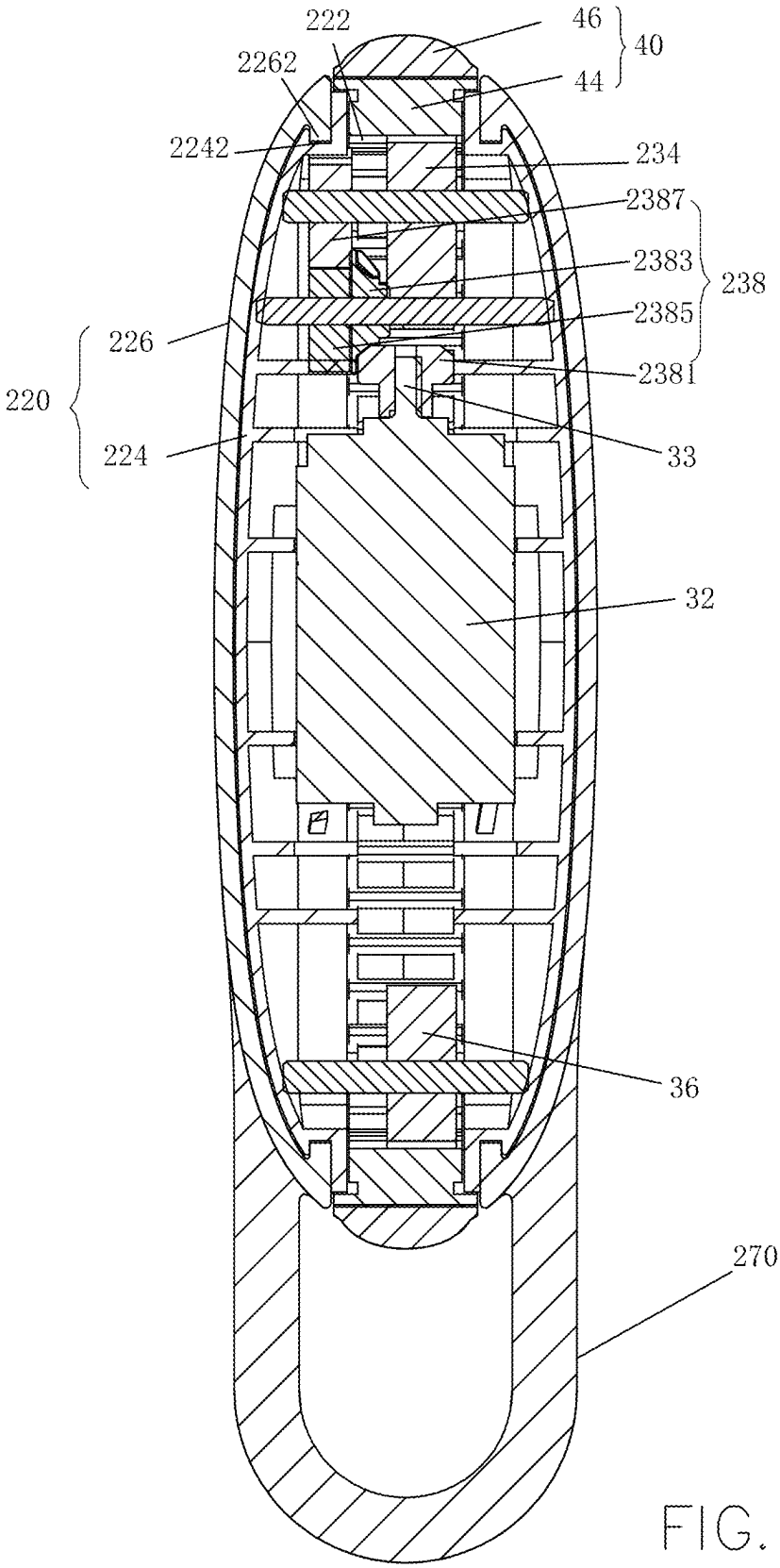

222
46
40
2262
44
2242
234
2387
2383
238
2385
226
2381
220
224
33
32
36
270

FIG. 17

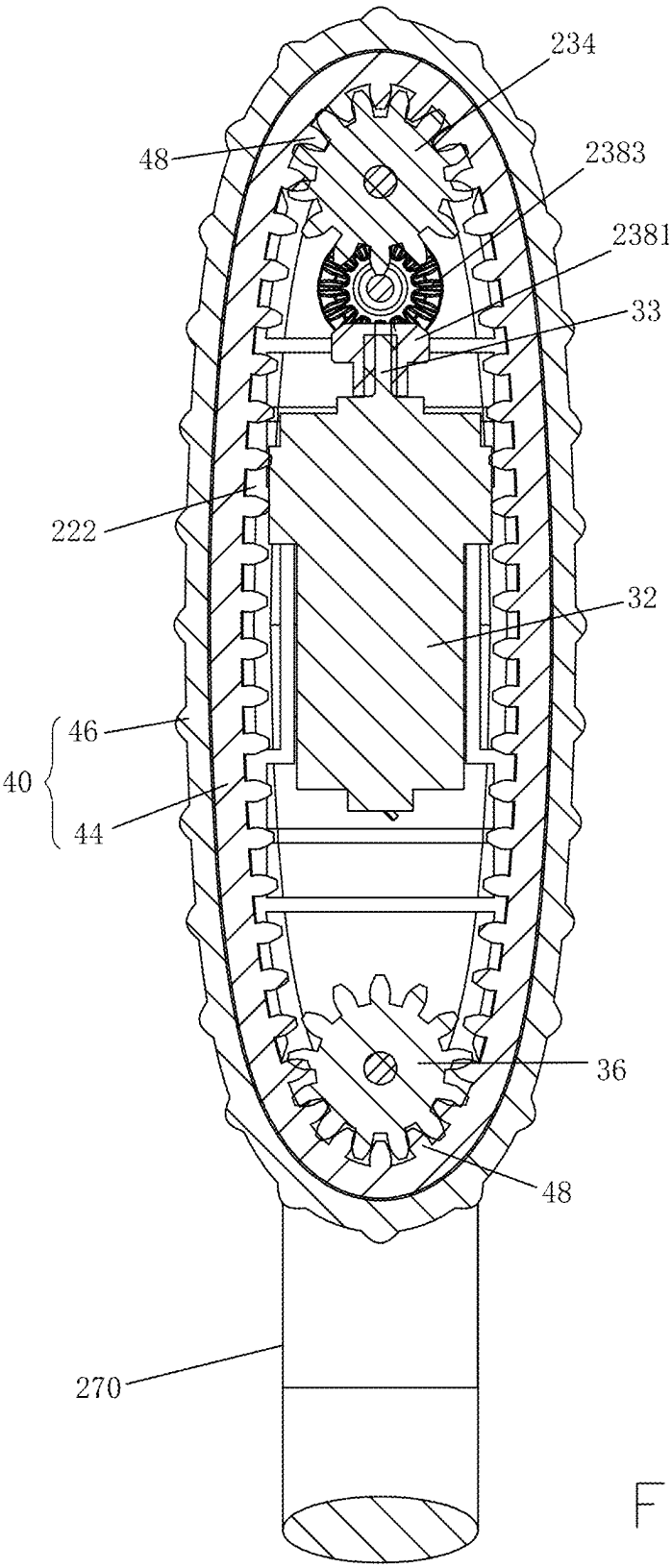


FIG. 18

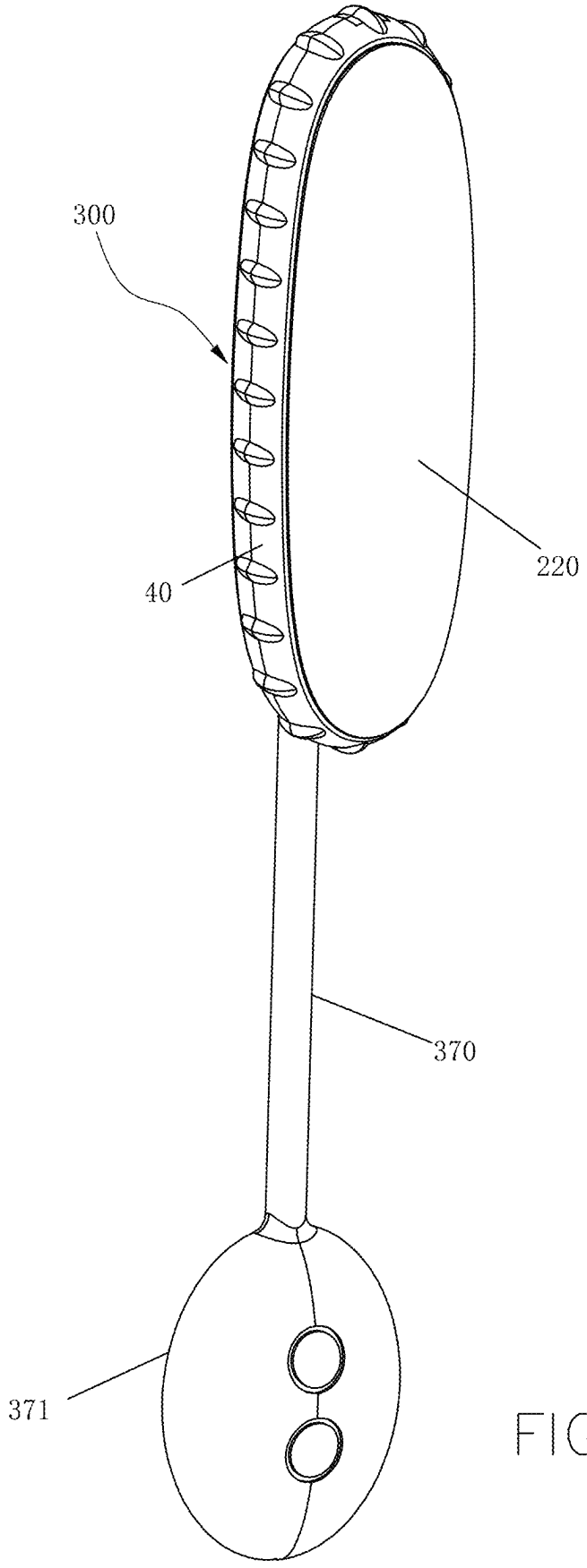


FIG. 19

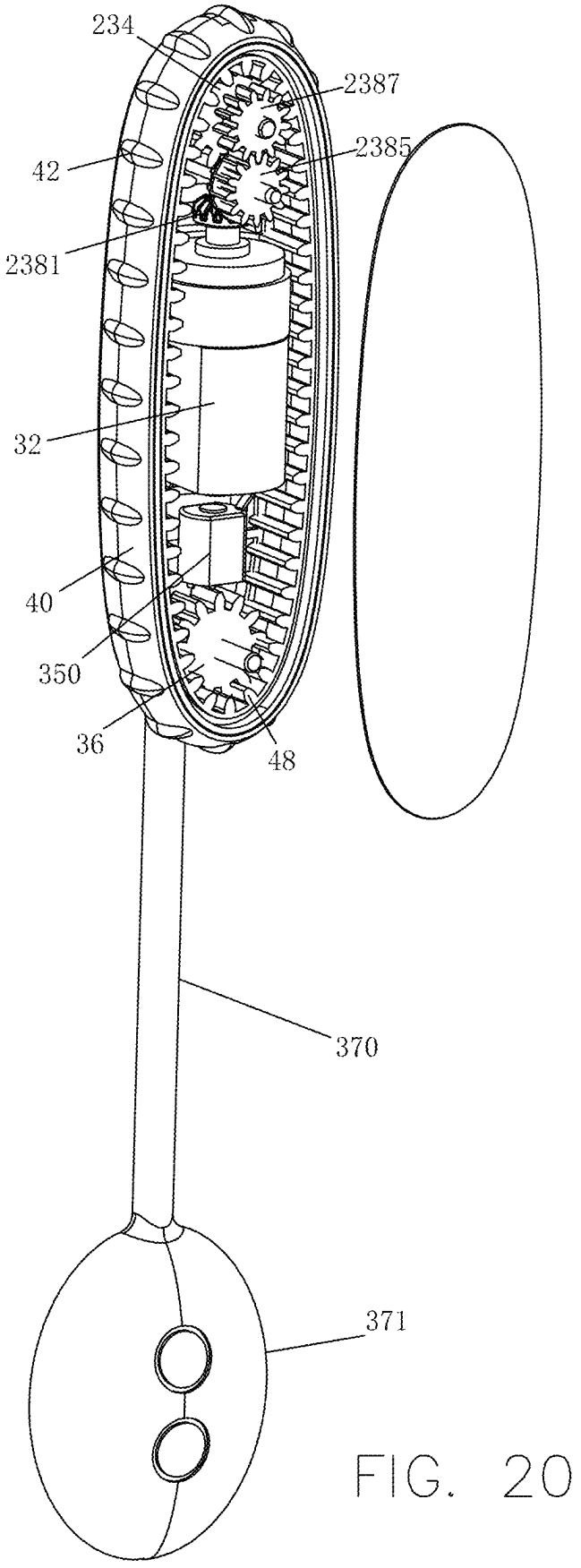


FIG. 20

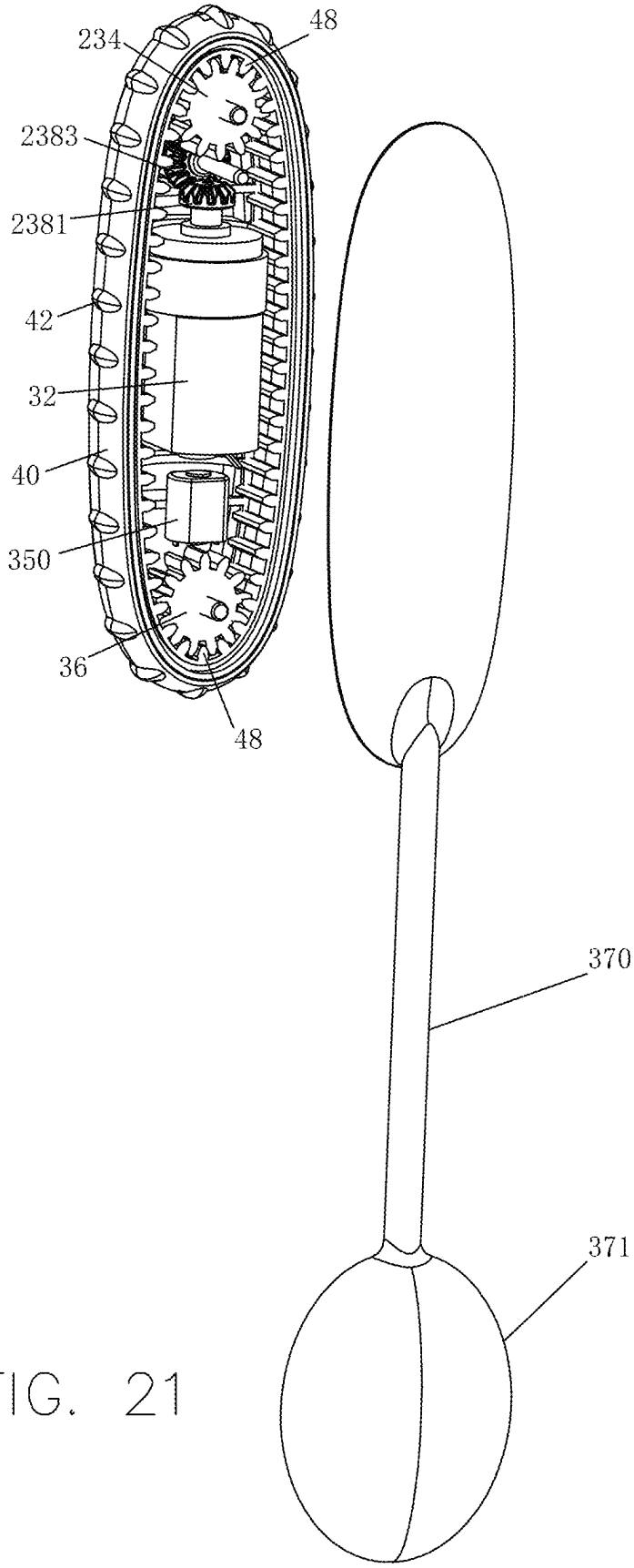


FIG. 21

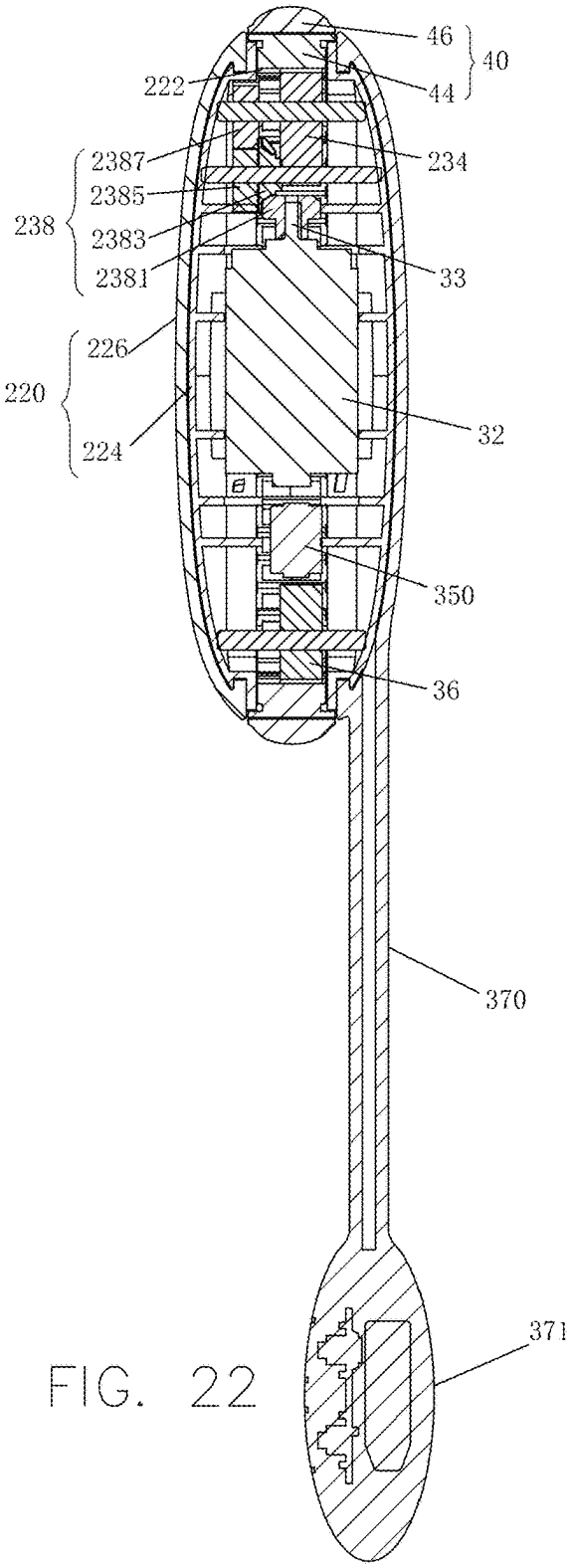

46
40
44
222
234
2387
2385
238
2383
2381
33
226
220
224
32
350
36
370
371

FIG. 22

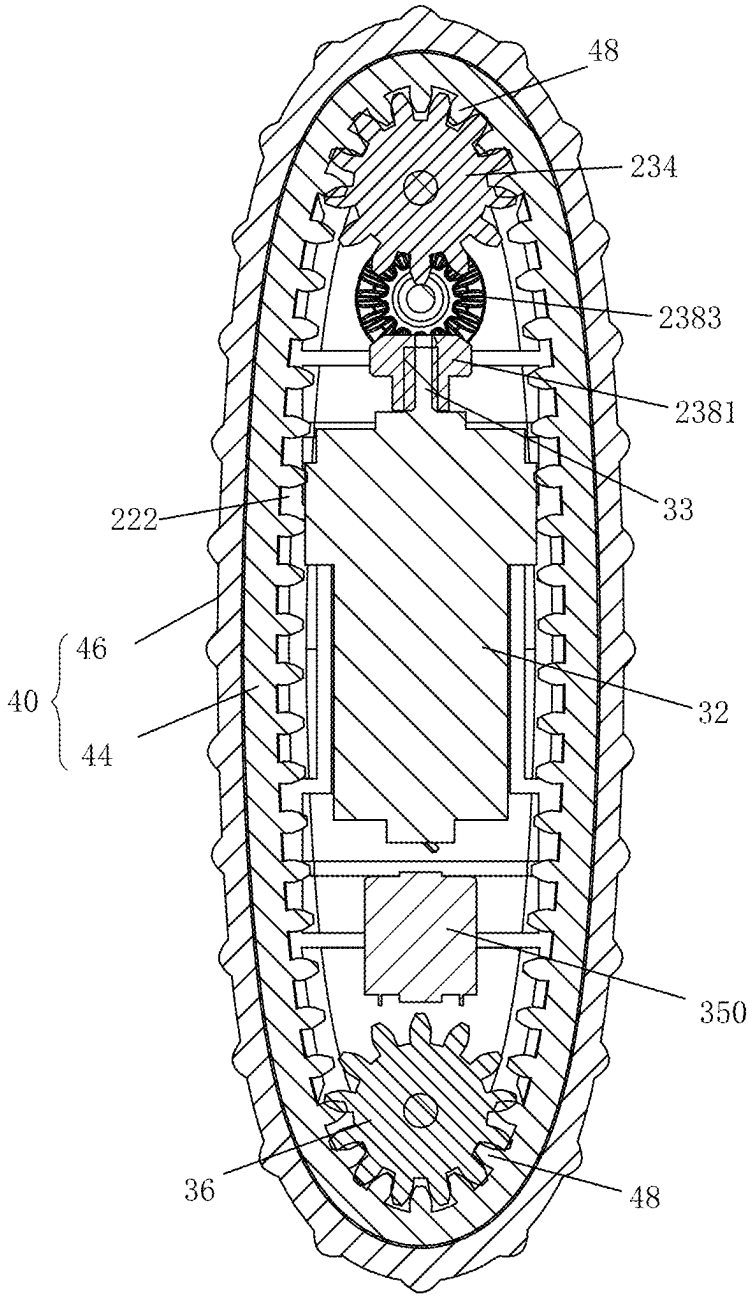


FIG. 23

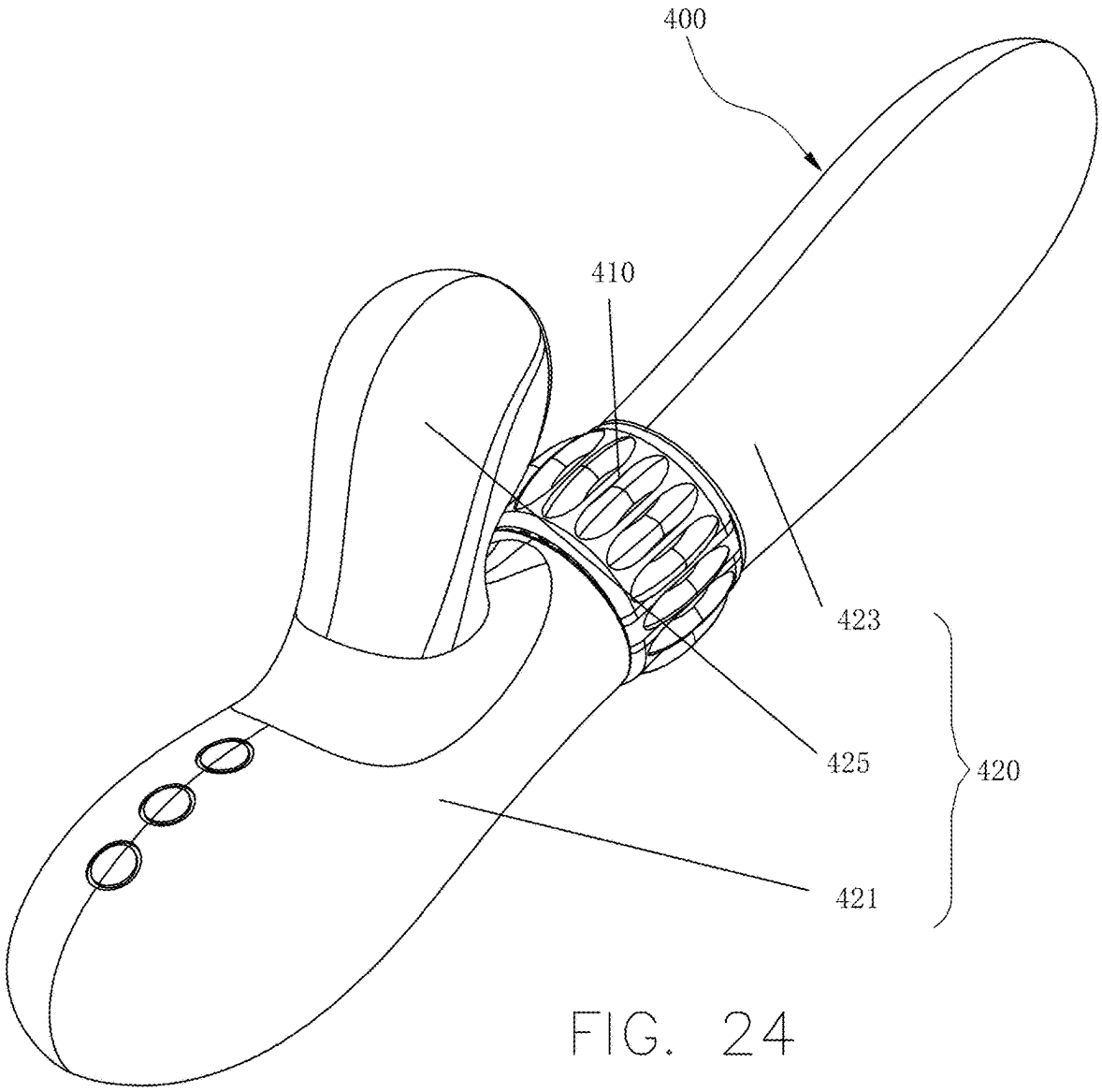


FIG. 24

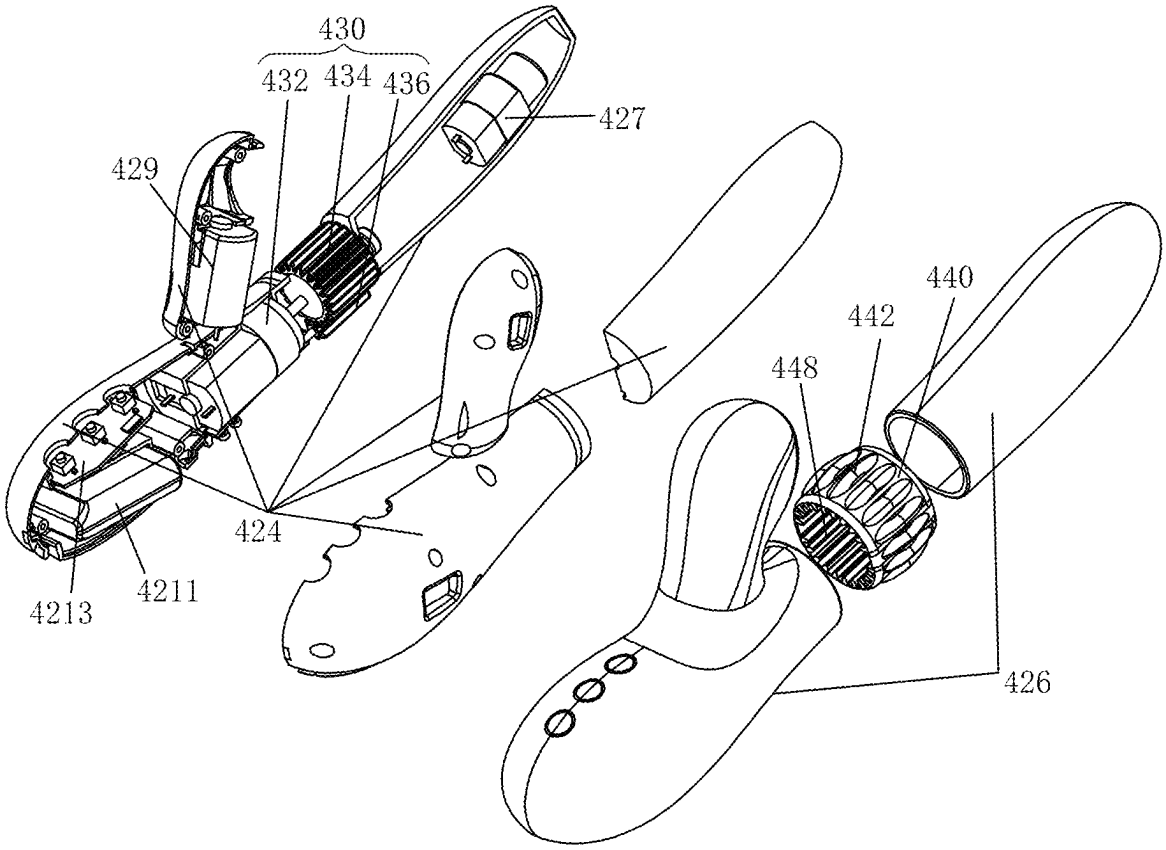


FIG. 25

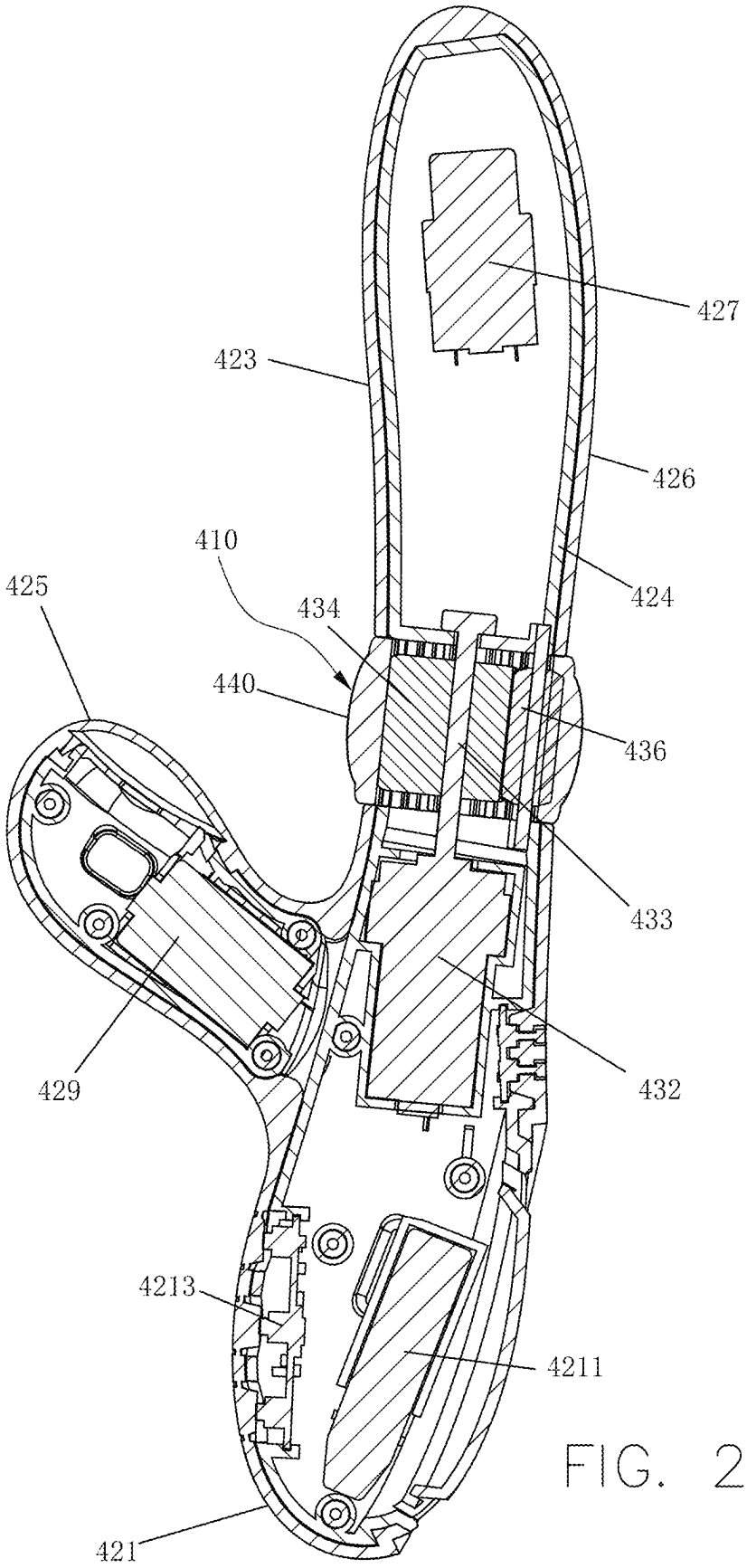


FIG. 26

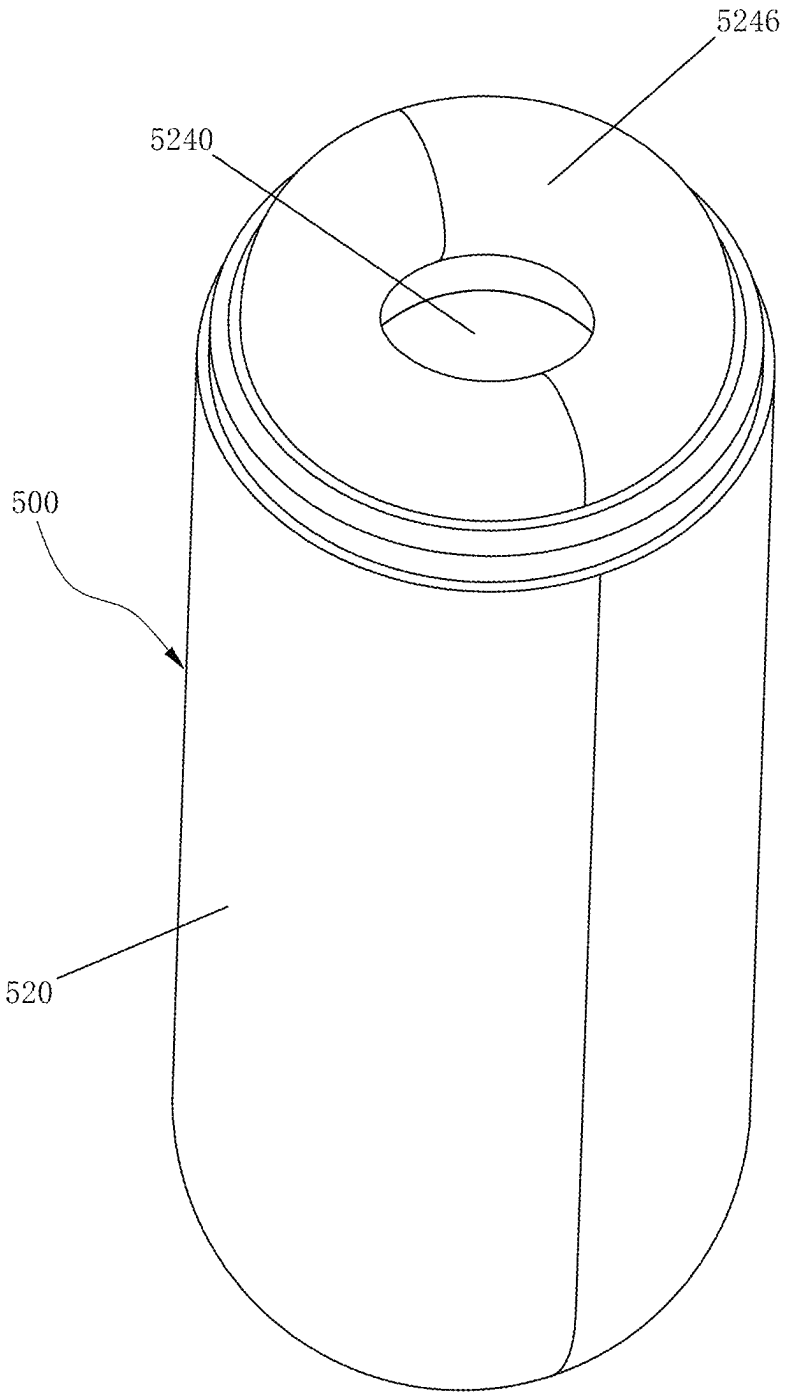


FIG. 27

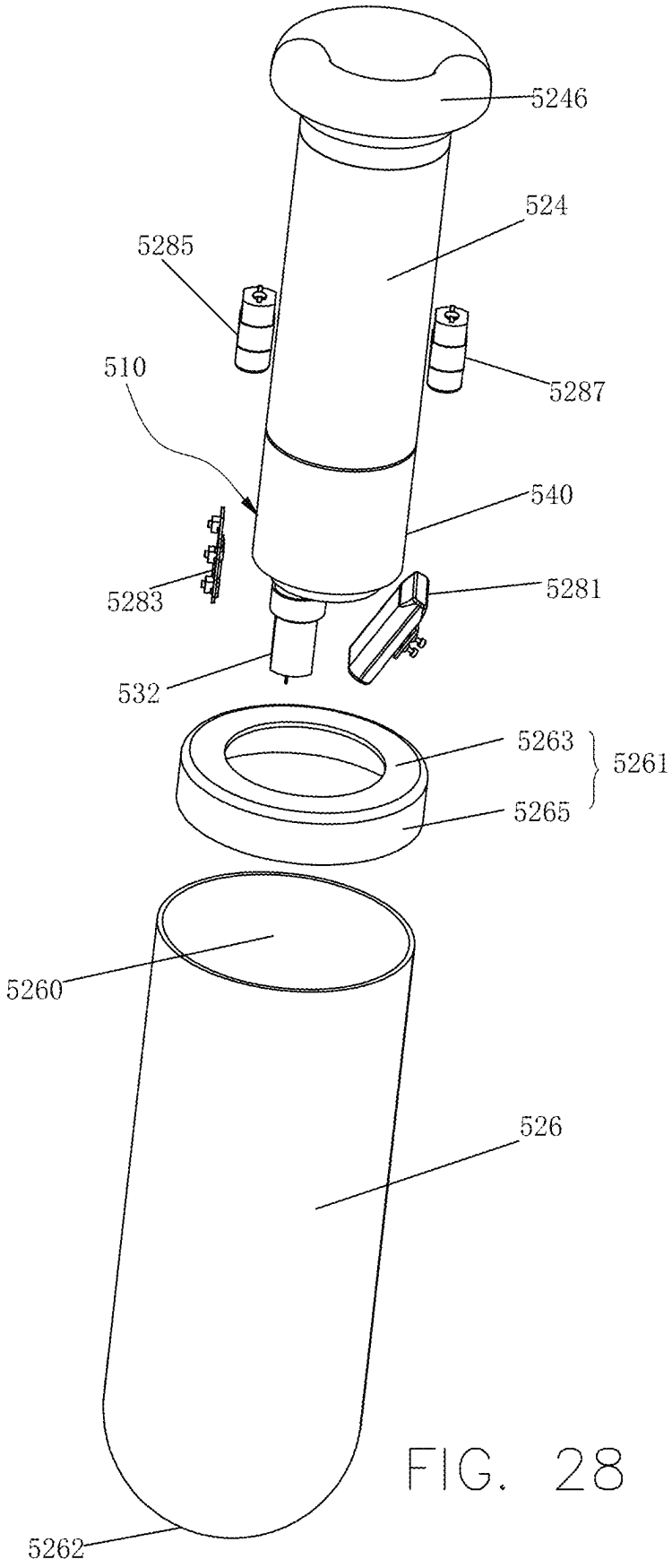

5246
524
5285
5287
510
540
5283
5281
532
5263
5261
5265
5260
526
5262

FIG. 28

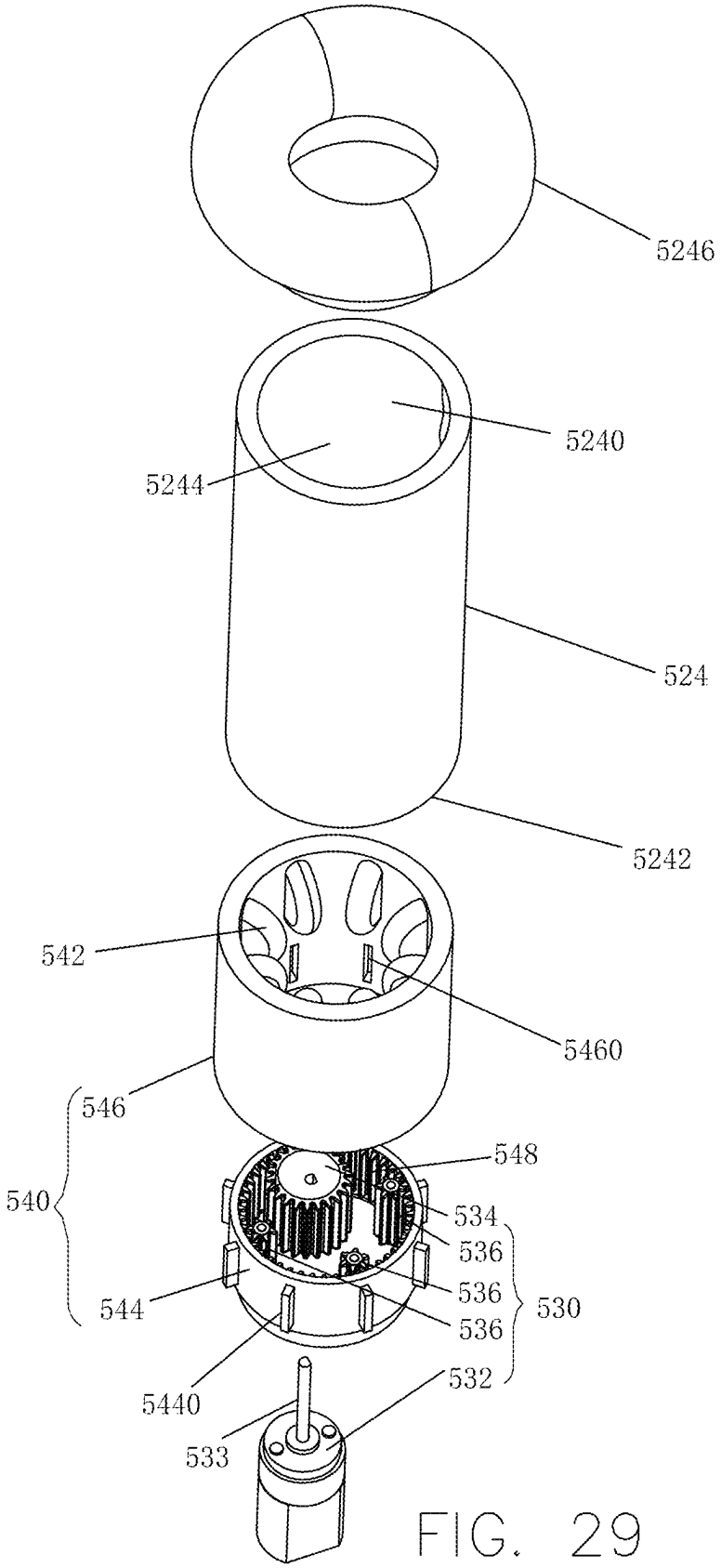

5246
5240
5244
524
5242
542
5460
546
548
540
534
536
536
544
536
530
5440
532
533

FIG. 29

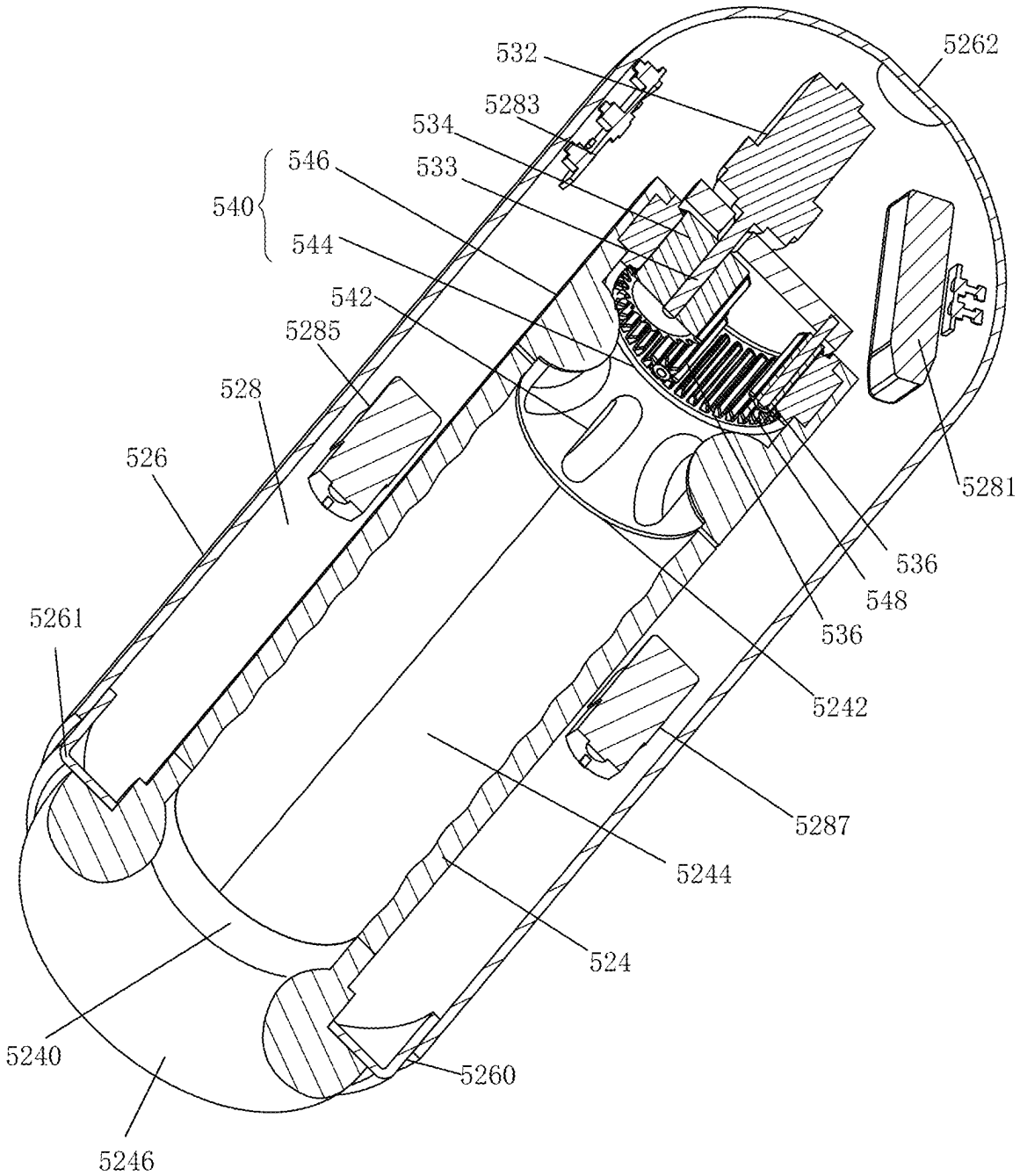

532
5262
5283
534
546
533
540
544
542
5285
528
526
5281
536
548
5261
536
5242
5287
5244
524
5240
5260
5246

FIG. 30

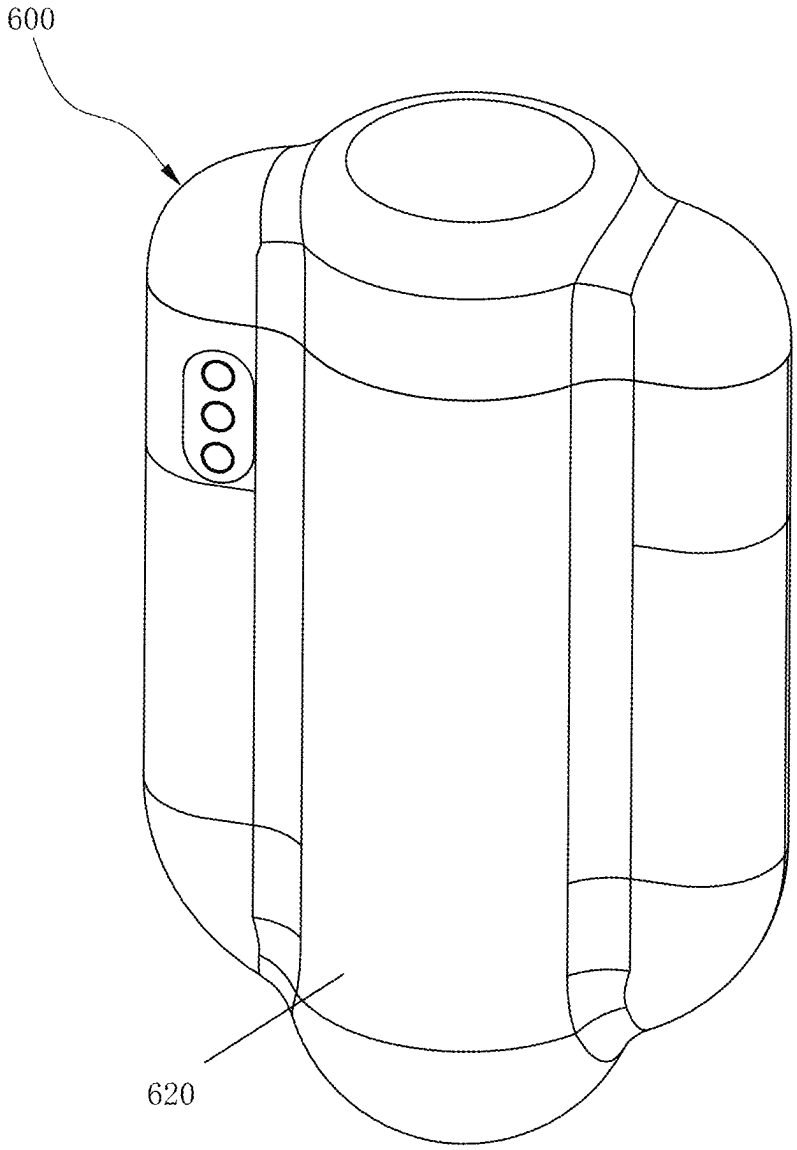


FIG. 31

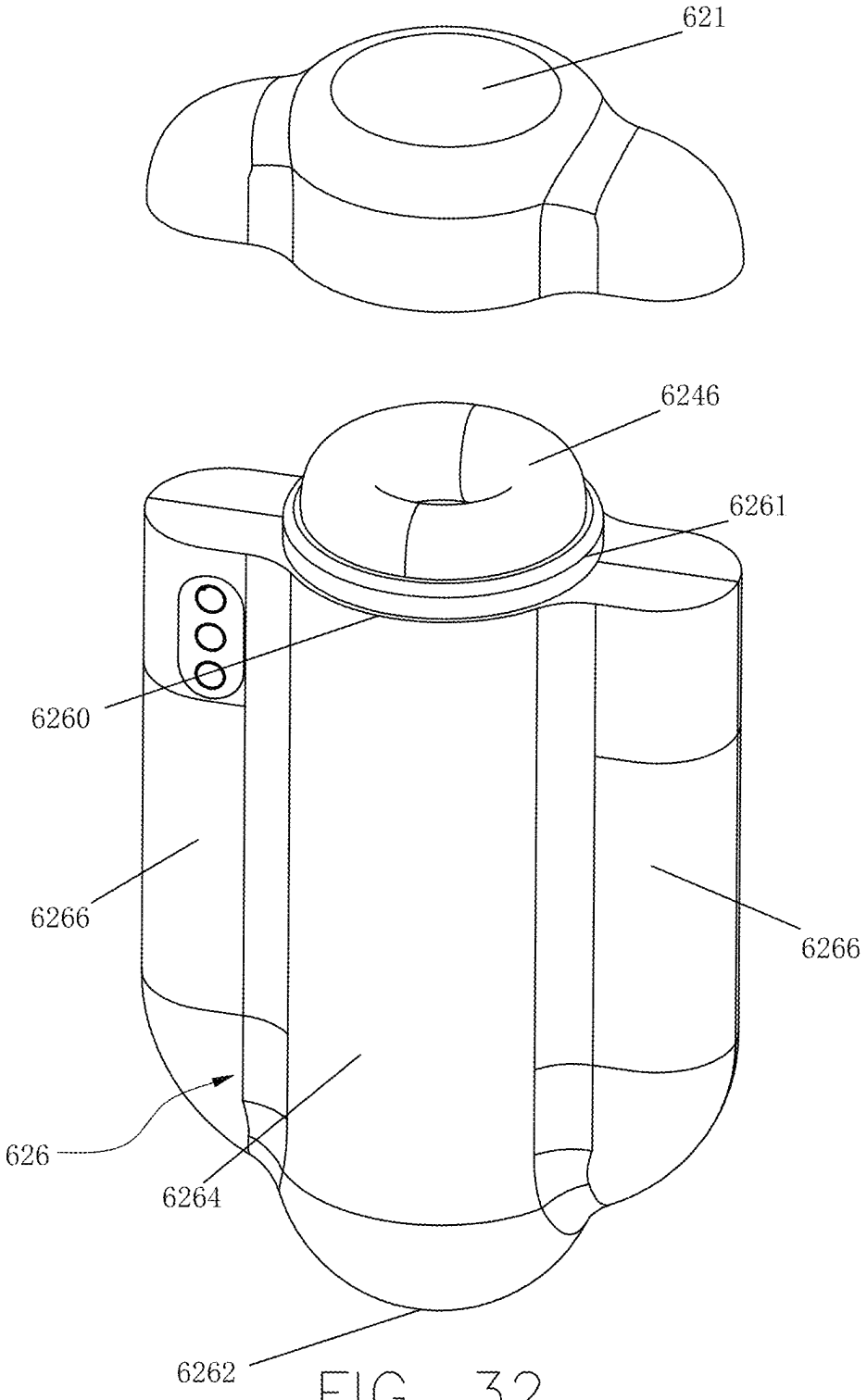


FIG. 32

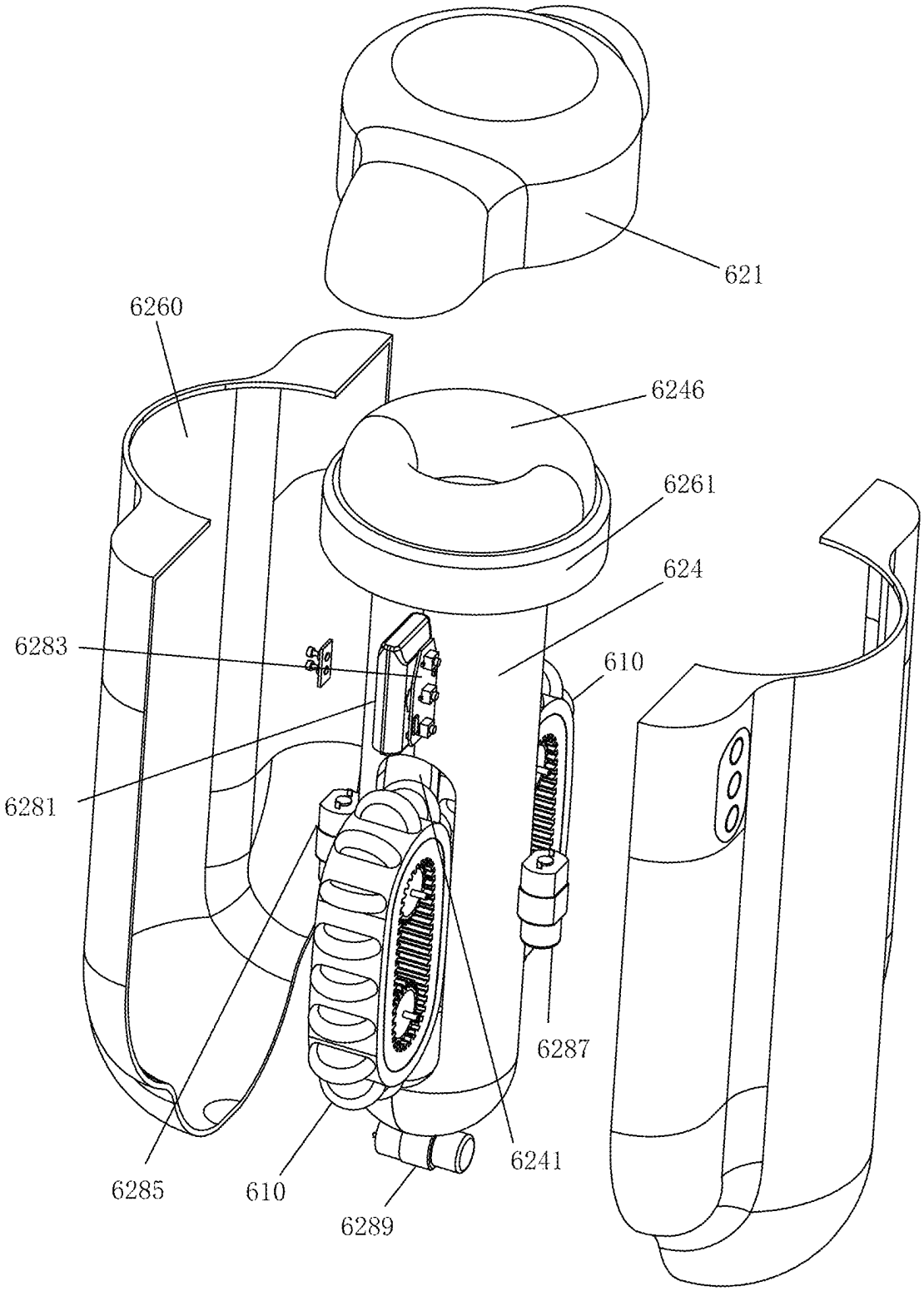


FIG. 33

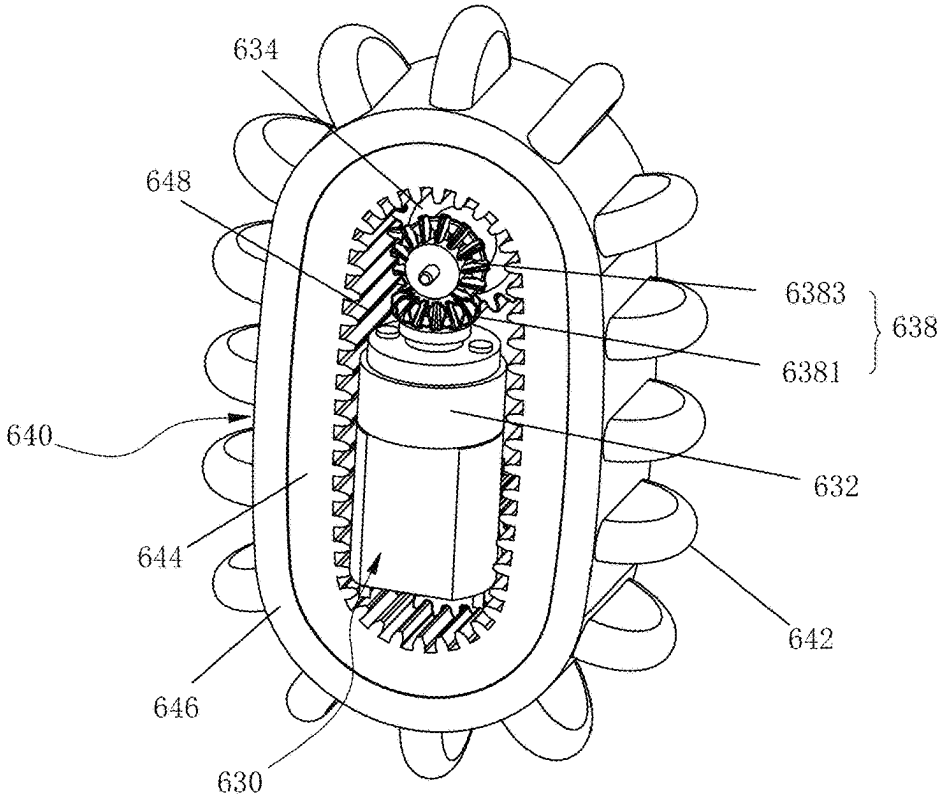


FIG. 34A

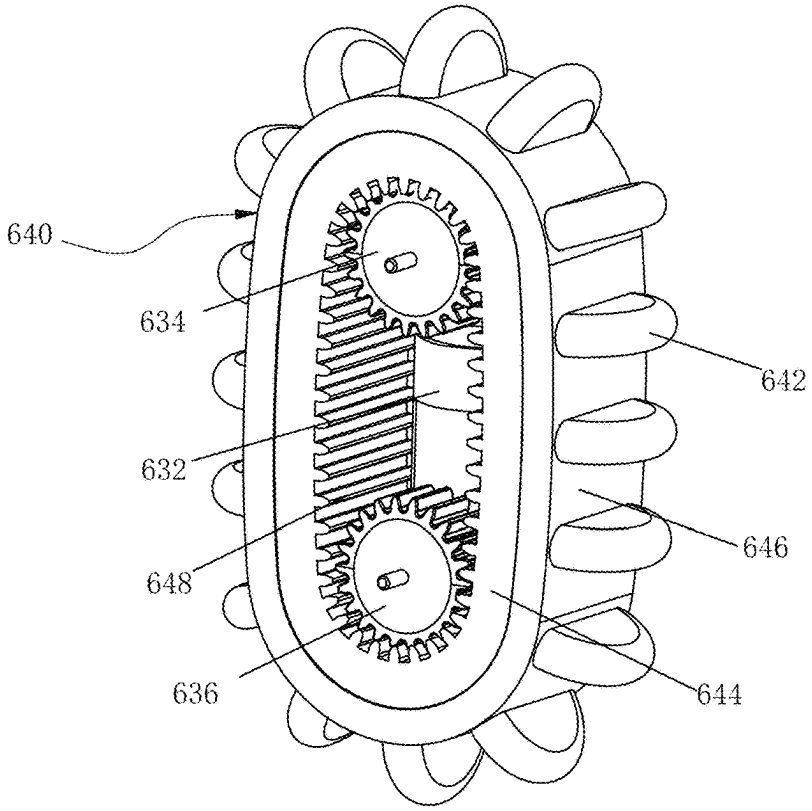


FIG. 34B

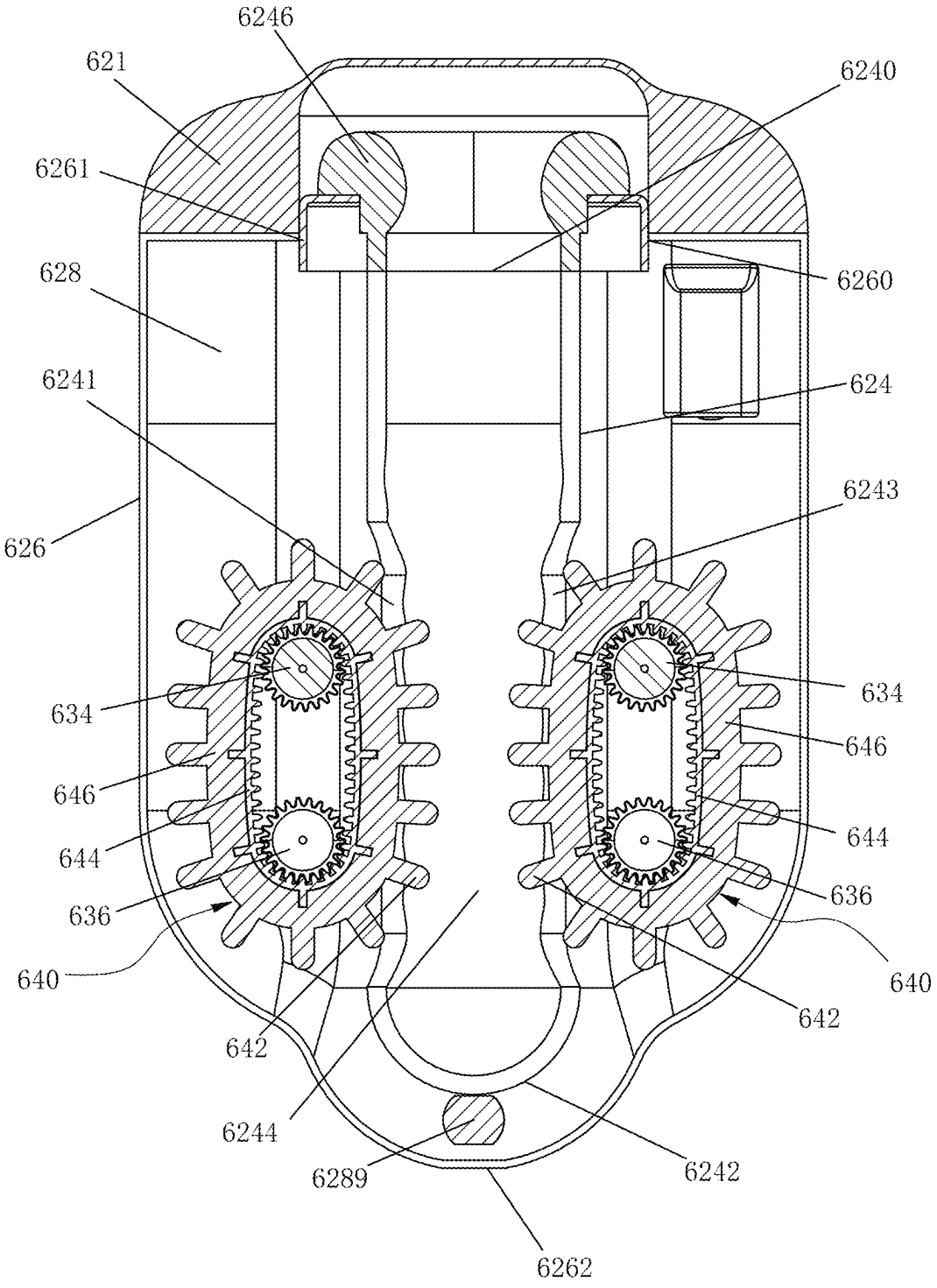

6246
621
6240
6261
628
6260
6241
624
6243
626
634
634
646
646
644
644
636
636
640
640
642
642
6244
6242
6289
6262

FIG. 35

MASSAGE DEVICE

CROSS-REFERENCE TO RELATED APPLICATIONS

The present disclosure claims priorities of Chinese Patent Application No. 202420402674.3, filed on Mar. 1, 2024, and Chinese Patent Application No. 202420331832.0, filed on Feb. 21, 2024, the entire contents of which are hereby incorporated by reference.

TECHNICAL FIELD

The present disclosure relates to the field of medical equipment, in particular to a massage device.

DESCRIPTION OF THE PRIOR ART

With the development of society and the improvement of living standards, people are paying more and more attention to their own health and the comfort of life. Medical equipment, such as massage device, is becoming more and more popular among the public.

Some existing massage devices use a motor to drive the massage head to frequently beat and thus to stimulate the muscles. However, such massage devices can only stimulate a small area, making it difficult to achieve the desired massage effect.

SUMMARY OF THE DISCLOSURE

In view of the above, the object of the present disclosure is to provide a massage device that can effectively increase the stimulation area and improve sexual experience.

Embodiments of the present disclosure provide a massage device for sexual purpose. The massage device includes a housing and at least one massage assembly provided on the housing. The massage assembly includes a driving assembly disposed in the housing and a massage member engaged with the driving wheel and the at least one driven wheel. The driving assembly includes a driving source, a driving wheel connected to the driving source and at least one driven wheel for cooperating with the driving wheel. The driving source is configured to drive the massage member to rotate through the driving wheel.

Compared with the existing massage devices, the massage device according to the embodiments of the present disclosure creates a kneading effect on the massaged part of the human body through the rotation of the massage member and can act on a larger area, effectively improving the stimulation and massage effect.

BRIEF DESCRIPTION OF DRAWINGS

The accompanying drawings, which are incorporated in and constitute a part of this specification, illustrate several embodiments of the present disclosure and together with the description, serve to explain the principles of the present disclosure.

FIG. **1** is a perspective view of a first embodiment of a massage device of the present disclosure;

FIG. **2** is a front view of the massage device shown in FIG. **1**;

FIG. **3** is a side view of the massage device shown in FIG. **1**;

FIG. **4** is an exploded view of the massage device shown in FIG. **1**;

FIG. **5** is an exploded view of the massage device shown in FIG. **1** from another perspective;

FIG. **6** is a cross-sectional view of the massage device shown in FIG. **2** along line VI-VI;

FIG. **7** is a cross-sectional view of the massage device shown in FIG. **3** along line VII-VII;

FIG. **8** is another exploded view of the massage device shown in FIG. **1**;

FIG. **9** is a first alternative of the massage member shown in FIG. **8**;

FIG. **10** is a second alternative of the massage member shown in FIG. **8**;

FIG. **11** is a third alternative of the massage member shown in FIG. **8**;

FIG. **12** is a fourth alternative of the massage member shown in FIG. **8**;

FIG. **13** is a perspective view of a second embodiment of a massage device of the present disclosure;

FIG. **14** is an exploded view of the massage device shown in FIG. **13**;

FIG. **15** is an exploded view of the massage device shown in FIG. **13** from another perspective;

FIG. **16** is a further exploded view of the massage device shown in FIG. **13**;

FIG. **17** is a cross-sectional view of the massage device shown in FIG. **13**;

FIG. **18** is another cross-sectional view of the massage device shown in FIG. **13**;

FIG. **19** is a perspective view of a third embodiment of a massage device of the present disclosure;

FIG. **20** is an exploded view of the massage device shown in FIG. **19**;

FIG. **21** is an exploded view of the massage device shown in FIG. **19** from another perspective;

FIG. **22** is a cross-sectional view of the massage device shown in FIG. **19**;

FIG. **23** is another cross-sectional view of the massage device shown in FIG. **19**;

FIG. **24** is a perspective view of a fourth embodiment of a massage device of the present disclosure;

FIG. **25** is an exploded view of the massage device shown in FIG. **24**;

FIG. **26** is a cross-sectional view of the massage device shown in FIG. **24**;

FIG. **27** is a perspective view of a fifth embodiment of a massage device of the present disclosure;

FIG. **28** is an exploded view of the massage device shown in FIG. **27**;

FIG. **29** is an exploded view of the internal structure of the massage device shown in FIG. **28**;

FIG. **30** is a cross-sectional view of the massage device shown in FIG. **27**;

FIG. **31** is a perspective view of a sixth embodiment of a massage device of the present disclosure;

FIG. **32** is an exploded view of the massage device shown in FIG. **31**;

FIG. **33** is another exploded view of the massage device shown in FIG. **31**;

FIG. **34**A is a perspective view of the massage assembly shown in FIG. **33**;

FIG. **34**B is another perspective view of the massage assembly shown in FIG. **33** from another perspective; and

FIG. **35** is an exploded view of the massage device shown in FIG. **31**.

DESCRIPTION OF EMBODIMENTS

Reference throughout this specification to "one embodiment", "an embodiment", "some embodiments", "embodi-

ments", or similar language means that a particular feature, structure, or characteristic described in connection with the embodiment is included in at least one embodiment of the present disclosure. Thus, appearances of the phrases "in one embodiment", "in an embodiment", "in some embodiments", "in embodiments" and similar language throughout this specification may, but do not necessarily, all refer to the same embodiment.

The terminology used herein is for the purpose of describing particular embodiments only and is not intended to be limiting of this disclosure. As used herein, the singular forms "a", "an", and "the" are intended to include the plural forms as well, unless the context clearly indicates otherwise.

Furthermore, the use of the terms "a", "an", etc., do not denote a limitation of quantity, but rather denote the presence of at least one of the referenced items. It will be further understood that the terms "comprises" and/or "comprising", or "includes" and/or "including", or "has" and/or "having", when used in this specification, specify the presence of stated features, regions, integers, steps, operations, elements, and/or components, but do not preclude the presence or addition of one or more other features, regions, integers, steps, operations, elements, components, and/or groups thereof.

For the purposes of disclosure, the word "substantially" is defined as "for the most part", it means "to a great extent", but having some room for some minor variation.

Moreover, the described features, structures, or characteristics of the disclosure may be combined in any suitable manner in one or more embodiments. Features, structures, or characteristics of one embodiment can be mixed and matched with features, structures, or characteristics of another embodiment. It will be apparent to those skilled in the art that various modifications and variations can be made to the present disclosure without departing from the spirit and scope and purpose of the disclosure. Thus, it is intended that the present disclosure cover the modifications and variations of this disclosure provided they come within the scope of the appended claims and their equivalents. Reference will now be made in detail to the preferred embodiments of the disclosure.

Referring to FIGS. **1** to **5**, a massage device **100** for sexual purpose according to a first embodiment includes a housing **20** and a massage assembly **10** provided on the housing **20**. The massage assembly **10** includes a driving assembly **30** disposed in the housing **20**, and a massage member **40** surrounding the housing **20**. The driving assembly **30** includes a driving source, for example, a driving motor **32**, a driving wheel **34** that is connected to the driving motor **32**, and a driven wheel **36** that cooperates with the driving wheel **34**. The massage member **40** surrounds and is engaged with the driving wheel **34** and the driven wheel **36**, and the driving motor **32** drives the massage member **40** to rotate around the housing **20** through the driving wheel **34**. The massage device **100** according to the first embodiment is used to be placed in the vagina or the rectum, for creating a kneading effect on the vaginal wall or the rectal wall of the human body through the rotation of the massage member **40**. Compared with the existing massage devices providing frequent beat, the massage device **100** according to the first embodiment can act on a larger area, effectively improving the stimulation and massage effect.

Referring to FIGS. **6** to **8**, an annular groove **22** is defined on the outer circumferential surface of the housing **20** to provide an installation space and a rotation path for the massage member **40**. In this embodiment, the massage member **40** is shaped like a ring, and specifically, shaped like an elliptical caterpillar belt. Accordingly, the annular groove **22** of the housing **20** is elliptical. The depth of the annular groove **22** relative to the outer surface of the housing **20** is less than the thickness of the massage member **40**, so that after assembly, part of the massage member **40** is received in the annular groove **22**, while the other part protrudes to a certain height relative to the outer surface of the housing **20**, so as to ensure that the massage member **40** is in full contact with the vaginal wall or the rectal wall. Preferably, the outer surface of the massage member **40** is provided with a plurality of protrusions **42** which protrude outwardly. The protrusions **42** protrude outwardly relative to the outer surface of the housing **20**. Specifically, the protrusions **42** can be convex points, convex pillars, convex strips, convex ribs, etc., distributed at intervals along the outer circumference of the massage member **40**. In this embodiment, the protrusions **42** are shaped as elongate convex ribs. When the massage member **40** rotates around the housing **20** to massage the human body, the protrusions **42** can improve the stimulation effect on the vaginal wall or the rectal wall.

FIGS. **9** to **12** show alternatives of the massage member **40**. As shown in FIG. **9**, the protrusions **42***a* on the outer circumference of the massage member **40***a* are shaped like balls. As shown in FIG. **10**, the protrusions **42***b* on the outer circumference of the massage member **40***b* are shaped like arc sheets. As shown in FIG. **11**, the protrusions **42***c* on the outer circumference of the massage member **40***c* are shaped like pillars. As shown in FIG. **12**, the protrusions **42***d* on the outer circumference of the massage member **40***d* are shaped like convex ribs which are shorter and thicker than the convex ribs shown in FIG. **8**.

Referring to FIGS. **6** to **8** again, in the first embodiment, the housing **20** has a double-layer structure, including an inner housing **24** and an outer housing **26** covering the inner housing **24**. The hardness of the outer housing **26** is smaller than the hardness of the inner housing **24**. The inner housing **24** can be made of hard materials such as plastics or alloys, and has a certain degree of strength, defining an interior space for installing the driving assembly **30** among others. The outer housing **26**, as the outermost structure of the entire massage device **100**, can be made of flexible materials such as silicone, rubber, etc. that have a soft touch when in contact with the human body. During manufacturing, the driving assembly **30** among others can be installed in the inner housing **24** first, and then the outer housing **26** can be over-molded outside the inner housing **24** by injection molding, which not only simplifies manufacturing and assembly, but also improves the sealing performance of the massage device **100**. Preferably, the annular groove **22** is defined by the outer housing **26** and passes through the outer housing **26** in the radial direction. The inner wall of the massage member **40** is slidably engaged with the outer wall of the inner housing **24** so that the massage member **40** can rotate around the housing **20**.

Specifically, the massage member **40** includes an inner annular belt **44** and an outer annular belt **46** covering the inner annular belt **44**. The hardness of the outer annular belt **46** is smaller than the hardness of the inner annular belt **44**. The outer annular belt **46** can be made of flexible materials such as silicone, rubber, etc., and preferably, the protrusions **42** and the outer annular belt **46** are formed in one piece. Alternatively, the outer annular belt **46** can be made of other flexible materials that can directly contact the skin, which are not strictly limited here. The inner annular belt **44** has a certain strength, and its two ends are respectively engaged with the driving wheel **34** and the driven wheel **36**. Preferably, the housing **20** (specifically, the inner housing **24**) is

opened at two ends corresponding to the driving wheel **34** and the driven wheel **36**, so that the driving wheel **34** and the driven wheel **36** are at least partially exposed out of the inner housing **24** and can be in direct contact and connected in transmission with the inner annular belt **44**. As shown in the FIG. **8**, the inner annular belt **44** has a plurality of internal teeth **48** on the inner surface thereof for engaging with the driving wheel **34** and the driven wheel **36**.

Specifically, in this embodiment, both the driving wheel **34** and the driven wheel **36** are gears, and the inner annular belt **44** of the massage member **40** meshes with the driving wheel **34** and the driven wheel **36** for transmission. In this way, when the driving motor **32** drives the driving wheel **34** to rotate, the driving wheel **34** drives the massage member **40** engaged with it to rotate, and the massage member **40** drives the driven wheel **36** engaged with it to rotate, so that the massage member **40** can rotate along the outer circumferential surface of the housing **20**. As shown in the figure, the driving wheel **34** and the driven wheel **36** are spaced apart in the inner housing **24**, and an installation space is defined between them for installing the driving motor **32**. The driving motor **32** is arranged in the length direction of the housing **20** (in the major axis of the elliptical massage member **40**), and its rotating shaft **33** is arranged at an angle to the central axis of the driving wheel **34**, preferably perpendicularly to the central axis of the driving wheel **34**. In this way, the space in the length direction can be fully utilized and the overall size of the massage device **100** can be reduced.

Preferably, a gear set **38** is provided between the driving motor **32** and the driving wheel **34**. As a transmission mechanism, the gear set **38** can not only transmit the torque from the driving motor **32** to the driving wheel **34**, but also change the direction of torque transmission as needed. Specifically, the gear set **38** includes two bevel gears meshing with each other, so that a 90-degree change in direction can be achieved through the cooperation of the two bevel gears.

In this illustrated embodiment, the gear set **38** includes a first gear **381**, a second gear **383**, a third gear **385**, a fourth gear **387** and a fifth gear **389**. The rotating shaft **33** of the driving motor **32** is inserted into the first gear **381**, and the two are preferably coaxially arranged. The second gear **383** meshes with the first gear **381**, and preferably the first gear **381** and the second gear **383** are bevel gears. The third gear **385** and the second gear **383** are arranged coaxially, and preferably the two are formed in one piece, wherein the diameter of the third gear **385** is larger than the diameter of the second gear **383**. The fourth gear **387** meshes with the third gear **385**, and preferably the diameter of the fourth gear **387** is smaller than the diameter of the third gear **385**. The fifth gear **389** and the fourth gear **387** are coaxially arranged, and the two are preferably formed in one piece, wherein the diameter of the fifth gear **389** is larger than the diameter of the fourth gear **387**. The driving wheel **34** meshes with the fifth gear **389**, and the diameter of the driving wheel **34** is smaller than the diameter of the fifth gear **389**.

Through the gear set **38**, the torque transmission direction can be changed and the rotation speed can also be reduced. After the high-speed rotation of the driving motor **32** is decelerated step by step, the driving wheel **34** is driven to rotate at an appropriate speed, thereby driving the massage member **40** to rotate around the housing **20** at an appropriate speed. It should be understood that the quantity, structure, size, etc. of the gears in the gear set **38** can be adjusted as needed. In addition, other transmission mechanisms can also be provided between the driving motor **32** and the driving wheel **34**, such as worm gears, pulleys, etc., or a combination of multiple transmission mechanisms can be provided between the driving motor **32** and the driving wheel **34**. That is, the transmission mechanism between the driving motor **32** and the driving wheel **34** is not limited to the gear transmission shown in the figure. Furthermore, in some embodiments, the driving motor **32** can also directly drive the driving wheel **34** to rotate, removing the transmission mechanism.

FIGS. **13** to **18** show a massage device **200** for sexual purpose according to a second embodiment. The massage device **200** according to the second embodiment is similar to the massage device **100** according to the first embodiment. The similarities between the two will no longer be repeated here, and the following will main explain the differences between the two.

As shown in FIGS. **13** to **15**, the massage device **200** according to the second embodiment further includes a handle **270** connected to the housing **220** so that the user can easily take the massage device **200** from the vagina or the rectum. In this embodiment, the handle **270** is generally U-shaped, and two ends of the handle **270** are respectively connected to two sides of the housing **220**. It can be understood that in other embodiments, the handle **270** can have other shapes and configurations. For example, the handle **270** can be generally rod-shaped and connected to one side of the housing **220**.

Referring to FIGS. **16** and **17**, the housing **220** in the second embodiment includes an inner housing **224** and an outer housing **226** covering the inner housing **224**. The outer housing **226** has a hardness smaller than that of the inner housing **224**. In this embodiment, the inner housing **224** includes two separate inner housing halves **2240**, and the outer housing **226** includes two separate outer housing halves **2260**, wherein one outer housing half **2260** covers a corresponding inner housing half **2240**. Specifically, the outer housing half **2260** has an annular flange **2262** on the inner side edge thereof, and the inner housing half **2240** defines an annular recession **2242** on the outer side edge thereof for receiving the annular flange **2262**, so that the outer housing half **2260** and the inner housing half **2240** are assembled together. In this embodiment, the annular groove **222** for receiving the massage member **40** is defined between the housing halves (between one assembly of one outer housing half **2260** and the corresponding inner housing half **2240** and the other assembly of the other outer housing half **2260** and the corresponding inner housing half **2240**). Therefore, the annular groove **222** can be considered as passing through both the inner housing **224** and the outer housing **226**.

Referring to FIGS. **16** to **18**, in the second embodiment, the gear set **238** includes a first gear **2381**, a second gear **2383**, a third gear **2385**, and a fourth gear **2387**. The rotating shaft **33** of the driving motor **32** is inserted into the first gear **2381**, and the two are preferably coaxially arranged. The second gear **2383** meshes with the first gear **2381**, and preferably the first gear **2381** and the second gear **2383** are bevel gears. The third gear **2385** and the second gear **2383** are arranged coaxially, and preferably the two are formed in one piece, wherein the diameter of the third gear **2385** is generally the same as the diameter of the large end of the second gear **2383**. The fourth gear **2387** meshes with the third gear **2385**, and preferably the diameter of the fourth gear **2387** is generally the same as the diameter of the third gear **2385**. The driving wheel **234** and the fourth gear **2387** are coaxially arranged, and the two are preferably formed in one piece, wherein the diameter of the driving wheel **234** is

larger than the diameter of the fourth gear **2387**. The driving wheel **234** meshes with the internal teeth **48** of the massage member **40**. When the driving motor **32** drives the driving wheel **234** through the gear set **238** to rotate, the driving wheel **234** drives the massage member **40** engaged with it to rotate, and the massage member **40** drives the driven wheel **36** engaged with it to rotate, so that the massage member **40** can rotate along the outer circumferential surface of the housing **220**.

FIGS. **19** to **23** show a massage device **300** for sexual purpose according to a third embodiment. The massage device **300** according to the third embodiment is similar to the massage device **200** according to the second embodiment. The similarities between the two will no longer be repeated here, and the following will main explain the differences between the two.

As shown in FIGS. **19** to **22**, the massage device **300** according to the third embodiment further includes a pull rope **370**, instead of the handle **270**, connected to the housing **220** so that the user can easily take the massage device **300** from the vagina or the rectum. In this embodiment, the pull rope **370** is elongate and connected to one side of the housing **220**. It can be understood that in other embodiments, the pull rope **370** can have other shapes and configurations. For example, the pull rope **370** can be generally U-shaped and connected to two sides of the housing **220**.

Optionally, the free end of the pull rope **370** opposing to the housing **220** can be provided with a control portion **371** in which a control board among others can be disposed and coupled to the driving motor **32** among others, so that the user can control the driving motor **32** among others through the control portion **371**.

Preferably, referring to FIGS. **20** to **23**, the massage device **300** according to the third embodiment further includes a vibration member **350** disposed in the housing **220**, in order to further improve the stimulation effect. For example, the vibration member **350** can be a vibration motor.

FIGS. **24** to **26** show a massage device **400** for sexual purpose according to a fourth embodiment. Similar to the massage device **100** according to the first embodiment, the massage device **400** according to the fourth embodiment also includes a housing **420** and a massage assembly **410** provided on the housing **420**. The massage assembly **410** includes a driving assembly **430** disposed in the housing **420** and a massage member **440**. The driving assembly **430** includes a driving source, for example, a driving motor **432**, a driving wheel **434** connected to the driving motor **432** and a driven wheel **436** for cooperating with the driving wheel **434**. The massage member **440** surrounds and is engaged with the driving wheel **434** and the driven wheel **436**. The driving motor **432** is configured to drive the massage member **440** to rotate through the driving wheel **434**.

Similar to the housing **20** in the first embodiment, the housing **420** in the fourth embodiment also includes an inner housing **424** and an outer housing **426** covering the inner housing **424**. The outer housing **426** has a hardness smaller than that of the inner housing **424**. For example, the outer housing **426** can be made of flexible materials, such as silicon rubber, which can contact the skin directly. The inner housing **424** can be made of materials with a certain strength, such as plastic, to provide support for the outer housing **426**. However, as shown in the figures, the shape and configuration of the housing **420** is different from that of the housing **20**. Specifically, in this embodiment, the housing **420** includes a handle part **421**, a stick-like part **423** generally coaxially connected to the front end of the handle part **421**, and a branched part **425** obliquely connected to the front end of the handle part **421**. The driving motor **432** can be arranged in the handle part **421**. Optionally, battery **4211**, PCB control board **4213** among others can be arranged in the handle part **421**. The stick-like part **423** is configured to be inserted into the vagina or the rectum. Preferably, the stick-like part **423** is provided with a first vibration member **427** such as s vibration motor therein, in order to improve the stimulation effect. The branched part **425** is configured to stimulate the external genitalia region, such as the clitoris. Preferably, the branched part **425** is provided with a second vibration member **429** such as a vibration motor therein, in order to improve the stimulation effect.

Similar to the massage member **40** in the first embodiment, the massage member **440** in the fourth embodiment is also configured to rotate along the outer circumferential surface of the housing **420** to stimulate the vagina or the rectum. Further, the massage member **440** is also provided with a plurality of protrusions **442** which protrude outwardly on the outer surface thereof in order to improve the stimulation effect. However, as shown in FIG. **25**, the massage member **440** is generally shaped like a circular ring with a plurality of internal teeth **448** on the inner surface thereof engaged with the driving wheel **434** and the driven wheel **436**, instead of an elliptical ring. Optionally, the massage member **440** in this embodiment consists of only one annular belt, instead of two annular belts. In this embodiment, the massage member **440** is connected between the handle part **421** and the stick-like part **423**. It can be understood that in other embodiments, the massage member **440** can have different arrangement. For example, the massage member **440** can be arranged at the middle of the stick-like part **423** or near the front end of the stick-like part **423**, instead of the rear end of the stick-like part **423** as shown in the figures.

As shown in the figures, the driving assembly **430** in the fourth embodiment does not include a gear set between the driving motor **432** and the driving wheel **434**. Instead, in this embodiment, the rotating shaft **433** of the driving motor **432** is directly coaxially connected to the driving wheel **434**. That is, the rotation axis of the rotating shaft **433** of the driving motor **432** is parallel to the rotation axis of the driving wheel **434**. Similar to the first embodiment, the driving wheel **434** and the driven wheel **436** are also gears. As shown in the figure, the rotating shaft **433** of the driving motor **432** pass through the driving wheel **434** and is connected with the stick-like part **423** so as to connect the handle part **421**, the stick-like part **423** and the massage member **440** between the handle part **421** and the stick-like part **423**. When the driving motor **432** drives the driving wheel **434** to rotate, the driving wheel **434** drives the massage member **440** engaged with it to rotate, and the massage member **440** drives the driven wheel **436** engaged with it to rotate, so that the massage member **440** can rotate along the outer circumferential surface of the housing **420**.

FIGS. **27** to **30** show a massage device **500** for sexual purpose according to a fifth embodiment. Similar to the massage device **100** according to the first embodiment, the massage device **500** according to the fifth embodiment also includes a housing **520** and a massage assembly **510** provided on the housing **520**. The massage assembly **510** includes a driving assembly **530** disposed in the housing **520** and a massage member **540**. The driving assembly **530** includes a driving source, for example, a driving motor **532**, a driving wheel **534** connected to the driving motor **532** and at least one driven wheel **536** for cooperating with the

driving wheel **534**. The massage member **540** surrounds and is engaged with the driving wheel **534** and the at least one driven wheel **536**. The driving motor **532** is configured to drive the massage member **540** to rotate through the driving wheel **534**.

Similar to the housing **20** in the first embodiment, the housing **520** in the fifth embodiment also includes an inner housing **524** and an outer housing **526** covering the inner housing **524**. However, in this embodiment, the inner housing **524** has a hardness smaller than that of the outer housing **526**. For example, the inner housing **524** can be made of flexible materials, such as silicon rubber, which can contact the skin directly. The outer housing **526** can be made of materials with a certain strength, such as plastic. In this embodiment, the outer housing **526** is shaped like a hollow cylinder with an open end **5260** and an opposing close end **5262**. The inner housing **524** is received in the outer housing **526** and shaped like a hollow cylinder with openings **5240**, **5242** at two ends. The interior of the inner housing **524** is an elongate axial space **5244** for receiving the penis and communicated with the openings **5240**, **5242** at two ends. Preferably, a flexible ring **5246** is provided at the first opening **5240** of the inner housing **524** and the open end **5260** of the outer housing **526**, in order to provide a comfort feel. Preferably, the material of the flexible ring **5246** in contact with the skin is the same as that of the inner housing **524**, for example silicon rubber. In order to enhance the connection between the flexible ring **5246** and the outer housing **526**, a fixing ring **5261** is provided therebetween. Specifically, the fixing ring **5261** includes an inner flange **5263** and a side wall **5265** connected to the outer edge of the inner flange **5263**. The inner flange **5263** is fixedly connected to the flexible ring **5246** and the side wall **5265** is fixedly connected to the outer housing **526**. As shown in the FIG. **30**, a chamber **528** is defined between the outer housing **526** and the inner housing **524**. Optionally, battery **5281**, PCB control board **5283** among others can be arranged in the chamber **528**. Preferably, one or more vibration members can be arranged in the chamber **528**. As shown in the figure, in this embodiment, a first vibration member **5285** and a second vibration member **5287** are respectively arranged at two opposite sides of the inner housing **526**. The vibration member is preferably vibration motor.

Similar to the massage member **40** in the first embodiment, the massage member **540** in the fourth embodiment is shaped like a ring with a plurality of internal teeth **548** engaged with the driving wheel **534** and the at least one driven wheel **536**. However, the massage member **540** in this embodiment is shaped like a circular ring, instead of an elliptical ring, and the massage member **540** in this embodiment is disposed in the housing **520** to stimulate the penis received in the elongate axial space **5244** of the housing **520**. Specifically, the massage member **540** is coaxially arranged at the second opening **5242** of the inner housing **524** opposing to the first opening **5240**, and the interior space of the massage member **540** is communicated with the elongate axial space **5244** of the inner housing **524**. The massage member **540** is also provided with a plurality of protrusions **542**. However, the protrusions **542** are provided on the inner surface of the massage member **540**, instead of the outer surface of the massage member **540**. Specifically, the massage member **540** includes an inner annular belt **544** and an outer annular belt **546** surrounding the inner annular belt **544**. For example, one of the inner annular belt **544** and the outer annular belt **546** can be provided with one or more ribs **5440** and the other can be provided with one or more slots **5460** for receiving the one or more ribs **5440**, thereby connecting the inner annular belt **544** and the outer annular belt **546**. The hardness of the outer annular belt **546** is smaller than the hardness of the inner annular belt **544**. The outer annular belt **546** can be made of flexible materials such as silicone, rubber, etc. One section of the outer annular belt **546** is connected with the inner annular belt **544** and the other section has the protrusions **542** on the inner surface thereof. Preferably, the protrusions **542** and the outer annular belt **546** are formed in one piece. The inner annular belt **544** has a certain strength, for example, can be made of plastic. The internal teeth **548** are provided on the inner surface of the inner annular belt **544** and engaged with the driving wheel **534** and the driven wheel **536**.

As shown in the figures, the driving assembly **530** in the fifth embodiment does not include a gear set between the driving motor **532** and the driving wheel **534**. Instead, in this embodiment, the rotating shaft **533** of the driving motor **532** is directly coaxially connected to the driving wheel **534**. That is, the rotation axis of the rotating shaft **533** of the driving motor **532** is parallel to the rotation axis of the driving wheel **534**. Similar to the first embodiment, the driving wheel **534** and the driven wheel **536** are also gears. However, in this embodiment, there are a plurality of driven wheel **536** meshed with the internal teeth **548** of the massage member **540**, in order to improve the rotation stability of the massage member **540**. As shown in FIG. **29**, three driven wheel **536** are distributed at intervals along the inner circumference of the inner annular belt **544**. When the driving motor **532** drives the driving wheel **534** to rotate, the driving wheel **534** drives the massage member **540** engaged with it to rotate, and the massage member **540** drives the driven wheels **536** engaged with it to rotate, so that the massage member **540** can rotate around the central axis of the elongate axial space **5244** of the housing **520**.

FIGS. **31** to **35** show a massage device **600** for sexual purpose according to a sixth embodiment. Similar to the massage device **500** according to the fifth embodiment, the massage device **600** according to the sixth embodiment also includes a housing **620** and at least one massage assembly **610** provided in the housing **620**. The massage assembly **610** includes a driving assembly **630** and a massage member **640**. The driving assembly **630** includes a driving source, for example, a driving motor **632**, a driving wheel **634** connected to the driving motor **632** and a driven wheel **636** for cooperating with the driving wheel **634**. The massage member **640** surrounds and is engaged with the driving wheel **634** and the driven wheel **636**. The driving motor **632** is configured to drive the massage member **640** to rotate through the driving wheel **634**.

Similar to the housing **520** in the fifth embodiment, the housing **620** in the sixth embodiment also includes an inner housing **624** and an outer housing **626** covering the inner housing **624**. The inner housing **624** has a hardness smaller than that of the outer housing **626**. For example, the inner housing **624** can be made of flexible materials, such as silicon rubber, which can contact the skin directly. The outer housing **626** can be made of materials with a certain strength, such as plastic. However, in this embodiment, in addition to a hollow cylinder portion **6264** with an open end **6260** and an opposing close end **6262**, the outer housing **626** further includes two extensions **6246** respectively connected at two sides of the hollow cylinder portion **6264**. The inner housing **624** is also received in the outer housing **626** and shaped like a hollow cylinder with a first opening **6240**. However, in this embodiment, the other end of the inner housing **624** opposing to the first opening **6240** is a close end **6242**, and the inner housing **624** in this embodiment defines

a first through hole **6241** and a second through hole **6243** on the opposite sides thereof. The inner housing **624** also defines an elongate axial space **6244** for receiving the penis and communicated with the first opening **6240**. Preferably, a flexible ring **6246** is also provided at the first opening **6240** of the inner housing **624** and the open end **6260** of the outer housing **626**, in order to provide a comfort feel. Preferably, the material of the flexible ring **6246** in contact with the skin is the same as that of the inner housing **624**, for example silicon rubber. In order to enhance the connection between the flexible ring **6246** and the outer housing **626**, a fixing ring **6261** is provided therebetween. The structure of the fixing ring **6261** can refer to the structure of the fixing ring **5261**, which will not be repeated here again. In addition, the housing **620** in this embodiment further includes a detachable cover **621** abutting against the outer housing **626** for covering the first opening **6240**. As shown in the FIGS. **33** and **35**, a chamber **628** is defined between the outer housing **626** and the inner housing **624**. Optionally, battery **6281**, PCB control board **6283** among others can be arranged in the chamber **628**. Preferably, one or more vibration members can be arranged in the chamber **628**. As shown in the figure, in this embodiment, a first vibration member **6285**, a second vibration member **6287** and a third vibration member **6289** are respectively arranged at two opposite sides and the bottom of the inner housing **626**. The vibration member is preferably vibration motor. Further, in the chamber **628**, there are two massage assemblies **610** respectively arranged on two opposite sides of the inner housing **626** corresponding to the first and second through holes **6241**, **6243**, and the massage members **640** of the massage assemblies **610** are configured to stimulate the penis received in the elongate axial space **6244** of the housing **620** through the first and second through holes **6241**, **6243**, respectively.

In this embodiment, each massage assembly **610** is similar to the massage assembly **10** in the embodiment. Specifically, the massage member **640** is also shaped like an elliptical caterpillar belt, and includes an inner annular belt **644** and an outer annular belt **646** covering the inner annular belt **644**. The inner annular belt **644** is provided with a plurality of internal teeth **648** on the inner surface thereof for engaging with the driving wheel **634** and the driven wheel **636**. The outer surface of the outer annular belt **646** is provided with a plurality of protrusions **642**. In this embodiment, the protrusions **642** are shaped like semicircular sheets (see FIGS. **34**A and **34**B). As shown in FIG. **35**, the massage assemblies **610** are arranged so that the protrusions **642** extend into the elongate axial space **6244** through the through holes **6241**, **6243**, respectively, in order to stimulate the penis received in the elongate axial space **6244**. In this embodiment, the driving assembly **630** of the massage assembly **610** also includes a gear set **638** provided between the driving motor **632** and the driving wheel **634**. However, in this embodiment, the gear set **638** only includes a first bevel gear **6381** and a second bevel gear **6383** meshing with each other. The rotating shaft (not shown) of the driving motor **632** is inserted into the first bevel gear **6381**. The second bevel gear **6383** and the driving wheel **634** are coaxially arranged and preferably formed in one piece. More preferably, the diameter of the driving wheel **634** is greater than that of the second bevel gear **6383**. When the driving motor **632** drives the driving wheel **634** through the gear set **638** to rotate, the driving wheel **634** drives the massage member **640** engaged with it to rotate, and the massage member **640** drives the driven wheel **636** engaged with it to rotate, so that the massage member **640** can rotate to stimulate the penis received in the elongate axial space **6244** of the housing **620** through the first or second through hole **6241**, **6243**. It should be noted that the rotation directions of the massage members **640** of the two massage assemblies **610** can be the same or different.

It should be noted that the above embodiments are only for illustration. The skilled person in the art can make modifications based on the inventive concept disclosed here. For example, in other embodiments, only one massage assembly **610** can be arranged outside the inner housing **624** and corresponding to one through hole defined on the inner housing **624**. Alternatively, three or more massage assemblies **610** can be arranged outside the inner housing **624**, in which case, the massage assemblies **610** can be arranged at intervals around the inner housing **624** in the circumferential direction, or the massage assemblies **610** can be arranged on one side of the inner housing **624** at intervals in the axial direction, or in combination. The quantity of the through hole can be adjusted as needed, provided that the massage members **640** of the massage assemblies **610** can stimulate the penis received in the elongate axial space **6244** of the housing **620** through the through hole(s).

While the disclosure has been particularly shown and described in conjunction with exemplary embodiments, it will be appreciated that variations and modifications will occur to those skilled in the art. The embodiments according to the present disclosure may be implemented in association with the formation and/or processing of structures illustrated and described herein as well as in association with other structures not illustrated. Moreover, in particular regard to the various functions performed by the above described components (assemblies, devices, circuits, etc.), the terms used to describe such components are intended to correspond, unless otherwise indicated, to any component which performs the specified function of the described component (i.e., that is functionally equivalent), even though not structurally equivalent to the disclosed structure which performs the function in the herein illustrated exemplary embodiments of the disclosure. In addition, while a particular feature of the disclosure may have been disclosed with respect to only one of several embodiments, such feature may be combined with one or more features of the other embodiments as may be desired and advantageous for any given or particular application. Therefore, it is to be understood that the appended claims are intended to cover all such modifications and changes that fall within the true spirit of the disclosure.

The invention claimed is:

1. A massage device for sexual purpose, comprising:

a housing, and

at least one massage assembly provided on the housing, each of the at least one massage assembly comprising:

a driving assembly disposed in the housing, the driving assembly comprising a driving source, a driving wheel connected to the driving source and at least one driven wheel for cooperating with the driving wheel, and

a massage member engaged with the driving wheel and the at least one driven wheel, wherein the driving source is configured to drive the massage member to rotate through the driving wheel;

wherein the driving source comprises a rotating shaft, and a rotation axis of the rotating shaft is parallel or perpendicular to a rotation axis of the driving wheel; and

wherein the driving assembly further comprises a gear set arranged between the driving source and the driving wheel, and the gear set comprises at least two bevel gears meshing with each other.

2. The massage device of claim 1, wherein the massage member has an inner surface and an outer surface, and the inner surface or the outer surface of the massage member is provided with a plurality of protrusions.

3. The massage device of claim 1, wherein the massage member is shaped like a ring with a plurality of internal teeth engaged with the driving wheel and the at least one driven wheel.

4. The massage device of claim 3, wherein the massage member comprises an inner annular belt and an outer annular belt covering the inner annular belt, and the outer annular belt has a hardness smaller than that of the inner annular belt, and wherein the plurality of internal teeth are provided on the inner annular belt.

5. The massage device of claim 1, further comprising at least one vibration member arranged in the housing.

6. The massage device of claim 1, wherein the housing has an outer circumferential surface, and the massage member is configured to rotate along the outer circumferential surface of the housing to stimulate a vagina or a rectum.

7. The massage device of claim 6, wherein the massage member is shaped like an elliptical caterpillar belt, and the housing defines an annular groove on the outer circumferential surface thereof for receiving the massage member.

8. The massage device of claim 7, further comprising a handle or a pull rope connected to the housing.

9. The massage device of claim 6, wherein the housing comprises a stick-like part configured to be inserted into the vagina or the rectum, and the massage member is coaxially or generally coaxially arranged with the stick-like part.

10. The massage device of claim 9, wherein the housing further comprises a branched part configured to stimulate an external genitalia region, and at least one of the stick-like part and the branched part is provided with a vibration member.

11. The massage device of claim 1, wherein the housing defines an elongate axial space for receiving a penis, and the massage member is disposed in the housing and configured to stimulate the penis received in the elongate axial space of the housing.

12. The massage device of claim 11, wherein the housing defines an opening on one end of the elongate axial space, the massage member is coaxially arranged at an other end of the elongate axial space opposing to the opening, the massage member has an inner surface, and the inner surface of the massage member is provided with a plurality of protrusions which protrude inwardly.

13. The massage device of claim 11, wherein the housing comprises an inner housing defining the elongate axial space therein and an outer housing sleeving the inner housing, the inner housing defines at least one through hole, and the massage member is disposed outside the inner housing and is configured to stimulate the penis received in the elongate axial space of the housing through the at least one through hole.

14. The massage device of claim 13, wherein the massage member has an outer surface, and the outer surface of the massage member is provided with a plurality of protrusions which partly extend into the elongate axial space through the at least one through hole to stimulate the penis received in the elongate axial space of the housing.

15. The massage device of claim 13, wherein the at least one massage assembly comprises at least two massage assemblies arranged outside the inner housing, the at least one through hole comprises at least two through holes, and the at least two massage assemblies are configured to stimulate the penis received in the elongate axial space of the housing through the at least two through holes defined on the inner housing, respectively.

16. A massage device for sexual purpose, comprising:

a housing comprising an inner housing and an outer housing mounted around the inner housing, a space being defined in the inner housing, a chamber being defined between the inner housing and the outer housing, and the inner housing defining a through hole to intercommunicate the space and the chamber, and

a massage assembly comprising:

a driving assembly mounted in the chamber of the housing, the driving assembly comprising a driving source, a driving wheel connected to the driving source and a driven wheel cooperating with the driving wheel, and

a massage member engaged with the driving wheel and the driven wheel, wherein the massage member is mounted in the chamber and extends partly into the space through the through hole.

17. The massage device of claim 16, wherein a plurality of protrusions are provided on and arranged along a circumferential direction of an outer surface of the massage member, at least one of the plurality of protrusions extends partly into the space through the through hole; and wherein the driving source is configured for driving the massage member to rotate, making the plurality of protrusions move in and out of the space to stimulate a portion of a human body inside the space during use.

18. The massage device of claim 17, wherein the plurality of protrusions are configured as balls, arc plates, pillars or convex ribs.

* * * * *