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(71) Applicant: **Saplast S.R.L.**
20853 Muggiò (MB) (IT)

(72) Inventor: **NEGRI, Cesare Giovanni**
20853 Muggiò (IT)

(74) Representative: **Penza, Giancarlo**
Bugnion S.p.A.
Viale Lancetti, 17
20158 Milano (IT)

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(54) **LANE DIVIDER FOR SWIMMING POOLS**

(57) A system for realizing a lane divider (1) for swimming pools is disclosed, said system comprising modular elements (10, 20), each of which having a first and a second longitudinal end (11a, 11b, 21a, 21b) and at least one seat (12a, 12b, 22a, 22b). The modular elements are mutually interconnected one after the other by respective connectors (30), each one comprising a shank (31) having at least one, but preferably two heads (32a,

32b), each head being placed at one of its axial ends. Each head (32a, 32b) of each connector (30) is oscillatably housed in the seat (12a, 12b, 22a, 22b) of the adjacent modular element (10, 20). The oscillation between the head (32a, 32b) of the connector (30) and the seat (12a, 12b, 22a, 22b) of the modular element (10, 20) allows the connector (30) to move within a solid angle.

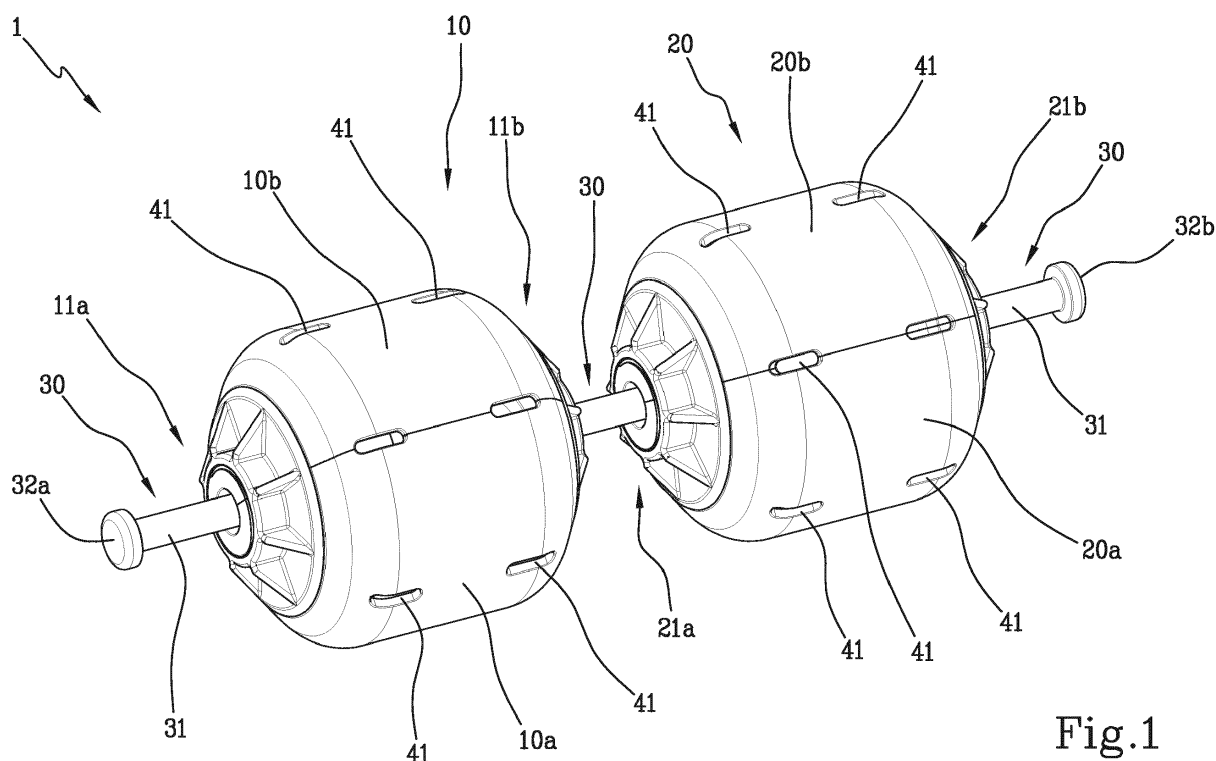


Fig.1

Description

[0001] The present invention relates to a lane divider for swimming areas, particularly for swimming pools.

[0002] As is known, swimming pools and particularly competition pools have a plurality of lane dividers that extend for the entire length of the pool for the purpose of thus delimiting the lanes along which the swimmers can swim without the risk of getting in each other's way.

[0003] These dividers are removable and can also serve to separate various activities which may be taking place simultaneously in the same pool.

[0004] For example, removable dividers can be used to divide a pool into different portions for the various types of activities, assigning to various swimmers those parts of the pool reserved for a given activity. They can also be used to prevent beginner swimmers from venturing into the deep end, particularly in large-sized pools.

[0005] The lane dividers of the prior art are generally made up of a plurality of floating elements arranged along a cable, which is usually made of steel and covered with a protective sheath.

[0006] There are several known models of floats, which are generally made of a plastic material and have various shapes such as spheroidal shapes, disc-like shapes, cylindrical shapes and other shapes.

[0007] The floats of each lane divider are usually in contact with each other and have a diameter approximately ranging between 5 cm and 15 cm.

[0008] The ends of the lane dividers are removably fastened by means of snap-hooks to anchoring devices on the sides or bottom of the swimming pool. When the dividers are no longer needed, they are taken out of the water and usually stored on winding storage trolleys or reels so as to minimize the space occupied.

[0009] Conventional lane markers are detached from the anchoring devices, taken out and rolled up depending on the activities taking place in the swimming pool, which often also means many times during the day. For this purpose, the steel cable must be loosened. Given that the steel cable is retained by anchoring points between fixed positions on opposite walls of the swimming pool, loosening a cable can be a time-consuming process, particularly when the anchoring devices are tightened, as is usually the case. Moreover, the steel cable must be kept tensioned at all times, for example, through the use of a ratchet tensioner or another similar device.

[0010] One drawback of the lane dividers of the prior art consists in the fact that the combination of the floating discs and the steel cable makes the conventional lane dividers relatively heavy. As a result, the procedures for setting them up and removing them are rather arduous.

[0011] A further drawback of known lane dividers consists in the fact that because of their weight, additional buoys are often required about every 2 m.

[0012] An additional drawback consists in the fact that the shape of the floating discs, together with the presence of the steel cable on which they are present, makes it

difficult to handle the lane dividers as considerable resistance is generated when the lane dividers are being rewound and pulled out of the water. Owing to these problems, rather than pulling a divider out of the water, the pool staff often pull the lane dividers from one side or at one end of the pool and then lift the dividers lengthwise onto one side of the swimming pool, creating a potential risk of tripping over them. A further drawback of prior-art lane dividers consists in the fact that the steel cables of the lane dividers have to be constantly kept tensioned, as swimmers lean on and hold onto the dividers and the floating discs tend to move into the central area of the steel cables. A loose lane divider tends to change its position in turbulent water and under windy conditions and also not to stay afloat in the correct position.

[0013] An additional drawback of known lane dividers consists in the fact that portions of the steel cable can easily remain directly exposed to contact with the swimmers, particularly at the ends of the cable, and as a result the swimmers could hurt or cut themselves.

[0014] A further drawback of known lane dividers consists in the fact that as the floating discs slide freely on the steel cable, two contiguous sliding discs can pinch a swimmer's skin.

[0015] JP 2003 340482 A discloses the technical characteristics present in the preamble of claim 1.

[0016] The aim of the present invention is to realize a lane divider, particularly for swimming pools, which does not need to be constantly kept tensioned or at the least requires less tensioning with respect to known dividers.

[0017] A further aim of the present invention is to realize a lane divider for swimming pools which prevents two contiguous floating elements from moving close to each other and thus from possibly "pinching" the skin of swimmers.

[0018] Another aim of the present invention is to realize a lane divider for swimming pools which limits the need to use steel cables, the ends of which could wound the skin of swimmers.

[0019] A further aim of the present invention is to realize a lane divider for swimming pools which is light in weight and easily removable from the water for storage on a winding storage trolley.

[0020] Another aim of the present invention is to realize a lane divider for swimming pools which is highly reliable, relatively simple to realize, and at competitive costs compared to the prior art.

[0021] These and other aims are achieved by a system for realizing lane dividers for swimming pools, the system comprising modular elements, each of which having a first and a second longitudinal end and at least one seat. The modular elements are mutually interconnected one after the other by respective connectors, each one comprising a shank having at least one head placed at one of its axial ends. The head of each connector is also oscillatably housed in the seat of the adjacent modular element.

[0022] In one or more embodiments, the present in-

vention further comprises one or more of the following preferential characteristics.

[0023] Preferably, the oscillation between the head of the connector and the seat of the modular element allows the connector to move within a solid angle.

[0024] Preferably, said at least one seat of each modular element is positioned inside it, close to one of the longitudinal ends.

[0025] Preferably, each modular element comprises two of said seats.

[0026] Preferably, each connector comprises two heads placed on its respectively opposite axial ends.

[0027] Preferably, each modular element comprises at least two half-shells interconnected to one another by means of mutually coupling members.

[0028] Preferably, said mutually coupling members comprise at least one ring nut which is coupleable to a respective cylindrical sleeve provided in at least one of the two axial ends of the modular element.

[0029] Preferably, the ring nut is threaded internally and can be screwed on a corresponding thread present on the outer surface of the cylindrical sleeve, or vice versa.

[0030] Preferably, the ring nut has an inner diameter that is larger than an outer diameter of the head of the connector.

[0031] Preferably, at least one portion of said seat is located inside the cylindrical sleeve.

[0032] Preferably, said seat comprises a stop wall facing an axially inner surface of the head of the connector, a perimeter wall arranged around a peripheral surface of the head and a bottom wall facing an axially external surface of the head.

[0033] Preferably, the bottom wall is convex in shape and the head is substantially flat.

[0034] Preferably, each head of the connector has a substantially truncated-cone shape adapted to be housed in the corresponding seat of the modular element in such a manner as to enable an articulated coupling.

[0035] Preferably, one or more of said modular elements comprises at least one floating element inside it.

[0036] Preferably, said at least one floating element has, in a section which is perpendicular to a longitudinal geometric axis of the modular element, a polygonal perimetral profile that is for example square-shaped.

[0037] Preferably, the modular element and the connector are made of a plastic material, preferably polycarbonate.

[0038] Preferably, at least one of the two half-shells comprises a plurality of openings in fluid communication with the inside of the modular element.

[0039] Preferably, said mutually coupling members comprise coupling elements integral with the half-shells and mutually coupleable by a snap fit.

[0040] Preferably, the connector is integral with said modular element.

[0041] Preferably, said modular elements are substantially cylindrical in shape. The use of modular elements

that are mutually connected by means of connectors makes it possible to avoid the use of steel cables that extend for the entire length of the divider. A swimming pool lane divider that is lighter in weight and more manageable with respect to known types of lane dividers comprising a steel cable is thus made available.

[0042] In particular, the invention as disclosed achieves the technical effects of:

- 10 - avoiding wounds and pinching of the skin of swimmers by eliminating the presence of the steel cable;
- facilitating the process of winding the divider around a winding reel;
- avoiding having to keep the steel cable constantly tensioned;
- 15 - facilitating maintenance of the floating elements;
- facilitating unfastening and removal of the lane divider from the water;
- and enabling quick assembly of lane dividers of the desired length.

[0043] The technical effects/advantages cited and further technical effects/advantages of the invention will emerge in further detail from the description, provided herein below, of an example embodiment and they are provided by way of approximate and non-limiting example with reference to the attached drawings, of which:

- Figure 1 shows a swimming pool lane divider in a perspective view in which the floats are aligned.
- 30 - Figure 2 shows a swimming pool divider in a perspective view, in which the floats are arranged along an arc of a circle.
- Figure 3 shows an exploded view of the divider appearing in Figure 1.
- 35 - Figure 4 shows an enlargement of a detail of the divider appearing in Figure 3.
- Figure 5 shows an exploded view of a divider according to an alternative embodiment.
- 40 - Figure 6 shows an exploded view of a divider according to an additional alternative embodiment.
- Figure 7 shows some lane dividers in a state of use.

[0044] With reference to the figures cited, the lane divider according to the invention, indicated in its entirety by the reference number 1, comprises modular elements 10, 20, each having a first and a second longitudinal end 11a, 11b, 21a, 21b.

[0045] The divider 1 further comprises connectors 30, each one having a shank 31 having at least one head 32a, 32b placed at one of its axial ends.

[0046] The first and the second longitudinal end 11a, 11b, 21a, 21b prove to be aligned along a longitudinal geometric axis of the modular element. When the divider 1 is laid out in a rectilinear extension, the shank 31 and the heads 32a, 32b of the connector 30 also prove to be aligned along said longitudinal geometric axis.

[0047] The head 32a, 32b of each connector 30 is os-

cillatably housed in at least one seat 12a, 12b, 22a, 22b defined inside the adjacent modular element 10, 20. In this manner, an articulated coupling is realized which is capable of enabling the dividers to be wound onto a winding roller (not illustrated in the figures) when they are being removed from the water.

[0048] When the head is inserted in the seat 12a, 12b, 22a, 22b of each modular element 10, 20, oscillation of the head 32a, 32b of the connector 30 allows the connector 30 to move within a solid angle in such a manner as to give the divider adequate flexibility and facilitate the process of winding the divider.

[0049] The seat 12a, 12b, 22a, 22b is positioned inside each modular element 10, 20, close to the longitudinal end 11a, 11b, 21a, 21b so as to facilitate the insertion of the head of the connector 30.

[0050] In one embodiment, each modular element 10, 20 comprises, at one of the two longitudinal ends 11a, 11b, 21a, 21b, a seat for the head of the next connector, whereas at the other longitudinal end, the connector is integral with it, for example fashioned as one piece with the same modular element. The connector has a shank 31 protruding outwards from the modular element and it ends with a single head adapted to be coupled oscillatably in the sole seat of the next module.

[0051] In another preferred embodiment, which is shown in the figures, each modular element 10, 20 comprises two seats 12a, 12b, 22a, 22b placed at the respective axially opposite ends 11a, 11b, 21a, 21b. Each connector 30 comprises two heads 32a, 32b placed on the axial ends of the shank 31. In this manner, a divider is obtained which proves to be more flexible and articulated with respect to the divider in the embodiment with one end of the connector integral with the modular element.

[0052] Each modular element 10, 20 consists of two half-shells 10a, 10b, 20a, 20b interconnected to one another by means of mutually coupling members.

[0053] In one embodiment, the mutually coupling members comprise at least one ring nut 15 which is coupleable to a cylindrical sleeve 14a, 14b provided outside of one of the two axial ends 11a, 11b, 21a, 21b of the modular element 10, 20. In the illustrated example, a cylindrical sleeve 14a, 14b protrudes from each one of the two axial ends 11a, 11b, 21a, 21b of the modular element 10, 20.

[0054] The ring nut 15 is threaded internally and can be screwed on a corresponding thread present on the outer surface of the cylindrical sleeve 14a, 14b, or vice versa. In this manner, the ring nut mounted on the cylindrical sleeve makes it possible to keep the two half-shells 10a, 10b, 20a, 20b joined together so as to form the modular element 10, 20.

[0055] The ring nut 15 has an inner diameter that is larger than the outer diameter of the head 32a, 32b of the connector 30, so as to enable the passage of the head 32a, 32b and the shank 31 of the connector 30 for the insertion in the respective seat 12a, 12b, 22a, 22b.

[0056] To assemble the two half-shells and the con-

connector 30, the head 32a, 32b of the connector 30 is passed through the ring nut 15. The head 32a, 32b of the connector 30 is then inserted in the portion of seat 12a, 12b, 22a, 22b of one of the two half-shells 10a, 10b, 20a, 20b and then the second half-shell is fitted on the first half-shell. The remaining part of the head of the connector thus proves to be housed in the seat defined between the first and the second half-shell. Lastly, the ring nut 15 is screwed onto the cylindrical sleeve 14a, 14b, which in this manner keeps the two half-shells joined together and the head firmly inside the seat provided in the modular element.

[0057] As is clearly illustrated in Figure 4, at least one portion of the seat 12a, 12b, 22a, 22b is located inside the cylindrical sleeve 14a, 14b.

[0058] Each seat 12a, 12b, 22a, 22b has, in the area which is closest to the respective longitudinal end (11a, 11b, 21a, 21b), a stop wall 17 that faces an axially inner surface of the head 32a, 32b of the connector 30, so as to act against it when a pulling action is applied along the divider 1. A bottom wall 19 is opposite the stop wall 17 and it faces an axially external end surface of the head 32a, 32b of the connector 30. The bottom wall 19 is suited to acting against the head 32a, 32b of the connector 30 when the divider is subjected to a compressing action along its own longitudinal extension.

[0059] The stop wall 17 and the bottom wall 19 mutually extend around a radially external peripheral surface of the head 32a, 32b.

[0060] In the illustrated example, the bottom wall 19 has a convex shape and the head 32a, 32b of the connector is substantially flat (as illustrated in the detail shown in Figure 4).

[0061] The seat 12a, 12b, 22a, 22b communicates with the outside environment through an opening 23 preferably being of a minimum size that is greater than a cross-sectional dimension detectable on the shank 31, perpendicular to the longitudinal extension of the connector 30. To facilitate the mutual oscillation between the connector 30 and the modular element 10, 20, the opening can have a flared profile, preferably flaring towards the inside of the seat 12a, 12b, 22a, 22b. In the illustrated example, the shank 31 and the head 32a, 32b of the connector 30 are cylindrical in shape, and the opening has a truncated-cone shape.

[0062] In the variant embodiment shown in Figure 5, the articulated coupling can be facilitated by means of a substantially truncated-cone shape, preferably spheroidal in shape, of the head of the connector 30, said shape being adapted to be housed in the corresponding seat 12a, 12b, 22a, 22b of the modular element 10, 20.

[0063] In this case, the stop wall 17 also has a substantially truncated-cone shape, preferably spheroidal in shape.

[0064] One or more modular elements 10, 20 of the lane divider 1 can internally comprise at least one floating element 40 housed in a seat 13. For example, such seat 13 is present in both half-shells, in a central position of

the modular element 10, 20.

[0065] The dimensions and the materials constituting the half-shells 10a, 10b, 20a, 20b and the possible float 40 are selected so that the modular element 10, 20 including the connector 30, has a specific weight equal to or less than 1 kg/dm³, such as to be able to float on the surface of the water.

[0066] The half-shells 10a, 10b, 20a, 20b and the connector 30 are preferably made of a plastic material, particularly polycarbonate,

[0067] For example, the float 40 can be made of polystyrene or another expanded foam material.

[0068] In accordance with a possible preferred embodiment, in a section that is perpendicular with respect to the longitudinal geometric axis of the modular element 10, 20, the floating element 40 has a polygon-shaped perimetral profile, for example square-shaped, so as to simplify the realization of the float, enabling it to be obtained by means of simple cutting procedures from a sheet of adequate thickness.

[0069] However, in the example illustrated in Figure 5, said perimetral profile of the floating element 40 is circular.

[0070] At least one of the two half-shells 10a, 10b, 20a, 20b can comprise a plurality of openings 41 located on the lateral surface and in fluid communication with the inside of the modular element 10, 20, in such a manner as to drain the water quickly when the divider 1 is being taken out of the swimming pool.

[0071] As illustrated by way of example in Figure 5, the mutually coupling members of the two half-shells 10a, 10b, 20a, 20b can comprise coupling elements 16, in addition to or as an alternative to the ring nuts 15 shown in Figures 1 to 4, for example tabs or protrusions equipped with coupling teeth, integral with the half-shells and mutually coupleable by snap-fitting with the respective coupling seats 16a.

[0072] In the example shown in Figure 6, the mutually coupling members comprise threaded connection elements 16b, in addition to or as an alternative to the coupling elements 16 and/or ring nuts 15.

[0073] In one non-limiting example embodiment, the modular elements 10, 20 of the lane divider 1 for swimming pools are substantially cylindrical in shape. The connector 30 and/or a half-shell can be made of a transparent material.

[0074] It has been ascertained in practice that the invention completely fulfils its set task and aims. In particular, it has been observed that the lane divider thus conceived makes it possible to overcome the quality-related limits of the prior art because it makes it possible to eliminate the need for a connecting cable therein.

[0075] Although the lane divider according to the invention has been conceived particularly for swimming pools, it can in any case be used more generally for any swimming area.

[0076] The invention thus conceived is susceptible to numerous modifications and variants, all of which falling

within the scope of the inventive concept. Moreover, all details may be replaced with other technically equivalent elements.

[0077] In practice, provided that they are compatible with the specific use, the materials used, as well as the contingent dimensions and shapes, can be of any type according to needs and the state of the art.

[0078] In conclusion, the scope of protection of the claims shall not be limited by the explanations or preferred embodiments illustrated in the description in the form of examples, but rather the claims shall comprise all the features of patentable novelty that reside in the present invention, including all the features that would be treated as equivalents by a person skilled in the art.

Claims

1. Lane divider (1) for swimming pools, comprising modular elements (10, 20), each having a first and a second longitudinal end (11a, 11b, 21a, 21b) and at least one seat (12a, 12b, 22a, 22b), said modular elements being mutually interconnected one after the other by respective connectors (30), each comprising a shank (31) having at least one head (32a, 32b) placed at one of its axial ends, in which the head (32a, 32b) of each connector (30) is oscillatably housed in the seat (12a, 12b, 22a, 22b) of the adjacent modular element (10, 20).
2. The lane divider according to claim 1, wherein the oscillation between the head (32a, 32b) of the connector (30) and the seat (12a, 12b, 22a, 22b) of the modular element (10, 20) allows the connector (30) to move within a solid angle.
3. The lane divider according to one or more of the preceding claims, wherein said at least one seat (12a, 12b, 22a, 22b) of each modular element (10, 20) is positioned inside it, close to one of the longitudinal ends (11a, 11b, 21a, 21b).
4. The lane divider according to one or more of the preceding claims, wherein each modular element (10, 20) comprises two of said seats (12a, 12b, 22a, 22b), placed on its respectively opposite axial ends.
5. The lane divider according to one or more of the preceding claims, wherein each modular element (10, 20) comprises at least two half-shells (10a, 10b, 20a, 20b) interconnected to one another by means of mutually coupling members, in which said reciprocally coupling members comprise at least one ring nut (15) which is coupleable to a respective cylindrical sleeve (14a, 14b) provided in at least one of the two axial ends (11a, 11b, 21a, 21b) of the modular element (10, 20).

6. The lane divider according to one or more of the preceding claims, wherein the ring nut (15) is threaded internally and screwed on a corresponding thread present on the outer surface of the cylindrical sleeve (14a, 14b), or vice versa. 5

7. The lane divider according to one or more of the preceding claims, wherein said seat (12a, 12b, 22a, 22b) comprises a stop wall (17) facing an axially inner surface of the head (32a, 32b) of the connector (30), a perimeter wall (18) arranged around a peripheral surface of the head (32a, 32b) and a bottom wall (19) facing an axially external surface of the head (32a, 32b). 10
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8. The lane divider according to one or more of the preceding claims, wherein at least one of said modular elements (10, 20) comprises at least one floating element (40) inside it. 20

9. The lane divider according to claim 8, wherein said at least one floating element (40) has, in a section perpendicular to a longitudinal geometric axis of the modular element (10, 20), a polygonal perimetral profile, for example square shaped. 25

10. The lane divider according to one or more of the preceding claims, wherein at least one of the two half-shells (10a, 10b, 20a, 20b) comprises a plurality of openings (41) in fluid communication with the inside of the modular element (10, 20). 30

11. The lane divider according to one or more of the preceding claims, wherein each modular element (10, 20) comprises at least two half-shells (10a, 10b, 20a, 20b) interconnected to one another by mutually coupling members, wherein said mutually coupling members comprise coupling elements (16) integral with the half-shells (10a, 10b, 20a, 20b) and mutually coupleable by a snap fit. 35
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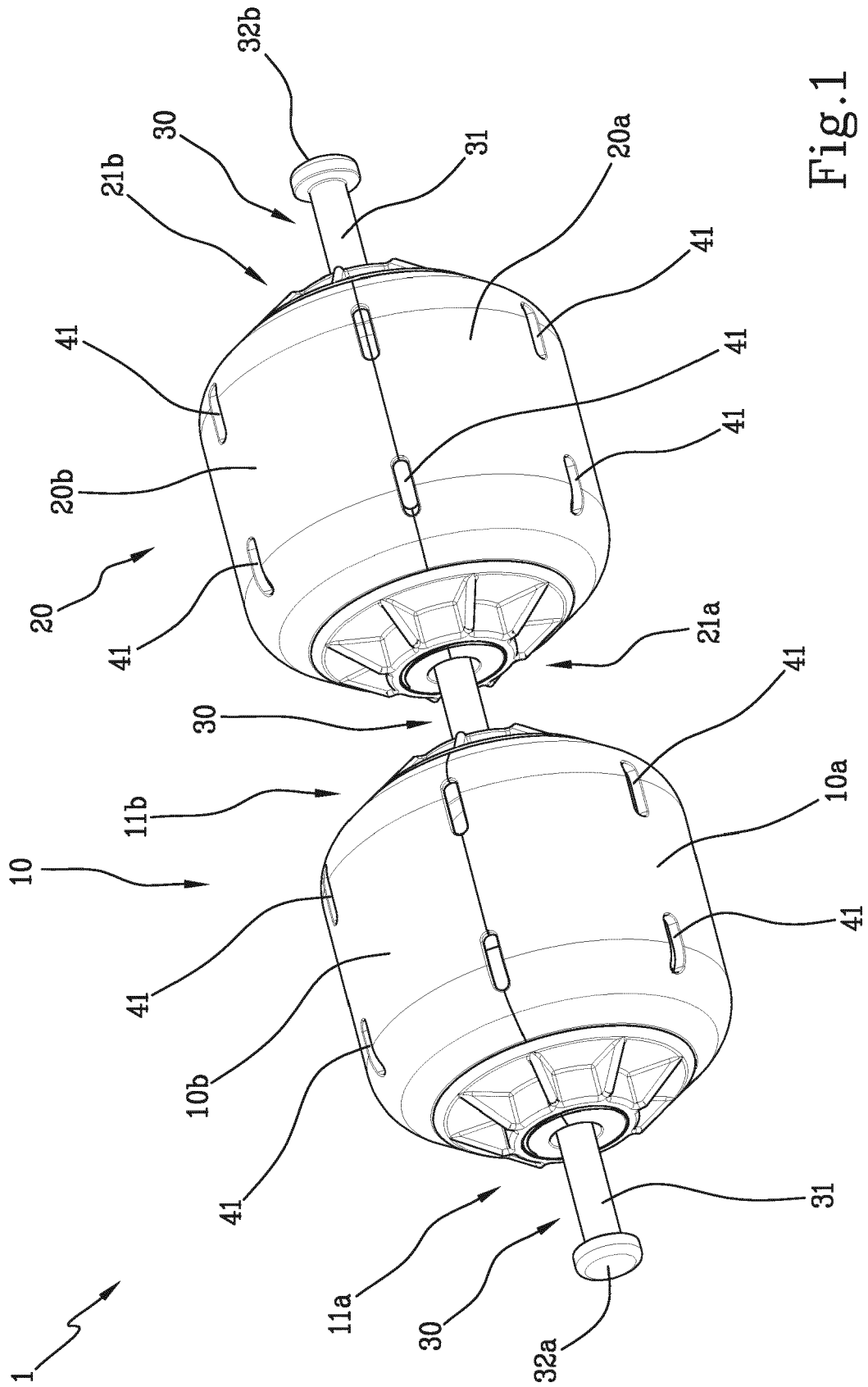
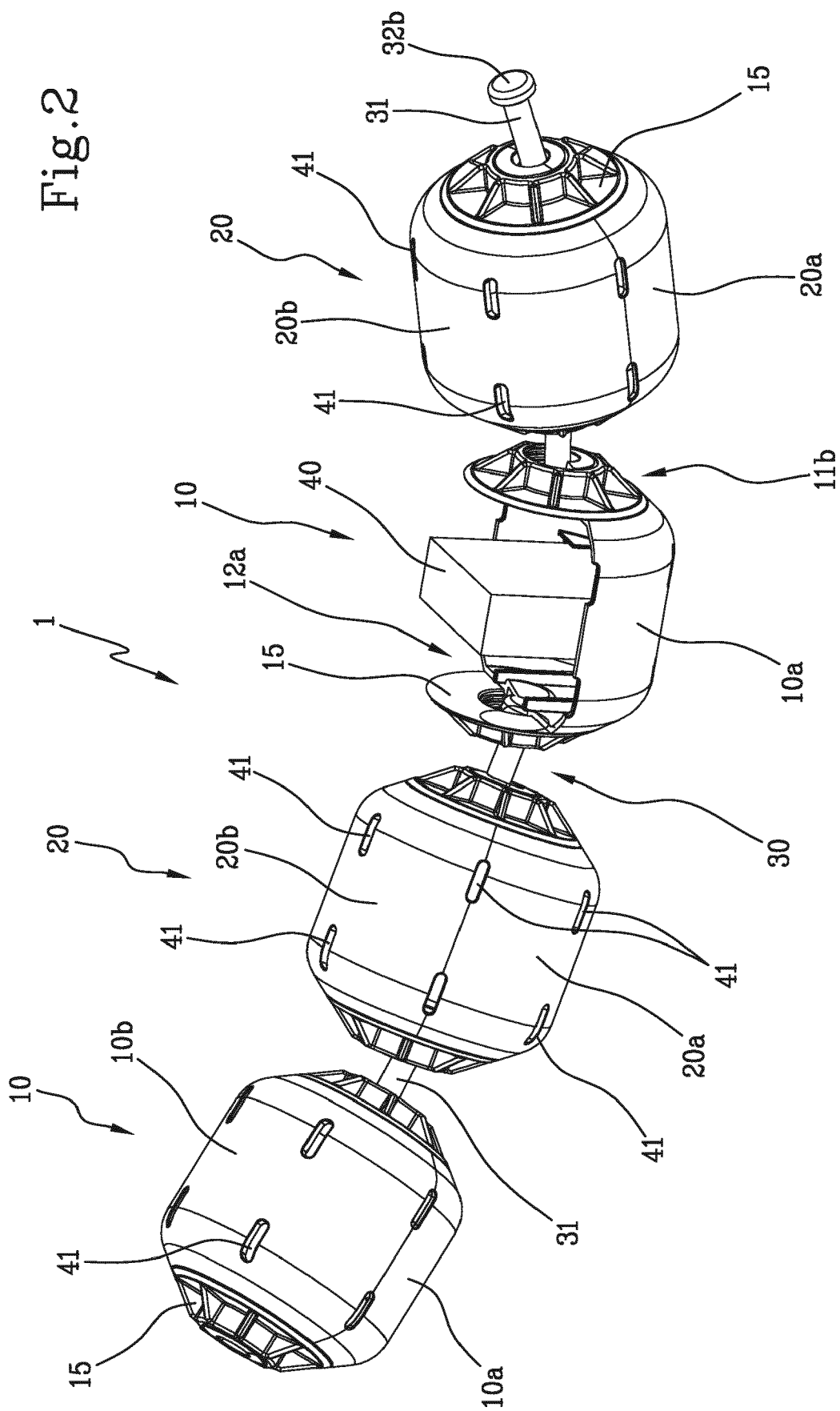


Fig.1

Fig.2



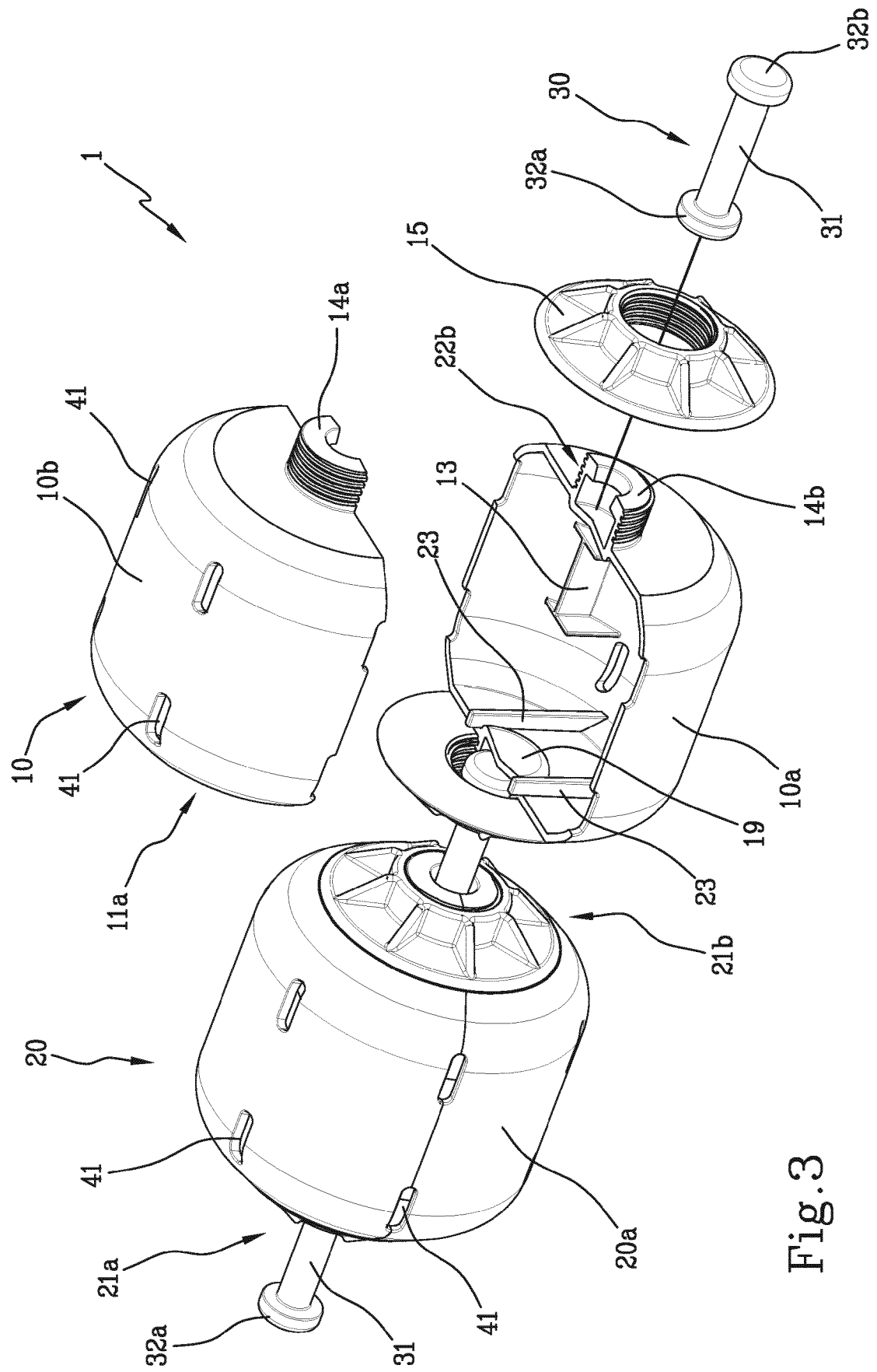


Fig. 3

Fig.4

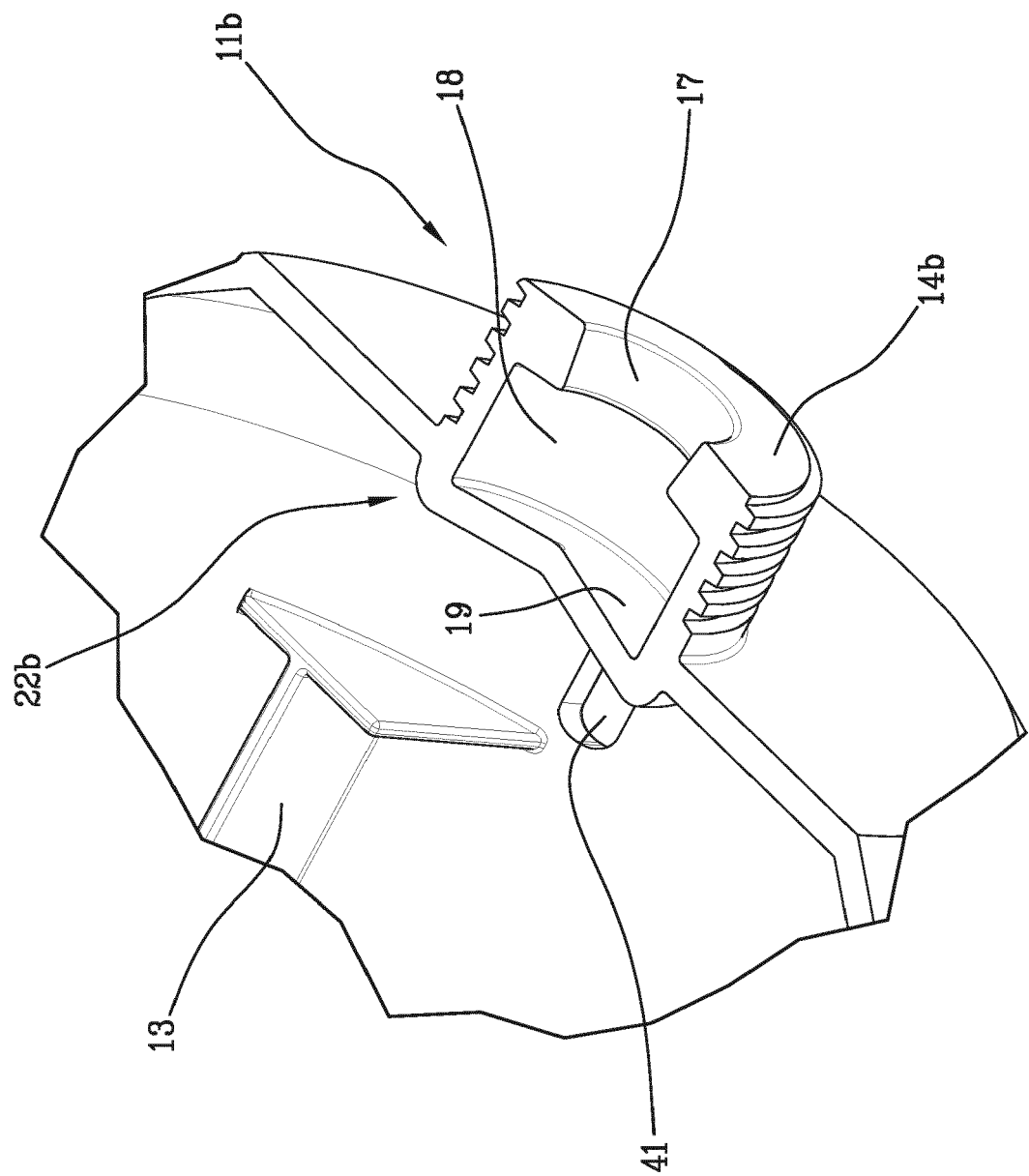


Fig.5

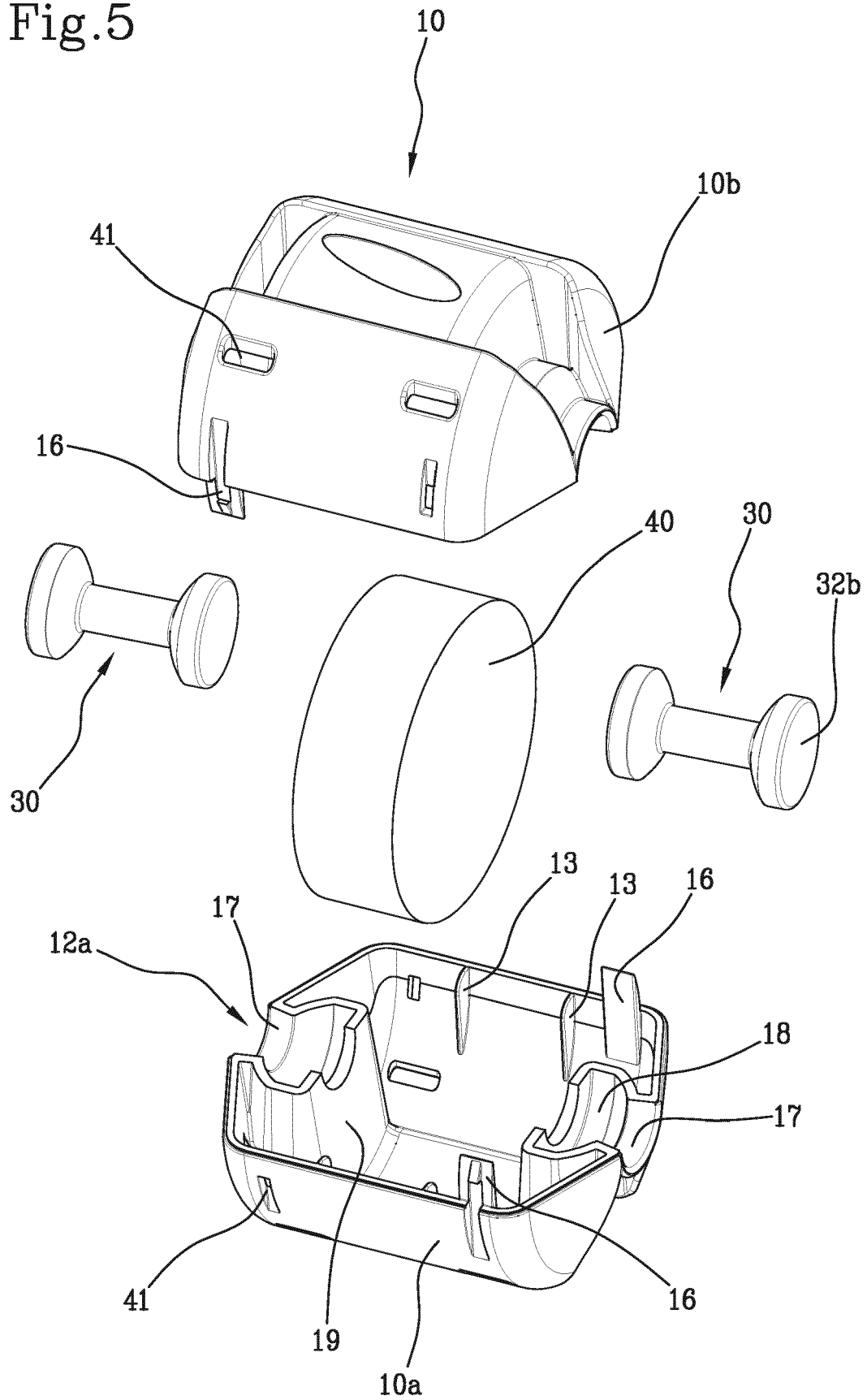
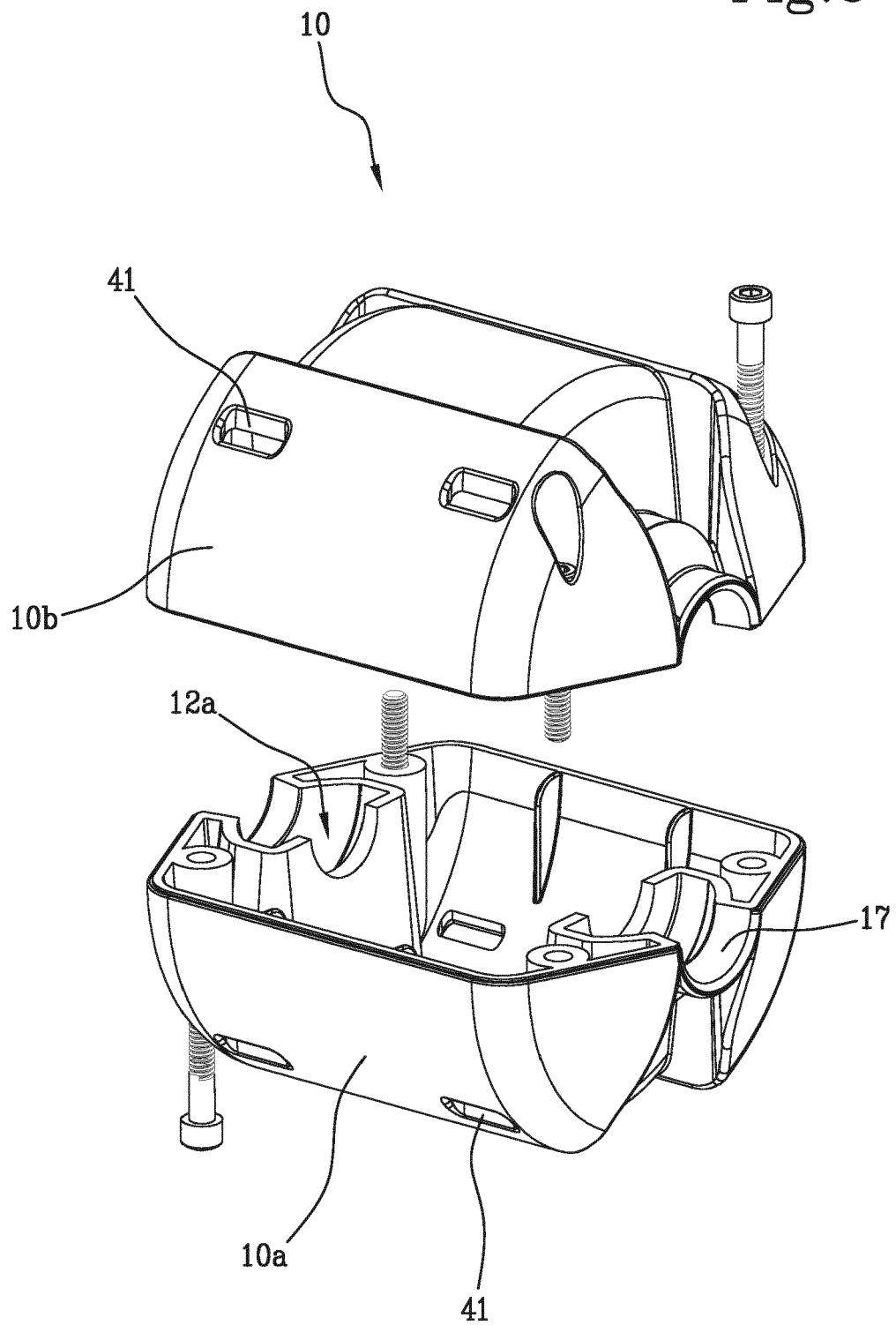


Fig.6



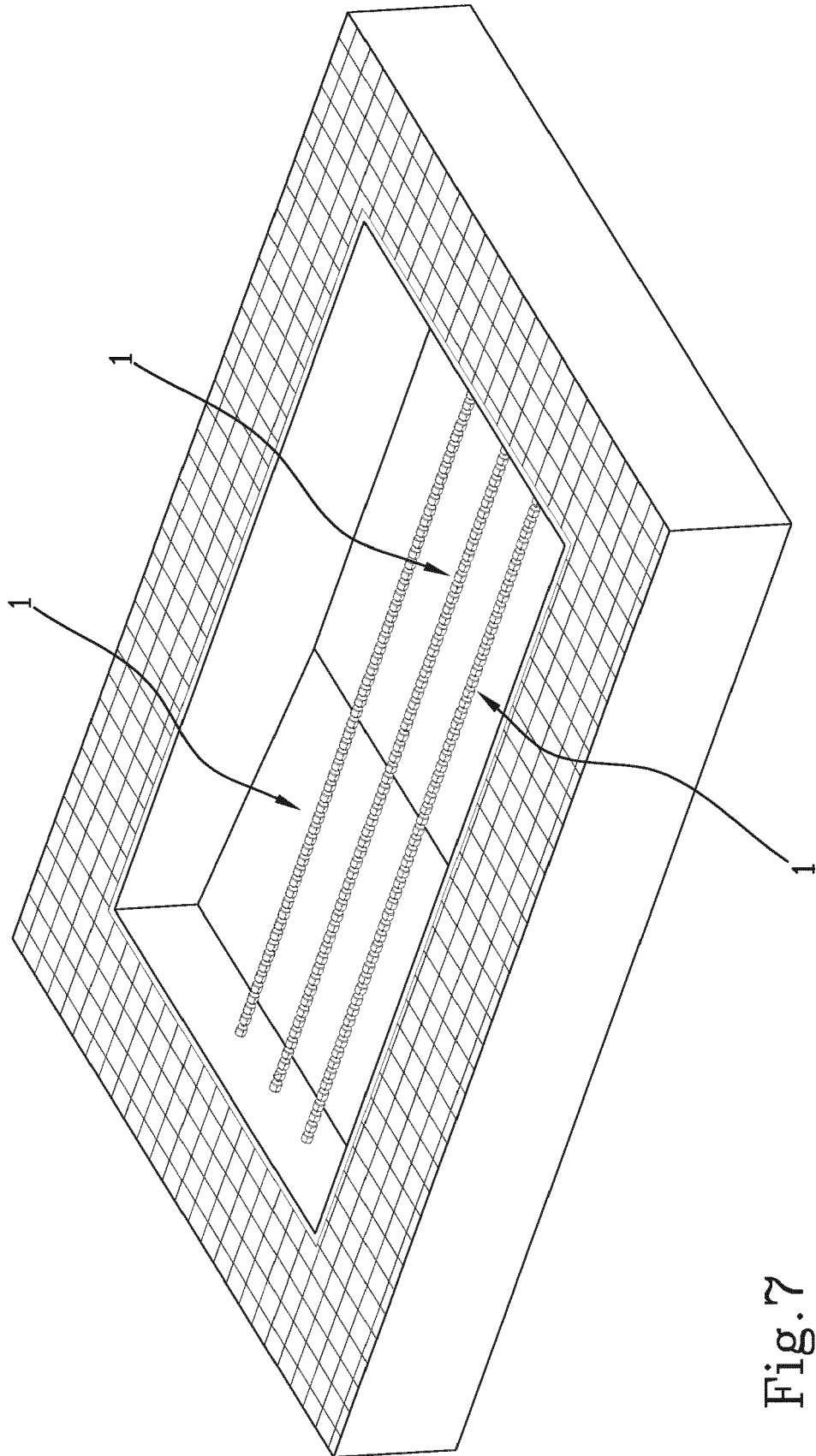


Fig. 7



EUROPEAN SEARCH REPORT

 Application Number
 EP 18 21 5446

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DOCUMENTS CONSIDERED TO BE RELEVANT			
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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 29 April 2019	Examiner Schnedler, Marlon
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 EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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