(19) DANMARK

(10) **DK/EP 3028600 T3**

Patent- og Varemærkestyrelsen

(12) Oversættelse af europæisk patentskrift

(51) Int.Cl.: ***A 46 B 5/00 (2006.01)*** ***A 46 B 7/04 (2006.01)*** ***A 47 L 11/283 (2006.01)***

(45) Oversættelsen bekendtgjort den: **2022-05-16**

(80) Dato for Den Europæiske Patentmyndigheds bekendtgørelse om meddelelse af patentet: **2022-02-23**

(86) Europæisk ansøgning nr.: **14196361.1**

(86) Europæisk indleveringsdag: **2014-12-04**

(87) Den europæiske ansøgnings publiceringsdag: **2016-06-08**

(84) Designerede stater: **AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR**

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(54) Benævnelse: **Tallerkenkost og tilhørende fastgøringsanordning**

(56) Fremdragne publikationer:
DE-A1-102012 205 483
DE-B3-102005 045 310
US-A- 5 421 053
US-A1- 2014 007 368

Description

Technical field

The invention relates to a circular brush for the interchangeable arrangement on a carrier of a sweeper or cleaning machine, wherein the carrier is mounted on the sweeper or cleaning machine capable of being rotated by means of a drive.

Background

The use of so-called circular brushes has long been known for cleaning fixed surfaces. Common sweeper and cleaning machines or devices have a motor-driven and correspondingly rotatable head, i.e., a drive head on which a carrier for the circular brush is arranged in conjoined manner. The rotatably movable carrier serves for detachably connecting a circular brush. Common circular brushes have a disc-like circular-plate body on which several bristles are arranged which are oriented with their free end facing away from the circular-plate body, typically approximately axially in relation to the axis of rotation of the circular-plate body, or inclined radially to the outside and axially at a predetermined angle.

To fasten the circular brush to the carrier of the sweeper or cleaning machine in a torque-transferring manner it is normal to provide on the plate body side and on the carrier side screw bolts and through holes which correspond with one another so that the circular brush can be releasably mounted on the carrier by means of several screw bolts or locking pins which extend in the axial direction. Since the circular brush is an expendable part it is necessary to replace this regularly on the carrier.

For a particularly user-friendly simple handling and exchange of the circular brushes it is desirable to provide a quick-change system for circular brushes which is simple to handle in the most intuitive manner possible and which, in addition to a simple easy exchange, provides a reliable durable torque-

transferring connection between the circular brush and carrier. Circular brushes of this kind should be simple to manufacture in the most cost-effective way possible.

DE 91 14 382 U1 already discloses a fastening unit between the circular brush and rotatable drive head of a street sweeping machine. To fasten a hub of the circular-plate body of the circular brush the drive head is provided with a bayonet lock having several bayonet members arranged spread out around the periphery of the circular-plate body and the drive head. Furthermore at least one clamping member is provided for axially compressing the circular-plate body and the drive head, and the hub of the circular-plate body is configured as a spring washer.

The document US 2014/0007368 A1 furthermore describes an adaptor plate for a rotatably driven floor scrubber machine.

The object of the present invention is to provide an improved fastening device for a circular brush on the drive head or carrier of a sweeper or cleaning machine which enables a quick and particularly simple exchange of a circular plate as far as possible without the aid of separate assembly tools. A further aim is to provide a circular brush intended for that fastening device.

Invention and advantageous configurations

This is achieved with a circular brush according to the independent Patent Claim 1 as well as with an associated fastening device according to Claim 4. Advantageous configurations are the subject of respective dependent claims.

According to a first aspect the invention relates to a circular plate for the interchangeable arrangement on a carrier or drive head arranged in a rotatable manner on a sweeper or cleaning machine. The circular plate has a disc-like circular-plate body for a torque-transferring connection on the carrier. The circular-plate body is in particular of a rotationally

symmetrical configuration and has a substantially circular round outer circumference.

The circular-plate body has on its outer circumference in at least some parts a form-fitting structure for forming a torque-transmitting connection between the carrier and the circular-plate body. The circular-plate body can be coupled or connected by means of the form-fitting structure over its outer circumference in a torque-transmitting manner to the carrier of the sweeper or cleaning machine configured corresponding therewith. Conventional axially extended locking pins, screw bolts or screws used up until now for transmitting torque between the carrier and circular-plate body can thus be completely omitted.

In order to exchange the circular brush it is henceforth no longer necessary to orientate the circular brush with regard to its axis of rotation extending in the axial direction in such a way that mutually corresponding bolts and screw holes on the circular brush and on the carrier come to overlap in alignment with one another. By means of the form-fitting structure provided on the outer circumference it is possible to fasten the circular-plate body on the carrier in either orientation, so to speak rotation-invariant, relative to the axially extended axis of rotation.

The configuration of a form-fitting structure on the outer circumference of the circular-plate body is furthermore advantageous in that as a result of the radially outer position compared with a radially further inward bolt smaller forces are to be transferred with the same torque. The greater the distance to the axis of rotation so the smaller is the force to be transferred in the tangential direction in order to achieve a uniform torque. Thus, as a result of the radially outer form-fitting structure, the demands on the force transferred in the tangential direction can be reduced. This allows the use of new types of materials for the circular-plate body and also for the carrier which can be characterized in particular by low

manufacturing costs and by low weight. In particular light metals such as for example aluminium can be used for the carrier and various plastics as well as wood can be used for the circular-plate body.

The form-fitting structure of the circular-plate body is of undulating, toothed or serrated configuration in the circumferential and radial directions. In general, the most varied specific geometric forms of the form-fitting structure are conceivable which can be configured differently depending on the field of use and also for each type of machine. Furthermore, as a result of the different configurations of the form-fitting structure the assembly systems for individual circular brushes can be particularly clearly demarcated haptically and visually from one another.

If for example a certain circular brush is provided for only a specific type of machine then a specific form-fitting structure, for example a toothed form-fitting structure, can be provided on the plate side and carrier side. For another type of machine however a different form-fitting structure such as for example an undulating stricture can be provided. For the end user serrated form-fitting structures and undulating form-fitting structures can be differentiated intuitively and immediately from one another so that when changing a circular brush, a fitter can immediately and directly recognize whether a relevant circular brush is suitable and provided for a specific type of machine.

According to a further embodiment the form-fitting structure is formed on a radially outwardly oriented outer surface of the circular-plate body. The circular-plate body itself can be formed for example as an extruded component which is cut into individual discs perpendicular to the extrusion direction which can coincide with the axial direction. The radially outwardly facing outer surface of the circular-plate body can be of practically any shape, in each case through a corresponding shaping of the extrusion tool.

The configuration of a form-fitting structure, that is any contour deviating from a circular structure, can be produced in this way at practically no extra cost. Thermoplastic plastics, for example polypropylene or polyoxometalate (POM), can be considered for configurating the circular-plate body as an extrusion component. The form-fitting structure is formed in particular in the radial and in the circumferential direction, whilst the outer circumference of the circular-plate body is substantially constant and straight in the axial direction. The circular-plate body can thus have more or less a flat cylindrical structure and shaping wherein however the lateral cylinder surface is provided with a form-fitting structure, that is with at least one radial protrusion and/or a radial depression.

According to a further configuration the form-fitting structure is of encircling and continuous configuration. An encircling and continuous form-fitting structure enables on the one hand the most homogeneous force and torque transfer which is uniform or evenly distributed over the outer circumference of the circular-plate body. The torque transfer can thus be introduced into the circular-plate body not only selectively but over the largest possible surface area, that is in the extreme case over the entire outer circumference. Mechanical stresses of the circular-plate body can thus be effectively reduced, which can have an advantageous effect on the service life of the circular-plate body, in particular for the reusability of circular-plate bodies.

Furthermore, an encircling and continuous configuration for the form-fitting structure on the outer circumference of the circular-plate body enables the circular-plate body to be arranged on the carrier in any orientation relative to its axis of rotation. Furthermore, with an encircling continuous form-fitting structure on the outer circumference of the circular-plate body it is not absolutely necessary to provide on the carrier corresponding therewith a completely encircling counter form-fitting structure, that is a form-fitting structure corresponding with the form-fitting structure of the circular

brush.

It is thus in principle sufficient to provide only on one or on several places spread out over the circumference of the carrier one form-fitting structure on the carrier side which corresponds with the form-fitting structure of the circular brush and which can be brought into torque-transmitting engagement therewith. The manufacturing costs for the carrier can be reduced in this way. Furthermore, a form-fitting structure which is only in selective places or portions on the carrier enables a further simplification when mounting the circular brush.

According to a further aspect a fastening device is further provided for a circular brush as previously described. The fastening device is configured in particular as a quick-change system for a sweeper or cleaning machine. The fastening device has a carrier which can be arranged in a rotatable manner on a sweeper or cleaning machine and has a mount for the circular-plate body of the circular brush. The mount is delimited radially outwardly by a side wall, on at least part of the inside of which is formed a form-fitting structure which corresponds with the form-fitting structure of the circular-plate body.

The mount of the fastening device is typically accessible from below when it is in a mounted position on the sweeper or cleaning machine, i.e., it is open underneath so that the circular-plate body can be inserted from underneath into that mount. The internal cross section or the internal diameter of the mount is adapted to the outer cross section or outer diameter of the circular-plate body. The circular-plate body can in particular be placed with an exact fit in that mount so that the form-fitting structures which correspond with one another or communicate with one another and are geometrically matched to one another on the outside of the circular-plate body and on the inside of the side wall of the mount of the carrier are in torque-transmitting engagement with one another.

As a result of the interengaging form-fitting structures of the

carrier and circular-plate body a rotational movement of the carrier can be transmitted slip-free into a corresponding rotational movement of the circular-plate body and thus of the entire circular brush.

According to a further configuration of the fastening device the carrier has a carrier plate on the outer circumference of which the side wall projects axially downwardly. The carrier plate is oriented in an end-mounted configuration, in which the circular brush is arranged on the carrier, approximately parallel to the disc-like circular-plate body. The carrier plate can have a closed configuration and in the end-mounted configuration on the sweeper or cleaning machine have the axially downwardly projecting side wall. The side wall functions as a radial socket of the mount or as an outer edge of the carrier plate. The axial height of the side wall corresponds to at least the axial extension of the circular-plate body so that the circular-plate body, in relation to the axial direction, comes to lie in at least some portions inside the side wall. This is particularly advantageous for axially securing or axially fastening the circular-plate body with the circular brush on the carrier.

According to a further configuration a holder which protrudes from the inner side of the side wall and extends radially inwardly is arranged in at least some portions on a lower end portion of the side wall that faces away from the carrier. The holder can be arranged as a separate component on the end portion lying at the bottom in the axial direction, that is on a lower end of the side wall directed away from the carrier plate. It is however also conceivable to integrate the holder in one piece into the side wall.

It can be proposed in particular that the carrier with the carrier plate and the side wall are formed as a cast component or as a milled component, typically of metal, such as steel or aluminium, or from a plastic, for example from POM. It is further conceivable that the carrier is formed as an injection-moulded component, in particular as a plastics injection-moulded

component. Since the holder projects from the inner side of the side wall it forms together with the carrier plate and the inner side of the side wall a type of U-profiled section in which the circular-plate body can be inserted axially secured in at least some portions. The holder forms with the side wall a rear-cut section in which the circular-plate body can be radially inserted. A radial insertion movement of this kind is only possible if there are no axially oriented screw bolts on either the carrier or the circular-plate body.

According to a further configuration a retaining bracket which can be brought into engagement with the outer circumference of the circular-plate body is mounted on the carrier such that it can be pivoted between an open position and a closed position. The retaining bracket enables a particularly simple fixing and corresponding release of the circular-plate body from the carrier. The mount of the carrier can be selectively closed or opened by means of the retaining bracket so that the circular-plate body of the circular brush is axially released or axially secured on the carrier accordingly.

The retaining bracket serves in particular for axially fixing the circular-plate body on the carrier. In addition, the pivotable retaining bracket can also serve for the radial or torque-transmitting fixing of the carrier and circular-plate body.

According to a further configuration the pivot axis of the retaining bracket runs in the axial direction (z). It furthermore runs through a side wall of the retaining bracket. The retaining bracket typically has a circular segment type or arcuate contour wherein the radius of curvature of the retaining bracket corresponds roughly to the radius of curvature of the side wall of the mount. To move into its closed position the free end, directed away from the pivot axis, of the retaining bracket can be pivoted radially inwards whilst it can be pivoted radially outwards to move the retaining bracket into the open position.

The mount of the carrier can be selectively closed or opened in this way. The provision of the retaining bracket enables in particular an exchange of the circular brush on the carrier without tools or assembly tools. In particular the retaining bracket enables the fastening device to be actuated by one hand. A fitter can grip the retaining bracket by one hand whilst with the other hand he holds or manually fixes the circular brush to be mounted in a preassembly position on the carrier. The circular brush can be fixed on the carrier by merely pivoting the retaining bracket from the open position into the closed position. The interaction of the form-fitting structure, holder and pivotable retaining bracket thus enables a particularly simple intuitive rapid exchange of the circular brush on the associated carrier of a sweeper or cleaning machine.

According to a further configuration the retaining bracket in its closed position protrudes radially inwardly from the side wall by way of a limb which is spaced apart from the carrier or the carrier plate thereof. Like the holder already described above the retaining bracket in its closed position can engage round at least a portion of the outer circumference of the circular-plate body in the axial direction.

By moving the retaining bracket into the open position, the inwardly projecting limb of the retaining bracket can be brought into a position radially outside of the side wall so that the circular-plate body can be axially released from the carrier in the region of the retaining bracket and removed from the mount.

According to a further configuration the retaining bracket forms a sub-region of the side wall. A portion of the side wall can thus be arranged for pivotable movement on the carrier, in particular for pivotable movement on the carrier plate. By integrating the retaining bracket into the side wall or by configuring part of the side wall in the form of a pivotably mounted retaining bracket it is in particular possible to fold a sub-region of the side wall up or away, in particular to pivot

it radially outwardly in the radial direction (r).

The mount for the circular-plate body is thus accessible from a radial direction. The circular brush can be pushed sideways, i.e., in the radial direction, into the mount. On moving the retaining bracket, or side wall respectively, into the closed position the circular-plate body can then be secured both radially and also axially on the carrier.

According to a further configuration it is furthermore proposed that a lower end portion of the retaining bracket, this lower end portion being spaced apart from the carrier or the carrier plate thereof, has arranged on it a further radially inwardly extending holder which, in the closed position of the retaining bracket, protrudes from the inner side of the side wall. That further holder of the retaining bracket is typically arranged on the side wall opposite or spaced in the circumferential direction away from the previously described holder.

The circular-plate body can be fixed axially on the carrier repeatedly over its outer circumference by means of several radially inwardly protruding holders typically arranged spread out over the circumference of the side wall. The provision of several such holders thus enables a particularly uniform axial fixing of the circular-plate body on the carrier. It is however also conceivable that the retaining bracket is configured without a holder and only clamps the outer circumference of the circular-plate body radially between it and an opposing side wall portion of the carrier.

It can be proposed in particular that only a single axial holder protrudes radially inwardly for example on a fixed region of the side wall and thus forms a type of circular arc shaped U-shaped profiled mount for the circular-plate body. In a for example semi-circular or U-shaped profile mount of this kind the circular-plate body can be at least fixed by merely pushing in the radial direction. The holder on the side wall can compensate at least the weight of the circular brush so that the circular

brush through merely sliding into the mount itself when the retaining bracket is open also remains on the carrier when the circular brush is released.

It is then possible to close the retaining bracket without having to fix the circular brush manually further in the axial direction on the carrier. This also enables a two-handed operation of the retaining bracket, such as when this is configured as a type of tension ring or band by means of which the circular-plate body can be tensioned radially in the mount formed by the carrier plate and the side wall.

In addition to the torque-transmitting form-fitting connection between the circular-plate body and the carrier a radially tensioned fastening of the circular-plate body on the carrier can be advantageous for an improved play-free fixing.

According to a further configuration the holder and the retaining bracket are arranged on diametrically or radially opposite portions of the side wall. It is hereby possible in particular that the circular-plate body with an opened retaining bracket can be radially inserted, at least with a radially outwardly lying portion, into the region between the holder and carrier plate so that the circular-plate body is secured in at least some places or portions axially on the carrier.

A region of the circular-plate body opposite the bearing point thus formed can then be moved axially into the mount so that the circular-plate body occupies its end mounted position on the carrier. The retaining bracket can then be moved in this from its open position into the closed position so that the holder, configured on the retaining bracket, similarly axially encloses or engages the region of the outer circumference of the circular-plate body coming into abutment therewith. The circular-plate body is in this way secured axially on the carrier together with the entire circular brush at least in at two opposing places.

In a configuration in which the retaining bracket is fitted

without a holder, the retaining bracket when moving into its closed position can fix the circular-plate body radially, whereby axial fixing of the entire circular brush on the carrier likewise proceeds also at the same time as already with at least one single holder.

According to a further configuration the retaining bracket can be fixed in its closed position on the carrier by means of a closure. The closure can have closure elements, which can be brought into engagement with one another, on one side at the free end of the retaining bracket and on the other side on the carrier plate or on its side wall. The closure can be configured for example in the form of a clip lock or tension lever closure with tension lever and counter hooks. The closure can be arranged in particular on the carrier plate or on the side wall of the carrier and oriented such that the centrifugal forces acting on the carrier during operation of the sweeper act in the closing direction but not in the opening direction of the closure. Unintended opening of the closure as the carrier is rotating can hereby be prevented.

Brief description of the figures

Further aims, features and advantageous configurations of the circular brush and its associated fastening device will now be explained in the following description of exemplary embodiments with reference to the drawings in which:

Fig. 1 shows a perspective view of a circular brush and a fastening device provided for it according to a first embodiment;

Fig. 2 shows the configuration according to Fig. 1, but with the circular brush mounted on the fastening device;

Fig. 3 shows an isolated perspective view of an opened fastening device, viewed obliquely from below;

Fig. 4 shows a further perspective view of the fastening device and carrier, respectively, from below but in the closed position;

Fig. 5 shows the carrier according to Figs. 3 and 4 in a plan view from below with the retaining bracket in the opened position;

Fig. 6 shows the carrier according to Fig. 5 but with the retaining bracket in the closed position;

Fig. 7 shows a perspective sectional view through the arrangement according to Fig. 2;

Fig. 8 shows an enlarged view of the cross section according to Fig. 7 in the region of the retaining bracket;

Fig. 9 shows an alternative configuration of the fastening device wherein the retaining bracket forms a sub-region of the side wall;

Fig. 10 shows a further perspective view of the arrangement according to Fig. 9, but without showing the closure;

Fig. 11 shows an isolated perspective view of the carrier according to Figs. 9 and 10 viewed obliquely from below, with the retaining bracket in the opened position;

Fig. 12 shows the carrier according to Fig. 11 with the retaining bracket in the closed position;

Fig. 13 shows a form-fitting structure of the circular-plate body corresponding to the configurations 1 and 2 as well as 9 and 10;

Fig. 14 shows a further configuration of the form-fitting structure;

Fig 15 shows a further configuration of a form-fitting structure;

Fig. 16 shows a further configuration of a form-fitting structure;

Fig. 17 shows a further configuration of a form-fitting structure;

Fig. 18 shows a further toothed configuration of a form-fitting structure of the circular-plate body.

Detailed description

Figs. 1 and 2 show a circular brush 20 for releasable fastening on a fastening device 10. The fastening device 10 has a carrier 12 which can be arranged in rotatable manner on a sweeper or cleaning machine, having a carrier plate 14 on the underside of which there is a mount 13 for inserting a circular-plate body 22 of the circular brush 20. The mount 13 is delimited in the circumferential direction by a side wall 15 which is encircling in Figs. 3 and 4. The side wall 15 thus functions as a radial and circumferential outer edge for the mount 13.

The inside of the side wall 15 is provided with a form-fitting structure 16, here in the present case in the form of an undulating profile. The undulations have an amplitude in the radial direction (r) and extend or propagate in the circumferential direction (u) on the inner side of the side wall 15. The circular-plate body 22 of the circular brush 20 has a disc-like approximately circular contour with an outer circumference 24. A form-fitting structure 26 is formed on the outer circumference 24 and corresponds with the form-fitting structure 16 of the side wall 15.

The circular-plate body 22 can be coupled in torque-transmitting manner to the carrier 12 by the form-fitting structures 16, 26

which correspond with one another on the mount 13 and on the circular-plate body 22, by merely inserting the circular-plate body 22 axially into the mount 13. The carrier plate 14 is configured here as a solid disc. It thus forms so to speak an end stop for an insertion or mounting movement of the circular-plate body 22 directed in the axial direction or z-direction. Bristles 28 projecting radially outwards and axially downwards are arranged on the underneath of the circular-plate body 22, as shown in Figs. 1 and 2.

A retaining backet 18 is furthermore mounted for pivotal movement on the side wall 15 for axially, and where applicable, radially, securing the circular-plate body 22 on the carrier 12. The retaining bracket 18 is mounted on the outer circumference of the carrier 12 relative to a pivot axis 30 running in the axial direction (z). Here the retaining bracket 18 has a U-section or C-shaped profile which in the closed position S of the retaining bracket 18, as shown in Fig. 4, encircles the outer circumference of the side wall 15.

At the free end of the retaining bracket 18 there is a closure 19 by means of which the retaining bracket 18 can be fixed in the closed position S shown in Fig. 4. The retaining bracket 18, as can be seen by comparing Figs. 5 and 6, has in particular at at least the lower end, which in the closed position S comes to lie axially spaced from the carrier 12 or carrier plate 14, a radially inwardly protruding limb 18a whose radially inner end portion protrudes radially inwards from the side wall 15.

A holder 17 is arranged in the same way opposite the retaining bracket 18 at the lower end of the side wall 15, which holder 17 protrudes radially inwards likewise from the lower end of the side wall 15 facing away from the carrier plate 14. The circular-plate body 22 which is configured with its outer circumference or outer contour exactly matching the form-fitting structure 16 can be inserted for mounting when a retaining bracket 18 is located in the opened position O by a portion of its outer circumference 24 into the region between the holder 17 and

carrier plate 14. An opposing portion of the outer circumference of the circular-plate body 22 can then likewise be inserted axially into the mount 13 of the carrier 12 so that the lower side of the circular-plate body 22 facing the bristles 28 lies axially inside the side wall 15.

By closing the retaining bracket 18 the lower limb 18a of the retaining bracket 18 likewise encircles the underneath side of the circular-plate body 22 facing away from the carrier plate 14 in the mounted configuration, so that the circular-plate body 22 is secured axially on the carrier 12 at least in two opposing outer regions. It can be clearly seen in the cross-sectional view of Figs. 7 and 8 that the lower limb 18a of the retaining bracket 18 located in the closed position S interacts axially with the underneath of the circular brush 20, or circular-plate body 22, facing the bristles 28, in order to secure the brush axially in the mount 13.

Fig. 8 further shows the closure 19 with which the free end of the retaining bracket 18 facing away from the pivot axis 30 can be fixed in the closed position S on the carrier 12. The closure 19 has here a counter hook 31, provided on the upper side of the carrier plate 14, as well as a clip lock or tension lever closure 32 which is arranged on the retaining bracket 18 and interacts with the counter hook 31 so that it secures the free end of the retaining bracket 18 radially on the carrier 12.

Torque transmission takes place between the rotatably driven carrier 12 and the circular-plate body 22 solely via the interacting or corresponding and interengaging form-fitting structures 16, 18 of the carrier 12 and the circular-plate body 22.

It is basically sufficient for torque transmission if only one of the two form-fitting structures 16, 26 is configured encircling and continuous, whilst the other form-fitting structure 26, 16 is configured only in sections or portions. With an encircling continuously configured form-fitting

structure 26 of the circular-plate body 22 it is basically sufficient if only a single sub-region, preferably several sub-regions, spread out around the circumferential direction, of the side wall 15 are provided with a form-fitting structure 16 corresponding therewith.

Conversely, it is likewise conceivable that for example the entire inner side of the side wall is provided with a form-fitting structure 16, whilst only individual sub-regions of the outer circumference 24 of the circular-plate body 22 being connected therewith are provided with a form-fitting structure 26 corresponding therewith. Basically it would even be sufficient if only one region of the outer circumference of the circular-plate body 22 is provided with a form-fitting structure 26.

Basically diverse form-fitting structures are conceivable on the circular-plate body 22 and on the mount 13 of the carrier 12. Fig. 13 shows again the form-fitting structure 26 of the circular-plate body 22 shown in the remaining Figs. 1 to 12. The form-fitting structure 36 according to Fig 14 has a serrated profile with projections and depressions configured more or less at right angles in the radial direction. Fig. 15 shows a form-fitting structure 46 with individual teeth wherein the individual tooth flanks are spaced from one another in the circumferential direction and are spaced from one another over a circular segment-like portion which follows the circumferential geometry of the circular-plate shaped body. Fig. 16 shows an alternative form-fitting structure 56 in which the teeth are ball-shaped or approximately concave-shaped.

The form-fitting structure 66 according to Fig. 17 shows individual partly conical or beveled teeth which are likewise spaced from one another in the circumferential direction, like the teeth according to Fig. 15. Fig. 18 finally shows a form-fitting structure 76 in which the individual tooth flanks adjoin one another or merge seamlessly into one another in the circumferential direction. For each of the form-fitting

structures 26, 36, 46, 56, 66, 76, shown only by way of example in Figs. 13 to 18, there is provided a form-fitting structure corresponding therewith of a relevant carrier 12, which are not shown explicitly here. The diverse form-fitting structures according to Figs. 13 and 18 can equally be used for the embodiment shown in Figs. 1 to 8 as also for the alternative embodiment shown in Figs. 9 to 12.

The alternative configuration of the fastening device 100 shown in Figs. 9 to 12 likewise has a carrier 112 with a carrier plate 114. As opposed to the first configuration according to Figs. 1 to 8, the side wall 115, as shown by way of example in Fig.11, is however not circumferential and is closed in the circumferential direction, but the retaining bracket 118 forms so to speak a sub-region of the side wall 115. In other words, a fixed region of the side wall 115 is formed circular segment-like in the configuration according to Fig. 11. The side wall 115 forms quasi only a part circle, here roughly a semi-circle on the underneath of the carrier plate 114.

The retaining bracket 118 can equally be fixed by means of a closure 119 in the closed position shown in Fig. 12. Also here, the closure 119 is arranged on a free end of the retaining bracket 118 that faces away from the pivot axis 130. As opposed to the configuration according to Fig. 1, the closure 119 here is located on the outer side directed radially outwardly from the side wall 115 and the retaining bracket 118. It could however also be formed identically with the embodiment shown in Fig. 1, and vice versa.

On the underneath, that is, on the lower end of the fixed side wall 115 facing away from the carrier plate 114, there is also a radially inwardly directed holder 117 here which protrudes away from the inside of the side wall 115. That holder 117 is here likewise of a semi-circular configuration so that it extends practically or completely over the entire region of the fixed side wall 115.

Furthermore, on the inside of the side wall 115 there is the form-fitting structure 116 which corresponds with the form-fitting structure 26 of the circular-plate body 22. With that configuration, the circular brush 20, as shown in Figs. 9 and 10, can be inserted sideways, that is in the radial direction (r) into the mount 113 formed by the carrier plate 114, side wall 115 and holder 117. As a result of the geometric configuration of the side wall 115 and holder 117, the circular-plate body 22 can be at least already pre-fixed axially on the carrier 112 by merely being radially inserted into the opened mount 113. For an end mounting and for an operationally secure fixing it is then only necessary to close the retaining backet 118, as shown in Fig. 12.

It can be proposed here that the retaining bracket 118 is formed free of form-fitting structures and only serves for radially tensioning or clamping in the circular-plate body 22. Insofar as the circular-plate body 22 can be radially clamped with a precise fit between the side wall 115 and the retaining bracket 118, it is not necessary to provide on the retaining bracket 118 a separate holder 127 which, like the limb 18a of the holder 117, encircles the outer circumference 24 of the circular-plate body 22.

In the configuration shown in Figs. 9 to 12, however, a further holder 127 is arranged on the axial underneath of the retaining bracket 118, roughly centrally between the closure 119 and the pivot axis 130, which equally like the holder 117 protrudes radially inwards from the inner wall of the retaining bracket 118 in order to encircle the outer circumference 24 of the circular-plate body 22 and secure this axially on the carrier 112.

Figs. 11 and 12 only show a sectionwise configuration of the form-fitting structure 116 on the carrier side. This is located here solely on the fixed part of the side wall 115, whilst the retaining bracket 118 is formed free of form-fitting structure and thus has a substantially planar circular segment-like inner

contour. As an alternative to this it is naturally also conceivable to provide the retaining bracket 118 similarly with a form-fitting structure 116 on its inner side. A reversed arrangement is also conceivable in which the fixed part of the side wall 115 is free of form-fitting structure and only the retaining bracket 118 is provided with a form-fitting structure 116 in at least some portions.

Reference numeral list

10	Fastening device
12	Carrier
13	Mount
14	Carrier plate
15	Side wall
16	Form-fitting structure
17	Holder
18	Retaining bracket
18a	Limb
19	Closure
20	Circular brush
22	Circular-plate body
24	Outer circumference
26	Form-fitting structure
28	Bristles
30	Pivot axis
31	Counter hook
32	Clip or tension lever closure
36	Form-fitting structure
46	Form-fitting structure
56	Form-fitting structure
66	Form-fitting structure
76	Form-fitting structure
100	Fastening device
112	Carrier
113	Mount
114	Carrier plate
115	Side wall
116	Form-fitting structure
117	Holder
118	Retaining backet
119	Closure
127	Holder
130	Pivot axis

Patentkrav

1. Tallerkenkost til udskiftelig anordning på en feje- eller rengøringsmaskine drejeligt placeret bærer (12; 112) med et skiveformet tallerkenlegeme (22) til en omdrejningsmomentoverførende fastgøring på bæreren (12; 112), idet tallerkenlegemet (22) på sit udvendige omfang (24) i det mindste afsnitsvist har en indgrebssikker struktur (26; 36; 46; 56; 66; 76) til dannelse af en omdrejningsmomentoverførende forbindelse mellem bærer (12; 112) og tallerkenlegeme (22), kendetegnet ved, at den indgrebssikre struktur (26; 36; 46; 56; 66; 76) i omfangs- og radial retning er udformet bølgeformet, fortandet eller takket.

2. Tallerkenkost ifølge krav 1, idet den indgrebssikre struktur (26; 36; 46; 56; 66; 76) er udformet på en radialt udad pegende udvendig flade på tallerkenlegemet (22).

3. Tallerkenkost ifølge et af de foregående krav, idet den indgrebssikre struktur (26; 36; 46; 56; 66; 76) er udformet omløbende og gennemgående.

4. Fastgøringsenhed til en tallerkenkost (10) ifølge et af de foregående krav med en bærer (12; 112), som kan placeres drejeligt på en feje- eller rengøringsmaskine, med et optag (13; 113) til tallerkenlegemet (22) på tallerkenkosten (20), kendetegnet ved, at optaget (13; 113) radialt udad er begrænset af en sidevæg (15; 115), hvorpå der indvendigt i det mindste afsnitsvist er dannet en med den indgrebssikre struktur (26; 36; 46; 56; 66; 76) på tallerkenlegemet (22) korresponderende indgrebssikker struktur (16).

5. Fastgøringsenhed ifølge krav 4, idet bæreren (12; 112) har en bæreplade (14; 114), på hvis udvendige omfang sidevæggen (15; 115) rager aksialt nedad.

6. Fastgøringsenhed ifølge et af de foregående krav 4 eller 5, idet der i et på bæreren (12, 112) bortvendt nedre endeafsnit

på sidevæggen (15; 115) i det mindste afsnitsvist er placeret en radialt indad rækkende og fra indersiden af sidevæggen (15; 115) fremstående holder (17; 117).

7. Fastgøringsenhed ifølge et af de foregående krav 4 til 6, idet der på bæreren (12; 112) svingbart er lejret en holdebøjle (18; 118), som kan bringes i indgreb med det udvendige omfang (24) på tallerkenlegemet (22), mellem en åben stilling (0) og en lukket stilling (S).

8. Fastgøringsenhed ifølge krav 7, idet en svingaksel (30; 130) på holdebøjlen (18; 118) er orienteret aksialt og forløber gennem sidevæggen (15; 115).

9. Fastgøringsenhed ifølge et af de foregående krav 4 til 8, idet holdebøjlen (18; 118) i sin lukkede stilling (S) med et ben (18a) med afstand til bæreren (12; 112) eller dens bæreplade (14; 114) rager radialt frem indad fra sidevæggen (15; 115).

10. Fastgøringsenhed ifølge et af de foregående krav 7 til 9, idet holdebøjlen (18; 118) danner et delområde i sidevæggen (15; 115).

11. Fastgøringsenhed ifølge et af de foregående krav 7 til 10, idet der på et med afstand til bæreren (12; 112) eller dens bæreplade (14; 114) nedre endeafsnit på holdebøjlen (18; 118) er placeret en yderligere, radialt indad strækkende og i den låste stilling på holdebøjlen (18; 118) fra den indvendige side af sidevæggen (15; 115) fremstående holder (127).

12. Fastgøringsenhed ifølge et af de foregående krav 7 til 11, idet holderen (17; 117) og holdebøjlen (18; 118) er placeret på diametralt eller radialt over for hinanden liggende afsnit af sidevæggen (15; 115).

13. Fastgøringsenhed ifølge et af de foregående krav 7 til 12, idet holdebøjlen (18; 118) ved hjælp af en lukning (19; 119) kan fikseres på bæreren (12; 112) i sin lukkede stilling.

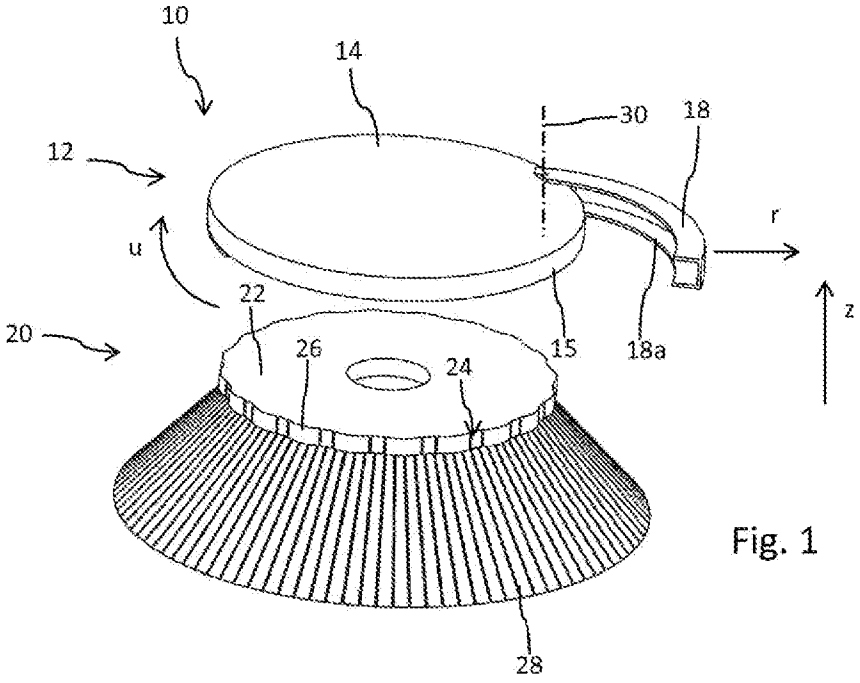


Fig. 1

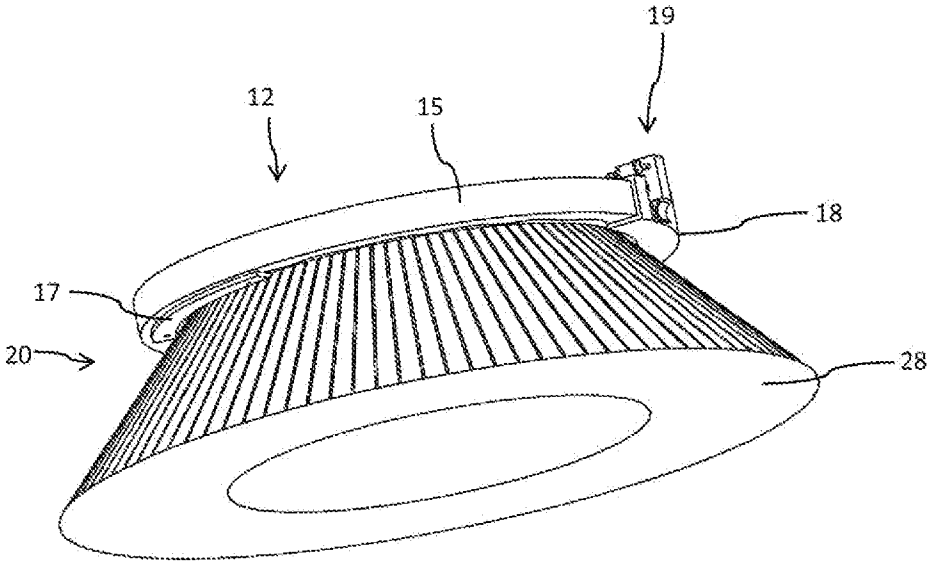


Fig. 2

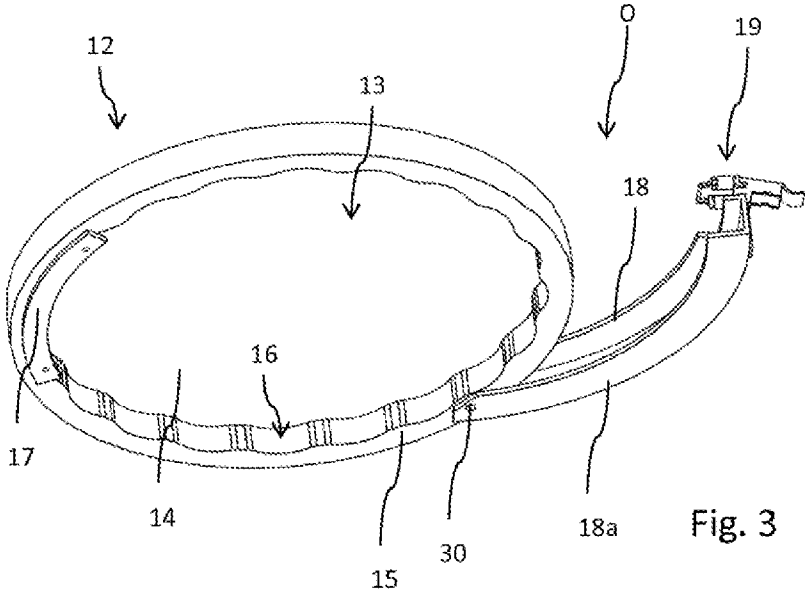


Fig. 3

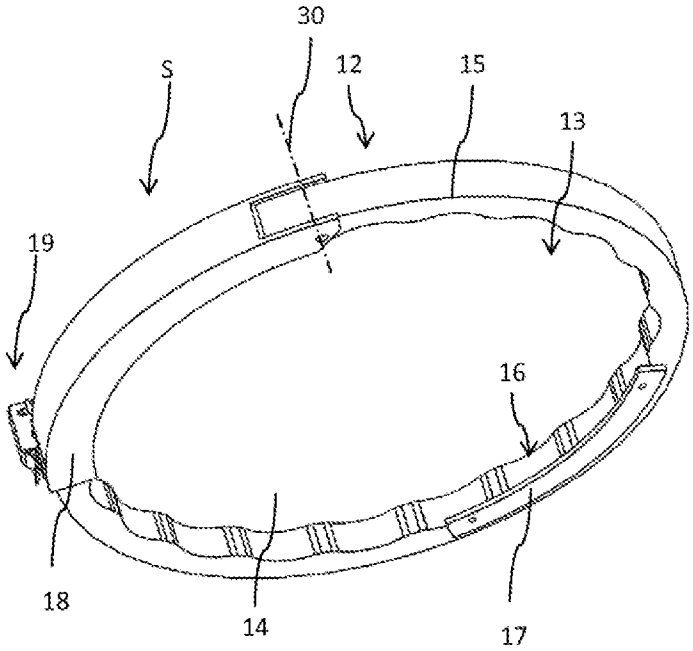


Fig. 4

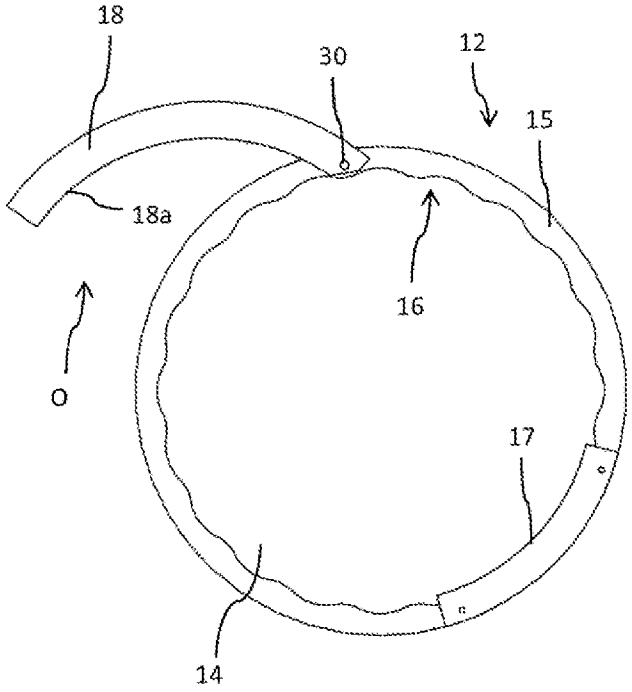
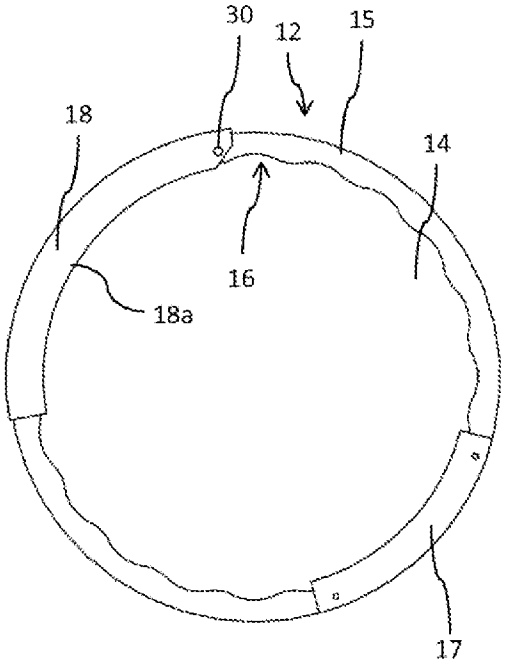


Fig. 5



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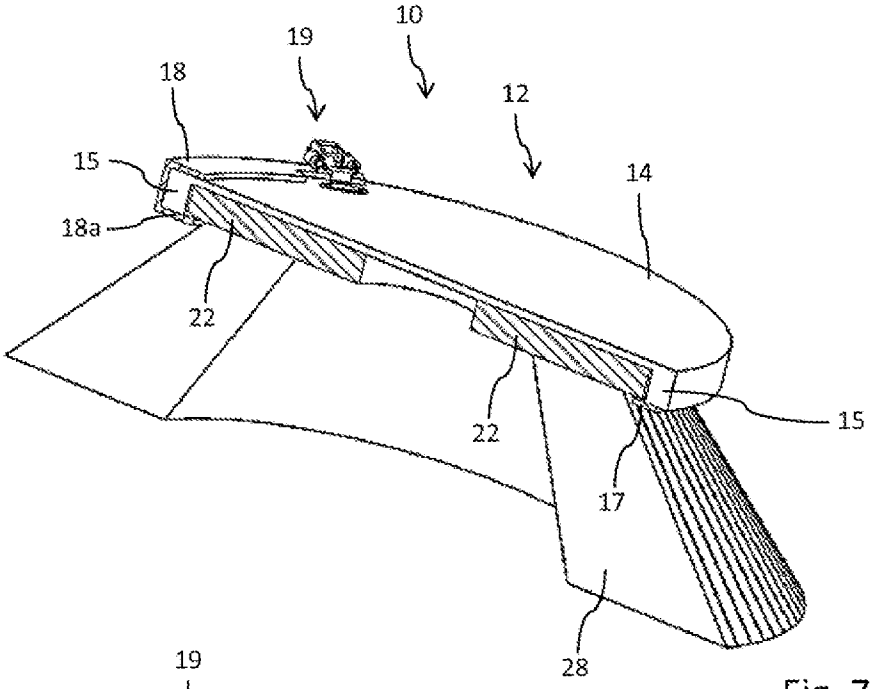
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Fig. 7

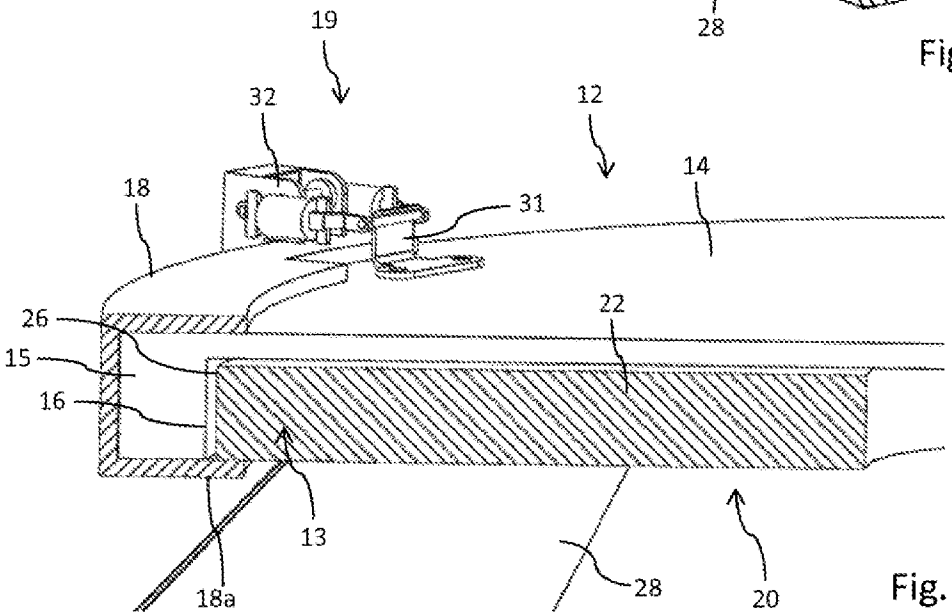
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Fig. 8

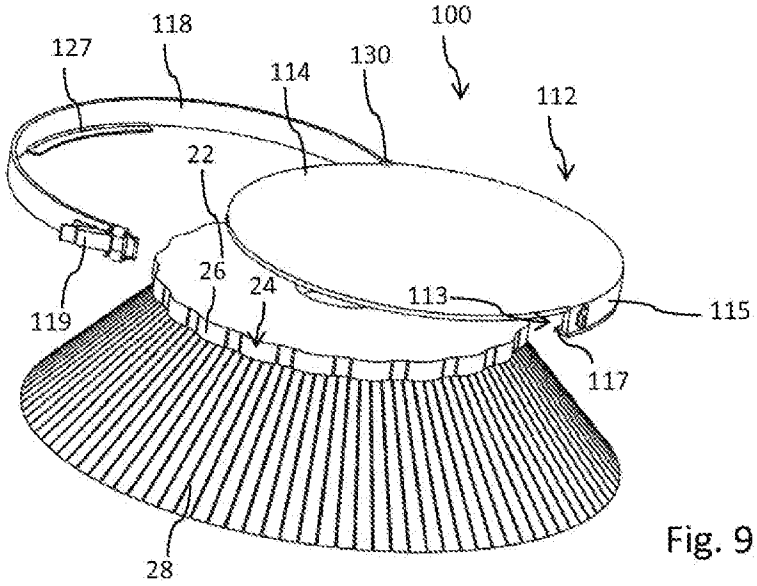
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Fig. 9

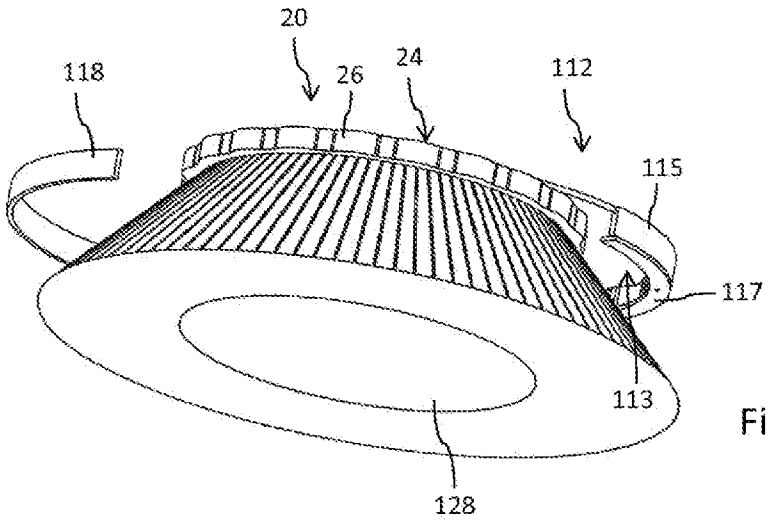
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Fig. 10

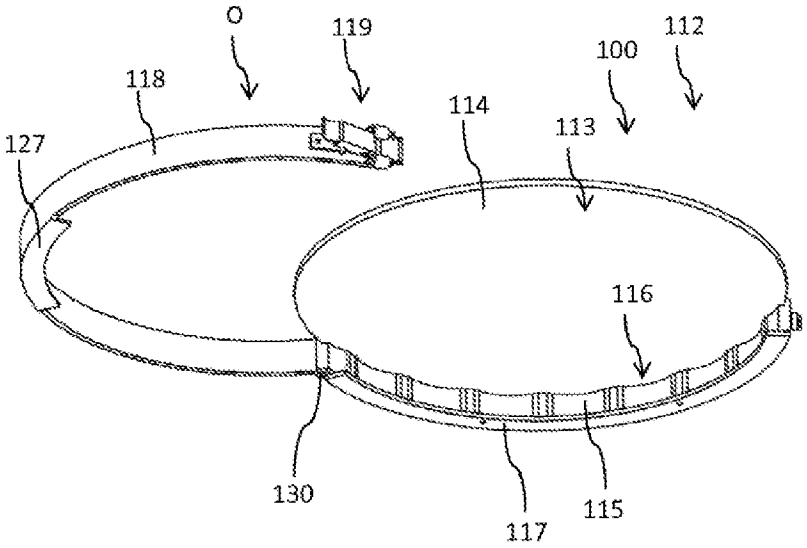
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Fig. 11

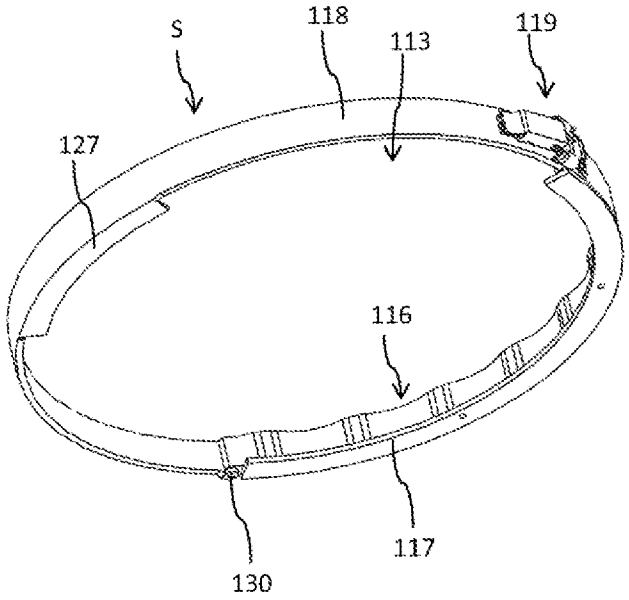
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Fig. 12

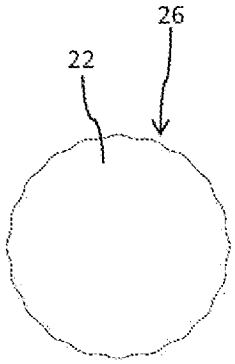

Fig. 13

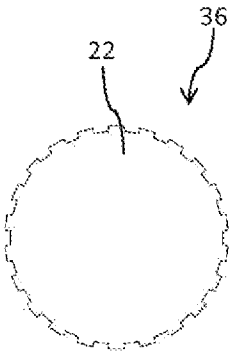

Fig. 14

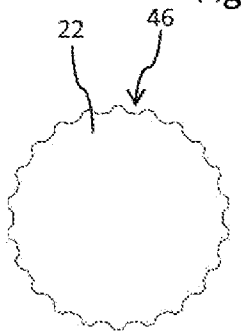

Fig. 15

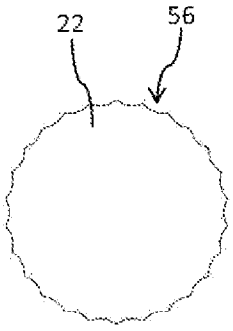

Fig. 16

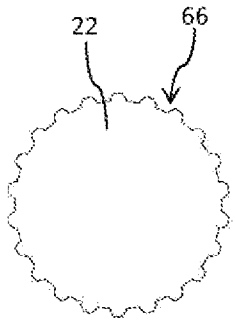

Fig. 17

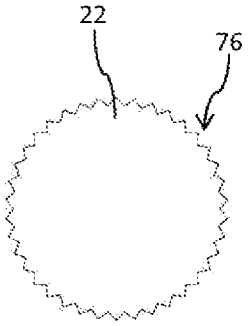

Fig. 18