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(54) **SHOE ROLLER END MODULE AND METHOD TO ASSEMBLE A SHOE ROLLER END MODULE**

SCHUHWALZENENDMODUL UND VERFAHREN ZUM ZUSAMMENBAU EINES SCHUHWALZENENDMODULS

MODULE D'EXTRÉMITÉ D'UN ROULEAU DE PRESSE À SABOT ET PROCÉDÉ D'ASSEMBLAGE D'UN MODULE D'EXTRÉMITÉ D'UN ROULEAU DE PRESSE À SABOT

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EP 3 733 961 B1

Description

[0001] The invention pertains to a shoe roll end module and to a method to assemble such a shoe roll end module. Such shoe rolls are for instance used in a paper or board machine.

[0002] Document EP 1 619 299 B1 discloses an extended-nip press. The extended-nip press is provided between a shoe press roller and a counter roller, to press the moving web at a papermaking machine. The shoe press roller has a fixed carrier and a rotating flexible roller belt. The ends of the belt are supported on the carrier by end disks, with roller bearings running on bearing rings at roller journals. Between the shoe press and the belt a liquid is present.

[0003] In order to keep the belt in the shape of a cylindrical jacket, roll head elements are fitted with bearings to the axle. It is known to use an eccentricity of the belt for getting better inlet and outlet angles between the belt and the shoe. Thus, it is possible to use longer shoes inside a smaller diameter shoe press belt roll.

[0004] In prior art solutions, eccentricity is made with eccentric ferrules turned from a cast billet and fitted directly to an axle stub. Manufacturing such an eccentric ferrule is a challenging work. Moreover, it is a risk for working safety, because those big rotating eccentric masses can come loose from attachments during the turning work in manufacturing.

[0005] Moreover, in use it is difficult to affect the amount or direction of eccentricity for individual projects. Another issue is that an eccentric ferrule has a mass distribution that contributes for rotation in manufacturing.

[0006] Document EP 0 619 399 A1 discloses a method and an equipment for opening a nip in an extended-nip press. When the nip between two rolls is opened, a loading shoe of loading members of the extended-nip roll is shifted to an open position and apart from a glide-belt mantle. In the method, an inside end-flange part of an end flange, which is operationally coupled with a bearing of the glide-belt mantle is rotated as parallel to the face of the central axle of the roll. Thereby the glide-belt mantle is separated from contact with the back-up roll as the central axis of the end-flange part is placed at a distance from the central axis of the roll.

[0007] It is the object of the invention to provide a shoe roll head facilitating to set an amount or direction of eccentricity.

[0008] The object of the invention is achieved by shoe roll end module according to claim 1. Advantageous embodiments are carried out according to its dependent claims. An advantageous assembly method according to the invention is defined by claim 11 and its dependent claims 12 to 15.

[0009] According to the invention, a shoe roll end module comprises a pedestal; a roll head configured to support a belt tensioned about the shoe roll heads; and an axially elongated annular structure in connection with the pedestal. The axially elongated annular structure is configured to support the roll head.

[0010] Thus, in comparison to prior art structures, a shoe roll end module can be assembled or disassembled in a fast and clear manner. Since the individual parts are combined to one end module having only one fitting to the axle, the end module can be manufactured in a simple manner before assembly to the axle as well as the end module can be handled more easily.

[0011] Moreover, the shoe roll end module with support from the pedestal moves the support of the roll head further away from the stressed part of the axle where its profile changes from an axle stub to a support beam for a press shoe.

[0012] Advantageously, generating straight lines of an outer surface of the axially elongated annular structure can be arranged in parallel to a center axis of an axle hole in the pedestal, and the outer surface of the axially elongated annular structure is eccentric to the center axis of the axle hole.

[0013] Due to this feature combination, it is possible to provide an eccentric member, which simply consists of an annular structure. Such an annular structure is comparably easy to manufacture, e.g. by turning. Moreover, by shifting the annular structure, with respect to the pedestal, a center axis position of the annular structure can be easily arranged with a required relation to the center axis position of the pedestal's axle hole. Accordingly, an arbitrary amount of eccentricity can be caused with the very same parts.

[0014] Advantageously, the axially elongated annular structure can be a ferrule, being configured to, with a proximal end thereof, be attached to and dismounted from the pedestal or the roll head.

[0015] Moreover, advantageously, a center axis of the axially elongated annular structure can be arranged in parallel to a center axis of an axle hole in the pedestal and is distanced from the center axis of the pedestal.

[0016] Moreover, advantageously, the axially elongated annular structure can have a flange part on a distal end thereof, the flange part protruding radially outwards.

[0017] Such a flange part is advantageous for mounting a roll head, by inserting the annular structure into the roll head while the flange part gets into abutment with the roll head, the position of which is determined. Thus, the flange part works as a stopper preventing the roll head from falling off the ferrule.

[0018] In an advantageous manner, the roll head can have a base part, which is configured to be slid over the axially elongated annular structure. Moreover, it can have a rotating part, which is configured to hold the belt and to rotate with the belt a rotation axis of the shoe press roller, and a bearing, which is arranged between the base part and the rotating part.

[0019] Moreover advantageously, the roll head can have a flange part protruding radially inwards, such that, when the roll head is slid over the axially elongated annular structure the flange part of the roll head and the flange part of the axially elongated annular structure form

an annular gap therebetween.

[0020] In a case where such an annular gap is formed, by correspondingly sealing the circumferential surfaces of the respective flange parts, the gap can serve as a pneumatic or hydraulic chamber for adjusting the roll head's position with regard to the annular structure and the pedestal.

[0021] Accordingly, in an advantageous manner, the annular gap can have a port for introducing a fluid in order to increase the annular gap's volume by moving the roll head towards the pedestal, in order to determine the roll head's position with regard to the pedestal.

[0022] Moreover advantageously, the axially elongated annular structure can be attachable in a manner such that its center axis changes its distance to the center axis of an axle hole in the pedestal.

[0023] Thereby, the amount of eccentricity can be adjusted according to actual needs.

[0024] Moreover advantageously, the axially elongated annular structure can be attached to the pedestal at merely one location by a fixing means serving as rotation axis such that the axially elongated annular structure can swing about the fixing means for adjusting the position of its center axis.

[0025] Moreover, according to the invention, a method to assemble a shoe roll end module comprises a step of sliding a roll head over an axially elongated annular structure; and a step of attaching the axially elongated annular structure supporting the roll head to a pedestal.

[0026] Thus, it is possible to assemble or disassemble the shoe roll end module in the course of setting up a shoe roll and/or to perform maintenance.

[0027] Advantageously, the attaching step can be performed in a manner that a center axis of the axially elongated annular structure is in parallel with the center axis of an axle hole of the pedestal.

[0028] Moreover advantageously, a step of adjusting a horizontal and/or vertical position of the roll head with regard to the pedestal by shifting the axially elongated annular structure can be performed.

[0029] Advantageously, furthermore a step of adjusting a distance of the roll head to the pedestal by sliding it on the axially elongated annular structure can be performed in the shoe roll end module.

[0030] Moreover advantageously, a distance-adjusting step can be performed, in which the distance of the roll head to the pedestal is adjusted by introducing a fluid into an annular gap. The annular gap is established between a radially inwardly protruding flange of the roll head and a radially outwardly protruding flange arranged an a distal end of the axially elongated annular structure when viewed from the pedestal. Additionally or alternatively, the distance-adjusting step can be performed by means of a working cylinder, having one of its ends attached with the roll head and having the other of its ends attached at the pedestal.

[0031] Other advantages and effects of the invention will become clear from the detailed description of a presently preferred embodiment in combination with the attached drawings. In the drawings:

Fig. 1 is a perspective view of a pedestal according to the embodiment, to which an axially elongated annular structure is attached;
Fig. 2 is a plan view of the pedestal of Fig. 1;
Fig. 3 is a section view of a shoe roll end module structure according to the embodiment.

[0032] A preferred embodiment of the invention will be described by referring to Figs. 1 to 3. Fig. 1 is a perspective view of a pedestal according to the embodiment, Fig. 2 is a plan view of the pedestal, and Fig. 3 is a section view of a shoe roll end module 2 structure according to the embodiment.

[0033] A pedestal 1 has an axle hole 11, which serves to accommodate an axle stub of a shoe roll. In this regard, it is to be noted that the terms "axle" and related terms such as "axle hole" and "axle stub" are used throughout the application rather for sake of brevity. In fact a "pressure beam" and related terms such as an "accommodating hole for (such) a pressure beam" and a "stub of (such) a pressure beam", respectively, are meant instead.

[0034] The axle hole 11 in section has an octagonal shape. Thus, there are eight surfaces forming the axle hole 11. Among the eight surfaces, the highest surface 11b is finished with a degree of accuracy exceeding the finishing degree of the remaining seven surfaces. This highest surface 11b serves as a torque surface, and is manufactured with

- an increased roughness (Ra) level in comparison to a reference surface;
- an increased planar evenness of the surface in comparison to the reference surface;
- an increased degree of parallelism of the surface compared to the reference surface.

[0035] A corresponding surface of an axle stub 7 is manufactured with the same degree of accuracy. Thus, when bringing the torque surface 11b of the axle hole 11 and a corresponding surface of an axle stub in abutment, due to the high degree of accuracy of manufacturing of these surfaces it is possible to position the shoe roll with a degree of accuracy not possible with prior art solutions having a rocker bearing in the pedestal.

[0036] At an inner side of the pedestal 1, that is, a side, which is directed towards the center of the paper or board machine, a ferrule 5 as an axially elongated annular structure, is connected with the pedestal. According to the embodiment, the ferrule 5 is connected with the pedestal by means of bolts 55.

[0037] The ferrule 5 is an annular member. It is connected with the pedestal 1 in a manner that its center axis OF deviates from the center axis OP of the pedestal. Thus, due to shifting of the ferrule 5, it is possible to achieve a required degree of eccentricity.

[0038] With regard to the center axis OP of the axle hole 11 corresponding to the center axis of the axle (pressure beam), certain eccentricity is required in order to meet the loads occurring on the shoe roll. That is, since the belt 31 of the shoe roll in section has a shape of a cardioid, the rotation axis position of the belt does not correspond to the center axis of the axle. Accordingly, a certain eccentricity is required for the roll head 3 holding the belt 31.

[0039] According to the embodiment of the shoe roll end module, it is possible to connect the ferrule 5 with the pedestal in an arbitrary manner as indicated by the arrows in Fig. 2. Thus, any required degree of eccentricity can be obtained when assembling the shoe roll head structure.

[0040] Moreover, the ferrule 5 has a flange 51 at its distal end, i.e. the flange 51 is provided at the side distanced from the pedestal 1. The flange 51 extends radially outwards and has two functions, which will be described later.

[0041] Before being connected with the pedestal 1, the ferrule 5 is inserted into an inner bore of the roll head 3when assembling the shoe roll end module 2. The roll head 3 has an inner static structure 35 and an outer dynamic (rotating) structure 37. A bearing 39 and a labyrinth seal connect these two structures 35 and 37 of the roll head 3 and prevent leakage of fluid, e.g. lubrication fluid. The roll head 3 supports the belt 31. A bellows 34 connects the roll head with the pedestal and prevents contamination of the inner portions of the roll head 3.

[0042] Moreover, in the shoe roll end module the roll head 3 is connected with the pedestal 1 by means of indexing rods 4. These indexing rods 4 comprise a screw extending through a bore provided in the pedestal 1 and being in thread engagement with a thread bore 32 in the roll head 3. An indexing head 41 is arranged on the outer side of the pedestal 1.

[0043] Pressurization of the annular gap 53 reveals in that indexing head 41 just moves along in a longitudinal manner because its far end is fixed to the rod 4. An indexing nut 45 having a scale shows the movement when being screwed back against the pedestal 1. This allows keeping the gap 53 without pressure when not moving the head. Springs 43 and the indexing nut 45 keep the head in the indexed position. Thus, movement of the roll head 3 towards the pedestal 1 is effected, i.e. in the Figure towards the left direction as indicated by the double arrows in Fig. 3.

[0044] Loosening of the indexing nut 45 effects a movement of the roll head 3 from the pedestal 1 towards the machine center, i.e. into the right direction in the figures as also indicated by the double arrows in Fig. 3. This rightward movement is mainly effected by means of the compression springs 43. The compression springs are provided about the portion of the screw between the roll head 3 and the pedestal 1. Thus, a movement of the roll head 3 towards the pedestal 1 effects compression of the springs 43. The compression is then relieved upon loosening of the indexing nut 45, which effects then the roll head's 3 movement towards the machine center.

[0045] In its bore, the roll head 3 has a radially inwards extending flange 33, which cooperates with the flange 51 of the ferrule 5 in two manners as indicated above.

[0046] Firstly, the flange 51 serves to secure the roll head 3 by getting into abutment with a flange 33 of the roll head. That is, the flange 33 is provided radially inwards and is arranged in an axial position between the pedestal 1 and the flange 51 of the ferrule 5.

[0047] Secondly, since the flange 51 forms an annular gap 53 with the flange 33 provided at the roll head 3, by sealing the respective circumferential surfaces of the flanges 51 and 33, e.g. by means of O-rings, as shown in Fig. 3, the gap can be used as a hydraulic or pneumatic chamber. Then, by introducing a fluid into the annular gap, movement of the roll head towards the pedestal can be performed. This is done for instance to adjust the belt's 31 tension and indexing the belt to a different axial position in order to reduce belt wear in the edge areas.

[0048] The main advantages of the shoe roll end module invention described by means of the preferred embodiment are:

- there is an increased possibility to adjust the individual components. That is, by connecting the ferrule with the pedestal at an arbitrary location it is possible to adjust eccentricity according to the project. Modifications to a cast model are not necessary;
- the roll head can be arranged at an arbitrary required position with respect to the axle and the shoe by sliding it over the ferrule;
- turning work of the centric ferrule is well known and easily to be achieved;
- the shoe roll end module with support from the pedestal moves the support of the roll head further away from the stressed part of the axle where its profile changes from an axle stub to a support beam for a press shoe;
- for manufacturing the ferrule, less material is required, i.e. material of the billet can be saved;
- final assembly is getting significantly faster with pre assembling of the shoe press and modules;
- pre assembling is possible with said new shoe roll end module;
- less fitting and sealing surfaces are to be machined, only one fitting form locking location compared to the earlier two separate parts with own fitting surfaces in different locations;
- the number of needed small parts, like protective lids for sealings, etc. decreases;
- it is possible to adjust eccentricity specially without extra parts, thereby geometry of the shoe inlet can be optimized.

[0049] While the invention has been described by means of a presently preferred embodiment, it is to be understood that the scope of the invention is merely de-

fined by the attached claims.

REFERNCE SIGNS LIST

[0050]

1	pedestal
11	axle hole (hole for accommodating a pressure beam stub)
11b	torque surface
3	roll head
31	belt
32	thread bore
33	flange
34	bellows
35	static part
37	rotating (dynamic) part
39	bearing
4	indexing rod
41	screw head
43	spring
5	ferrule (axially elongated annular structure)
51	flange
53	annular gap
55	bolt

Claims

1. A shoe roll end module comprising:

a pedestal (1);
a roll head (3) configured to support a belt (31) tensioned about the shoe roll; and
an axially elongated annular structure (5) being attached to the pedestal (1), and supporting the roll head (3).

2. The shoe roll end module according to claim 1, wherein
generating straight lines of an outer surface of the axially elongated annular structure (5) are arranged in parallel to a center axis (OP) of an axle hole (11) in the pedestal (1), and the outer surface of the axially elongated annular structure (5) is eccentric to the center axis (OP) of the axle hole (11).

3. The shoe roll end module according to claim 1 or 2, wherein
the axially elongated annular structure (5) is a ferrule, being configured to, with a proximal end thereof, be attached to and dismounted from the pedestal (1).

4. The shoe roll end module according to any of the preceding claims, wherein
a center axis (OF) of the axially elongated annular structure (5) is arranged in parallel to a center axis (OP) of an axle hole (11) in the pedestal (1) and is distanced from the center axis (OP) of the pedestal (1).

5. The shoe roll end module according to any of the preceding claims, wherein
the axially elongated annular structure (5) has a flange part (51) on a distal end thereof, the flange part (51) protruding radially outwards.

6. The shoe roll end module according to any of the preceding claims, wherein
the roll head (3) has

a base part (35) configured to be slid over the axially elongated annular structure (5),
a rotating part (37) configured to hold the belt (31) and to rotate with the belt (31) a rotation axis of the shoe press roll, and
a bearing (39) arranged between the base part and the rotating part.

7. The shoe roll end module according to claim 5 or 6, wherein
the roll head (3) has a flange part (33) protruding radially inwards, such that, when the roll head (3) is slid over the axially elongated annular structure (5) the flange part (33) of the roll head (3) and the flange part (51) of the axially elongated annular structure (5) form an annular gap (53) therebetween.

8. The shoe roll end module according to claim 7, wherein
the annular gap (53) has a port for introducing a fluid in order to increase the annular gap's (53) volume by moving the roll head (3) towards the pedestal (1), in order to determine the roll head's (3) position with regard to the pedestal (1).

9. The shoe roll end module according to any of the preceding claims, wherein
the axially elongated annular structure (5) is attachable in a manner such that its center axis (OF) changes its distance to the center axis (OP) of an axle hole (11) in the pedestal (1).

10. The shoe roll end module according to any of the preceding claims, wherein
the axially elongated annular structure (5) is attached to the pedestal (1) at merely one location by a fixing means (55) serving as rotation axis such that the axially elongated annular structure (5) can swing about the fixing means (55) for adjusting the position of its center axis (OF).

11. Method to assemble a shoe roll end module, comprising

a step of sliding a roll head (3) over an axially

elongated annular structure (5);
a step of attaching the axially elongated annular structure (5) supporting the roll head (3) to a pedestal (1).

12. The method to assemble a shoe roll end module according to claim 11,
wherein the attaching step is performed in a manner that a center axis (OF) of the axially elongated annular structure (5) is in parallel with the center axis of an axle hole (11) of the pedestal (1).

13. The method to assemble a shoe roll end module according to claim 11 or 12, furthermore comprising
a step of adjusting a horizontal and/or vertical position of the roll head (3) with regard to the pedestal by shifting the axially elongated annular structure (3).

14. The method to assemble a shoe roll end module according to any of claims 11 to 13, furthermore comprising
a step of adjusting a distance of the roll head (3) to the pedestal (1) by sliding it on the axially elongated annular structure (5).

15. The method to assemble a shoe roll end module according to any of claims 11 to 14, wherein

a distance adjusting step is performed, in which the distance of the roll head (3) to the pedestal (1) is adjusted by introducing a fluid into an annular gap (53) established between a radially inwardly protruding flange (33) of the roll head (3) and a radially outwardly protruding flange (51) arranged an a distal end of the axially elongated annular structure (5) when viewed from the pedestal (1), and/or
the distance adjusting step is performed by means of a working cylinder, having one of its ends attached with the roll head (3) and having the other of its ends attached at the pedestal (1).

Patentansprüche

1. Schuhwalzenendmodul, umfassend:

einen Sockel (1);
einen Walzenkopf (3), der so konfiguriert ist, dass er einen um die Schuhwalze gespannten Riemen (31) trägt; und
eine axial verlängerte ringförmige Struktur (5), die an dem Sockel (1) befestigt ist und den Walzenkopf (3) trägt.

2. Schuhwalzenendmodul gemäß Anspruch 1, wobei erzeugende Geraden einer Außenfläche der axial verlängerten ringförmigen Struktur (5) parallel zu einer Mittelpunktsachse (OP) eines Achslochs (11) in dem Sockel (1) angeordnet sind und die Außenfläche der axial verlängerten ringförmigen Struktur (5) exzentrisch zu der Mittelpunktsachse (OP) des Achslochs (11) liegt.

3. Schuhwalzenendmodul gemäß Anspruch 1 oder 2, wobei
die axial langgestreckte ringförmige Struktur (5) eine Hülse ist, die so konfiguriert ist, dass sie mit ihrem proximalen Ende an dem Sockel (1) befestigt und von diesem abgenommen werden kann.

4. Schuhwalzenendmodul gemäß einem der vorangehenden Ansprüche, wobei
eine Mittelpunktsachse (OF) der axial langgestreckten ringförmigen Struktur (5) parallel zu einer Mittelpunktsachse (OP) eines Achslochs (11) in dem Sockel (1) liegt und von der Mittelpunktsachse (OP) des Sockels (1) beabstandet ist.

5. Schuhwalzenendmodul gemäß einem der vorangehenden Ansprüche, wobei
die axial langgestreckte ringförmige Struktur (5) an ihrem distalen Ende ein Flanschteil (51) aufweist, wobei das Flanschteil (51) radial nach außen vorsteht.

6. Schuhwalzenendmodul gemäß einem der vorangehenden Ansprüche, wobei

der Walzenkopf (3) aufweist

ein Basisteil (35), das so konfiguriert ist, dass es über die axial verlängerte ringförmige Struktur (5) geschoben werden kann
ein drehendes Teil (37), das konfiguriert ist, um das Band (31) zu halten und mit dem Band (31) eine Drehachse der Schuhpresswalze zu drehen, und

ein Lager (39), das zwischen dem ruhenden Teil und dem drehenden Teil angeordnet ist.

7. Schuhwalzenendmodul gemäß Anspruch 5 oder 6, wobei
der Walzenkopf (3) ein radial nach innen vorstehendes Flanschteil (33) aufweist, so dass, wenn der Walzenkopf (3) über die axial langgestreckte ringförmige Struktur (5) geschoben wird, das Flanschteil (33) des Walzenkopfes (3) und das Flanschteil (51) der axial langgestreckten ringförmigen Struktur (5) dazwischen einen ringförmigen Spalt (53) ausbilden.

8. Schuhwalzenendmodul gemäß Anspruch 7, wobei der ringförmige Spalt (53) einen Anschluss zum Einbringen eines Fluids aufweist, um das Volumen des ringförmigen Spalts (53) durch Bewegen des Wal-

zenkopfs (3) in Richtung des Sockels (1) zu vergrößern, um die Position des Walzenkopfs (3) in Bezug auf den Sockel (1) zu bestimmen.

9. Schuhwalzenendmodul gemäß einem der vorangehenden Ansprüche, wobei
die axial langgestreckte ringförmige Struktur (5) derart anbringbar ist, dass ihre Mittelpunktsachse (OF) ihren Abstand zur Mittelpunktsachse (OP) eines Achslochs (11) im Sockel (1) ändert.

10. Schuhwalzenendmodul gemäß einem der vorangehenden Ansprüche, wobei
die axial langgestreckte Ringstruktur (5) an dem Sockel (1) an nur einer Stelle durch ein als Drehachse dienendes Befestigungsmittel (55) derart befestigt ist, dass die axial langgestreckte Ringstruktur (5) zum Anpassen der Position ihrer Mittelpunktsachse (OF) um das Befestigungsmittel (55) schwenken kann.

11. Verfahren zum Zusammenbau eines Schuhwalzenendmoduls, umfassend

einen Schritt des Aufschiebens eines Walzenkopfes (3) auf eine axial verlängerte ringförmige Struktur (5);
einen Schritt der Befestigung der axial verlängerten ringförmigen Struktur (5), die den Walzenkopf (3) trägt, an einem Sockel (1).

12. Verfahren zum Zusammenbau eines Schuhwalzenendmoduls gemäß Anspruch 10, wobei der Befestigungsschritt in einer Weise durchgeführt wird, dass eine Mittelpunktsachse (OF) der axial verlängerten ringförmigen Struktur (5) parallel zur Mittelpunktsachse eines Achslochs (11) des Sockels (1) liegt.

13. Verfahren zum Zusammenbau eines Schuhwalzenendmoduls gemäß Anspruch 11 oder 12, das ferner umfasst
einen Schritt des Anpassens einer horizontalen und/oder vertikalen Position des Walzenkopfes (3) in Bezug auf den Sockel durch Verschieben der axial verlängerten ringförmigen Struktur (3).

14. Verfahren zum Zusammenbau eines Schuhwalzenendmoduls gemäß einem der Ansprüche 11 bis 13, das ferner umfasst
einen Schritt zum Anpassen eines Abstands des Walzenkopfs (3) zum Sockel (1) durch Verschieben desselben auf der axial langgestreckten ringförmigen Struktur (5).

15. Verfahren zum Zusammenbau eines Schuhwalzenendmoduls gemäß einem der Ansprüche 11 bis 14, wobei
ein Abstandseinstellschritt durchgeführt wird, in dem der Abstand des Walzenkopfes (3) zu dem Sockel (1) angepasst wird, indem ein Fluid in einen ringförmigen Spalt (53) eingebracht wird, der zwischen einem radial nach innen vorstehenden Flansch (33) des Walzenkopfes (3) und einem radial nach außen vorstehenden Flansch (51) gebildet wird, der an einem distalen Ende der axial langgestreckten ringförmigen Struktur (5), vom Sockel (1) aus gesehen, angeordnet ist, und/oder
der Abstandseinstellschritt mittels eines Arbeitszylinders durchgeführt wird, der mit einem seiner Enden am Walzenkopf (3) und mit dem anderen seiner Enden am Sockel (1) befestigt ist.

Revendications

1. Module d'extrémité de rouleau à sabot comprenant :

un support (1) ;
une tête de rouleau (3) conçue pour supporter une courroie (31) tendue autour du rouleau à sabot ; et
une structure annulaire axialement allongée (5) attachée au support (1), et supportant la tête de rouleau (3).

2. Module d'extrémité de rouleau à sabot selon la revendication 1, dans lequel
des génératrices droites d'une surface extérieure de la structure annulaire axialement allongée (5) sont agencées parallèlement à un axe central (OP) d'un orifice pour arbre (11) dans le support (1), et la surface extérieure de la structure annulaire axialement allongée (5) est excentrique relativement à l'axe central (OP) de l'orifice pour arbre (11).

3. Module d'extrémité de rouleau à sabot selon la revendication 1 ou 2, dans lequel
la structure annulaire axialement allongée (5) est un collier conçu pour, par le biais d'une extrémité proximale de celui-ci, être attaché au support (1) et détaché de celui-ci.

4. Module d'extrémité de rouleau à sabot selon l'une quelconque des revendications précédentes, dans lequel
un axe central (OF) de la structure annulaire axialement allongée (5) est agencé parallèlement à un axe central (OP) d'un orifice pour arbre (11) dans le support (1) et est espacé de l'axe central (OP) du support (1).

5. Module d'extrémité de rouleau à sabot selon l'une quelconque des revendications précédentes, dans

lequel
la structure annulaire axialement allongée (5) comporte une partie collerette (51) sur une extrémité distale de celle-ci, la partie collerette (51) faisant saillie radialement vers l'extérieur.

6. Module d'extrémité de rouleau à sabot selon l'une quelconque des revendications précédentes, dans lequel

la tête de rouleau (3) comporte
une partie base (35) conçue pour être adaptée par coulissement par-dessus la structure annulaire axialement allongée (5),
une partie rotative (37) conçue pour maintenir la courroie (31) et pour tourner avec la courroie (31) autour d'un axe de rotation du rouleau presseur à sabot, et
un palier (39) placé entre la partie base et la partie rotative.

7. Module d'extrémité de rouleau à sabot selon la revendication 5 ou 6, dans lequel
la tête de rouleau (3) comporte une partie collerette (33) faisant saillie radialement vers l'intérieur, de telle sorte que, lorsque la tête de rouleau (3) est adaptée par coulissement par-dessus la structure annulaire axialement allongée (5), la partie collerette (33) de la tête de rouleau (3) et la partie collerette (51) de la structure annulaire axialement allongée (5) forment un intervalle annulaire (53) entre elles.

8. Module d'extrémité de rouleau à sabot selon la revendication 7, dans lequel
l'intervalle annulaire (53) comporte un trou pour l'introduction d'un fluide afin d'augmenter le volume de l'intervalle annulaire (53) en déplaçant la tête de rouleau (3) vers le support (1), afin de déterminer la position de la tête de rouleau (3) par rapport au support (1).

9. Module d'extrémité de rouleau à sabot selon l'une quelconque des revendications précédentes, dans lequel
la structure annulaire axialement allongée (5) peut être attachée de telle façon que son axe central (OF) change son espacement relativement à l'axe central (OP) d'un orifice pour arbre (11) dans le support (1).

10. Module d'extrémité de rouleau à sabot selon l'une quelconque des revendications précédentes, dans lequel
la structure annulaire axialement allongée (5) est attachée au support (1) à un seul emplacement par un moyen de fixation (55) servant d'axe de rotation de telle sorte que la structure annulaire axialement allongée (5) puisse pivoter autour du moyen de fixation (55) pour ajuster la position de son axe central (OF).

11. Procédé d'assemblage d'un module d'extrémité de rouleau à sabot, comprenant

une étape consistant à adapter par coulissement une tête de rouleau (3) par-dessus une structure annulaire axialement allongée (5) ;
une étape consistant à attacher la structure annulaire axialement allongée (5) supportant la tête de rouleau (3) à un support (1).

12. Procédé d'assemblage d'un module d'extrémité de rouleau à sabot selon la revendication 11, dans lequel l'étape d'attache est accomplie de façon à ce qu'un axe central (OF) de la structure annulaire axialement allongée (5) soit parallèle à l'axe central d'un orifice pour arbre (11) du support (1).

13. Procédé d'assemblage d'un module d'extrémité de rouleau à sabot selon la revendication 11 ou 12, comprenant, en outre,
une étape consistant à ajuster une position horizontale et/ou verticale de la tête de rouleau (3) par rapport au support en déplaçant la structure annulaire axialement allongée (3).

14. Procédé d'assemblage d'un module d'extrémité de rouleau à sabot selon l'une quelconque des revendications 11 à 13, comprenant, en outre,
une étape consistant à ajuster une distance de la tête de rouleau (3) par rapport au support (1) en la faisant coulisser sur la structure annulaire axialement allongée (5).

15. Procédé d'assemblage d'un module d'extrémité de rouleau à sabot selon l'une quelconque des revendications 11 à 14, dans lequel
une étape d'ajustement de distance est exécutée, dans laquelle la distance de la tête de rouleau (3) par rapport au support (1) est ajustée en introduisant un fluide dans un intervalle annulaire (53) établi entre une collerette faisant saillie radialement vers l'intérieur (33) de la tête de rouleau (3) et une collerette faisant saillie radialement vers l'extérieur (51) formée sur une extrémité distale de la structure annulaire axialement allongée (5) selon une vue depuis le support (1), et/ou l'étape d'ajustement de distance est accomplie au moyen d'un cylindre de travail, ayant une de ses extrémités attachée à la tête de rouleau (3) et ayant l'autre de ses extrémités attachée au support (1).

FIG. 1

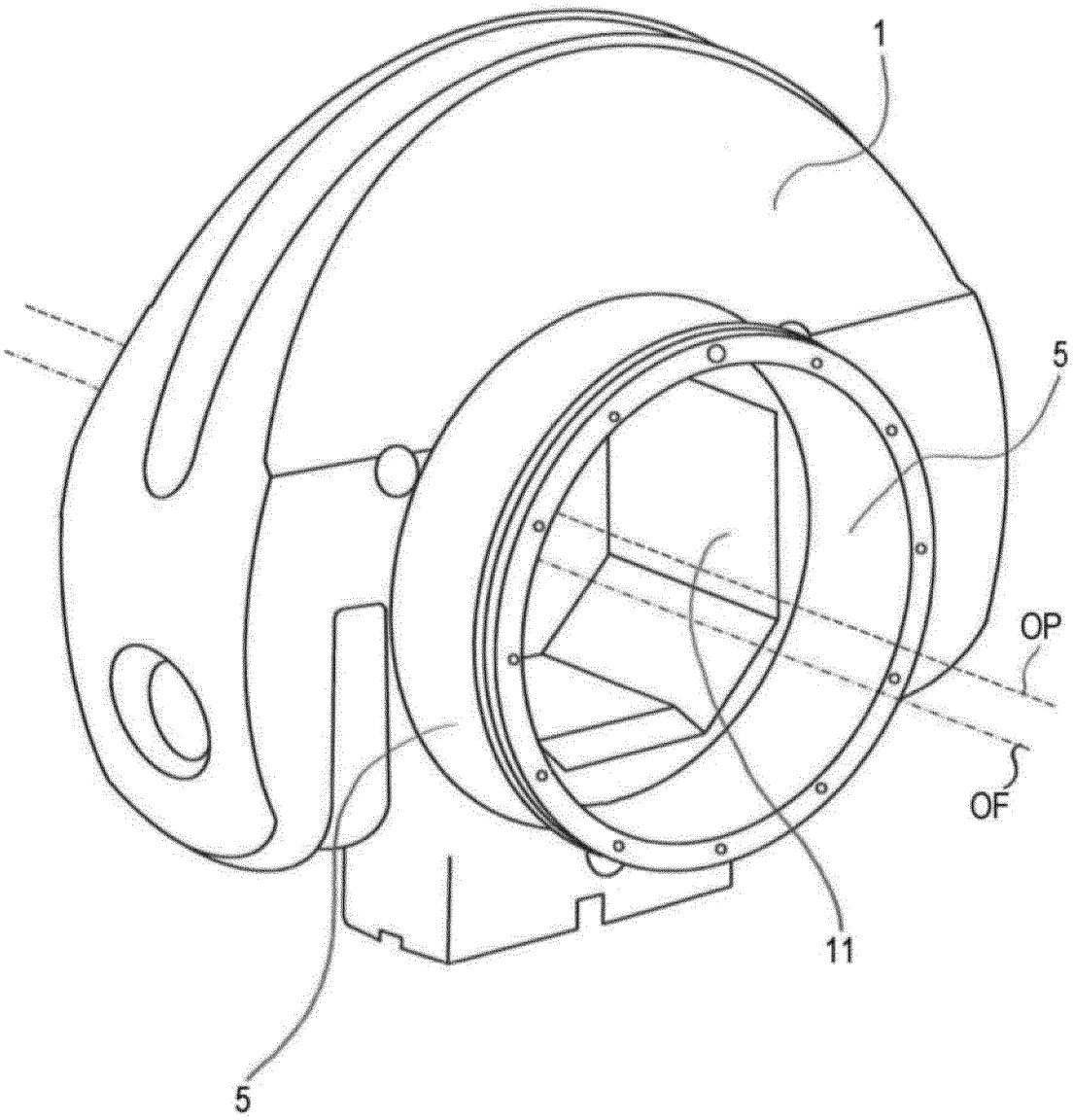


FIG. 2

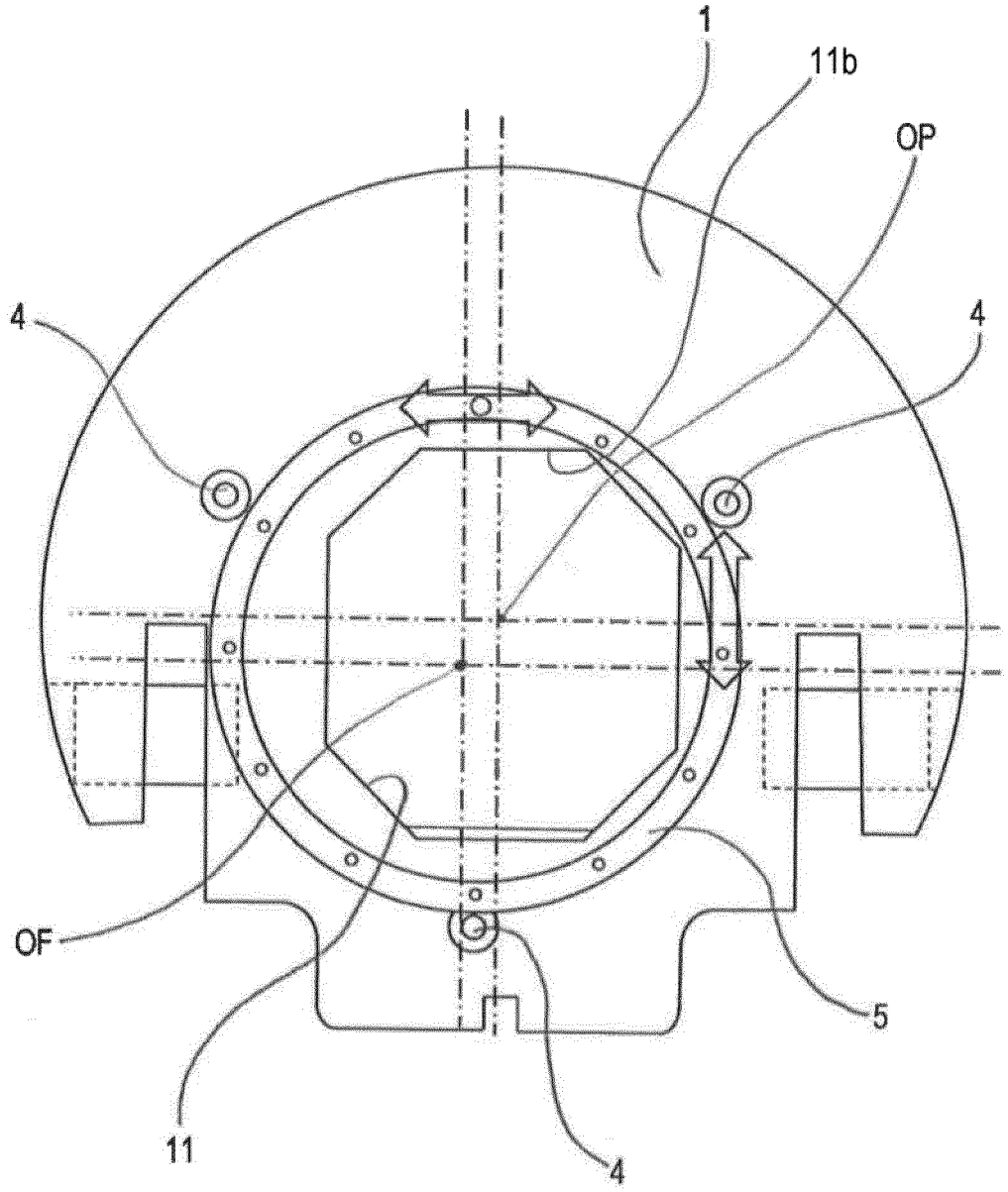
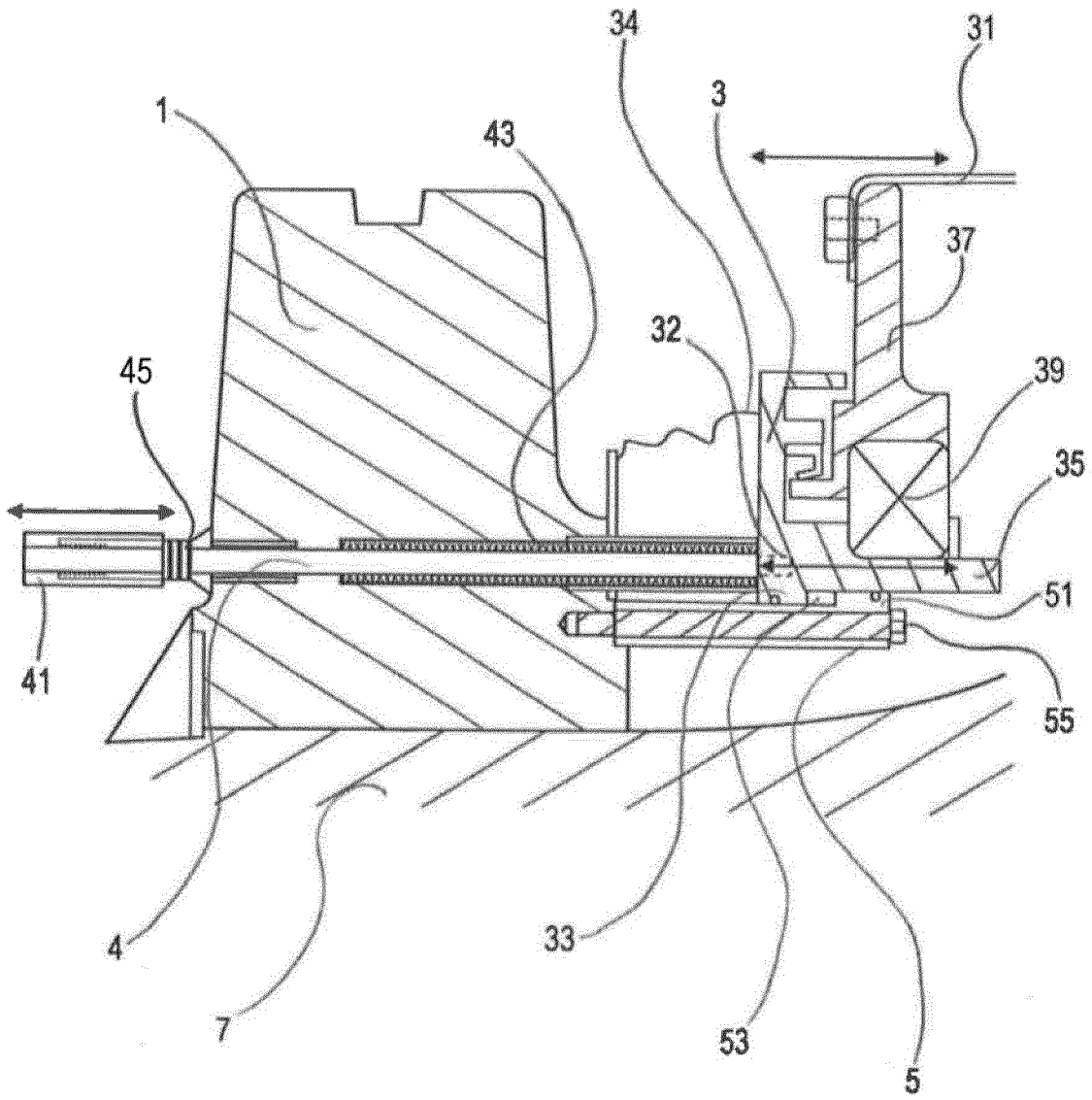


FIG. 3



REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- EP 1619299 B1 **[0002]**
- EP 0619399 A1 **[0006]**