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Separator having direct drive

The invention relates to a separator having the features of the preamble of claim 1 and a method for the assembly thereof.

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Separators of this kind which are also suitable for industrial use and can preferably be used in continuous operation are known per se from the prior art.

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Power transmission from the electric motor to the rotor frequently takes place via a drive belt or by means of a helical gear. Moreover, the systems known in the art also include designs in which the drum, the drive spindle, and the electric drive motor are rigidly connected to a structural unit which is then flexibly supported as a whole on a machine frame. Examples of this kind of prior art are disclosed by the generic GB 368 247, FR 1.287.551, DE 1 057 979 and DE 43 14 440 C1.

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WO 2004/089550 should also be referred to in relation to the prior art, in which the drum, the drive spindle, and the electric drive motor are also rigidly connected to a structural unit which can then be supported as a whole on a machine frame.

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The overall structural design of the known structures described above is relatively complex. In addition, the cooling of the aforementioned drive devices would appear to be in need of improvement. The more modern designs in DE 10 2006 011 895 and DE 10 2006 020 467 A1 and the generic WO 2014/072318 A2 represent a development to this extent.

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In generic designs, the one or more liquid phases are discharged via one or more paring disks which are stationary relative to the drum during operation and are designed as centripetal pumps. The one or more paring disks do not rotate with the drum during operation. They are, however, arranged in paring chambers of the system which rotates during operation. For this reason, the one or more paring disks must be arranged in the paring chamber(s) which rotate(s) during operation in such a manner that a distance of this kind between the parts which rotate during operation and the parts which do not rotate during operation is always retained in such a man-

ner that the members which rotate during operation and the members which do not rotate during operation do not touch one another.

5 The problem addressed by the invention is that of solving the problem of setting the relative axial distance between members of the system which rotates during operation and members of the system which does not rotate during operation of a separator in a simple manner.

10 The invention solves this problem by virtue of the subject matter of claim 1. It further solves this problem by virtue of the method in claim 18.

15 As claimed in claim 1, a separator is created which comprises the following: a pre-assembled drive and rotation system unit having an outer annular flange portion, a drive frame with an inner annular flange, wherein the outer annular flange portion of the preassembled drive and rotation system unit is vertically connected to the inner annular flange of the drive frame, wherein a rotatable drum is placed on the preassembled drive and rotation system unit, and wherein at least one paring disk is arranged in the drum in a paring chamber which is connected as a whole rigidly and axially to the drive frame, and wherein between the inner annular flange and the outer annular flange portion one or more stacks is/are arranged made up of one or more stackable intermediate members in each case for setting an axial relative position at least between the drive frame, on the one hand, and the drive and rotation system unit, on the other, and wherein or by virtue of which the axial relative position between the drum and the at least one paring disk is also adjustable using the intermediate members.

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According to the advantageous development of claim 2, a hood structure which is fastened to the drive frame and surrounds the drum can be placed on said drive frame, wherein the paring disk is fastened to the hood structure so that said paring disk is connected to the drive frame axially and rigidly in this manner.

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According to another advantageous development, it may be provided that the drive frame with the inner annular flange is configured in the manner of an outer housing and assumes the function of a machine frame.

According to one variant, the outer annular flange portion of the preassembled drive and rotation system unit lies on the inner annular flange of the drive frame.

5 According to an alternative variant, the outer annular flange portion of the preassembled drive and rotation system unit may be arranged beneath the inner annular flange of the drive frame. The intermediate members are each arranged between the inner annular flange and the outer annular flange portion.

10 It is particularly advantageous that by virtue of the stackable intermediate members, the vertical distance between the drive frame and also the one paring disk connected axially and rigidly thereto and the drive and rotation system unit and a drum arranged thereupon can also be set or is set in a surprisingly simple manner. In this way, a setting of the relative axial distance between members of the system which rotates during operation and members of the non-rotating system of a separator is easily possible.

15 It is advantageous that before or after the preassembled unit has been mounted on the drive frame, the drum is placed or remains placed on this unit, that at least one paring disk is arranged in a paring chamber in the drum, and that by means of the intermediate members the axial relative position between the drum and the at least one paring disk is also adjustable and can be set to a required dimension. If there are multiple paring disks available, these are rigidly connected to one another so that their axial position relative to the paring chambers can also be jointly set.

25 According to claim 18 a method for assembling a separator as claimed in one or more of the claims related thereto, is realized accordingly which comprises at least the following steps:

- 30 A) provision of a preassembled drive and rotation system unit having an outer annular flange portion and provision of a drive frame having an inner annular flange,
B) vertical placement of the outer annular flange portion of the preassembled drive and rotation system unit on the inner annular flange of the drive frame (11), and

C) distribution of one or more stackable intermediate members between the inner annular flange and the outer annular flange portion for setting the axial relative position between the paring disk and the drive and rotation system unit.

5 According to a preferred variant which makes assembly particularly simply, the pre-assembled drive and rotation system unit advantageously comprises at least the following: a drive spindle which is mounted rotatably with a bearing arrangement which comprises a neck bearing and a base bearing, wherein the neck bearing is mounted in a bearing housing and wherein the bearing housing is placed directly or via at least
10 one intermediate member such as an intermediate ring on a one-part or multipart motor housing, and wherein the bearing housing, the intermediate ring where appropriate, and the motor housing each have a annular flange portion on their outer periphery which together form the annular flange portion of the preassembled drive and rotation system unit. In addition, it may be advantageously provided that the pre-
15 assembled drive and rotation system unit also comprises a drive motor and a lubrication system.

So that the desired axial relative position can be set easily using the intermediate members, it is advantageous according to one variant for threaded bolts to pass
20 through the axial bores in the annular flanges and also, where appropriate, the intermediate members which are firmly screwed into or onto axial bores of the inner annular flange of the drive frame.

Consequently, it is advantageously provided according to a further particularly simple
25 variant in design terms for the axially stackable intermediate members to be configured as rings or annular disks. In this case, the axially stackable annular disks may exhibit the same or a different axial extent. In order to set the distance, two or three annular disks with the same axial extent can be stacked one above the other, for example. If, however, an annular disk with the overall desired axial extent is present in
30 a supplied set of members, for example annular disks, this axially thicker annular disk can also replace the two or three axially thinner annular disks.

In order to further simplify assembly, it is advantageous for the axially stackable annular disks to be configured as rings which have holes, in particular slots, distributed around their circumference, which holes have threaded bolts passing through them.

5 The rings may be configured with a closed circumference or without a closed circumference. It may therefore be advantageously provided that the axially stackable annular disks are configured as rings arranged circumferentially on the flange portions, which have threaded bolts passing through them. Instead of rotating rings, however, ring segments can also be provided as annular disks, so for example three ring segments
10 which then each comprise one or two bores, for example, and each have one or two threaded bolts passing through them, so that in their interaction they act virtually as a closed-circumference ring in any event. An outer contour of the ring segments that corresponds to the inner radius of the drive frame preferably prevents an unwanted relative movement of these ring segments.

15 To this extent, the axially stackable intermediate members may not have a rotating design and multiple stacks made up of intermediate members may be distributed about the circumference between the annular flanges of the drive frame and the pre-assembled drive and rotation system unit.

20 In order to provide a structurally compact and easy-to-handle separator, it is further advantageous for air cooling to be provided as the cooling system (preferably exclusively), which comprises cooling ribs on the outer circumference of the drive frame.

25 The design according to the invention can therefore be advantageously added to in that the preassembled drive and rotation system unit has a closed lubricating system circuit. This is contrary to the layout as a preassembled unit but is not obligatory.

30 According to a further structurally advantageous variant of the invention which further simplifies the setting of the position of the paring disk in the paring chamber of the drum, it is provided that the paring disk has an axially lower disk or annular portion with a conveying member and also a paring disk shaft attached axially thereto with a discharge in the paring disk shaft, and that the paring disk shaft is fixed to a hood structure which is rigidly connected to the drive frame. In this case, it may be further

advantageously provided that the disk portion is arranged in the paring chamber of a drum head of the drum.

5 Finally, it may be advantageously – but not necessarily – provided that the rotating system with the drum and the drive spindle is supported substantially axially in the drive frame via the base bearing. To this extent, however, other variants with a support on the neck bearing can also be advantageously realized.

10 Further advantageous embodiments can be inferred from the remaining dependent claims.

The invention is described in greater detail below with the help of exemplary embodiments with reference to the drawing. In the drawing:

15 Fig. 1 shows a sectional view of a separator according to the invention depicted schematically.

20 Fig. 1 shows a separator 1 which comprises a system that does not rotate or is at a standstill during operation and a system that turns or rotates relative to the stationary system during operation. In this case, the rotating system and the stationary system each have a plurality of members.

25 As the first substantial member, the rotating system of the separator has a drum 2 with a vertical axis of rotation D. This drum 2 is only schematically depicted in this case. It may be differently configured. It is preferably designed for continuous operation for the continuous clarification and/or separation of a flowable product into one or two liquid phases and possibly a solid phase – in particular in the industrial process. For this purpose, its interior is preferably provided with a separating plate stack made up of separating plates (which cannot be identified or are not depicted here). The
30 preferably single or double conical drum 2 is placed on the vertical upper end of a rotatable drive spindle 3 in this case. This drive spindle 3 is mounted rotatably with a bearing arrangement which has a neck bearing 4 and a base bearing 5 in this case. The neck bearing 4 in this case is mounted in a bearing housing 6 – preferably supported in a radially elastic manner. For this purpose, an elastic member 36 such as

an elastic ring may be arranged between the inner circumference of the bearing housing 6 and the outer circumference of the neck bearing 4. This bearing housing use 6 does not rotate and is therefore part of the system which is stationary during operation.

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The bearing housing 6 is placed directly or via at least one intermediate member, such as an intermediate ring 7, on a one-part or multipart motor housing 8. The bearing housing 6, where appropriate the intermediate ring 7 and the motor housing 8, each have an annular flange portion 6a, 7a or 8a on their outer circumference. These annular flange portions 6a, 7a, 8a are each axially stacked above one another. They can be assembled or are assembled with one another using axial screws 9 into a modular-like unit. Together they form an annular flange portion 100a of a drive and rotation system unit 100 that can be preassembled and is also preassembled in this case.

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A drive motor 10 and the base bearing 5 are preferably also configured or arranged in the one-part or multipart motor housing 8. In this way, the rotating system with the bearing housing 6, possibly the intermediate ring 7, and the one-part or multipart motor housing 8 forms the drive and rotation system unit 100 that can be preassembled, and is preassembled, in the manner of a replaceable cassette that can be assembled as a whole. This preassembled drive and rotation system unit 100 is also briefly referred to below as a preassembled unit 100. This preassembled unit 100 may also comprise the drum 2.

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The motor housing 8 is inserted into a drive frame 11. This drive frame 11 is configured in the manner of an outer housing surrounding the motor housing 8. In this case it assumes the function of a machine frame. For this purpose it may be fastened to a base such as a warehouse floor, for example.

30

Cooling ribs 12 may be configured on the outer circumference of the drive frame 11, so that in this way waste heat from the drive system can easily radiate into the surrounding space.

The drive frame 11 has an annular flange 11a on its inner circumference. The preassembled drive and rotation system unit 100 is fastened to this annular flange 11a, so that this unit 100, in this case the annular flange 8a of the motor housing 8, is connected directly or indirectly in a manner yet to be described to the annular flange portion 100a. In this case, the outer annular flange portion 100a of the preassembled drive and rotation system unit 100 may lie, as depicted, on the inner annular flange 11a of the drive frame 11 or, in an alternative embodiment, it may be suspended thereunder.

10 The preassembled unit 100 and its annular flange portion 100a are preferably fastened, in particular tightly screwed, using at least one or more fastening means, in particular one or more threaded bolts 13, to the annular flange 11a of the drive frame 11.

15 For this purpose, the outer annular flange portion 100a of the preassembled unit formed in this case by the annular flange portions 6a, 7a and 8a of the bearing housing 6, where appropriate of the intermediate ring 7, and of the motor housing 8 (flush in each case), contains axial bores 14 which are oriented flush with further axial bores 15 or blind holes – threaded where appropriate – in the annular flange 11a of the drive frame 11.

20 It is possible in this case for one or more stackable intermediate members 16, in particular annular disks 16a, b, ..., possibly each in the manner of an annular disk stack, to be arranged between the annular flange portion 8a and the annular flange 11a of the drive frame 11. Consequently, the preassembled drive and rotation system unit 100 with the bearing housing 6, where appropriate the intermediate ring 7 and the motor housing 8, and also the preferably entire rotating system are used and threaded bolts 13 are distributed which pass through the axial bores 14 of the annular flanges 6a, 7a, 8a and 11 and possibly the intermediate members and which are therefore tightly screwed in the axial bores 15 provided with a thread in the inner annular flange 11a of the drive frame 11.

30 With the help of the axially stackable intermediate members 16, in particular the one or more stackable annular disks 16a, b, c, the relative distance between the drum 2

and the drive frame 11 with the hood can be changed in the axial direction using simple means by selecting the number of intermediate members 16 in such a manner that the desired dimension is set. The annular disks 16a, b, ... may exhibit the same or a different axial extent.

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This is particularly advantageous since at least one paring disk 17 which does not rotate during operation is fixed to a hood construction 23, said paring disk projecting into the drum 2 which rotates during operation. The relative axial position of the drum 2 and paring disk 17 must be exactly set to this extent during assembly of the separator 1. This was very time-consuming according to the prior art and is substantially simplified by the design described above. This is because adjusting this axial relative position simply requires the height of the intermediate member stack made up of intermediate members 16, in particular annular disks 16a, b, ..., to be changed by none, one or more of these intermediate members 16 being arranged between the inner annular flange 11a of the drive frame 11 and the preassembled, in particular cassette-like, drive and rotation system unit 100.

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The paring disk 17 in this case has an axially lower disk or ring portion 18 with a conveying member and also a paring disk shaft 19 attached axially thereto. The conveying member may be configured as an opening formed on the outer circumference of the disk portion 18, which opening opens out into a discharge in the paring disk shaft 19, through which a product phase being discharged can be conducted axially from the drum 2 into a downstream discharge (not depicted in detail here).

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The paring disk shaft 19 surrounds a feed pipe 20 coaxially. Said feed pipe projects freely into the drum. Alternatively, the entrance region of the feed pipe 20 into the drum 2 may also be hermetically sealed. The disk portion 18 is formed in a paring chamber 21 of a drum head 22 of the drum 2 at the upper axial end above the drum 2. The drum head 22 of the drum 2 co-rotates with the drum during operation. It is part of the rotating system.

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Conversely, the paring disk 17 with the disk portion 18 and its paring disk shaft 19 do not rotate during operation. Likewise, the feed pipe 20 does not rotate with the drum 2. There is therefore a relative rotation between the drum head 22, which delimits the

paring chambers 21 outwardly, and the paring disk 17 inserted therein. It must therefore be ensured that the paring disk 17 is arranged axially roughly in the middle of the paring chamber 21, so that it cannot come into contact with the inner wall thereof during rotations of the drum 2.

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This axial orientation may take place according to the invention through the arrangement of one or more intermediate members 16 between the inner annular flange 11a of the drive frame 11 and the annular flange portion 8a of the preassembled drive unit, in particular of the motor housing 8.

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A hood structure 23 is placed on the drive frame. This is fastened to the drive frame 11. The hood structure 23 surrounds the drum 2.

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The paring disk 17 – in this case the paring disk shaft 19 – is fastened to the hood structure 23 and preferably also passes through this. The paring disk 17 is connected to the drive frame 11 as a whole axially and rigidly.

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In order to cool the drive, an air cooling system is used in this case which is realized by the cooling ribs 12. This is advantageous and simple. However, liquid cooling may also be used in addition or as an alternative.

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The supply of lubricant to the bearings 4, 5 may likewise take place in different ways. In this case, the drive spindle 3 has a bore 29 passing through it axially, wherein the drive spindle 3 is immersed in an oil sump 30 at the bottom in the drive frame 11. Oil is conveyed through the bore 29 in the drive spindle 3 to below the neck bearing 4 in a suction tube manner. Here it is conveyed radially through one or more transverse bores 31 and inwardly to the neck bearing 4 through an annular channel 32 in a ring or a sleeve 24, wherein the neck bearing 4 is lubricated and then runs axially downwards in a vertical channel 37. The ring 24 is supported vertically on a graduation of the drive spindle 3. The neck bearing 4 is preferably configured as a roller bearing and is designed as a floating bearing in this case. An inspection glass 38 may be provided for this purpose, in order to allow a visual inspection of the oil level. A drain screw 39 allows the oil to be changed.

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The base bearing 5 is configured as an axial fixed bearing and arranged on the drive spindle 3. In addition, it is inserted via its outer ring in a bearing housing pot 25. The bearing housing pot 25 is inserted in an inner ring of a joint bearing 26, wherein the joint bearing has spherical bearing surfaces. The joint bearing 26 also has an outer ring which is axially fixed in the motor housing 8.

The joint bearing 26 makes the drive spindle 3 universally movable or tiltable, so that the drive spindle 5 with the drum 2 is able to follow the precision movements of the drum 2 during operation.

In this case, the weight of the drum 2 with all the drive parts which are connected to the drive spindle 3 is substantially supported via the lower base bearing 5 in the motor housing 8. Accordingly, a roller bearing which is able to absorb the axial forces that occur in a suitable manner is preferably used in this case. Grooved ball bearings or angular ball bearings are suitable for this purpose, for example. Where necessary, these bearings may also be arranged in pairs when the forces to be absorbed require this.

The joint bearing 26 described is responsible for the universal tiltability and support in this case.

Where small forces are to be absorbed, particularly axial forces, the unit as a whole comprising the joint bearing 26 and base bearing 5 may be replaced by a self-aligning ball bearing or a self-aligning roller bearing.

The base bearing 5 in this case lies upwardly with its inner ring adjacent to a ring 33 which, for its part, is adjacent to a shoulder 34 exhibiting the drive spindle 3. The outer ring of the base bearing 5 is supported downwardly based on the bearing housing pot 25. The outer ring of the joint bearing 26 is downwardly supported by a ring 35 which is fastened to the motor housing 8 on the inside.

This arrangement has a compact design and allows the weight of the drum 2 to be supported easily and reliably on the drive frame 8 via the base bearing 5.

The drive motor 10 is arranged in the axial region between the bearings as the drive mechanism. The drive motor preferably works according to an electrical operating principle and has a rotor 27 and a stator 28. This drive motor 10 lies completely between the neck bearing 4 and the base bearing 5. The electrical drive motor 10 may be an asynchronous motor or a synchronous motor – e.g. a reluctance motor. The rotor 27 is formed directly on the outer circumference of the drive spindle. The stator 28 is fastened to the motor housing 8 on the inside. Since the drive - except for the neck and base bearings 4, 5 - runs in a low-wear manner, a large part of the customary maintenance work can be dispensed with, which lowers operating costs.

List of reference numbers

	1	Separator
	2	Drum
5	3	Drive spindle
	4	Neck bearing
	5	Base bearing
	6	Bearing housing
	6a	Annular flange portion
10	7	Intermediate ring
	7a	Annular flange portion
	8	Motor housing
	8a	Annular flange portion
	9	Axial screw
15	10	Drive motor
	11	Drive frame
	11a	Annular flange
	12	Cooling rib
	13	Threaded bolt
20	14	Axial bore
	15	Axial bore
	16	Intermediate member
	16a, b, ...	Annular disk
	17	Paring disk
25	18	Disk portion
	19	Paring disk shaft
	20	Feed pipe
	21	Paring chamber
	22	Drum head
30	23	Hood structure
	24	Ring
	25	Bearing housing pot
	26	Joint bearing
	27	Rotor

	28	Stator
	29	Bore
	30	Oil sump
	31	Transverse bores
5	32	Annular channel
	33	Ring
	34	Shoulder
	35	Ring
	36	Elastic member
10	37	Vertical channel
	38	Inspection glass
	39	Drain screw
	100	Drive and rotation system unit
15	100a	Annular flange portion
	D	Axis of rotation

Patentkrav

1. Separator (1), som har følgende:
 - 5 a. en formonteret driv- og drejesystemenhed (100) med et ydre ringflangeafsnit (100a),
 - b. et drivstativ (11) med en indre ringflange (11a),
 - c. hvor det ydre ringflangeafsnit (100a) af den formonterede driv- og drejesystemenhed (100) er forbundet vertikalt med drivstativets (11) indre ringflange (11a),
 - 10 d. hvor der på den formonterede driv- og drejesystemenhed (100) er påsat en drejelig tromle (2),
 - e. og hvor der i tromlen (2) er anbragt i det mindste en skrælleskive (17) i et skrællekammer (21), som er forbundet aksialt stift med drivstativet (11), kendetegnet ved,
 - 15 f. at der mellem den indre ringflange (11a) og det ydre ringflangeafsnit (100a) er fordelt en eller flere stabler af hver et eller flere stabelbare mellemelementer (16) til indstilling af en aksial relativ position i det mindste mellem drivstativet (11) på den ene side og driv- og drejesystemenheden (100) på den anden side, og
 - 20 g. der med mellemelementerne (16) også kan indstilles den aksiale relative position mellem tromlen (2) og den i det mindste ene skrælleskive (17).

2. Separator ifølge krav 1, kendetegnet ved, at der på drivstativet er påsat en hættekonstruktion (23), der er fastgjort på drivstativet (11) og omgiver
25 tromlen (2), hvor skrælleskiven (17) er fastgjort på hættekonstruktionen (23), således at skrælleskiven (17) er forbundet aksialt stift med drivstativet (11).

3. Separator ifølge krav 1 eller 2, kendetegnet ved, at drivstativet (11) med den indre ringflange (11a) er udformet svarende til et udvendigt hus og
30 overtager funktionen som et maskinstativ.

4. Separator ifølge et af de foregående krav, kendetegnet ved, at den fortrinsvis enkelt eller dobbelt koniske tromle (2) er påsat på den øverste ende af en drejelig drivspindel (3).
- 5 5. Separator ifølge et af de foregående krav, kendetegnet ved, at den formonterede driv- og drejesystemenhed (100) har følgende: drivspindlen (3), der er drejeligt lejret med et lejearrangement, der har et halsleje (4) og et fodleje (5), hvor halslejet (4) er lejret i et lejehus (6), og hvor lejehuset (6) direkte eller via i det mindste et mellemelement såsom en mellemring (7) er
10 påsat på et udelt eller flerdelt motorhus (8), og hvor lejehuset (6), i givet fald mellemringen (7) og motorhuset (8) hver især på deres ydre omkreds har et ringflangeafsnit (6a, 7a og 8a), som i fællesskab danner den formonterbare driv- og drejesystemenheds (100) ringflangeafsnit (100a).
- 15 6. Separator ifølge et af de foregående krav, kendetegnet ved, at den formonterede driv- og drejesystemenhed (100) yderligere har følgende: en drivmotor (10) og et smøresystem.
- 20 7. Separator ifølge et af de foregående krav, kendetegnet ved, at skrælleskiven (17) har en aksialt nedre skive eller skiveafsnit (18) med et transportorgan samt et skrælleskiveskaft (19), der slutter sig aksialt dertil, med en afledning i skrælleskiveskaftet (19), og at skrælleskiveskaftet er fastlagt på hættekonstruktionen (23), som er forbundet stift med drivstativet.
- 25 8. Separator ifølge krav 7, kendetegnet ved, at skiveafsnittet (18) er anbragt i et skrællekammer (21) i et tromlehoved (22) af tromlen (2).
- 30 9. Separator ifølge et af de foregående krav, kendetegnet ved, at skruebolte (13) gennemtrænger aksiale borer (14) i den formonterede driv- og drejesystemenheds (100) ringflangeafsnit (100a) samt i givet fald de mellemelementer (16), der er fastskruet i eller på aksiale borer (15) i drivstativets (11) indre ringflange (11a).

10. Separator ifølge et af de foregående krav, kendetegnet ved, at de aksialt stabelbare mellemelementer (16) er udformet som ringskiver (16a, b, ...), eller at de aksialt stabelbare mellemelementer er udformet som ringsegmenter.
- 5
11. Separator ifølge et af de foregående krav, kendetegnet ved, at de aksialt stabelbare mellemelementer (16) har en ens eller en forskellig aksial udstrækning.
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12. Separator ifølge et af de foregående krav 10 eller 11, kendetegnet ved, at de aksialt stabelbare mellemelementer (16) er udformet som ringskiver eller ringsegmenter, som har et eller flere huller, især langhuller, der er gennemtrængt af skrueboltene (13).
- 15
13. Separator ifølge et af de foregående krav, kendetegnet ved, at der fordelt på omkredsen er fordelt flere stabler af mellemelementerne (16) mellem ringflangerne i drivstativet (11) og dem i den formonterede driv- og drejesystemenhed (100).
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14. Separator ifølge et af de foregående krav, kendetegnet ved, at der som kølesystem er indrettet en luftkøling, som omfatter køleribber (12) på drivstativets (11) ydre omkreds.
- 25
15. Separator ifølge et af de foregående krav, kendetegnet ved, at der i tromlen (2) er anbragt en skillepladestabel af skilleplader.
- 30
16. Separator ifølge et af de foregående krav, kendetegnet ved, at den formonterede driv- og drejesystemenhed (100) har et lukket smøresystemkredsløb.
17. Separator ifølge et af de foregående krav, kendetegnet ved, at det roterende system med tromlen og drivspindlen (3) i det væsentlige er understøttet i motorhuset (8) aksialt via fodlejet (5).

18. Fremgangsmåde til montage af en separator (1) ifølge et eller flere af de foregående krav, med følgende trin:

- 5 A) tilvejebringelse af en formonteret driv- og drejesystemenhed (100) med et ydre ringflangeafsnit (100a) og tilvejebringelse af et drivstativ (11) med en indre ringflange (11a),
- B) vertikal anlægning af den formonterede driv- og drejesystemenheds (100) ydre ringflangeafsnit (100a) mod drivstativets (11) indre ringflange (11a) og
- 10 C) fordeling af et eller flere stabelbare mellemelementer (16) mellem den indre ringflange (11a) og det ydre ringflangeafsnit (100a) med henblik på indstilling af den aksiale relative position mellem skrælleskiven (17) og driv- og drejesystemenheden (100).

Fig. 1

