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(54) **Open-end rotor spinning device.**

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Description

The invention relates to an open-end rotor spinning device comprising a one-sidedly open spinning rotor, a positively driven guide body in the form of a ring, tube, or the like, which enters by its rear end coaxially the spinning rotor and whose inner wall serves for depositing supplied fibres, for supportingly guiding and finally delivering them to the spinning rotor, further an immovable covering body which is associated with the front end of the guide body and through which a guide tube or duct extends for supplying fibres to the inner wall of said guide body, and a take-off duct or tube which extends through the axis of the spinning rotor or that of the covering body and which serves for withdrawing yarn out of the spinning rotor, there being provided between the spinning rotor and the guide body an annular spacing through which the communicating spaces of the spinning rotor and the guide body are connected to a first sucking unit.

In a known device of the above-described kind an properties disclosed in DE-A 2,126,841 separated fibres are supplied to the inner wall of the guide body by means of air flowing through the guide duct into the communicating spaces of the spinning rotor and the guide body and therefrom out through the annular spacing between the spinning rotor and the guide body. Since the guide body rotates, the fibres advance, due to the action centrifugal forces, on the inner wall of said body toward the spinning rotor which rotates in the same or the opposite direction as the guide body. Finally, the fibres get on to the wall of the spinning rotor and are entrained into its interior where they are deposited, taken on the end of yarn being built, and withdrawn therefrom in yarn form. As being entrained into the spinning rotor, the fibres are temporarily supported by the inner wall of the guide body so that they are straightened whereby the quality of final yarn product is positively influenced.

A disadvantage of the above device resides in that it does not allow a wide assortment of yarns from cotton fibres and synthetic cotton-type fibres to be manufactured; actually, there are concerned only the so called carded yarn sorts 14.5 to 100, or 166 tex count for the manufacture of which relatively short and coarse fibres are used. Admittedly, if using finer fibres it is possible to approach even the count range of the so called combed yarn sorts but the final product does not reach the desired quality. It is why such combed yarns of from 5 to 14.5 tex are manufactured exclusively in ring spinning frames from relatively long and fine fibres. Such a process, however, has to be preceded by relatively complicated and expensive preparatory steps; the carding step is usually followed by quadruple draft on three drawing frames and by doubling on a silver doubler, or, alternative, a shortened method of double draft is availed of, and particularly on one drawing frame, followed by silver doubling. The thus arising lap is then supplied to a combing machine whereupon it is subjected to double to triple drafting step - Waste ejected from the combing machine - the so called noils - are ordinarily used for manufacturing vigogne yarns.

It is an object of the present invention to take such measures with the device of the above-described type and properties that make it possible, on the one hand, to manufacture first-grade yarns of combed character from fibres suitable for spinning combed yarns without preceding combing step followed by drafting, or, on the other hand, yarns of combed character at least within the count range of combed yarns, including also coarser combed yarns, from fine fibres suitable for spinning carded yarns.

To meet this object, there is provided at the side of front end of the guide body an air discharge hole through which the communicating spaces of the spinning rotor and the guide body are connected either to a second sucking unit, there being arranged at least in front of the first sucking unit an air regulating member or at least the first sucking unit having a selectable sucking output, or also to said first sucking unit but in parallel to the annular spacing between the spinning rotor and the guide body, the air regulating members being associated with said annular spacing and the air discharge hole. These measures, namely, enable the air flow values or rates in the device to be adjusted in such a way that almost all the air volume serving for supplying the fibres, leaves the inner spaces of the spinning rotor and the guide body through the air discharge hole at the side of front end of the guide body, while only a small air portion escapes through the annular spacing between the spinning rotor and the guide body. By means of air escaping from said communicating inner spaces of the spinning rotor and the guide body through the annular space between said two elements, short fibres of selectable length are then ejected outside the spinning rotor while the remaining, longer fibres are spun in the spinning rotor to yarn of the desired kind and quality, viz. yarn of combed character. The process of withdrawing short fibres of exactly predetermined length and of leaving longer fibres of desired length in the spinning process can be effected by adjusting the revolution rates of the spinning rotor and the guide body in a ratio. It is to be noted that the ejected short fibres do not practically mean any production loss, since they can be used for further processing as, for instance, to yarns of another sort.

It, however, is also possible to adjust the aforementioned ratio between the revolution rates of the spinning rotor and the guide body as well as the air flow rate in the annular spacing between said two elements in such a manner that any portion of fibres supplied to the spinning rotor is not withdrawn or ejected. This means that the device can operate as the conventional open-end spinning machine and that it is capable of producing a wider yarn assortment. Apart from this, the fact that almost all air volume leaves the communicating spaces of the spinning rotor and the guide body at the side of front end of the guide body, is also advantageous in that the air flows from the guide duct to the air discharge hole on a short path so that it cannot influence in any way the advance of fibres toward the spinning rotor and the process of fibre depositing in its interior.

Actually, the air discharge hole can be made as a through hole which is provided in the covering body and whose inlet portion at the inner side of said covering body has the form of at least a part of annular cavity and extends in peripheral direction along the inner marginal portion of said guide body, or as an annular gap between the guide body and the covering body. If the air discharge hole is through hole as hereinabove set forth, a labyrinth packing should preferably be provided between the front end of the guide body and the covering body, the packing serving for perfectly separating the inlet portion of said through hole from the ambient atmosphere so that no air losses occur.

For every case, however, it is advisable according to the invention, when a filtering element for retaining and collecting fibres is associated with the annular spacing between the spinning rotor and the guide body.

Some preferred embodiments of the open-end rotor spinning device according to the present invention will hereinafter be described with reference to the accompanying schematic drawings in which

Fig. 1 is a general sectional view of one spinning unit or station equipped with an air sucking system;

Fig. 2 is a top view showing the inner side of the covering body shown in Figure 1;

Fig. 3 is a detail view of the spinning station together with an alternative embodiment of the air discharge hole, all in section;

Fig. 4 is an alternative embodiment of air sucking system;

Fig. 5 is a detailed sectional view showing the region of annular spacing between the spinning rotor and the guide body as well as trajectories of short fibres;

Fig. 6 is a view in the direction of arrow P in Figure 5 but turned through an angle of 90°; and

Fig. 7 is a view corresponding to that shown in Figure 5 but indicating trajectories of long,i.e. spinnable fibres.

The spinning station or unit forming one consituent of the device according to the invention can be - except for some modifications due to the new system of sucking air off the communicating spaces of the spinning rotor and the guide body - of a usual construction. In the same way it is possible to assemble a conventional open-end rotor spinning machine from a plurality of such units and an air sucking system therefor, the system comprising either a first and a second air sucking system, or the first sucking system only.

As can be seen in the drawings, and particularly Figure 1 thereof, the spinning rotor 2 of the spinning unit 1 is fixed onto a driven shaft 3 which is mounted for rotation in a bearing bush 4 received for reciprocation in a bushing portion 5 of a rotor box 6 and secured therein by a fastening bolt 7.

The spinning rotor 2 has the form of a shallow dish with a flat circular bottom 8, a rounded mouth 9 of a smaller diameter than said bottom 8, and an inner wall 10 outstanding from the bottom 8 and conically tapering toward the mouth 9. The bottom 8 and the wall 10 form together a fibre collecting channel.

The rotor box 6 surrounding, at a radial distance, the spinning rotor 2 is provided at its front, also open side with a recess 11 coaxial to the spinning rotor 2, in which a rotary, positively driven guide body 13 is received and mounted by means of an antifriction radial bearing 12. The guide body 13 has the form of an annulus and is provided, at its rear end 14 facing the spinning rotor 2, with a frontal circular recess 15 by which said rear end 14 is radially divided into an inner and an outer portion 16 and 17, respectively; the inner portion 16 is disposed in the mouth 9 of the spinning rotor 2 while the outer portion 17 outside said mouth. Since, however, the spinning rotor 2 is somewhat spaced apart from the guide body 13 in axial direction, there arises between the mouth 9 of the spinning rotor 2 and said portions 16, 17 of the rear end 14 of the guide body 13, including the transition between said portions, an annular spacing 18 which connects the communicating spaces of the spinning rotor 2 and the guide body 13 together with an inner air space 19 of the rotor box 6. This inner air space 19 is confined, at the side of the rotor box 6, by its rear wall 20, an annular projection 21 provided in a radial plane with said outer portion 17 of the rear end 14 of the guide body 13 as a sealing partition, and by an inner peripheral wall 22 between said rear wall 20 and said annular

projection 21, and communicates via hole 23 with a first sucking pipeline 24.

The inner wall 25 of the guide body 13 has the form of the lateral area of a cone, its minimum diameter being at the side of front end 26 of the guide body 13.

The rotor box 6 is covered by a removable but otherwise immovable covering body 27 the inner wall 28 of which is spaced apart at a very small distance from the front end 26 of the guide body 13.

As it is shown in Figure 1, the device is provided with an air discharge hole constituted by a through hole 29 leading in radial direction to an extended axis X of revolution of the guide body 13 through the body 27, and connected to a second sucking pipeline 30. The inlet portion 31 of said pipeline 30 has the form of an annular cavity and extends in peripheral direction along an inner marginal portion 32 of the guide body 13 as it is apparent from Figure 2. In some cases, however, the through hole 29 can be provided in a tubular member inserted into the covering body 27. Such an embodiment is not shown in the drawings.

Another embodiment of the air discharge hole is shown in Figure 3. It consists of an annular gap 33 between the inner marginal portion 32 of the guide body 13 and a peripheral surface 34 of the conical projection 35 provided on the inner wall 28 of said covering body 27, the projection being disposed in the front end 26 of the guide body 13. Also in this embodiment there is provided in the covering body 27 the same through hole 29 as shown in Figure 1. The inlet portion 31 of said hole 29, however, has the form of a complete annular cavity and is an immediate proximity of said conical projection 35.

Owing to the provision of through holes 29 in both of the afore-described embodiments there is installed between the front end 26 of the guide body 13 and the covering body 27 a labyrinth packing 36 consisting, as shown in Figure 1, of an annular projection 37 provided on the inner wall 28 of the covering body 27 and of a corresponding recess 38 on the facing front surface of the front end 26 of the guide body 13. It, however, is to be understood that the packing elements can be arranged in a reversed, or any other alternative embodiment, provided they exhibit a desired, air penetration preventing effect.

As can be seen in Figure 1, a guide tube 40 for supplying fibres 39 to the inner wall 25 of the guide body 13 extends through the covering body 27; alternatively, if the conical projection 35 is provided on the inner wall 28 of said body 27 - as hereinabove set forth - the guide tube 40 can be replaced by a guide duct 41 (Fig. 3). In every case, however, also a take-off tube 42 extends through the covering body 27, through which yarn 43 is withdrawn out of the spinning rotor 2.

The air sucking system as shown in Figure 1 is a central system for a plurality of spinning stations 1; it comprises a first main conduit 44 which is connected to a first sucking unit 45 with an upstream filtering element 46 and into which enters the first sucking pipeline 24 leading from the individual spinning stations 1. A second main conduit 47 is connected to a second sucking unit 48 into which the second sucking pipeline 30 opens; the latter leads also from the individual spinning stations 1. The two sucking units 45, 48 and the filtering element 46 can be of any structure which is usual for textile machines with air sucking regimes. In front of the two sucking units 45, 48 there are arranged air regulating members 49, 50, respectively, e.g. in the form of a valve which, however, can be omitted if installing sucking units 45, 48 with selectable sucking output.

Figure 4 shows also an alternative central air sucking system comprising the first main conduit 44 and the second main conduit 47 which are connected together at their homothetic ends to form a central duct 51 which is then connected to the first sucking unit 45 with upstream filtering element 46. Also the first sucking pipeline 24 enters the first main conduit 44, and the second sucking pipeline 30 the second main conduit 47. The air regulating members 49 and 50 are associated with the annular spacing 18 between the spinning rotor 2 and the guide body 13, and with the through hole 29 in the covering body 27, and are disposed at the ends of said first main conduit 44 and the second main conduit 47, respectively. In this case, the filtering element 46 can alternatively be installed in the first main conduit 44 in front of the respective air regulating member 50 as indicated in Fig.4 by dash contours.

Irrespective of the embodiment of the air discharge hole as shown in Figures 1, or 2, and of the air sucking system according to Figures 1, or 4, the process of manufacturing yarns of combed character in the device of the invention takes place as follows:

Depending on the adjustment of operation parameters, including the size of annular spacing 18 between the spinning rotor 2 and the guide body 13, the two latter elements rotate in the same direction; however, the guide body 13 rotates slower than the spinning rotor but, on the other hand, faster than is the velocity of air supplying fibres 39 to the inner wall 25 of said body 13. Simultaneously, almost all of the volume of fibre carrying air which enters the communicating inner spaces of the spinning rotor 2 and the guide body 13 leaves said spaces at the side of front end 26 of said body 13 whereas only a small, remaining air

portion escapes through the annular spacing 18 between the spinning rotor and the guide body.

Fibres 39 are supplied, under assistance of air flow, from a fibre opening device (not shown) in which they are separated from a fibrous sliver, and particularly a carded, or drafted sliver. After engaging the inner wall 25 of the guide body 13, the fibres 39 are caused, by the action of centrifugal forces, to advance on this inner wall 25 toward the spinning rotor. Before, however, reaching the wall 10 of the spinning rotor 2, they have first to overcome the annular spacing 18 between the spinning rotor 2 and the guide body 13. So the fibres 39 are exposed to the action of air flow escaping through said annular spacing 18 whereby the fibres 39 leaving the inner wall 25 of the guide body 13, change abruptly their course to a peripheral one as indicated, for better understanding, in Figures 5 and 7 by angles A and B. Thus their trajectory S between the inner wall 25 if the guide body 13 and the wall 10 of the spinning rotor 2 has a section U (Fig. 6) in which fibres the length of which is smaller than that of said section, may get airborne, which means that no one of their portions comes into contact either with the inner wall 25 of the guide body 13, or with the wall 10 of the spinning rotor 2.

Such fibres 39 (hereinafter referred to as "short fibres 52") are then easily entrained by air escaping through the annular spacing 18 between the spinning rotor 2 and the guide body 13 and withdrawn outside the spinning rotor 2 whereas the remaining longer fibres 53 follow undisturbed their way to said spinning rotor 2. Accordingly, it is made possible, within every predetermined ratio between revolutions rates of the spinning rotor 2 and the guide body 13, to withdraw or eject short fibres 52 of a quite definite length and to leave the longer fibres 53 in the spinning process to be processed to yarn of a desired kind and quality. It is to be noted that the process of entraining and withdrawing short fibres 52 does not lay extreme claims on power; it, however, has been ascertained that it is sufficient when the speed of air flow escaping through the annular spacing 18 between the spinning rotor 2 and the guide body 13 does not exceed 30 metres per second. On the contrary, higher speed lead not only to power losses but also, especially, to the ejection of short fibres 52 having a greater length than it is desired. Actual values of these air velocities are usually adjusted empirically by means of air sucking regulation.

Apart from the above described manner, the exact length of fibres 52 to be ejected can also be controlled by adjusting the size of annular spacing 18 between the spinning rotor 2 and the guide body 13. After loosening the bolt 7 securing the bearing bush 4 for the shaft 3 of the spinning rotor 2, both the rotor and the bush can be axially displaced into desired positions wherein the bearing bush 4 can be fastened again by said bolt 7. It, however, has been found out that the size of said annular spacing 18 can be, in many cases, adjusted once for ever.

In order that the process of withdrawing short fibres 52 be better understood, Figure 5 shows successive positions of one and the same short fibre 52. As can be seen, a short fibre 52 takes on its trajectory S a first position P1 on the inner wall 25 of said guide body 13, then a second position P2 in the section U between the inner wall 25 of the guide body 13 and the wall 10 of the spinning rotor 2, a third position P3 in the annular spacing 18 between the spinning rotor 2 and the guide body 13, and a fourth position P4 in the inner air space 19 of the rotor box 6. The corresponding positions P1, P2 and P3 of the short fibre 52 are shown in Figure 6.

Longer fibres 53 (Fig. 7) are not withdrawn, since, as ascertained, they are always on their trajectory S in contact with the inner wall 25 of the guide body 13, or with both said inner wall 25 and the wall 10 of the spinning rotor 2, or with said positions of one and the same longer fibres 53 are indicated in Figure 7 by symbols P11, P12 and P13.

Thus from fibres 39 supplied to the spinning rotor 2 there are separated and ejected short fibres 52 of length corresponding to the predetermined revolution rates of the spinning rotor 2 and th guide body 13 as well as to the flow welocity of air escaping through the annular spacing 18 between the spinning rotor 2 and the guide body 13 whereas the longer fibres 53 are subsequently straightened and conveyed, as being exposed to centrifugal forces and to the supporting action of the wall 10 of the spinning rotor 2, to the collecting channel formed by the bottom 8 and the wall 10 of the spinning rotor 2, wherein they are deposited and wherefrom they are continuously taken on to the open end of yarn 43 and withdrawn.

If a sliver is to be processed, having a staple fibre diagram insuitable for the orthodox combing step, which means, most frequently, that it contains a relatively great portion of short fibres 52, such raw material can be very effectively classified in the annular space 18 by separating short fibres 52 from it while the remaining, longer fibres 53 are processed to fine yarn 43. Such a material, however, does not contain such a portion of sufficiently fine fibres 39 enabling a very fine yarn 43 to be spun from the remaining longer fibres 53. In spite of this fact, it is possible to manufacture therefrom some yarn types still within the count range of fine combed yarns, i.e. up to 10 tex.

If, on the contrary, a sliver of fibres suitable for the ortho dox combing process is used, the annular spacing 18 between the spinning rotor 2 and the guide body 13 can be adjusted to cause short fibres 52 of e.g. 20 mm length to be ejected while the remaining, longer fibres 53 are then processed to a fine combed yarn 43

Both of the above described variants are very economical, since they substantially shorten the spinning process and enable also some low-grade fibrous materials to be used for the manufacture of fine yarns 43.

The ejected short fibres 52 accumulated in the filtering element can be then processed to another type of yarns, or fabrics. Since a very pure "waste" is concerned, the short fibres 52 can be returned to the carding machine, and after drafting them on a drawing frame, it is possible to process them to carded yarn sorts, and particularly in the conventional open-end rotor spinning machine, or in the device of the invention.

Claims

1. An open-end rotor spinning device (1) comprising a one-sidedly open spinning rotor (2), a positively driven guide body (13) in the form of a ring, tube, or the like, which enters by its rear end coaxially the spinning rotor (2) and whose inner wall serves for depositing supplied fibres (39), for supportingly guiding and finally delivering them to the spinning rotor (2), further an immovable covering body (27) which is associated with the front end of the guide body (13) and through which a guide duct (40) or tube extends for supplying fibres (39) to the inner wall of said guide body (13), and a take-off duct or tube (42) which extends through the axis of the spinning rotor (2) or of the covering body (27) and which serves for withdrawing yarn out of the spinning rotor (2), there being provided between the spinning rotor (2) and the guide body (13) an annular spacing (18) through which the communicating spaces of the spinning rotor (2) and the guide body (13) are connected to a first sucking unit (45), the device being characterized in that at the side of front end (26) of the guide body (13) an air discharge hole (29) is provided, through which the communicating spaces of the spinning rotor (2) and the guide body (13) are connected either to a second sucking unit (48) or also to said first sucking unit (45) but in parallel to the annular spacing (18) between the spinning rotor (2) and the guide body (13), there being arranged at least in front of the first sucking unit (45) a first air regulating member (49) or at least the first sucking unit (45) having a selectable sucking output and in front of the second sucking unit (48) a second regulating member (50), the air regulating members (49, 50) being associated with said annular spacing (18) and the air discharge hole (29).

2. An open-end rotor spinning device according to claim 1, wherein the air discharge hole is a through hole (29) which is provided in the covering body (27) and whose inlet portion (31) at the inner side of said covering body (27) has the form of at least a part of annular cavity and extends in peripheral direction along an inner marginal portion (32) of said guide body (13).

3. An open-end rotor spinning device according to claim 1 wherein the air discharge hole is a through hole (29) which is provided in the covering body (27) and whose inlet portion (31) at the inner side of said covering body (27) has the form of an annular gab (33) between the guide body (13) and the covering body (27).

4. An open-end rotor spinning device according to claim 2 or claim 3, wherein with the annular spacing (18) between the spinning rotor (2) and the guide body (13) a filtering element (46) is associated for retaining and collecting fibres.

5. An open-end rotor spinning device according to claim 2, wherein between the front end (26) of the guide body (13) and the covering body (27) a labyrinth packing (36) is provided.

6. Method of supplying fibres under assistence of air flow from a fibres opening device in which they are separated from a fibres sliver into a spinning rotor (2) of an open-end rotor spinning device having a positively driven one-sidedly open spinning rotor (2) and guide body (13) in the form of a ring, tube or the like axially aligned therewith and forming a small annular spacing (28) together with the spinning rotor (2), the diameter of the communicating inner space of the spinning rotor (2) and the guide body (13) decreasing from the fibre collecting groove of the spinning rotor (2) to front end (26) of the guide body (13), the method consisting in supplying fibres first on the interior wall (25) of the guide body (13) from where the fibres are caused, by the action of centrifugal force to advance on this inner wall (25) toward the spinning rotor (2) where a yarn is formed and withdrawn through a take-off duct characterized in that almost all of the air volume serving for supplying the fibres (39) is

withdrawn from the communicating inner space of the spinning rotor (2) and the guide body (13) through an air discharge hole (29) at the side of the front end (26) of the guide body (13), while only a small air portion flows through the annular spacing between the spinning rotor (2) and the guide body (13), and that a positive difference of revolution rates of the spinning rotor (2) and the guide body (13) is maintained.

7. Method according to claim 6 characterized in that short fibres of exactly predetermined lengths are withdrawn through the annular gap (18) by adjusting the ratio of the revolution rates of the spinning rotor (2) and the guide body (13).

8. Method according to claim 6 characterized in that any portion of fibres (39) supplied to the spinning rotor (2) is not withdrawn or rejected through the annular gap (18) by adjusting the ratio between the revolution rates of the spinning rotor (2) and the guide body (13).

9. Method according to one of claims 6 to 8 characterized in that almost all of the air volume serving for supplying the fibres is withdrawn from the communicating inner space of the spinning rotor (2) and the guide body (13) through said discharge hole (29) at a place being diametrically opposite to the place where the fibres (39) are supplied through a guide tube (40).

Patentansprüche

1. Eine Offenend-Rotorspinnvorrichtung (1) mit einem einseitig offenen Spinnrotor (2), einem positiv angetriebenen Führungskörper (13) in der Form eines Rings, einer Röhre oder dergleichen, welcher an seinem hinteren Ende koaxial in den Spinnrotor (2) eintritt und dessen innere Wand dazu dient, zugeführte Fasern (39) abzulagern, um sie stützend zu führen und schließlich zum Spinnrotor (2) zu liefern, ferner einem unbewegbaren Abdeckkörper (27), der dem vorderen Ende des Führungskörpers (13) zugeordnet ist und durch welchen sich eine Führungsleitung (40) oder -röhre erstreckt, die Fasern (39) der inneren Wand des Führungskörpers (13) zuführt, und einer Abnahmeleitung oder -röhre (42), die sich durch die Achse des Spinnrotors (2) oder des Abdeckkörpers (27) erstreckt und welche dazu dient, Garn aus dem Spinnrotor (2) zu entnehmen, wobei zwischen dem Spinnrotor (2) und dem Führungskörper (13) ein ringförmiger Zwischenraum (18) vorgesehen ist, durch welchen die kommunizierenden Räume des Spinnrotors (2) und des Führungskörpers (13) mit einer ersten Saugeinheit (45) verbunden sind, wobei die Vorrichtung
dadurch **gekennzeichnet** ist,
daß an der Seite eines vorderen Endes (26) des Führungskörpers (13) ein Luftablaßloch (29) vorgesehen ist, durch welches die kommunizierenden Räume des Spinnrotors (2) und des Führungskörpers (13) verbunden sind mit entweder einer zweiten Saugeinheit (48) oder auch mit der ersten Saugeinheit (45), jedoch parallel zum ringförmigen Zwischenraum (18) zwischen dem Spinnrotor (2) und dem Führungskörper (13), wobei wenigstens vor der ersten Saugeinheit (45) ein erstes Luftregelbauteil (49) angeordnet ist, oder wenigstens die erste Saugeinheit (45) einen selektierbaren Saugausgang aufweist, und vor der zweiten Saugeinheit (48) ein zweites Regelbauteil (50) angeordnet ist und die Luftregelbauteile (49, 50) dem ringförmigen Zwischenraum (18) und dem Luftablaßloch (29) zugeordnet sind.

2. Eine Offenend-Rotorspinnvorrichtung nach Anspruch 1,
worin das Luftablaßloch ein Durchgangsloch (29) ist, das im Abdeckkörper (27) vorgesehen ist und dessen Einlaßabschnitt (31) an der inneren Seite des Abdeckkörpers (27) die Form wenigstens eines Teils eines ringförmigen Hohlraums aufweist und sich in Umfangsrichtung entlang eines inneren Randabschnitts (32) des Führungskörpers (13) erstreckt.

3. Eine Offenend-Rotorspinnvorrichtung nach Anspruch 1,
worin das Luftablaßloch ein Durchgangsloch (29) ist, das im Abdeckkörper (27) vorgesehen ist und dessen Einlaßabschnitt (31) an der inneren Seite des Abdeckkörpers (27) die Form eines ringförmigen Spalts (33) zwischen dem Führungskörper (13) und dem Abdeckkörper (27) besitzt.

4. Eine Offenend-Rotorspinnvorrichtung nach Anspruch 2 oder Anspruch 3,
worin dem ringförmigen Zwischenraum (18) zwischen dem Spinnrotor (2) und dem Führungskörper (13) ein Filterelement (46) zugeordnet ist, das Fasern festhält und sammelt.

5. Eine Offenend-Rotorspinnvorrichtung nach Anspruch 2,
worin zwischen dem vorderen Ende (26) des Führungskörpers (13) und dem Abdeckkörper (27) eine Labyrinthdichtung (36) vorgesehen

ist.

6. Verfahren zum Zuführen von Fasern mithilfe einer Luftströmung von einer Faseröffnungsvorrichtung, in welcher sie von einem Faserband getrennt werden, hinein in einen Spinnrotor (2) einer Offenend-Rotorspinnvorrichtung mit einem positiv angetriebenen einseitig offenen Spinnrotor (2) und Führungskörper (13) in der Form eines Rings, einer Röhre oder dergleichen, der axial damit ausgerichtet ist und einen kleinen ringförmigen Zwischenraum (28) zusammen mit dem Spinnrotor (2) bildet, wobei der Durchmesser des kommunizierenden inneren Raumes des Spinnrotors (2) und des Führungskörpers (13) von der Fasersammelnut des Spinnrotors (2) zu einem vorderen Ende (26) des Führungskörpers (13) abnimmt und das Verfahren darin besteht, daß Fasern zuerst auf der Innenwand (25) des Führungskörpers (13) zugeführt werden, von wo aus die Fasern veranlaßt werden, durch die Wirkung einer Zentrifugalkraft auf dieser inneren Wand (25) zum Spinnrotor (2) vorzurücken, wo ein Garn gebildet und durch eine Abnahmeleitung entnommen wird,
dadurch **gekennzeichnet**,
daß nahezu das gesamte Luftvolumen, das dazu dient, die Fasern (39) zuzuführen, vom kommunizierenden inneren Raum des Spinnrotors (2) und des Führungskörpers (13) durch ein Luftablaßloch (29) an der Seite des vorderen Endes (26) des Führungskörpers (13) abgezogen wird, während lediglich ein kleiner Luftanteil durch den ringförmigen Zwischenraum zwischen dem Spinnrotor (2) und dem Führungskörper (13) strömt, und daß eine positive Differenz von Umdrehungsraten des Spinnrotors (2) und des Führungskörpers (13) aufrechterhalten wird.

7. Verfahren nach Anspruch 6,
dadurch **gekennzeichnet**,
daß kurze Fasern exakt vorbestimmter Längen durch den ringförmigen Spalt (18) entnommen werden, indem das Verhältnis der Umdrehungsraten des Spinnrotors (2) und des Führungskörpers (13) eingestellt werden.

8. Verfahren nach Anspruch 6,
dadurch **gekennzeichnet**,
daß irgendein Teil von dem Spinnrotor (2) zugeführten Fasern (39) durch den ringförmigen Spalt (18) nicht entnommen oder verworfen wird, indem das Verhältnis zwischen den Umdrehungsraten des Spinnrotors (2) und des Führungskörpers (13) eingestellt wird.

9. Verfahren nach einem der Ansprüche 6 bis 8,
dadurch **gekennzeichnet**,
daß nahezu das gesamte Luftvolumen, das dazu dient, die Fasern zuzuführen, vom kommunizierenden inneren Raum des Spinnrotors (2) und des Führungskörpers (13) durch das Ablaßloch (29) an einem Ort abgezogen wird, der dem Ort diametral gegenüberliegt, wo die Fasern (39) durch eine Führungsröhre (40) zugeführt werden.

Revendications

1. Dispositif de filature (1) avec rotor à extrémité ouverte, qui comprend un rotor de filature (2) ouvert sur un côté, un corps de guidage (13) entraîné positivement, ayant la forme d'un anneau, d'un tube ou d'un autre élément similaire, qui pénètre coaxialement par son extrémité arrière dans le rotor de filature (2) et dont une paroi intérieure sert à déposer des fibres amenées (39), pour les guider en les soutenant et finalement les amener au rotor de filature (2), ainsi qu'un corps de couverture (27) ne pouvant être déplacé qui est associé à l'extrémité avant du corps de guidage (13) et à travers lequel s'étend un tube ou conduit (40) de guidage destiné à amener les fibres (39) à la paroi intérieure dudit corps de guidage (13), et un tube ou conduit (42) de sortie qui s'étend sur l'axe du rotor de filature (2) ou du corps de couverture (27) et qui sert à faire sortir un filé hors du rotor de filature (2), sachant qu'il y a entre le rotor de filature (2) et le corps de guidage (13) un intervalle annulaire (18) par lequel les espaces communicants du rotor de filature (2) et du corps de guidage (13) sont reliés à un premier groupe d'aspiration (45),
le dispositif étant **caractérisé** en ce qu'un orifice d'évacuation d'air (29) est ménagé sur le côté de l'extrémité avant (26) du corps de guidage (13), orifice par lequel les espaces communicants du rotor de filature (2) et du corps de guidage (13) sont reliés soit à un second groupe d'aspiration (48) soit également au premier groupe d'aspiration (45) mais en parallèle avec l'intervalle annulaire (18) entre le rotor de filature (2) et le corps de guidage (13), sachant qu'est disposé au moins en avant du premier groupe d'aspiration (45) un premier organe (49) de régulation de l'air ou que le premier groupe d'aspiration (45) au moins a une sortie d'aspiration selectionnable et , en avant du second groupe d'aspiration (48), un second organe de régulation (50), les organes (49, 50) de régulation de l'air étant associés audit intervalle annulaire (18) et à l'orifice d'évacuation de l'air (29).

2. Dispositif de filature avec rotor à extrémité ouverte selon la revendication 1, dans lequel l'orifice d'évacuation de l'air est un trou traversant (29) qui est ménagé dans le corps de couverture (27) et dont la partie d'entrée (31) sur le côté intérieur dudit corps de couverture (27) a la forme d'au moins une partie de cavité annulaire et s'étend dans une direction périphérique le long d'une partie marginale intérieure (32) dudit corps de guidage (13).

3. Dispositif de filature avec rotor à extrémité ouverte selon la revendication 1, dans lequel l'orifice d'évacuation de l'air est un trou traversant (29) qui est ménagé dans le corps de couverture (27) et dont la partie d'entrée (31) sur le côté intérieur dudit corps de couverture a la forme d'une encoche annulaire (33) entre le corps de guidage (13) et le corps de couverture (27).

4. Dispositif de filature avec rotor à extrémité ouverte selon la revendication 2 ou 3, dans lequel un élément filtrant (46), destiné à retenir et collecter des fibres, est associé à l'intervalle annulaire (18) entre le rotor de filature (2) et le corps de guidage (13).

5. Dispositif de filature avec rotor à extrémité ouverte selon la revendication 2, dans lequel est placé un corps d'étanchéité en labyrinthe (36) entre l'extrémité avant (26) du corps de guidage (13) et le corps de couverture (27).

6. Procédé pour amener à l'aide d'un courant d'air des fibres d'un dispositif d'ouverture de fibres, dans lequel elles sont séparées d'un ruban de libres, à un rotor de filature (2) d'un dispositif de filature avec rotor à extrémité ouverte qui comprend un positivement entraîné unilatérallement ouvert rotor de filature (2) et corps de guidage (13), ayant la forme d'un anneau, d'un tube ou d'un autre élément similaire, aligné avec lui et formant un petit intervalle annulaire (28) avec le rotor de filature (2), le diamètre de l'espace intérieur communicant du rotor de filature (2) et du corps de guidage (13) diminuant depuis la rainure de collecte des fibres du rotor de filature (2) jusqu'à l'extrémité avant (26) du corps de guidage (13), le procédé comprenant le fait d'amener d'abord des fibres sur la paroi intérieure (25) du corps de guidage (13), de laquelle les fibres sont amenées sous l'effet de la force centrifuge à avancer sur cette paroi intérieure (25) en direction du rotor de filature (2) où un filé est formé et extrait par l'intermédiaire d'un conduit de sortie,

caractérisé en ce que presque tout le volume d'air servant à amener les fibres (39) est extrait de l'espace intérieur communicant du rotor de filature (2) et du corps de guidage (13) par un orifice d'évacuation de l'air (29) sur le côté de l'extrémité avant (26) du corps de guidage (13) tandis que seule une petite partie de l'air s'écoule par l'intervalle annulaire entre le rotor de filature (2) et le corps de guidage (13) et en ce qu'une différence positive de vitesses de rotation est maintenue entre le rotor de filature (2) et le corps de guidage (13).

7. Procédé selon la revendication 6, caractérisé en ce que de courtes fibres de longueurs exactement prédéterminées sont extraites par l'intervalle annulaire (18) grâce à un réglage du rapport des vitesses de rotation du rotor de filature (2) et du corps de guidage (13).

8. Procédé selon la revendication 6, caractérisé en ce qu'aucune partie des fibres (39) amenées au rotor de filature (2) n'est extraite ou rejetée par l'intervalle annulaire (18) grâce à un réglage du rapport des vitesses de rotation du rotor de filature (2) et du corps de guidage (13).

9. Procédé selon l'une quelconque des revendications 6 à 8, caractérisé en ce que presque tout le volume d'air servant à amener les fibres est extrait de l'espace intérieur communicant du rotor de filature (2) et du corps de guidage (13) par l'intermédiaire dudit orifice de décharge (29) en un emplacement diamétralement opposé à l'endroit où les fibres (39) sont amenées par un tube de guidage (40).

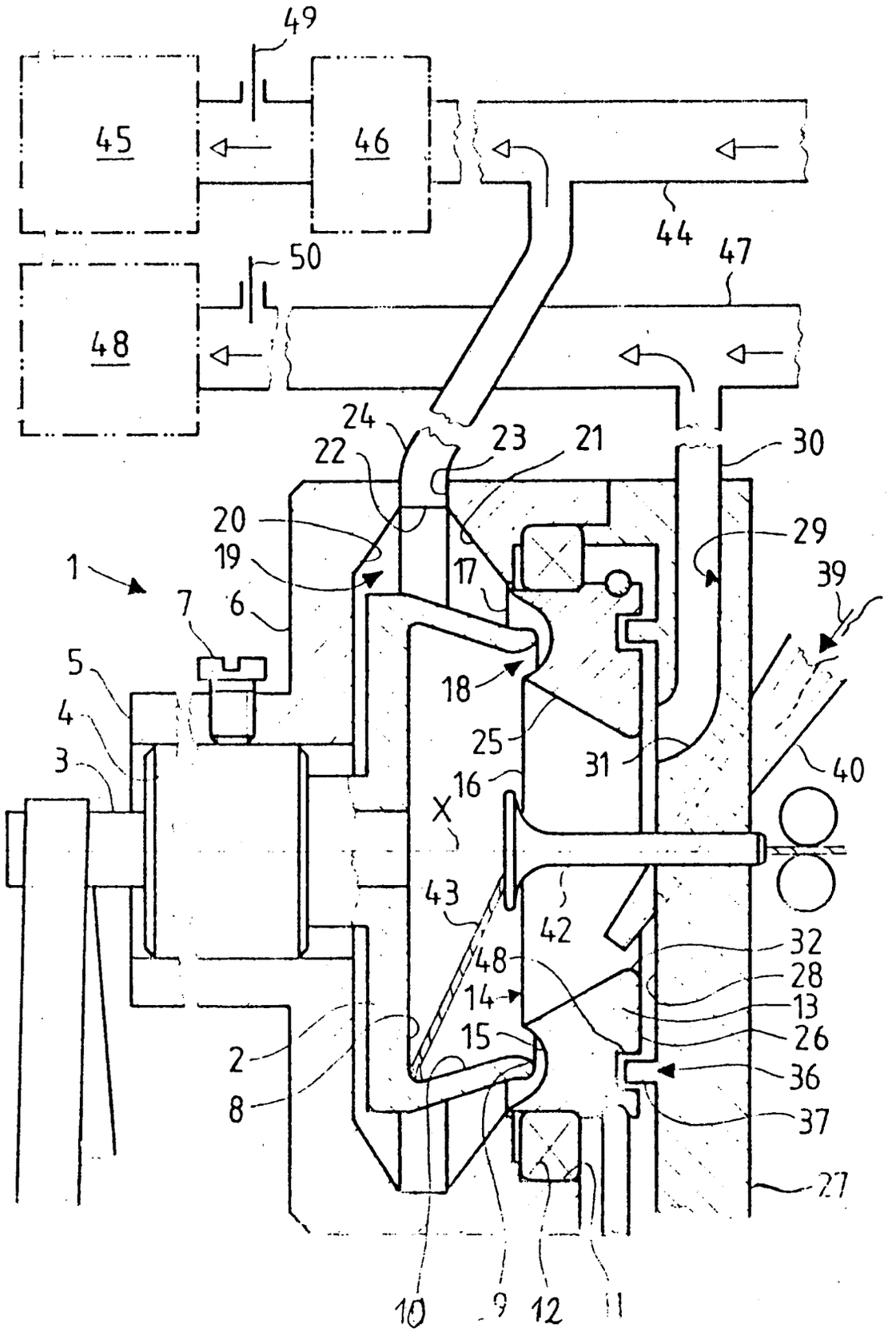
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Fig. 1

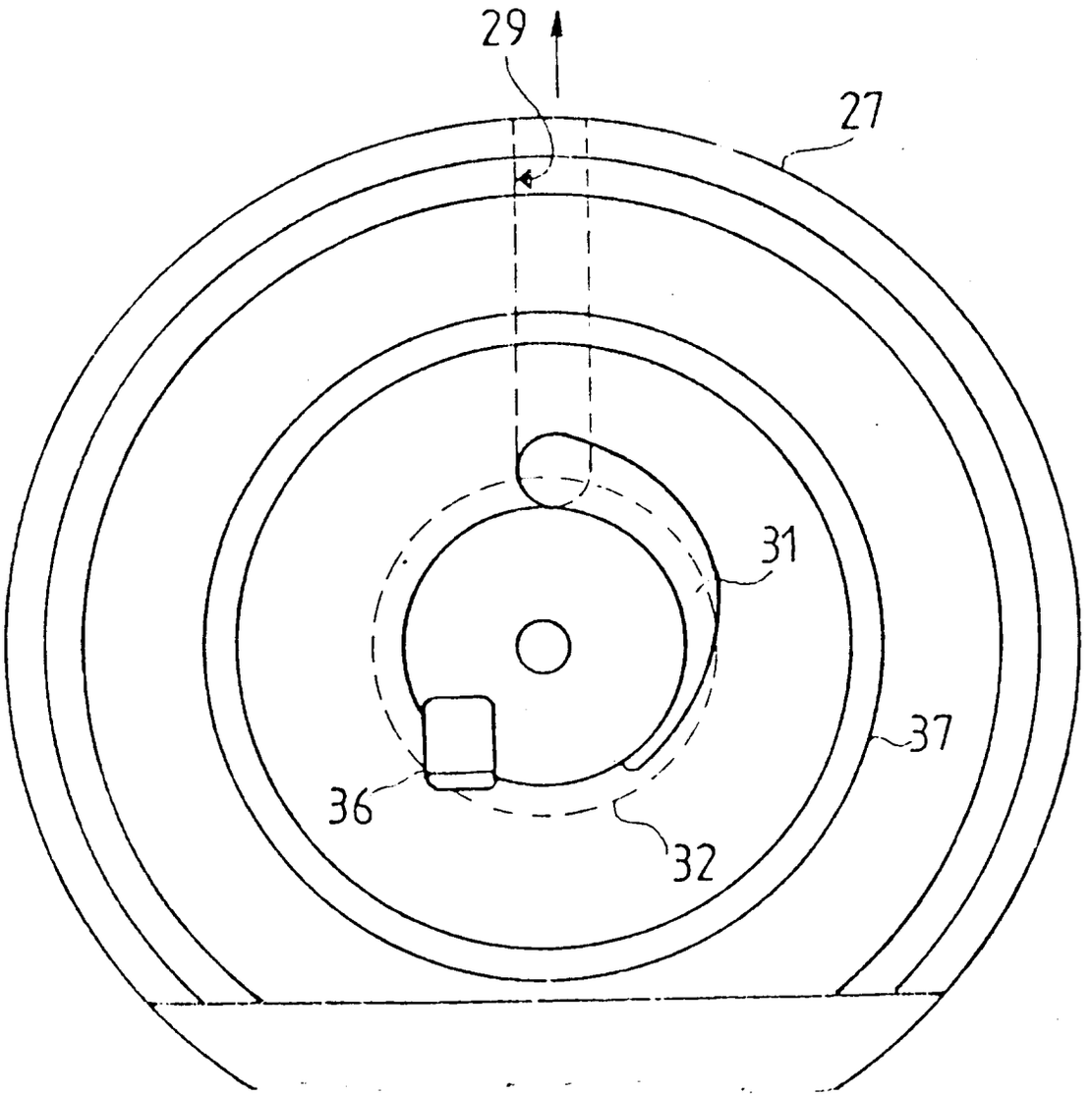

Fig. 2

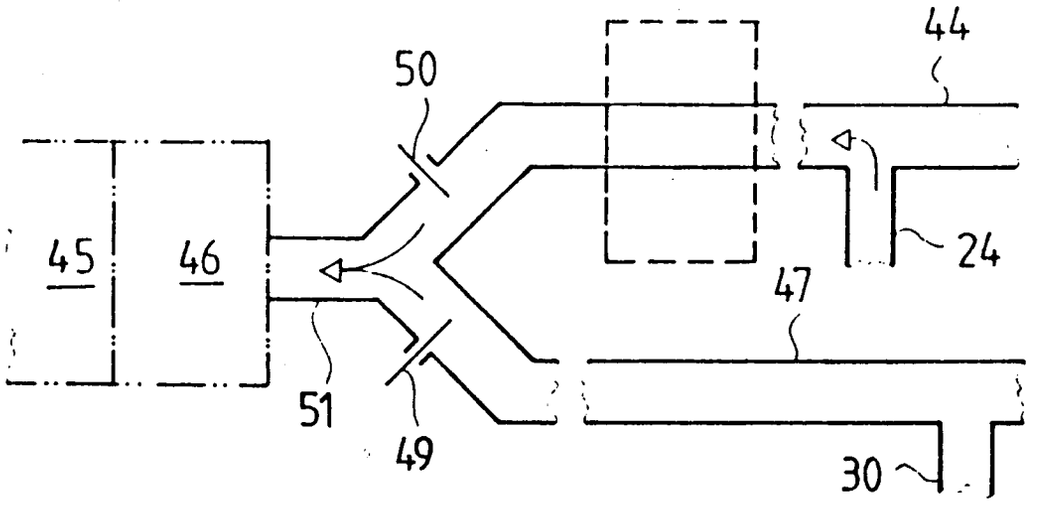

Fig. 4

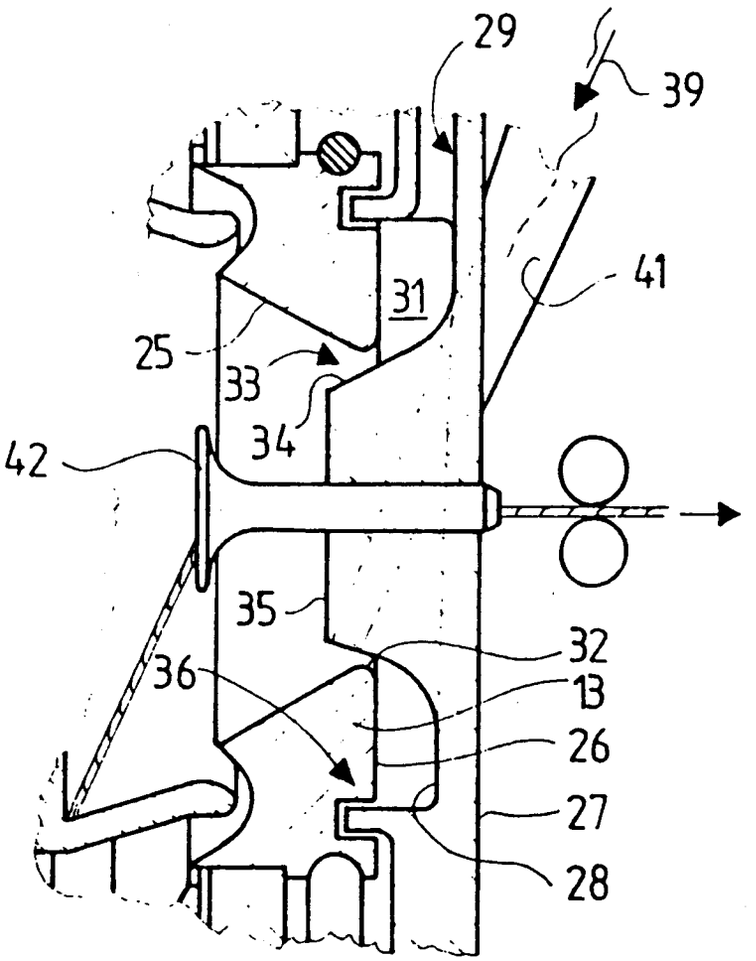

Fig. 3

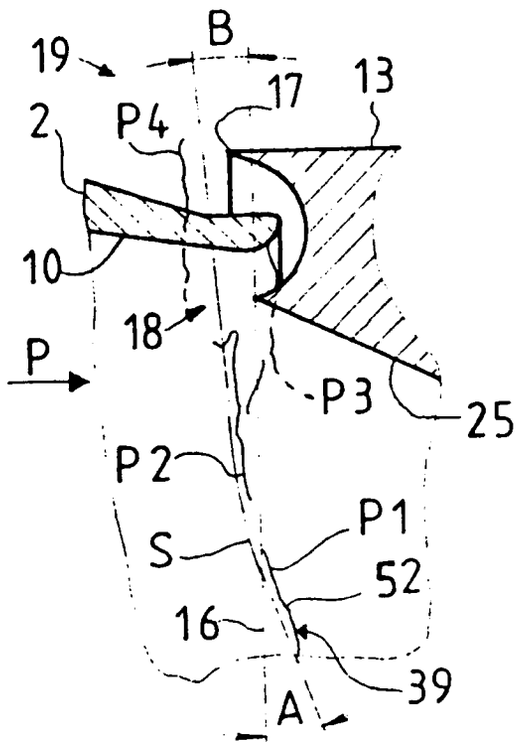

Fig. 5

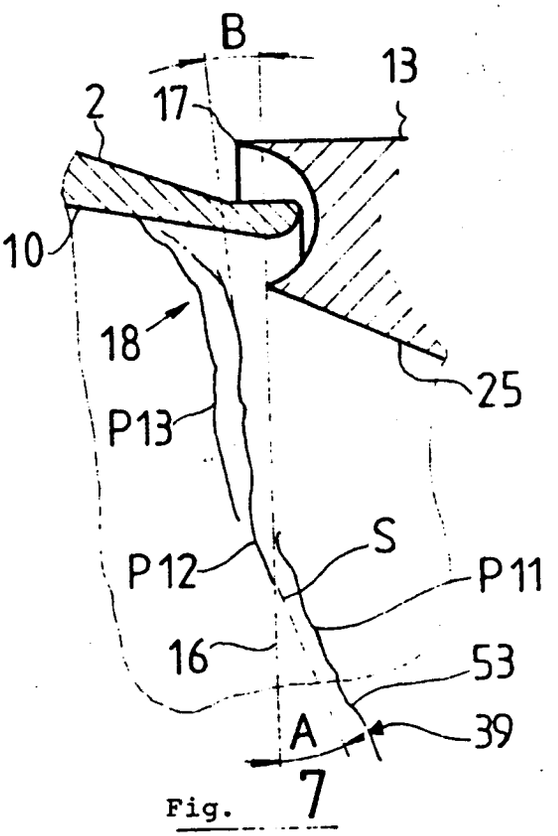

Fig. 7

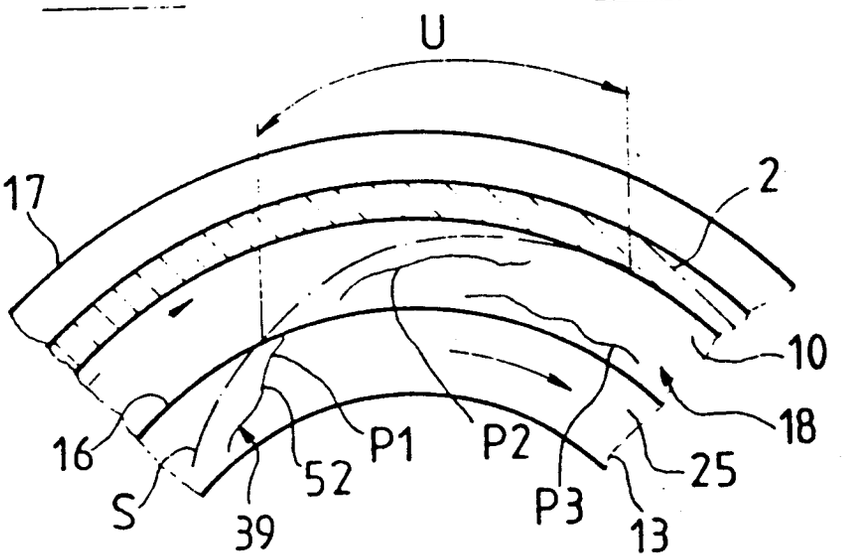

Fig. 6