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(54) **Sealing device for machines under pressure or depression**

Vorrichtung zum Abdichten von unter Über- oder Unterdruck stehenden Maschinen

Dispositif d'étanchéité pour machines travaillant en surpression ou en dépression

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Description

[0001] This invention concerns a device to ensure seal on machines functioning under pressure or depression, as set forth in the main claim.

[0002] To be more exact, the invention concerns a sealing device applied both at inlet to and at outlet from machines, apparatus or other equipment defining at least a volume wherein a condition of pressure or depression is created with respect to the ambient pressure.

[0003] The invention is applied preferentially, but not exclusively, to machines or apparatus used in the textile field.

[0004] In the textile field there are various processes, particularly fabric finishing operations, performed under conditions of pressure or depression.

[0005] For example there are continuous damp fixing operations for wool products, desizing and continuous bleaching for cotton products, continuous scouring of synthetic articles and similar, all operations performed in autoclaves under pressure.

[0006] In the state of the art the devices to ensure that the autoclaves are sealed at inlet and at outlet substantially comprise the same pairs of cylinders which also act as drawing elements for the fabric.

[0007] At least one of the two cylinders is lined with a layer of elastomer (theretofore in the further description and claims these cylinders are called "soft" cylinders) so that, since it is subjected to crushing, the contact with the other cylinder does not take place along a line, but over an extended area thus ensuring the transverse seal, therefore perpendicular to the direction of advance of the fabric.

[0008] The main difficulty of all the systems known to the state of the art is to achieve an efficient lateral seal on the drawing cylinders.

[0009] For this purpose there are seals of a mechanical or hydraulic type, or with air cushions, as described in the patent of industrial invention IT-B-1218051, or sliding seal.

[0010] The state of the art also includes US-A-4,111,434, which, in one of its embodiments, provides sealing flanges located in contact with the heads of the drawing cylinders and intermediate rollers, which have a lesser diameter than that of the drawing cylinders, arranged in tangential contact with the drawing cylinders in order to achieve the seal.

[0011] The teachings of this document, like those of US-A-3546902, GB-A-1.211.421 and GB-A-1.319.352, do not, however, obtain a satisfactory result in that the devices described are not able in any way to recover the plays, deriving from progressive wear and thermal expansion, which occur in the axial direction of the rollers, i.e. transversely with respect to the feeding direction of the fabric, while the machine is working.

[0012] To be more exact, the contact between the ends of the drawing cylinders and the lateral flanges

causes a progressive wear and erosion of material, which leads to the formation of plays and gaps which cause a drastic reduction in efficiency of the sealing devices, with obvious consequences on the performance of the whole plant.

[0013] The present Applicant has devised and embodied this invention to overcome this shortcoming, which businessmen in this field particularly complain of, and to obtain further advantages as will be described hereafter.

[0014] The invention is set forth and characterised in the main claim, while the dependent claims describe other characteristics of the main embodiment.

[0015] The purpose of the invention is to achieve a sealing device to be applied in a machine suitable to work under pressure/depression, which will be configured so as to ensure a sealing action both transverse and lateral and extremely efficient under all operating conditions of the machine.

[0016] To be more exact, the sealing device is achieved in such a way as to maintain its characteristics substantially unchanged in the course of time, even when there is progressive wear in the parts in reciprocal contact, and even when there are plays and gaps deriving from mechanical stresses and thermal expansion.

[0017] The device according to the invention comprises a pair of rollers made of hard material which are parallel and superimposed, arranged between the soft drawing roller or rollers and the inlet to the machine.

[0018] The hard rollers are positioned transverse with respect to the direction of advance of the fabric and are in tangential contact against the surface of at least one of the soft drawing rollers.

[0019] In a preferential embodiment of the invention, the hard rollers have an axial length which is greater than the axial length of the corresponding soft drawing roller.

[0020] The soft drawing rollers cooperate, in correspondence with their heads, with plate elements located in contact both with the heads of the rollers and also with a portion of the lateral surface of the two hard rollers.

[0021] When they are longer than the soft drawing rollers, the hard rollers protrude laterally from the respective plate elements and are accommodated in suitable seatings made on the plate elements which partly or completely occupy the circumferential development of the rollers.

[0022] The seatings have a suitable thickness and adequate characteristics of mechanical tolerance so as to ensure a reliable and long-lasting seal.

[0023] In the device according to the invention, it is provided to insert auxiliary sealing elements, or pads, between the hard rollers and the front, fixed part of the machine, which are contained longitudinally between the plate elements so that their ends are always in contact with the plate elements.

[0024] There may be a pad for every hard roller, or one single pad may be associated with both hard rollers.

[0025] According to the main characteristic of this invention, the length of the auxiliary elements, in a transverse direction to the advance of the fabric, can be varied and modified so as to adapt to the specific requirements which occur when the machine is being used under conditions of pressure/depression and to ensure optimum sealing conditions always.

[0026] When they modify their length, the auxiliary elements allow to compensate and to recover in every operating situation the plays between the parts in reciprocal contact (cylinders, plate elements and rollers) which are created when the machine is working, both due to thermal expansion and also due to the progressive wear which derives from the functioning of the machine and in particular from the reciprocal rubbing of the parts in contact.

[0027] With this embodiment the device ensures a complete seal, both longitudinal and lateral, reliable and long-lasting.

[0028] Further characteristics of the invention will be shown in greater detail in the following description of its possible forms of embodiment, given as a non-restrictive example, with the aid of the attached drawings wherein:

Fig. 1 is a side view, partly in section, of the device according to the invention, with two soft drawing rollers;

Fig. 2 is a front view, partly in section, of the device in Fig. 1;

Fig. 3 shows a variant of Fig. 1 with only one soft drawing roller;

Fig. 4 shows another variant of Fig. 1 with a different conformation of the pads and the lateral plates;

Fig. 5 shows a variant of the invention;

Fig. 6 is a side view, in section, of the transverse seals;

Fig. 7 shows a variant of the invention;

Fig. 8 shows another variant of the invention;

Fig. 9 is a detailed section view of the transverse seal;

Fig. 10 is a front view, in diagram form, of the device according to the invention which shows a pad according to the invention cooperating with the respective roller;

Fig. 11 is a view from above, in diagram form, of a variant of Fig. 10;

Fig. 12 is a view from the side of another variant which provides a single pad cooperating with both rollers;

Fig. 13 is a front view of Fig. 12, in diagram form;

Fig. 14 shows a variant of Fig. 12.

[0029] As can be seen in Figs. 1 and 2, the fabric 1 is engaged between two soft drawing rollers 2' and 2", advantageously lined with elastomer material, arranged parallel to each other and reciprocally crushed against each other.

[0030] The soft rollers 2', 2" are suitable to insert and extract the fabric 1 into/from an operating machine 3, which is not described in any detail here, and which operates under pressure or depression.

[0031] The sealing device, denoted in its entirety by the reference number 4 in Fig. 1, is installed between the two soft rollers 2', 2" and the inlet of the fabric 1 into the machine 3.

[0032] In this case we shall illustrate the case wherein the soft rollers 2' and 2" perform the function of inserting the fabric 1 into an operating machine 3.

[0033] However, it is exactly the same if the device 4 is applied at the outlet from the machine 3, and the rollers 2' and 2" perform the action of removing the fabric 1 from the machine 3.

[0034] The sealing device 4 comprises two lateral flanges 5', 5" arranged in sliding contact with at least part of the heads of the rollers 2', 2", two rollers 6', 6", made of metal, hard resin or other similar hard material, arranged transverse and tangent for the entire length to the surface of the rollers 2' and 2", and an intermediate block 7, anchored to the front system of the machine 3.

[0035] The lateral flanges 5' and 5" are advantageously made of a material which is highly resistant to wear and the applied loads, and with a low friction coefficient.

[0036] The materials used for preference are polymer materials with a PTFE (polytetrafluorethylene) base, for example Valflon® or similar materials.

[0037] The intermediate block 7 has an aperture 20 in a substantially central position, which allows the fabric 1 to enter the machine 3.

[0038] The two lateral flanges 5' and 5" are maintained in constant elastic thrust against the heads of the soft rollers 2' and 2" due to the action of adjustable elastic elements 8, of a known type.

[0039] The contact surface between the soft rollers 2' and 2" and the flanges 5' and 5" is defined, in this case, by raised edges 9', 9", advantageously consisting of rings made of hard rubber or other material with the same mechanical/ physical properties, made on or protruding from the lateral walls of the respective soft rollers 2', 2".

[0040] As can be seen for example in Fig. 2, the two hard rollers 6', 6" are longer than the corresponding soft rollers 2', 2", with which they are in reciprocal tangential contact on the length, and protrude laterally from the flanges 5' and 5" thanks to appropriate holes or seatings made at a suitable position thereon.

[0041] These holes or seatings act as an assembly bushing and ensure a coupling with the hard rollers 6' and 6" which has a sufficient degree of mechanical tolerance in order to ensure seal in correspondence with the coupling.

[0042] The transverse seal of the two hard rollers 6', 6" defined by the area of contact with the soft rollers 2', 2" and by the presence of the flanges 5' and 5" is obtained, in correspondence with the inlet to the machine

3 in the intermediate block 7 by means of auxiliary elements, in this case pads 10, arranged between the hard rollers 6' and 6" and the inlet to the machine 3.

[0043] The pads 10 are positioned in longitudinal sliding contact with the surface of the hard rollers 6' and 6" and are housed inside suitable shaped seatings made on the intermediate body 7 (Fig. 9).

[0044] The upper surface of the pads 10 is curved, specifically concave, so as to adhere perfectly with at least part of the surface of the hard rollers 6' and 6".

[0045] The pads 10 are made of a material with high characteristics of resistance to wear and the loads applied, and a low friction coefficient, for example Valflon® or similar material.

[0046] The pads 10 are held in lateral contact with the relative flanges 5 and are suitable to modify their length according to the elastic stresses imparted to them by the thrust of the elastic means 8 which act in constant compression against the flanges 5' and 5" themselves.

[0047] In other words, if while the machine 3 is working plays are created which derive from expansion of the materials due to differences in temperature, or caused by wear due to the friction between the parts in contact, and the flanges 5' and 5" are distanced from or brought closer to their inactive position, the pads 10 are able to modify their length so as to ensure constant lateral contact against the flanges 5' and 5" and therefore a constant seal.

[0048] In an intermediate position between the pads 10 there are elastic packings 11, which occupy the space delimited by the pads 10, the central intermediate block 7 and the inner walls of the flanges 5.

[0049] According to a first embodiment of the invention, the pads 10 are made in at least two parts, reciprocally sliding with respect to each other, and, in this case, comprise two lateral parts 13 and a central body 110.

[0050] The lateral parts 13 (Fig. 10) can be anchored, for example, glued, nailed, screwed or otherwise, to the respective flanges 5' and 5", and are able to slide lengthwise with respect to the central body 110.

[0051] The reciprocal sliding serves to lengthen or shorten the pad 10 when the flanges 5' and 5" are respectively distanced or brought near, due to the thrust of the elastic means 8, indicated by the number 24 in Fig. 11, in order to recover the play or gaps which are created when the machine 3 is working.

[0052] In the preferential embodiment, shown in Figs. 2 and 10, the end parts 13 are connected to the central body 110 by means of elastic means 14 which guarantee a constant position and that the elastic thrust to bring the parts reciprocally together is maintained.

[0053] The reference number 22, in Figs. 10 and 13, denotes the zone of sliding contact between the hard rollers 6' and 6" and the respective pads 10.

[0054] This area 22 is distributed longitudinally astride the separation zone between the end parts 13 and the central body 110, which ensures that the seal is main-

tained even when there is the separation zone.

[0055] The variant shown in Fig. 7 provides that the pad 10 is made in a single piece and has elastic packings 14 at the ends suitable to be compressed or dilated so as to allow the pad 10 to shorten or, respectively, lengthen if it is subjected to an elastic stress by the flanges 5' and 5".

[0056] According to a variant which is not shown here, the elastic packing 14 is arranged in a substantially central position on the length of the pad 10.

[0057] According to the variant shown in Fig. 8, the pad 10 is in a single piece and cooperates, at the ends, with elastic inserts 23 inserted in a mating position in the body of the flanges 5' and 5".

[0058] The inclusion of the elastic inserts 23 allows the ends of the pad 10 to penetrate inside the body of the flange 5 when the said flange is thrust inwards by the elastic means 8 in order to recover plays or gaps, for example when the edges 9 of the soft rollers 2' and 2" are worn.

[0059] The variant shown in Fig. 3 provides only one soft roller 2 on which the two hard rollers 6', 6" are in tangent contact.

[0060] Fig. 4 shows a different conformation of the flange 5, where the area of sliding contact of the flange 5 with the heads of the hard rollers 6', 6" extends for the entire circumference thereof.

[0061] In this embodiment, the pads 10 are located partly below and partly behind the relative hard roller 6' and 6" and surround a substantial part of the arc of the hard rollers 6' and 6" facing towards the machine 3.

[0062] The pads 10 inserted into the relative positioning seating made on the intermediate block 7 are supported at the rear by an elastic base 17 which ensures the appropriate compression force against the relative hard roller 6' and 6".

[0063] In the variant shown in Fig. 5, inside the body of the flanges 5 and in a substantially central position, the lateral flanges 5 include portions 12 made of elastic material, preferably vulcanised rubber, which give a certain elasticity to the body of the flange and thus allow a better sliding adherence of the flanges 5 to the heads of the hard rollers 6', 6", even in the case that the hard rollers 6' and 6" are partly misaligned.

[0064] Figs. 12 and 13 show a variant of the invention, in diagram form, from the side and from the front, where-in there is only one pad 10 for both the hard rollers 6' and 6".

[0065] In this case too, the pad 10 comprises a central body 110 and two reciprocally sliding lateral parts 13' and 13" (of which only one is visible); elastic connection elements 14 are interposed between the two parts.

[0066] The two lateral parts 13' and 13" can be attached to the relative flanges 5.

[0067] In this case the central body 110 of the pad 10 has a central aperture 21 through which the fabric 1 passes.

[0068] Moreover, in this case, the elastic packing 11

does not need to be included.

[0069] The longitudinal seal in the zone of reciprocal sliding between the pad 10 and the relative hard roller 6', 6" is also ensured by the fact that these parts 110, 13' and 13" are maintained in close contact with the lateral walls of the relative positioning seating 15 made on the intermediate block 7.

[0070] The lateral walls of the seating 15 are advantageously lined with rubberised material and at least one wall 16 is movable and/or adjustable so that it is possible to vary the pressure in the zone of reciprocal sliding of the said parts (Fig. 9).

[0071] Moreover, the seal is ensured by the inclusion of the elastic base 17, preferably made of rubber or consisting of an air chamber with adjustable pressure.

[0072] It may be advantageous from a construction point of view, and also during assembly, if the elastic bases 17 and the elastic lateral packings 11 are made in a single piece.

[0073] It may also be advantageous from a construction point of view if the intermediate block 7, instead of being anchored to the structure of the machine 3, is a single piece therewith.

[0074] In construction, the rubberised soft rollers and the hard rollers are supported by means suitable to adjust both their position and also the value of the force of reciprocal compression between the soft and the hard roller; these components, either driven or idle, may also be cooled or heated by the circulation of liquid inside.

[0075] As already described, for the surfaces in sliding contact, such as the lateral plates 5, the pads 10 and possibly the hard rollers 6', 6", PTFE (polytetrafluoroethylene) based products are used, or similar products which offer not only a minimum friction coefficient and reasonable elasticity, but also considerable mechanical resistance even at high temperatures, up to 280°C.

[0076] Advantageously, in order to reduce to a minimum the wear on the ridges 9', 9" of the soft rollers 2', 2", there is an automatic lubrication system.

[0077] From this description the advantages of the invention are evident: the seal both lateral and transverse, taken to mean in the direction perpendicular to the direction of feed of the fabric, is achieved by means of a minimum number of components, which are simple to construct and do not require maintenance.

Claims

1. Sealing device to be installed at inlet and/or outlet on machines (3) defining at least an inner volume working under pressure or depression, wherein a fabric to be processed (1) is inserted into/removed from the said volume by means of rotary drawing elements consisting of at least a soft drawing roller (2', 2") lined with an elastomer material, said soft roller(s) being placed in tangent contact with a pair of hard rollers (6', 6") arranged between said soft

roller(s) (2', 2") and the machine (3), said machine (3) including an intermediate block (7) in correspondence with its inlet and/or outlet front, said sealing device being **characterized by** lateral flanges (5', 5") arranged in contact with at least part of the side heads of said soft rollers (2', 2") and with a part of the lateral cylindrical surface of said hard rollers (6', 6"), which are longer than the soft rollers (2', 2"), said flanges (5', 5") being elastically thrust against the side heads of said soft rollers (2', 2"), the device being further **characterized by** auxiliary sealing elements (10) interposed between said hard rollers (6', 6") and said intermediate block (7), said auxiliary sealing elements (10) extending transversely between the flanges (5', 5") and having their ends in lateral contact therewith, the length of the auxiliary sealing elements (10), in a transverse direction to the direction of advance of the fabric (1), being able to be varied and modified so as to adapt to any transversal movement of said flanges (5', 5") to compensate and recover the plays and gaps between said flanges (5', 5") and the side heads of said soft rollers (2', 2") which are created while the machine is functioning.

2. Device as in Claim 1, **characterized in that** the auxiliary sealing elements comprise pads (10) housed in a mating positioning seating (15) made inside the intermediate block (7).
3. Device as in Claim 2, **characterized in that** said pads (10) are sub-divided longitudinally into at least two parts (13', 13", 110) reciprocally sliding with respect to the others.
4. Device as in Claim 3, **characterized in that** each pad (10) comprises at least two lateral parts (13', 13"), anchored to the respective flanges (5', 5").
5. Device as in Claim 3, **characterized in that** said lateral parts (13', 13", 110) of the pad (10) are connected by means of elastic packings (14).
6. Device as in Claim 2, **characterized in that** said pads (10) are made in a single piece and have elastic packings (14) at the ends, in contact with the respective flanges (5', 5").
7. Device as in Claim 2, **characterized in that** said pads (10) are made in a single piece and cooperate with elastic inserts (23) made in the body of the relative flange (5', 5") in a position mating with the contact position of the relative end of the relative pad (10).
8. Device as in Claim 2, **characterized in that** every hard roller (6', 6") cooperates with a respective pad (10).

9. Device as in Claim 8, **characterized in that** it comprises elastic packings (11) arranged in the space delimited between the pads (10), the intermediate block (7) and the inner walls of the flanges (5', 5").
10. Device as in Claim 2, **characterized in that** only one pad (10) cooperates with both hard rollers (6', 6") and has a substantially central aperture through which the fabric (1) passes.
11. Device as in any claim hereinbefore, **characterized in that** the pads (10) partly surround the semi-circumference of the hard rollers (6', 6") facing towards the machine (3).
12. Device as in any claim hereinbefore, **characterized in that** each pad (10) has an elastic base (17) at the rear, housed inside the positioning seating (15) within the intermediate block (7).
13. Device as in Claim 12, **characterized in that** said elastic base (17) is made of rubber.
14. Device as in Claim 12, **characterized in that** said elastic base (17) consists of an air chamber with adjustable pressure.
15. Device as in Claim 2, **characterized in that** it includes means (16) suitable to adjustably compress the pads (10) inside the relative positioning seatings (15) within the intermediate block (7).
16. Device as in Claim 2, **characterized in that** said positioning seating (15) has its inner wall rubberised.
17. Device as in any claim hereinbefore, **characterized in that** said flanges (5', 5") have inside a portion of elastic material (12) in the proximity of the positioning seating of the relative hard rollers (6', 6").
18. Device as in any claim hereinbefore, **characterized in that** a heating or cooling fluid flows inside at least one of the soft rollers (2', 2") and/or hard rollers (6', 6").
19. Device as in any claim hereinbefore, **characterized in that**, at their ends, the soft rollers (2) have raised edges (9', 9") in sliding cooperation with the sealing flanges (5', 5").
20. Device as in any claim hereinbefore, **characterized in that** in the areas of contact between the raised edges (9) of the soft rollers (2) and the flanges (5) there is a lubrication system.

Patentansprüche

1. Dichtungsvorrichtung, die am Einlass und/oder Auslass von Maschinen (3) zu installieren ist, die mindestens ein unter Über- oder Unterdruck arbeitendes Innenvolumen bilden, wobei ein zu bearbeitendes Gewebe (1) durch ziehende Drehelemente, die aus mindestens einer mit einem elastomeren Material ausgekleideten weichen Ziehrolle (2', 2") bestehen, in das Volumen eingeführt wird/aus diesem entnommen wird, wobei die mindestens eine weiche Rolle in tangentialen Kontakt mit einem Paar harter Rollen, die zwischen der mindestens einen weichen Rolle (2', 2") und der Maschine (3) angeordnet sind, platziert ist, wobei die Maschine (3) über einen Zwischenblock (7) entsprechend der Einlass- und/oder Auslassfront verfügt, **gekennzeichnet durch** laterale Flansche (5', 5"), die in Kontakt mit zumindest einem Teil der Seitenköpfe der weichen Rollen (2', 2") und mit einem Teil der lateralen Zylinderfläche der harten Rollen (6', 6"), die länger als die weichen Rollen (2', 2") sind, angeordnet sind und elastisch gegen die Seitenköpfe der weichen Rollen (2', 2") gedrückt werden, und ferner **gekennzeichnet durch** Hilfs-Abdichtelemente (10), die zwischen die harten Rollen (6', 6") und den Zwischenblock (7) eingefügt sind und sich transversal zwischen den Flanschen (5', 5") erstrecken, wobei ihre Enden in lateralem Kontakt mit diesen stehen, wobei die Länge der Hilfs-Abdichtelemente (10), in der Richtung quer zur Vorschubrichtung des Gewebes (1), variiert und modifiziert werden kann, um eine Anpassung an jegliche Querbewegung der Flansche (5', 5") zu erzielen, um Spiel und Zwischenräume zwischen den Flanschen (5', 5") und den Seitenköpfen der weichen Rollen (2', 2"), wie sie während des Arbeitens der Maschine erzeugt werden, zu kompensieren und wiederherzustellen.
2. Vorrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** die Hilfs-Abdichtelemente Kissen (10) aufweisen, die in einem passenden Positioniersitz (15) untergebracht sind, der innerhalb des Zwischenblocks (7) ausgebildet ist.
3. Vorrichtung nach Anspruch 2, **dadurch gekennzeichnet, dass** die Kissen (10) in der Längsrichtung in mindestens zwei Teile (13', 13", 110) unterteilt sind, die in Bezug aufeinander wechselseitig gleiten.
4. Vorrichtung nach Anspruch 3, **dadurch gekennzeichnet, dass** jedes Kissen (10) über mindestens zwei laterale Teile (13', 13") verfügt, die an den zugehörigen Flanschen (5', 5") verankert sind.
5. Vorrichtung nach Anspruch 3, **dadurch gekennzeichnet,**

zeichnet, dass die lateralen Teile (13', 13", 110) des Kissens (10) durch elastische Dichtpackungen (14) verbunden sind.

6. Vorrichtung nach Anspruch 2, **dadurch gekennzeichnet, dass** die Kissen (10) als einzelnes Teil ausgebildet sind und an den Enden über elastische Dichtpackungen (14) in Kontakt mit den jeweiligen Flanschen (5', 5") verfügen. 5
7. Vorrichtung nach Anspruch 2, **dadurch gekennzeichnet, dass** die Kissen (10) als einzelnes Teil ausgebildet sind und mit elastischen Einsätzen (23) zusammenwirken, die im Körper des zugehörigen Flanschs (5', 5") an einer Position ausgebildet sind, die zur Kontaktposition des zugehörigen Endes des zugehörigen Kissens (10) passt. 10
8. Vorrichtung nach Anspruch 2, **dadurch gekennzeichnet, dass** jede harte Rolle (6', 6") mit einem jeweiligen Kissen (10) zusammenwirkt. 15
9. Vorrichtung nach Anspruch 8, **dadurch gekennzeichnet, dass** es über elastische Dichtpackungen (11) verfügt, die im Raum angebracht sind, der durch die Kissen (10), den Zwischenblock (7) und die Innenwände der Flansche (5', 5") begrenzt ist. 20
10. Vorrichtung nach Anspruch 2, **dadurch gekennzeichnet, dass** nur ein Kissen (10) mit beiden harten Rollen (6', 6") zusammenwirkt und es eine im Wesentlichen zentrale Öffnung aufweist, durch die das Gewebe (1) läuft. 25
11. Vorrichtung nach einem der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** die Kissen (10) den Halbumfang der harten Rollen (6', 6"), der der Maschine (3) zugewandt ist, teilweise umgeben. 30
12. Vorrichtung nach einem der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** jedes Kissen (10) an seiner Rückseite über einen elastischen Träger (17) verfügt, der innerhalb des Positioniersitzes (15) innerhalb des Zwischenblocks (7) untergebracht ist. 35
13. Vorrichtung nach Anspruch 12, **dadurch gekennzeichnet, dass** der elastische Träger (17) aus Kautschuk besteht. 40
14. Vorrichtung nach Anspruch 12, **dadurch gekennzeichnet, dass** der elastische Träger (17) aus einer Luftkammer mit einstellbarem Druck besteht. 45
15. Vorrichtung nach Anspruch 2, **dadurch gekennzeichnet, dass** sie über eine Einrichtung (16) verfügt, die die Kissen (10) innerhalb der zugehörigen 50

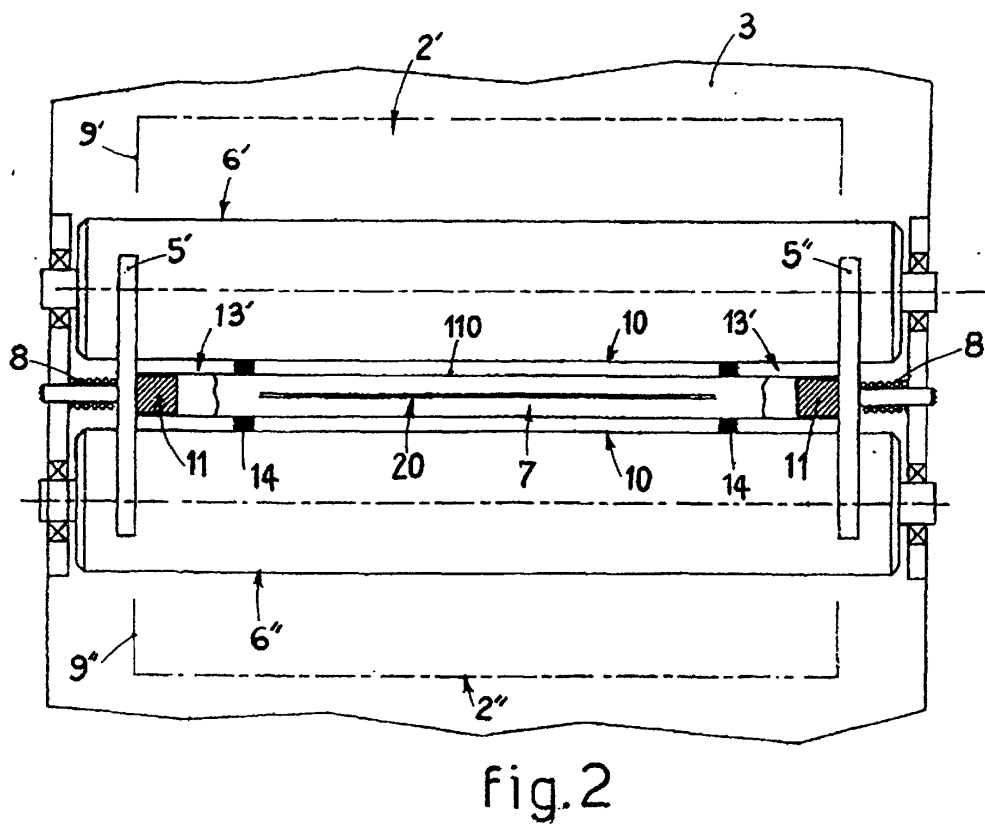
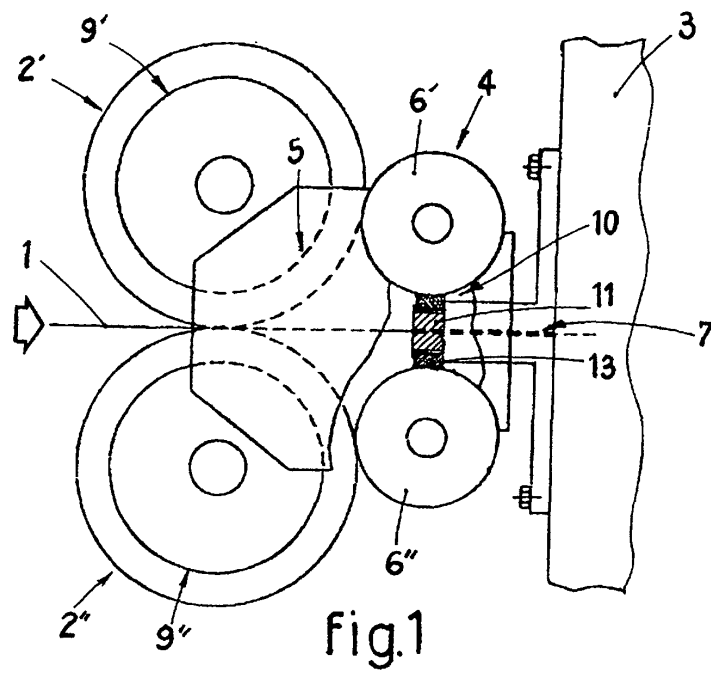
Positioniersitze (15) innerhalb des Zwischenblocks (7) einstellbar zusammendrücken kann.

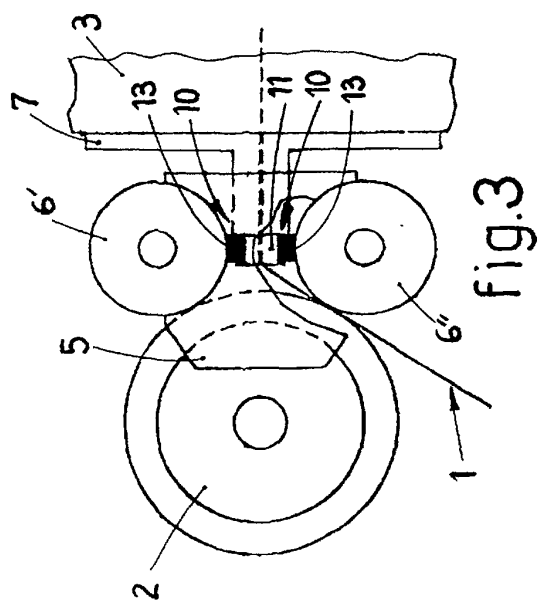
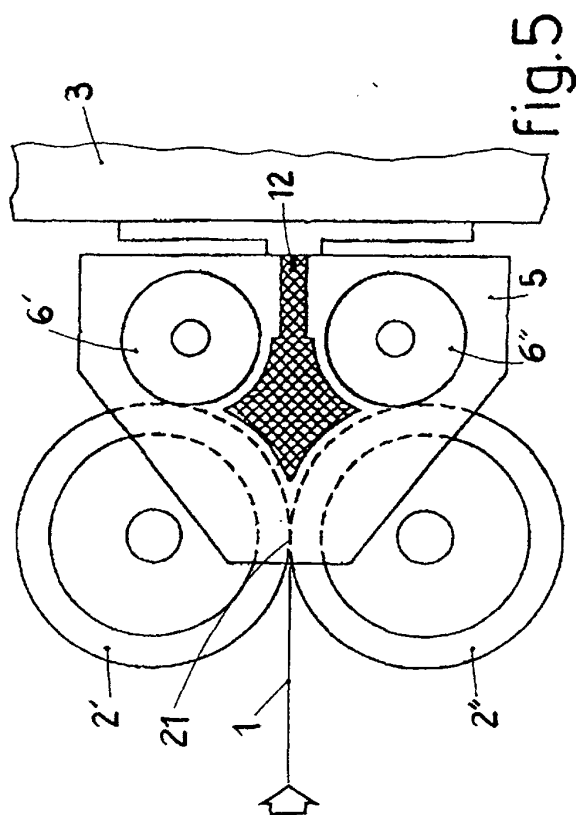
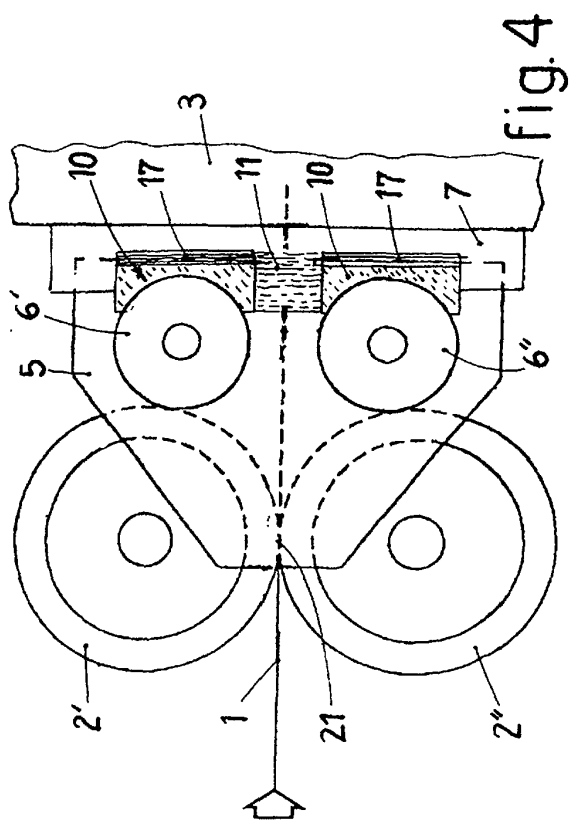
16. Vorrichtung nach Anspruch 2, **dadurch gekennzeichnet, dass** die Innenwand des Positioniersitzes 815) gummiert ist.
17. Vorrichtung nach einem der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** die Flansche (5', 5") im Inneren in der Nähe des Positioniersitzes der zugehörigen harten Rollen (6', 6") einen Abschnitt aus elastischem Material (12) aufweisen.
18. Vorrichtung nach einem der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** innerhalb zumindest einer der weichen Rollen (2', 2") und/oder der harten Rollen (6', 6") ein Heiz- oder Kühlfluid strömt.
19. Vorrichtung nach einem der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** die weichen Rollen (2) an ihren Enden über erhöhte Ränder (9', 9") in gleitender Zusammenwirkung mit den Abdichtflanschen (5', 5") aufweisen.
20. Vorrichtung nach einem der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** in den Kontaktgebieten zwischen den erhöhten Rändern (9) der weichen Rollen (2) und den Flanschen (5) ein Schmiersystem existiert.

Revendications

1. Dispositif d'étanchéité à installer à l'entrée et/ou à la sortie de machines (3) définissant au moins un volume intérieur fonctionnant sous pression ou dépression, dans lequel un tissu à traiter (1) est inséré dans / retiré dudit volume au moyen d'éléments de tirage rotatifs constitués d'au moins un rouleau de tirage doux (2', 2") revêtu d'un matériau élastomère, ledit ou lesdits rouleaux doux étant placés en contact tangent avec une paire de rouleaux durs (6', 6") disposés entre lesdits rouleaux doux (2', 2") et la machine (3), ladite machine (3) incluant un bloc intermédiaire (7) en correspondance avec sa face d'entrée et/ou de sortie, ledit dispositif d'étanchéité étant **caractérisé par** des flasques latéraux (5', 5") disposés en contact avec au moins une partie des extrémités latérales desdits rouleaux doux (2', 2") et avec une partie de la surface cylindrique latérale desdits rouleaux durs (6', 6"), qui sont plus longs que les rouleaux doux (2', 2"), lesdits flasques (5', 5") étant serrés élastiquement contre les extrémités latérales desdits rouleaux doux (2', 2"), le dispositif étant en outre **caractérisé par** des éléments d'étanchéité auxiliaires (10) interposés entre lesdits rouleaux durs (6', 6") et ledit bloc intermédiaire (7), 55

- lesdits éléments d'étanchéité auxiliaires (10) s'étendant transversalement entre les flasques (5', 5") et ayant leurs extrémités en contact latéral avec ceux-ci, la longueur des éléments d'étanchéité auxiliaires (10), dans une direction transversale à la direction d'avancement du tissu (1), pouvant être variée et modifiée de façon à s'adapter à tout mouvement transversal desdits flasques (5', 5") afin de compenser et d'annuler les jeux et interstices entre lesdits flasques (5', 5") et les extrémités latérales desdits rouleaux doux (2', 2"), qui apparaissent lorsque la machine est en fonctionnement.
2. Dispositif suivant la revendication 1, **caractérisé en ce que** les éléments d'étanchéité auxiliaires comprennent des patins (10) logés dans un siège de positionnement (15) de forme correspondante prévu à l'intérieur du bloc intermédiaire (7).
 3. Dispositif suivant la revendication 2, **caractérisé en ce que** lesdits patins (10) sont subdivisés longitudinalement en au moins deux parties (13', 13", 110) glissant réciproquement l'une par rapport aux autres.
 4. Dispositif suivant la revendication 3, **caractérisé en ce que** chaque patin (10) comprend au moins deux parties latérales (13', 13") ancrées aux flasques respectifs (5', 5").
 5. Dispositif suivant la revendication 3, **caractérisé en ce que** lesdites parties latérales (13', 13", 110) du patin (10) sont reliées au moyen de bourrages élastiques (14).
 6. Dispositif suivant la revendication 2, **caractérisé en ce que** lesdits patins (10) sont fabriqués en une seule pièce et ont des bourrages élastiques (14) aux extrémités, en contact avec les flasques respectifs (5', 5").
 7. Dispositif suivant la revendication 2, **caractérisé en ce que** lesdits patins (10) sont fabriqués en une seule pièce et coopèrent avec des garnitures élastiques (23) fabriquées dans le corps du flasque respectif (5', 5") dans une position correspondant à la position de contact de l'extrémité respective du patin correspondant (10).
 8. Dispositif suivant la revendication 2, **caractérisé en ce que** chaque rouleau dur (6', 6") coopère avec un patin respectif (10).
 9. Dispositif suivant la revendication 8, **caractérisé en ce qu'il** comprend des bourrages élastiques (11) disposés dans l'espace délimité entre les patins (10), le bloc intermédiaire (7) et les parois intérieures des flasques (5', 5").
 10. Dispositif suivant la revendication 2, **caractérisé en ce qu'un** seul patin (10) coopère avec les deux rouleaux durs (6', 6") et a une ouverture essentiellement centrale à travers laquelle le tissu (1) passe.
 11. Dispositif suivant l'une quelconque des revendications précédentes, **caractérisé en ce que** les patins (10) entourent partiellement la demi-circonférence des rouleaux durs (6', 6") faisant face à la machine (3).
 12. Dispositif suivant l'une quelconque des revendications précédentes, **caractérisé en ce que** chaque patin (10) a une base élastique (17) à l'arrière, logée à l'intérieur du siège de positionnement (15) au sein du bloc intermédiaire (7).
 13. Dispositif suivant la revendication 12, **caractérisé en ce que** ladite base élastique (17) est fabriquée en caoutchouc.
 14. Dispositif suivant la revendication 12, **caractérisé en ce que** ladite base élastique (17) est constituée d'une chambre à air à pression réglable.
 15. Dispositif suivant la revendication 2, **caractérisé en ce qu'il** comprend un moyen (16) convenant pour comprimer de manière réglable les patins (10) à l'intérieur des sièges de positionnement (15) respectifs au sein du bloc intermédiaire (7).
 16. Dispositif suivant la revendication 2, **caractérisé en ce que** la paroi intérieure dudit siège de positionnement (15) est caoutchoutée.
 17. Dispositif suivant l'une quelconque des revendications précédentes, **caractérisé en ce que** lesdits flasques (5', 5") ont à l'intérieur une partie de matériau élastique (12) à proximité du siège de positionnement des rouleaux durs correspondants (6', 6").
 18. Dispositif suivant l'une quelconque des revendications précédentes, **caractérisé en ce qu'un** fluide de chauffage ou de refroidissement circule à l'intérieur d'au moins un des rouleaux doux (2', 2") et/ou des rouleaux durs (6', 6").
 19. Dispositif suivant l'une quelconque des revendications précédentes, **caractérisé en ce que**, à leurs extrémités, les rouleaux doux (2) ont des bords relevés (9', 9") en coopération de glissement avec les flasques d'étanchéité (5', 5").
 20. Dispositif suivant l'une quelconque des revendications précédentes, **caractérisé en ce qu'il** y a un système de lubrification dans les zones de contact entre les bords relevés (9) des rouleaux doux (2) et les flasques (5).





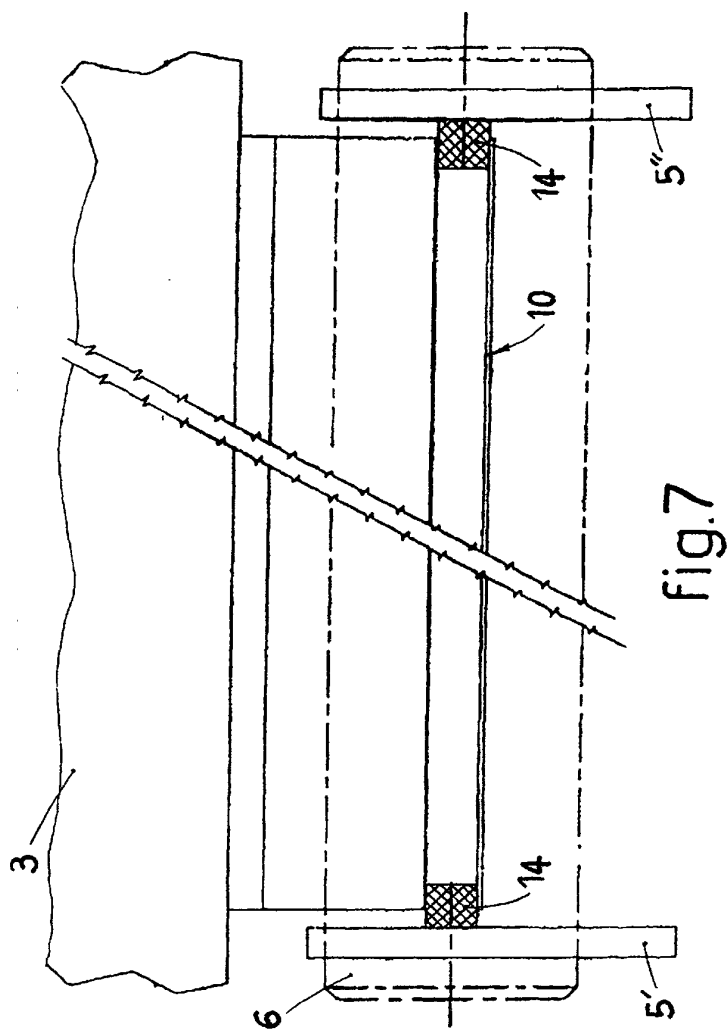


fig.7

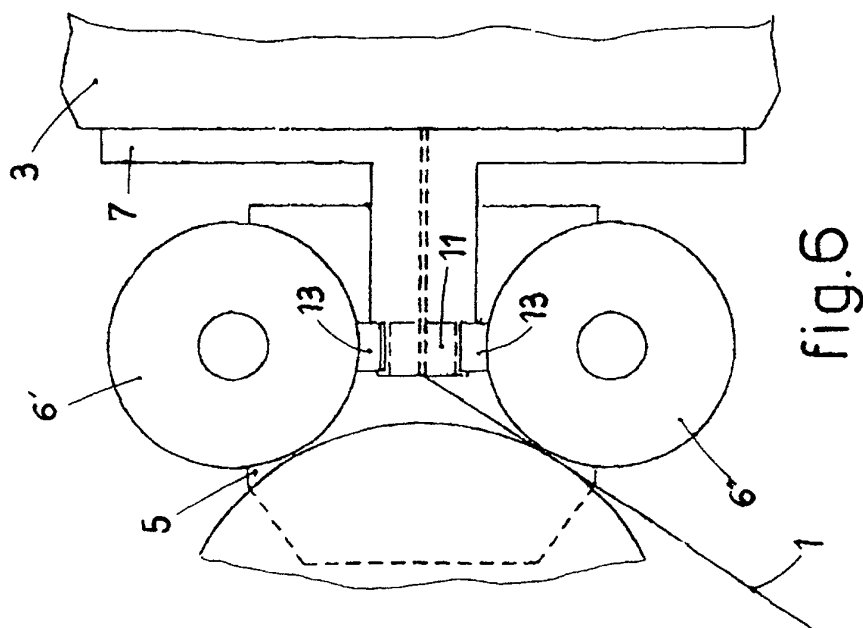


fig.6

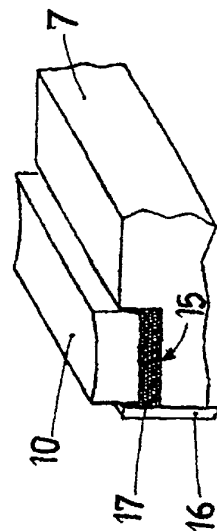
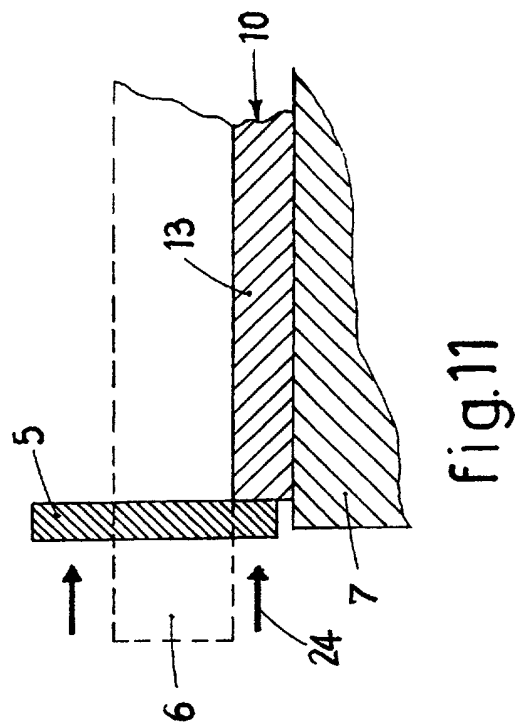
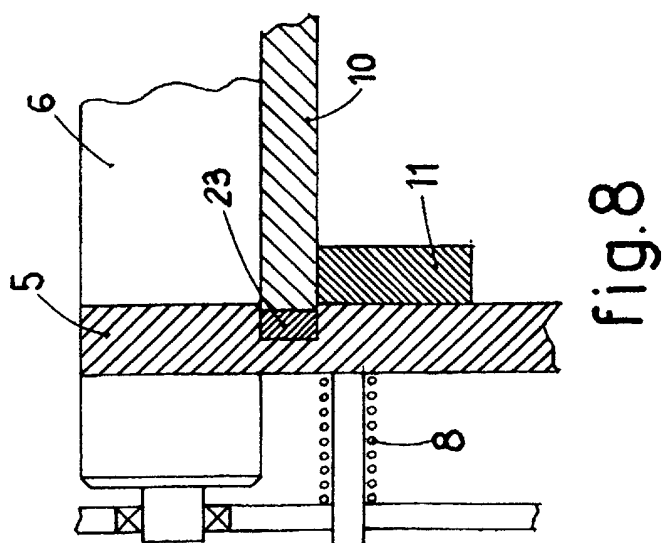
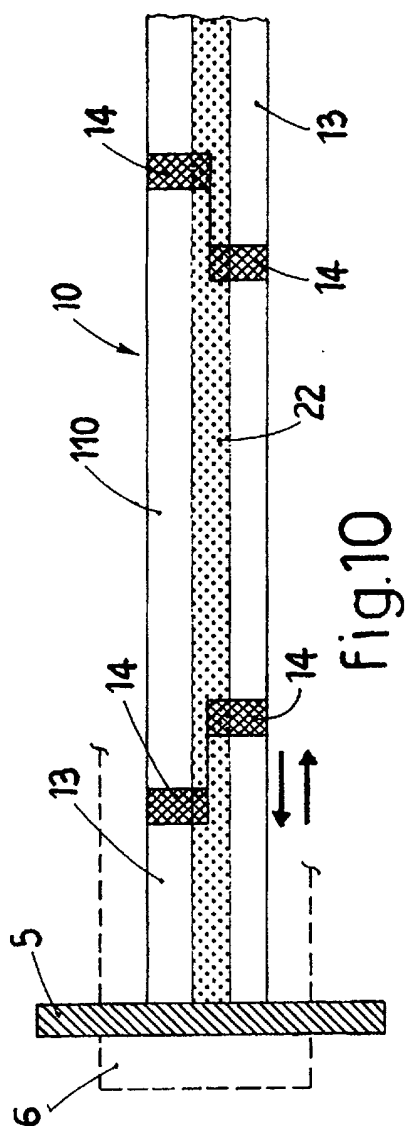


fig.9



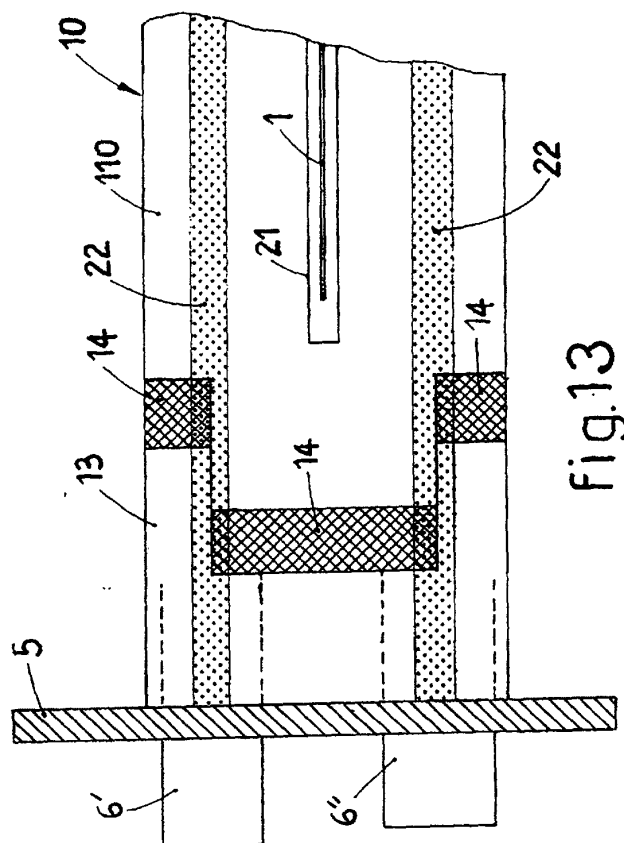
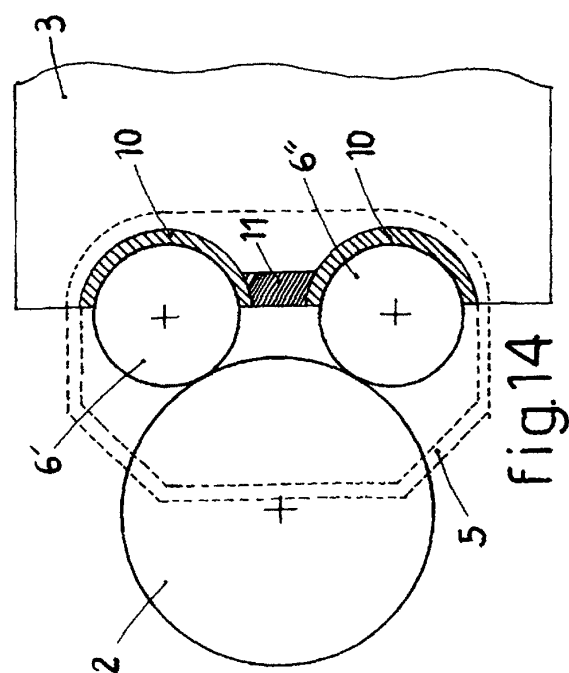
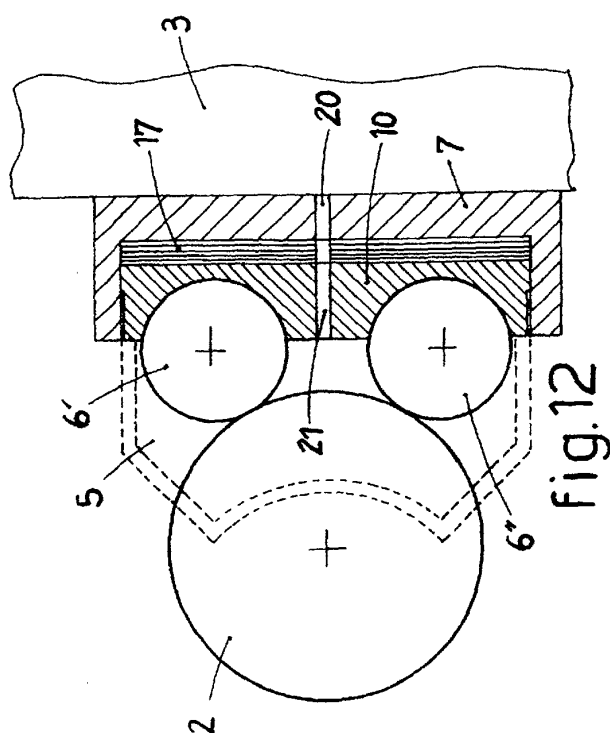


fig.13