(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 0 943 719 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
22.09.1999 Bulletin 1999/38

(51) Int. Cl.[6]: **D06B 23/16**, D06B 23/18

(21) Application number: **99104807.5**

(22) Date of filing: **11.03.1999**

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE
Designated Extension States:
AL LT LV MK RO SI

(30) Priority: **16.03.1998 IT VI980053**

(71) Applicant: **Franchetti, Roberto**
36100 Vicenza (IT)

(72) Inventor: **Franchetti, Roberto**
36100 Vicenza (IT)

(74) Representative:
Petraz, Gilberto Luigi et al
GLP S.r.l.
Piazzale Cavedalis 6/2
33100 Udine (IT)

(54) Sealing device for machines under pressure or depression

(57) Holding device to be installed at inlet and/or outlet on machines (3) defining at least an inner volume working under pressure or depression, where the product to be processed (1), is inserted into/removed from the said volume by means of rotary drawing elements consisting of at least a drawing cylinder (2', 2"), the rotary elements being placed in tangent contact with a pair of rollers (6', 6") arranged between the cylinders (2', 2") and the machine (3), there being included lateral flanges (5', 5") arranged in contact with at least part of the heads of the cylinders (2',2") and with a part of the lateral surface of the rollers (6', 6"), the flanges (5', 5") being elastically thrust against the heads of the cylinders (2', 2"), the machine (3) including an intermediate block (7) in correspondence with its inlet and outlet front, the device comprising auxiliary holding elements (10) interposed between the rollers (6', 6") and the intermediate block (7), the auxiliary elements (10) being contained longitudinally between the flanges (5', 5") and in lateral contact therewith, the length of the auxiliary 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 compensate and recover the plays and gaps between the parts in reciprocal contact (cylinders, flanges, rollers) which are created while the machine is functioning.

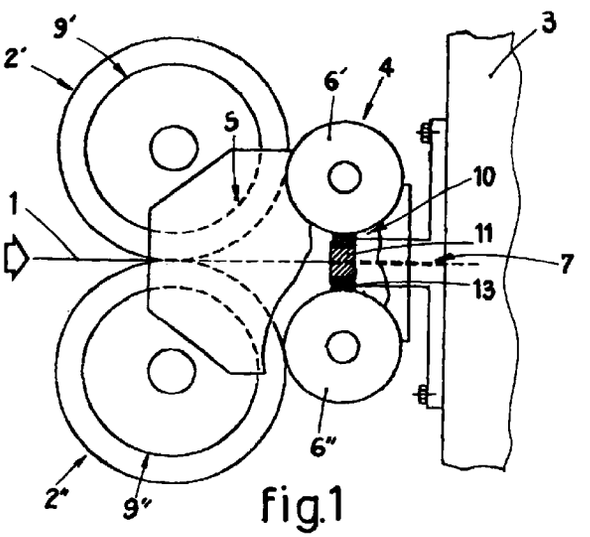


fig.1

EP 0 943 719 A1

Description

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

[0002] To be more exact, the invention concerns a holding 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 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 hold, intended in 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 hold on the drawing cylinders.

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

[0010] The state of the art also includes US-A-4,111,434, which, in one of its embodiments, provides holding 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 hold.

[0011] The teachings of this document, like those of 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 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 holding 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 holding device to be applied in a machine suitable to work under pressure/depression, which will be configured so as to ensure a holding action both transverse and lateral and extremely efficient under all operating conditions of the machine.

[0016] To be more exact, the holding 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 drawing cylinder or cylinders and the inlet to the machine.

[0018] The 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 drawing cylinders.

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

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

[0021] When they are longer than the drawing cylinders, the 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 hold.

[0023] In the device according to the invention, it is provided to insert auxiliary holding elements, or pads, between the 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 roller, or one single pad may be associated with both 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 holding 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 hold, 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 drawing cylinders;
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 drawing cylinder;
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 holds;
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 hold;
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 drawing cylinders 2' and 2", advantageously lined with elastomer material, arranged parallel to each other and reciprocally crushed against each other.

[0030] The cylinders 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 holding device, denoted in its entirety by the reference number 4 in Fig. 1, is installed between the two cylinders 2', 2" and the inlet of the fabric 1 into the machine 3.

[0032] In this case we shall illustrate the case wherein the cylinders 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 cylinders 2' and 2" perform the action of removing the fabric 1 from the machine 3.

[0034] The holding device 4 comprises two lateral flanges 5', 5" arranged in sliding contact with at least part of the heads of the cylinders 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 cylinders 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 cylinders 2' and 2" due to the action of adjustable elastic elements 8, of a known type.

[0039] The contact surface between the cylinders 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 cylinders 2', 2".

[0040] As can be seen for example in Fig. 2, the two rollers 6', 6" are longer than the corresponding cylinders 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 rollers 6' and 6" which has a sufficient degree of mechanical tolerance in order to ensure hold in correspondence with the coupling.

[0042] The transverse hold of the two rollers 6', 6" defined by the area of contact with the cylinders 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 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 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 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 hold.

[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 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 hold is maintained 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 cylinders 2' and 2" are worn.

[0059] The variant shown in Fig. 3 provides only one cylinder 2 on which the two 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 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 roller 6' and 6" and surround a substantial part of the arc of the 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 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 rollers 6', 6", even in the case that the 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, wherein there is only one pad 10 for both the 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 hold in the zone of reciprocal sliding between the pad 10 and the relative 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 hold 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 cylinders and the rollers are supported by means suitable to adjust both their position and also the value of the force of reciprocal compression between the cylinder and 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 rollers 6', 6", PTFE (polytetrafluorethylene) 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 cylinders 2', 2", there is an automatic lubrication system.

[0077] From this description the advantages of the invention are evident: the hold 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. Holding device to be installed at inlet and/or outlet on machines (3) defining at least an inner volume working under pressure or depression, wherein the product to be processed (1) is inserted into/removed from the said volume by means of rotary drawing elements consisting of at least a drawing cylinder (2', 2"), the rotary elements being placed in tangent contact with a pair of rollers (6', 6") arranged between the cylinders (2', 2") and the machine (3), there being included lateral flanges (5', 5") arranged in contact with at least part of the heads of the cylinders (2', 2") and with a part of the lateral surface of the rollers (6', 6"), the flanges (5', 5") being elastically thrust against the heads of the cylinders (2', 2"), the machine (3) including an intermediate block (7) in correspondence with its inlet and outlet front, the device being characterised in that it comprises auxiliary holding elements (10) interposed between the rollers (6', 6") and the intermediate block (7), the auxiliary elements (10) being contained longitudinally between the flanges (5', 5") and in lateral contact therewith, the length of the auxiliary 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 compensate and recover the plays and gaps between the parts in reciprocal contact (cylinders, flanges, rollers) which are created while the machine is functioning.

2. Device as in Claim 1, characterised in that the rollers (6', 6") are longer than the drawing cylinders (2', 2") and protrude laterally from the relative flanges (5', 5").

3. Device as in Claim 1, characterised in that the auxiliary elements comprise pads (10) housed in a mating positioning seating (15) made inside the intermediate block (7).

4. Device as in Claim 3, characterised in that the pads (10) are sub-divided longitudinally into at least two parts (13', 13", 110) reciprocally sliding with respect to the others.

5. Device as in Claim 4, characterised in that each pad (10) comprises at least two lateral parts (13', 13"), anchored to the respective flanges (5', 5").

6. Device as in Claim 4, characterised in that the parts (13', 13", 110) of the pad (10) are connected by means of elastic packings (14).

7. Device as in Claim 3, characterised in that the pads (10) are made in a single piece and have elastic packings (14) at the ends, in contact with the respective flanges (5', 5").

8. Device as in Claim 3, characterised in that the 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).

9. Device as in Claim 3, characterised in that every roller (6', 6") cooperates with a respective pad (10).

10. Device as in Claim 9, characterised 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").

11. Device as in Claim 3, characterised in that only one pad (10) cooperates with both rollers (6', 6") and has a substantially central aperture through which the fabric (1) passes.

12. Device as in any claim hereinbefore, characterised in that the pads (10) partly surround the semi-circumference of the rollers (6', 6") facing towards the machine (3).

13. Device as in any claim hereinbefore, characterised in that each pad (10) has an elastic base (17) at the rear, housed inside the positioning seating (15) within the intermediate block (7).

14. Device as in Claim 13, characterised in that the elastic base (17) is made of rubber.

15. Device as in Claim 13, characterised in that the elastic base (17) consists of an air chamber with adjustable pressure.

16. Device as in Claim 3, characterised in that it includes means (16) suitable to adjustably compress the pads (10) inside the relative positioning seatings (15) within the intermediate block (7).

17. Device as in Claim 3, characterised in that the positioning seating (15) has its inner wall rubberised.

18. Device as in any claim hereinbefore, characterised in that the flanges (5', 5") have inside a portion of elastic material (12) in the proximity of the positioning seating of the relative rollers (6', 6").

19. Device as in any claim hereinbefore, characterised in that a heating or cooling fluid flows inside at least one of the cylinders (2', 2") and/or rollers (6', 6").

20. Device as in any claim hereinbefore, characterised in that, at their ends, the cylinders (2) have raised edges (9', 9") in sliding cooperation with the holding flanges (5', 5").

21. Device as in any claim hereinbefore, characterised in that in the areas of contact between the raised edges (9) of the cylinders (2) and the flanges (5) there is a lubrication system.

22. Device as in any claim hereinbefore, characterised in that the intermediate block (7) constitutes an integral part with the body of the machine (3).

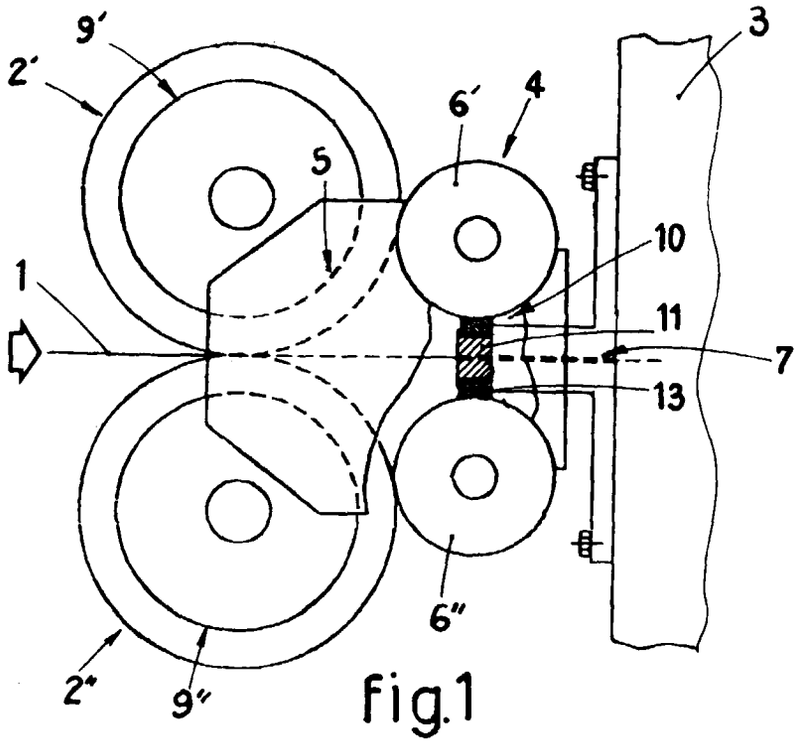

9'
2'
3
6'
4
5
10
1
11
7
13
6"
2"
9"

Fig.1

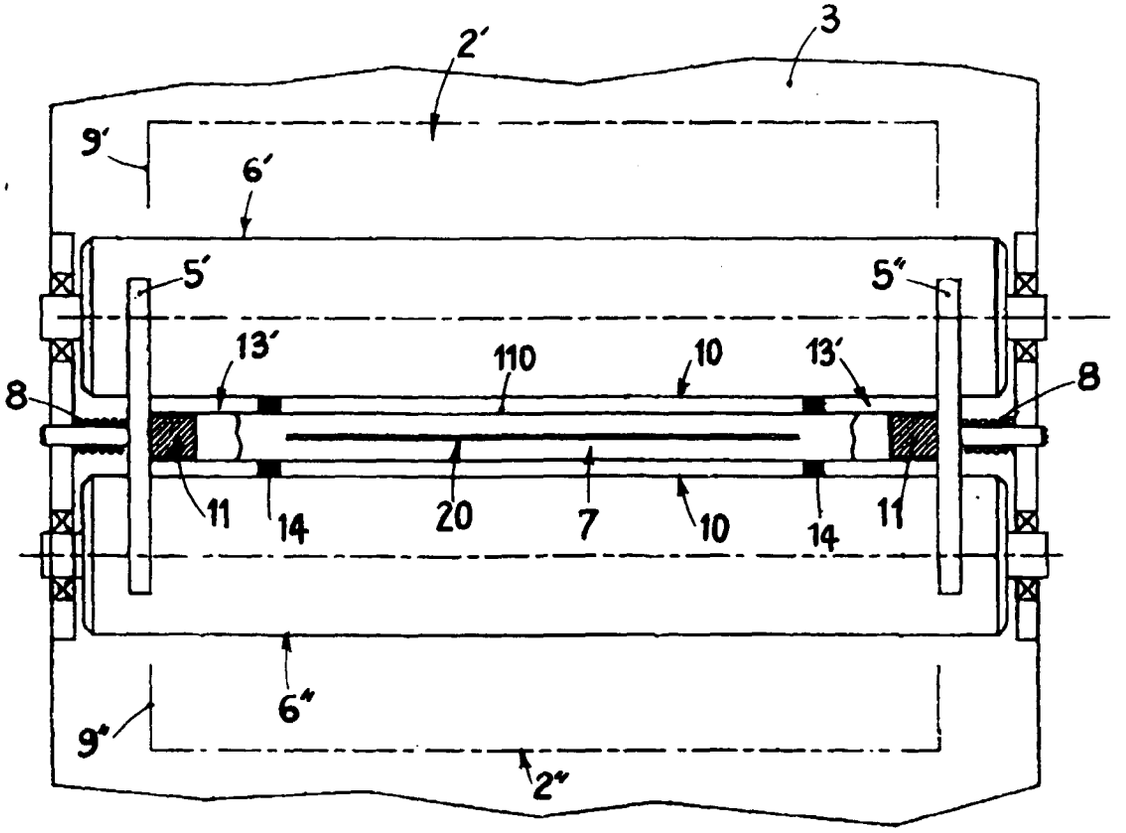

2'
3
9'
6'
5'
5"
13'
110
10
13'
8
8
11
14
20
7
10
14
11
6"
9"
2"

Fig.2

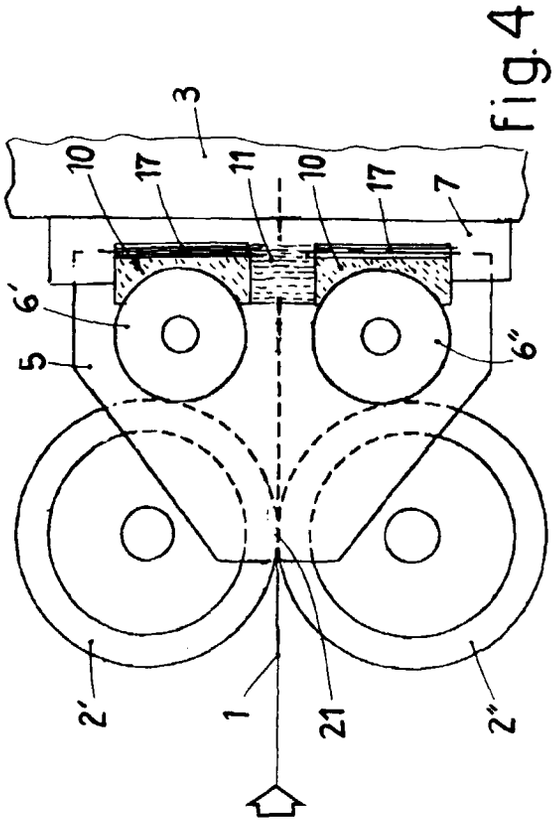


Fig.4

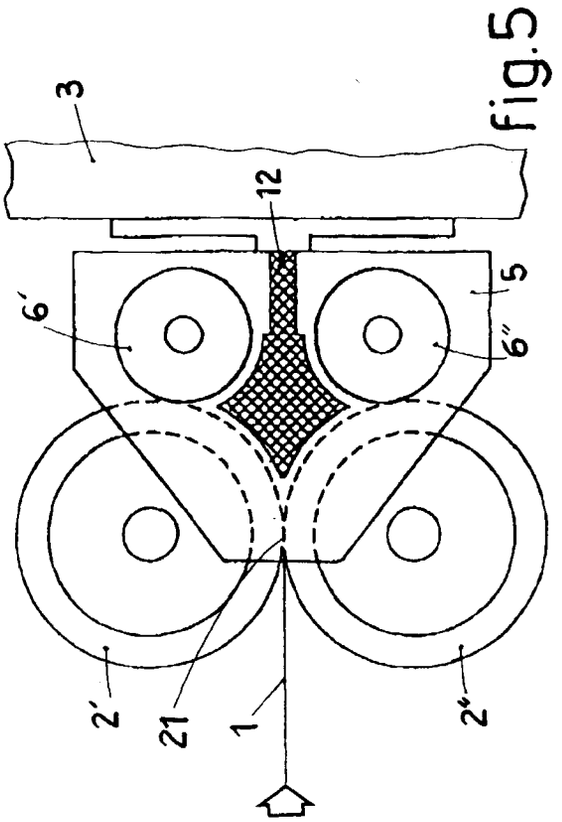


Fig.5

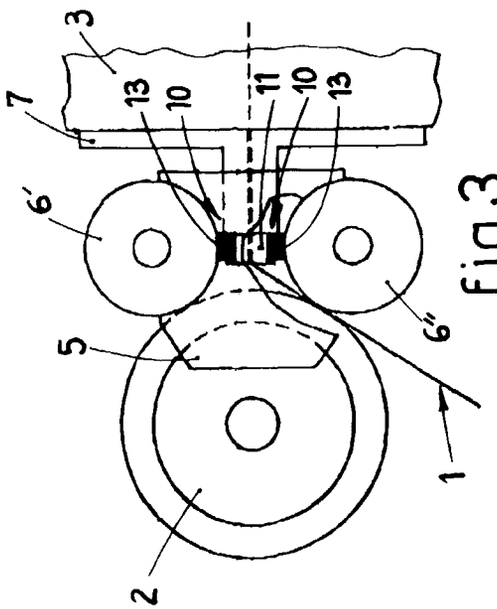


Fig.3

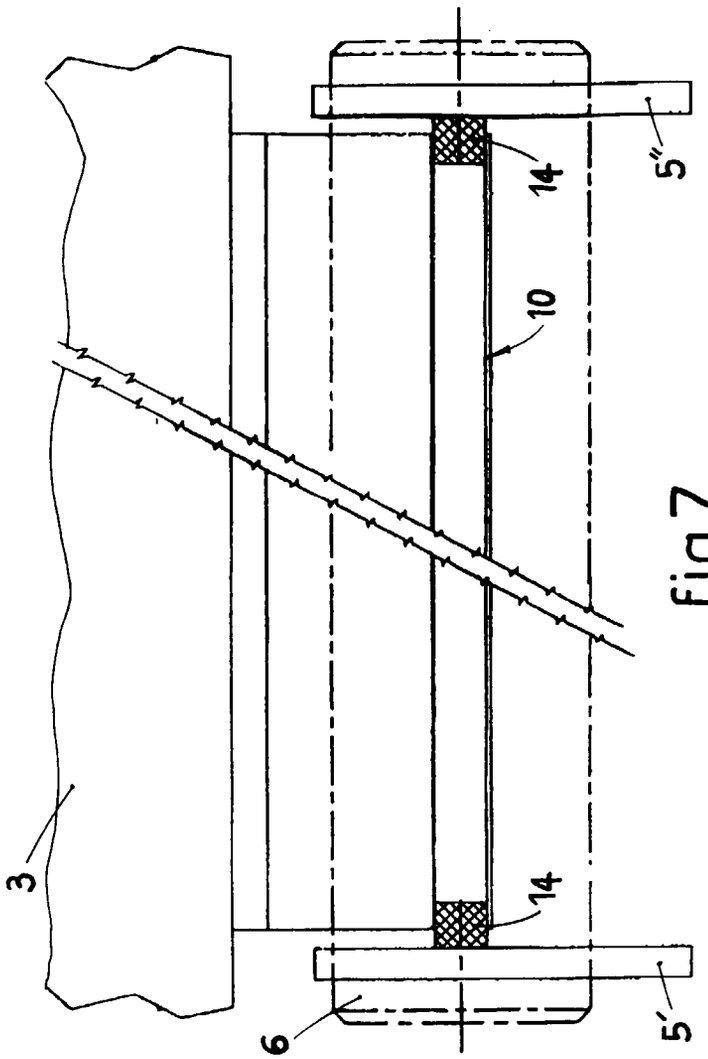


Fig.7

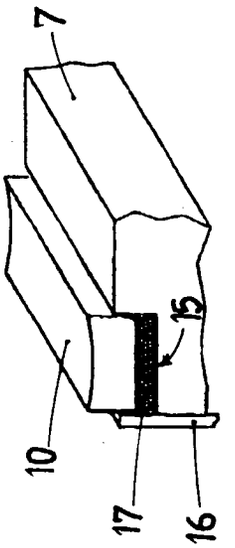


Fig.9

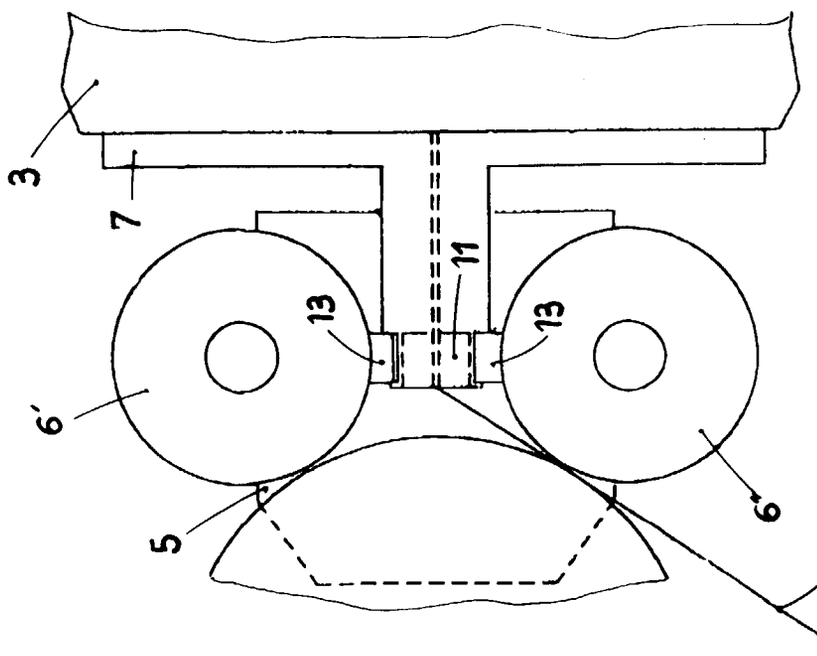


Fig.6

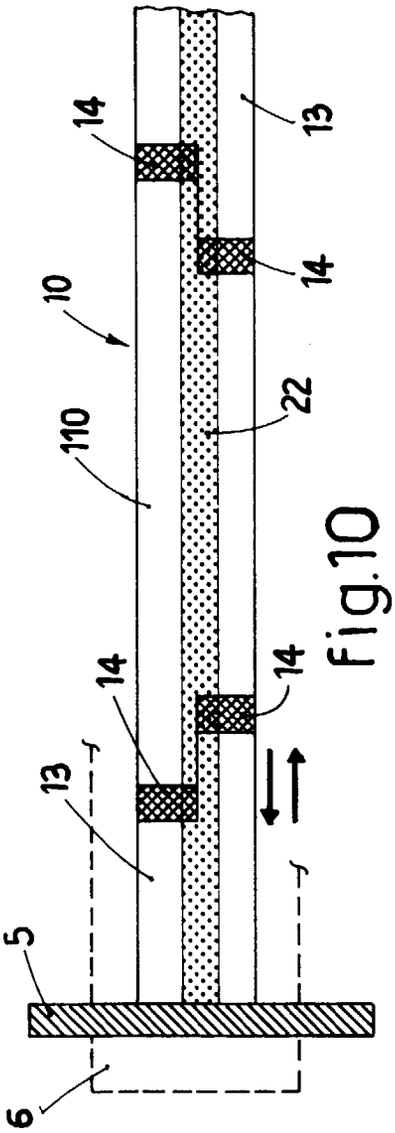


Fig.10

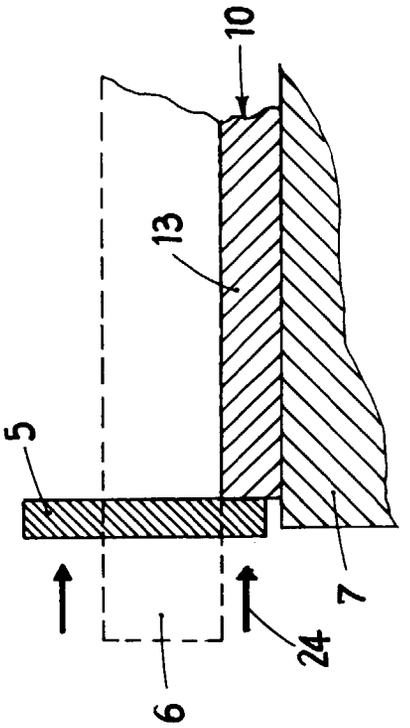


Fig.11

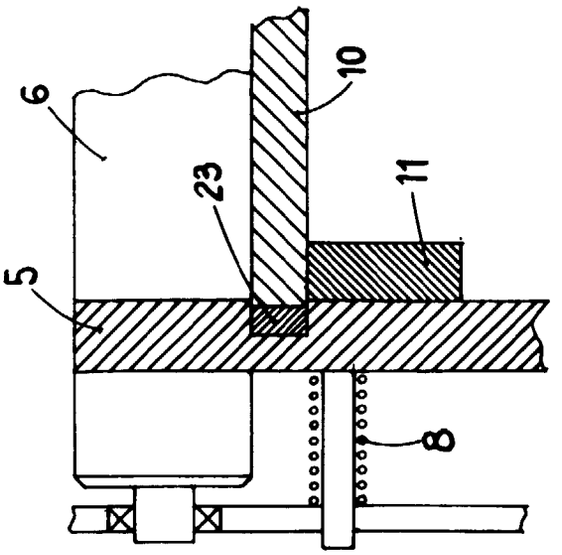


fig.8

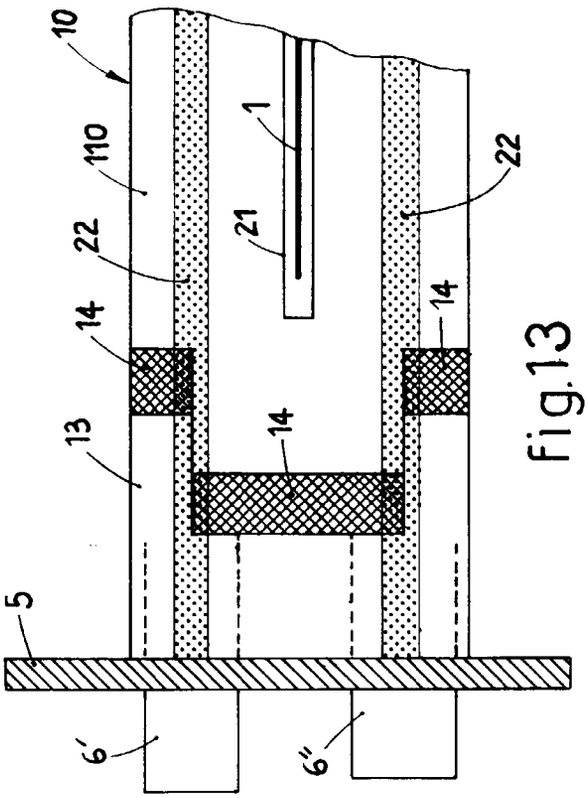


Fig.13

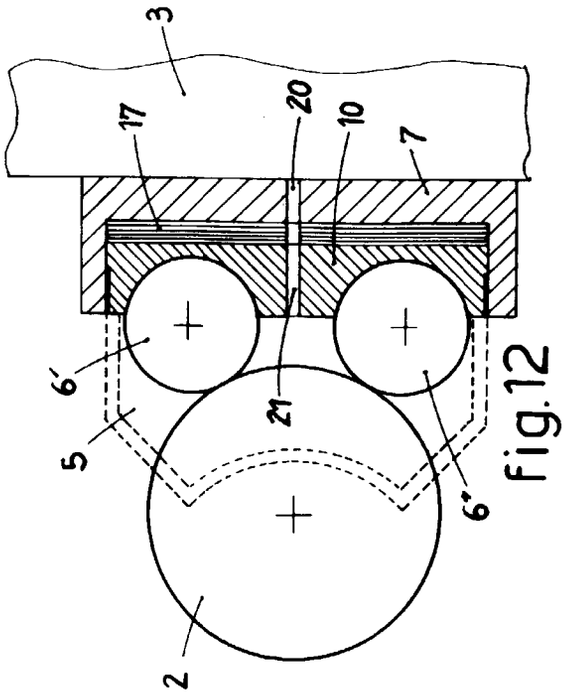


Fig.12

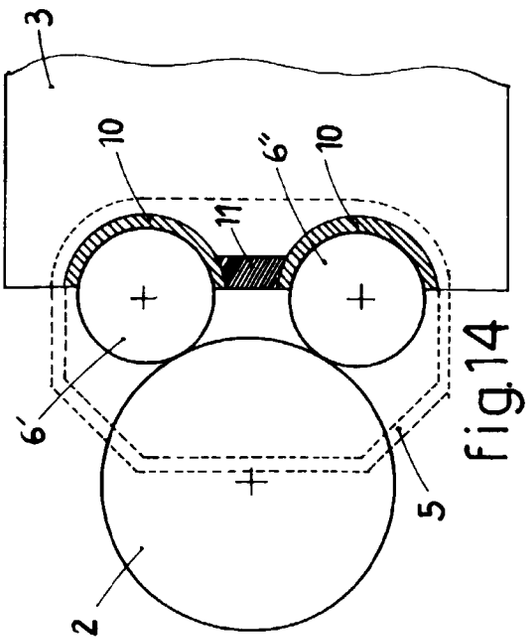


Fig.14

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 99 10 4807

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
D,A	US 4 111 434 A (Y. SANDO ET AL) 5 September 1978 * column 3, line 47 - column 4, line 21 * * column 6, line 59 - column 7, line 25 *	1,2,12, 19	D06B23/16 D06B23/18
A	US 3 546 902 A (Y. SANDO ET AL) 15 December 1970 * column 3, line 3 - column 5, line 3 *	1,19,20	
D,A	GB 1 319 352 A (SANDO IRON WORKS CO. LTD.) 6 June 1973 * page 3, line 7 - line 42 *	1,21	
D,A	GB 1 211 421 A (KONRAD PETER AG) 4 November 1970 * page 2, line 109 - page 3, line 5 *	1	

TECHNICAL FIELDS SEARCHED (Int.Cl.6)

D06B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	16 June 1999	Goodall, C

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 99 10 4807

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

16-06-1999

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4111434 A	05-09-1978	JP 1017692 C	28-10-1980
		JP 50155777 A	16-12-1975
		JP 53030829 B	29-08-1978
		JP 908245 C	08-05-1978
		JP 50155778 A	16-12-1975
		JP 52033716 B	30-08-1977
		BE 830040 A	01-10-1975
		BR 7503645 A	29-06-1976
		CH 598395 A	28-04-1978
		DE 2525834 A	18-12-1975
		FR 2273897 A	02-01-1976
		GB 1483566 A	24-08-1977
		SU 902675 A	30-01-1982
		US 4017258 A	12-04-1977
US 3546902 A	15-12-1970	BE 717289 A	02-12-1968
		CH 481247 A	15-11-1969
		DE 1785703 B	31-05-1979
		DE 1792060 A	20-04-1972
		ES 355402 A	01-03-1970
		FR 1572764 A	27-06-1969
		GB 1246474 A	15-09-1971
GB 1319352 A	06-06-1973	NONE	
GB 1211421 A	04-11-1970	FR 1565215 A	25-04-1969
		US 3511065 A	12-05-1970

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82