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(54) Adjustable glue distribution device of an embossing-lamination group, relative group and adjusting method

(57) An adjustable glue distributor device (10) of an embossing-lamination group (100) comprising an embossing roll (120) and an embossing counter-roll (110), comprises a glue (11) distribution roll (12) and a glue (11) dosing roll (13), wherein the dosing roll (13) is respectively coupled along two different generatrices respectively with a tank (14) containing the glue for collecting the glue and with the distribution roll (12) along a coupling portion (17) for feeding the collected glue onto the distribution roll (12), the distribution roll (12) and the dosing roll (13) having the same axial development, in which at least one of the distribution roll (12) and the dosing roll (13) is arranged mobile axially in the direction orthogonal with respect to a middle axis (x) of the group (100) in order to increase and/or to reduce the width of the coupling portion (17) between the dosing roll (13) and the distribution roll (12), the dosing roll (13) being integral with the tank of glue (14).

A relative embossing-lamination group and the adjusting method of the device are also part of the invention.

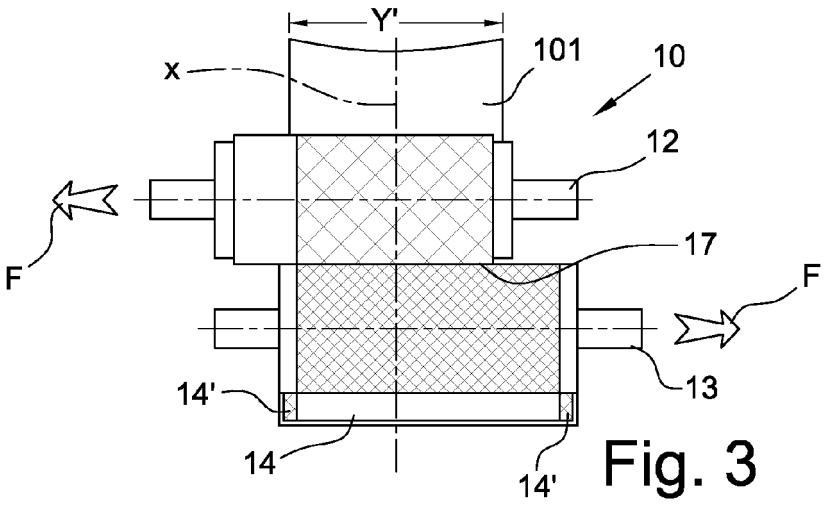

Fig. 3

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Description

[0001] The present invention refers to an adjustable glue distributor device of an embossing-lamination group, to a relative group and to an adjusting method.

[0002] In general embossing-lamination groups for paper comprise at least one embossing roll, at least one embossing counter-roll, at least one glue distribution roll and at least one glue dosing roll.

[0003] Generally, the embossing roll is on one side in abutment against the embossing counter-roll, so as to emboss at least one fed paper ply, and on the other side it is in abutment against the distribution roll so as to distribute the glue on the same embossed paper ply.

[0004] The dosing roll in such groups has the purpose of feeding the glue on the distribution roll and to do this it is in turn coupled with its outer surface on one side with a tank of glue and on the other side with a distribution roll.

[0005] Thanks to such a coupling of rolls, in which the dosing roll is generally called "netted" and the distribution roll "cliché", the glue is then collected from the tank, also called "doctor blade chamber" and is arranged onto at least one embossed ply passing on the same cliché.

[0006] However, these embossing-lamination groups described above have some drawbacks, in particular coming from the necessity of changing the size, that is to say the width, of the paper fed into the group itself, which can for example vary according to the different suppliers.

[0007] Indeed, for a correct operation of the glue distribution device, the paper fed must have a width that is greater than the axial development of the cliché roller by around 40 mm.

[0008] Otherwise, glue would not only be dispensed onto the paper but also onto the surface of the embossing roll against which the cliché roller acts and that is not covered by the paper, disadvantageously leading in addition to a waste of glue, also to the tearing of the paper during embossing and, in particular, to a malfunctioning of the group in general due to the soiling of the embossing roll.

[0009] Currently, when the width of the paper fed to the embossing-lamination group varies, the cliché roll is replaced, each time, with a roll having a slightly smaller development with respect to the width of the paper that is fed to the group itself.

[0010] Such a procedure is obviously completely disadvantageous both in terms of costs and in terms of production since it requires high costs for the cliché rolls to be replaced each time as well as long stoppage of the group during such a replacement of the rolls.

[0011] Solutions have also been proposed aimed at intervening at the interface between the doctor blade chamber and the netted roll by applying onto the netted roll the glue only on the portion of its axial development actually at the paper, therefore transferring the glue onto the cliché roll only at such a portion.

[0012] Document EP 2 025 503 A2 teaches to equip the doctor blade chamber with lateral walls, placed in contact with the netted roll, transversally mobile so as to reduce the length of the tank of the glue and therefore the length facing the netted roll.

[0013] These solutions however lead to a technical complication at the interface between one fixed part, the tank of the glue, and a mobile part, the netted roll, which is *per* se critical for example concerning the sliding seals, and do not seem to have reached the optimal compromise between efficiency and functionality.

[0014] The purpose of the present invention is that of making an adjustable glue distributor device of an embossing-lamination group, a relative group and an adjusting method that are capable of being adapted to the various widths of the paper to be glued without requiring the replacement of any roll of the group.

[0015] The purpose of the present invention is that of making an adjustable glue distributor device of an embossing-lamination group, a relative group and an adjusting method in which sliding seals are avoided between components equipped with rotor-translation relative motion, like for example the linearly mobile side walls of the glue tank and the rotatory netted roll.

[0016] The purpose of the present invention is that of making an adjustable glue distributor device of an embossing-lamination group, a relative group and an adjusting method that are capable of overcoming the drawbacks mentioned above with reference to the prior art in an extremely simple, cost-effective and particularly functional manner.

[0017] These purposes according to the present invention are achieved by making an adjustable glue distributor device of an embossing-lamination group, a relative group and an adjusting method as outlined in the independent claims.

[0018] Further characteristics are provided for in the dependent claims.

[0019] The characteristics and the advantages of an adjustable glue distributor device of an embossing-lamination group, of a relative group and of an adjusting method according to the present invention shall become clearer from the following description, given as an example and not for limiting purposes, with reference to the attached schematic drawings, in which:

figure 1 is a partially cross-sectional schematic side elevation view of an embossing-lamination group provided with an adjustable glue distributor device according to the present invention;

figure 2 is a schematic plan view of an adjustable glue distributor device of an embossing-lamination group according to the present invention in a first operation modality;

figure 3 shows the device of figure 2 in a second operation modality;

figures 4 and 5 schematically show two different example embodiments of the device according to the invention.

[0020] With reference to the figures, an adjustable glue distributor device of an embossing-lamination group is shown, wholly indicated with reference numeral 10.

[0021] By the term glue 11, in general, a gluing substance preferably with a fluid behaviour is meant.

[0022] As visible in figure 1 the adjustable glue distributor device 10, object of the present invention, can be applied to an embossing-lamination group 100.

[0023] According to the embodiment shown in the aforementioned figure 1 such an embossing-lamination group 100 comprises an embossing roll 120 and an embossing counter-roll 110, between which at least one paper ply 101 is fed.

[0024] The adjustable glue distributor device 10 comprises a glue distribution roll 12 and a dosing roll 13 of the same glue, having according to the invention the same axial development and without any delimiting lateral walls.

[0025] In particular, the embossing roll 120 is respectively coupled along two different generatrices with the embossing counter-roll 110 for embossing the at least one paper ply 101 and with the distribution roll 12 that distributes glue onto the at least one embossed paper ply 101.

[0026] The dosing roll 13 is in turn respectively coupled along two different generatrices respectively with a tank 14 containing glue 11 for collecting the glue and with the distribution roll 12 for feeding the glue 11 by contact, collected from the tank 14, onto the distribution roll 12 along a coupling portion 17.

[0027] The tank 14 for the glue 11 is made of a so called doctor blade chamber, comprising a "C"-shaped body, that is suitable for containing the glue, which is arranged laterally substantially along the entire development of the dosing roll 13. In particular, the "C"-shaped body of the tank of glue 14 is delimited at the ends by two fixed lateral walls 14' provided, at the end facing the dosing roll 13, with sealing elements, like for example gaskets. The lateral walls 14' indeed extend up to the proximity of the lateral surface portion of the dosing roll 13, defining the axial development of the dosing roll 13 onto which glue is distributed, which remains constant in the different configurations of the device according to the invention.

[0028] The distribution roll 12 and the dosing roll 13 are each mounted on frame sides 15 that are independent from one another and are provided with their own motorizations 16.

[0029] According to the invention, at least one of the distribution rolls 12 and/or dosing rolls 13 is mobile axially with respect to a middle axis x of the group 100 in order to increase and/or to reduce the width of the coupling portion 17 between the dosing roll 13 and the distribution roll 12. By middle axis x the axis that is parallel to the feeding direction of the at least one paper ply 101 passing through the middle line of the embossing roll 120 is meant.

[0030] Preferably, both the distribution roll 12 and the dosing roll 13 are mobile axially in directions that are opposite to each other and perpendicular with respect to the middle axis x, schematically shown with the arrows F. By translating each of the rolls 12, 13 by the same amount in the opposite direction, symmetrically with respect to the axis x, the at least one paper ply 101 receives the glue in a centred position with respect to the middle axis x of the group. According to the invention, the dosing roll 13 translates remaining integral with the tank of the glue 14.

[0031] For such a purpose figure 2 schematically illustrates the mutual position of the distribution roll 12 and of the dosing roll 13 when a paper ply 101 is fed having a maximum width Y substantially equal to the width of the dosing roll 13. More precisely, the paper ply 101 is slightly wider than the dosing roll 13, for example greater than about 40 mm distributed on the opposite sides.

[0032] In this configuration, the dosing roll 13 and the distribution roll 12 are in contact along their entire axial development with their maximum coupling portions 17 facing one another. Therefore the dosing roll 13 receives the glue 11 on all its surface and transfers the glue to the distribution roll 12 by contact on the entire surface thereof having an axial development that is substantially equal to or slightly less than the width of the paper ply 101.

[0033] Figure 3 on the other hand schematically illustrates the mutual position of the distribution roll 12 and of the dosing roll 13 when a paper ply 101 is fed, for example having a width Y', which is less than the width of the dosing roll 13. The rolls 12 and 13 are coupled along a portion of their axial development, arranged symmetrically with respect to the axis x, that is substantially equal to the width Y' of the paper and more precisely slightly less than it.

[0034] In this configuration, the dosing roll 13 receives the glue 11 on its entire surface, but it only transfers, to the distribution roll 12, by contact that which is at the facing coupling portion 17, equipped with an axial development that is substantially equal to or slightly less than the width of the paper ply 101. The glue that is not transferred on the distribution roll 12 is collected and recycled through means that are not shown.

[0035] The distribution roll 12 receives the glue 11 only on the portion of its axial development facing the dosing roll 13, which substantially coincides with the width of the paper Y'. The portion of the distribution roll 12 that does not face the dosing roll 13 and is not covered by the paper ply 101 comes directly into contact with the embossing roll 120, but it is not affected by the glue 11 and therefore it does not risk to soil the same roll 120.

[0036] Consequently the portion of axial development of the distribution roll 12 on which the glue 11 is distributed is not delimited by the presence of mechanical obstacles, such as lateral walls.

[0037] According to the invention, the dosing roll 13 and/or the distribution roll 12, together with the respective motorizations 16, are mutually translatable in the axial direction integrally with the relative frame sides 15 (figure

4) or they are axially translatable with respect to them (figure 5) with the aid of guide and adjustment means that are not shown.

[0038] It is completely easy to understand how the device 10 object of the invention operates.

[0039] According to the invention, the dosing roll 13 and the distribution roll 12 are mutually translated in the axial direction so as to face one another along the coupling portion 17 of their axial development, which is substantially coincident, and more in particular slightly less than the width of the at least one paper ply 101.

[0040] According to the invention therefore, it is possible to prevent any accidental dispensing of glue onto the surface of the embossing roll 120 of the embossing-lamination group 100 not covered by the at least one ply 101, as mentioned in the case of a dosing roll 13 with a development that is greater than the width of the paper 101 to be glued, decreasing the portion of the distribution roll 12 facing the dosing roll 13 according to the width of the at least one ply 101 to be glued.

[0041] The adjustable glue distributor device of an embossing-lamination group and the relative group object of the present invention have the advantage of not requiring the replacement of the distribution roll 12, nor the intervention on the interface between the tank of the glue 14 and the dosing roll 13.

[0042] The adjustable glue distributor device of an embossing-lamination group and the relative group object of the present invention also have the advantage of avoiding the presence of sliding seals between the rotating rolls and mobile lateral walls that are provided with translating motion relative to the rolls.

[0043] The adjustable glue distributor device of an embossing-lamination group and the relative group thus conceived can undergo numerous modifications and variants, all covered by the invention; moreover, all the details can be replaced with technically equivalent elements. In practice the materials used, as well as the dimensions, can be any according to the technical requirements.

Claims

1. Adjustable glue distribution device (10) of an embossing-lamination group (100) comprising an embossing roll (120) and an embossing counter-roll (110), wherein said device comprises a glue (11) distribution roll (12) and a dosing roll (13) of said glue (11), wherein said dosing roll (13) is respectively coupled along two different generatrices respectively with a tank (14) containing said glue for collecting said glue and with said distribution roll (12) along a coupling portion (17) for feeding said collected glue onto said distribution roll (12), said distribution roll (12) and said dosing roll (13) having the same axial development, **characterized in that** at least one of said distribution roll (12) and said dosing roll (13) is arranged mobile axially in the direction orthogonal with respect to a middle axis (x) of the group (100) in order to increase and/or to reduce the width of said coupling portion (17) between said dosing roll (13) and said distribution roll (12), said dosing roll (13) being integral with said tank of glue (14).

2. Device according to claim 1, **characterized in that** both said distribution roll (12) and said dosing roll (13) are arranged mobile axially in directions opposite to each other with respect to the middle axis (x).

3. Device according to claim 2, **characterized in that** said distribution roll (12) and said dosing roll (13) have in any translated configuration said coupling portion (17) arranged symmetrically with respect to said middle axis (x).

4. Device according to any of the preceding claims, **characterized in that** said dosing roll (13) and/or said distribution roll (12) and the respective motorizations (16) are mutually translatable in the axial direction integrally with the relative frame sides (15).

5. Device according to any of the claims 1 to 3, **characterized in that** said dosing roll (13) and/or said distribution roll (12) and the respective motorizations (16) are mutually translatable in the axial direction and translatable with respect to said frame sides (15).

6. Device according to any of the preceding claims **characterised in that** said distribution roll (12) is in contact only with said dosing roll (13) along said coupling surface (17).

7. Embossing-lamination group comprising an embossing roll (120) and an embossing counter-roll (110), as well as an adjustable glue distributor device (10) according to any of the preceding claims, wherein said embossing roll (120) is respectively coupled along two different generatrices with said embossing counter-roll (110) for embossing at least one paper ply (101) and with said distribution roll (12) for distributing said glue (11) onto said at least one embossed paper ply (101).

8. Adjusting method of an adjustable glue distributor device (10) according to any of the claims 1 to 6, comprising the steps of axially moving in the direction orthogonal with respect to a middle axis (x) of the group (100) at least one of said dosing roll (13), integral with said tank of glue (14), and said distribution roll (12) in order to increase and/or to reduce the width of said coupling portion (17) between said dosing roll (13) and said distribution roll (12), said coupling portion (17) being substantially coincident with the width (Y, Y') of said at least one paper ply (101).

9. Method according to claim 8, **characterized in that** both said distribution roll (12) and said dosing roll (13) are axially translated in directions opposite to each other with respect to the middle axis (x).

10. Method according to claim 9, **characterized in that** said distribution roll (12) and said dosing roll (13) are translated in opposite directions by the same quantity in order to center the coupling portion (17) with respect to the middle axis (x) of the group (100).

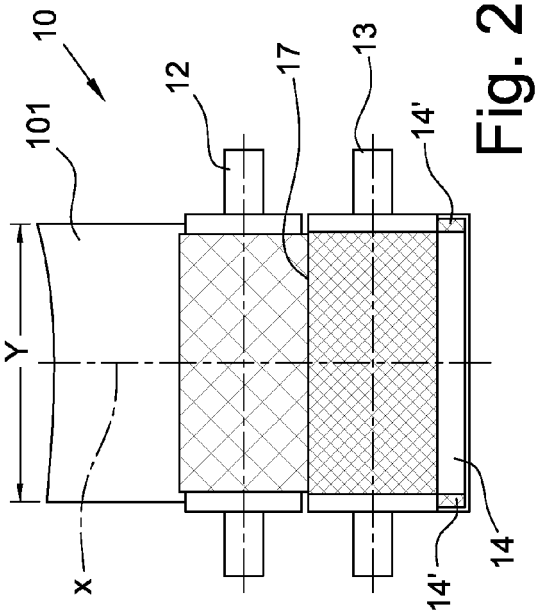

Fig. 2

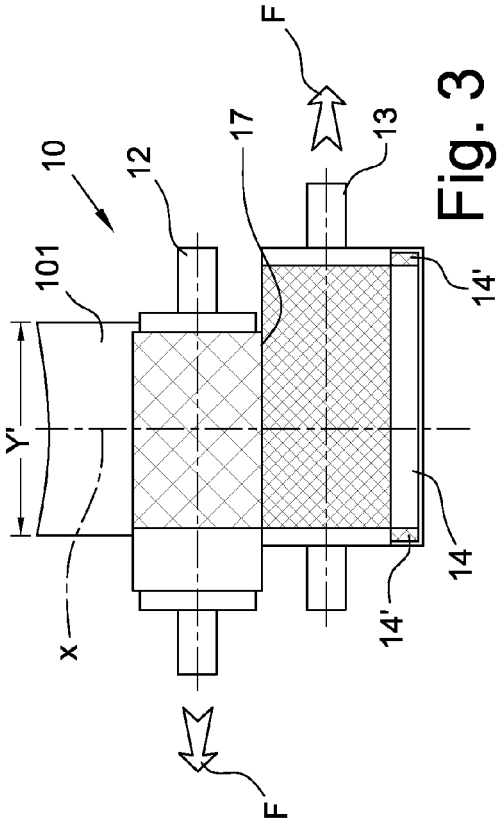

Fig. 3

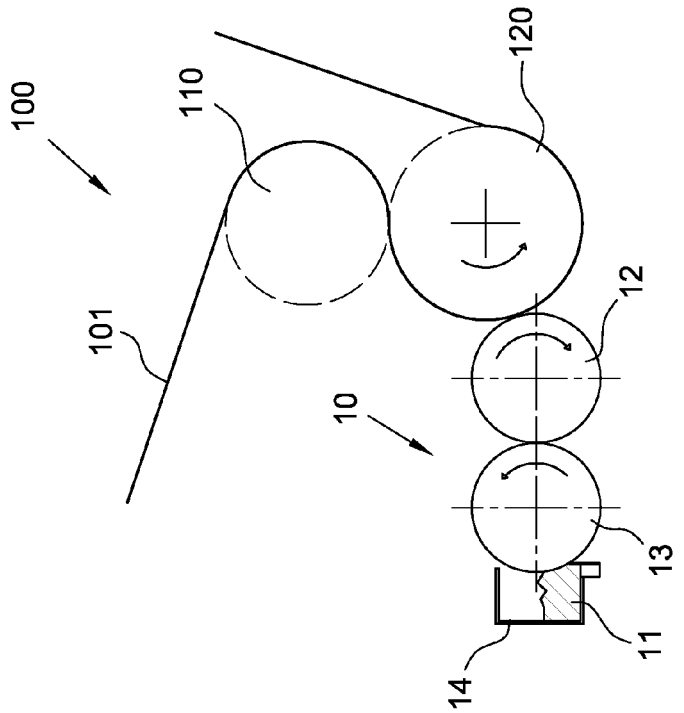

Fig. 1

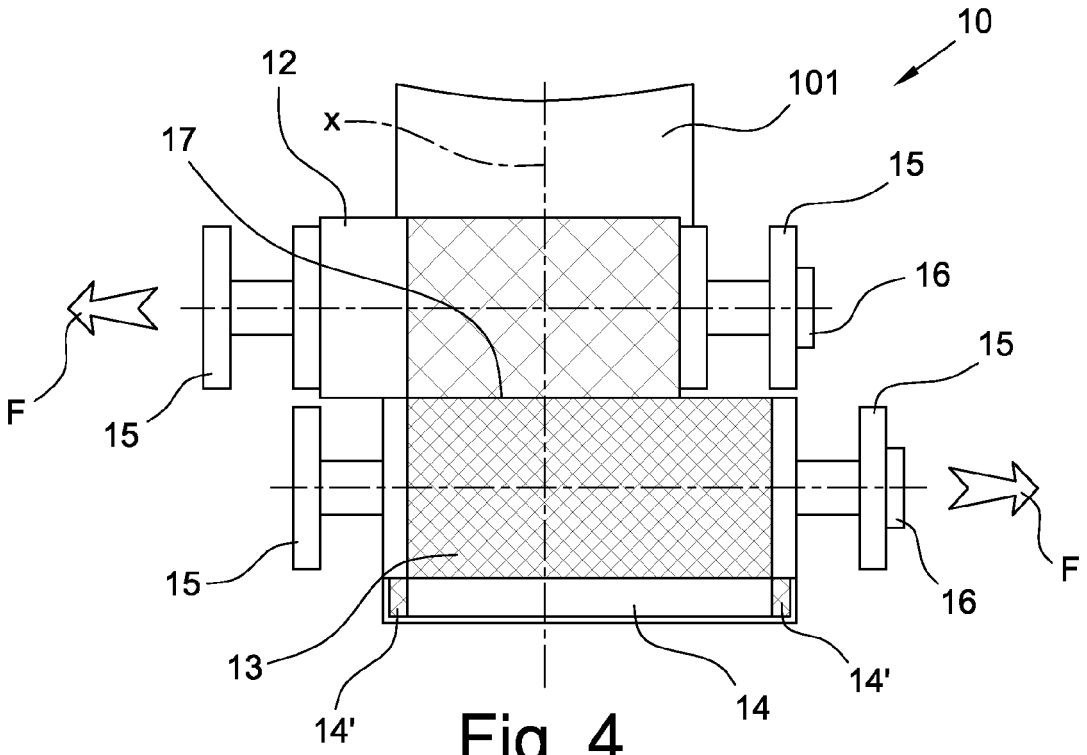
10
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Fig. 4

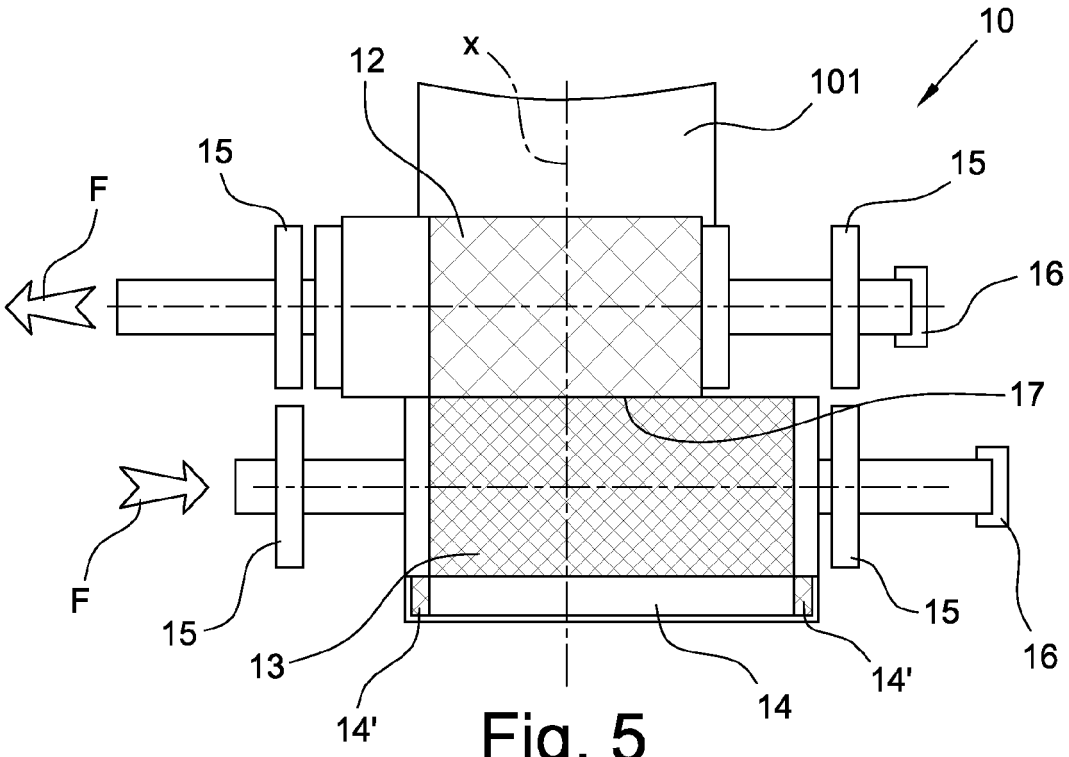
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Fig. 5

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EUROPEAN SEARCH REPORT

Application Number
EP 13 19 9477

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	12 March 2014	Frego, Maria Chiara

CATEGORY OF CITED DOCUMENTS

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