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(54) BEARING FOR WINDING ABSORBING MATERIAL TO BE USED IN CLEANING PLANTS FOR PRINTING MACHINES

LAGER ZUM WICKELN VON ABSORBIERENDEM MATERIAL ZUR VERWENDUNG IN REINIGUNGSANLAGEN FÜR DRUCKMASCHINEN

SUPPORT POUR L'ENROULEMENT DE MATIERE ABSORBANTE A UTILISER DANS DES INSTALLATIONS DE NETTOYAGE POUR MACHINES A IMPRIMER

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Description

[0001] The present invention has as an object a bearing for winding absorbing material to be used in cleaning plants for printing machines.

[0002] New printing machines are provided with automatic cleaning systems involving the use of a non-woven fabric packaged in the form of coils having the same width as the printing machine. Such non-woven fabric coils are placed within the automatic device which is intended to unroll the coil at issue, spray the non-woven fabric or other absorbing material with a solvent for printing inks and put the solvent imbued non-woven fabric into contact with the machine ink-stained cylinders by rotating them.

[0003] Due to this contact between the solvent imbued non-woven fabric and the machine inked cylinders, the cleaning of cylinders is obtained through transfer of ink from cylinders to the solvent imbued non-woven fabric; ink-stained non-woven fabric is then rolled up on an automatic system shaft, while clean non-woven fabric still available on the coil is unrolled, sprayed with solvent and put into contact with the ink-stained cylinder of the printing machine when cleaning is wanted.

[0004] Through this process, which continues until the non-woven material rolled up on the coil ends, several complete cleaning cycles of cylinders and printing sheets are obtained.

[0005] A more complex automatic cleaning system involves the use of non-woven material coils pre-imbued with solvent. Such coils are placed into an automatic device comprised of equipment provided only with an unrolling and winding device for the clean non-woven fabric. The device used with such a system is remarkably more simple since the use of solvent pre-imbued non-woven fabric does not require any solvent tank, distribution pumps, spraying nozzles and recovery systems for exhausted or exceeding solvent.

[0006] In all cases described above, during cleaning operations, the absorbent material coil is subjected to a strong tensile force in order to assure perfect contact between the material itself and the surface of the ink-stained sheet or printing machine cylinder.

[0007] It is thus necessary an anchoring of the absorbing material to its relevant bearing which is as strong as possible in order to avoid inconvenient slippage when said material is subjected to traction.

[0008] Prior art bearings for winding absorbing material provide the use of glues or adhesive tapes applied to bearings, thus realizing the bonds needed to keep said absorbing material adherent to the bearing.

[0009] The limitations of such systems are numerous and well understandable.

[0010] First of all, it is required the use of glues or adhesives particularly strong and, consequently, expensive. In addition, the application of such glues or adhesives involves a greater increasing in coils preparation time and, consequently, in costs incurred.

[0011] Finally, it is very important to underline the risk of tack loss in case the absorbent material is imbued with new solvents whose exact composition is not known. As a matter of fact, in this case the behavior of solvents interacting with glue or adhesive used to assure the absorbing material to the relevant bearing is not known. This remarkably increases slippage risks by the material on the relevant bearing.

[0012] Further known bearings for winding absorbing material to be used in cleaning plants for printing machines are disclosed in GB-A-1149396, US-A-4986182 and US-A-2003/0075064.

[0013] Therefore, the object of this invention is to solve the above problems by realizing a bearing for winding absorbing material to be used in cleaning plants for printing machines that assures an optimum grip of the material.

[0014] A further object of the present invention is to realize a bearing for winding absorbing material to be used in cleaning plants for printing machines which is compatible with any type of solvent used for cleaning.

[0015] Finally, an object of the present invention is to realize a low cost and easy maintenance bearing for winding absorbing material to be used in cleaning plants for printing machines.

[0016] Such objects are reached by a bearing for winding absorbing material as to claim 1, to which reference is made for brevity sake.

[0017] The invention is thereafter described in detail as a non limiting example, with reference to the enclosed drawings, wherein:

- figure 1 shows a cross-section view of the absorbing material bearing along a plane which is perpendicular to the axis of said bearing, according to prior art;
- figure 2 shows a cross section view of a first embodiment of the absorbing material bearing along a plane which is perpendicular to the axis of said bearing, according to the present invention;
- figure 3 shows a cross section view of a particular of the absorbing material bearing according to the present invention;
- figure 4 shows a perspective view of a particular of the absorbing material bearing according to the present invention;
- figure 5 shows a perspective view of a particular of an embodiment of the absorbing material bearing which is not part of the present invention; and
- figure 6 shows a perspective view of a particular of an embodiment of the absorbing material bearing which is not part of the present invention.

[0018] The bearing representing the object of the present invention is globally indicated, in an embodiment thereof, by numerical reference 10.

[0019] The absorbing material bearing 10, as shown in figure 2, has shaped anchoring elements 20 on its external surface.

[0020] This section, independently of the particular form of anchoring elements 20, has one of its sides inclined with respect to the base with an angle a of 90° or greater.

[0021] In figure 3 is shown a preferred embodiment of the bearing representing the object of the present invention, in which anchoring elements 20 located on the external surface of the bearing have a triangular cross section and a side 30 of the triangle forms, with the external surface of the bearing, an angle α of 90° or greater.

[0022] However, such a section can include a triangular shape in which one or both sides have a curvilinear or broken pattern and in which, in any case, one side has an angle α of 90 ° or greater with respect to the base represented by the bearing external surface.

[0023] In the embodiment of the present invention shown in figure 4, the bearing will be provided with anchoring elements 20 extended through all its length.

[0024] In a further embodiment shown in figure 5, anchoring elements 20 will be interrupted transversally to the bearing longitudinal extent, in order to form on its surface protuberances in the form of variable length teeth 40. Such transversal interruptions could also form anchoring elements in the form of spikes or thorns 50 regularly or irregularly placed on the external surface of bearing 10, as shown in an exemplary form in figure 6.

[0025] Such anchoring elements 20 could be obtained independently of the preferred embodiment during the extrusion or manufacturing step of the tube constituting the bearing, or they could be obtained by digging the external surface in order to remove part of the material.

[0026] Such anchoring elements 20 could finally be obtained by applying protuberances having the above characteristics to the external surface of the bearing by means of casting or sticking or mechanical fastenings of several kinds, such as nailing or screwing.

[0027] During operation of bearing 10 for winding absorbing material to be used in cleaning plants for printing machines, such absorbent material is wound on bearing 10 so that the leading portion of the non-woven material sheet comes into contact with the anchoring elements 20 described on the external surface of said bearing.

[0028] During cleaning operations of printing machines, friction between said anchoring elements 20 and the absorbing material opposes to the tensile force by the printing cylinder on the solvent imbued non-woven fabric.

[0029] The higher the value of tensile force exerted by interaction between the printing cylinder and the absorbing material coil, the higher the friction.

[0030] Bearing 10 representing the object of the present invention can be comprised of plastic, paperboard, wood or metal.

[0031] Preferably, bearing 10 will be comprised of plastics, such as polythene, polyethylene, PVC, polyester, nylon or rubber or a mixture thereof.

[0032] Another manufacturing possibility for bearing 10 is to use stiff paperboards or plasticized paperboards or plastic externally coated paperboards properly treated in order to allow formation of protuberances continued along the full extent of bearing 10.

[0033] Bearing 10 can also be manufactured using wood or metal of by coupling such materials in turn usable together with plastics and paperboards as pointed out above.

[0034] Bearing 10 for absorbing material representing the object of the present invention has numerous and important advantages with respect to bearings used in prior art.

[0035] First of all, the presence of anchoring elements 20 oriented in a direction opposed to the absorbing material winding direction allows stapling to the bearing 10, which increases adherence in proportion to the increase in the attractive force exerted on the material.

[0036] Second, the possibility to exert a greater pressure in using the cleaning coil, which can be strongly scrubbed against the surface to be cleaned, is assured.

[0037] In addiction, the use of glues or adhesives to keep the absorbing material adherent to bearing 10 is avoided, thus preventing problems deriving from interaction between the solvents used to clean cylinders of printing machines and glues and adhesives themselves.

[0038] Another advantage is obtained through reduction of costs concerning preparation of the cleaning coils, since gluing of the absorbing material to its bearing is eliminated.

[0039] Finally, elimination of risks concerning downtimes, due to the absorbing material slippage during cleaning because of the sizable extent of tensile forces concerned, is assured.

[0040] From the above it is clear that the inventive concepts expressed are not limited to the application examples shown, but they can be advantageously adapted to other similar applications.

[0041] The practical scope of the present invention is not limited to the examples shown in the above description.

[0042] The present invention is thus subjected to many modifications and changes, all within the inventive concept expressed in the claims enclosed, while technical details can change as needed.

Claims

1. A bearing (10) for winding absorbing material to be used in cleaning plants for printing machines of a type provided with an external curvilinear winding surface, wherein said external winding surface has anchoring elements (20) protruding with respect to said surface oriented in adirection opposed to the absorbing material winding direction, wherein said anchoring elements (20) cross section along a plane that is perpendicular to the axis of said bearing (10) is substantially triangular and hasat least a side forming an angle of 90° or greater with the external wind-

ing surface along a plane which is perpendicular to the said external winding surface, **characterized in that** said anchoring elements (20) extend each along the full longitudinal extent of said bearing (10).

2. The bearing (10) according to claim 1, **characterized in that** one or both sides of the triangle representing the cross section of said bearing (10) have a curvilinear or broken pattern.

3. The bearing (10) according to claim 1 or 2, **characterized in that** said anchoring elements (20) are obtained during the extrusion or manufacturing step of said bearing (10).

4. The bearing (10) according to claim 1 or 2, **characterized in that** said anchoring elements (20) are obtained by digging the external surface in order to remove part of the material.

5. The bearing (10) according to claim 1 or 2, **characterized in that** said anchoring elements (20) are connected to the external surface of said bearing (10) by means of a casting process.

6. The bearing (10) according to claim 1 or 2, **characterized in that** said anchoring elements (20) are connected to the external surface of said bearing (10) by means of gluing.

7. The bearing (10) according to claim 1 or 2, **characterized in that** said anchoring elements (20) are connected to the external surface of said bearing (10) by means of mechanical fastenings of various types, such as nailing or screwing.

8. The bearing (10) according to claim 1, **characterized in that** it is comprised of paperboard or plastic or metal.

9. The bearing (10) according to previous claims, **characterized in that** it is comprised of mutually mixed or coupled materials, such as plasticized paperboard, metal-coated wood and other similar combinations.

Patentansprüche

1. Lager (10) zum Wickeln von absorbierendem Material zur Verwendung in Reinigungsanlagen für Druckmaschinen einer Art, die mit einer äußeren kurvenförmigen Wickeloberfläche versehen ist, wobei die äußere Wickeloberfläche Verankerungselemente (20) umfasst, die gegenüber der Oberfläche herausragen, die in eine zur Winderichtung des absorbierenden Materials entgegengesetzte Richtung ausgerichtet ist, wobei der Querschnitt der Verankerungselemente (20) entlang einer Ebene, die sich senkrecht zur Achse des Lagers (10) verhält, im Wesentlichen dreieckig ist und wenigstens eine Seite umfasst, die einen Winkel von mindestens 90° zur äußeren Wickeloberfläche entlang einer Ebene bildet, die sich senkrecht zur äußeren Wickeloberfläche verhält, **dadurch kennzeichnet, dass** sich die Verankerungselemente (20) jeweils entlang der gesamten Längsausdehnung des Lagers (10) erstrecken.

2. Das Lager (10) nach Anspruch 1, **dadurch gekennzeichnet, dass** eine oder beide Seiten des Dreiecks, das den Querschnitt des Lagers (10) bildet, ein kurvenförmiges oder unterbrochenes Profil aufweist/aufweisen.

3. Das Lager (10) nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** die Verankerungselemente (20) während der Extrusion oder Fertigungsstufe des Lagers (10) gewonnen werden.

4. Das Lager (10) nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** die Verankerungselemente (20) gewonnen werden, indem die äußere Oberfläche eingekerbt wird, um Teile des Materials zu entfernen.

5. Das Lager (10) nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** die Verankerungselemente (20) mittels eines Gussverfahrens mit der äußeren Oberfläche des Lagers (10) verbunden sind.

6. Das Lager (10) nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** die Verankerungselemente (20) mittels Klebung mit der äußeren Oberfläche des Lagers (10) verbunden sind.

7. Das Lager (10) nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** die Verankerungselemente (20) mittels unterschiedlicher mechanischer Befestigung wie Vernagelung oder Verschraubung mit der äußeren Oberfläche des Lagers (10) verbunden sind.

8. Das Lager (10) nach Anspruch 1, **dadurch gekennzeichnet, dass** es aus Karton oder Kunststoff oder Metall besteht.

9. Das Lager (10) nach vorausgehenden Ansprüchen, **dadurch gekennzeichnet, dass** es aus miteinander vermischten oder verbundenen Materialien wie plastifiziertem Karton, metallüberzogenem Holz und anderen, ähnlichen Kombinationen besteht.

Revendications

1. Palier (10) destiné à enrouler un matériau absorbant à utiliser dans des usines de nettoyage pour des imprimantes d'un type pourvu d'une surface extérieure d'enroulement curvilinéaire, ladite surface extérieure d'enroulement présentant des éléments d'ancrage (20) faisant saillie par rapport à ladite surface orientée dans une direction opposée à la direction d'enroulement du matériau absorbant, la section transversale desdits éléments d'ancrage (20) le long d'un plan perpendiculaire à l'axe dudit palier (10) étant substantiellement triangulaire et possédant au moins un côté formant un angle supérieur ou égal à 90° avec la surface extérieure d'enroulement le long d'un plan perpendiculaire à ladite surface extérieure d'enroulement, **caractérisé en ce que** lesdits éléments d'ancrage (20) s'étendent respectivement le long de toute l'étendue longitudinale dudit palier (10).

2. Palier (10) selon la revendication 1, **caractérisé en ce qu'**un côté ou les deux côtés du triangle représentant la section transversale dudit palier (10) présentent un motif curvilinéaire ou brisé.

3. Palier (10) selon la revendication 1 ou 2, **caractérisé en ce que** lesdits éléments d'ancrage (20) sont obtenus pendant l'étape d'extrusion ou d'usinage dudit palier (10).

4. Palier (10) selon la revendication 1 ou 2, **caractérisé en ce que** lesdits éléments d'ancrage sont obtenus en creusant la surface extérieure afin d'ôter une partie du matériau.

5. Palier (10) selon la revendication 1 ou 2, **caractérisé en ce que** lesdits éléments d'ancrage (20) sont reliés à la surface extérieure dudit palier (10) à l'aide d'un procédé de moulage.

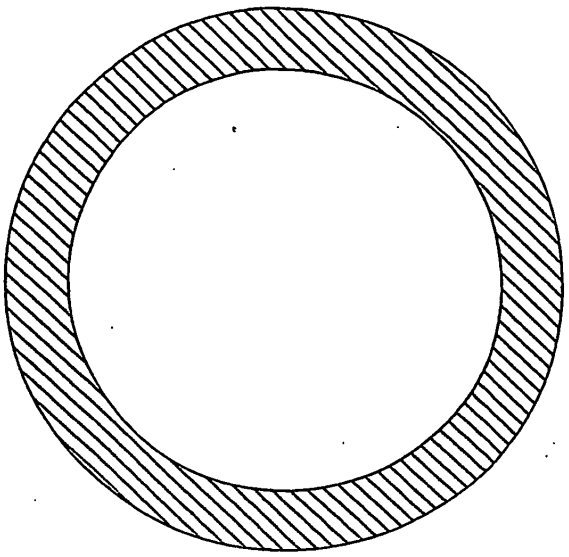
6. Palier (10) selon la revendication 1 ou 2, **caractérisé en ce que** lesdits éléments d'ancrage (20) sont reliés à la surface extérieure dudit palier (10) à l'aide d'un collage.

7. Palier (10) selon la revendication 1 ou 2, **caractérisé en ce que** lesdits éléments d'ancrage (20) sont reliés à la surface extérieure dudit palier (10) à l'aide de fixations mécaniques de différents types, telles que des clous ou des vis.

8. Palier (10) selon la revendication 1, **caractérisé en ce qu'**il est constitué de carton ou de plastique ou de métal.

9. Palier (10) selon les revendications précédentes, **caractérisé en ce qu'**il est constitué de matériaux mélangés mutuellement ou accouplés, tels que du carton plastifié, du bois recouvert de métal et d'autres combinaisons similaires.

Fig. 1



PRIOR ART

Fig. 2

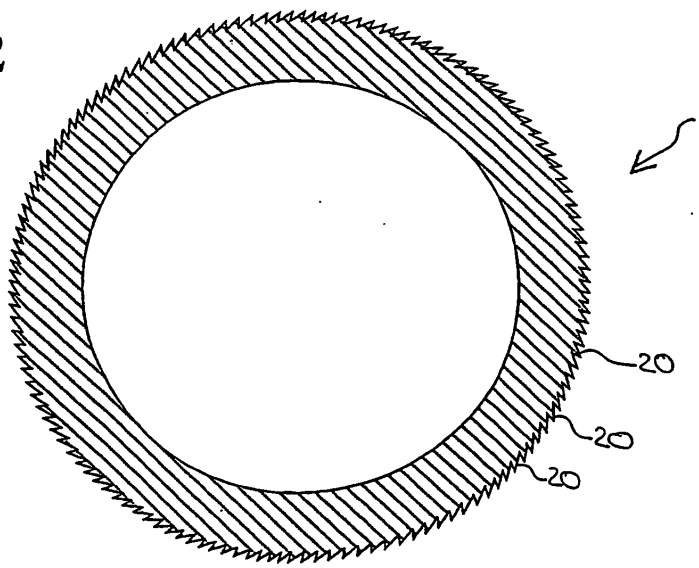
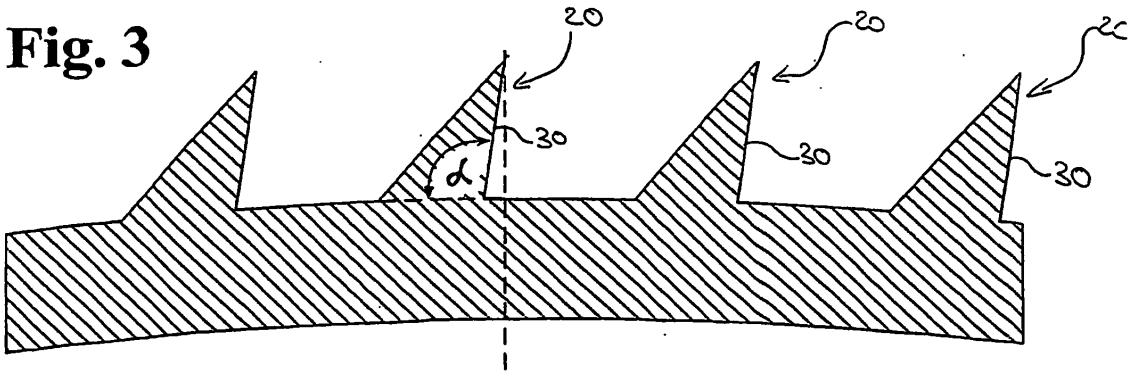


Fig. 3



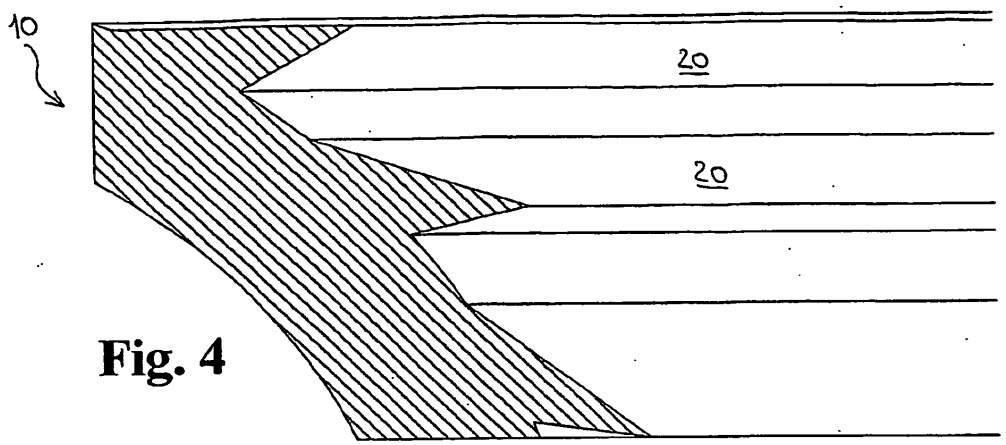


Fig. 4

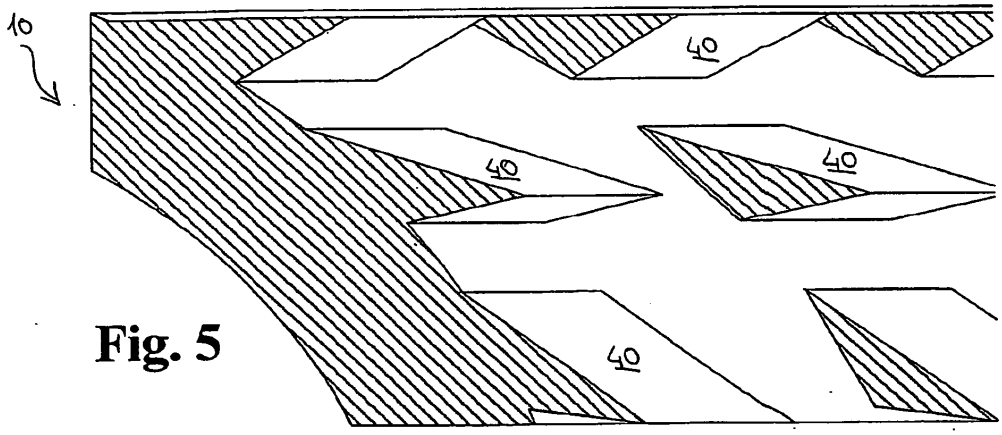


Fig. 5

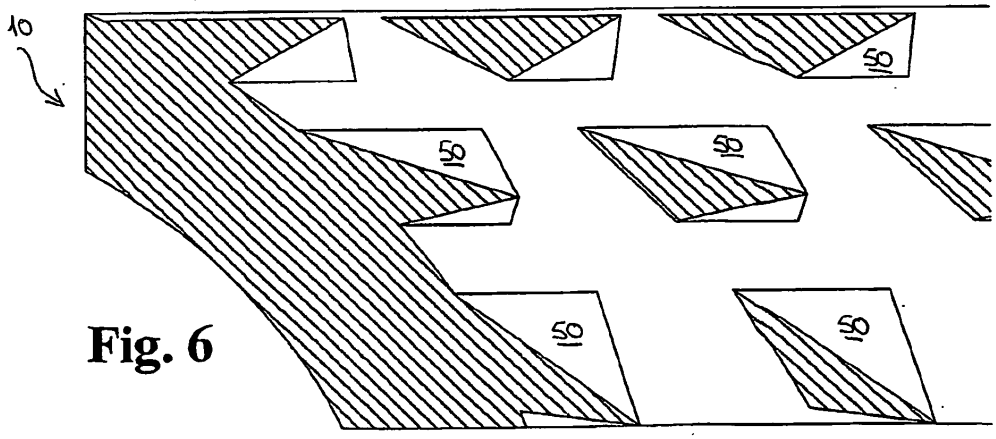


Fig. 6

REFERENCES CITED IN THE DESCRIPTION

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