

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
15 January 2009 (15.01.2009)

PCT

(10) International Publication Number
WO 2009/007892 A1

(51) International Patent Classification:
B41N 10/04 (2006.01)

(21) International Application Number:
PCT/IB2008/052697

(22) International Filing Date: 4 July 2008 (04.07.2008)

(25) Filing Language: Italian

(26) Publication Language: English

(30) Priority Data:
MI2007A001350 6 July 2007 (06.07.2007) IT

(71) Applicant (*for all designated States except US*):
TRELLEBORG ENGINEERED SYSTEMS ITALY S.P.A. [IT/IT]; Via Andrea Costa 2, I-20131 Milano (IT).

(72) Inventors; and

(75) Inventors/Applicants (*for US only*): **INVERNIZZI, Gianpietro** [IT/IT]; Via Bocconi 22, I-26900 Lodi (IT).
ZENI, Fausto [IT/IT]; Via G. Di Vittorio 15, I-26826 Secugnago (IT).

(74) Agents: **BORSANO, Corrado** et al.; Corso di Porta Vittoria 9, I-MILANO 20122 (IT).

(81) Designated States (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM,

AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declaration under Rule 4.17:

— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*

Published:

— *with international search report*
— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

(54) Title: METHOD FOR OBTAINING A COATING (METAL-BACK PRINTING BLANKET) OF A TYPOGRAPHIC PRINTING ROLL WITH NON-ADHESIVE PLASTIC SHEET, AND METAL-BACK PRINTING BLANKET THUS OBTAINED

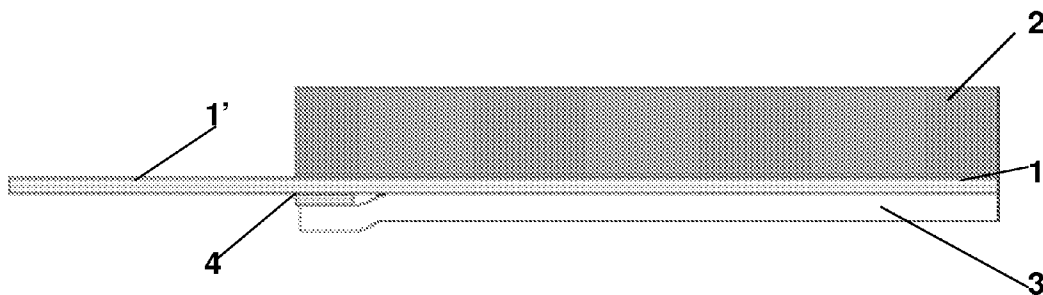


FIG. 1

(57) Abstract: Described herein is a method for providing the coating (metal-back printing blanket) of a typographic printing roll, said coating comprising a metal layer, one or more upper layers, and a sheet of plastic material on the bottom surface of the metal layer, the method comprising the step of sealing one or more edges of the plastic sheet to the metal layer by means of an adhesive tape applied between the edge of the plastic sheet and the metal layer.

METHOD FOR OBTAINING A COATING (METAL-BACK PRINTING
BLANKET) OF A TYPOGRAPHIC PRINTING ROLL WITH NON-ADHESIVE
PLASTIC SHEET, AND METAL-BACK PRINTING BLANKET THUS OBTAINED
DESCRIPTION

5 The present invention relates to a method for providing a
coating (metal-back printing blanket) of a typographic
printing roll with a non-adhesive plastic sheet, and metal-
back printing blanket thus obtained.

10 Offset typographic printing machines are made up of a
number of rolls, some of which simply carry out a driving
function in regard to the paper that is passing through,
whilst others are involved, in particular, in the printing
process. Amongst the latter rolls, at least one performs the
15 function of taking the ink from the printing plate or matrix
and transferring it to the paper. The roll or cylinder that
is to receive the ink from the plate and transfer it to the
paper is made of steel coated with a rubberized fabric
referred to in the technical sector as "offset printing
20 blanket" which must guarantee that the ink is taken up
efficiently from the printing matrix with a consequent good
transfer of the ink itself to the paper to be printed.

An offset printing blanket is typically made up of
different layers, generally of rubber and fabric; its outer
part (top part) is made of rubber, and the bottom part in
25 contact with the printing roll is generally made of fabric.

In the case, instead, of a coating referred to in the
technical sector and in what follows as «metal-back printing
blanket», the bottom part in contact with the printing roll
is constituted by a metal layer made of stainless steel.

30 The metal-back printing blanket is wound around the steel
roll, which envisages a transverse slit, referred to as
"gap", within which the terminal edges of the metal base of
the metal-back printing blanket are inserted and fixed.

The printing roll and the metal-back printing blanket

wound around it are subject to phenomena of corrosion and wear due in part to mutual rubbing and in part to the corrosive action of the chemical substances used both in the printing process and in the steps of cleaning after use.

5 In order to overcome the effects of corrosion and wear it is known from the patent No. US-6912955 to coat the bottom surface of the metal-back printing blanket, which must come into contact with the printing roll, with a plasma treatment.

10 It is likewise known to insert between the metal layer of the metal-back printing blanket and the surface of the printing roll a sheet of plastic material, which can be wound around the printing roll, or else fixed on the bottom surface of the metal layer of the blanket. Fixing is obtained with an adhesive of the acrylic PSA (Pressure Sensitive Adhesive) type.

15 The above adhesive, however, presents problems due to the fact that it does not resist effectively the solvents used in the processes of printing and above all of washing of the surface, in addition to not presenting a sufficient adhesion at temperatures higher than 60°C.

20 The solvent tends to penetrate from the edges of the plastic sheet and corrode the adhesive, forming also bubbles and peeling of the coating. The most problematical consequence is that the plastic sheet tends to slide and displace with respect to the metal layer of the metal-back printing blanket, with consequent machine downtime for replacement of the metal-back printing blanket itself and consequent reduction in productivity.

25 Likewise known to the art is to use, in the field of coatings of the classic offset-printing-blanket type, a plastic sheet without adhesive between the surface of the printing roll and the offset printing blanket. The sheet is applied underneath the entire surface of the offset printing blanket, including the terminal edges, and is inserted in the gap together with said edges, where is then engaged and fixed

with purposely provided stays.

In the case of the metal-back printing blanket, however, there is no possibility of anchoring the plastic sheet inside the gap of the printing roll in so far as the fixing system is different.

Consequently, the purpose of the present invention is to overcome the aforesaid drawbacks and indicate a method for providing the coating of the metal-back-printing-blanket type for a typographic printing roll with a non-adhesive plastic sheet, and a metal-back printing blanket thus obtained, which prevents penetration of the solvents and guarantees perfect adhesion of the plastic sheet to the metal-back printing blanket.

The subject of the present invention is a method for providing a coating for a typographic printing roll, said coating, referred to as "metal-back printing blanket", comprising at least one metal layer, one or more upper layers, and a non-adhesive sheet of plastic material on the bottom surface of the metal layer, said method being characterized in that it comprises the step of gluing one or more edges of the non-adhesive sheet of plastic material to the metal layer by means of an adhesive material applied between the edge of the plastic sheet and the metal layer.

A particular subject of the present invention is a method for providing a coating (metal-back printing blanket) for a typographic printing roll with a non-adhesive plastic sheet, and a metal-back printing blanket thus obtained, as will be described more fully in the claims, which form an integral part of the present description.

Further purposes and advantages of the present invention will emerge clearly from the ensuing detailed description of an example of embodiment thereof (and of its variants) and from the annexed plate of drawings, which is provided purely by way of explanatory and non-limiting example and in which:

figure 1 shows a cross-sectional side view of the metal-back printing blanket provided with plastic sheet, forming the subject of the present invention;

figure 2 shows a detail of Figure 1 regarding a step of
5 milling.

With reference to Figure 1, the reference number 1 designates the metal layer of the metal-back printing blanket, whilst the reference number 2 designates the set of the upper layers of the metal-back printing blanket (one or
10 more layers) obtained using a well-known technique.

The reference number 3 designates a sheet of plastic material, for example, polyester, set on the bottom surface of the metal layer 1 of the blanket. Preferably, the plastic sheet 3 occupies a major part of the bottom surface of the
15 metal layer, with the exclusion of the edge 1', which is folded back and inserted in the gap of the printing roll not represented in the figure.

Then according to the main aspect of the present invention, one or more edges of the plastic sheet 3 are glued
20 to the metal layer 1 by means of an adhesive material, which, in this example of embodiment, is an adhesive tape 4 applied between the edge of the plastic sheet 3 and the adjacent metal layer 1.

Preferably, the adhesive tape is of the thermo-adhesive
25 type, provided with thermoplastic or thermosetting glue, which is able to undergo vulcanizing and cross-linking, and proves resistant to the solvents typically used and to the high temperatures, higher than 60°C, which can develop during normal use of the metal-back printing blanket.

The adhesive tape can be of a single-layer or multilayer
30 type, even with intermediate supporting layers, which can be made, for example, of plastic material (polyester, polyvinyl chloride, polypropylene, polyurethane, etc.), of paper, or else of non-woven fabric.

The glue of the adhesive tape can comprise, for example, one or more of the following materials: thermoplastic polyurethane, polyvinyl chloride, copolymers with vinyl acetate, thermosetting polyurethane, polyester, polyamide, polyolephin, phenolic resins, epoxy adhesives, polyurethane adhesives, polyacrylic adhesives, etc.

According to another example of embodiment, the adhesive material 4 can also present as fluid or gel layer with a material composition comprising one or more materials, for example, chosen from amongst the ones referred to above, which is spread or applied with a purposely provided tool, for example, a paintbrush, a spatula, a roller, a gun or by spraying.

Preferably, the adhesive tape 4 is applied only to the edge of the plastic sheet set at the so-called "leading edge" of the metal-back printing blanket, i.e., the edge that is in front with respect to the direction of rotation of the printing roll, at one side of the gap of the printing roll, since in this point there is the highest stress due to sliding of the plastic sheet 3 with respect to the metal layer 1 and/or to the printing roll, and it is hence in this point that adhesion by gluing is obtained.

Obviously, the tape can appropriately be applied on a number or all of the sides of the plastic sheet, on the side edges and on the so-called "trailing edge", the edge that is at the back with respect to the direction of rotation of the printing roll, at the other side of the gap of the printing roll.

With reference to Figure 2, in order to prevent the thickness of the adhesive tape 4 from creating an undesirable overall thickening of the metal-back printing blanket in the points in which it is applied, a thickening that could adversely affect proper rotation of the printing roll and a correct printing process, there is preferably carried out a milling of the outer edge 3' of the plastic sheet 3 on which

the tape 4 is applied so as to render the overall thickness of the stretch that comprises the edge of the plastic sheet and the adhesive tape uniform. Alternatively, the milling can be made on the top edge 2' of the metal-back printing
5 blanket.

Variants are possible to the non-limiting example described, without this implying any departure from the sphere of protection of the present invention, said variants comprising all the embodiments that are equivalent for a
10 person skilled in the branch.

The advantages deriving from the application of the present invention are clear.

The application of the adhesive tape 4 guarantees fixing of the plastic sheet to the metal-back printing blanket,
15 given that it is possible to avoid using the self-adhesive plastic sheet with adhesive of a PSA (Pressure Sensitive Adhesive) type.

From the above description the person skilled in the branch is able to reproduce the object of the invention
20 without introducing any further constructional details.

CLAIMS

1. A method for providing a coating for a typographic printing roll, said coating, referred to in the following as "metal-back printing blanket", comprising at least one metal layer (1), one or more upper layers (2), and a non-adhesive sheet of plastic material (3) on the bottom surface of the metal layer (1), said method being characterized in that it comprises a step of gluing one or more edges of the non-adhesive sheet of plastic material (3) to the metal layer (1) by means of an adhesive material (4) applied between the edge of the plastic sheet (3) and the metal layer (1).

2. The method according to Claim 1, characterized in that said adhesive material is an adhesive tape (4) of the thermo-adhesive type, provided with thermoplastic or thermosetting glue.

3. The method according to Claim 2, characterized in that said adhesive tape (4) is single-layer or multilayer.

4. The method according to Claim 3, characterized in that said single-layer or multilayer adhesive tape (4) comprises intermediate supporting layers of plastic material, such as polyester, polyvinyl chloride, polypropylene, polyurethane, or else paper, or else non-woven fabric.

5. The method according to Claim 2, characterized in that said thermoplastic or thermosetting glue comprises one or more of the following materials: thermoplastic polyurethane, polyvinyl chloride, copolymers with vinyl acetate, thermosetting polyurethane, polyester, polyamide, polyolephin, phenolic resins, epoxy adhesives, polyurethane adhesives, polyacrylic adhesives.

6. The method according to Claim 1, characterized in that said adhesive material (4) is a fluid or gel layer.

7. The method according to Claim 1, characterized in that said plastic sheet (3) is applied on a major part of the bottom surface of the metal layer (1), with the exclusion of

the edge (1'), which is folded back and inserted in a gap provided in the typographic printing roll.

8. The method according to Claim 1, characterized in that said adhesive tape (4) is applied at least to the edge of the plastic sheet set at the leading edge of the coating.

9. The method according to Claim 1, characterized in that it further comprises a step of milling of said one or more external edges (3') of said plastic sheet (3) on which said adhesive tape is applied so as to render the overall thickness of the stretch that comprises the edge of the plastic sheet and the adhesive tape uniform.

10. The method according to Claim 1, characterized in that it further comprises a step of milling of the top edge (2') of said upper layer (2) in an area corresponding to the points on which said adhesive tape is applied so as to render the overall thickness of the stretch that comprises the edge of the plastic sheet and the adhesive tape uniform.

11. A metal-back printing blanket for a typographic printing roll, comprising at least one metal layer (1), one or more upper layers (2), and a non-adhesive sheet of plastic material (3) on the bottom surface of the metal layer (1), said metal-back printing blanket being characterized in that it comprises an adhesive material (4) applied on one or more edges of the non-adhesive sheet of plastic material (3), between the edge of the plastic sheet (3) and the metal layer (1).

12. The metal-back printing blanket according to Claim 11, characterized in that said adhesive material is an adhesive tape (4) of the thermo-adhesive type, provided with thermoplastic or thermosetting glue.

13. The metal-back printing blanket according to Claim 12, characterized in that said adhesive tape (4) is single-layer or multilayer.

14. The metal-back printing blanket according to Claim 13, characterized in that said single-layer or multilayer

adhesive tape (4) comprises intermediate supporting layers of plastic material, such as polyester, polyvinyl chloride, polypropylene, polyurethane, or else paper, or else non-woven fabric.

5 15. The metal-back printing blanket according to Claim 12, characterized in that said thermoplastic or thermosetting glue comprises one or more of the following materials: thermoplastic polyurethane, polyvinyl chloride, copolymers with vinyl acetate, thermosetting polyurethane, polyester,
10 polyamide, polyolephin, phenolic resins, epoxy adhesives, polyurethane adhesives, polyacrylic adhesives.

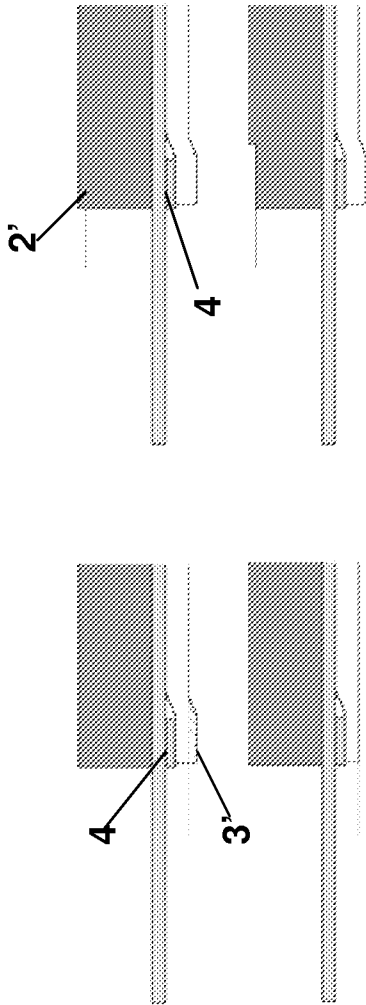
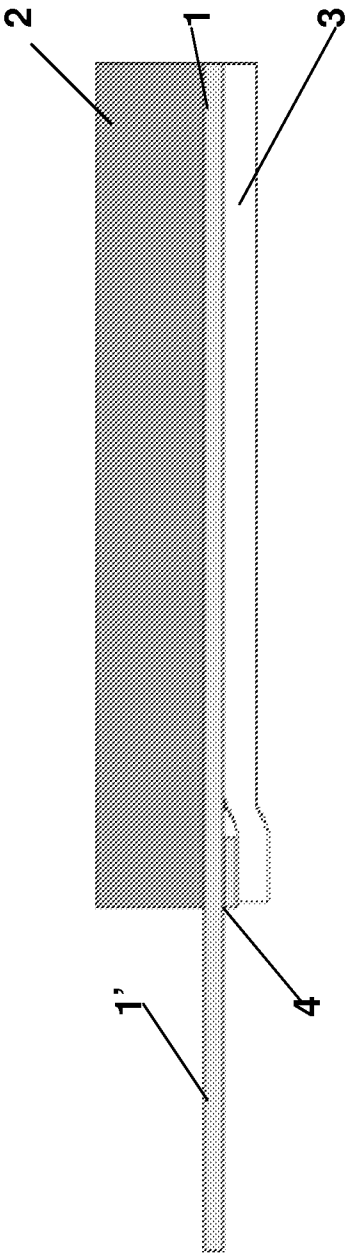
16. The metal-back printing blanket according to Claim 11, characterized in that said adhesive material (4) is a fluid or gel layer.

15 17. The metal-back printing blanket according to Claim 11, characterized in that said plastic sheet (3) is applied on a major part of the bottom surface of the metal layer, with the exclusion of the edge (1'), which is folded back and inserted in a gap provided in the typographic printing roll.

20 18. The metal-back printing blanket according to Claim 11, characterized in that said adhesive tape (4) is applied at least to the edge of the plastic sheet set at the leading edge of the coating.

25 19. The metal-back printing blanket according to Claim 11, characterized in that said one or more edges (3') of said plastic sheet (3) are milled in an area corresponding to the points on which said adhesive tape is applied so as to render the overall thickness of the stretch that comprises the edge of the plastic sheet and the adhesive tape uniform.

30 20. The metal-back printing blanket according to Claim 11, characterized in that the top edge (2') of said upper layer (2) is milled in an area corresponding to the points on which said adhesive tape is applied so as to render the overall thickness of the stretch that comprises the edge of the
35 plastic sheet and the adhesive tape uniform.



INTERNATIONAL SEARCH REPORT

International application No

PCT/IB2008/052697

A. CLASSIFICATION OF SUBJECT MATTER

INV. B41N10/04

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

B41N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, CHEM ABS Data, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2005/039619 A1 (G. INVERNIZZI ET AL.) 24 February 2005 (2005-02-24) cited in the application paragraphs [0001], [0016] - [0021], [0029] - [0035]; claims 1-6; figure 2 -----	1-20



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *Z* document member of the same patent family

Date of the actual completion of the international search

27 October 2008

Date of mailing of the international search report

05/11/2008

Name and mailing address of the ISA/

Européan Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040,
Fax: (+31-70) 340-3016

Authorized officer

Bacon, Alan

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IB2008/052697

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2005039619	A1	24-02-2005	
		AU 2004268960 A1	10-03-2005
		BR PI0411512 A	25-07-2006
		CA 2527807 A1	10-03-2005
		CN 1839053 A	27-09-2006
		EP 1656260 A1	17-05-2006
		JP 2007502730 T	15-02-2007
		WO 2005021279 A1	10-03-2005