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PRINTING BLANKET HOLDING BAR FASTENING METHOD

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(56) Prior Art Documents
US 5352507
US 5301610
US 3930852

(57) Claim

1. A method for securing a mounting bar to a printing blanket which comprises:

applying a strip of hot melt adhesive tape along and adjacent an edge of the blanket;

placing the mounting bar along the edge of the blanket upon the tape to form an assembly;

applying heat and pressure to the assembly for a sufficient time to melt the adhesive and provide a substantially uniform thickness of such adhesive between the components; and

allowing the melted adhesive to solidify and securely attach the mounting bar to the blanket.



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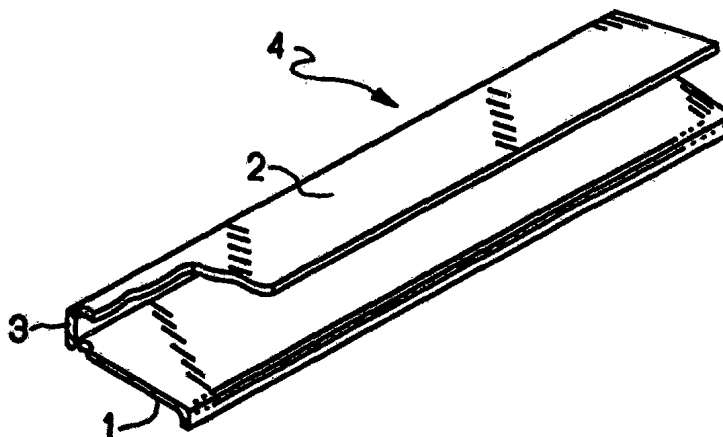
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(54) Title: PRINTING BLANKET HOLDING BAR FASTENING METHOD

(57) Abstract

This invention is a method for securing a mounting bar (4) to a printing blanket (6) by applying a strip of a hot melt adhesive tape (7) along and adjacent an edge (5) of the blanket (6), placing the mounting bar (4) along the edge (5) of the blanket (6) upon the tape (7) to form an assembly, and applying heat and pressure to the assembly for a sufficient time to melt the adhesive (7) and securely attach the mounting bar (4) to the blanket (6). The assembly may be cooled to more rapidly solidify the adhesive (7) so that the assembly can be placed into service without waiting for a long adhesive curing time.



PRINTING BLANKET HOLDING BAR FASTENING METHOD

5 TECHNICAL FIELD

This invention relates to an assembly for mounting and holding a printing blanket in a printing press cylinder. More specifically, this invention relates to a method for fastening the holding devices
10 or bars used to hold such printing blankets on the printed cylindrical rollers.

BACKGROUND OF THE INVENTION

Sheet-fed printing presses are widely used in lithographic printing. In these presses, printing
15 blankets are utilized to pick up the inked image from the printing plate and then transfer this image onto the paper which is to be printed. These printing blankets are comprised of an outer layer, formed mainly of a polymeric material, and a backing material
20 on one side of the outer layer. The other side of the outer layer is the printing surface which carries ink for printing. The blanket is wrapped on a cylinder to transfer an inked image from a printing plate to paper during the printing process.
25

To achieve high quality printing, the blanket must not slip or creep on the cylinder. The conventional method of securing the blanket to the cylinder has been to secure the leading and trailing
30 edges of the printing blanket between a channel formed into a holding bar. This holding bar is then housed in a gap or groove extending axially along the surface of the cylinder.

A number of considerations must be kept in mind
35 when mounting these blankets to the holding bar, the foremost of which is to make sure that the printing

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blanket will not separate from the holding bar when the blanket is stretched taut over the printing cylinder. Another factor is the simplicity of installation and time involved in attaching the printing blankets. Conventional methods utilize a mono or bicomponent glue such as epoxy or polyurethane resin which is viscous and difficult to apply evenly. Furthermore, there is about a 24 hour delay between the application of the glue and bar to the blanket for curing prior to actual use.

Accordingly, there is a need for fastening a holding bar to a printing blanket in an expedient and inexpensive manner so that it will be able to bear the necessary mechanical stresses due to tensioning the blanket on the cylinder.

SUMMARY OF THE INVENTION

The present invention constitutes an improvement over the prior art as described above. In accordance with the present invention, a strip of an adhesive tape made of a thermoplastic or thermosetting hot melt material such as polyurethane or nylon is used to firmly bond the printing blanket to the holding bars.

This method according to the invention is well calculated to single-handedly perform the job of assembling a holding bar to a printing blanket. Thus, according to the invention, the adhesive is directly applied in the form of a strip upon the edge of the printing blanket. Thereafter, a holding bar is placed adjacent the adhesive strip, and sufficient heat and pressure are utilized to melt the adhesive. Upon heating, the adhesive forms a layer of substantially uniform thickness between the holding bar and the printing blanket; and adheres to both the bar and the

35

blanket. The adhesive then establishes a firm bonding between these components on subsequent cooling.

The above and other features and advantages of this invention and the manner of attaining them will
5 become more apparent, and the invention itself will best be understood, from a study of the following description with reference to the attached drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

10 FIG. 1 is a fragmentary perspective view of a holding bar.

FIG. 2 is a perspective view of an unwrapped printing blanket and a layer of thermosetting adhesive.

15 FIG. 3 is a side view of the printing blanket of FIG. 2 in between the legs of the holding bar of FIG. 1 and positioned in a heating station.

FIG. 4 is a side view of the printing blanket being fastened to the holding bar by the heating
20 station.

FIG. 5 is a side view of the bar and printing blanket assembly being cooled.

DETAILED DESCRIPTION OF THE INVENTION

25 The term "hot melt" as used herein should be understood to mean any solid, thermoplastic or thermosetting adhesive which melts upon application of heat and then sets to a firm bond on cooling. Besides providing a sufficiently strong bond between the
30 printing blanket and the holding bar, the adhesive layer therebetween can be remelted, if desired, after the use of the printing blanket, for example, to allow removal of the holding bar in reusable form.

With reference to FIG. 1 of the drawing, a
35 typical holding bar in accordance with the invention

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is shown. The holding bar is typically in the form of a channel-like member having a bight 3 and a pair of legs 1 and 2 diverging outwardly from opposite ends of the bight. The holding bar is adapted to be deformed
5 so that the legs 1 and 2 are arranged substantially parallel as illustrated in FIG. 1.

For the preparation of the holding bar and printing blanket by the method of this invention, a strip of hot melt adhesive 7 is applied to part of at
10 least the top surface of the printing blanket 6. The adhesive 7 is preferably applied to the printing blanket 6 by unrolling a tape supply 8 and placing it along the edge of the bottom surface of the blanket 6. Thus, one embodiment of the invention includes a tape
15 supply 8 and scissors apparatus 9 for cutting the tape for easy application to the printing blanket 6 as shown in FIG. 2.

After the adhesive 7 has been applied on the printing blanket 6, the printing blanket 6 is placed
20 in between legs 1 and 2 of holding bar 4. The legs of the holding bar 4 are moved apart in the area 5 where leg 1 adjoins bight 3 as shown in FIG. 3. This allows the edge of the printing blanket 6 to be positioned closely adjacent to bight 3 and preferably against the
25 inside surface of such bight. The holding bar 4 can be slipped onto the printing blanket 6 immediately after, or concurrently with, the travel of the adhesive 7 rolled down the edge of the printing blanket 6.

30 The holding bar 4 and the printing blanket 6 are then fitted on the lower plane 10 of the heating station (limit switch) and the top plane 11 of the heating station is fitted over the top end of the holding bar as shown in FIG. 3. This station applies
35 both heat and pressure to the assembly pressure is

- 5 -

applied by lowering the upper plane 11 until the necessary force is applied to close the holding bar 4 at the required thickness as shown in FIG. 4. The holding bar 4 is then maintained in this position as long as the heat coming from the upper plane 11 is transmitted to the holding bar 4. The heat is applied to melt the adhesive tape so that it can adhere to each component. Generally, a temperature of about 180°C is sufficient to do this.

10 The preferred adhesive strips are those which are hot melt adhesives of a thermosetting or thermoplastic nature, such as nylons or polyurethanes. Other hot melt adhesives are known to those skilled in the art and can also be used. At room temperature, these
15 adhesives are solid and can be formed into desired shapes. For this invention, it is preferably to utilize flat strips of adhesive which have a uniform thickness and a width which corresponds to width of the legs of the holding bar. This enables a
20 substantially uniform thickness of adhesive to be applied in the appropriate locations in a simple and straightforward manner, thus highly simplifying the manufacturing process compared to the use of liquid or semi-solid adhesives.

25 Moreover, the application of a substantially uniform thickness of the adhesive enables increased bond strengths to be obtained between the holding bar 4 and the blanket 6. Since the adhesive is a solid at room temperature, it is easy to handle and accurately
30 place on the blanket. It also facilitates placement in the holding bar without initially sticking to the legs of the bar or otherwise being displaced inadvertently. The closing of the legs of the holding bar onto the adhesive strip and blanket also retain
35 the position of the adhesive without squeezing or

extruding it into undesired locations. Thereafter, the heat which is applied causes the adhesive strip to melt and adhere to the bar and blanket at a substantially uniform thickness for maximum bond strength. Also, the connection
5 can be made easily and quickly, so that the blanket can be used minutes after being made, rather than in 24 hours when liquid adhesives are used.

Finally, referring to FIG. 5, the upper plane 11 is lifted and the now barred blanket is taken off and forced
10 to cool in a cooling station 20 and 21 which solidifies the adhesive 7 and provides a firm bond between the bar and the blanket. After cooling of holding bar 4 and printing blanket 6, the bar and the blanket are able to bear the necessary mechanical stresses due to tensioning in the
15 cylinder, and can be immediately used.

The holding bar or similar bar may be made of any suitable material. Preferably the holding bar is made of an easily deformable, heat conductive, non-ferrous metallic material such as aluminum. Further, it will be appreciated
20 that the holding bar may be of any suitable construction and reference is made to U.S. Pat. No. 3,883,940, for example, for a disclosure of holding bars of other materials and designs.

As has been mentioned in connection with the method of
25 this invention, the printing blanket and/or the holding bar can be heated and provided with a hot melt adhesive in various ways other than those adopted in the embodiments of FIGS. 3-5. For example, one hot melt adhesive tape may be applied to the bottom support to the blanket and a second
30 hot melt adhesive tape may be applied to the top surface of the blanket along and adjacent the edge thereof. The second hot melt adhesive tape may be selected to be of a thermosetting or thermoplastic material or of a polyurethane or nylon material in the form of a flat strip. The
35 applications and heating method of FIGS. 3-5 is preferred, however, because of the quickness of assembly, the ease with which the printing blanket is heated and coated, the constancy of the bar temperature, and the uniformity of the



thickness of the resultant adhesive layer. Furthermore, the fitting of the holding bar over the printing blanket immediately after the application of the adhesive strip onto the latter, as in this embodiment, contribute to the
5 uniformity of the thickness of the adhesive to thus provide a firmer union therebetween.

While present exemplary embodiments of this invention, and methods of practicing the same, have been illustrated and described, it will be recognized that this invention may
10 be otherwise variously embodied and practiced within the spirit and scope of the following claims.

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DOC# 23173

31 December 1997

THE CLAIMS

What is claimed:

1. A method for securing a mounting bar to a printing blanket which comprises:

5 applying a strip of hot melt adhesive tape along and adjacent an edge of the blanket;

 placing the mounting bar along the edge of the blanket upon the tape to form an assembly;

 applying heat and pressure to the assembly
10 for a sufficient time to melt the adhesive and provide a substantially uniform thickness of such adhesive between the components; and

 allowing the melted adhesive to solidify and securely attach the mounting bar to the
15 blanket.

2. The method of claim 1 which further comprises selecting the hot melt adhesive tape to be of a thermosetting or thermoplastic material in the form of a flat strip.

20 3. The method of claim 1 which further comprises selecting the hot melt adhesive tape to be of a polyurethane or nylon material in the form of a flat strip.

4. The method of claim 1 wherein the blanket
25 comprises a top printing surface and a bottom support surface, and which further comprises applying the adhesive tape to the bottom support surface of the blanket.

5. The method of claim 1 wherein the holding
30 bar comprises upper and lower spaced legs each having a surface for contacting the blanket and which further comprises inserting the blanket edge and adhesive tape between the surfaces of upper and lower legs of the mounting bar before applying heat and pressure
35 thereto.

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6. The method of claim 5 wherein sufficient pressure is applied to the assembly to force the surfaces of the upper and lower legs to substantially completely contact the edge of the blanket.

5 7. The method of claim 6 wherein sufficient heat is applied to the bar to melt the adhesive tape so that the adhesive can melt and solidify to join the bar to the blanket.

8. The method of claim 7 which further
10 comprises cooling the assembly to harden the adhesive and reduce the time within which the assembly can be mounted upon a printing cylinder.

9. The method of claim 4 which further
15 comprises applying a second hot melt adhesive tape to the top surface of the blanket along an adjacent the edge thereof.

10. The method of claim 9 which further
20 comprises selecting the second hot melt adhesive tape to be of a thermosetting or thermoplastic material in the form of a flat strip.

11. The method of claim 9 which further
comprises selecting the second hot melt adhesive tape to be of a polyurethane or nylon material in the form of a flat strip.

25 12. The method of claim 1 wherein the bar is heated to about 180°C to melt the adhesive tape.

13. The method of claim 9 wherein the bar is heated to about 180°C to melt the adhesive tape.

14. The method of claim 1 which further
30 comprises selecting the mounting bar to be of a heat conductive metal.

15. The method of claim 1 which further
comprises selecting the mounting bar to be of aluminum.

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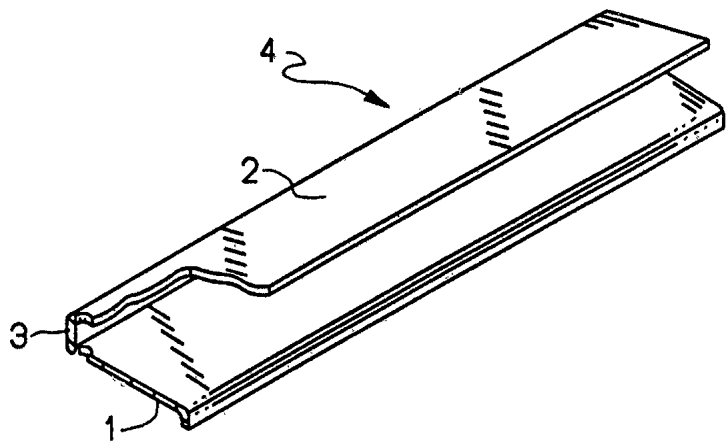


FIG. 1

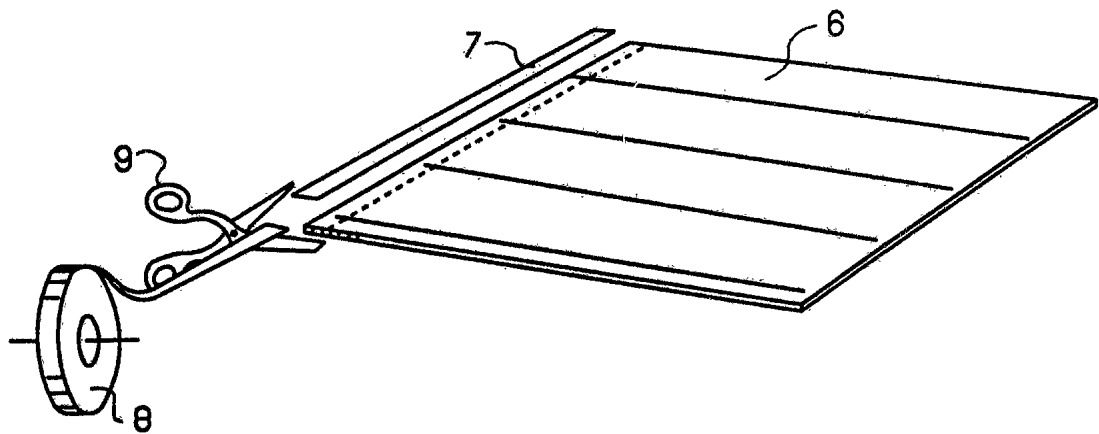


FIG. 2

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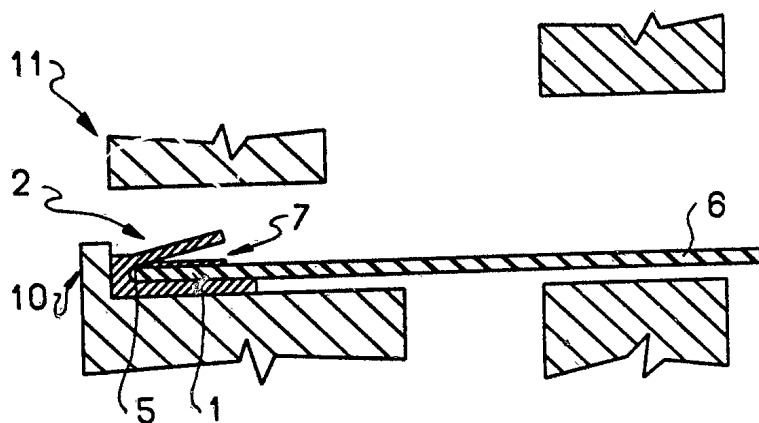


FIG. 3

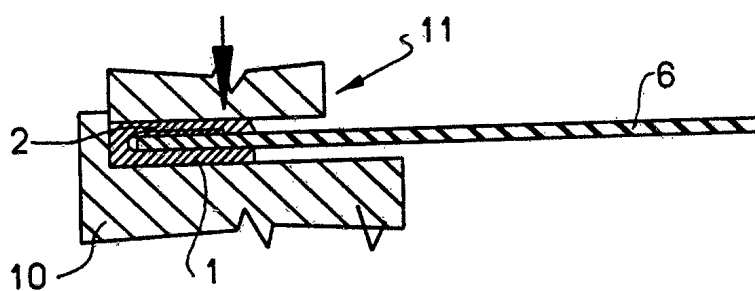


FIG. 4

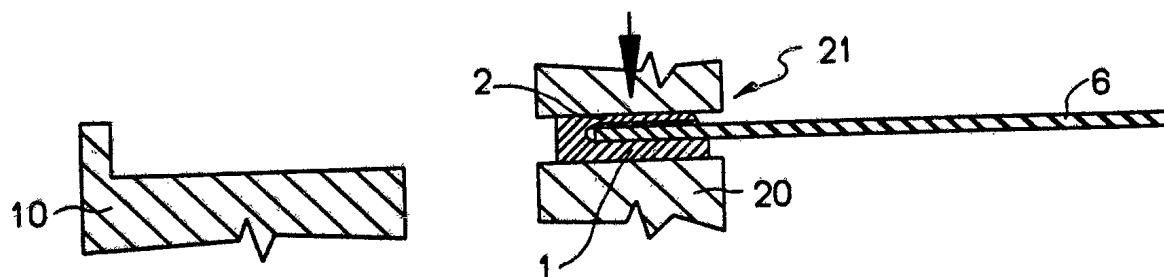


FIG. 5

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US95/01280

CLASSIFICATION OF SUBJECT MATTER

IPC(6) :B41N 1/12

US CL :101/383, 401.1, 415.1; 428/245

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)

U.S. : 101/383, 401.1, 415.1; 428/245

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

NONE

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

NONE

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US, A, H440, (O'RELL), 01 March 1988. See column 1 lines 26-28, and column 4 lines 43-48.	1-15
Y, P	US, A, 5,352,507, (BRESSION ET AL.), 04 October 1994. See column 10 lines 59-68, and column 11 line 1.	3, 11-13
Y, P	US, A, 5,301,610, (MCCONNELL), 12 April 1994. See column 8. Lines 3 and 13 teach temperature range and nylon adhesive tape.	3, 11-13
A	US, A, 3,930,852, (TANAKA ET AL.), 06 January 1976.	1-15
A	US, A, 4,767,694, (SCHUBERT), 30 August 1988.	1-15

☐ Further documents are listed in the continuation of Box C.☐ See patent family annex.

* Special categories of cited documents:	"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
"A" document defining the general state of the art which is not considered to be part of particular relevance	"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
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"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	

Date of the actual completion of the international search

28 MARCH 1995

Date of mailing of the international search report

12 APR 1995

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