

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 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 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 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.

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 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 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

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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 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

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.

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 station.

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

DETAILED DESCRIPTION OF THE INVENTION

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 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 typical holding bar in accordance with the invention



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



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 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 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 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 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 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. The 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, contributes to the 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 be otherwise variously embodied and practiced within the spirit and scope of the following claims.

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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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