United States Patent

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[54] **HOT MELT ADHESIVE APPLICATOR**
6 Claims, 2 Drawing Figs.

[52] **U.S. Cl.** **118/5,** 118/65, 118/202, 118/212
[51] **Int. Cl.** **B05c 1/00,** B05c 11/00
[50] **Field of Search** ..... 118/5, 63, 65, 202, 212, 216, (Wax Digest); 117/119.8

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ABSTRACT: A hot melt adhesive applicator for application to a paper line, such as spaced or overlapped envelopes, in which the transfer roll is resiliently covered and is located in a chamber having a controlled temperature environment. The applicator is provided with a contiguous melt box and chamber. The melt box is provided with an opening in a wall thereof through which a part of the dispensing roller projects thereby essentially filling the opening. The dispensing roller picks up the adhesive and passes it to the transfer roller. The chamber is provided with a hot air environment in order to control the temperature of the transfer roller, the latter having a resilient covering.

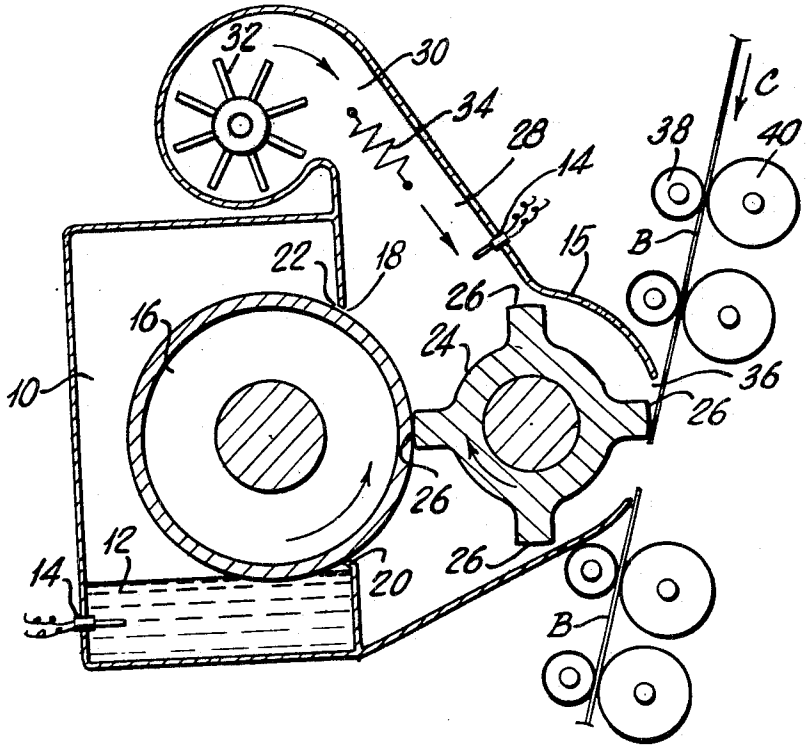


Fig. 1.

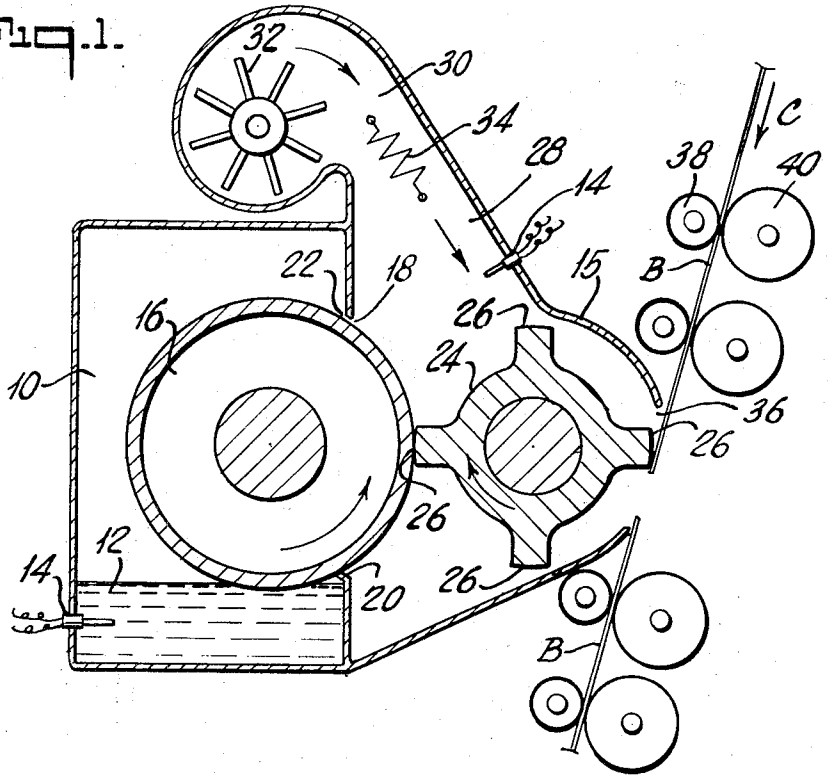
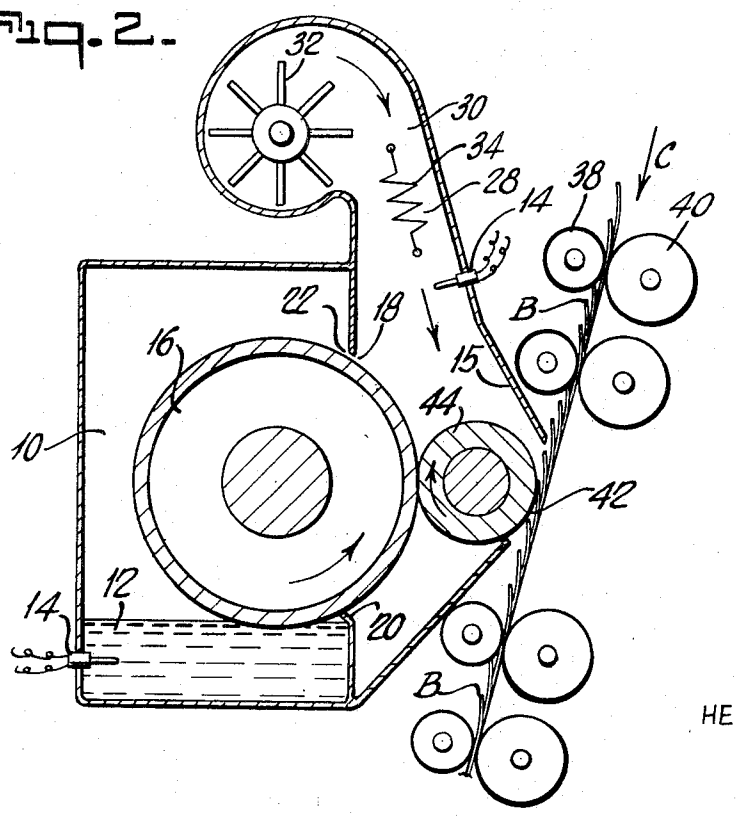


Fig. 2.



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HOT MELT ADHESIVE APPLICATOR

BACKGROUND OF THE INVENTION

A hot melt applicator is known as a heated applicator roller or a direct applicator roller which is in the form of a smooth, hard-surfaced cylinder that is etched to a particular depth and design. Thus, when the cylinder is rotated in the hot melt adhesive, it is coated uniformly. Thereafter, a scraper or doctor blade scrapes off the surface of the cylinder leaving only that adhesive material which is in the etched area. The rotating cylinder then is adapted to apply the adhesive to the paper material. The use of resilient material eliminates high precision machining operations necessary for manufacturing metallic rolls.

In addition, the use of resilient material provides a more even distribution of adhesives to the paper line.

SUMMARY OF THE INVENTION

It is an object of the invention to provide a standard hard-surfaced cylinder rotating against another cylinder provided with a resilient covering. The hard-surfaced cylinder is adapted for rotation in molten adhesive in place of the expensive gravure cylinder.

The molten adhesive is transferred evenly by the resilient material on the other cylinder to the paper line. However, the transfer roll with the resilient covering is not heated internally as is the case with the standard hard-surfaced gravure cylinder since the high temperatures required in heating the transfer roll would destroy the resilient covering.

In order to overcome the heating problem with respect to the transfer roll, a controlled temperature environment has been evolved to keep the resilient applicator at the proper temperature without damaging the resilient coating thereof.

Another object of the present invention is to provide a resilient covered transfer roll which can be applied to either individual or overlapped blanks on a web form.

BRIEF DESCRIPTION OF THE DRAWING

Further objects and advantages of this invention will become apparent from the following description which will be best understood by reference to the appended drawing in which:

FIG. 1 is a diagrammatic sectional view of the hot melt adhesive applicator constructed in accordance with the teachings of the present invention; and

FIG. 2 is an alternative embodiment of the hot melt adhesive applicator as disclosed in FIG. 1.

DESCRIPTION OF A PREFERRED EMBODIMENT

Referring to FIG. 1, the hot melt applicator constructed in accordance with the present invention comprises a melt box **10** in which a quantity of adhesive **12** is located therein. The temperature in the melt box **10** is thermostatically controlled by thermostat **14**. Mounted partially within the melt box **10** is a rotatable hard surface roller **16**. The part of the roller **16** that is not located within the melt box **10** projects through opening **18**. The roller **16** when rotating picks up an excess of molten adhesive which is scraped off by an adjustable scraper **20** adjacent to the opening **18** in the melt box **10**. Unused adhesive **12** is transferred back to the melt box **10** through the clearance **22** formed between the box **10** and the roller **16**.

In order to overcome the problem of heat transfer to the transfer roll **24** having resilient coverings **26** on selected areas thereof, a controlled temperature environment has been achieved. In this regard, the surface temperature of the applicator wheel **24** is maintained at a slightly higher temperature than the temperature of the melt box **10**. The heated environment in the chamber **28** is controlled in a thermostatically controlled air blower channel **30** by a rotatable blade **32** therein as well as a resistance element **34**. Thus, a flow of hot air generated in the channel **30** is directed toward the applicator wheel **24** and escapes through the spacing **36** between the housing **15** and the roller **24**.

The feed rollers **38** and **40** engage the paper line **42** and propel the web either in the form of individual spaced blanks or overlapped blanks B in the direction of the arrow C. The blanks are engaged by the resilient surfaces **26** of the transfer roll **24** in the proper timed relationship in order to place the adhesive at the proper location on each of the blanks B.

FIG. 2 shows a hot melt adhesive applicator such as shown in FIG. 1, however, the transfer roll **42** therein is provided with an uninterrupted resilient covering **44** instead of the discontinuous resilient covering **26** shown in FIG. 1. The structure of FIG. 2 is especially adapted for the application of adhesive to individual sheets in an overlap condition.

I claim:

1. A hot melt adhesive applicator for a line of paper comprising a melt box provided with an opening in a wall thereof, said melt box having an adhesive therein, a dispensing roller at least partly in said melt box in contact with said adhesive, means for controlling and maintaining the prescribed temperature in said melt box, a chamber operatively connected to said melt box, part of said dispensing roller projecting through the opening in said melt box into said chamber and to essentially fill said opening, a transfer roller in said chamber having a coating of resilient material, said transfer roller taking adhesive from said dispensing roller on said resilient material and transferring the same to said line of paper, and a constantly controlled hot air environment in said chamber to control the temperature of the transfer roller therein.

2. A hot melt adhesive applicator as claimed in claim 1 wherein said transfer roll has discontinuous resilient surfaces.

3. A hot melt adhesive applicator as claimed in claim 1 wherein said transfer roll has a continuous, outer, resilient surface.

4. A hot melt adhesive applicator for a line of paper comprising a melt box provided with an opening in a wall thereof, said melt box having an adhesive therein, a dispensing roller at least partly in said melt box in contact with said adhesive, a chamber adjacent and operatively connected to said melt box, means in said chamber for maintaining a surface temperature therein which is higher than the surface temperature in said melt box, part of said dispensing roller projecting through the opening in said melt box into said chamber and essentially filling said opening, and a transfer roller in said chamber having a coating of resilient material, said transfer roller taking adhesive from said dispensing roller on said resilient material and transferring the same to said line of paper.

5. A hot melt adhesive applicator for a line of paper comprising a melt box provided with an opening therein, said melt box having an adhesive therein, a dispensing roller at least partly in said melt box and in contact with said adhesive, means for controlling and maintaining the prescribed temperature in said melt box, a chamber operatively connected to said melt box, part of said dispensing roller projecting through the opening in said melt box into said chamber, a transfer roller in said chamber having a coating of resilient material, said transfer roller taking adhesive from said dispensing roller on said resilient material and transferring the same to said line of paper, and means in said chamber for controlling the temperature therein being a blower having a plurality of blades and a resistance element.

6. A hot melt adhesive applicator as claimed in claim 5 wherein said chamber is contiguous to said melt box, and said chamber is provided with an outlet adjacent to said transfer roller whereby hot air propelled by said blower is ejected through said outlet.