

**United States Patent** [19]

[11] **Patent Number:** 5,597,618

**Bayer, Jr. et al.**

[45] **Date of Patent:** Jan. 28, 1997

[54] **APPLICATION MEMBER FOR APPLYING A COATING MATERIAL TO A SUBSTRATE**

[75] **Inventors:** Glen H. Bayer, Jr., Cottage Grove; Timothy J. O'Leary, St. Paul, both of Minn.

[73] **Assignee:** Minnesota Mining and Manufacturing Company, St. Paul, Minn.

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 [22] **Filed:** Feb. 14, 1996

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**Related U.S. Application Data**

[63] Continuation of Ser. No. 393,881, Feb. 23, 1995, abandoned, which is a continuation of Ser. No. 56,362, Apr. 30, 1993, abandoned.

[51] **Int. Cl.<sup>6</sup>** ..... B05C 1/12; B05D 1/28; B05D 5/00; B05D 5/10

[52] **U.S. Cl.** ..... 427/207.1; 427/208.6; 427/288; 427/428; 118/210; 118/212; 118/244

[58] **Field of Search** ..... 427/207.1, 208.4, 427/208.6, 288, 428; 118/210, 212, 244, 246, 248, 249, 258, 261, 262; 29/895.3, 895.31, 895.32; 101/348; 492/30, 37, 59

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*Primary Examiner*—Shrive Beck  
*Assistant Examiner*—Fred J. Parker  
*Attorney, Agent, or Firm*—Gary L. Griswold; Walter N. Kirn; William L. Huebsch

[57] **ABSTRACT**

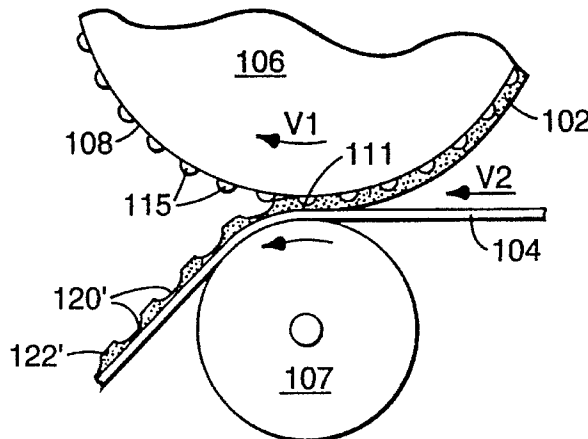
An application member for applying a coating material, such as a pressure sensitive adhesive, to a receiving surface, such as a paper substrate. The application member includes a cylindrical peripheral surface and a plurality of spaced, discrete structures projecting from the peripheral surface of the hub, whereby adhesive may be carried on and between the structures prior to being applied to the receiving surface. By varying the surface velocity of the application member relative to the velocity of the substrate, the characteristics of the adhesive layer applied to the substrate may be changed. Also provided is a process for making the application member by retaining individual particles within substantially all of a plurality of indentations in the peripheral surface of a hub.

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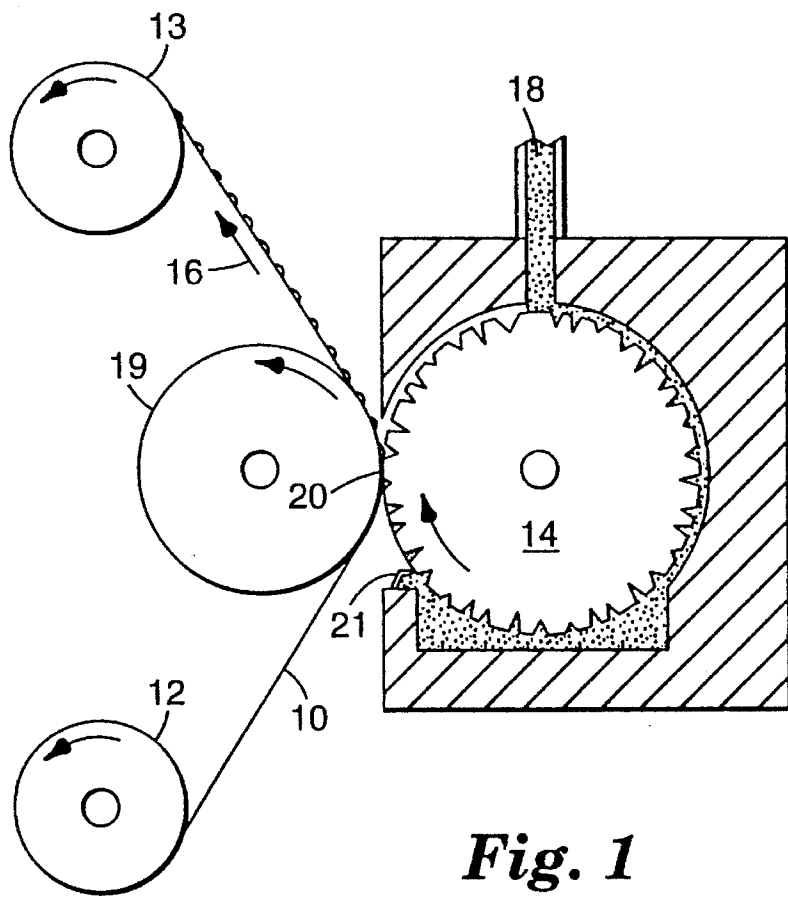
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**24 Claims, 4 Drawing Sheets**

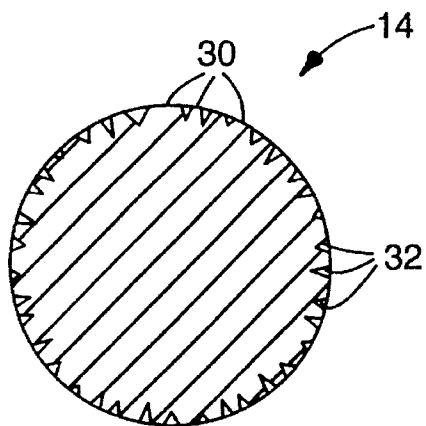


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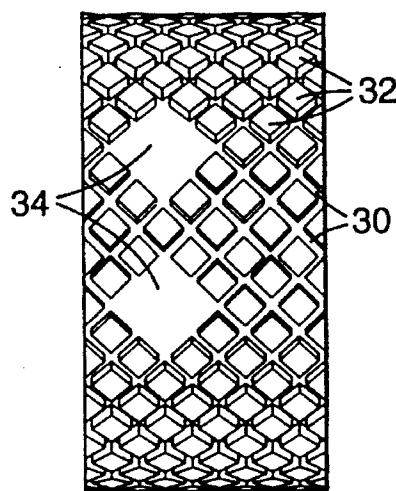
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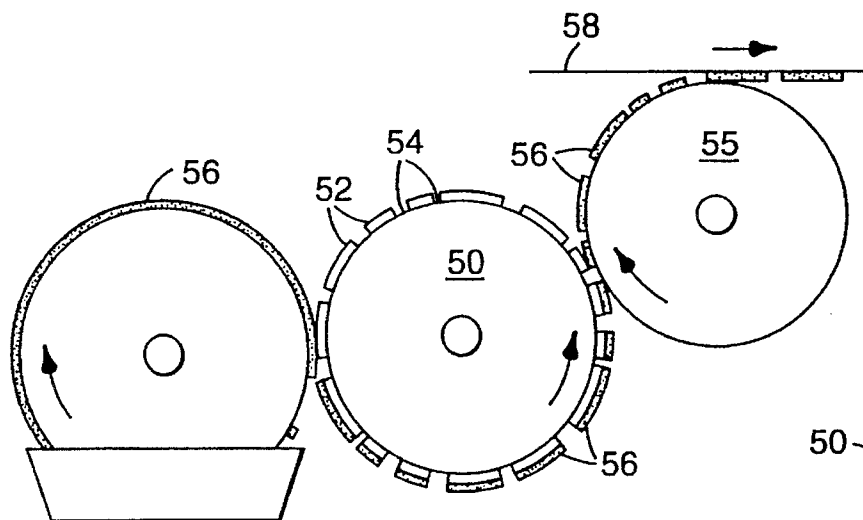
**Fig. 1**  
PRIOR ART



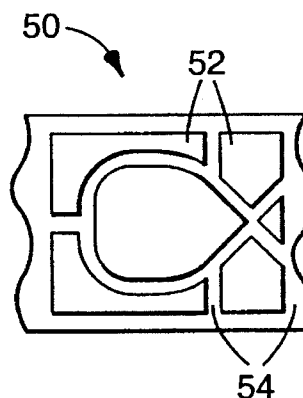
**Fig. 2**  
PRIOR ART



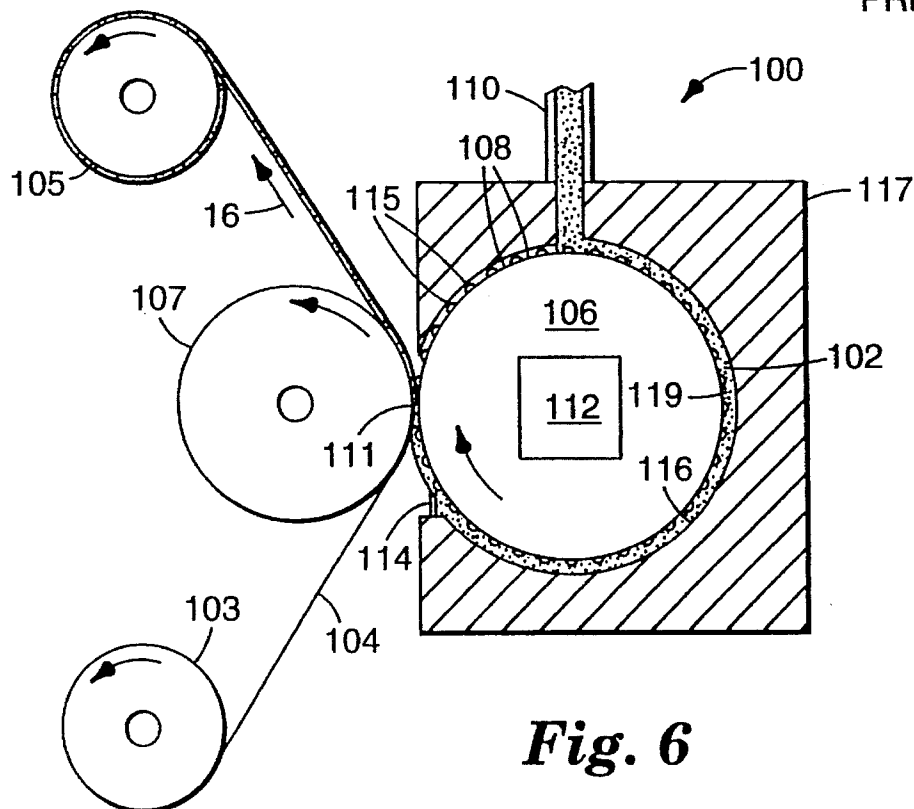
**Fig. 3**  
PRIOR ART



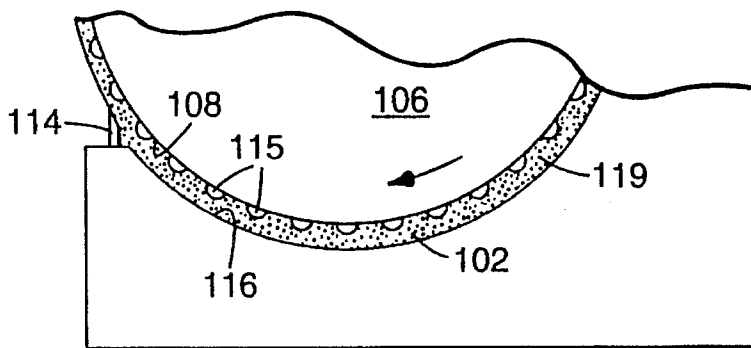
**Fig. 4**  
PRIOR ART



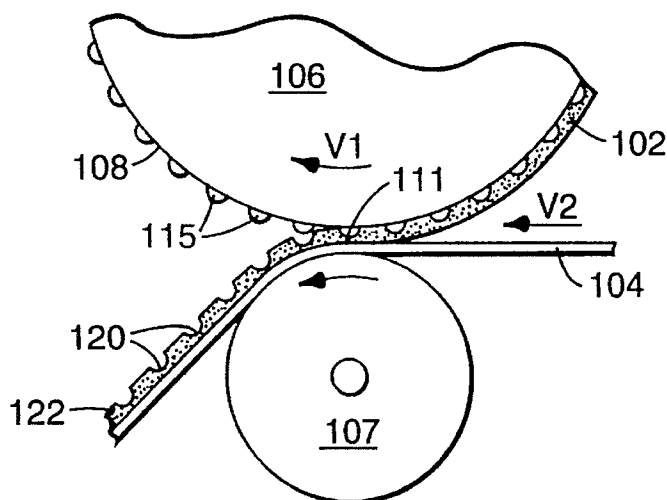
**Fig. 5**  
PRIOR ART



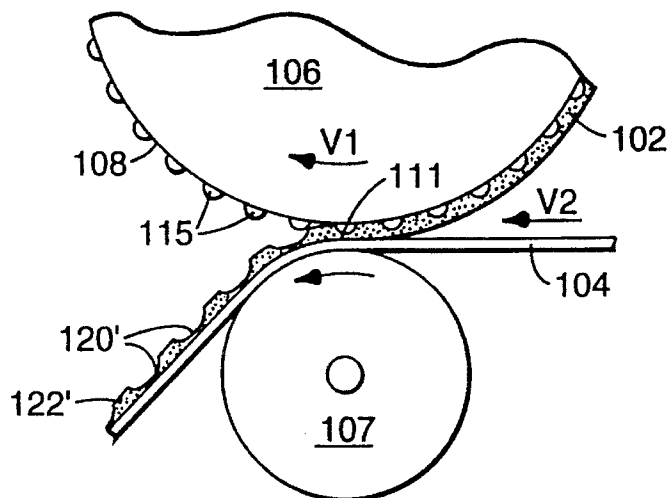
**Fig. 6**



**Fig. 7**



**Fig. 8**



**Fig. 9**

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