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**Rust et al.**

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(54) **APPARATUS AND METHOD FOR  
PRECISION TESTING OF FIBER LENGTH  
USING ELECTROSTATIC COLLECTION  
AND CONTROL OF FIBERS**

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356/630, 614, 615, 634; 382/111, 141

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(57) **ABSTRACT**

A system for precision testing of fiber length and the like using electrostatic collection and control of fibers. The system comprises two spaced-apart and longitudinal extending electrode plates wherein one electrode plate has a positive charge and the other electrode plate is grounded or has a negative charge. An endless rotating belt extends between and parallel to the electrode plates, and the rotating belt is positioned next adjacent and in contact with or in close proximity to one of the two spaced-apart electrode plates such that the distance between the belt and the other electrode plate is greater than the length of fibers to be tested. A fiber introduction system is provided to introduce a plurality of individual fibers above the two electrode plates such that the fibers will adhere to the belt and the other ends of the fibers are attracted to the other electrode plate and thereby straightened. An imaging system is provided above the belt to generate image data corresponding to the length of individual fibers being transported by the rotating belt, and a data processor serves to analyze the image data to determine the length of fibers passing beneath the imaging system.

**22 Claims, 9 Drawing Sheets**

