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54 Pinned component for textile machinery and method.

57 A pinned component for use in textile finishing machines and other purposes, the component having a plurality of pins projecting from the surface of its body and wherein the surface of the body is given a textured finish by means of a sandblasting or chemical etching process. The sandblasting or etching removes unwanted burrs or the like from the surface of the body and if the pins are secured in their apertures with adhesive will also remove excess adhesive, thereby allowing the component to operate more efficiently. A typical component which would incorporate the invention would be an opening roller for an open-end spinning machine.

"Pinned component for textile machinery and method"

This invention relates to pinned components for treating textiles and other fibres and is particularly applicable to pinned textile carding, combing and opening equipment and to pinned opening rollers for open-end spinning machines and to pinned combing elements for half lap combing machines and rollers or segments of rollers for carding apparatus, and to a method of treating the pinned components to improve their performance.

Nowadays, pinned components often have an essentially cylindrical or part-cylindrical metallic body presenting a surface covered with pin points. These pin points are formed by mounting or setting suitably hardened or tempered steel pins known in the trade as textile pins, within drilled apertures in the body. The pins are often held in place with the aid of a polymer adhesive.

Because the surface for receiving the pins has to be machined and drilled, it is liable to be marked by burrs and other irregularities, and these can cause snagging of the textile material being treated by the component. Also, cured or part cured adhesive can remain on the surface, especially around the pin roots. Any or all of these faults can cause fibrous material to adhere to the surface. Even if the surface is free of burrs and other irregularities and is therefore substantially smooth, it can tend to attract textile material due to suction forces being set up as a result of rapid rotation of the component.

The present invention seeks to overcome these disadvantages.

According to one aspect of the present invention, we provide a pinned component having a metallic body portion from a surface of which textile pins project, and wherein the pinned surface is of a smooth but textured nature. By a smooth but textured surface, we mean, for example, one which is similar in nature to the skin of an orange. Preferably, the body of the component is formed of aluminium, or an aluminium alloy, and the pins are made of steel. The pins may form a force fit in apertures in the body but preferably,



they are secured in the body in the manner described in our U.K. Patent Specification No. 1298561.

Also according to the one embodiment of the present invention, we provide a method of forming a pinned component as described above wherein the surface of the component from which the pins project is textured by shot blasting. Preferably, this operation is carried out after the surface has been pinned, thereby ensuring that burrs and/or excess adhesive used for securing the pins in place is/are removed from the surface and around the base of the pins.

Preferably, spherical glass beads having a diameter of between 45 and 85 microns are used for the shot blasting process. It has been found that these do not affect the surface of the pins, and can in fact smooth the surface of the pins, whereas the softer material of the body is texturised. In an alternative embodiment the textured surface is provided by a chemical etching process, using any one of a number of commercially available chemical etchants. If the pins are formed of stainless steel, then the pinned component can be etched subsequent to pinning, otherwise the process would be performed prior to pinning.

In our U.K. Patent No. 1298561 (corresponding U.S. Patent No. 3,730,802) we disclose a method of locating discrete pins in a matrix by means of suitable thermosetting or thermoplastic adhesive. Basically, the method disclosed is to provide oversized holes for the pin shanks in the matrix e.g. a roller, and secure the pins in position using the adhesive. In manufacturing pinned components using a metallic body, in accordance with our patented method, we often experience difficulties in removing unwanted adhesive, e.g. set resin, from the exposed, i.e. non-pinned, fibre handling face of the body. We have now found that by mechanically or chemically treating the pinned components in accordance with the present invention, the unwanted adhesive is easily removed, as are

undesirable burrs and other irregularities in or on the surface of the component from which the pins project.

5 We have found that significant advantages can be obtained by using pinned components having a textured surface on the body of the component in accordance with the present invention as opening rollers especially for open-end spinning machines. Surprisingly, significant improvements to the spinning characteristics of the open-end spinning machine have resulted which we
10 believe are caused because the smooth textured surface of the component does not attract textile material, and can therefore operate at maximum efficiency.

We have also found that other textile machine components such as comb half laps and carding staves
15 when made or treated in accordance with the invention have a considerably reduced tendency for fibres to be broken and snagged by the surface of the component.

Although it is envisaged that the pinned component would normally be mechanically or chemically treated
20 after the fixing of the pins in position, it is believed that improved results can be obtained if just the drilled surface of the body of the components from which the pins will project is treated, prior to insertion of the pins.

25 Although the textured pinned components disclosed herein are especially suited to textile processing, treating or finishing, it will be appreciated that the components can be used for other purposes. For example, pinned components having a textured surface on the body from
30 which the pins project can be used for fibrillating and other slitting or shredding operations, e.g. in the tobacco industry.

CLAIMS:

1. A pinned component having a metallic body portion from a surface of which textile pins project, and wherein the pinned surface is of a smooth but textured nature.
- 5 2. A pinned component according to claim 1 wherein the body of the component is formed of aluminium, or an aluminium alloy, and the pins are made of steel.
3. A pinned component according to claim 1 or 2 wherein the pins are secured in apertures in the body with the aid of an adhesive, the pin shanks being a loose fit in
10 the body and any gaps between the shanks and aperture walls being filled by the adhesive.
4. A method of forming a pinned component as claimed in any one of claims 1-3 wherein the surface of the component
15 from which the pins project is textured by shot blasting.
5. A method according to claim 4 wherein the shot blasting is carried out after the surface has been pinned.
6. A method according to claim 4 or 5 wherein spherical glass beads having a diameter of between 45 and 85 microns
20 are used for the shot blasting process.
7. A method of forming a pinned component as claimed in any one of claims 1-3 wherein the textured surface is provided by a chemical etching process.
8. A method according to claim 7 wherein the pins are
25 formed of stainless steel and wherein the pinned component is etched subsequent to the pinning.
9. A method according to claim 7 wherein the chemical etching is performed prior to pinning of the body.