Patented June 28, 1932 1,864,718

UNITED STATES PATENT OFFICE

RICHARD FEIBELMANN, OF RADEBEUL-DRESDEN, GERMANY, ASSIGNOR TO CHEMISCHE FABRIK VON HEYDEN, A. G., OF RADEBEUL, NEAR DRESDEN, GERMANY, A CORPORATION OF GERMANY

PROCESS FOR TREATING ANIMAL FIBERS

No Drawing. Application filed October 25, 1928, Serial No. 315,108, and in Germany February 11, 1928.

This invention relates to processes for treating animal fibers and particularly relates to a process for treating animal fiber, such as wool, or silk, with less dangerous materials than the sulfuric acid used up to now in the various processes for improving the said fibers. Processes of the nature coming here in consideration are particularly the carbonization and dyeing processes. The carbonization is only carried out with wool, but can be combined with the dyeing of wool as well. As to silk the invention plays only a part of the dyeing of the same.

The carbonization of wool is now universally effected by treating the wool with sulfuric acid. Wool may be carbonized either before or after dyeing and in either case the deleterious effect of the sulfuric acid is of great importance.

I have now found that the wool is very much improved if I treat it instead of with sulfuric acid, with sulfonic acids of the aromatic hydrocarbons, such as for instance p-toluenesulfonic acid, naphthalene-sulfonic acids. Though these latter acids are strong, they affect the wood fibers very much less than sulfuric acid, and furthermore they develop a high capacity of wetting out wool so as to render the much recommended application of wetting out agents superfluous.

During the carbonization the relatively strong sulfonic acids advantageously destroy the vegetable impurities contained in the wool, but show very little, if any effect on the wool fiber and inasmuch as they are capable of thoroughly wetting out the wool, it is evenly carbonized all over without giving rise to the much dreaded acid spots.

If for economic reasons the exclusive application of sulfonic acids cannot be resorted to, then at least a great part of the sulfuric acid can be substituted by the sulfonic acids and its disadvantages can thus be avoided to a considerable extent.

Moreover, I have found that the application of sulfonic acids is very advantageous for the dyeing of wool in acid baths, whereby the use of wetting out agents can be dispensed with.

The introduction of the organic sulfonic acids into the industry of enhancing wool offers therefore, as is seen from the above, considerable advantages.

For the better understanding of my new invention I shall cite various examples of how I proceed to carry the same into effect.

Example 1. Carbonization of wool

I soak wool containing impurities of vegetable origin, such as stickers, straw etc., in a solution containing 5% of p-toluenesulfonic acid until aforesaid impurities are thoroughly penetrated, squeeze out the surplus of the solution, then dry the wool and heat it for 30 minutes at approximately 100° C. The stickers are then carbonized and can be easily removed mechanically. The after treatment of the wool is as usual. Instead of p-toluenesulfonic acid I may apply naphthalene-sulfonic (α or β), or naphthalene-disulfonic or the like economically possible sulfonic acids.

Wool treated analogously with a 5% sulfuric acid is darker than such treated with toluene-sulfonic acid.

Example II. Dyeing of wool, silk

I prepare a solution containing 10% of sodium sulfate and of 5% β-naphthalene-sulfonic acid, dissolve therein an acid dye, suitable for wool, and proceed then as usual.

In the dye baths for the dyeing of silk the acids usually applied may be advantageously substituted by organic sulfonic acids. Sodium sulfate is added as a levelling agent, since this substance appears to have a slight solvent action on the dye taken up by the fiber, thus removing it from those places in which it may have been deposited in excess.

What I claim is:

1. The process for the carbonization of raw wool containing vegetable impurities, said process consisting in soaking the raw wool in an aqueous solution of an aromatic sulfonic acid, drying the wool, and exposing it to an elevated temperature.

2. The process for the carbonization of raw wool containing vegetable impurities, said process consisting in soaking the raw wool in an aqueous solution of p-toluenesulfonic acid, drying the wool, and exposing it to an elevated temperature.

In witness whereof, I have hereunto set my hand.

RICHARD FEIBELMANN.