

UNITED STATES PATENT OFFICE

ERICH BÖHM, OF VIENNA, AUSTRIA

PROCESS FOR INCREASING THE LUSTER OF GOODS MADE OF ANIMAL HAIR AND WOOL

No Drawing. Original application filed November 22, 1927, Serial No. 235,125, and in Austria December 1, 1926. Divided and this application filed September 18, 1928. Serial No. 306,784.

My invention relates to a process for increasing the luster of goods made of animal hair or wool more particularly of felt and velour hat bodies.

5 This application is a division of my application filed in the United States on November 22nd, 1927 under Serial No. 235,125 for a "process for treating animal hair and wool with chlorine."

10 It has already been proposed to treat animal hair and wool with hypochlorites, with chlorine water and even with gaseous chlorine for improving the luster of the same. But the methods heretofore used in such
15 treatments resulted invariably in a highly objectionable action on the hair and wool viz: a reduction of the mechanical strength, and even a rapid destruction thereof and more particularly a complete loss of the capacity of
20 hair and wool to be fulled or felted.

It has also been proposed to treat coarse hair either human or of the manes, tails and other parts of the bodies of animals with hydrochloric acid and oxygen carrier such as
25 chlorates and bichromates, the hydrochloric acid being largely in excess for reducing the diameter of such hairs and imparting to them the aspect of the finest human hair. My invention does not relate to such refining of
30 coarse hair but, as already stated, to the increasing of the luster of goods made of animal hair and wool and more particularly of felt hat bodies and velour hat bodies.

35 The main object of my invention is to avoid the deleterious effects above referred to of the chlorine treatment of such goods made of animal hair and wool and to provide a method for such treatment which results in imparting to the said goods a very durable silk like
40 luster without producing any deleterious effect on the said goods.

In carefully studying the action of chlorine on animal hair and wool I have discovered that any deleterious action of chlorine on
45 animal hair and wool can be avoided by providing for a comparatively slow development of chlorine on the hair and wool itself, and avoiding the presence or formation of hypochlorites and hypochlorous acid, while the
50 formation of chlorine dioxide (ClO_2) ap-

pears to have even a beneficial effect. By satisfying these conditions I obtain a very durable and beautiful silk like luster on any goods such as felt hat bodies or felt hats or cloth or fabrics made of animal hair or wool. 55

With the object above referred to in view, my improved process comprises the step of applying to goods made from animal hair or wool an aqueous solution of hydrochloric acid and an aqueous solution of an oxygen
60 carrier capable of liberating chlorine from hydrochloric acid.

The concentrations of the said aqueous solutions are so low, that in the cold no reaction is set up between them by which chlorine is liberated, but such reaction is set up
65 on heating the mixture of the said aqueous solutions to from 50 to 100° centigrade. Or this reaction may be set up on increasing the concentration of the mixture of the said
70 aqueous solution by drying.

I may apply the said aqueous solutions to the goods to be treated in any suitable or preferred manner, either simultaneously or successively by spraying or by brushes or by
75 simply immersing the goods to be treated into the said solutions successively or into the mixture of such solutions and subsequently removing the excess of liquid by pressing or by centrifugal action. I may simply immerse
80 the goods into the mixture of the aqueous solutions and then heat the whole to a temperature of 50 to 100° centigrade.

Instead of hydrochloric acid a mixture of substances capable of producing hydrochloric
85 acid may be used. The oxygen carrier is peroxide of hydrogen.

In any case of heating or on drying the aqueous solutions in contact with goods made of animal hair or wool, the chlorine is immediately taken up by the hair or wool as it is liberated and as the chlorine accompanied or not by chlorine dioxide is liberated comparatively slowly, any deleterious action on the air or wool is avoided. 95

If the said aqueous solutions are applied to the goods made from hair or wool such as felt hat bodies by spraying or by brushing or by immersion and subsequent removal of the liquid in excess, the quantity of chlorine 100

liberated on and taken up by the hair or wool may be nicely predetermined.

If my improved process has to be carried out by simple immersion and subsequent heating, the concentration of the aqueous solutions is preferably much lower about only one fifth to one twentieth of that used in the former case.

The aqueous solutions above referred to are of a comparatively low concentration. The percentage of chlorine capable of being liberated in such mixtures of aqueous solutions may vary from one tenth to three per cent, the quantity of the peroxide of hydrogen in the mixture of solutions is such as to enable the said quantities of chlorine to be liberated from the hydrochloric acid. In the said quantities of chlorine those contained in the readily decomposing chlorine dioxide, if such be formed, are included.

Example

Felt hat bodies are immersed into $\frac{1}{2}$ to 1% aqueous hydrochloric acid; to this, aqueous peroxide of hydrogen is gradually added until the desired effect of improving the luster of the felt hat bodies is obtained. Or the felt hat bodies may be immersed for about 20 minutes into $\frac{1}{2}$ to 1% aqueous hydrochloric acid, then the liquid in excess is removed in any suitable manner and a 0.2 to 0.6% aqueous peroxide of hydrogen are applied to the felt hat bodies so treated whereupon they are dried, chlorine being liberated and taken up by the hair or wool as above described. Instead of hydrochloric acid I may use a mixture of aqueous solutions of sodium chloride and sulphuric acid. Thus I may first soak velour felt hat bodies with a 5% aqueous solution of sodium chloride and then bring them into a 2% aqueous solution of peroxide of hydrogen to which about 2% of sulphuric acid are added gradually, heating the whole, if desired, until the desired effect is obtained.

Or velour hat bodies may be immersed into a 1% aqueous solution of sodium chloride for $\frac{1}{2}$ to 1 hour, heated to a temperature of about 80° centigrade and then, after removing the excess of liquid, immersed for about $\frac{1}{2}$ hour into an aqueous solution containing 0.1% of peroxide of hydrogen and 0.2% of sulphuric acid heated to a temperature of 30 to 80° centigrade. The liquid in excess is then removed by centrifugal action and finally the velour hat bodies thus treated are dried at a temperature of 50 to 70° centigrade. In this case practically all of the chlorine is liberated only on drying at the higher temperature when the concentration is increased, while in the highly diluted liquid practically no chlorine at all is liberated.

A beautiful silk like luster is thus imparted to the goods made of hair or wool which will withstand subsequent treatments such as washing, shaping, brushing and dyeing.

What I claim is:

1. A process for increasing the luster of goods made of animal hair and wool comprising the step of bringing into contact therewith an aqueous solution containing chlorine and hydrogen ions and an aqueous solution of peroxide of hydrogen, and causing the two solutions to react with each other in contact with the said goods.

2. A process for increasing the luster of goods made of animal hair and wool comprising the step of applying thereto aqueous solutions of peroxide of hydrogen, a metal chloride and an acid capable of evolving hydrochloric acid from such metal chloride, and causing the two solutions to react with each other in contact with the said goods.

3. A process for the increasing the luster of goods made of animal hair and wool comprising the step of bringing into contact therewith an aqueous solution containing chlorine and hydrogen ions and an aqueous solution of peroxide of hydrogen the whole containing from one half to three per cent by weight of chlorine capable of being evolved from the hydrochloric acid resulting from the chlorine and hydrogen ions, and the quantity of peroxide of hydrogen required for evolving such quantity of chlorine and causing the two solutions to react with each other in contact with the said goods.

4. A process for increasing the luster of goods made of animal hair and wool comprising the step of bringing into contact therewith an aqueous solution containing chlorine and hydrogen ions and an aqueous solution of peroxide of hydrogen the whole containing from one half to three per cent by weight of chlorine capable of being evolved from the hydrochloric acid resulting from the chlorine and hydrogen ions, and the quantity of peroxide of hydrogen required for evolving such quantity of chlorine, removing the excess of liquid from the goods and drying them.

5. A process for increasing the luster of goods made of animal hair and wool comprising the step of applying thereto aqueous solutions of peroxide of hydrogen, a metal chloride and an acid, capable of evolving one half to three per cent by weight of chlorine, and causing the two solutions to react with each other in contact with the said goods.

6. A process for increasing the luster of goods made of animal hair and wool comprising the step of applying thereto an aqueous solution of peroxide of hydrogen, sodium chloride and sulphuric acid, capable of evolving one half to three per cent by weight of chlorine, and causing the two solutions to react with each other in contact with the said goods.

7. A process for increasing the luster of goods made of animal hair and wool comprising the step of applying thereto aqueous

solutions of peroxide of hydrogen, sodium chloride and sulphuric acid, such solutions being capable of evolving one half to three per cent by weight of chlorine, removing the excess of liquid from the goods and drying them at a temperature of about 70° centigrade.

In testimony whereof I have affixed my signature.

ERICH BÖHM.