

UNITED STATES PATENT OFFICE.

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PROCESS OF PRODUCING MULTICOLORED DYE EFFECTS IN WOOLEN FABRICS. &c.

No. 815,671.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, MAX BECKE, colorist, a citizen of the Empire of Austria-Hungary, residing at Höchst-on-the-Main, in the Empire of Germany, have invented certain new and useful Improvements in Processes of Producing Multicolored Dye Effects in Woolen and Mixed Fabrics, of which the following is a specification.

10 If wool is treated with tanning substances and metallic salts, its properties when dyed are totally changed. It can no longer be dyed with dyestuffs usually employed in dyeing, as it has acquired the property of combining with basic dyestuffs. I have found
15 that these properties may be applied in a manifold and useful manner to obtain bi- and multi-colored effects with woolen piece goods and yarns.

20 If wool or similar animal fibers, treated with tanning substances and metallic salts, are spun or woven together with ordinary wool, goods are obtained which may be dyed in melange or weaving effects of a totally-
25 different aspect, as the several parts of these goods are of a different behavior toward the dyestuffs. The wool treated with tanning substances and metallic salts readily absorbs basic dyestuffs, but does not combine with
30 the ordinary dyestuffs for wool, especially with acid dyestuffs, which, as is known, are much used in wool dyeing. The ordinary wool, however, worked up in yarns and piece goods does not absorb the basic dyestuffs in
35 the presence of treated wool, but readily combines with acid, chrome-developing, and mordant dyestuffs.

In finally dyeing three methods may be employed—first, only the treated wool is
40 dyed with basic dyestuffs, whereas the untreated wool remains undyed; second, only the untreated wool is dyed with acid or chrome-developing dyestuffs and the treated wool remains undyed; third, the treated wool
45 is dyed with basic dyestuffs, the untreated wool, however, with acid or chrome-developing dyestuffs. Besides, wool dyed with fast dyestuffs may also be treated with tanning substances and metallic salts, to be then worked
50 with ordinary wool into yarns and piece goods. If these goods are dyed with acid dyestuffs, only the ordinary wool absorbs the dyestuffs and not the wool previously dyed and treated with tanning substances
55 and metallic salts. In this manner the most varied multicolored effects may be obtained.

Besides sheep's wool other hair of animals—such as of goats, calves, cows, camels, horses, cats, hares, rabbits, &c., treated with tanning substances and metallic salts—may be worked
60 in the same manner with untreated fibers, to be finally dyed in different ways, as described.

Wool may be worked up in any state of condition, as loose material, slubbings, yarn, and thread. On finally dyeing melange,
65 thread, warp, weft effects or combinations thereof are obtained, according to the material employed. Besides, the tanning preparation may be also applied on slubbings, yarns, and pieces by way of printing. On finally
70 dyeing these goods the effects come out as bi- or multi-colored printing designs.

The process may profitably be applied to all branches of the wool industry in the manufacture of carded yarn and slubbings,
75 felts, hats, ladies' and gentlemen's cloths of all kinds.

On finally dyeing the goods the effects are rendered prominent by observing the following directions: The dyeing of the treated
80 wool is done with basic dyestuffs, preferably at boiling-point, in a bath acidified with about ten per cent. of acetic acid fifty per cent. The best results are obtained by using
85 azines, oxazines, and thiazines, also auramin and acridin-red, whereas the triphenylmethane dyestuffs produce less good effects, as they also dye the untreated wool. The more the reaction of the dye-bath is sour the purer are the effects. The dyeing of the untreated
90 wool, however, occurs in a bath made up with Glauber's salt and acetic acid at 80° to 85°, centigrade. Here the effects come out more prominently if the bath is not too sour, a considerable quantity of Glauber's salt being
95 added and the temperature not surpassing 85° centigrade. Of the dyestuffs to be considered most of the acid and azo dyestuffs may be employed, but those containing only
100 one sulfo group, especially in the presence of strong basic groups, are not advantageous for obtaining strong color contrasts, as they also dye proportionately the treated wool. To
105 obtain specially pure effects and contrasts of colors, it is advisable to use the higher sulfonated acid and azo dyestuffs, as they only slightly dye the treated wool. The presence of strong acids in the bath influences the beauty of the effects.

Having now described my invention, what I claim is—

1. The process herein described of produc-

ing multicolored effects in woolen and mixed fabrics, which consists in treating animal hair with a tanning substance and a metallic salt, then working it with untreated fiber into spun goods or woven fabrics, and then dyeing the goods thus obtained with ordinary wool dyestuffs in an acid-bath, substantially as set forth.

2. The herein-described process of producing multicolored effects in woolen and mixed fabrics, which consists in dyeing animal hair with woolen dyestuffs fast to milling and acid, then treating with a tanning substance and metallic salt so as to render it dye-resistant, working it then with untreated fiber into spun goods or woven fabrics, and then dyeing said

goods or fabrics with acid dyestuffs, substantially as set forth.

3. Woolen goods or woven fabrics having multicolored dye effects, and consisting of a mixture of treated woolen fibers, rendered dye-resistant by tanning substances and metallic salts, and of untreated fibers, said treated and untreated fibers being dyed in different colors, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

MAX BECKE.

Witnesses:

ALFRED BRISBOIS,
HEINRICH HAHN.