

# UNITED STATES PATENT OFFICE.

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## PROCESS OF DYEING HALF-WOOL GOODS.

990,023.

Specification of Letters Patent.

Patented Apr. 18, 1911.

No Drawing.

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*To all whom it may concern:*

Be it known that I, HANS WALTHER, doctor of philosophy, chemist, citizen of the German Empire, residing at Elberfeld, Kingdom of Prussia, Germany, have invented new and useful Improvements in Processes of Dyeing Half-Wool Goods, of which the following is a specification.

The present invention relates to a new process for dyeing half-wool (mixed cotton and wool goods), which process consists in dyeing at the same time the wool and the cotton in mixed cotton and wool goods from an acid bath with acid substantive cotton azo dyestuffs, either with or without the addition of wool dyes.

I have found that the substantive cotton azo dyestuffs, even those which are but scarcely soluble in an acid bath can be used for dyeing the mixed goods. On boiling the cotton is dyed in every depth of shade desired and, in some instances, is even dyed a deeper shade than the wool. In such case the latter has to be finally dyed to shade with a suitable wool dye. This new process is of great importance for the dyeing of half-wool as both fibers can be dyed a uniform shade by means of it. For dyeing blacks the known black polyazo dyes may be used *e. g.* direct deep black E, EW, RW, Pluto black FR, 3B extra, A extra, BS extra, G, CR, direct blue black B and N, benzo chrome blue black B, patent dianil black EB, oxydiaminogene, diazo black BHN, diamine deep black CR, formal black; for other colors other substantive cotton azo dyestuffs may be used *e. g.* benzo fast scarlet 5BS, benzo chrome brown BS and B, benzo dark brown, benzo copper blue, brilliant azurine 5G, Chicago blue B, Cupranil brown, etc. By neither of these products the wool is dyed a deeper shade than the cotton. But if the wool should show a tendency to assume a deeper shade than the cotton it is only necessary in order to prevent this, to reduce the temperature of the dye bath. To prevent the cotton from being tendered by mineral acid which might adhere to it even after washing it is advis-

able to use formic acid for acidulating the bath. But other acids *e. g.* acetic acid, sulfuric acid, etc., may be used, care however being required in the case of mineral acids to thoroughly wash the goods after dyeing.

In carrying out the new process I can proceed as follows, the parts being by weight:—

Example: For dyeing 100 parts of a half-wool (mixed cotton and wool) piece (Berlin half-wool, Ravenna) dissolve 8 parts of half-wool black G in 2000 parts of water. Warm the bath and enter the well wetted goods at about 50° C.; add 20–30 parts of Glauber salt and after a quarter of an hour  $\frac{1}{2}$  part of formic acid (solution 1:10), raise slowly to the boil and boil for 15 to 20 minutes while gradually adding in portions 1 part of formic acid (solution 1:10). Match off and if necessary—as soon as the wool is dyed sufficiently deep—let the piece run through the liquor for some time while the bath is cooling. A full black is thus obtained.

Having now described my invention and in what manner the same is to be performed, I declare that what I claim is:—

1. In the art of dyeing half-wool the improvement consisting in dyeing at the same time wool and cotton in half woolen goods from an acid bath with acid substantive cotton azo dyestuffs, entering the goods at about 50° C. and slowly raising the temperature to boiling substantially as described.

2. In the art of dyeing half-wool the improvement consisting in dyeing at the same time wool and cotton in half woolen goods from an acid bath with acid substantive cotton azo dyestuffs and wool dyes, entering the goods at about 50° C. and slowly raising the temperature to boiling substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

HANS WALTHER. [L. s.]

Witnesses:

OTTO KÖNIG,  
JULIUS HINDRICH.