

UNITED STATES PATENT OFFICE.

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PROCESS OF PRODUCING MULTICOLORED EFFECTS IN SPUN AND WOVEN GOODS.

1,002,118.

Specification of Letters Patent.

Patented Aug. 29, 1911.

No Drawing.

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To all whom it may concern:

Be it known that I, MAX BECKE, engineer-chemist, a citizen of the Empire of Germany, residing at Höchst-on-the-Main, Germany, have invented certain new and useful Improvements in Processes of Producing Multicolored Effects in Spun and Woven Goods, of which the following is a specification.

10 In U. S. Patent No. 815,671 is described a process for modifying the affinity of wool fiber for dyestuffs in such a manner that multi-colored effects of any kind can be obtained in dyeing fabrics composed entirely
15 or partly of wool. Hitherto no analogous process for producing such effects on vegetable fiber has been known. Now I have found that similar white or colored effects can be produced in dyeing cotton and other
20 vegetable material by applying, on the one hand, the oxidizing action of the higher oxids of manganese upon certain dyestuffs, and on the other hand, the stability of certain cotton dyestuffs to this oxidizing action.
25 According to the new method the procedure is as follows: The cotton (loose cotton, laps, yarns or twisted yarn) to be rendered capable of resisting dye is prepared with higher oxids of manganese. For this purpose
30 it is impregnated with a concentrated solution of a salt of peroxid of manganese, for example manganous chlorid. It is then treated with a strongly-alkaline solution, for example one of caustic soda or ammonia, whereby
35 a manganese hydroxid is precipitated on the fiber. An active oxidizing agent such as a hypochlorite or chromate is usually added to this alkaline bath to effect the formation of the insoluble higher oxids of manganese.
40 Or in lieu of such addition, the manganous hydroxid precipitated by the alkaline solution may be transformed into the higher oxids on the fiber, by the absorption of atmospheric oxygen when drying. The essential
45 feature of the process is the provision on the fiber of higher manganese oxids, whether the sesquioxid or the dioxid, which act in the final stage to liberate oxygen in the acid dye-bath and thereby destroy the ground-dyestuff at the prepared spots. For the production of color effects contrasting with
50 those of the subsequent dyeing, the cotton or other vegetable fiber must be dyed with dyestuffs which are fast to oxidizing agents

(thioindigo derivatives, anthraquinone, vat-dyestuffs, insoluble azo-dyestuffs or the like) before it is impregnated with the manganese salt. The white or colored vegetable fibers thus prepared with higher oxids of manganese are used together with undyed cotton or
60 another vegetable fiber or an animal fiber for manufacturing spun goods and woven goods. These spun goods and woven goods can, if required, be steeped, washed, boiled in the kier bleached or mercerized before the
65 dyeing, without detriment to the action of the oxids of manganese. If the fabrics and spun goods thus prepared are then dyed, the dyestuffs used, so far as they are substantive cotton dyestuffs, are absorbed by the treated
70 and untreated fibers. However, if the dyed material is passed through an acid bath, and if for the second dyeing the proper dyestuffs are used, the color absorbed in the second bath is removed from those parts of the fiber
75 which are loaded with the manganese oxids; after the passage through the acid bath it is advantageous to pass the material through a bath of oxalic acid, bisulfite or the like. In this manner a fabric of any ground-color
80 decorated with white or colored effects is obtained. For the dyeing in the second bath there can be used, among other dyestuffs, substantive cotton-dyestuffs, azo-dyestuffs capable of being diazotized, and indigo.
85

The resulting spun and woven goods having multi-colored effects are characterized by the fact that their ground-color is destroyed when treated with a hypochlorite solution of 1-2° Twaddle, while the multi-colored effects withstand this treatment.

The great technical advantage of the present process consists in the possibility of keeping the current patterns in stock and dyeing them any ground color, as and when
95 required.

In calico printing the production of resist and discharge effects on indigo-dyed goods by means of the higher oxids of manganese and acids is known; however, a
100 great number of the usual resist, discharge and printing processes cannot be applied in multi-colored dyeing. Moreover the piece dyeing of fabrics consists of vegetable fiber with colored effects, has not yet been carried
105 out in practice, whereas this problem has already been solved as regards wool fiber in an excellent manner, according to U. S. Patent

No. 815,671. The possibility of industrially producing contrast-effects of any tint in dyeing vegetable fibers in the piece was not, therefore, to be foreseen.

5 Having now described my invention, what I claim is:

10 1. The herein described process of producing multicolored effects in spun and woven goods, by precipitating on vegetable fibers manganese oxids, then working the fibers thus treated together with untreated fibers, dyeing the goods thus manufactured, and subsequently treating the goods with agents capable of developing the oxidizing action of the manganese oxids.

15 2. The herein-described process of pro-

ducing multi-colored effects in spun and woven goods, by precipitating on the vegetable fibers dyed with dyestuffs resisting oxidizing agents, manganese oxids, then working the fibers thus treated together with untreated fibers, dyeing the goods thus manufactured, and subsequently treating the goods with agents capable of developing the oxidizing action of the manganese oxids. 20 25

In testimony whereof, I affix my signature in presence of two witnesses.

MAX BECKE.

Witnesses:

JEAN GRUND,
CARL GRUND.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."