

UNITED STATES PATENT OFFICE.

WILLIAM WARR, OF STALYBRIDGE, ENGLAND, ASSIGNOR TO CALICO
PRINTERS' ASSOCIATION LIMITED, OF MANCHESTER, ENGLAND.

PROCESS OF MORDANTING WITH MAGNESIUM COMPOUNDS.

No. 803,647.

Specification of Letters Patent.

Patented Nov. 7, 1905.

Application filed January 4, 1905. Serial No. 239,616.

To all whom it may concern:

Be it known that I, WILLIAM WARR, chemist, a subject of the King of Great Britain, residing at Buckton Vale Print Works, Staly-
5 bridge, in the county of Chester, England, have invented new and useful Improvements in Processes of Mordanting with Magnesium Compounds, of which the following is a specification.

10 This invention relates to improvements in mordanting vegetable fibers for dyeing or printing the well-known direct or substantive colors which have by any hitherto known methods been only imperfectly fixed upon
15 cotton goods and other vegetable fibers.

According to my invention I fix magnesium hydroxid or an insoluble magnesium compound (other than the hydroxid) as a mordant in the vegetable fibers in the follow-
20 ing manner: I first saturate the cotton goods or other vegetable fibers (hereinafter called "the goods") preferably by padding them with a solution of any suitable magnesium salt. By preference I employ magnesium
25 sulfate (Epsom salts) as being the cheapest known soluble salt of magnesium. The strength of the solution should be varied according to the depth of color required; but for medium shades I have obtained good re-
30 sults with a solution of about 24° Twaddell. I increase the strength for darker shades and diminish the strength for lighter shades, as or if necessary. After saturating the goods with the solution of the magnesium salt I dry
35 them, if required.

To form and fix the magnesium hydroxid, I employ any suitable alkaline precipitating agent, such as caustic alkali—say, for exam-
40 ple, caustic soda at 12° Twaddell when used with a magnesium-salt solution of 24° Twaddell. When a magnesium salt of a volatile acid is used, (as examples of such salts I name the acetate, formate, and sulfite,) I may employ steaming or an equivalent proc-
45 ess to form and fix the hydroxid.

To form and fix the insoluble magnesium compound (by which I exclude the fixation of magnesium hydroxid alone) I employ any suitable precipitating agent capable of pro-

ducing an insoluble magnesium salt. For 50
example, with a solution of a magnesium salt at a strength of 24° Twaddell I might employ sodium silicate at a strength of, say, 16° Twaddell.

After washing, if necessary, and drying the 55
goods, if required, I then dye or print them with the direct or substantive colors by any of the well-known processes of dyeing and calico-printing. Alternatively I may first
60 dye or print the goods with the direct or substantive colors by any of the well-known processes and then carry out the operations of saturation and formation and fixation of the magnesium mordant as above described.

I have found in practice that the magne- 65
sium hydroxid forms by far the best mordant for the direct or substantive colors on the goods and that the insoluble magnesium compounds give results which, although far
70 superior to any hitherto known, are inferior to those obtained with the magnesium hydroxid.

I wish it to be clearly understood that I do not limit myself to carrying out the opera-
75 tions in the above or any particular order of procedure, as the same may be varied or modified by combining the operations or inverting or changing their order without departing from the essential characteristic of
80 my invention, which consists, as already stated, in fixing in vegetable fibers magnesium hydroxid or an insoluble magnesium compound as a mordant for the direct or substantive colors. For example, in some cases
85 instead of effecting the operation by the steps above described I first saturate the goods with a solution of a suitable magnesium salt and dry them. I then apply the coloring-matter and form the mordant and
90 fix it together with the color in one operation, with the aid of a precipitating agent or by steaming or an equivalent process.

Again in other cases I may apply the col-
95 oring-matter together with a magnesium salt of a volatile acid and form the magnesium mordant and fix it together with the color by steaming or an equivalent process.

I also wish it to be clearly understood that

the strengths of the solutions hereinbefore stated are only given by way of example and not necessarily as limitations.

What I claim as my invention, and desire
5 to secure by Letters Patent, is—

1. The herein-described process of mordanting consisting in fixing an insoluble magnesium salt on vegetable fibers and then dyeing with substantive colors, substantially as
10 described.

2. The herein-described process of mor-

danting consisting in fixing an insoluble magnesium hydroxid on vegetable fibers and then dyeing with substantive colors, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM WARR.

Witnesses:

S. W. GILLET,

HERBERT ROWLAND ABBEY.