

# UNITED STATES PATENT OFFICE.

ALEXANDER CAMPBELL DUNCAN AND ARCHIBALD DUNCAN, OF MANCHESTER, ENGLAND.

## IMPROVEMENT IN DYEING WITH MADDER COLORS.

Specification forming part of Letters Patent No. 128,027, dated June 18, 1872.

*To all whom it may concern:*

Be it known that we, ALEXANDER CAMPBELL DUNCAN and ARCHIBALD DUNCAN, of the city of Manchester, in the county of Lancaster, in that part of the United Kingdom of Great Britain and Ireland called England, have invented or discovered certain "Improvements in Dyeing:" and we do hereby declare that the following is a full and exact description thereof—that is to say:

This invention has reference to the dyeing of goods or fabrics with the coloring-matter of madder, or with the so-called artificial alizarine; and consists: instead of dyeing the goods with the liquor at a lower temperature at the commencement, and gradually increasing its intensity, as now done, we pass the goods through the hot water, saturated with the coloring-matter of madder or artificial alizarine, heated and kept at as high a temperature as

convenient. The higher the temperature of the liquor the more rapidly the dyeing is effected.

By these improvements a great saving of time is obtained, for the ordinary process of madder-dyeing now in use occupies from one and a half to three hours, whereas by our improved process the operation is effected in from three to fifteen minutes, according to circumstances.

We claim—

Dyeing the goods in a saturated solution of the coloring-matter of madder or artificial alizarine at a high and equable temperature throughout, instead of as at present adopted, as herein described.

Witness our hands this eighth day of March, one thousand eight hundred and seventy-two.

ALEXR. C. DUNCAN.

Witnesses: ARCH. DUNCAN.

G. SEPTIMUS HUGHES,

CHAS. W. COLLINS.