

UNITED STATES PATENT OFFICE.

EDUARD LAUBER, OF TORRE-PELLICE, AND LUIGI CABERTI, OF MESSINA, ITALY, ASSIGNORS TO THE FARBENFABRIKEN, VORMALS FR. BAYER & CO., OF ELBERFELD, GERMANY.

PROCESS OF DYEING.

SPECIFICATION forming part of Letters Patent No. 542,022, dated July 2, 1895.

Application filed April 5, 1895. Serial No. 544,672. (No specimens.) Patented in Germany June 9, 1884, No. 79,802.

To all whom it may concern:

Be it known that we, EDUARD LAUBER, a citizen of Germany, residing at Torre-Pellice, Italy, and LUIGI CABERTI, a citizen of Italy, residing at Messina, Italy, doctors of philosophy, chemists, assignors to the FARBEN-FABRIKEN, VORMALS FR. BAYER & Co., of Elberfeld, Prussia, Germany, have invented a new and useful Improvement in Dyeing or Printing, (for which the aforesaid FARBEN-FABRIKEN has already obtained Letters Patent in Germany, No. 79,802, dated June 9, 1894;) and we do hereby declare the following to be an exact and clear description of our invention.

Our invention relates to a new process of dyeing or printing on cotton fiber, which process consists in heating the cotton material with a mixture containing an alkaline salt of beta-naphthol, together with antimonious oxid (Sb_2O_3) in an alkaline solution, and subsequently allowing any diazo compound to act in the usual well-known manner on the material treated in the above manner.

The method used hitherto for producing by means of beta-naphthol insoluble azo dyes on the cotton material consists in padding the material with an alkaline solution of beta-naphthol, drying the impregnated cotton material, and finally combining the beta-naphthol on the fiber with any suitable diazo compound. This method, however, is very defective in many regards, owing to the property of beta-naphthol when fixed on the fiber to be decomposed. Therefore it is very difficult to produce clear and intense shades on such cotton material containing beta-naphthol partly decomposed. According to our researches, however, solutions of alkaline salts of beta-naphthol by themselves, or when used for impregnating the cotton fiber, do not undergo any decomposition if antimonious oxid is present. This latter substance has the remarkable property to keep the beta-naphthol also when on the fiber in good and

stable form during a long time. In the like manner beta-naphthol in alkline solutions, to which antimonious oxid is added, remains undecomposed, while beta-naphthol, when dissolved in alkaline solution without an addition of antimonious oxid, soon becomes yellowish-brown owing to the gradual decomposition. Our invention, therefore, is of the greatest value, for every printer will now prefer our durable beta-naphthol solution to those solutions hitherto in use and not containing antimonious oxid.

In preparing our beta-naphthol solution, which we briefly term as "naphthol preparation," we can proceed as follows: The solution in water of any antimonious salt, as for example, the double salt of fluorid of antimony with the fluorid of soda ($\text{SbF}_3 \cdot \text{NaF}$) is treated with the necessary quantity of sodium carbonate solution. The resulting precipitate, which is antimonious hydroxid, is carefully decanted, nine parts, by weight, of the resulting mass are well mixed with 13.1 parts, by weight, of glycerin (28° Baumé) or other suitable dilutant, and 13.2 parts, by weight, of the sodium salt of beta-naphthol. A thick paste is thus obtained which is finally mixed with a suitable quantity of dilute soda-lye, (for example, 20° Baumé,) under continuous stirring. After this operation a thick liquid is obtained which is now fit for practical use.

Of course we do not limit ourselves to the aforesaid proportions, as the same may be varied according to the particular modes of use. Such modifications do not alter the nature of this invention, which generally relates to the use of beta-naphthol, together with antimonious oxid. Other suitable salts of antimony may be used for obtaining the antimonious oxide.

Having now described our invention and in what manner the same is to be performed, what we claim as new, and desire to secure by Letters Patent, is—

1. The process of dyeing fabrics, which consists, in first treating such fabrics with beta naphthol and antimonious oxid in alkaline solution, and in finally treating the thus
5 treated fabric with diazo compounds, substantially as described.

2. The new composition of matter hereinbefore described, consisting of a solution or mixture containing beta naphthol and antimonious oxid, substantially as described.
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In testimony whereof we have signed our

names in the presence of two subscribing witnesses.

EDUARD LAUBER.
LUIGI CABERTI.

Witnesses to signature of Eduard Lauber:

JULES ELTER,
ZERRERO GIOVANNI.

Witnesses to signature of Luigi Caberti:

ORIN AOKAND,
GIOVANNI BURTBEK.