

UNITED STATES PATENT OFFICE.

GADIEN~~T~~ENGI, OF BASEL, SWITZERLAND, ASSIGNOR TO THE FIRM OF SOCIETY OF CHEMICAL INDUSTRY IN BASLE, OF BASEL, SWITZERLAND.

PROCESS OF MAKING DIBROMINDIGO.

No. 883,703.

Specification of Letters Patent.

Patented April 7, 1908.

Application filed March 27, 1907. Serial No. 364,909.

To all whom it may concern:

Be it known that I, GADIEN~~T~~ENGI, doctor of philosophy and chemist, a citizen of the Swiss Republic, and resident of Basel, Switzerland, have invented a new and useful Dibromo Derivative of Indigo and a Process for the Manufacture of the Same, of which the following is a full and exact specification.

In my United States Patents No. 856687 & No. 856776 dated June 11th 1907, I described the manufacture of tri- and tetrabromoderivatives of indigo consisting in treating indigo, mono- or dibromindigo at a raised temperature with the appropriate proportion of bromin in presence of a suitable indifferent diluent or solvent, particularly of nitrobenzene. I have found that this process may also be applied advantageously for producing a dibromoderivative of indigo, the heating of indigo with the theoretically necessary quantity of bromin (4 atomic proportions) in presence of nitrobenzene furnishing a dibromoderivative in a very pure condition and with a quantitative out-put.

Comparatively to the processes for the manufacture of bromindigo described in the German Patent No. 128575 and in the United States Patents No. 729217 and No. 807782, my new process has the advantage to give directly—by employing the theoretical necessary quantity of bromin—a dibromindigo containing the exact percentage of bromin (about 37.8% of Br.) and corresponding to the formula $C_{16}H_8O_2N_2Br_2$, while by brominating indigo with 4 atomic proportions of bromin, according to the process of the said patents, a product is obtained, which contains only about 33% of bromin.

Example. 20 parts of indigo, 200 parts

of nitrobenzene and 24–24.5 parts (four atomic proportions) of bromin are well mixed together and heated in a reflux apparatus in an oil bath in such a manner that in the course of about an hour the temperature of the latter rises to 225° C., the heating is then continued for about 1½ to 2 hours at 226 to 228° C., much hydrogen bromid being evolved, this ceasing completely, however, after the lapse of the time named. After cooling and filtering, the solid dibromo-derivative of indigo is washed with alcohol and dried; it forms a deep blue crystalline powder and the yield is nearly quantitative.

By treatment with alkaline reducing agents, preferably dilute caustic soda lye and sodium hydrosulfite, the product of the example yields a bright yellow vat more easily and with more complete dissolution than is the case with indigo RR under like conditions. Cotton is dyed in the vat vivid reddish blue tints, which in comparison with the dyeings obtained in the indigo vat, besides being considerably more vivid and more intense, are characterized by an essentially greater fastness to washing and chlorin.

What I claim is:

The herein described process for the manufacture of a dibromoderivative of indigo by heating indigo with four atoms of bromin in presence of nitrobenzene.

In witness whereof I have hereunto signed my name this 11 day of March 1907, in the presence of two subscribing witnesses.

GADIEN~~T~~ENGI.

Witnesses:

GEO. GIFFORD,
AMAND BRAUN.