

UNITED STATES PATENT OFFICE.

ARTHUR WEINBERG, OF FRANKFORT-ON-THE-MAIN, GERMANY, ASSIGNOR
TO LEOPOLD CASSELLA & CO., OF SAME PLACE.

PROCESS OF DYEING BY THE AID OF PARAMIDODIPHENYLAMIN.

SPECIFICATION forming part of Letters Patent No. 517,533, dated April 3, 1894.

Application filed November 29, 1893. Serial No. 492,404. (No specimens.) Patented in England March 2, 1893, No. 4,612, and in France March 4, 1893, No. 228,395.

To all whom it may concern:

Be it known that I, ARTHUR WEINBERG, a subject of the King of Prussia, Emperor of Germany, and a resident of Frankfort-on-the-
5 Main, Germany, have invented new and useful Improvements in the Production on the Fiber, by the Aid of Paramidodiphenylamin, of Dye-Stuffs Fast to Light and Washing, (for which patents have been obtained in Great
10 Britain, No. 4,612, dated March 2, 1893, and in France, No. 228,395, dated March 4, 1893,) of which the following is a specification.

The object of this invention is a new method of the production on the fiber, by the aid of
15 para-amidodiphenylamin, of dye-stuffs fast to light and washing. The para-amidodiphenylamin cannot be combined with diazo bodies to form normal azo-dye-stuffs. If the two
20 bodies are brought together no diazoamido compounds result, but nitrogen is generated, and colorless or weakly colored substances are formed, the constitution of which has not yet been ascertained. In quite a different and unforeseen manner the para-amidodi-
25 phenylamin reacts on diazo compounds produced on the fiber from dyestuffs which contain diazotizable amido-groups. In these cases intense and exceedingly fast dyeings are produced. For this purpose the most useful
30 among the diazotizable dye-stuffs on the one hand, are the diazo dye-stuffs in general deriving from paradiamins, such as benzidin and its analogous bodies, and on the other hand, amidonaphtholsulfo acids, alphanaphthylamin, alpha naphthylaminsulfo acids al-
35 pha₁ beta₃ or alpha₁ beta₄, alpha₁ beta₁ amidonaphtholether, alpha₁ beta₁ amidonaphtholethersulfo acid. Of such dye-stuffs are of special value the products from gamma ami-
40 donaphtholsulfo acid, namely diamin black R and B, diamin blue black E, diamin black B H, diamin brown V, the products from amidonaphtholdisulfonic acid H, as diamin blue

BX, 2B, 3B, the naphthylene violet described in the United States Letters Patent No. 464,566, 45 the brown dye stuffs mentioned in the German Patent No. 58,617 as well as other substitutes recommended for the same purposes, which are brought into the market under different denominations as diazurin, diazoblack, 50 diazobrown, benzoblue, Nyanza black, Tabora black, Zambezi blue, &c.

The process is explained by the following example: One hundred kilos cotton are dyed in an alkaline bath with five kilos diamin blue 55 black E, for one hour at the boil. It is rinsed and then entered into a cold bath, in which are dissolved 0.5 kilos nitrite and which is acidulated with two kilos muriatic acid. After about five minutes the diazotation is ter- 60 minated. Then the cotton is entered after being rinsed into a third bath, containing a solution of 1.5 kilos chlorhydrate of para-amidodiphenylamin. At once a dark blue dye- 65 ing appears, which is fast to light and washing. In an analogous way the other colors are developed.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, 70 what I claim, and desire to secure by Letters Patent, is—

The method of producing fast colors on the fiber dyed with a diazotizable dye-stuff by treating such dyeings in a first bath with free 75 nitrous acid and developing the color in a second bath containing para-amidodiphenylamin substantially as herein described.

In testimony that I claim the foregoing as my invention I have signed my name, in pres- 80 ence of two witnesses, this 11th day of November, 1893.

ARTHUR WEINBERG.

Witnesses:

ALVESTO S. HOGUE,
JEAN GRUND.