

UNITED STATES PATENT OFFICE.

NIKOLAUS SCHWAN AND WILHELM ZEDEL, OF HÖCHST-ON-THE-MAIN, GERMANY, ASSIGNORS TO THE FARBWERKE, VORMALS MEISTER, LUCIUS & BRÜNING, OF SAME PLACE.

BROWN SULFUR DYE AND PROCESS OF MAKING SAME.

SPECIFICATION forming part of Letters Patent No. 658,286, dated September 18, 1900.

Application filed July 21, 1900. Serial No. 24,358. (Specimens.)

To all whom it may concern:

Be it known that we, NIKOLAUS SCHWAN, Ph. D., and WILHELM ZEDEL, Ph. D., chemists, subjects of the Emperor of Germany, residing in Höchst-on-the-Main, Germany, have invented certain new and useful Improvements in the Manufacture of Brown Dyestuffs, of which the following is a specification.

10 We have found that by the action of sulfids (meaning mono- and polysulfids) of alkali metals on trinitronaphthalenes brown dyestuffs for cotton may be obtained. The dyestuff from 1.3.8. trinitronaphthalene is of special value.

20 The process consists in dissolving trinitronaphthalene in an alkali sulfid. The solution may directly be employed for dyeing purposes or evaporated to dryness, and the product may also be again heated. Modifications in this respect produce no essential difference, as a black product will always be obtained which is easily soluble in water, dyeing cotton more or less intensely brown.

25 We illustrate our process by the following example: Fifty parts of crystallized sodium sulfid and ten parts of sulfur are dissolved in 200 parts of water, to which are introduced fifteen parts of 1.3.8. trinitronaphthalene. 30 The reaction takes place under considerable rise of temperature. Stirring is continued till the trinitronaphthalene has disappeared, when the solution is evaporated to dryness. The dyestuff is thus obtained as a brown-black mass easily soluble in water. Its solution dyes cotton brown. Hydrochloric acid produces a dark-brown precipitate from the solution.

Having now described our invention, what we claim is—

1. The herein-described process for the manufacture of brown dyestuffs, which consists in subjecting trinitronaphthalenes to the action of alkali sulfids, substantially as set forth.

2. The herein-described process for the manufacture of a brown dyestuff for cotton, which consists in subjecting 1.3.8-trinitronaphthalene to the action of alkali sulfids.

3. As new products the brown dyestuffs obtained by the action of sulfids of alkali metals on trinitronaphthalenes being, when dry, brown-black products, easily soluble in water and directly dyeing cotton brown; their solutions produce with acids a brown precipitate.

4. As a new product the brown dyestuff obtained by the action of alkali sulfid on 1.3.8-trinitronaphthalene, being, when dry, a brown-black product, easily soluble in water and directly dyeing cotton brown, its solution producing with acid a brown precipitate.

In testimony that we claim the foregoing as our invention we have signed our names in presence of the subscribing witnesses.

NIKOLAUS SCHWAN.
WILHELM ZEDEL.

Witnesses for Nikolaus Schwan:

E. H. L. MUMMENHOFF,
IDA CHR. HAUFERMANN.

Witnesses for Wilhelm Zedel:

HEINRICH HAHN,
ALFRED BRISBOIS.