

# UNITED STATES PATENT OFFICE.

HENRI RAYMOND VIDAL, OF PARIS, FRANCE.

## MIXED SULFUR DYE.

SPECIFICATION forming part of Letters Patent No. 594,106, dated November 23, 1897.

Application filed July 24, 1897. Serial No. 645,856. (Specimens.) Patented in France February 27, 1897, No. 231,188, and in England March 3, 1897, No. 5,690.

*To all whom it may concern:*

Be it known that I, HENRI RAYMOND VIDAL, of Paris, France, have invented new and useful Improvements in Coloring-Matters, (for which I have obtained patents in France, No. 231,188, dated February 27, 1897, and in Great Britain, No. 5,690, dated March 3, 1897,) which are clearly described in the following specification.

I have found that in heating paraphenylenediamin and hydroquinone in equal parts in the presence of sulfur a coloring-matter is produced which differs from those obtained by the reaction upon each of these isolated products of sulfur only as to paraphenylenediamin and of sulfur and ammonia as regards hydroquinone. One portion of the product formed is constituted by a coloring-matter directly soluble in the acids without being reduced and dyeing animal fibers an intense black. The other portion dissolves in the alkalies and dyes vegetable fibers a dull blue.

Having now particularly described and as-

certained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. The process of producing coloring-matters which consists in heating paraphenylenediamin and hydroquinone in equal parts in presence of sulfur, substantially as described.
2. The product of the reaction of sulfur upon paraphenylenediamin and hydroquinone, the same being constituted in part by a body directly soluble in acids and dyeing animal fibers an intense black, and in part by a body soluble in alkalies and dyeing vegetable fibers dull blue, substantially as described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

HENRI RAYMOND VIDAL.

Witnesses:

EDWARD P. MACLEAN,  
ANTOINÉ ROUSSANNES.