

UNITED STATES PATENT OFFICE.

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HAIR DYE.

No Drawing.

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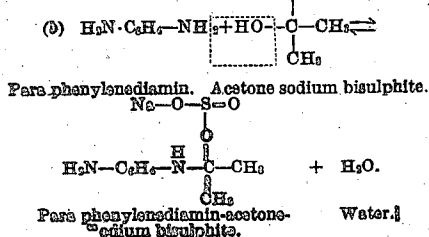
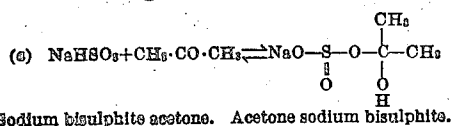
To all whom it may concern:

Be it known that I, RALPH L. EVANS, a citizen of the United States, and resident of the borough of Manhattan, in the city and State of New York, have invented a new and useful Improvement in Hair Dyes, of which the following is a specification.

In hair dyes where aromatic amino compounds are used, it is well known that the amine has a poisonous and therefore very deleterious effect on the skin of the user and different attempts have been made from time to time to reduce these bad effects, as, for instance, by the use of reducing agents as sodium sulfite for the amino compound. This method has been found in actual practice to be inefficient and unsatisfactory.

My invention is directed to the production of hair dyes containing aromatic amino compounds in which the poisonous effect of the amine is reduced to a minimum or eliminated entirely, by chemically coupling with the amino compounds other compounds which are not intended to be used as reducing agents but which serve to muzzle the amine, not by forming a nuclear derivative, but by coupling it through the nitrogen to form a slightly disassociated compound by a reversible reaction, which compound acts as a reservoir, liberating the amine as it is used up by the usual oxidizing agent such for instance as hydrogen peroxide in the process of dyeing. When so combined the amine is not readily absorbed by the skin and its poisonous effect is thereby reduced to a minimum.

The following is an illustrating reaction.



The reactions illustrated above show the formation of para phenylenediamin-acetone-sodium bisulphite. This compound tends to dissociate with the formation of para phenylenediamin in small concentration. It is in this way that we get the "muzzling" effect.

My invention consists in the chemical combination with the aromatic amine compound, such as para phenylenediamin of a carbonyl containing compound, of the type formula RC:OR' where R and R' may be H or organic radicals connected through carbon, such as a ketone or an aldehyde (acetone, formaldehyde, acetaldehyde, etc.) to produce a nontoxic mixture. To make this mixture soluble in water there is combined therewith a sulfur containing compound, such as sodium bisulfite or sodium sulfoxylate.

The following is the best example of my improved hair dye which I have produced with the proportions given by weight.

I dissolve 1 to 5 parts of para phenylenediamin ($\text{C}_6\text{H}_4(\text{NH}_2)_2$) in 100 parts of water and add thereto $1\frac{1}{2}$ to $7\frac{1}{2}$ parts of acetone sodium bisulfite ($\text{C}_3\text{H}_7\text{SO}_3\text{Na}$) which chemically combines with the amine to form the triple compound para phenylenediamin-acetone-sodium bisulfite ($\text{C}_6\text{H}_4\text{N}_2\text{SO}_3\text{Na}$). This compound may be used for dyeing in the usual manner by the addition of a suitable oxidizing agent, such as hydrogen peroxide.

While I have described this invention as a hair dye, it is suitable for other purposes, such as dyeing fur, feathers, etc., hence I do not wish to limit myself to a hair dye, but

What I claim is:—

1. A dye including an aromatic amino compound chemically coupled with a carbonyl containing compound of the type formula RC:OR' where R and R' may be H or organic radicals connected through carbon.
2. A dye including an aromatic amino compound chemically coupled with a carbonyl containing compound of the type formula RC:OR' where R and R' may be H or organic radicals connected through carbon, and a sulfur containing compound.
3. A dye including para phenylenediamin and acetone sodium bisulfite.
4. A dye including para phenylenediamin

and acetone sodium bisulfite in the substantial proportions of 1 to 5 parts of para phenylenediamin and $1\frac{1}{2}$ to $7\frac{1}{2}$ parts of acetone sodium bisulfite.

- 5 5. A dye including water, para phenylenediamin and acetone sodium bisulfite in the substantial proportions of 100 parts of

water; 1 to 5 parts of para phenylenediamin, and $1\frac{1}{2}$ to $7\frac{1}{2}$ parts of acetone sodium bisulfite.

In testimony, that I claim the foregoing as my invention, I have signed my name this 19th day of February, 1923.

RALPH L. EVANS.