UNITED STATES PATENT OFFICE.

MANLEY HOWE AND HENRY R. STEVENS, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN THE PREPARATION OF DYE-COLORS.

Specification forming part of Letters Patent No. **40,263**, dated October 13, 1863.

To all whom it may concern:

Be it known that we, MANLEY HOWE and HENRY R. STEVENS, both of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in the Preparation or Manufacture of Dye-Colors; and we hereby declare that the following is a full, clear, and exact description of the same.

Dyes as heretofore prepared could only be used by dyers or those acquainted with the art of dyeing stuffs.

The object of our invention is to produce dye-colors which may be used by those uninitiated in that art, and thus to afford to families or individuals facility economically to dye faded or soiled or new articles of wear, whether the same be made of silk, wool, cotton, or other vegetable or animal fiber.

Our invention therefore consists in the production of dye-colors of every shade or variety in powder, with which are incorporated and intimately mixed the requisite quantity and quality of mordant to fix the color upon the fibers and textiles of whatever derivation.

To enable others to make and use our invention, we shall now proceed more particularly to describe our invention and the manner in which the same is or may be carried into effect.

We take the dye-colors of the trade, such as are prepared or manufactured for sale to be used in dyeing establishments, or we take the material from which the dye-colors are extracted, and prepare the coloring therefrom in the usual way. These dyes may be of vegetable or mineral origin, or may be compounds of both or either. The colors are in all cases to be pulverized and thoroughly mixed or incorporated to produce a homogeneous mass. In some cases, when the colors to be extracted are derived from dye-woods, we first completely desiccate the wood, then reduce the same to fine powder. For various shades of colors powders of different woods are mixed in varying proportions, as is well known to those acquainted with the art of mixing and applying colors. With these powders we combine the mordant in manner as follows: If the dye-color or the material to which the coloring-matter is to be applied admit of a mineral mordant—such as alum—then the process simply consists in grinding the alum to a fine powder and in mixing and intimately incorporating the same with the powdered coloring-matter before described. This compound is now ready to be used or to be put in packages for sale. If the dye-color and the material to which the coloring-matter is to be applied requires a metallic mordant—such as tin—then the process consists in first discoloring the metal by means of a suitable acid, then mixing the solution in requisite proportion (such as is well known to chemists, manufacturers of dyes, and dyers) with the dye-powder obtained as above described. The mixture is then subjected to the action of heat for the purpose of drying it to a pasty consistency. To this paste is then added a sufficient quantity of pulverized starch or other like absorbent to completely dry the mass. After a little further exposure to dry air or heat the mass becomes pulverulent, and in that condition ready to be reduced to powder, which is or may be effected in a mill or mortar, whose action will perfectly mix and render homogeneous the mass of powder. This powder is then ready to be used or to be packed in packages for sale.

The powder so prepared may be used in accordance with the following directions: Clean the goods thoroughly in strong soapsuds, so as to remove all dirt, spots, streaks, &c. Rinse them in clean cold water. Then put them in warm water until the die is ready; put the dye-powder into warm water, let it simmer one half hour, stir often, skim, add water to cool, stir again, then take the goods from the warm water and drop them into the dye, not in a bunch, but as openly as possible; lift and stir goods constantly with a clean stick, that the dye may come to every part of the goods. For woolens bring the dye-liquor up to a gentle boil. For silk a simmering heat is sufficient. The boiler must not be directly over the fire while the goods are being dyed. Silks are dyed in from ten minutes to half an hour; woolens, half an hour to two hours. Take out the goods and hang them in the air about ten minutes. If you are dyeing black, brown, drab, or slate, rinse in warm soapsuds, and then rinse thoroughly in clean cold water. For all other colors rinse in clean cold water only, then dry them, and iron or press while damp, and they are ready to wear. Tin, crockery, or porcelain may be used for dyeing. Lift and stir the goods constantly when they are first put in the dye. Have plenter of water. The

color in some goods discharges very easily. It is best to try a small piece before putting them into the die, as the color would come out in the hot dye and change the color of the dye-liquor. Always use soft water (rain, pond, or river water, or such as is used for washing clothes) for these dyes, and have it perfectly clean. For dyeing less quantities of goods use less of the powders in the same proportion. Always use water enough to cover the goods.

Having now fully described our invention, we shall state our claim as follows:

1. As a new article of manufacture, dye colors in powder having incorporated with them the mordants in kind and quantity requisite, substantially as hereinbefore set forth.

2. Combining with dye-colors in powder mordants reduced to powder, substantially as set forth.

3. Mixing dye-colors and mordants when either or both of them are in a liquid condition and then drying and afterward reducing the same to powder, substantially as set forth.

4. The combination, with dye-colors and mordants when mixed in a liquid or pasty state, of starch or other similar absorbent, substantially as hereinbefore set forth.

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Witnesses:
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