UNITED STATES PATENT OFFICE.

KARL OCHS, OF BERLIN, GERMANY.

PROCESS OF MANUFACTURING HOMOGENEOUS MIXTURES FOR FILAMENTS OF INCANDESCENT ELECTRIC LAMPS.

SPECIFICATION forming part of Letters Patent No. 653,875, dated July 17, 1900.

Application filed October 21, 1898. Serial No. 694,169. (No specimens.)

To all whom it may concern:

Be it known that I, KARL OCHS, Ph. D., a resident of Berlin, Germany, have invented a certain new and useful Process of Manufacturing Homogeneous Mixtures for Filaments of Incandescent Electric Lamps, of which the following is a specification.

My invention relates to a process of manufacturing homogeneous glowers of incandescent electric lamps.

The invention will be described and claimed herein.

For glowers of conductors of the second class the pure oxids are not used alone, but in admixture. It has been found that the purely-mechanical mixing causes loss of time and is expensive and that the glowers made of this mixture attain the required homogeneity only by longer glowing, probably on account of the diffusion of the oxids into each other. The same result may be attained more quickly and simply if a mixture of the oxids as homogeneous as possible is used for the production of the glowers. Such a mixture is obtained if started from the solutions of the oxids. For instance, soluble salts can be mixed in the desired proportions—for instance, the nitrates and chlorids—and the oxids can be precipitated therefrom by reagents, such as ammonia, or the oxids may be precipitated from the solutions electrolytically. The precipitated oxids are then mixed with a binder and formed into pins, as hereinafter set forth, which are glowed in the oxyhydrogen-gas blowpipe or in the oven.

As proper oxid mixtures the following have stood proof and may be used: first, eighty per cent. thoria thoroxid, twenty per cent. yttriumoxid; second, ninety-five per cent. zirconia zirconoxid, five per cent. yttriumoxid; third, sixty per cent. thoria thoroxid ten per cent. zirconia zirconoxid, thirty per cent. yttriumoxid. Now to make such oxid mixtures according to the stated processes from the salts of the respective oxids it is necessary to know the amount of oxid which can be produced from the salt. If the salt has a definite formula, the amount of oxid can be thereby determined, or one may proceed empirically by glowing a weighted amount of salt and then weighing the resulting oxid, which is sometimes necessary when the salt has an indefinite amount of water. For instance, to produce an oxid mixture from the chlorid take eighty-five grains thorchlorid ($ThCl_4$ molecular weight three hundred and seventy-four, corresponding to two hundred and sixty-four thoroxid Tho_2) plus 27.2 grains zirconchlorid ($ZrCl_4$ molecular weight three hundred and thirty-two, corresponding to one hundred and twenty-two ZrO_2) plus 51.7 grains yttriumchlorid, (Y_2Cl_6 molecular weight three hundred and ninety-two, corresponding to two hundred and twenty-seven Y_2O_3.) These three salts are dissolved together and the oxids precipitated with alkalies like ammonia, or the solution may be electrolyzed, or the solution is evaporated and the residue glowed. Instead of the chlorids equivalent amounts of nitrates or sulfates can be used. The oxid mixture obtained in this manner is washed out, dried, and stirred with water, solution of gum, or a like medium into a paste, from which the pins are then made, which may be done in a mold.

What I claim, and desire to secure by Letters Patent, is—

The process of manufacturing homogeneous glowers for lamp-conductors of the second class designed to burn in the open air, which consists in producing a homogeneous solution of mixtures of metallic salts thereupon precipitating the corresponding oxids of the metallic salts from the salt solution thereby producing a homogeneous mixture of oxids and thereupon forming said precipitated oxids into a paste with a suitable binder and producing glowers therefrom.

KARL OCHS.

Witnesses:
C. H. DAY,
HENRY HASPER.