UNITED STATES PATENT OFFICE.

ALFRED C. DE LA MARTELLIÉRE, OF PARIS, FRANCE.

IMPROVEMENT IN FIRE-PROOF METALLIC ROOFING.

Specification forming part of Letters Patent No. **190,834**, dated May 15, 1877; application filed April 21, 1877.

To all whom it may concern:

Be it known that I, ALFRED CAMILLE DE LA MARTELLIÉRE, of Paris, France, have invented a new and useful Improvement in the Art of Making Fire-Proof Metallic Roofing; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention consists in producing fire-proof roofing by first covering the surface of iron plates with a coating of lead and tin, then immersing these lead and tin covered plates in a solution of chloride of zinc and hydrochlorate of ammonia, and subsequently depositing thereon a covering of zinc to the required thickness, as herein set forth.

The iron plates to be thus doubly galvanized, as it were, are prepared in the following manner:

Plates of iron to be treated by my new process, to render them fire-proof, are first immersed in a solution of sulphuric acid for a short time, for the purpose of removing all oxidation from their surfaces, which leaves them in a state to absorb the coating of lead and tin, the first step in the deposition, and to receive the final deposit of zinc, hereinafter described.

Plates thus prepared are immersed in a bath of melted lead, having a small proportion of tin, to the surface of which plates will adhere a covering, inseparably connected and absorbed in their surfaces, as it were, which covering more readily receives the subsequent deposit of zinc, which commingles with the lead and tin, and presents a surface, fire-proof, consisting of lead, tin, and zinc, being part and parcel of the iron plates as a base.

These plates are next immersed in a solution of chloride of zinc and hydrochlorate of ammonia, being immersed and withdrawn several times, remaining in this solution but a few moments at each immersion.

The next stage in this process is to place these plates into a solution of zinc, and deposit upon their surfaces the finally-required coating.

In this solution of zinc a portion of the lead and tin, which the iron accepts while passing through the first stage of this process, runs off and settles at the bottom of the solution, and finds itself replaced by a coating of zinc, forming a homogeneous surface therewith.

The plates, thus doubly galvanized, are taken from the zinc-bath and washed in water to free them from what may adhere of the solution, which completes the process of what I term double galvanization.

The plates, thus prepared, are composed mostly of iron, the iron being first covered with a light coating of lead and tin, and subsequently covered with a deposition of zinc.

This method of galvanizing produces several advantages, the most important of which is that the deposit of zinc is much more adhesive than if deposited simply upon the iron without previous preparation, the covering of lead and tin serving as a sort of combination between the iron and zinc.

Iron plates thus prepared produce a combination of about .98 of lead and .02 of tin, of which only a small quantity, a thin layer, remains, and the final deposit of zinc thereon for roofing should be about one-fifth or one-sixth of the total thickness.

The incombustibility of these plates results from the peculiar combination of the different metals of which they are composed. The zinc, which is the only metal really combustible, is present only in such a state that it cannot burn.

Having thus fully described my invention, what I claim therein as new, and desire to secure by Letters Patent, is—

The process of rendering metallic plates for roofing fire-proof, by first covering their surfaces with a coating of lead and tin, immersing these plates so covered in a bath of chloride of zinc and hydrochlorate of ammonia, and subsequently depositing thereon a covering of zinc, substantially as herein set forth.

A. C. DE LA MARTELLIÉRE.

Witnesses:

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