

UNITED STATES PATENT OFFICE.

ALEXANDRE JULLIEN, OF PARIS, FRANCE.

IMPROVEMENT IN CONVERTING OLD IRON INTO STEEL.

Specification forming part of Letters Patent No. **163,080**, dated May 11, 1875; application filed July 18, 1874.

To all whom it may concern:

Be it known that I, ALEXANDRE JULLIEN, of Paris, France, manager of the Foundries and Forges Company, of Terre Noire, La Voulte, and Besseges, in the French Republic, have invented a new and Improved Process for Converting Old Iron into Steel, of which the following is a specification:

This invention relates to certain improvements in the manufacture of steel from cast-iron and wrought-iron, combined with a percentage of ferro-manganese, the object being to utilize the old and comparatively worthless wrought-iron in the market for the manufacture of steel.

The invention consists of a compound formed by melting in a Siemens-Martin or other suitable furnace, one thousand parts of cast-iron, selecting that which contains less than one-thousandth part of phosphorus, and adding from time to time suitable quantities of wrought-iron in the shape of old nails, axles, and the like, the whole quantity varying from two thousand five hundred to three thousand five hundred parts, according to the amount of carbon present in the cast-iron. After the mass has all been reduced to a molten state, sixty-five parts, or thereabout, of ferro-manganese, containing about sixty per cent. of manganese, are added in fragments from time

to time to the mass, and melted therewith. The materials must be quickly mixed during this process until the whole are thoroughly melted and combined, after which the compound may be run off into molds and formed into ingots.

In carrying out the invention, the following proportions have been found to answer well, although they may be considerably varied, according to the percentage of carbon in the cast-iron: White cast-iron, one thousand kilograms; old wrought-iron, such as old English rails, for instance, two thousand six hundred kilograms; ferro-manganese, containing fifty-five per cent. of manganese, sixty-five kilograms.

These materials are melted, as above described, and when completely combined are run into molds, and the alloy allowed to cool for use.

What I claim is—

The compound or alloy, consisting of wrought-iron, cast-iron, and ferro-manganese, combined in or about the proportions herein set forth.

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Witnesses:

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