

UNITED STATES PATENT OFFICE.

WILLIAM J. MILES, JR., OF NEWTON, KANSAS, ASSIGNOR TO THE MILES CUTLERY AND MACHINE COMPANY, OF KANSAS, ILLINOIS.

COMPOSITION FOR CONVERTING MALLEABLE CAST-IRON INTO STEEL.

SPECIFICATION forming part of Letters Patent No. 428,687, dated May 27, 1890.

Application filed February 19, 1890. Serial No. 341,056. (No Specimens.)

To all whom it may concern:

Be it known that I, WILLIAM J. MILES, Jr., a citizen of the United States, residing at Newton, in the county of Harvey and State of Kansas, have invented a new and useful Composition for Converting Malleable Cast-Iron into Steel, of which the following is a specification.

The invention relates to improvements in converting malleable cast-iron into steel.

The object of the present invention is to improve the process of converting malleable cast-iron into steel, save time and fuel, and render the metal more ductile and homogeneous.

The invention consists in using, in addition to the charcoal bath usually employed, a compound consisting of ferro-cyanide of potassium, cyanide of potassium, and carbonate of potassium.

The ingredients of the compound are mixed in the following proportions: Ferro-cyanide of potassium, three ounces; cyanide of potassium, one ounce; carbonate of potassium, two ounces.

The ingredients are pulverized and thoroughly mixed. A cast-iron box of the usual construction is employed, and in the bottom is placed a layer of fine charcoal, and the malleable iron castings are then placed in a layer upon the charcoal and the compound is sifted evenly over the castings. Then another layer of charcoal and a layer of castings are placed in the box and the compound is sifted over the metal as before, and the castings are then covered by charcoal. This is continued until the box is full, which is then cemented air-tight with clay and placed in a furnace and heated to a bright red heat and main-

tained at that temperature from six to twenty-four hours, according to the thickness of the castings to be converted. About six ounces of the compound is used to two hundred pounds of metal, the compound generating, together with the charcoal, carbon gases which unite with the metal in the box and convert the castings into steel that can be readily forged and welded and which is tough and homogeneous.

The process is designed to be employed in the manufacture of all kinds of edge-tools, hammers, small gearings, and the like where lightness and strength are required.

Having described my invention, what I claim is—

1. The herein-described process of converting malleable cast-iron into steel, the same consisting in placing the castings in a metal box, sifting over them a compound of ferro-cyanide of potassium, cyanide of potassium, and carbonate of potassium, surrounding the castings by layers of charcoal, and raising and maintaining the castings at a bright red heat, substantially as and for the purpose described.

2. The herein-described compound for converting malleable cast-iron into steel, the same consisting of ferro-cyanide of potassium, cyanide of potassium, and carbonate of potassium in the proportions described, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

WILLIAM J. MILES, JR.

Witnesses:

GRANVILLE P. WATSON,
HORACE W. HUBBARD.