

UNITED STATES PATENT OFFICE.

CHARLES L. LEIBY, OF KNOXVILLE, TENNESSEE, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO THE LEIBY COMPANY, OF SAME PLACE.

PROCESS OF MAKING METALS WELDABLE AND MALLEABLE.

SPECIFICATION forming part of Letters Patent No. 661,407, dated November 6, 1900.

Application filed December 5, 1898. Serial No. 698,347. (No specimens.)

To all whom it may concern:

Be it known that I, CHARLES L. LEIBY, a citizen of the United States, residing at Knoxville, in the county of Knox and State of Tennessee, have invented certain new and useful Improvements in Processes of Making Metals Weldable and Malleable, of which the following is a specification.

My said invention has for its object the converting of metals of a naturally soft or weak nature and not weldable into a physical condition in which they are weldable and the converting of non-malleable metals into a malleable state; and it consists in a process of preparing said metals by treatment with a chemical compound, whereby these objects are accomplished, as will be hereinafter more fully described and claimed.

The compound consists of potassium nitrate and a cyanid (potassium cyanid, potassium ferri, or ferrocyanid, or a mixture) in the proportion of about a pound of the potassium nitrate to ten grains of the cyanid.

The process of treating the metals consists in placing them in a vessel of suitable size and construction (sheet-iron of proper thickness will do) and putting therein a sufficient quantity of the compound so that when melted it will cover or immerse the metal. The vessel is then subjected to heat sufficient to melt or fuse the compound, and said metal is left in the bath thus formed until the desired chemical action has taken place. Two or three hours will be found sufficient usually, and sometimes less time is required. Metal so treated will be found to be readily weldable and malleable.

I have treated ten pounds of copper in a box with one pound of the potassium nitrate and ten grains of a cyanid, as above described, and secured a perfect result, the copper so treated having been worked and welded as readily as malleable iron. While I have secured perfect results with the proportions above stated, it will be understood that they

may be considerably varied without departing from my invention. It will be understood, further, that the quantity of compound is not material, so long as the proportions are maintained such as will secure the desired result; but it is desirable to have sufficient to cover the metal being treated after the compound has fused. The same compound may be used a second time in some cases, as I have done so in my experiments with success. Copper so treated can be melted, then cast into any form desired, and then welded, if desired. I have also added about twenty grains of borax to the compound, as above specified, and found the result very satisfactory.

It will be understood, of course, that the several parts composing the compound need not necessarily be mixed before being placed in the vessel with metal to be treated, as they will mix and fuse upon becoming melted without further attention.

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

The process of rendering metals weldable and malleable which consists in placing them in a vessel with a compound of potassium nitrate and a cyanid in about the proportions of one pound of potassium nitrate to ten grains of cyanid, substantially as described, and of a quantity sufficient to immerse said metal when fused, and subjecting the whole to a heat sufficient to fuse said compound, and allowing said metal to remain in said vessel a period of time, subject to the chemical action of said compound, substantially as set forth.

In witness whereof I have hereunto set my hand and seal, at Washington, District of Columbia, this 3d day of December, A. D. 1898.

CHARLES L. LEIBY. [L. S.]

Witnesses:

CHARLES T. CATES, Jr.,
E. W. BRADFORD.