UNITED STATES PATENT OFFICE.

ROBERT A. HADFIELD, OF SHEFFIELD, ENGLAND.

PROCESS OF IMPROVING THE MAGNETIC QUALITIES OF IRON-SILICON-MANGANESE ALLOYS.

No. 836,757. Specification of Letters Patent. Patented Nov. 27, 1906.

Application filed July 5, 1906. Serial No. 324,893.

To all whom it may concern:

Be it known that I, ROBERT ABBOTT HADFIELD, a subject of the King of Great Britain, residing at Sheffield, England, have invented a certain new and useful Improvement in Processes for Improving the Magnetic Qualities of Iron-Silicon-Manganese Alloys, of which the following is a specification.

In United States Letters Patent No. 745,829 granted to me December 1, 1903, I have described and claimed a process of producing a magnetic material of high permeability and low hysteresis action which consists in alloying a magnetic body with silicon, heating the alloy to a relatively high temperature below its melting-point, allowing the alloy to cool, reheating it to a temperature below that first employed and finally cooling.

In another application for Letters Patent, Serial No. 324,892, filed July 5, 1906, I have set forth the addition of manganese to the aforesaid alloy of iron and silicon, whereby the working and rolling qualities of said alloy are improved.

My present invention is a process of increasing the permeability and electric resistance and decreasing the hysteresis action of said iron-silicon-manganese alloy.

I carry my said process into effect by melting together the ingredients in a suitable vessel, casting into ingots, rolling or working and treating the same by first heating the alloy to between about 900° and 1,100° centigrade, then allowing it to cool, then reheating to between 700° and 850° centigrade—that is, to a temperature lower than the one attained during the first heating and then finally cooling.

I claim—

The process of producing a magnetic alloy of high magnetic permeability and electric resistance and low hysteresis action, which consists in adding to an alloy of iron and silicon an admixture of manganese in proportion not sufficient to impair said magnetic qualities, then heating said iron-silicon-manganese alloy to a relatively high temperature below its melting-point, allowing the alloy to cool, reheating it to a temperature below that first employed, and finally cooling.

In witness whereof I have signed my name hereto in the presence of two witnesses.

ROBERT A. HADFIELD.

Witnesses:

HENRY E. DIXON,

FRANK HUTSON.