

# UNITED STATES PATENT OFFICE.

ROBERT A. HADFIELD, OF SHEFFIELD, ENGLAND.

## METHOD OF MAKING MAGNETIC MATERIALS.

No. 836,759.

Specification of Letters Patent.

Patented Nov. 27, 1906.

Application filed July 5, 1906. Serial No. 324,896.

*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 Methods of Making Magnetic Materials, of which the following is a specification.

In United States Letters Patent No. 767,110, granted to me August 9, 1904, I have described and claimed a method of making magnetic material, which consists in rolling an alloy of iron combined with other elements (more particularly silicon, aluminium, or phosphorus) into thin sheets and then subjecting said rolled sheets to a heat treatment, whereby said sheets are first heated to a temperature below the melting-point, allowed to cool, reheated to a temperature above that first employed, and then finally cooled. As the magnetic material referred to (and especially the alloy or alloys above mentioned) is cold-short, the rolling or forging of the alloy into thin sheets as set forth in my patent aforesaid necessarily implies a preliminary heating of said alloy to a high temperature in order to enable it to be thus mechanically treated.

My present invention differs from that claimed in my Letters Patent aforesaid in that instead of first subjecting the rolled or wrought thin sheet to a temperature below

that subsequently employed I subject it to one higher than that subsequently employed. Thus I first heat the alloy to, say, 950° centigrade, cool, reheat to 750° centigrade, and finally cool.

I claim—

1. The herein-described method of producing a magnetic material of high permeability and low hysteresis action which consists in alloying a magnetic substance with silicon, reducing the alloy to a thin body, heating such thin body to a temperature below its melting-point, allowing it to cool, reheating it to a temperature below that first employed and again allowing it to cool.

2. The herein-described method of producing a magnetic material of high permeability and low hysteresis action, which consists in alloying a magnetic substance with silicon, heating the mass and working the same into a sheet, heating such sheet to a temperature below the melting-point of the material and allowing it to cool; reheating said sheet to a temperature below that first employed and again allowing it to cool.

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

ROBERT A. HADFIELD.

Witnesses:

HENRY E. DIXON,  
FRANK HUTSON.