

# UNITED STATES PATENT OFFICE.

ROBERT A. HADFIELD, OF SHEFFIELD, ENGLAND.

PROCESS OF IMPROVING CERTAIN MAGNETIC QUALITIES OF A MAGNETIC BODY.

No. 836,755.

Specification of Letters Patent.

Patented Nov. 27, 1906.

Application filed July 5, 1906. Serial No. 324,891.

*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  
5 a certain new and useful Improvement in Processes for Improving Certain Magnetic Qualities of a Magnetic Body, of which the following is a specification.

The invention is a process for improving  
10 certain magnetic qualities of a magnetic body.

I have discovered that the permeability may be increased and the hysteresis action reduced of any magnetic body which is low in  
15 carbon and manganese by heating said body to a certain temperature or to a point within a certain range of temperatures, retaining said temperature constant for a certain time and then cooling slowly. The magnetic body  
20 thus treated is especially adapted for use in ballast-coils, transformer-plates, and other electrical apparatus wherein it is of great importance to keep the total magnetic and electric losses as low as possible.

This process is specially applicable to the  
25 magnetic alloy set out in United States Patent No. 745,829, granted to me December 1, 1903, also to alloys of iron-silicon and aluminium as set out in my copending application, Serial No. 324,894, filed July 5, 1906, or  
30 of iron-silicon and manganese as set out in my copending application, Serial No. 324,892, filed July 5, 1906.

In carrying my process into effect I first  
35 heat the magnetic body by any suitable

means to a temperature between 700° and 800° centigrade. The precise point between these limits most advantageously used in any given case will depend somewhat upon the physical and chemical characteristics of the  
40 particular body selected and may easily be determined by trial once for all for that particular body. The said temperature having been attained, I maintain it constant for a period of not less than ten consecutive hours.  
45 I then allow said body to cool slowly—say at the rate of about 10° centigrade per hour—until normal temperature is regained.

I claim—

1. The process of reducing the total mag-  
50 netic and electric loss in a magnetic body, which consists in first heating said body to a temperature between 700° and 800° centigrade maintaining said temperature constant for not less than ten consecutive hours, and  
55 then slowly cooling said body.

2. The process of reducing the total magnetic and electric loss in an alloy containing iron and silicon which consists in first heating  
60 said alloy to a temperature between 700° and 800° centigrade, maintaining said temperature constant for not less than ten consecutive hours and then slowly cooling said body.

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

ROBERT A. HADFIELD:

Witnesses:

HENRY E. DIXON,  
FRANK HUTSON.