UNITED STATES PATENT OFFICE.

ROBERT ABBOTT HADFIELD, OF SHEFFIELD, ENGLAND.

MAGNETIC ALLOY.

No. 842,403. Specification of Letters Patent. Patented Jan. 29, 1907.

Application filed November 8, 1906. Serial No. 342,459.

To all whom it may concern:

Be it known that I, ROBERT ABBOTT HADFIELD, a subject of the King of Great Britain, residing at Parkhead, Sheffield, England, have invented a certain new and useful Improvement in Magnetic Alloys, of which the following is a specification.

The invention is an alloy having magnetic and electric properties especially adapting it for use in ballast-coils, transformer-plates, and like electrical apparatus, wherein it is of great importance to reduce the total magnetic and electric losses to the lowest possible degree.

To produce my said alloy, I take pure Swedish or other suitable pure iron and melt this together with silicon from two to 4.5 per cent. of the entire mass, manganese not exceeding .7, and aluminium not exceeding 1.3 per cent. I may effect this melting by a crucible process or instead thereof produce decarbonized or desiliconized iron by any steel-making process—such as the open-hearth, the pneumatic, or the electrical process—adding to such iron the desired percentages of silicon, aluminium, and manganese. It is important to keep the percentage of carbon present low—say under about .12 per cent. As one specific example of my said alloy I give the following percentages: silicon 3.98, manganese .08, aluminium, .95, with iron, and, in this particular case, carbon .08. Here the manganese is obviously low.

Another example in which the manganese is relatively high is silicon 3.57, manganese .67, aluminium .1, with iron, and, in this particular case, carbon .09.

I claim—

An iron-silicon-manganese-aluminium alloy containing silicon from two to 4.5 per cent., manganese not exceeding .7 per cent. and aluminium not exceeding 1.3 per cent.

In testimony whereof I have affixed my signature in presence of two witnesses.

ROBERT ABBOTT HADFIELD.

Witnesses:

EUSTACE H. BARKER,

JOHN J. NEWPORT.