

UNITED STATES PATENT OFFICE.

ROBERT A. HADFIELD, OF SHEFFIELD, ENGLAND.

MAGNETIC ALLOY.

No. 836,758.

Specification of Letters Patent.

Patented Nov. 27, 1906.

Application filed July 5, 1906. Serial No. 324,894.

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 Magnetic Alloys, of which the following is a specification.

The invention is an alloy having magnetic and electric properties especially adapting it
10 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, and also having improved physical
15 properties in point of solidity and homogeneity of structure when in cast or molded condition.

In United States Letters Patent No. 745,829, granted to me December 1, 1903, I
20 have set forth an alloy of iron and silicon which is subjected to a described heat treatment and which possesses magnetic permeability and electric resistance above and hysteresis quality below, respectively, those of
25 the best Swedish charcoal-iron or, generally, the purest iron commercially obtainable.

I have now discovered that castings of the

said alloy having the qualities aforesaid may be improved both magnetically and electrically by the addition of aluminium. I have
30 also found that said castings are thus rendered more free from blow-holes and like imperfections and from any tendency to boil when in molten state, while also becoming
35 much more solid and homogeneous in structure than when the aluminium is not added.

In making my improved alloy I melt suitable pure iron in any known way with from one to five per cent. of silicon and I add thereto not exceeding one per cent. of aluminium.
40 The alloy may be cast in ingots in the usual manner.

I claim—

The combination in an alloy of (1) iron; (2) silicon in proportion of from one to five
45 per cent., (3) aluminium in proportion less than one per cent.

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

ROBERT A. HADFIELD:

Witnesses:

HENRY E. DIXON,
FRANK HUTSON.