

UNITED STATES PATENT OFFICE.

GUSTAV PISTOR, OF FRANKFORT-ON-THE-MAIN, AND ALBERT BEIELSTEIN AND ADOLF BECK, OF BITTERFIELD, GERMANY, ASSIGNORS TO THE FIRM OF CHEMISCHE FABRIK GRIESHEIM-ELEKTRN, OF FRANKFORT-ON-THE-MAIN, GERMANY, A CORPORATION OF GERMANY.

METHOD OF PRODUCING FERRO-SILICO-MAGNESIUM ALLOY.

1,376,113.

Specification of Letters Patent. Patented Apr. 26, 1921.

No Drawing. Application filed November 11, 1916, Serial No. 130,908. Renewed February 7, 1921. Serial No. 443,222.

To all whom it may concern:

Be it known that we, GUSTAV PISTOR, ALBERT BEIELSTEIN, and ADOLF BECK, all subjects of Germany and residents of Frankfort-on-the-Main, Germany, and Bitterfeld, Germany, respectively, have invented certain new and useful Improvements in the Method of Producing Ferro-Silico-Magnesium Alloy, of which the following is a specification.

Our invention relates to the production of an alloy containing magnesium and being adapted to be used as a deoxidizing agent for iron and cast steel. The object of the invention is to provide a process of producing such an alloy that contains magnesium and silicon which latter substance has proved a quality improver of considerable value.

It has been proposed to produce a ferro-magnesium alloy by adding magnesium to iron or steel in a semi-fluid state, and to use the alloy thus obtained for the purpose of treating iron or cast steel. It has been further proposed to previously alloy the magnesium with nickel or aluminium, and to introduce the thus obtained alloy into an iron or steel bath, said bath being required to be in semi-fluid state for that purpose. The resulting alloy has been applied for refining iron or cast steel.

While trying to introduce, in the same manner, silicon into a magnesium alloy intended to be used for the same purpose of deoxidizing iron or cast steel, we found that the alloying of silicon and magnesium offers considerable difficulties.

Now, we have discovered that alloys of the desired character can be obtained in a simple and smooth manner by starting with ferro-silicon in a semi-fluid state and adding the magnesium thereto. The magnesium must be added to the ferro-silicon when the latter is in a semi-fluid state, that is, not

completely melted. If the addition of the magnesium is delayed until the ferro-silicon is completely melted and thinly fluid, only a small portion of the magnesium will alloy, by far the greater portion being uselessly consumed. Instead of magnesium, alloys of magnesium and any other metal, may be introduced into the ferro-silicon while the same is in a semi-fluid state, such magnesium alloys, for instance, as magnesium-aluminium, or magnesium-nickel. In carrying the invention into effect, a ferro-silicon may be used containing silicon to any percentage, for instance, a ferro-silicon containing from 50 per cent. to 80 per cent. silicon.

For the purpose of effecting a deoxidation of an iron or steel bath, the thus obtained alloy may be applied either in a fluid or in a solid state.

What we claim as our invention and desire to secure by Letters Patent of the United States, is:

The method of producing an alloy containing magnesium for use as a deoxidizing agent for iron and cast steel consisting in melting ferro-silicon to a semi-fluid state and adding magnesium thereto while in said state.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

GUSTAV PISTOR.
ALBERT BEIELSTEIN.
ADOLF BECK.

Witnesses as to signature of Gustav Pistor:

JEAN GRUND,
CARL GRUND.

Witnesses as to signatures of Albert Beielstein and Adolf Beck:

FRIEDRICH INGS,
EWALD BAUER.