

UNITED STATES PATENT OFFICE.

OTTO THALLNER, OF BISMARCKHÜTTE, GERMANY, ASSIGNOR TO THE FIRM OF
BISMARCKHÜTTE, OF BISMARCKHÜTTE, GERMANY.

PROCESS OF DEOXIDIZING SLAGS.

936,382.

Specification of Letters Patent.

Patented Oct. 12, 1909.

No Drawing.

Application filed April 20, 1909. Serial No. 491,173.

To all whom it may concern:

Be it known that I, OTTO THALLNER, a subject of the King of Prussia, and resident of Bismarckhütte, in the Province of Upper Silesia, German Empire, have invented a new and useful Process for Deoxidizing Slags, of which the following is a specification.

This invention relates to the deoxidation of slags over baths of molten metal for the purpose of reducing the metal oxids contained in the slag and recovering the metal, and is especially applicable to the deoxidation of those slags containing iron and resting on a bath of steel.

It is already known that metallic aluminium is a good deoxidizing agent and it has already been applied for the deoxidation of steel. It has been impossible however to deoxidize slag by means of aluminium according to the processes hitherto known, because the aluminium on account of its low specific gravity merely floats on the slag and burns in the air. In applying aluminium to the deoxidation of steel only small quantities have been employed because aluminium burns with the oxygen in the steel bath to form a clay, which is difficult to separate out from the molten metal. If however the aluminium is passed through the metal after the oxids have been extracted, there is no formation of clay and the aluminium, if properly introduced, ascends to the surface of the metal and acts upon the layer of slag from below.

The present invention employs these facts observed by me for the purpose of deoxidizing the slag and the method which I employ is to force quantities of aluminium into the metal bath and below the layers of slag during the whole melting process. The quantities introduced are of course introduced at intervals and are in excess of that required to deoxidize the metal. In this way a sufficient quantity of aluminium eventually rises to the top of the metal and burns in its course through the slag, thereby

deoxidizing the slag. The aluminium rising through the deoxidized steel to the surface of the metal bath spreads in a layer between this metal bath and the slag and then rises through the slag, so that the deoxidation proceeds from below. In this way a very important result is obtained, as the aluminium reaches the surface in the burned state, that is to say in the form of clay. The completion of the deoxidation is indicated by the white color of the slag. This white slag is well adapted to allow the passage therethrough of sulfur. This last feature is clearly one of considerable importance, as the molten bath of steel can be freed of its content of sulfur subsequent to the deoxidation.

It will be understood that the period of time in which the aluminium is led to the metal bath is sufficiently long to allow the clay formed in the metal bath at the preliminary stages of the process to separate out, so that the subsequent introduction of aluminium does not result in the formation of clay in the metal bath.

I claim:—

1. A process for deoxidizing a layer of slag over a molten metal bath, consisting in forcing aluminium into the metal bath so that said aluminium rises to the surface of the metal and acts on the layer of slag from below.

2. A process for deoxidizing a slag containing iron and over a molten bath of steel, consisting in forcing aluminium into the steel bath during the melting process until said steel bath is completely deoxidized and continuing the supply of aluminium to said steel bath, so that free aluminium rises to the surface of the molten steel and acts on the layer of slag from below.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

OTTO THALLNER.

Witnesses:

HERMANN PLISCHNE,
MAX FISCHE.