UNITED STATES PATENT OFFICE.

GIDEON BOERICKE, OF PHILADELPHIA, PENNSYLVANIA.

PROCESS OF REDUCING REFRACTORY ORES, PARTICULARLY OXIDS AND SULFIDS.

958,851. Specification of Letters Patent. Patented May 24, 1910.

No Drawing. Application filed January 4, 1909. Serial No. 470,565.

To all whom it may concern:

Be it known that I, GIDEON BOERICKE, a citizen of the United States, residing at Philadelphia, in the State of Pennsylvania, have invented certain new and useful Improvements in Processes of Reducing Refractory Ores, Particularly Oxids and Sulfids, of which the following is a specification.

This invention has particular reference to a method to be applied to the reduction of such refractory oxids as the oxids of tungsten, vanadium, molybdenum, or the like, and by my improved process I secure a superior product and also a reduction in the cost of the process.

In carrying out my invention I first take a quantity of the refractory oxid or other substance to be reduced and place with it some manganese compound, as for example ferro-manganese, together with another metallic reducing agent such for example as ferro-silicon—the said other reducing agent referred to being of a character such that the two reducing agents together in their oxidized form will serve the purpose of a flux, or, otherwise expressed, will serve to flux each other without the necessity of adding to the mixture any special flux other than that formed from the materials mentioned themselves.

In carrying out my improved process I prefer in some cases to use some carbon, which I find under certain conditions gives a better yield.

The mixture above referred to is of course subjected to the action of heat in any preferred manner, the two metallic reducing agents taking up the oxygen or sulfid from the ore and forming the flux as described.

It will be understood that the two metallic reducing agents are not necessarily added separately, but that if desired such reducing agents may be combined in the form of a single alloy, such for instance as a silicid of manganese or a ferro-silicon-manganese, and that the invention as defined in the claims is generic as to this feature. It will also be understood that the term "ore" is used in its generic sense, and covers not only material in its crude or natural form containing the element, but also artificially prepared substances containing the element as an ingredient.

Having thus described my invention and illustrated its use, what I claim as new and desire to secure by Letters Patent, is the following:

1. The herein described process of reducing refractory ores which consists in subjecting the said ores to heat in the presence of manganese and another metallic reducing agent of such character that the two agents will in their oxidized form flux the mass, substantially as described.

2. The herein described process of reducing refractory ores which consists in subjecting the said ores to heat in the presence of some reducing compound containing manganese, and another reducing agent of such character that the two agents will in their oxidized form flux the mass, substantially as described.

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

GIDEON BOERICKE.

Witnesses:
WALTER M. STEIN,
ARTHUR BARTSCH.