

UNITED STATES PATENT OFFICE.

UTLEY WEDGE, OF ARDMORE, PENNSYLVANIA.

PREPARING IRON OXID FOR USE IN BLAST-FURNACES.

No. 804,692.

Specification of Letters Patent.

Patented Nov. 14, 1905.

Application filed November 1, 1904. Renewed August 23, 1905. Serial No. 275,509.

To all whom it may concern:

Be it known that I, UTLEY WEDGE, a citizen of the United States, residing in Ardmore, Pennsylvania, have invented certain Improve-
5 ments in Preparing Iron Oxid for Use in Blast-Furnaces, of which the following is a specification.

The object of my invention is to prepare for use in a blast-furnace relatively fine particles
10 of oxid of iron, such as the red hematite ores and the cinder resulting from the desulfurization of iron pyrites in the manufacture of sulfuric acid. These relatively fine particles of oxid of iron are not available for use in
15 the blast-furnace, first, because of their tendency to pack and render the furnace charge too dense for the passage of the blast there-through, and, secondly, because when a high-pressure blast is used they are liable to be
20 carried off thereby and deposited in the flues of the furnace. I have found that such finely-divided iron oxids can be rendered available for blast-furnace use by combination with argillaceous matter—such as clay, clay shale,
25 clay slate, or argillaceous limestone—if the same is finely divided and mixed with the finely-divided iron oxid and the mixture then subjected to heat. The mixture should contain about three per cent. of the argillaceous
30 matter and should be subjected to a temperature of about twenty-four hundred (2,400) degrees Fahrenheit—that is to say, to a temperature high enough for fusing the iron-oxid particles, the result being an agglomeration
35 of the iron-oxid particles and the argillaceous matter and the forming of lumps of such size that the resultant product resembles gravel, in which form it is readily available for use in a blast-furnace. Preferably the mixture

during the time that it is being heated is 40 subjected to agitation, the most convenient method of accomplishing such agitation being to feed the mixture through a rotating kiln of suitable length whose axis is slightly inclined in respect to the horizontal, the kiln 45 being heated either externally or internally, or both.

The advantage of using argillaceous matter as a means of agglomerating the iron-oxid particles is that it is cheap and always avail- 50 able and answers the intended purpose quite as effectively as the more expensive and less accessible materials which have heretofore been proposed.

Having thus described my invention, I claim 55 and desire to obtain by Letters Patent—

1. The mode herein described of preparing relatively fine particles of iron oxid for use in a blast-furnace, said mode consisting in mixing said particles with powdered argilla- 60 ceous matter and subjecting the mixture to heat sufficient to fuse the iron-oxid particles, substantially as specified.

2. The mode herein described of preparing relatively fine particles of iron oxid for use 65 in a blast-furnace, said mode consisting in mixing said particles with powdered argillaceous matter and then subjecting the mixture simultaneously to agitation and to heat sufficient to fuse the iron-oxid particles, substan- 70 tially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

UTLEY WEDGE.

Witnesses:

MAY B. McDERMOTT,
JOS. H. KLEIN.