United States Patent Office.

CHARLES S. LYNCH, OF BOSTON, MASSACHUSETTS

Letters Patent No. 108,802, dated November 1, 1870.

IMPROVEMENT IN FIX FOR PUDDLING-FURNACES.

The Schedule referred to in these Letters Patent and making part of the same.

To all persons to whom these presents may come:

Be it known that I, CHARLES S. LYNCH, of Boston, of the county of Suffolk and State of Massachusetts, have invented a new or improved Metallurgical Composition for the Lining or Fettling of Puddling-Furnaces; and do hereby declare the same to be fully described, as follows:

In making the said composition, I take iron ore, in powder, or common or magnetic iron ore reduced to small pieces or to a powder, and add to one hundred pounds of the ore in such a state a quantity, say about five pounds of silicate of soda of commerce, dissolved in about thirty pounds of water at a boiling temperature.

The ingredients above named are next to be thoroughly stirred or incorporated together so as to form a pasty or adhesive mass.

The compound so made may either be plastered on the part or parts of the furnace to be lined or protected, and be dried either by heat or by atmospheric influence, or it may be molded into the shape of bricks or other forms sufficient for the purpose, which subsequently may be properly dried preparatory to being used as linings.

I do not confine my composition to the precise proportions, as set forth, of its ingredients, as such may often be varied to advantage.

The silicate of soda, besides answering as a means of holding together the portions of ore, is useful in other respects. It renders it unnecessary to reluce the ore to an impalpable powder, and enables granulated ore or fine ore of the mines to be used in making the compound.

I am familiar with the fact that magnetic iron ore is or has long been in this country extensively used as a "fix" or lining for puddling-furnaces; also, that only certain beds furnish a suitable ore for such use, and that many others are wholly unfit for the purpose; also, that the process in many rolling-mills is to line up or fix with the lump ore cold, and that in others fine ore is used by heating it in the furnace and "putting it up" hot, such being termed a "hot fix."

Some of the most esteemed ores for this purpose are very liable to crumble into crystals or grains. This disintegration is considerable in the blasting, handling, and raising at the mines, so that the products of such mines are often classified into "coarse" ore and fine ore, they being sold separately, and the "fine" at a price considerably less than the coarse ore.

This tendency of the ore to crumble is so great that buyers of the coarse ore generally find, after purchasing it and removing it to their rolling-mills, that it will, by exposure to the air and weather, and by transportation, have become reduced from coarse to fine ore.

Thus, if their process of fixing or fettling is with coarse or lump ore, and their furnaces are adapted for such, they are generally put to great inconvenience and loss by the reduction of their ore-pile from coarse to fine ore.

My invention enables this fine ore to be utilized or employed to advantage as a fix or lining for a furnace.

This fine ore is to be mixed with a solution of any of the soluble silicates, as silicate of soda or silicate of potash, the solution being made by boiling the silicate in water.

I am aware of the furnace-lining or fix as described in the United States Patent No. 98,534, dated January 4, 1870, and granted to John D. Williams, such fix consisting of asbestos, ground crucibles, brick-dust, horse-manure, and silicate of soda, &c., it being explained that the above-enumerated mineral matters are little affected by heat, and the composition is intended to take the place of ore.

My invention has nothing to do with such a composition, it being to enable ore of a certain kind to be utilized or used to advantage as a lining or fix for a puddling-furnace.

I, therefore, make no claim to the composition of the said Williams.

I claim as my invention, and as a new manufacture—

A fix, as composed of fine or disintegrated or powdered iron ore and a solution of alkaline silicate, as set forth, such being for the purpose or use as hereinbefore described.

CHAS. S. LYNCH.

Witnesses:
R. H. EDDY,
J. R. SNOW.