

# United States Patent Office.

JOHN D. WILLIAMS, OF ALLEGHENY, PENNSYLVANIA.

*Letters Patent No. 98,534, dated January 4, 1870.*

## IMPROVED FIX FOR BOILING AND PUDDLING-FURNACES.

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

I, JOHN D. WILLIAMS, of Allegheny, in the State of Pennsylvania, have invented a certain new Fix for Boiling or Puddling-Furnaces, of which the following is a specification.

In mixing and preparing said fix, I make use of the following ingredients, or their equivalents, and in about the following proportions, viz:

I take, of asbestos, one hundred and fifty (150) pounds; ground crucibles, seventy-five (75) pounds; ground brick-dust, twenty-five (25) pounds; horse-manure, fifty (50) pounds; silicate of soda, G., ten (10) gallons, or so much as is necessary to make said mixture of the consistency of stiff mortar.

Said composition is used as a fix, in the same manner as fixes made of ore are now used.

The ingredients, asbestos, crucibles, and brick-dust, are substances which are little affected by heat—so much so that they are almost indestructible.

The horse-manure contains ammonia, and I have found, by experiment, that in this form it is much better introduced into my mixture than in any other.

The silicate of soda, G., forms a glue-like coating or glazing over the whole mass, when the heat reaches the "fix."

The process now practised is to pack iron-ore about the part of the furnace where the pig-iron is placed, making a dish-like cavity, with ore also placed on the bottom, under the pig-iron.

This serves many uses in the reduction of the iron, but especially in retaining the iron in the middle of

the furnace, away from the sides, and in keeping the heat from the walls of the furnace, while the processes of reduction are going on.

This ore, subjected, as it is, to such a high heat, usually becomes "cinder" at the first heat, and unfit to repel the heat, and, of course, necessitating a re-packing, or "fixing," as it is known in the art; hence the great need, long felt by those using boiling or puddling-furnaces, or other receptacles where any "fix" is required, for some compound or substance which would remain unchanged by the heat, and the composition which I have invented meets this demand, and takes the place of ore.

The cost of packing the furnaces is also materially reduced, both by the lessened value of the material used, as well as by the saving in labor to "refix" or pack the furnace after every heating.

### *Claim.*

I claim, as my invention—

The combination, mixture, or composition, made, prepared, and used in manner as above substantially set forth and described, and the manufacture of said compound of the materials named, and in the proportions substantially as set forth.

JOHN D. WILLIAMS.

Witnesses:

CHARLES T. COLE,  
WARREN R. PERCE.