

UNITED STATES PATENT OFFICE.

LARS NELSEN AND THOMAS McNEFF, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN FIX FOR FURNACES.

Specification forming part of Letters Patent No. **147,064**, dated February 3, 1874; application filed August 16, 1873.

To all whom it may concern:

Be it known that we, LARS NELSEN and THOMAS McNEFF, of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Fire-Proof Composition for Lining Reverberatory and other Furnaces, of which the following is a specification:

Our object in this invention is to provide means for lining or repairing reverberatory and other furnaces without cooling them, more especially designed for reverberatory furnaces, but applicable to other kinds; and it consists in a compound or composition consisting of one part of fire-clay, two parts of fire-sand, and one part of ground coke.

The above ingredients are finely pulverized and mixed together with sufficient water to form a mass of the consistency of common mortar.

To line a furnace with the ordinary cement and fire-brick, it is necessary that the furnace should be cooled off, as the cement will not stick or adhere to a hot surface. To stop the fire, and cool off a furnace when the lining fails, requires some days, and is a very expensive operation. Our composition can be applied when the surface is hot, and without interrupting the usual operations of the furnace. No fire-bricks are required, and no time is lost in lining or repairing the lining of the furnace.

We are aware that it has been proposed to employ, as a lining for molds and crucibles, a compound of plumbago, fire-clay, fire-sand, and pulverized coke, in proportions varying, however, from ours.

Owing to the presence of plumbago in said compound it is not adapted as a lining for smelting-furnaces, as the molten iron or other metal will combine with the plumbago and disintegrate or destroy the lining in a comparatively brief time.

By omitting the plumbago, and by using fire-sand, fire-clay, and coke, in the proportions specified, we obtain a lining which is not destroyed in the furnace when the ores are in a molten state, for the latter will not attack either of the materials mentioned.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

A lining for smelting-furnaces composed of fire-clay, fire-sand, and ground coke, compounded in the proportions specified, and applied as set forth.

LARS NELSEN.

THOMAS ^{his} × McNEFF.
mark.

Witnesses:

ENOS W. SMITH,
H. SCHAFER.