

# UNITED STATES PATENT OFFICE.

WILLIAM S. COOKE, OF EAST FAIRFIELD, OHIO.

## IMPROVEMENT IN THE REDUCTION OF IRON ORES.

Specification forming part of Letters Patent No. 5,131, dated May 29, 1847.

*To all whom it may concern:*

Be it known that I, WILLIAM S. COOKE, of East Fairfield, in the county of Columbiana and State of Ohio, have invented an Improvement in the Manufacture of Iron, of which the following is a specification.

The nature of my invention consists in using steam in the form of a blast for the purpose of softening iron by introducing a jet of steam into cupola or furnace of the proper temperature, (about 300°,) either with or without air, depending on the kind of fuel used. The oxygen is absorbed by the fuel and supports combustion, and the hydrogen passes over the heated metal. The carbon of the metal unites with it and is burned in the form of carburated hydrogen gas. By this process hard brittle

metal can be reduced to a soft malleable state, even without melting. If the casting is too brittle, the steam may be thrown on it while heated to a white heat, and it will have the desired effect.

What I claim as my invention, and desire to secure by Letters Patent, is—

The use and utility of using steam in the form of a blast for the purpose of softening metallic ores while in the process of reduction, (or changing form by smelting,) as herein described.

WM. S. COOKE.

Witnesses:

JAMES HARTMAN,  
JAMES H. COOKE.