

UNITED STATES PATENT OFFICE.

LORENZO SIBERT, OF MOUNT SOLON, VIRGINIA.

IMPROVEMENT IN THE MANUFACTURE OF IRON AND STEEL.

Specification forming part of Letters Patent No. **64,916**, dated May 21, 1867.

To all whom it may concern:

Be it known that I, LORENZO SIBERT, of Mount Solon, in the county of Augusta and State of Virginia, have invented a new and useful Improvement in the Manufacture of Iron and Steel; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same.

The nature of this invention or discovery consists in a new and improved method of treating cast-iron produced in an ordinary blast-furnace for the manufacture of iron and steel of superior quality.

My improved method of manufacturing iron consists, first, in the employment of a compound flux for reducing the ores in the blast-furnace, composed of manganese and common salt, in varied proportions, according to the nature of the ores, combined with limestones or shells. The metal is run out into hot cast-iron molds in ingots, instead of being cast in sand-beds, as usual in pigs. The hot metal in the molds is then covered with powdered manganese, and the molds are set in a heating-furnace and kept at a high heat for several hours, or until the metal has parted with a portion of its carbon, which is taken up by the oxygen in the manganese, and is thereby rendered steel-like in its nature, in respect to the proportion of carbon contained in the iron. The metal having been thus kept at a uniform high temperature for a long time is cooled slowly in the furnace, and in the

process of crystallization under these conditions the molecules arrange themselves in such relations that the iron, when cold, possesses the flexibility and tenacity of hammered or rolled bars, combining the properties of the best cast-steel. When the ingot taken from the molds is reheated it may be rolled or hammered into bars of any required size and shape, for the manufacture of tools requiring hardness and temper.

Railroad-rails or any heavy iron-work requiring strength may be made of this refined and decarbonized metal by merely casting in proper molds, and the quality of the iron in tenacity and flexibility will be equal to steel bars. The face of rails may be hardened by placing a cold wrought-iron bar in the bottom of the mold, and casting upon it to chill the surface, while the body of the iron will be as strong as wrought-iron, thus obtaining, at a cost not much greater than that of pig-iron, a rail of the best quality.

Having described my invention and discovery, what I claim as new, and desire to secure by Letters Patent, is—

The improved method of manufacturing iron and steel, substantially as herein described.

The above specification of my invention signed by me this 12th day of March, 1867.

LORENZO SIBERT.

Witnesses:

THOS. EDWARDS,
EDWARD MCFADDEN.