UNITED STATES PATENT OFFICE.

JOHN W. HOXIE, OF CLINTONVILLE, ILLINOIS.

IMPROVEMENT IN PROCESSES OF PREPARING AN IRON AND STEEL CEMENTATION COMPOUND.

Specification forming part of Letters Patent No. **191,681**, dated June 5, 1877; application filed October 23, 1876.

To all whom it may concern:

Be it known that I, JOHN W. HOXIE, of Clintonville, in the county of Kane and State of Illinois, have invented a new and valuable Improvement in Process of Manufacturing Steel; and I do hereby declare that the following is a full, clear, and exact description of the same.

This invention has relation to the manufacture of steel; and consists in the improved method of preparing the mineral which is the chief production of the "Chester Emery mine," of Chester, Massachusetts, and which consists, essentially, of oxide of iron, silicate of iron, and alumina.

In the preparation of this mineral, previous to its use, it is first taken and subjected to a white heat for about six days, after which it is removed from the pots in cakes or lumps, pounded up, and then sifted or riddled and moistened with sal-ammoniac, and then repacked, and again subjected to heat for about the same length of time, after which it is ready for use.

To more fully illustrate the different steps in the process of manufacturing the steel with the mineral, charcoal or pig-iron is first melted in an air or puddling furnace, and then poured into molds of the desired shape and form of the article to be produced, after which said articles are packed in pots or receptacles usually employed in the art, in alternate layers of mineral and the articles to be annealed. The pots or receptacles are then placed into a suitable oven and fired up to the proper heat, according to the size and thickness of the article, after which they are allowed to cool, taking about nine days, depending altogether, as in the heating, upon the thickness of the article, when they are taken out of the pots or receptacles and ready to be finished by grinding or turning, as the case may be.

The silicate of iron in the mineral has great annealing properties, while the aluminum softens the castings, making a steel that has all the requisite qualities, both in toughness and malleability.

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

The process of preparing an iron and steel cementation compound, which consists in subjecting the raw material constituting the principal production of the Chester Emery mine to a white heat, pulverizing, moistening with sal-ammoniac, and, finally, reheating it, substantially as herein set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

JOHN W. HOXIE.

Witnesses:

JOHN MCKEAGE,

D. C. BECKER.