

# UNITED STATES PATENT OFFICE.

FRANK EUGENE PARKS, OF HOMESTEAD, PENNSYLVANIA.

## MANUFACTURE OF STEEL INGOTS.

SPECIFICATION forming part of Letters Patent No. 564,219, dated July 21, 1896.

Application filed May 11, 1896. Serial No. 591,153. (No specimens.)

*To all whom it may concern:*

Be it known that I, FRANK EUGENE PARKS, of Homestead, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in the Manufacture of Steel Ingots, of which the following is a full, clear, and exact description.

I have discovered that important results in the manufacture of steel are obtained by adding to the steel, at or after the end of the refining operation, an addition of a small proportion of the compound of silicon and carbon, which is commercially known as "carbid of silicon" or "carborundum."

I will now proceed to describe my invention as I have hitherto practiced the same, premising that the claims of this specification are not limited thereto, but that modification may be made in the method in respect of the precise time at which the addition is made, and in the proportion of the addition, and that, if desired, other compounds may be added to the steel with the carbid of silicon, either for the same purpose or for other purposes.

After the refining of the steel in a furnace or converter, and at the time of casting the same into ingot-molds, I add a small proportion of carbid of silicon. I inclose it in a small packet and throw it into the mold at the time of teeming the steel thereinto. I have obtained very excellent results by using the carbid of silicon in the proportion of about six ounces to a ton of steel, though more than this, up to, say, eight ounces, may be added, or less than six ounces will have some beneficial effect. In all cases, however, the proportion should be small, so as not to add to the steel an undue amount of silicon or carbon, the addition of these elements not being the purpose of my invention. When the

carbid of silicon is added to dead soft steel in hot and wild condition, tapped from an open-hearth furnace, in which condition it is most difficult to control in the mold, the steel is quieted and an ingot is produced having a solid top, practically free from sponginess or piping.

The carbid of silicon is cheap, it is easily added to the steel, and the results of the process, in affording uniformity and homogeneity of product, are such as to make my invention of very great value in the art.

Instead of adding the carbid of silicon to the steel in the mold, it may be added thereto in the ladle at the end of the refining operation, although I consider its addition in the mold to be the best.

It will be understood also that the steel may be treated by use of manganese and other agents, as heretofore, in addition to the carbid of silicon.

I claim—

1. In the manufacture of steel ingots, the improvement which consists in quieting the steel by adding thereto an addition containing carbid of silicon in small proportion relatively to the body of steel; substantially as described.

2. In the manufacture of steel ingots, the improvement which consists in quieting the steel by adding thereto in the mold an addition containing carbid of silicon in small proportion relatively to the body of steel; substantially as described.

In testimony whereof I have hereunto set my hand May 9, 1896.

FRANK EUGENE PARKS.

Witnesses:

THOMAS W. BAKEWELL,  
F. E. GAITHER.