

# UNITED STATES PATENT OFFICE.

FIDEL BERCHTOLD, OF CLEVELAND, OHIO.

## IMPROVEMENT IN MANUFACTURE OF STEEL.

Specification forming part of Letters Patent No. 210,745, dated December 10, 1878; application filed April 9, 1878.

*To all whom it may concern:*

Be it known that I, FIDEL BERCHTOLD, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Compounds for Use in the Manufacture of Cast-Steel; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it.

My invention relates to that class of compounds or mixtures which are used in the manufacture of cast-steel, and which employ the nitrogen compounds and the alkaline salts.

It consists in a compound or mass of the following description: three pounds of Prussian blue, one and one-half pound of a mixture consisting of equal-weight parts of iron filings and sand, mixed together and kept damp until rusted or oxidized, one pound of carbonate of potash, one and one-half pound of cyanide of potassium, two and one-half pounds of borate of soda, one-half pound of carbonate of soda, one-half pound of silicate of potash or soda, and two pounds of carbon, which may be charcoal from any hard wood. The given proportions of these several ingredients may be slightly varied from the formula given; but substantially the same parts and proportions should always be maintained.

In preparing iron for the manufacture of steel, three-fourths of an ounce, more or less,

of the compound should be mixed with every twenty-five pounds of the iron. This quantity of mixture will be varied by the quality of the iron used, since if the iron is hard a less quantity of the compound will answer, while if it is soft a greater quantity will be required.

By melting the iron together with such a quantity of the compound, steel of high quality will be produced, the same being adapted for any of the uses to which steel is put.

The compound should be used the same day that it is prepared; but if kept over to any subsequent time it should be placed in a close vessel.

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

A composition to be introduced into molten iron to assist in converting the same into steel, consisting of Prussian blue, the described oxidized mixture of iron filings and sand, carbonate of potash, cyanide of potassium, borate of soda, carbonate of soda, silicate of potash or soda, and carbon, in the proportions described, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FIDEL BERCHTOLD.

Witnesses:

JNO. CROWELL, JR.,  
F. TOUMBEY.