UNITED STATES PATENT OFFICE.

GEORGE FUNES DIEZ, OF NEW YORK, N. Y.

COMPOSITION FOR CONVERTING IRON INTO STEEL.

950,095. Specification of Letters Patent. Patented Feb. 22, 1910.

No Drawing. Application filed June 17, 1909. Serial No. 502,827.

To all whom it may concern:

Be it known that I, GEORGE FUNES DIEZ, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented a new and useful Composition for Converting Iron into Steel, of which the following is a specification.

This invention has reference to improvements in compositions for converting iron into steel.

While the present invention is of general application, it is especially valuable in connection with the process of producing steel dies set forth in Letters Patent Number 857926, granted to me on June 25, 1907 whereby the steel dies may be reproduced directly from the objects without the necessity of engraving the die. In the said Letters Patent there is described the process of depositing iron electrolytically directly upon the surface to be reproduced and then so treating the iron matrix thus formed as to convert it into a grade of steel best suited for producing positive impressions in the material chosen for the copies of the original. In this way the finest type of engraving may be produced where faithfulness of the copy is important. It is possible by the process of deposition set forth in the said patent to produce a film of exceeding fineness, in fact, so fine and homogeneous in texture as to produce a deposit which from the beginning to end is white like tin and at the same time free from corrugations or roughness or crystal structures to such an extent as to have the softness of silk to the touch. Having obtained an iron deposit of this character, it must be converted into steel of the proper degree of hardness to withstand the pressure necessary to produce copies from the die. For this purpose the electrolytically deposited iron matrix is treated in the following manner. I take charcoal powder, eight parts, steel filings, one and three-quarters parts, potassium ferrocyanid one-quarter part. To this mixture I add a sufficient quantity of oil to form a paste. The several ingredients are all ground together in a mortar and the oil is added in small quantities from time to time until the desired paste is formed. A crucible is filled with the paste and the matrix is first wet with oil and then covered with powdered charcoal until a coating is formed thereon and it is then placed in the crucible with the matrix face down after which the crucible is filled with the paste and pressed down and covered with plaster of paris or the like. The crucible is then placed in an oven and maintained at a red heat from eight to ten hours, when the plate will be found to be converted into the finest steel, after which it may be tempered and is then ready for use for stamping metals and will withstand the pressure of the most powerful presses.

The use of the composition described is not confined to the conversion into steel of iron deposited electrolytically in the manner set forth in the aforesaid Letters Patent, although if used in conjunction with the process set forth in the said Letters Patent, the result is markedly superior to other processes.

What is claimed is:

1. A composition of matter for embedding iron articles to be converted into steel under the action of heat, consisting of a paste formed of charcoal powder, steel filings, potassium ferrocyanid, and oil.

2. A composition of matter to embed iron articles to be converted into steel comprising charcoal powder, steel filings, and potassium ferrocyanid in substantially the proportions of eight parts of charcoal powder, one and three-quarters parts of steel filings, one-quarter part of potassium ferrocyanid, and oil in sufficient quantity to form a paste of the said ingredients.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

GEORGE FUNES DIEZ.

Witnesses:
T. G. NAVARRE,
RICHD. SMITH.