

# UNITED STATES PATENT OFFICE.

SAMUEL PARFITT, OF CARDIFF, ENGLAND.

## MANUFACTURE OF METALLIC COMPOUNDS.

No. 818,044.

Specification of Letters Patent.

Patented April 17, 1906.

Application filed May 25, 1903. Serial No. 158,638.

*To all whom it may concern:*

Be it known that I, SAMUEL PARFITT, a subject of the King of Great Britain, residing at 33 Partridge road, Cardiff, England, have  
5 invented new and useful Improvements in the Manufacture of Metallic Compounds; and I do hereby declare that the following is a full, clear, and exact description of the invention, as will enable others skilled in the art to  
10 practice the same.

This invention relates to improvements in the manufacture of metallic compounds having as their basic or principal constituent decarbonized iron; and the object of the invention  
15 is to provide a process or method of treatment of such compounds whereby the decarbonized iron may be hardened with a metal in contradistinction to the use of carbon for such hardening.

20 The invention further aims to provide a method of treating metallic compounds by which a product is obtained which is of great utility and tensile strength and which is not so liable to oxidation when exposed to the  
25 elements as those compounds not subjected to the treatment followed in the practice of the invention, nor becomes affected in the presence of strong solutions of sulfuric acid and similar corrodents.

30 To the accomplishment of the foregoing ends the invention consists in a process or method of treatment, substantially as hereinafter described, and finally pointed out in the appended claim.

In the practice of the invention the iron is melted, preferably, in an open-hearth regenerative furnace and decarbonized in the usual way, so as to contain as low a grade of carbon as is possible without forming oxids, the purpose being to obtain a body of molten metal containing not more than one-tenth of one

per cent. of carbon. When in such condition, the iron is prepared for the metallic hardening in accordance with the present invention and which is accomplished by adding to  
45 the metal a proportionate amount of metallic aluminium or some salt thereof. The preferred quantity of the aluminium is 0.5 per cent., in addition to which metallic tungsten is also added, the amount of this being 0.3  
50 per cent. The tungsten is in the form of powder, and as the hardening materials are combined in the process by the heating of the molten metal they react upon and alter the condition of the iron and produce a resultant  
55 compound of great strength.

In addition to the hardening material specified metallic manganese, nickel, and tin may also be employed either separately or  
60 together.

After the metal has been hardened in the manner described the same is cast into ingots or molds and then rolled into plates or hammered into forgings in the usual way, or it may be left in its molded form for use with-  
65 out rolling or hammering.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

In the manufacture of metallic compounds  
70 in which decarbonized iron is the basic or principal constituent, the process which consists in melting the iron, treating the latter so as to produce a resultant product containing not more than one-tenth of one per cent. of  
75 carbon, and adding to the metal metallic aluminium and metallic tungsten.

Dated this 24th day of April, 1903.

SAMUEL PARFITT.

Witnesses:

ERNEST L. PHILLIPS,  
JAMES L. LEMON.