

UNITED STATES PATENT OFFICE.

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ARTICLE OF AN ALLOY OF IRON AND HYDROGEN AND PROCESS OF PRODUCING THE SAME.

No. 835,495.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, AUGUSTO BONTEMPI, a subject of the King of Italy, residing at New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Articles of an Alloy of Iron and Hydrogen and Process of Producing the Same, of which the following is a specification.

10 This invention relates to the production of an article or body consisting of an alloy of iron and hydrogen impregnated with or having incorporated therewith another metal or compound of such metal which is fusible and
15 volatile at a comparatively low temperature—for example, antimony, or antimony sulfid, or lead, or lead acetate.

To produce such an article, the alloy of iron and hydrogen is finely powdered and a mass
20 of the particles is shaped, compressed, and heated in a non-porous, tightly-closed mold or muffle, preferably of iron, in the presence of the other metal or its compound. The article may be made by merely placing pieces
25 or a powder of the metal or its compound in the mold or muffle containing the compressed body of the alloy and heating the whole to a temperature sufficient to vaporize the metal and cause its fumes to penetrate
30 into the body, where they condense upon cooling, or the metal or compound to be added may also be finely divided and mixed with the powdered alloy. The mixture is then
35 shaped, compressed, placed in a gas-tight receptacle, and heated to a temperature which must be sufficient to volatilize the metal or compound—for example, to between 1,000° Fahrenheit and 2,000° Fahrenheit. The amount of the other metal or compound thus
40 incorporated with the alloy is usually small—say from one to two per cent. and rarely above ten per cent. For electrical uses a metal or compound of high, low, or any predetermined electrical conductivity may be added, the conductance or resistance of the article
45 being a function of the amount employed. To render the article non-porous, it may finally be dipped in molten paraffin or other inert filler.

The articles thus produced are rigid, coherent, and of uniform texture. They are useful for many purposes, especially for chemical, electrical, and electrochemical apparatus, on account of their chemical inertness and the ability to make them of variable but definite electrical conductivity.

I claim—

1. An article consisting of an alloy of iron and hydrogen impregnated with a metalliferous material, as set forth.

2. An article consisting of an alloy of iron and hydrogen impregnated with a relatively volatile metalliferous material, as set forth.

3. An article consisting of particles of an alloy of iron and hydrogen compressed and agglomerated into a strong coherent body, said body impregnated with a metalliferous material, as set forth.

4. An article consisting of a body of agglomerated particles of an alloy of iron and hydrogen, impregnated with a metalliferous material of suitable electrical conductivity, as set forth.

5. An article consisting of an alloy of iron and hydrogen impregnated with a metalliferous material and permeated with an inert filler, as set forth.

6. The process of producing coherent bodies of an iron-hydrogen alloy, which consists in incorporating a metalliferous material with a mass of particles of the alloy, as set forth.

7. The process of producing coherent bodies of an iron-hydrogen alloy, which consists in heating a mass of particles of the alloy and impregnating the mass with the vapors of a relatively volatile metalliferous material, as set forth.

8. The process of producing coherent bodies of an iron-hydrogen alloy, which consists in mixing particles of the alloy with a relatively volatile metalliferous material, shaping the mixture, and heating it to a temperature sufficient to volatilize the added material and impregnate the alloy therewith, as set forth.

9. The process of producing non-porous coherent bodies of an iron-hydrogen alloy,

which consists in impregnating the alloy with a metalliferous material, and saturating the product with an inert filler, as set forth.

10. The process of impregnating an alloy
5 of iron and hydrogen with a volatile metalliferous material, which consists in placing the materials in a tightly-closed vessel of iron or other non-porous material, and heating them

to a temperature sufficient to volatilize the added material, as set forth.

In testimony whereof I affix my signature
in presence of two witnesses.

AUGUSTO BONTEMPI.

Witnesses:

EDWARD A. BENSON,
EUGENE KELLEY.