UNITED STATES PATENT OFFICE.

GEORGE WELTDEN GESNER, OF NEW YORK, N. Y., ASSIGNOR TO HARLESTON CORBETT GESNER, OF SAME PLACE.

MANUFACTURE OF PIPES AND ALL TUBULAR MECHANICAL APPLIANCES, SUCH AS DRAINAGE-PIPES FOR MINES.

SPECIFICATION forming part of Letters Patent No. 649,049, dated May 8, 1900.

Application filed December 19, 1899. Serial No. 740,938. (No model.)

To all whom it may concern:

Be it known that I, GEORGE WELTDEN GESNER, a citizen of the United States, and a resident of the borough of Brooklyn, in the city and State of New York, have invented a new and useful improvement in the manufacture of pipes and all tubular mechanical appliances—such as drainage-pipe for mines, water and gas pipe, brine-conduits, gutters and leaders, water-meters, boilers and boiler-tubes, and steam-engine tubular appliances—of an alloy of iron and hydrogen, the hydrogen being present in such quantity as to prevent the action of all oxidizing agents, including that arising from chlorin, and being of much less specific gravity than any metal or metallic or other compound now used therefor, of which the following is a specification.

The manufacture of the alloy is generally disclosed in a pending application for patent of mine, filed March 10, 1896, Serial No. 582,600, also in Letters Patent No. 604,580, dated May 24, 1898, and No. 642,320, dated January 30, 1900, and also in additional pending applications filed December 13, 1899, Serial No. 740,153, and December 15, 1899, Serial No. 740,415. These applications and patents disclose in detail the alloy and processes and apparatuses for making the same.

It will suffice in the present case to state that the alloy of iron and hydrogen is produced from iron ore, steel, manufactured scrap or any other iron, and hydrogen. The association or combination of the hydrogen is stable under all conditions of heat. The alloy is of about half the weight of iron and of a specific gravity less. It resists oxidation that might be induced through any cause, including that arising from chlorin.

The alloy is produced by exposing the iron in a converter at a temperature of about 1,800° to an atmosphere of hydrogen, which may be conveniently generated by steam injected into the converter from a steam-boiler through a coil of iron pipe, constituting the hydrogen-generator, and heated either in a separate furnace or in the furnace in which the alloy is made. Another mode of producing the alloy is to expose scrap-iron to hydrogen in the converter and remove the scale formed upon it by stirring-bars inserted through the converter side, afterward grinding and screening such scale to remove any unalloyed iron, and then either fusing it in a crucible or upon an open hearth into ingots and drop-forging or rolling them. Another mode is to force the hydrogen through the molten metal and then to remove the alloy that has been formed from the unalloyed iron either by puddling and squeezing or by grinding and sifting. Another mode is direct from iron ore. The alloy, being ground and screened or otherwise freed from unalloyed iron or other impurities, is fused to a fluid state in crucibles and cast in the proper molds and flasks as used for cast-iron pipes, or it is converted into a pasty condition under the action of heat and then welded into lap-welded tubes or drawn over a mandrel after the manner of the manufacture of butt-welded tubes or pipes.

I claim as my invention—

1. A pipe or tubular mechanical appliance of an alloy of iron and hydrogen, the hydrogen being present in such proportion as to prevent the oxidation or corrosion of the iron in the said alloy.

2. A pipe or tubular mechanical appliance of an alloy of iron and hydrogen, the hydrogen being present in the proportion of about eleven one-hundredths of one per cent. and upward in the alloy obtained from ores of iron or commercial pig-iron or commercial iron and in larger percentage when obtained from chemically-pure iron, substantially as set forth.

In testimony that I claim the invention as above set forth I affix my signature in the presence of two witnesses.

GEORGE WELTDEN GESNER.

Witnesses:

EDWARD P. SCHWARTZ,

BERTHA L. DANA.