UNITED STATES PATENT OFFICE.

EDGAR A. CUSTER, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE CUSTER SANDLESS CASTING COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF DELAWARE.

MALLEABLE METAL PRODUCT FROM CAST-IRON.

1,086,652. Specification of Letters Patent. Patented Feb. 10, 1914.

No Drawing. Application filed October 22, 1910, Serial No. 588,475. Renewed June 21, 1913, Serial No. 775,132.

To all whom it may concern:

Be it known that I, EDGAR A. CUSTER, a citizen of the United States, residing in the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Malleable Metal Products from Cast-Iron, of which the following is a specification.

The object of this invention is to produce a malleable structure, such as a casting from ordinary foundry iron comparatively high in silicon and low in combined carbon.

Heretofore it has been necessary in order to produce a malleable structure from cast iron to cast the structure from an iron which is very low in silicon and very high in combined carbon, and after casting, to subject the structure to an annealing process. My improved product is produced from ordinary molten foundry iron in which a catalytic action is produced while the metal remains in its molten condition and before or during the process of cooling to the point of setting. This catalytic action may be caused to occur in a permanent metal mold of any preferred or desired construction. After the casting has been brought to the point of setting it is removed from the mold and allowed to cool under normal atmospheric conditions.

My improved product possesses all of the qualities of malleable iron produced in the usual manner. Said product is ductile, malleable and has the same tensile strength as malleable iron produced by the well known process heretofore employed.

From the above description it will be understood that I am enabled to produce a non-annealed malleable iron casting in a permanent mold which possesses those qualities which are characteristic of malleable iron, without the expense, labor and careful and skilful handling incidental to the production of such a casting by annealing. The importance of eliminating this one annealing step in the treatment of malleable iron will be readily appreciated by those skilled in the art, inasmuch as I am enabled to produce a malleable iron casting with the same facility and by as simple and inexpensive methods as employed in the producing of an ordinary non-annealed casting, such as has been hitherto known.

I have found that in producing castings in accordance with my improved process the stability of the compound employed in the permanent metal mold is unaffected by the pouring and setting of the casting herein. Thus it will be seen that no additional expense is encountered by reason of any harmful effects produced on the mold itself.

I claim as my invention:

1. A non-annealed malleable iron casting having the constituents of ordinary foundry iron comparatively high in silicon and low in combined carbon and possessing the ductility, malleability and the tensile strength of malleable iron.

2. A non-annealed iron casting produced in a permanent metal mold from ordinary foundry iron having the ductility, malleability and tensile strength of malleable iron.

3. A non-annealed malleable iron casting produced from ordinary foundry iron comparatively high in silicon and low in combined carbon produced in a permanent metal mold by catalytic action having the ductility, malleability and tensile strength of malleable iron.

4. A non-annealed malleable iron casting having the constituents of ordinary foundry iron produced in a permanent metal mold by catalytic action, said casting being brought quickly to the point of setting and allowed to cool under normal atmospheric conditions.

This specification signed and witnessed this 15th day of October, A. D. 1910.

EDGAR A. CUSTER.

Signed in the presence of—
AMBROSE L. O'SHEA,
N. A. SMITH.