

P. E. JAY.

Process of Manufacturing Wrought Iron.

No. 134,288.

Patented Dec. 24, 1872.

Fig. 1.

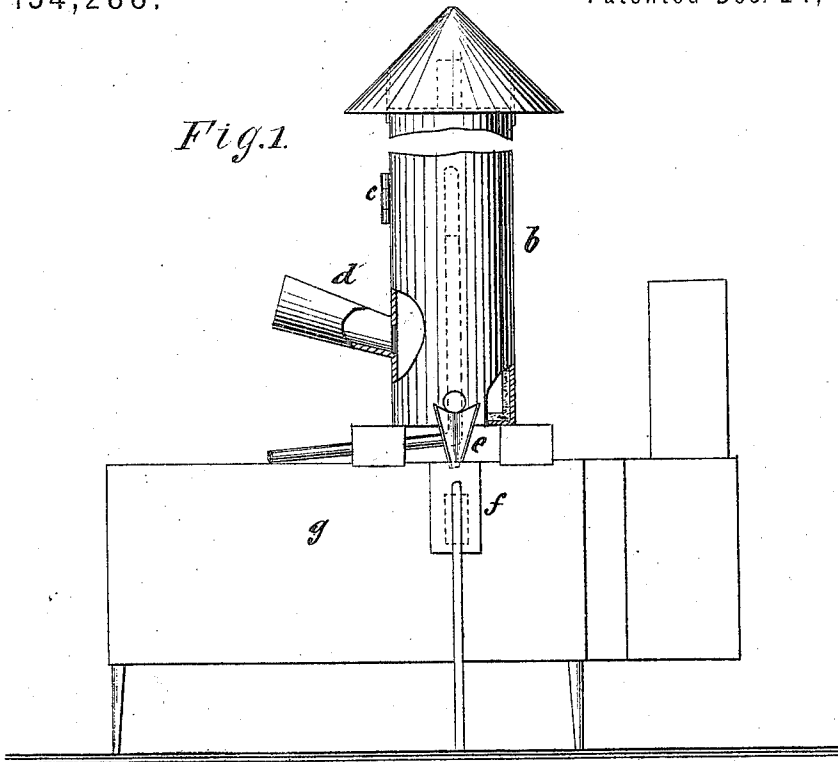
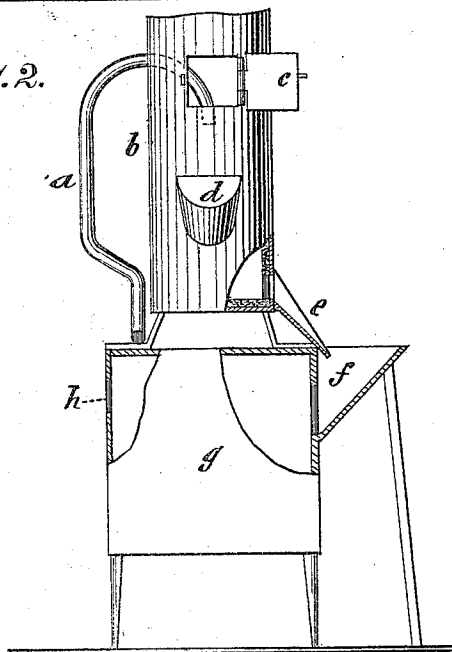


Fig. 2.



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IMPROVEMENT IN THE PROCESSES OF MANUFACTURING WROUGHT-IRON.

Specification forming part of Letters Patent No. 134,283, dated December 24, 1872.

CASE A.

To all whom it may concern:

Be it known that I, PIERRE EYMARD JAY, of St. Jean Baptiste, in the county of Hochelaga, in the Province of Quebec, Dominion of Canada, have invented and made a new and useful Improvement in the Process of Manufacturing Wrought-Iron; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing forming a part of this specification, in which—

Figure 1 is a side elevation, with parts cut away to better show the construction, of a cupola and puddling-furnace used in making wrought-iron according to my process; and Fig. 2 is an end elevation, the same (with parts in section) showing the arrangement of devices for conducting the melted metal from the cupola into the chamber.

My present invention relates to an improved process of treating cast-iron of all qualities for converting it into wrought-iron; the same consisting in the addition of certain proportions of nitrate of soda, oxide of manganese, and oxide of iron to a mass of melted cast-iron, and in the employment of a blast of atmospheric air impinging on the surface of the liquid metal during the time it is being subjected to the intense chemical and mechanical action of the ingredients specified. The result is that the sulphur, phosphorus, and arsenic are eliminated along with the carbon, leaving the iron in an approximately pure state and forming a scum upon the surface of the melted iron, which, upon cooling, becomes scoria or slag. The function of the blast is mainly to separate or so act on this scum as to enable the sulphur to evaporate freely.

The chemical admixture referred to consists of thirteen parts of nitrate of soda, seven parts of oxide of manganese, and four of oxide of iron.

In carrying out my invention, I employ a furnace constructed in the usual manner, except that a blast-pipe, *a*, is connected with the cupola *b*, and is curved or bent downward within the same, as shown in the drawing. *c* is the door of the cupola, and *d* a trough for

admitting the liquid metal into the same. *e* is a conductor or spout; *f*, a trough to receive the liquid metal from the conductor and admit it into the puddling-furnace *g*. *h* is a door to draw the metal from the puddling-furnace.

The operation is as follows: Take three pounds of the mixture above described and place it in the cupola. Take also one hundred pounds of cast-iron heated into a liquid state and let it flow through the trough *d* into the cupola. Allow the liquid cast-iron to remain three or four minutes in contact with the mixture. Admit a blast through pipe *a* during the same time over or onto the surface of the liquid metal. The sulphur, the phosphorus, and the arsenic which are contained in the cast-iron are then driven away along with the carbon, leaving the iron in such a state of purity as to be equal in quality to the best Swedish wrought-iron. A hole is then opened at the bottom of the cupola to allow the metal to flow through the conductor *e* into the trough *f* and from this last into the puddling-furnace *g*, where the metal is puddled in the usual way. From the puddling-furnace the metal is taken out through the door *h* and taken to the rollers, where it is converted into the shapes required by commerce.

Having thus described my invention, what I claim as new is—

1. The process of purifying cast-iron by placing it, in a liquid state, in contact with a mixture of nitrate of soda, oxide of manganese, and oxide of iron in the above-stated proportions, and the application of a current or blast of atmospheric air so as to free the metal of its extraneous substances, substantially as described.

2. The process of purifying cast-iron by means of a mixture of nitrate of soda, oxide of manganese, and oxide of iron, in the respective proportions of thirteen, seven, and four pounds to one hundred pounds of iron, substantially in the manner described.

P. E. JAY.

Witnesses:

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