

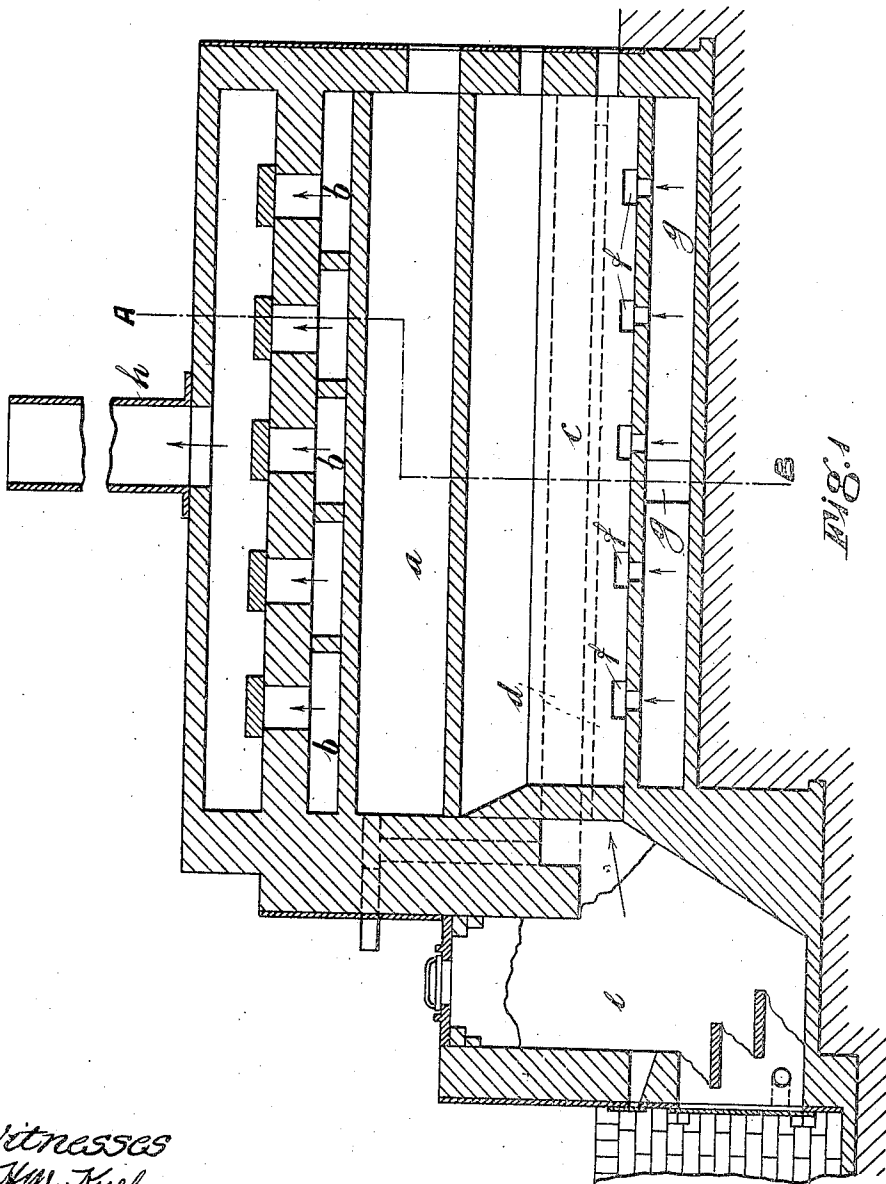
No. 818,147.

PATENTED APR. 17, 1906.

F. J. CLINCH-JONES.
APPARATUS FOR HEATING METALS.

APPLICATION FILED JUNE 1, 1905.

2 SHEETS—SHEET 1



Witnesses

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John A. Prewitt

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2 SHEETS—SHEET 2.

Fig. 2

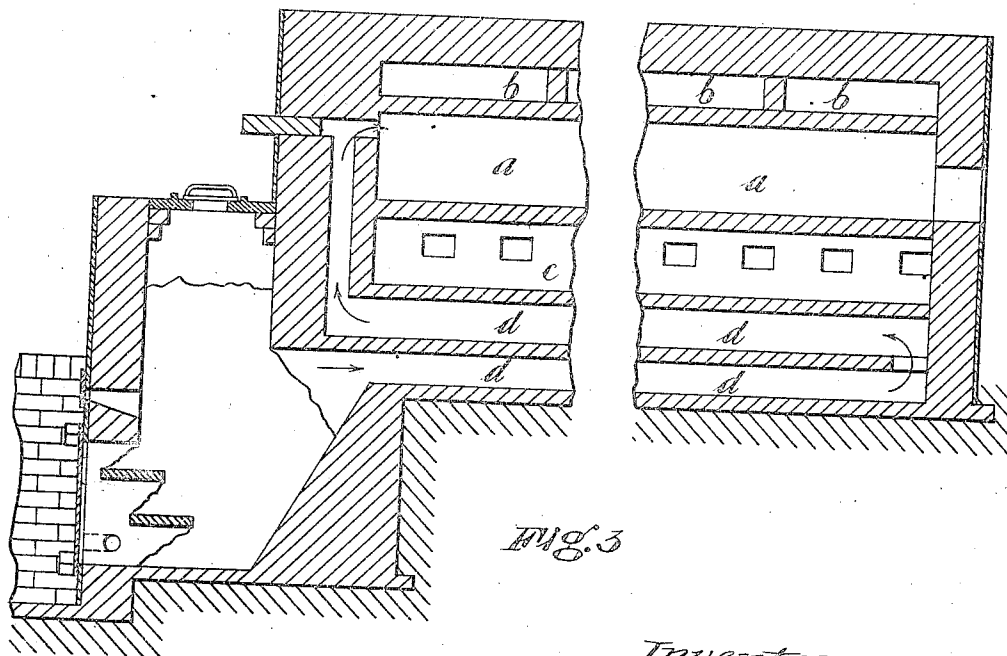
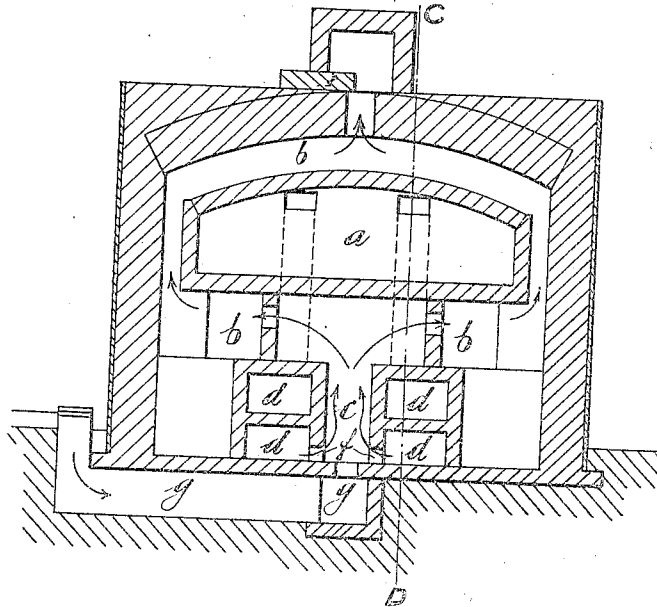


Fig. 3

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UNITED STATES PATENT OFFICE.

FREDERICK JOSIAH CLINCH-JONES, OF LEAMINGTON, ENGLAND.

APPARATUS FOR HEATING METALS.

No. 818,147.

Specification of Letters Patent.

Patented April 17, 1906.

Application filed June 1, 1905. Serial No. 263,311.

To all whom it may concern:

Be it known that I, FREDERICK JOSIAH CLINCH-JONES, a subject of the King of Great Britain, residing at 12 Claremont road, Leamington, in the county of Warwick, England, have invented new and useful Improvements in Apparatus for Heating Metals, of which the following is a specification.

This invention relates to the heating of metals—such, for instance, as steel—and has for its object to avoid in a more effectual manner than heretofore the oxidizing or decarbonizing effects by which ordinary heating processes are attended.

The invention comprises the heating of the metals in an atmosphere of unignited producer or other combustible gas or vapor which is superheated to a temperature at least as high as that to which it is required to heat the metal exposed to its influence and the employment for the formation of the said atmosphere of a portion of the gaseous fuel generated for supporting the combustion whereby the heating effect is obtained.

Referring to the two accompanying sheets of explanatory drawings, Figure 1 is a sectional side elevation of one form of reheating-furnace whereby this invention is carried into effect. Fig. 2 is an end section on the line A B, Fig. 1, while Fig. 3 is a sectional side elevation on the line C D, Fig. 2.

The same reference-letters in the different views indicate the same parts.

The metal articles to be heated are placed in the muffle *a*. Around the muffle are arranged flues *b*, communicating with the combustion-chamber *c*. The gaseous fuel is conducted through the furnace by way of conduits *d*, circuitously disposed adjacent to the combustion-chamber *c* and terminating in the muffle *a*. When producer-gas is employed, the generator, as *e*, is preferably constructed in conjunction with the furnace, as shown.

For the withdrawal of some of the gas from the conduits *d* to effect by the combustion of the same the superheating of the gas going to form the atmosphere in the muffle *a* and also the maintenance of the muffle at the required temperature a number of by-passages *f* are formed between the lower portion of the conduits *d* and the combustion-chamber *c*.

A portion of the gas from the generator *e* escapes by way of the said by-passages *f* into the chamber *c*, where it is ignited, the necessary air for the support of combustion being admitted through a channel *g*. The remaining portion of the gas is not ignited; but during its passage to the muffle *a* it is superheated by the heat of the combustion in the chamber *c* and is maintained at the required temperature when in the muffle by the hot products of combustion as they pass through the flues *b* to the chimney *h*.

For the purpose of excluding air from the interior of the muffle *a* the gas is admitted thereto at a slightly higher pressure than that of the external atmosphere. The metal or metal articles absorb heat from the gas; but no oxidation or decarbonization takes place.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In means for heating metals without oxidation or decarburization of the same, the combination consisting of a muffle, a combustion-chamber surrounding the muffle, superheating-conduits adjacent the combustion-chamber and communicating with the interior of the muffle, means for supplying combustible gas to said conduits, passages between the conduits and the combustion-chamber for supplying gas to said chamber and an air-supply to said chamber.

2. In means for heating metals without oxidation or decarburization of the same, the combination consisting of a muffle, a combustion-chamber below the same, passages connected to said chamber and surrounding the muffle, superheating-conduits placed on each side of a part of the combustion-chamber and communicating with the interior of the muffle, means for supplying said conduits with combustible gas, passages connecting the conduits with the combustion-chamber and an air-supply to said chamber.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FREDERICK JOSIAH CLINCH-JONES.

Witnesses:

EDWARD MARKS,
JOHN MORGAN.