Richard Jenkins' Furnace for Puddling Iron & Steel.

PATENTED JUL 4 1871

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Fig. 1

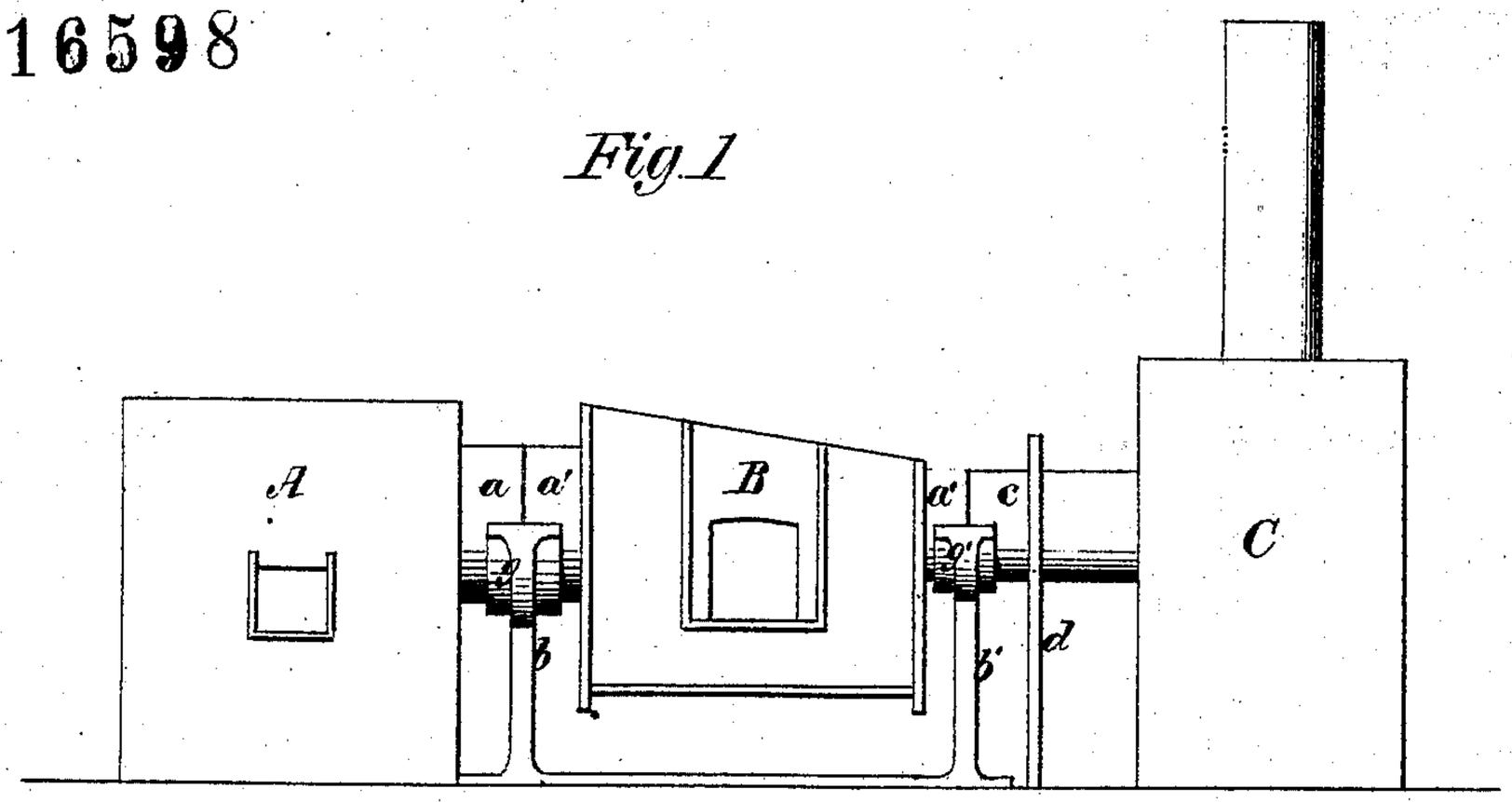


Fig. 2

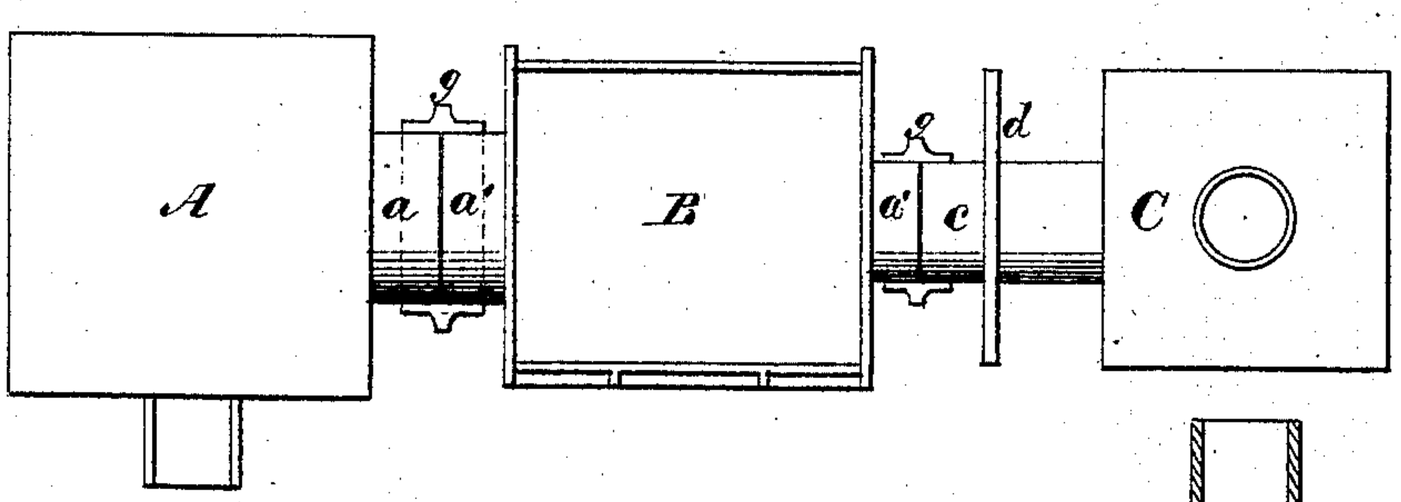


Fig. 3

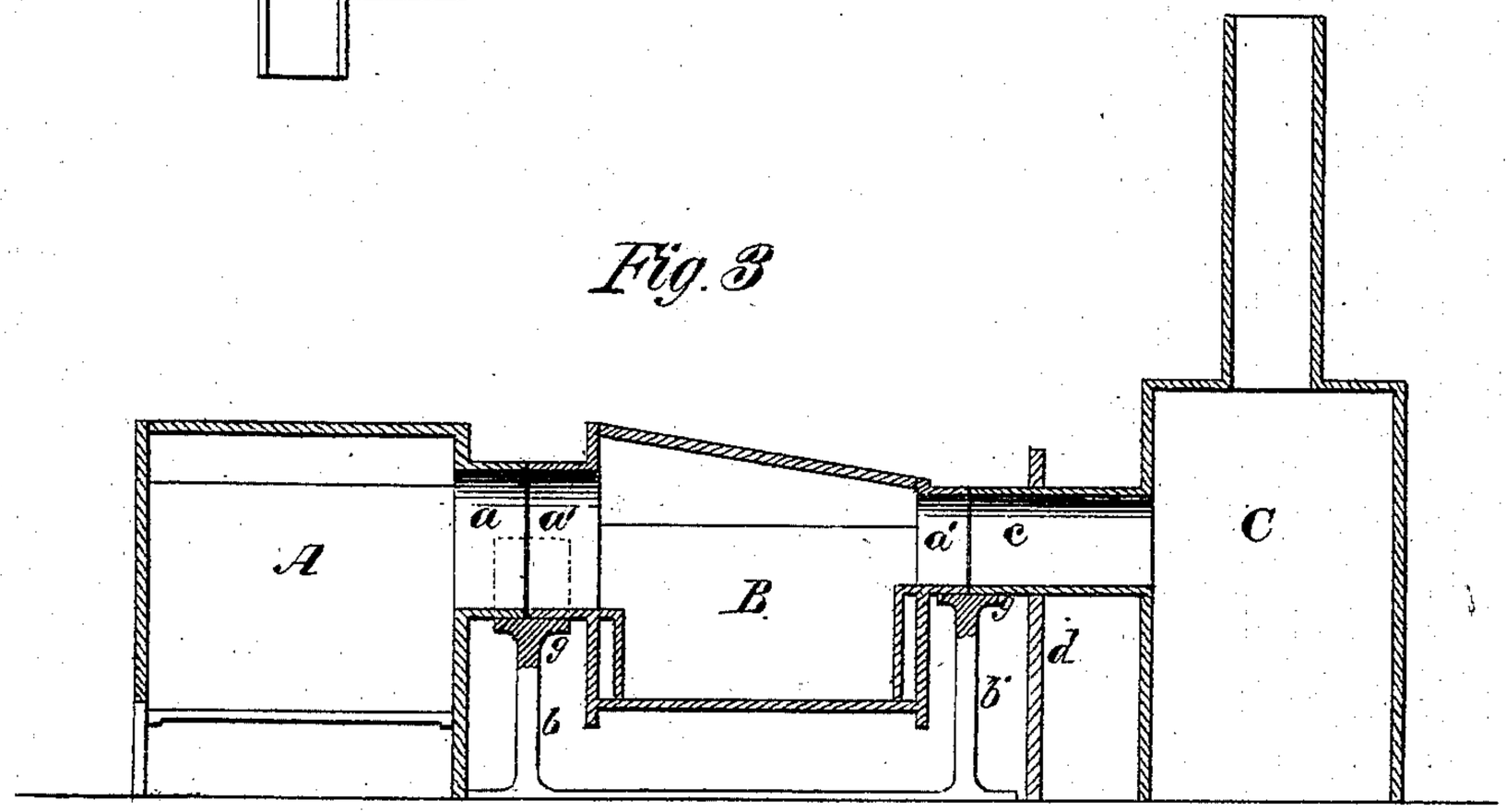
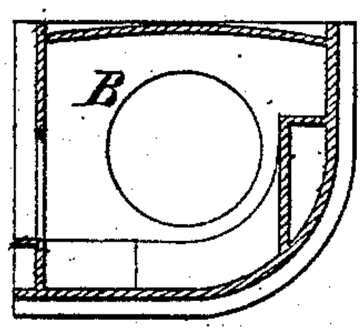


Fig. 4



Witnesses.
R. Campbell.
J. R. Campbell.

Inventor
Richard Jenkins
by his Attys
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UNITED STATES PATENT OFFICE.

RICHARD JENKINS, OF NEWARK, OHIO.

IMPROVEMENT IN FURNACES FOR PUDDLING IRON, &c.

Specification forming part of Letters Patent No. 116,598, dated July 4, 1871.

To all whom it may concern:

Be it known that I, RICHARD JENKINS, of Newark, in the county of Licking and State of Ohio, have invented a new and Improved Puddling-Furnace; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing making part of this specification, in which—

Figure 1 is an elevation of one side of the furnace. Fig. 2 is a top view of the same. Fig. 3 is a section taken longitudinally and vertically through the center of the furnace. Fig. 4 is a vertical cross-section through that part of the furnace in which the puddling is conducted.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to an improvement on the construction of furnaces for puddling iron and steel; and consists in the arrangement of that part of the furnace in which the puddling is conducted on hollow-flue trunnions, which are in communication with the fire-chamber and also with the base of the stock or chimney, and which allow an oscillating motion to be imparted to said part of the furnace for the purpose of stirring the metal by machinery instead of by manual labor, as will be hereinafter explained.

The following description of my invention will enable others skilled in the art to understand it.

In the accompanying drawing, A represents a furnace, which is provided with a grate, a feed-hole, an arched cover, and also with a cylindrical flue, *a*. This flue *a* is arranged horizontally, and communicates with a puddling-box, B, through the medium of a hollow trunnion, *a'*, which is supported in a bearing, *g*, on the upper end of a standard, *b*. At the opposite end of the box B, and in a horizontal line with the trunnion *a'*, is another hollow trunnion, *a'*, which is supported in the bearing *g'* of standard *b'*, and which communicates with the enlarged base C of a chimney by means of a flue, *c*. The flues *a* and *c* are stationary, but the puddling-box B with its trunnions *a' a'* are allowed to oscillate in their bearings *g g'*. The puddling-box B presents one flat side, through which an opening is made to allow the workman access to the hearth with his rod for balling the metal, and also for the introduction of the charges. This puddling-box B is constructed interiorly with a concave hearth or sole, surrounded in part by double walls, which are in communication with the external air through holes which are made through the outer wall.

It will be seen from the above description that the box B, in which the puddling operation is conducted, is allowed to oscillate freely; at the same time there will be a free communication through it for the heated products rising in the furnace A. This puddling-box B I oscillate by means of a steam-engine, to which the box will be connected by a pitman-rod.

During the process of puddling it is necessary to keep the molten metal stirred, so as to expose fresh surfaces to the oxidizing influence of the draught. In most furnaces for puddling iron, the stirrer is effected by means of a paddle in the hands of the attendant—an operation which is attended with considerable labor, besides other objections. I effect the stirring of the metal by the employment of a puddling-box or hearth, which is so mounted that it can be oscillated, and while thus moved its interior can be exposed to the inspection of the attendant from time to time through an opening made through one of its sides, which should be kept closed as much as possible to prevent the direct action of the atmosphere upon the metal.

I am aware that puddling-furnaces which were mounted to rotate have been used before my invention. Such furnaces do not toss the metal backward and forward, and stir it as it should be; nor is it possible, in such furnaces, to inspect the metal while the furnaces are in motion. For these and other reasons which might be named I have found my oscillating furnace to operate to a much better advantage than the rotary furnace.

I am aware that a converting-chamber has been mounted upon a solid rocking-axle. This is shown in the patent granted to Fletcher & Blanchard, March 16, 1869; but I am not aware that a puddling-furnace constructed and ar-

ranged as I have shown, with a rocking puddling-box which has hollow trunnions for matching branches of the fire-chamber and of the chimney, has ever been devised before my invention.

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

An oscillating puddling-box or hearth, which is supported upon bearings by means of hollow trunnions arranged in line with the flue leading from the fire-chamber on one side, and with the chimney on the opposite side, substantially as described.

Witness my hand in matter of my application for a patent for a furnace for puddling iron or steel this May 4, 1871.

RICHARD JENKINS.

Witnesses:

J. N. CAMPBELL,

R. T. CAMPBELL.