

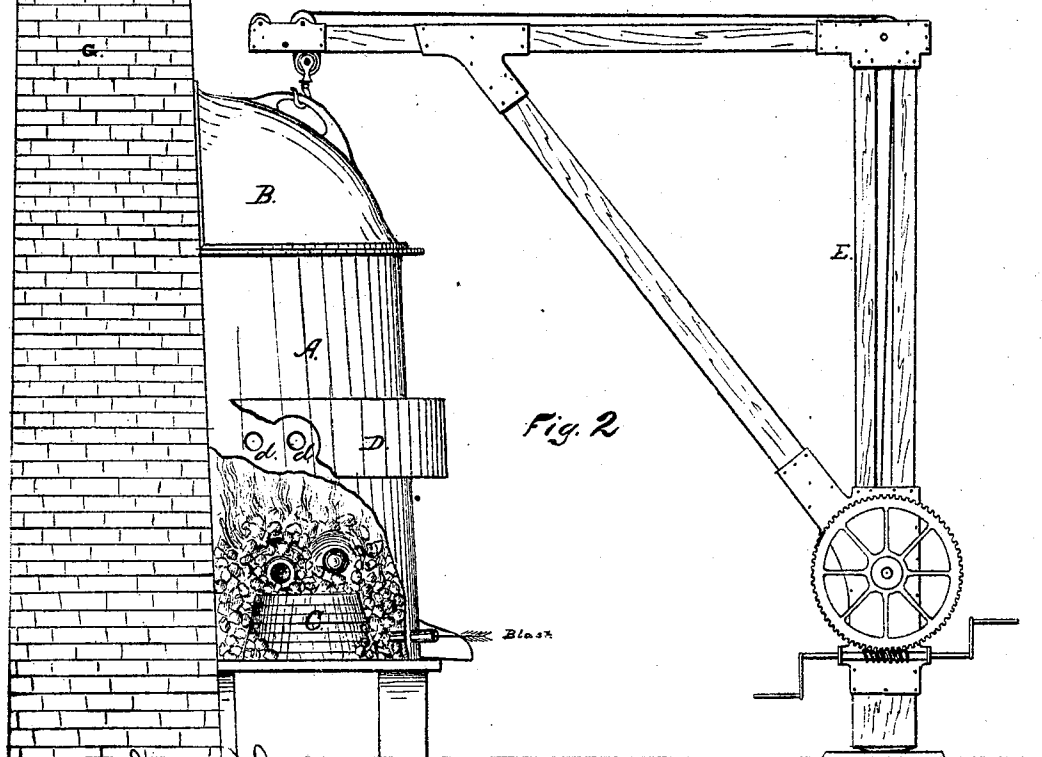
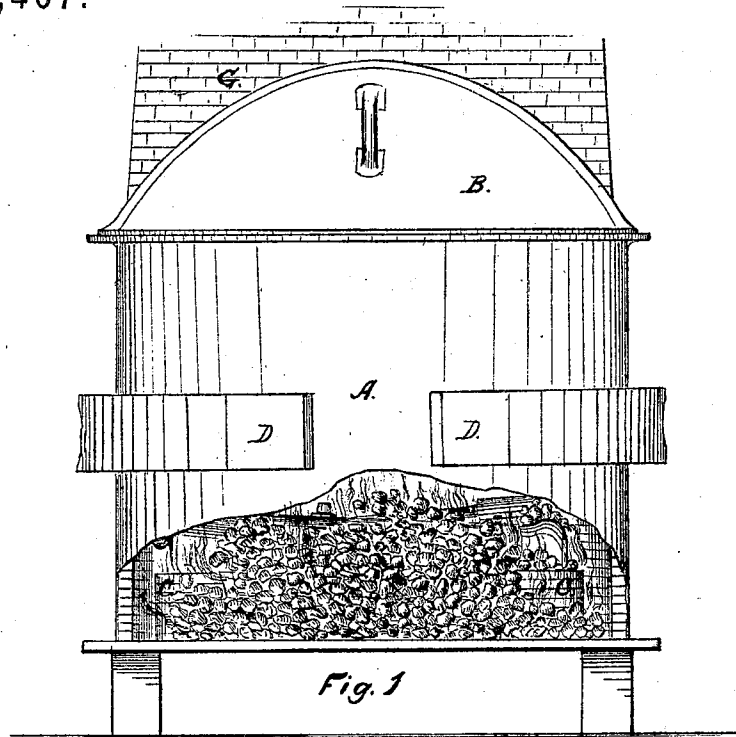
P. M. WILSON.

2 Sheets--Sheet 1.

Improvement in Smelting Furnaces.

No. 124,467.

Patented March 12, 1872.



Witnesses: *Edward A. Nelson*
E. H. Johnson

Inventor: *Peter M. Wilson*

P. M. WILSON.

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Fig 3.

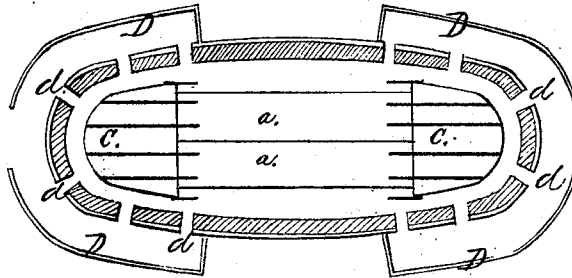


Fig 4.

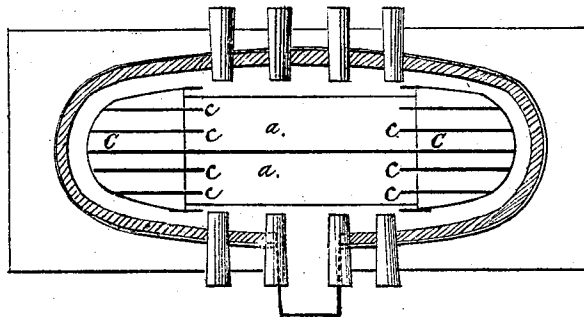


Fig 5.

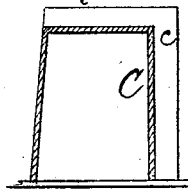
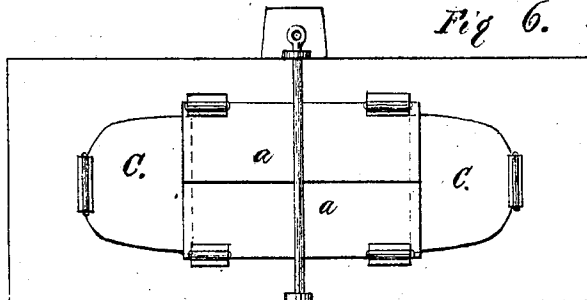


Fig 6.



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UNITED STATES PATENT OFFICE.

PETER M. WILSON, OF BROOKLYN, NEW YORK, ASSIGNOR TO HIMSELF, MANNING MERRILL, AND EDWARD W. MERRILL, OF NEW YORK CITY.

IMPROVEMENT IN SMELTING-FURNACES.

Specification forming part of Letters Patent No. 124,467, dated March 12, 1872.

Specification describing certain Improvements in Smelting-Furnaces, invented by PETER M. WILSON, of Brooklyn, in the county of Kings and State of New York.

My invention relates to furnaces for smelting iron; and consists in so constructing a furnace that large and heavy masses of iron may be placed in it and reduced for recasting.

It has been very difficult, heretofore, to utilize large masses of iron, such as cannon, heavy shafts, and blocks of cast-iron that have been condemned or become broken and unfit for use, as they cannot be melted in furnaces of ordinary construction until they are reduced in size by breaking them up; and the cost of doing this by blasting or by means of drilling and the use of wedges is considerable, amounting almost to the value of the iron. For this reason, such masses of iron have been considered nearly worthless.

My invention has for its object a furnace capable of receiving large masses of iron and melting them for recasting without the necessity of reducing the size of the mass.

Figure 1 is a front view of my improved furnace with a portion of the shell broken away to show the interior. Fig. 2 is a side elevation of the same. Fig. 3 is a top view in section through the upper row of tuyeres. Fig. 4 is a similar section taken in a plane just above the lower tuyeres. Fig. 5 is a vertical section through one of the rests or supports C. Fig. 6 is a view of the under side of the furnace.

General Description.

A represents the furnace, built in the usual way, against the chimney G, with tuyeres for the introduction of the blast, and an outlet for the molten iron. The top is left open for the introduction of the charge of coal and iron, and is covered by the hood B, which is removed and replaced by the crane E. The interior of the furnace is lined with fire-brick, and its bottom is covered with a layer of sand, in the usual manner of construction. Upon the bottom of the furnace there are two supports or rests, C C, arranged in the manner shown, for the purpose of supporting the

weight of the heavy masses of iron, so that they shall not rest entirely upon the coal. If the iron to be melted were laid upon the fire it would act to force the coal out from beneath the mass toward the sides of the furnace, and the fire would not have the desired effect; but by placing the masses of iron in the manner shown in the drawing, so that their weight is supported by the rests C C, the fire has the desired effect, and acts to quickly reduce the charge of iron and bring it to a molten state. The furnace is provided with a second row of tuyeres or apertures, *d d*, placed above the first row, and surrounded at each side by the outer casings D D, into which the blast is introduced. These tuyeres are arranged in this manner for the purpose of acting directly upon the mass of iron being reduced, when from the size of the mass it may be necessary; and, as by this manner of constructing them, the blast may be forced in at one side of the furnace and shut off at the other, masses of iron that are larger at one end than at the other can be quickly reduced by directing the blast at the larger end, so as to increase the heat at that point. The rest C is formed of a shell with a series of flanges, *c c*, projecting from it, for the purpose of holding the fire-brick covering in place that is placed over the shell to protect it from the heat. This is shown in Figs. 3, 4, and 5. Fig. 6 shows the bottom of the furnace constructed of hinged plates, held up in place by the bar F, so that the furnace can be easily and quickly cleaned out.

I claim as my invention—

1. The combination, with a furnace, A, of the rests C C, for supporting the mass of metal in proper position for smelting, substantially as described, and for the purpose specified.

2. A furnace so constructed that a portion thereof may be removed to admit the heavy masses of metal, and then replaced to make the furnace effectual, substantially as described and specified.

3. In combination, with the furnace A and rests C C, the double rows of tuyere-holes, constructed and operating substantially as described.

4. The combination, with the furnace A, of the channels D D, so arranged that the blast can be controlled and directed upon or against the material in the furnace to the best advantage, and thus contribute to the useful effects of the furnace, substantially as described and specified.

5. The rests C provided with the flanges *c c* for holding the fire-brick covering upon them, constructed as and for the purpose specified.

PETER M. WILSON.

Witnesses:

EDWARD E. OSBORN,
E. H. JOHNSON.