

G. E. REYNOLDS.

Furnace.

No. 54,409.

Patented May 1, 1866.

Fig. 1.

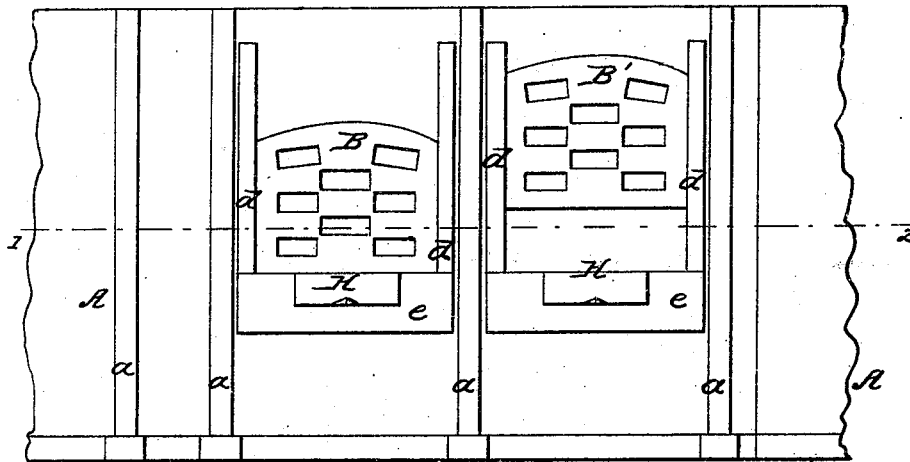
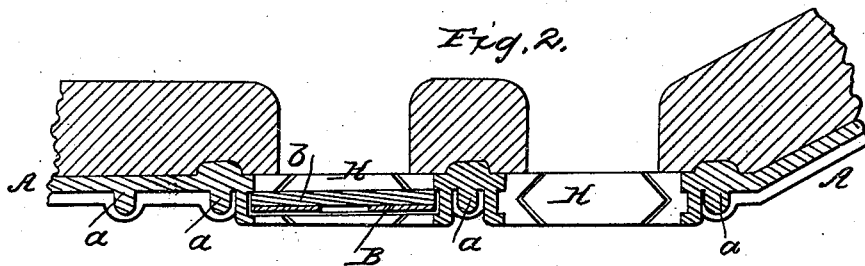


Fig. 2.



Witnesses:  
Wm. H. Clark  
John Parker.

Inventor:  
G. E. Reynolds  
By his Attys  
H. Howard

# UNITED STATES PATENT OFFICE.

GEORGE E. REYNOLDS, OF PHILADELPHIA, PENNSYLVANIA.

## IMPROVEMENT IN FURNACES.

Specification forming part of Letters Patent No. 54,409, dated May 1, 1866.

*To all whom it may concern:*

Be it known that I, GEORGE E. REYNOLDS, of Philadelphia, Pennsylvania, have invented an Improvement in Heating-Furnaces; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention consists of certain detachable blocks of cast-iron adapted to the fore plate of a heating-furnace, substantially as described hereinafter, so that the said blocks may prevent the communication of the direct heat of the fire to the side plate, thereby preventing the cracking of the same.

In order to enable others skilled in the art to make and use my invention, I will now proceed to describe its construction and operation.

On reference to the accompanying drawings, which form a part of this specification, Figure 1 is a side view of part of a furnace, showing the exterior of a portion of one of the side plates, and Fig. 2 a sectional plan on the line 1 2, Fig. 1.

A represents a portion of the side plate of the furnace, *a a* being the strengthening-ribs. In the present instance the furnace has two doors, B and B', each consisting of a perforated cast-iron plate, lined on the inside, as usual, with fire-brick *b*. Each door is arranged to slide in guiding-ribs *d*, which form a part of the plate A. and project upward from the fore plate, *e*, which also forms a part of the said plate A. In ordinary furnaces of this class the fore plate, *e*, forms part of the side plate, and is a solid mass of great strength, as it is exposed to a greater heat than any other part of the plate A. In spite of all precautions to prevent the breaking of this fore plate, the intense heat to which it is subjected on the inside and its comparative coolness on the outside and the varying expansion and contraction to which it is subjected tend to break the

plate, the fracture in most cases extending down to the lower edge of the plate, and being of such a character as to demand the removal of the entire plate A to make way for a new one. In doing this it becomes necessary to remove and rebuild the greater portion of the brick lining of the furnace—an operation which demands much labor and causes serious delays. In order to remedy this evil, I form in each fore plate, *e*, a recess for the reception of the cast-iron blocks H, the block having V-shaped ends, corresponding to the similarly-shaped ends of the recess, so that, although the block can be readily raised from the recess, it cannot be moved laterally. The length of the block, however, is so much less than that of the recess that the former is at liberty to expand and contract independently of the fore plate.

It will be seen on reference to Fig. 2, where the red lines represent the brick-work interior of the furnace, that the only part of the iron-work subjected to the direct heat is the inner edge of the blocks H, and should these blocks be broken, (a rare occurrence,) or should they become warped to an inconvenient extent, they can be readily raised from their recesses and replaced by new ones without disturbing the plate A or the interior of the furnace.

I claim as my invention and desire to secure by Letters Patent—

A detachable block, H, adapted to the fore plate of a furnace, substantially as and for the purpose herein set forth.

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

his  
GEORGE E. × REYNOLDS.  
mark.

Witnesses:

HENRY HOWSER,  
CHAS. E. PANCOAST.