

E. M. Ferguson.

Hot Blast Oven.

N^o. 10,449.

Patented Apr. 5, 1870.

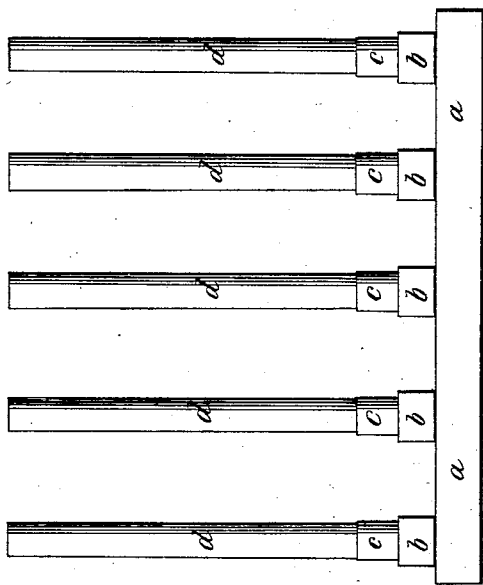


Fig. 1

Fig. 2

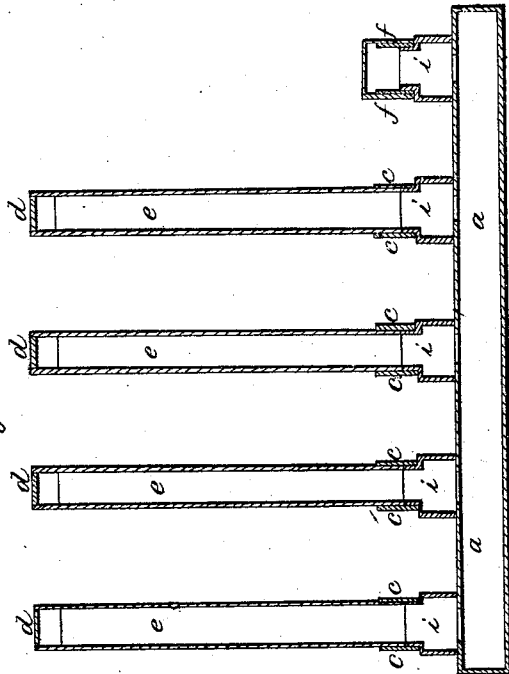
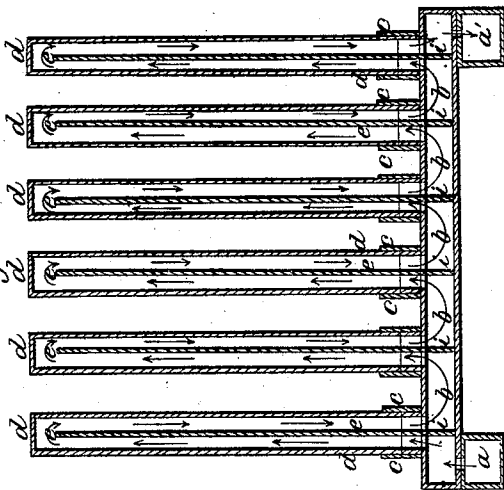


Fig. 3



Witnesses
R. Wrenschaff
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Inventor
Edmund M. Ferguson,
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United States Patent Office.

EDMUND M. FERGUSON, OF BRADY'S BEND, PENNSYLVANIA.

Letters Patent No. 101,449, dated April 5, 1870.

IMPROVEMENT IN HOT-BLAST OVENS OR FURNACES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, EDMUND M. FERGUSON, of Brady's Bend, in the county of Armstrong, and State of Pennsylvania, have invented a new and useful Improvement in Hot-blast Ovens; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention consists in an improved construction and arrangement of stoves for hot blast, whereby not only is the facility of removing or replacing any of the pipes increased, but the heated air is so directed and distributed throughout the oven in its relation to the introduction of the air when cold, and its discharge when properly heated, as to secure a more equable and uniform temperature of all the pipes, and so as to lessen the liability of one being more readily injured than another by excessive heat.

To enable others skilled in the art to construct and use my invention, I will proceed to describe it, with reference to the accompanying drawings forming part of this specification, in which—

Figure 1 is a side elevation of the upper portion of the stove above the gas-chamber, showing the situation and arrangement of the pipes composing the stove.

Figure 2 is a longitudinal section through the apparatus, near to one side.

Figure 3 is a transverse sectional elevation.

In the several figures like letters of reference denote similar parts.

In the drawing—

a a' are two hollow trunks or air-passages, made (as is the rest of the apparatus which I am about to describe) of cast-iron, placed horizontally, one on each side of the stove, in the heating-chamber above the chamber in which the gas to heat the stove is introduced and burned, which is called the gas-chamber.

At the front end of one of these main trunks *a*, the air enters cold, and passes out at the rear end of the other trunk *a'*, heated to the required degree for the hot blast.

The gas-chamber is arched or covered over with brick-work, the roof of the gas-chamber forming the floor of the heating-chamber.

Immediately above the longitudinal trunks *a a'* is placed a number of transverse pipes *b b*, the ends of which rest on the tops of the trunks *a a'*, but the weight of the pipes being sustained by the brick-work of the floor of the heating-chamber, there is no weight upon the trunks *a a'*.

Between each of the transverse pipes *b* and its adjacent pipe *b* is an opening in the floor, so as to allow the flame and heat to pass up from the gas-chamber through these apertures into the heated chamber above.

On each of the transverse horizontal pipes *b b* is a number of short necks or collars, *c*, each surrounding an opening into the pipe, and on each of these necks *c* is set a vertical standing pipe, *d d*.

Each of these standing pipes is cylindrical and straight, and has a partition, *e*, extending through its axis from its lower end to a point a little less than the diameter of the standing pipe from its upper extremity.

In the transverse horizontal pipes *b b* are also partitions *i* extending from the top of each of the short necks *c* to the bottom of the pipe, and filling its entire cross-section, so as to prevent the passage of air directly through the horizontal pipes *b b*.

The standing pipes *d* are set on the necks *c* in such a manner that when in place the lower end of the partition *e* in the standing pipe coincides with and touches the upper end of the partition *i* in the horizontal pipes *b b*, so as to form a continuous partition or barrier against the passage of the air through the horizontal pipes *b b*, and compel it, in passing on toward the exit trunk *a'*, to rise up one side of the standing pipes and down on the other side.

As the partitions *i* in the transverse pipes *b b* are placed across them, it is necessary that the standing pipes should be so set as to place the partition *e* in these standing pipes similarly, so that the partitions may coincide, and thus it happens, also, that the side of the standing pipes along which runs the edge of the partition *e* is turned toward the opening in the floor through which the heat and flame pass, and, as that side is the strongest, being supported inwardly by the partition, it is less likely to become warped or misshapen by the heat.

As there are no partitions or obstacles in the horizontal trunks *a a'*, the air passes through them freely, traversing the inlet trunk *a*, and passing up into any and all of the horizontal transverse pipes *b b*, with equal facility, and thence traversing the standing pipes *d d*, reaches the outlet-trunk *a'*, thoroughly heated.

As the same air does not pass through more than one series of standing pipes, but as some of the air admitted into the inlet-trunk *a* passes through each of the series of standing pipes *d*, the air traverses the pipes more slowly, with less friction, and the apparatus is more uniformly heated, than if the air passed successively through each and every one of the vertical pipes.

In case any one of the vertical pipes should become warped or otherwise need to be replaced, it can be done with but very little inconvenience, as each standing pipe *d* is independent of all the others, and stands vertically on its own base. When it is removed a cap, *f*, which has no partition in it, and which will be high enough to allow the air to pass over the parti-

tion *i* in the pipe *b*, may be placed on the neck *c*, if there be no new standing pipe ready to take the place.

Having thus described my improvement,

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

1. The use of the vertical standing pipes, in combination with the trunks *a a'* and transverse pipes *b b'*, when such vertical standing pipes are removably attached to the transverse pipes, and arranged substantially as described.

2. Setting the diaphragms in the standing pipes with their edges turned toward the passages through which the heated gas enters the heating-chamber, so

as to expose the strongest part of the pipe to the greatest heat.

3. The use of the removable caps *f*, in connection with the collars *c* on the transverse pipes *b b'*, when the vertical standing pipes are removed, for the purpose described.

In testimony whereof, I, the said EDMUND M. FERGUSON, have hereunto set my hand.

E. M. FERGUSON.

Witnesses:

R. C. WRENSHALL,
THOS. R. KERR.