T. W. McCune,

Blast Furnace.

No. 102,844. Patented May 10. 1870.

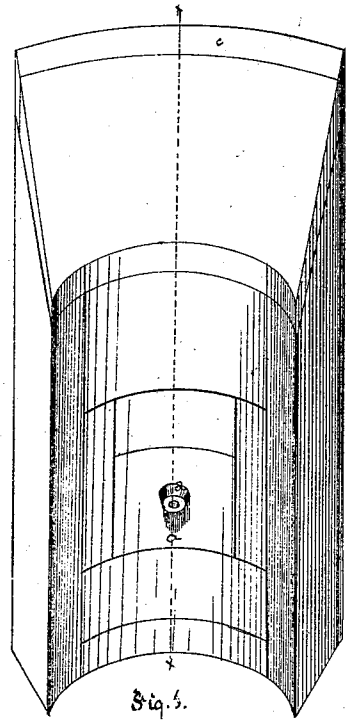

Fig. 1.

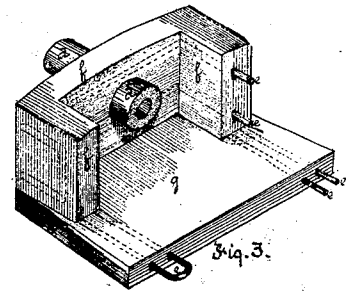

Fig. 3.

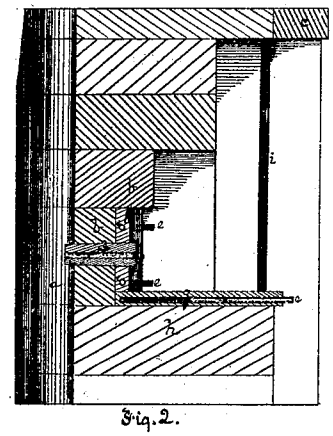

Fig. 2.

Inventor:
Thomas W. McCune,
by Bakewell & Johnston,
his Att'ys.

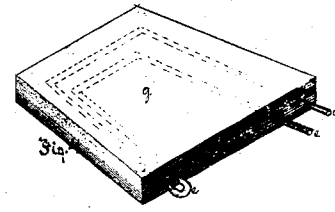

Fig.

Witnesses:
R. C. Brenshall
Thos. Ewing

United States Patent Office.

THOMAS W. McCUNE, OF PITTSBURG, PENNSYLVANIA.

Letters Patent No. 102,844, *dated May* 10, 1870.

IMPROVEMENT IN TWEERS OF BLAST-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, THOMAS W. McCUNE, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Blast-Furnaces; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings making a part of this specification, in which—

Figure 1 is a perspective view of a section of a blast-furnace;

Figure 2 is a vertical section through the line *x–x*, fig. 1; and

Figures 3 and 4 show, in detached views, the construction of the breast-plate and water-plate.

Like letters of reference indicate like parts in each.

My invention relates to the construction of cupola for blast-furnaces, and consists, particularly, in improvements in the tweer-attachments, whereby such attachments are rendered more serviceable and durable.

To enable those skilled in the art to make and use my invention, I will proceed to describe its construction and mode of operation.

The breast *a* is made in the usual way, as also is the tweer-arch *b* and main ring *c*, on which the lining rests.

The tweer *d* may also be of the usual or any known construction.

Heretofore, in such cupolas, it has been found that the action of the heat inside on the breast *a*, below the place of inserting the tweer, and to a less degree above and immediately around the tweer, was to burn out the breast, and let the tweer fall down, or otherwise become misplaced. This often renders it necessary to rebuild the lower part of the furnace, simply in order to secure the tweers in place, when, had there been any independent way of keeping the tweers in place, the furnace might have been used much longer.

In my invention, I obviate these evils, first, by inserting each tweer through an iron breast-piece, *f*, which latter is set vertically in or under the tweer-arch *b;* second, by supporting each breast-piece *f* by a plate, *g*, which has a bearing on the brick-work *h* of the cupola far enough back so that it will not be liable to displacement, even when the lower part of the breast *a* is burnt out, the plate *g* being braced, at or near its rear end, from above, by means of posts *i*, which bear, at their upper ends, against the main ring *c*, or some part of the brick-work; and, third, by making the breast-piece *f* and supporting-plate *g* with water-pipe *e* extending through them, so that a constant stream or flow of water may be passed through them, not only to keep them at a comparatively low temperature, but also so as to protect the brick-work contiguous thereto from the injurious or burning-out action of the heat inside.

These water-passages *e* are made in the casting of the breast-plate *f* and supporting-plate *g* in any of the ways known to the art. They may extend through in one or more coils, at pleasure, and in any desired direction; and at their outer ends they are connected with supply and discharge-pipes, in the usual way. This arrangement I apply to each of the tweers.

By the construction described, I increase greatly the durability of the furnace, and correspondingly lessen the cost of the manufacture of the iron.

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

1. A breast-plate, *f*, having passages through it for a stream or flow of water as a support for a blast-furnace tweer, substantially as described.

2. A supporting-plate, *g*, having water-passages, in combination with a breast-plate, *f*, and braces *i*, arranged substantially as described.

In testimony whereof, I, the said THOMAS W. McCUNE, have hereunto set my hand.

THOMAS W. McCUNE.

Witnesses:

JOHN GLENN,

THOS. B. KERR.