

ISRAEL B. B. CASE.

Improvement in Blast Furnaces.

No. 118,905.

Fig. 1

Patented Sep. 12, 1871.

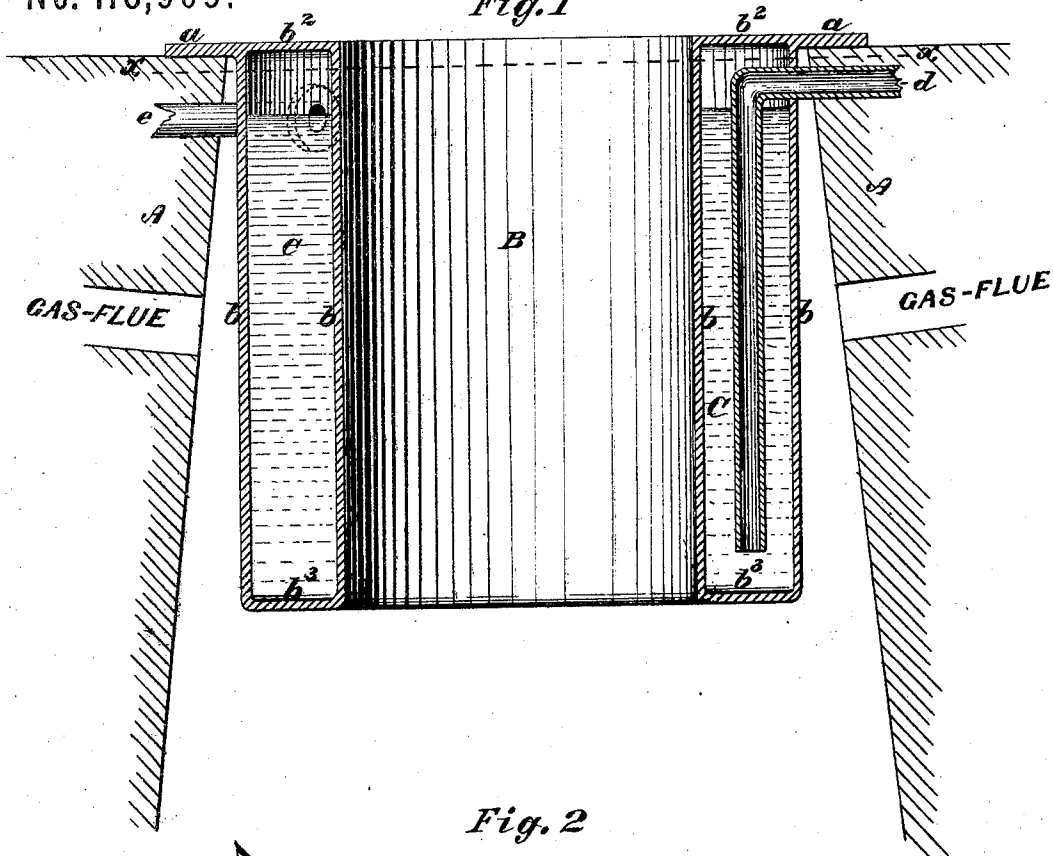
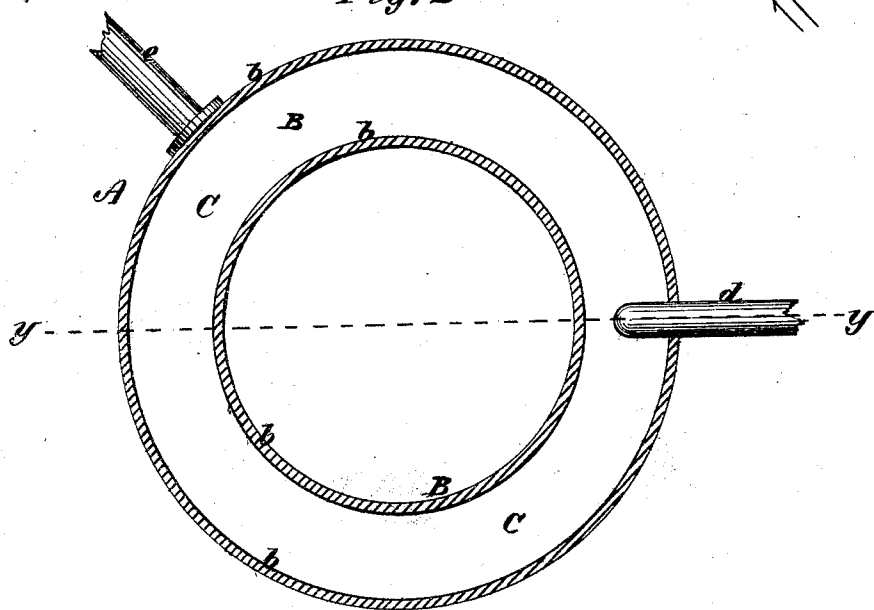


Fig. 2



Witnesses:-

W. H. Rowe.
 Geo. E. Peyton.

Israel B. B. Case

by his atty
 Wm. S. Baldwin

UNITED STATES PATENT OFFICE.

ISRAEL B. B. CASE, OF TOLEDO, OHIO.

IMPROVEMENT IN BLAST-FURNACES.

Specification forming part of Letters Patent No. 118,905, dated September 12, 1871.

To all whom it may concern:

Be it known that I, ISRAEL B. B. CASE, of Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Blast-Furnaces, of which the following is a specification:

Blast-furnaces usually have suspended in the tunnel-head a thimble or cylinder somewhat less in diameter than the mouth of the tunnel, but several feet in depth, to prevent the ore and soot from interfering with the withdrawal of the waste gases, which are usually employed to run the boilers and for other purposes. This thimble, being simply an annular plate of cast or boiler-iron, and being necessarily exposed to intense heat, is soon destroyed and has to be renewed.

The object of my invention is to prevent the destruction of these thimbles, as above mentioned; and to this end my improvement consists in constructing the thimble with a chamber to contain water to enable the cylinder better to resist the action of heat. My invention further consists in combining with the water-chamber a supply-pipe which discharges the feed-water near the bottom of the thimble, where the heat is greatest, and a discharge-pipe on the opposite and upper side to convey off the hot water, thus maintaining a constant circulation through the thimble.

In the accompanying drawing, Figure 1 represents a vertical section through the tunnel-head of a blast-furnace on the line *y y* of Fig. 2, and Fig. 2 a horizontal section of the same on the line *x x* of Fig. 1.

The walls A of the tunnel-head may be constructed in any well-known and approved way.

The thimble B consists, in this instance, of two concentric walls, *b b*, connected at top and bottom by horizontal plates *b² b³*, so as to form an annular water-chamber, C. A flange, *a*, on this chamber rests upon the top of the tunnel-head A and suspends the thimble therein. A supply-pipe, *d*, enters the chamber C near the top, where it is protected from the heat, and extends downward nearly to the bottom of the chamber, in order that the cold water may be discharged near the hottest part of the chamber. A discharge-pipe, *e*, conducts the waste water and steam away from the chamber. This pipe is by preference arranged with its mouth near the top of the chamber and opposite the supply-pipe, thus securing an active circulation of water through the chamber.

The operation and advantages of my improvement will be obvious from the foregoing description.

I claim as my invention—

1. The combination, with the thimble of a blast-furnace, of a water-chamber to enable the thimble better to resist the action of the heat, substantially as hereinbefore set forth.

2. The combination, with the water-chamber of the thimble, of supply and discharge-pipes to promote a circulation of water through the chamber, substantially as hereinbefore set forth.

In testimony whereof I have hereunto subscribed my name.

ISRAEL B. B. CASE.

Witnesses:

WAGER SWAYNE,
A. E. SCOTT.