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3 Sheets--Sheet 1.

DAVID MORGAN.

Puddling Furnaces.

No. 122,731.

Patented Jan. 16, 1872.

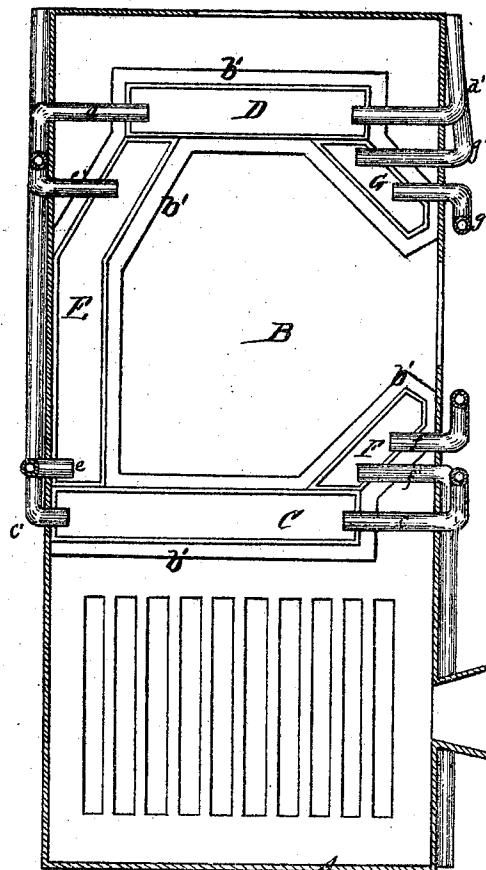


Fig. 1.

Witnesses.

E. H. Bates.  
C. M. Parsons.

Inventor:

David Morgan,  
Chippman, Hosmer & Co.,  
Attns.

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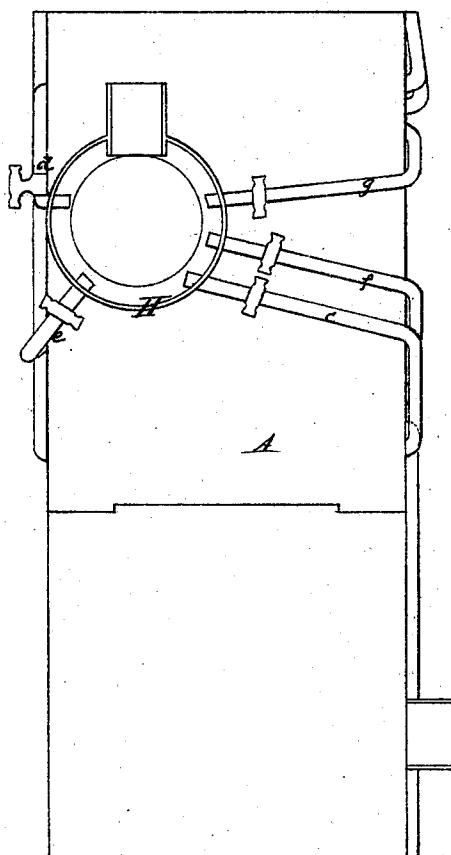
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Fig'. 2.



Witnesses.

J. D. Curtis

E. A. Bates.

Inventor:

David Morgan  
Chippman, Hosmer & Co.

Attg's

(85.)

3 Sheets--Sheet 3.

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Fig. 3

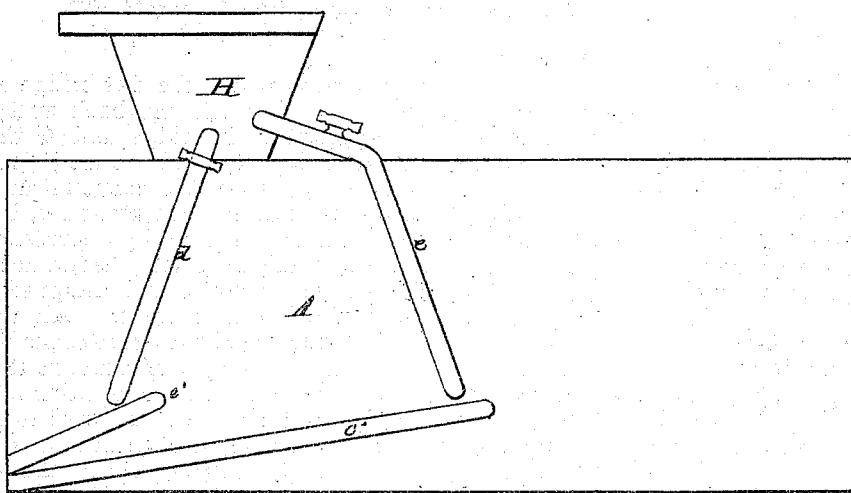
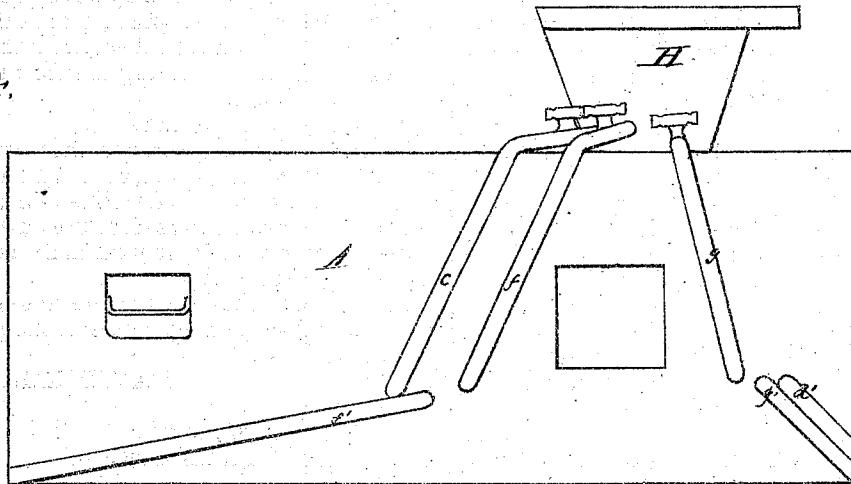


Fig. 4.



Witnesses.

F. B. Curtis.

E. H. Bates.

Inventor.

David Morgan,  
Chippingham, Somers, Ct.,

Atty.,

## UNITED STATES PATENT OFFICE.

DAVID MORGAN, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR OF ONE-HALF HIS RIGHT TO WILLIAM M. SPEER, OF SAME PLACE.

## IMPROVEMENT IN PUDDLING-FURNACES.

Specification forming part of Letters Patent No. 122,731, dated January 16, 1872.

*To all whom it may concern:*

Be it known that I, DAVID MORGAN, of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented a new and valuable Improvement in Puddling-Furnaces; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawing making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawing is a plan view of my invention. Fig. 2 is a horizontal section of the same.

This invention has relation to an improvement in iron puddling-furnaces; and the novelty consists in providing the bridge walls which inclose the lozenge-shaped hearth with a number of separate water-boxes supplied from a tank by communicating pipes and provided with discharge openings to empty their contents into the "bosh." The object of this improvement is the protection of the hearth walls from fusion by keeping the ore and scrap "fix" as cool as possible; and it tends to accomplish the purpose in view by allowing the water to be readily changed when its temperature or evaporation requires it. By the arrangement of separate boxes an advantage results from the fact that the repair of any part of the water-back does not necessitate the complete destruction of the furnace.

Referring to the drawing, A represents the furnace-casing; B, the puddling-hearth arranged within the lozenge-shaped inclosure formed by the hearth walls b. C represents the water-box within the fire-bridge wall; D,

the water-box within the flue-bridge wall; E, the water-box within the back wall; F, the water-box within the bridge-jamb; G, the water-box within the flue-jamb. c d e f g represent respectively inlet-tubes communicating with the water-boxes from a water-tank, H, on top of the furnace. c' d' e' f' g' represent outlet-tubes communicating with the furnace "bosh" from the water-boxes, and designed for the discharge of their contents. All the inlet-tubes are furnished with stop-cocks by which to regulate the supply of water to the boxes. These boxes may be made either of cast or wrought-iron, are readily adapted to their positions, and by means of them a constant flow of water may be kept up during the puddling process. They may be supplied according to their positions and other circumstances, and when one is damaged it may be replaced without the necessity of displacing the other.

The inlet and outlet tubes enter the boxes from the outside extending thence around to their proper points.

I claim as my invention—

In an iron puddling-furnace, the water-boxes C D E F G separately constructed and arranged around the hearth B, as described, in combination with their respective inlet and outlet tubes and the water-tank H, substantially as and for the purpose set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

DAVID MORGAN.

Witnesses:

JAMES M. TAYLOR,  
THOS. J. PARKINSON.

(85)