(No Model.)

C. F. BOYENS.

FIRE BOX FOR FORGES.

No. 303,487. Patented Aug. 12, 1884.

Fig. 1.

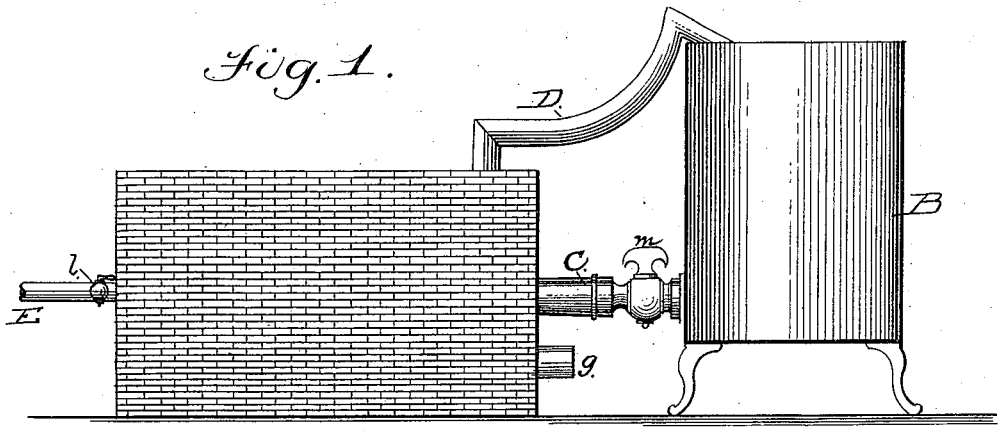


Fig. 2.

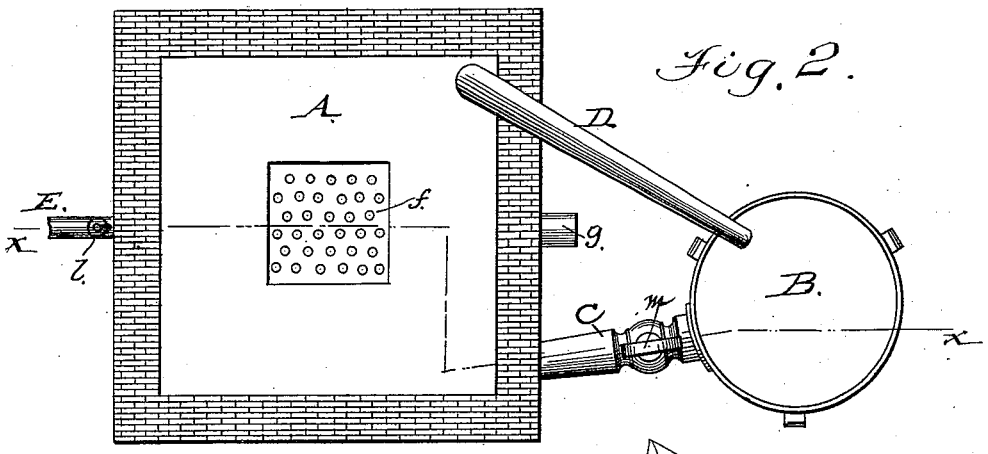
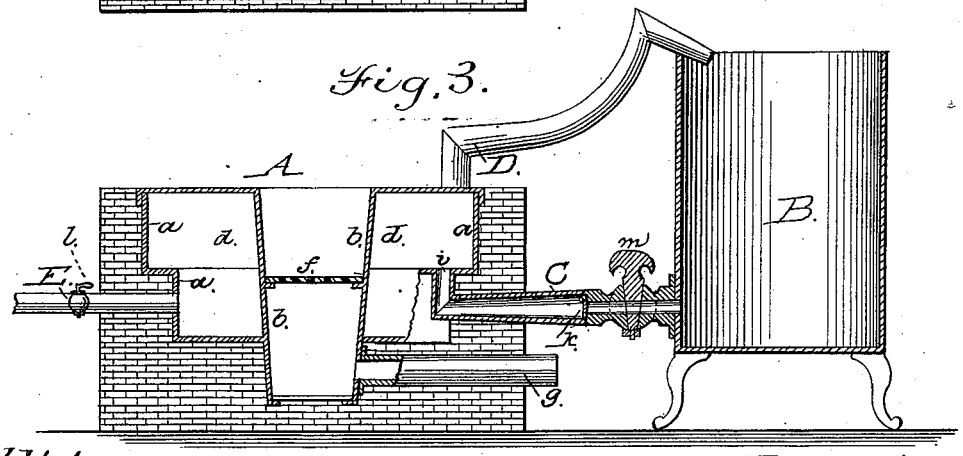


Fig. 3.



Witnesses;
F. Walter Fowler,
W. B. Hopkins

Inventor;
Carl F. Boyens
by R. K. Evans
his Atty;

UNITED STATES PATENT OFFICE.

CARL F. BOYENS, OF HARRISBURG, PENNSYLVANIA.

FIRE-BOX FOR FORGES.

SPECIFICATION forming part of Letters Patent No. 303,487, dated August 12, 1884.

Application filed January 11, 1884. (No model.)

To all whom it may concern:

Be it known that I, CARL F. BOYENS, of Harrisburg, in the county of Dauphin and State of Pennsylvania, have invented certain Improvements in Forges; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a side elevation of a forge with my improvements attached. Fig. 2 is a plan view of the same. Fig. 3 is a vertical longitudinal sectional view on the line *x x* of Fig. 2.

My invention relates to forges used by blacksmiths and others, and has for its object to increase the wearing capacity of the fire box to prevent the sticking of the cinders and economize fuel.

To this end my invention consists in a forge provided with a hollow fire-box, in which a circulation of water is induced from a tank or other convenient receptacle, as will be hereinafter fully described, and specifically pointed out in the claim.

In order that those skilled in the art may make and use my invention, I will proceed to describe the manner in which I have carried it out.

In the said drawings, A is the fire-box of a forge, composed of the walls *a b*, forming a chamber, *d*, which surrounds the fire-opening *e*, and lies below the perforated plate *f* to a plane just above the ingress-point of the tuyere *g*. A water-tank, B, is placed in some convenient location near the forge, and is provided with a water-supply pipe, C, which connects it with the chamber *d* at *i*, to carry water into and fill said chamber. The pipe C is provided with a check-valve, *k*, as shown, for a purpose hereinafter described. Another pipe, D, connects the chamber *d* with the top of tank B, for a purpose hereinafter described. At one side the box is provided with a waste-pipe, E, and a stop-cock, *l*, to withdraw all water from the chamber *d* when desired to prevent it from freezing, and for other purposes.

The operation is as follows: Upon turning cock *m* on the ingress water-pipe C the water flows into the chamber *d*, thereby keeping the inner wall, *b*, comparatively cool. As soon as the forge-fire heats the water sufficiently to make a pressure from the steam, some of the water in the chamber is forced out through pipe D into the tank, the check-valve *k* preventing the water passing back through pipe C. As soon as the pressure is relieved by this escape of water, water again flows in through pipe C to take the place of that which escaped through pipe D. In this way a constant circulation of water is kept up and the walls of the fire-box prevented from becoming highly heated.

It is evident that this fire-box may be made adjustable for all kinds of blacksmiths' forges, and that more than one fire-box can be supplied from the same water-tank.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

In a blacksmith's forge, a continuous water-chamber beneath the hearth and fire-box and surrounding the tuyere-box, formed by walls *a b*, in combination with pipe D, pipe C, provided with a check-valve, *k*, tank B, and tuyere *g*, all constructed, arranged, and operated as described.

CARL F. BOYENS.

Witnesses:
D. FRED. BLESSING,
JNO. W. BROWN.