J. Evans,

Forge

No. 41,143. Patented Jan. 5, 1864.

Fig. 1.

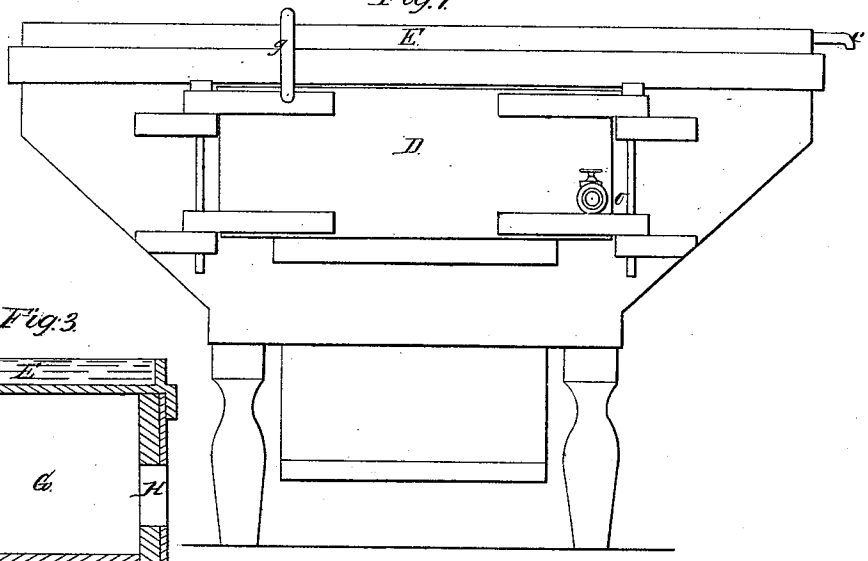


Fig. 3.

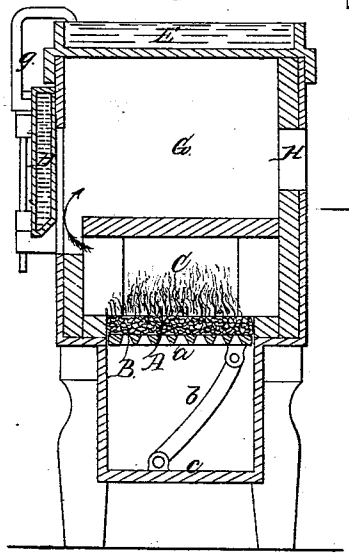
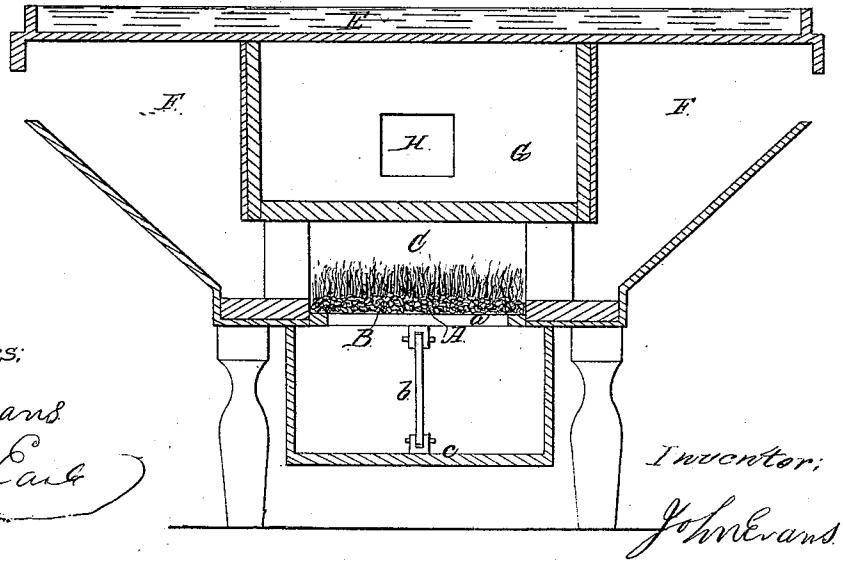


Fig. 2.



Witnesses:

George Evans

John E. Earle

Inventor:

John Evans

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UNITED STATES PATENT OFFICE.

JOHN EVANS, OF NEW HAVEN, CONNECTICUT.

IMPROVEMENT IN LEHIGH FORGE-FIRES.

Specification forming part of Letters Patent No. **41,143**, dated January 5, 1864.

To all whom it may concern:

Be it known that I, JOHN EVANS, of New Haven, in the county of New Haven and State of Connecticut, have invented a new and useful Improvement in Lehigh Forge-Fires; and I do hereby declare the following to be a full, clear, and exact description of the construction and operation of the same, when taken in connection with the accompanying drawings and the letters of reference marked thereon, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a front view of a forge with my improvement attached, Fig. 2 a longitudinal vertical section, and in Fig. 3 a transverse vertical section.

Similar letters and characters refer to like parts.

My invention relates to an improvement in the Lehigh forge-fire for which Letters Patent were granted to me the 24th day of March, 1863, and for which I have applied for a reissue application filed September 12, 1863; and it consists in combining a water-top with the water-front of the said Lehigh forge-fire for the purpose of cooling the atmosphere around the forge to a greater extent than can be done by the water-chamber front alone.

To enable others skilled in the art to make and use my improved forge-fire, I will proceed to describe its construction and operation.

A represents a Lehigh fire of the ordinary construction, built up of brick and cast-iron plates or any other suitable materials, and commonly used for heating large pieces of steel, iron, or other metal.

B is the fire-place, provided with a tilting grate, *a*, which connects by a curved rod, *b*, with the hinged bottom *c* of the ash-pan, so that by opening or closing said bottom the grate is lowered or raised at the same time. The said hinged bottom closes tight and forms the bottom of a chamber below the fire, into which the blast is introduced. The products of combustion which rise from the fire in the fire-place escapes to the chamber C, which, being closed at the rear and on its sides and top, throws the gases to the front of the fire, where the same meet the hollow water-chamber front D. This front is supplied with water through pipes, which connect with a stop-cock, *o*, near the bottom of the chamber D. A pipe, *g*, leading from the chamber D, at a point near its upper edge, conducts the water from the chamber to the water-top E. (See Fig. 3.) The said top is made of a plate of metal with a rim extending entirely around it, forming a vessel to hold the water as it flows from the chamber D. When the water shall have risen sufficiently high, the surplus is carried off through a waste-pipe, *e*, Fig. 1. A continuous flow of water through the chamber D into the water-top E, thence off to waste, keeps both the front D and top E cool. The water-chamber front D is fastened to the body of the forge in any convenient manner, it only being required to remove it to repair the fire-place.

F F are the feeding-chambers, which are kept constantly supplied with coal, which falls into the fire-place to replenish the fire as coal becomes consumed therein.

The operation of this forge-fire, as fully set forth in the Letters Patent and application for reissue before referred to, is substantially as follows: A stream of cold water is constantly passing through the chamber D, thence to the water-top, and thence to waste, keeping the two at a low degree of temperature. When the gases rising from the fire strike the lower edge of the chamber-front, they mingle with the atmospheric air and form a combustible mixture, which serves as a part of the fuel. The products of combustion pass up under the edge of the chamber D to the flue G and thence through the chimney-opening H. The front being kept constantly cool enables workmen to stand with comfort near the forge even in the hottest weather.

To avoid radiation of heat from the flue G and to make the position of the operator still more comfortable, the water-top is added, the operation of which has been already described. The said water-top need not of necessity be open, but may be closed similarly to the chamber-front. I prefer the open top, as it is quite as good and much cheaper.

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

The combination of a hollow water-chamber front, D, with a water-top, E, in the manner and for the purpose substantially as herein set forth.

JOHN EVANS.

Witnesses:
GEORGE EVANS,
JOHN E. EARLE.