J. E. LAYTON.

Tempering Furnace.

No. 18,914. Patented Dec. 22, 1857.

Fig. 1.

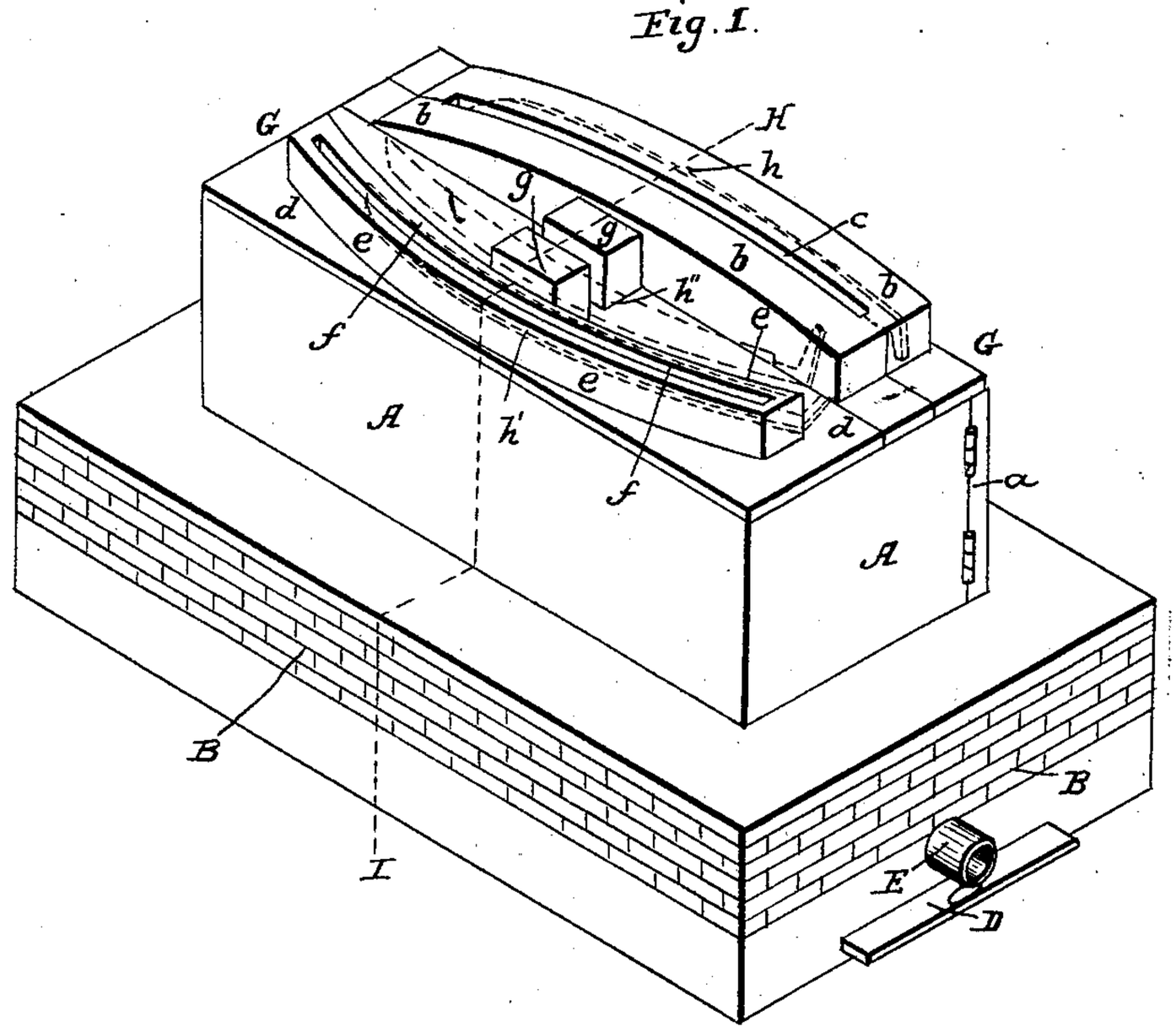
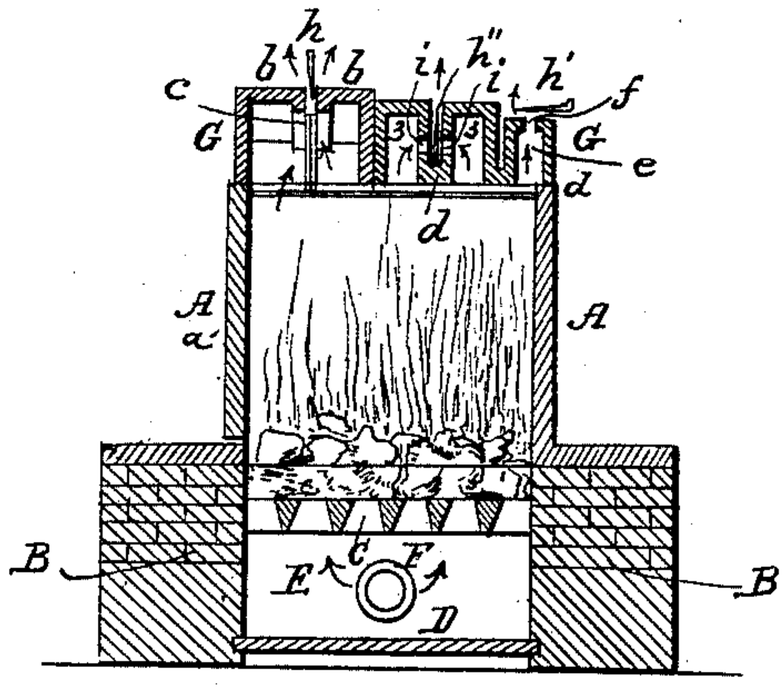


Fig. 2.



UNITED STATES PATENT OFFICE.

JOHN E. LAYTON, OF PITTSBURGH, PENNSYLVANIA.

FURNACE FOR TEMPERING SCYTHES.

Specification of Letters Patent No. 18,914, dated December 22, 1857.

To all whom it may concern:

Be it known that I, JOHN E. LAYTON, of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented a new and useful improvement in furnaces for hardening and tempering scythes and other like articles made of steel plate, of which the cutting edges are to be hardened and tempered; and I do hereby declare that the following is 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 perspective view of the whole furnace; Fig. 2 a transverse section through the middle of the same, as indicated by line I, II, in Fig. 1.

The nature of my improvement consists in constructing the top of a furnace in such a manner, that the shape of said top or a portion of the same, and of the openings, provided therein for the escape of the flame or heat of the furnace, conforms with the edge of the article to be hardened or tempered, whereby the said edge, in being held into or over the said openings, will receive a uniform degree of heat throughout its whole length, suitable for the hardening or tempering process, and further in providing two hollow blocks or projections on the said top with openings in the sides facing each other, whereby any particular spots or portions of the article, when brought between the said blocks, can be heated, for the purpose of correcting any unevenly tempered spots in the article.

In order to show my improvement more fully, I will proceed to describe the accompanying drawings, and the letters of reference, marked thereon.

A is a box, forming the body of the furnace; B, B, brickwork, upon which the box A is set, and which contains the grate C; the fuel is brought on the latter through the door *a* on the backside of the furnace-body A.

D is a plate, which closes up the space E directly under the grate; the said plate is made so that it can be drawn back, in order to remove the ashes, collecting on it, from time to time, when necessary.

F is a pipe, through which a current of air (produced by a fan blower or otherwise) is introduced under the grate.

G is the top plate of the furnace, which in the present drawings is shown, as adapted for hardening and tempering scythes. The top plate consists of the curved pieces *b b*, and the plate *d*, the pieces *b b* are curved to correspond with the curve, formed by the edge of a scythe; *c*, *c* is an opening or slot, left between them.

e, *e*, is a hollow projection on the plate *d;* the top surface of the same is level and has a slot *f*, *f*, through it, curved so as to correspond also with the shape of the edge of a scythe.

g, *g* are two other projections or hollow blocks on the plate *d*. *i*, *i*, are small openings in the sides of the same, opposite each other.

The operation of the described furnace, and the mode in which it is used is as follows: The air, entering through the pipe F into the space E, is compelled to pass through the grate C, and the flame or heat will pass through the different openings *c*, *f* and *i*, *i*, in the top of the furnace. The edge of the scythe to be hardened is first held into the slot *c*, (as indicated in Figs. 1 and 2, by red lines at *h*, *h*); the pieces *b*, *b*, by being curved in accordance with the curve of the edge of scythe, allow the latter to be held into the slot to a uniform depth, throughout its whole length, which could not be done, if the shape of the said pieces would vary from the shape of the said edge. Thereby a uniform heat is imparted to the edge; the back of the scythe however, being outside of slot, will be comparatively less heated, but sufficiently (by the flame issuing from the slot) to prevent the warping of the blade, which would result from a too great expansion of the one part of the scythe blade in relation to the other. The scythe, being thus heated, is ready to be immersed into the water or other liquid, when its edge will be perfectly hardened; its back however, on account of its lower temperature will remain comparatively soft. In order to draw the temper of the scythe thus hardened, it is now held over the opening *f*, *f*, as indicated by red lines at *h′ h′*, (Figs. 1 and 2) this opening being shaped in accordance with the shape of the scythe, the flame, passing through it, will strike the side of the blade (about its edge) throughout its whole length, heating it uniformly until it has acquired the desired degree of temper. The arrangement of the opening *f f*, is particularly adapted to the process of drawing the temper, as the blade, in being kept over it as shown, is in a favorable position for

observing the colors of the different degrees of temper; and as the heat imparted to the blade is extended more over the surface of the same, and the arrangement of the opening *c* is adapted to the heating of the blade for the hardening process, as the edge receives the greatest heat, which decreases gradually toward the back, as above shown.

In tempering the blade it frequently occurs, that portions or spots thereof have an uneven degree of temper, caused by differences in the nature of the steel or otherwise; to remedy this, any spot in the blade requiring correction is kept between the blocks *g g*, and thus exposed to the heat, passing out from the openings *i*, *i*, until the color of the said spot shows an equal temper with the rest of the blade.

I wish it understood, that I do not confine myself to the special shape of the portion of the top formed by the pieces *b*, *b*, or of the openings *f f*, as shown in the drawings, all these being merely designed to show a shape of the same, as suitable for hardening and tempering scythes; nor do I confine myself to any special number of openings *c*, *c*, *f f*, and *i*, *i* that may be provided in the top plate.

I do not claim, the arrangement of the body of the furnace, nor of the introducing of a current of air under the grate, as these are not novel and have been used before; but

What I do claim, and I desire to secure by Letters Patent is:

1. Constructing the top of a furnace in such a manner, that the same, or a portion *b*, *b*, of the same is curved or shaped so as to conform with the curve or shape of the edge of the article to be hardened, and providing in the top (thus shaped) an opening *c*, *c*, or a number of such openings substantially as and for the purpose herein set forth.

2. I claim, providing in the top of the said furnace an opening *f*, *f* (or a number of such openings), of such a shape, as to conform with the curve or shape of the article to be tempered, substantially as and for the purposes described.

3. I claim, providing on the top plate of the said furnace two blocks *g*, *g*, with the openings *i*, *i*, substantially as and for the purpose set forth.

JOHN E. LAYTON.

Witnesses:

HENRY MOSES,

AND. M'MASTER.