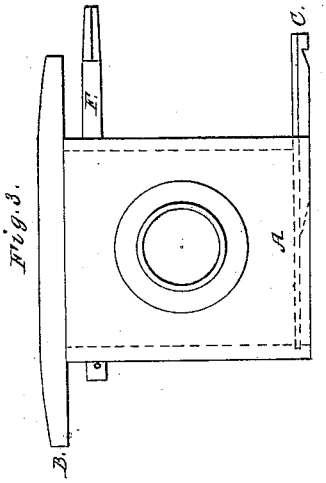
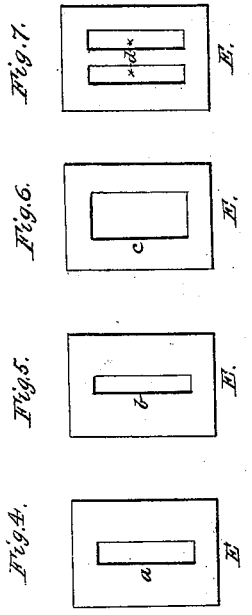
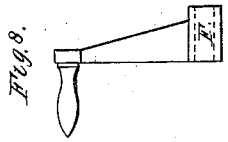
S. H. Camp.

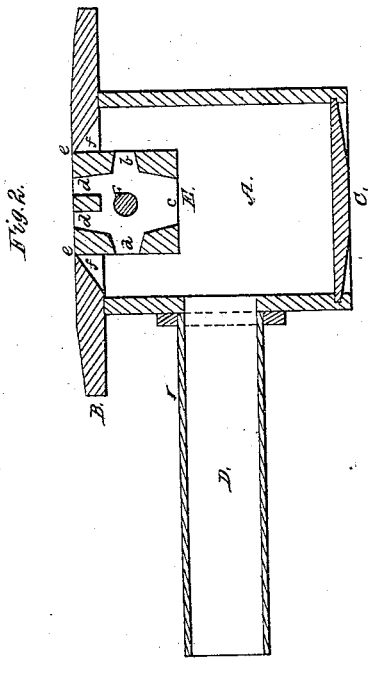
Tuyere,

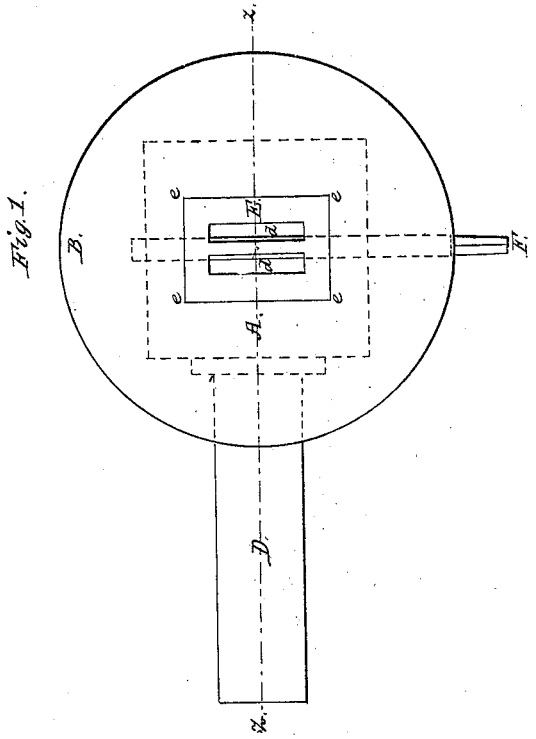
No. 6,662. Patented Aug. 21, 1849











UNITED STATES PATENT OFFICE.

SAML. H. CAMP, OF HARTFORD, CONNECTICUT.

ANGULAR ROTATING TWYER.

Specification of Letters Patent No. 6,662, dated August 21, 1849.

To all whom it may concern:

Be it known that I, SAMUEL H. CAMP, of Hartford, in the county of Hartford and State of Connecticut, have invented a new and useful Improvement on a Square Rectangular Revolving Grate or Twyer-Iron for Forges; and I do hereby declare that the following is a full, clear, and exact description.

The nature of my invention consists in the employment of a square rectangular hollow revolving grate or twyer iron for forges, perforated with apertures of different sizes forming bars in the sides for regulating the admission of air into the fire of the forge, and for breaking the scale of metal by edges of the grate or twyer iron when it is revolved to prevent the twyers from being choked.

To enable others skilled in the art to make and use my invention I will proceed to describe its construction and operation, reference being had to the annexed drawings, making a part of this specification.

Figure 1 is a plan view of the hearth or bed plate of the grate or twyer placed therein; and of the tube which receives the nozzle of the bellows. Fig. 2 is a vertical section of the same on the line *z z* Fig. 1. Fig. 3 is a side elevation of the air chamber or box, showing the opening in which is inserted the tube for receiving the nozzle of the bellows. Figs. 4, 5, 6 and 7 are views of the four sides of the grate or twyer iron, exhibiting the different sized air valves or apertures in each. Fig. 8 is a view of the crank for turning the grate or twyer iron.

The air chamber is a square box A, Figs. 2 and 3, about six and one half inches from side to side, on the top of which is a circular convex bed plate or hearth B, of about twelve inches diameter; and on the under side of said air chamber is the usual sliding door C, for dropping the ashes and cinders which may fall into it, and also for admitting the air to reduce the temperature of the hearth plate and grate, or twyer iron when the forge is not in operation.

The tube D, for receiving the nozzle of the bellows, is inserted centrally in the side of the air chamber A, in the usual manner.

I make my grate or twyer iron E square sided and oblong, as shown in Figs. 1, 2, 4, 5, 6, and 7. In the four sides are oblong apertures *a*, *b*, *c*, *d*, of different sizes in each, which open into each other in the inside of the grate or twyer iron, forming a hollow interior to the same as seen in Fig. 2, lengthwise through the grate or twyer iron, and firmly fastened in it, passes a rotary shaft F, on one end of which is attached a crank for turning the grate or twyer iron, and regulating the admission of air in the fire as seen in Figs. 1, 2, 3.

In the center of the bed plate or hearth B is an orifice *e*, *e*, *e*, *e*, of exactly the size and shape of one side of the grate or twyer iron, into which orifice the grate or twyer iron is inserted, having its upper side flush with the top of said hearth plate as seen in Figs. 1, 2. The lower side of said orifice is made beveling on two opposite sides, as seen at *f f* Fig. 2 for the purpose of permitting the corners of the grate or twyer iron to pass when it is turned.

The grate or twyer iron E is suspended in the air chamber A immediately below the orifice, *e*, *e*, in the hearth plate B, as seen in Fig. 2, and it is supported by the rotary shaft E which passes through two sides of the air-chamber at right angles to the line of the tube D, as seen in Figs. 1 and 3.

By turning the shaft F, any of the four sides of the grate or twyer iron may be presented to the orifice *e*, *e*, and the quantity of air admitted to the fire can thus be increased or diminished at pleasure, in consequence of the apertures *a*, *b*, *c*, *d*, in each side, respectively being of different capacity, allowing more or less air to pass from the air chamber A, thus regulating the blast.

The corners of the grate or twyer iron, are elevated above the level of the hearth plate B, by turning the shaft F back and forth, and the fire may thus be effectually stirred without the poker. The ashes and cinders will pass between the beveled sides of the orifice *f f* and the sides of the twyers into the bottom of the air chamber A, to be removed when they have accumulated by slipping out the slide C, as before described.

By constructing my twyer with more than one oblong aperture in the side or sides, the space between the two openings forms a bar and prevents the coal from falling into the twyer. My twyer being formed with edges, when it is turned around the scale that may be formed between it and the sides, is easily broken by the action of the edge or edges of the said twyer iron. In spherical and coni-

cal twyers, the scale has often to be chipped away with a chisel, which is avoided by the square, oblong twyer.

As a regulator of the blast, two different currents can be admitted from the outside of my twyer at once, by turning the twyers so as to make the edge project above the plate like an angle, the draft entering through the apertures of the two opposite sides.

Having thus explained my invention, I claim—

The twyer of a square, rectangular, or hexagon form, having edges, and revolving not on an eccentric axis, but a central axis, to break off the scale formed by the fire upon the metal, by turning around the twyer; when such twyer is constructed hollow, and with apertures of different sizes upon its different faces, through which the blast is forced; the whole being constructed substantially as herein described.

SAML. H. CAMP.

Witnesses:
THOMAS J. SALES,
R. R. BUCK.