No. 620,686. Patented Mar. 7, 1899.

G. W. WILLIAMS.

TWYER IRON.

(Application filed Apr. 25, 1898.)

(No Model.)

Fig. 1.

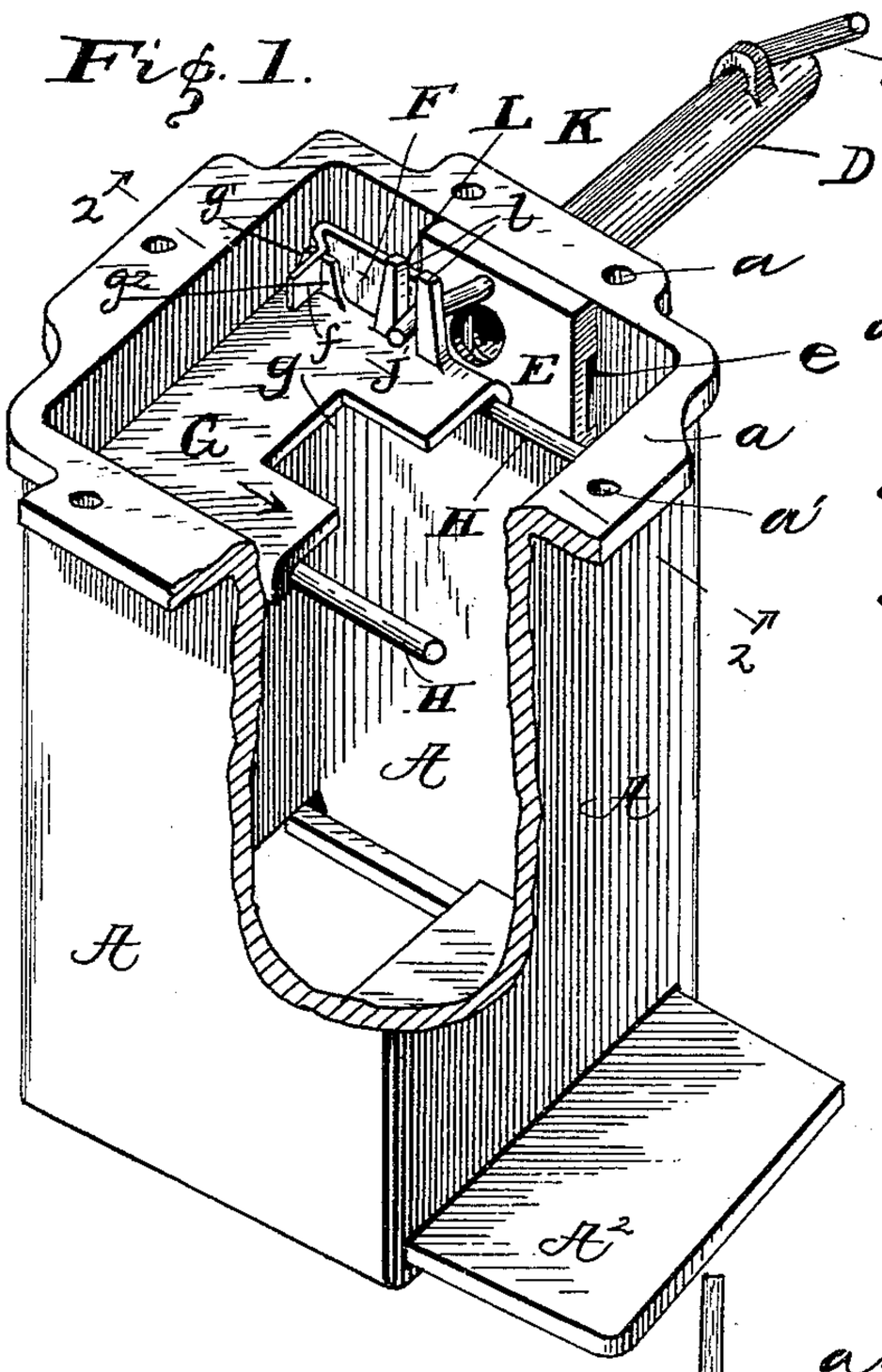


Fig. 2.

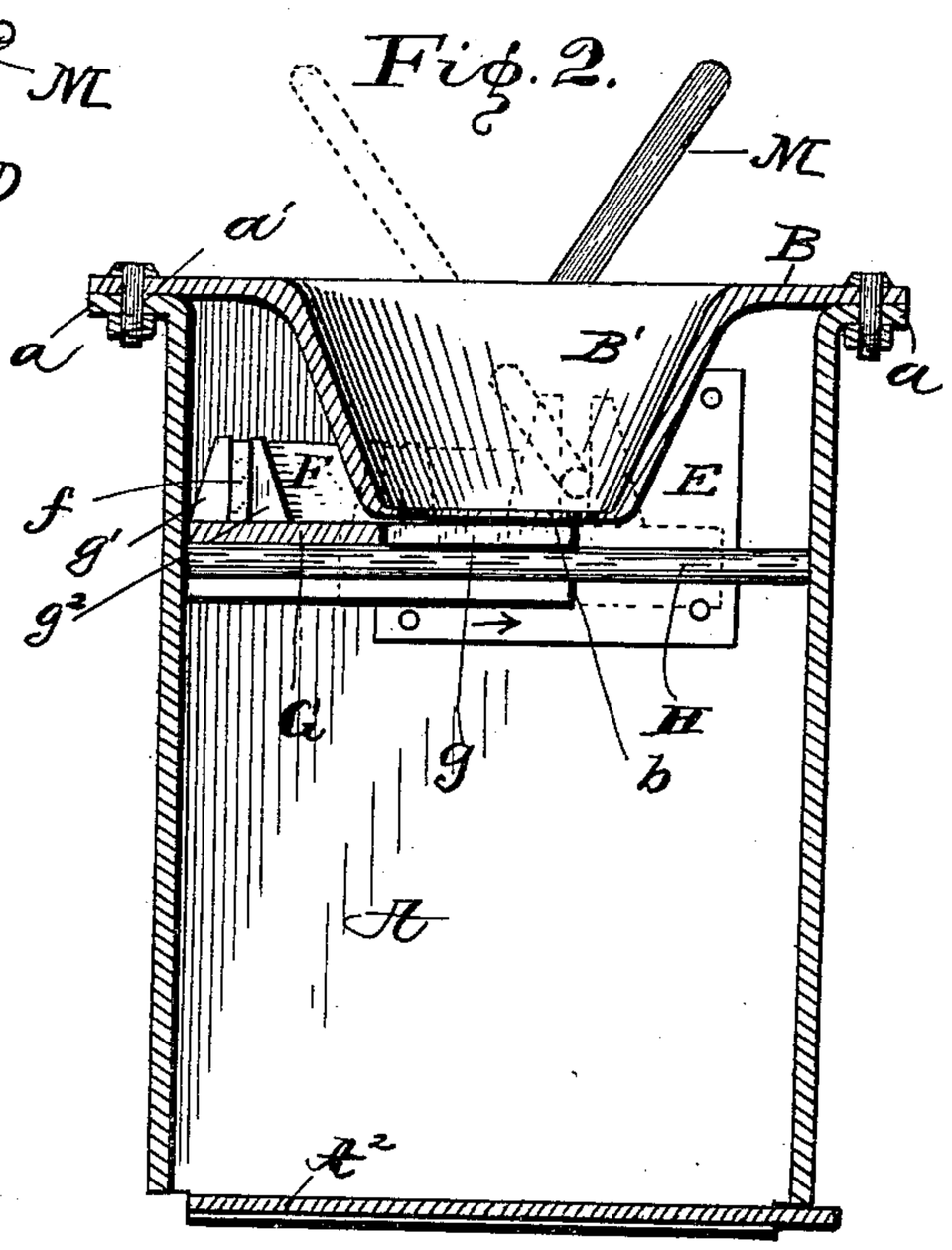


Fig. 4.

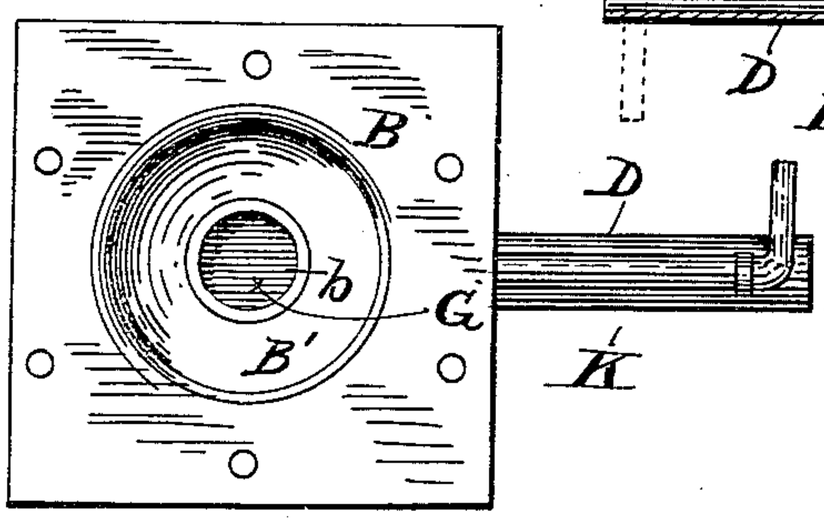
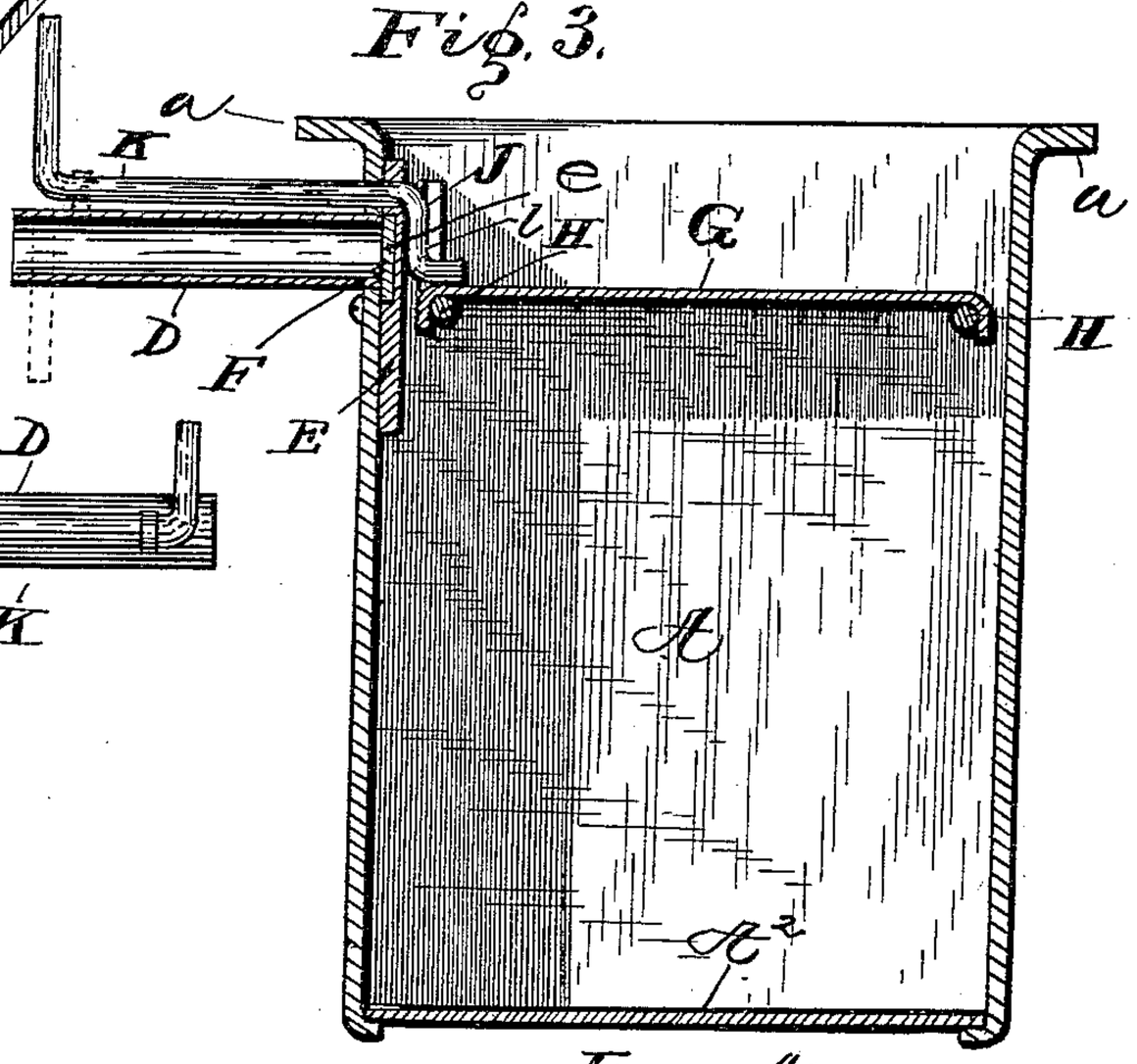


Fig. 3.



Witnesses,
L. A. Minturn
Carl Schlegel

Inventor,
Griffith W. Williams,
By Joseph A. Minturn
Attorney.

UNITED STATES PATENT OFFICE.

GRIFFITH W. WILLIAMS, OF INDIANAPOLIS, INDIANA.

TWYER-IRON.

SPECIFICATION forming part of Letters Patent No. 620,686, dated March 7, 1899.

Application filed April 25, 1898. Serial No. 678,722. (No model.)

To all whom it may concern:

Be it known that I, GRIFFITH W. WILLIAMS, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Twyer-Irons, of which the following is a specification.

This invention relates to improvements in twyer-irons for blacksmiths' forges in which a strong current of air from the bellows or blower is discharged upwardly into the fire through an opening in the bed-plate, upon which the fire is built. Heretofore the opening has been partially closed by a grate-bar or by a ball fitted loosely to allow the air to pass up and to keep the coals from falling down; but the formation of clinkers too large to pass through the orifices has occasioned great annoyance by choking the openings and stopping the blast. The coal is used in a coked condition and the blast is strong enough to sustain the coal without any grate-bars or other support than the bed-plate affords, while also allowing the heavier cinders to drop down out of the way, and no special construction other than a suitable opening in the bed-plate would be required were it not that the draft is frequently stopped, upon which occurrence the whole fire would be dropped.

The object of this invention is to provide a closure for the opening in the bed-plate for the air-blast and a valve to open and close the air-supply pipe from the blower, which work together, whereby when the valve is closed the closure will always be under the draft-opening to support the coals of the fire.

The object also is to provide a twyer-iron in which the controlling-levers are equally accessible from the right or left side of the forge, whereby the necessity of making right and left patterns will be obviated.

I accomplish the objects of the invention by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of the body portion of my twyer-iron with the top or bed plate removed and showing the walls of the body broken away to show the inside construction. The view also shows the bottom plate partly withdrawn. Fig. 2 is a vertical section on a plane through the dotted line 2 2 of Fig. 1. Fig. 3 is a vertical section on a plane passing through the longitudinal axis of the pipe through which the draft is admitted to the twyer-iron, and Fig. 4 is a plan view of the twyer-iron.

Similar letters of reference indicate like parts throughout the several views of the drawings.

A represents the four-sided body portion of the twyer-iron, which will preferably be of cast-iron. It will have the outside flange *a* around the upper edge, with holes *a'*, whereby a cast-iron cover or bed-plate B will be bolted to the body portion or base A. The base A will be provided with a sliding bottom A^2 to permit the cinders and ashes from the fire which will be deposited inside of the hollow base to be dumped and readily removed by withdrawing said bottom. The platform B will be provided with a centrally-cupped portion B', with an opening *b* through the bottom of said cupped part, all of which is of well-known and usual construction. The twyer-iron will be suspended from the flange *a*, which will rest on any suitable and usual construction of brickwork or the like and the blacksmith's fire will be built on the platform over the cupped opening *b* in the usual manner.

D is the air-blast pipe which communicates with the interior of the twyer-iron below the platform B and is connected at its outer end with a blower of any well-known and suitable construction (not shown) and through which pipe the air-blast for the fire is admitted to the twyer-iron. To shut off the blast, I provide a block E, which I secure to the inside wall of the body A opposite the mouth of the pipe D. This block has an opening through it which corresponds in size and position with the opening of the pipe, and it also has a recess *e* on the side next to the wall A extending the full width of the block in length and being in width somewhat greater than the diameter of the opening in the pipe D. This recess *e* forms a way for the plate F, which when pushed in will shut off the opening to the pipe and stop the draft and when drawn out will allow free discharge of air into the twyer-iron. When the draft is on, the air forces its way up through the opening *b* to the fire and is strong enough to keep the coals from dropping down through the opening, but not to

hold up the heavy clinkers, which drop down by their extra weight through the opening *b* into the hollow body A.

To support the coals when the air-blast is shut off, I provide a sliding plate G, which will be moved under the opening *b* simultaneously with the cutting off of the air-blast. The body A has the two inside parallel transverse bars H, which form guides and supports for the plate G. This plate is shown in Figs. 1 and 2 in position to leave the opening *b* unobstructed because of the cut-away portion *g*, but when moved in the direction of the arrows as far as it will go the plate will be in position to close the opening *b*. The ends of the plate are bent down to engage and keep the plate on the bars or guides H. The synchronal movement of the valve-plate F and the plate G is provided by bending the end of the plate F in to form the lateral extension *f*, which is inserted between the two lugs *g'* and g^2, cast on the upper side of the plate G, and the movement of the whole mechanism is secured by the crank J on the inner end of the rocker-shaft K, which shaft is mounted longitudinally and centrally of the pipe D on the upper side of said pipe and is projected through and terminates inside of the twyer-iron with said crank J. The end of the crank works in the yoke L, formed by the two upwardly-projected parallel and adjacent arms *l*, which are preferably integral with the plate G. The outer end of the shaft K is bent up to form a hand-lever M, which is equally accessible from either side of the forge.

Having thus fully described my invention, what I claim as new, and wish to secure by Letters Patent of the United States, is—

1. A twyer-iron having an opening under the fire-pot for the upward passage of an air-blast and free downward discharge of clinkers and heavy waste products of combustion, a valve to shut off the air-blast and a second valve separable from the first and working on a separate slideway to close the opening under the fire-pot, a separate slideway for said second valve, and means for synchronizing the movements of the two valves whereby the opening under the fire-pot will be accomplished simultaneously with the cutting off of the air-blast, substantially as described and specified.

2. A twyer-iron having a four-sided body portion with a laterally-projected air-blast pipe located near the top and approximately midway between the side edges of the body, said body having a removable top and bottom, the top being the platform on which the fire is built and having a downwardly-cupped middle portion with an opening through the bottom of the cupped part, a pair of horizontal guide-bars on the inside of the body of the twyer-iron and a slideway opposite the mouth of the blast-pipe, a horizontal plate having reciprocating movement on the guide-bars, a vertical plate having reciprocating movement in the slideway, said vertical plate having actuating means connected with the horizontal plate, and a rocker-shaft mounted longitudinally above the air-blast pipe and having an inner cranked end engaging the horizontal plate and a hand-lever at its outer end all substantially as described and specified.

3. The combination with a twyer-iron having a horizontally-reciprocating plate to close the draft-opening under the fire-pot and a valve having actuating means connected with the plate to open and close the air-supply pipe, an air-supply pipe and a platform with an opening over which the fire is built, of a shaft for changing the position of the horizontal plate said shaft being located near the upper end of the twyer-iron approximately midway between the adjacent sides of the body of the iron whereby the shaft can be operated from either side of the forge, substantially as described and specified.

In witness whereof I have hereunto set my hand and seal, at Indianapolis, Indiana, this 22d day of April, A. D. 1898.

GRIFFITH W. WILLIAMS. [L. S.]

Witnesses:
JOSEPH A. MINTURN,
CARL SCHLEGEL.