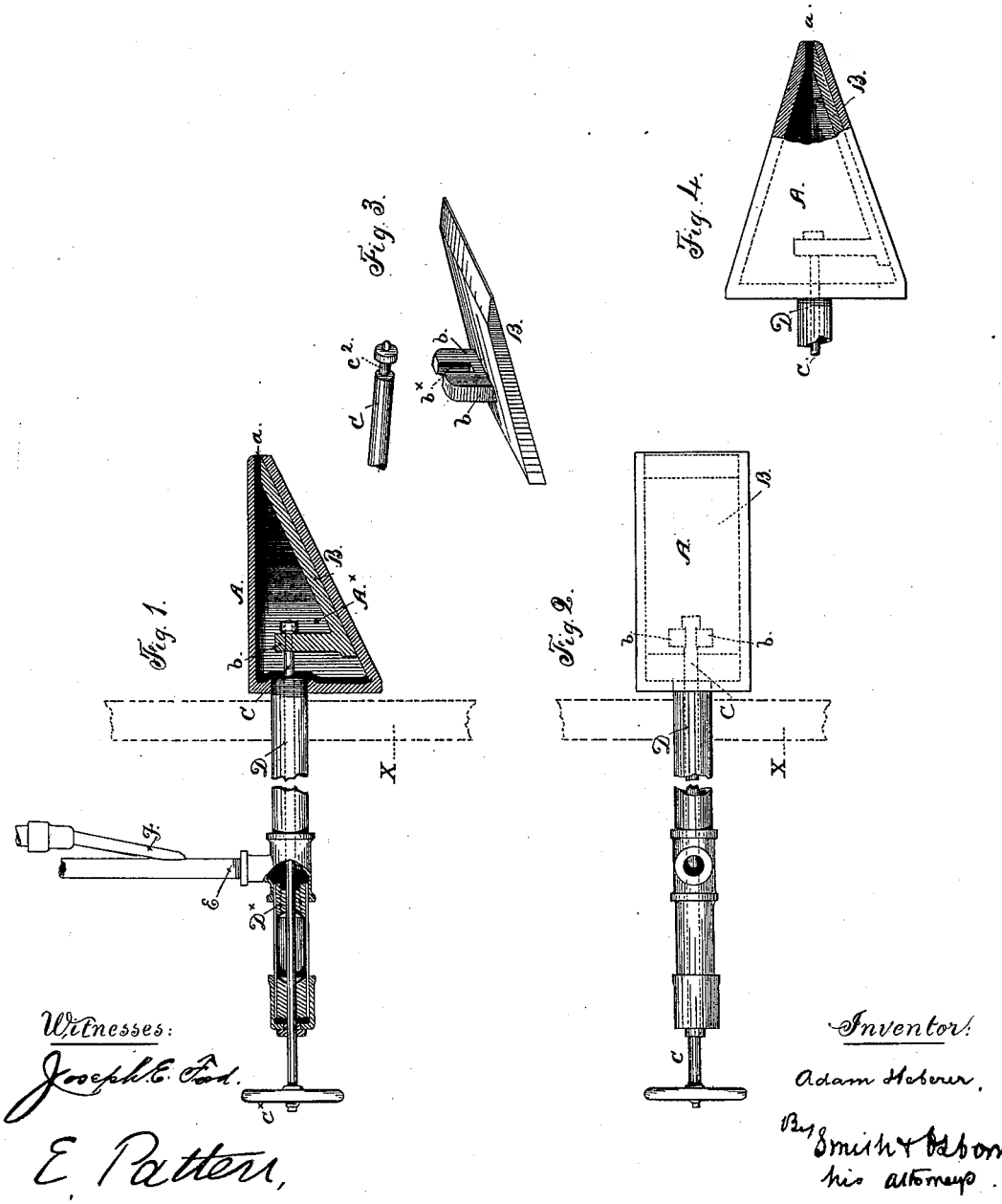
(No Model.)

A. HEBERER.

HYDROCARBON BURNER FOR FURNACES.

No. 384,524. Patented June 12, 1888.



Witnesses:
Joseph E. Ford.
E. Patten,

Inventor:
Adam Heberer.
By Smith & Gibson.
his attorneys.

UNITED STATES PATENT OFFICE.

ADAM HEBERER, OF ALAMEDA, CALIFORNIA.

HYDROCARBON-BURNER FOR FURNACES.

SPECIFICATION forming part of Letters Patent No. 384,524, dated June 12, 1888.

Application filed July 22, 1887. Serial No. 245,034. (No model.)

To all whom it may concern:

Be it known that I, ADAM HEBERER, a citizen of the United States, residing in the city of Alameda, in the county of Alameda and State of California, have invented certain new and useful Improvements in Hydrocarbon-Burners for Furnaces; and I do hereby declare that the following is a full, clear, and exact description of my said invention, reference being had to the drawings that accompany and form part of this specification.

My invention relates to an improved liquid-hydrocarbon burner for furnaces; and it has for its object to produce a burner having the property of throwing a broad sheet of liquid of various degrees of thickness and to secure certain advantages in point of economy in the consumption of fuel and freedom from noise when in operation. To such end and purpose I construct and produce a burner substantially in the following manner, with a broad flat body having a liquid space or chamber that is deepest at the back end and terminates at the front end in a slit or narrow opening of the width of the chamber. One side of this opening is formed of the edge of a sliding plate, which, being moved forward or drawn back in the chamber, acts to reduce or to enlarge the opening, and a shaft attached at the end of the sliding plate and extending through the supply-tube to the outside serves for adjusting the plate and regulating the area of the outlet.

The following description explains this construction and the manner of applying the burner for operation, the drawings being referred to by figures and letters, and corresponding parts being indicated by similar letters in the several views.

A is the body of the burner, and $A^{\times}$ the chamber or space into which the liquid fuel is injected from the source of supply outside the furnace through a tube, D, and the pipes E F, one of these pipes leading from the oil-reservoir above and the other being a steam-pipe. Suitable valves or cocks for controlling the oil and steam are provided in these pipes, and the oil-reservoir is placed at such height above the burner that the necessary head or pressure is obtained. The chamber $A^{\times}$ is rectangular in form at any point of cross-section or of uniform width from back to front; but its area from back to front regularly decreases, so that it terminates in a narrow opening or slit, *a*, of full width. This form is produced by giving the burner a triangular shape and either by inclining the bottom or both top and bottom sides from the back toward the front end, as shown in Figs. 1 and 4.

B is the sliding plate, and C is the rod or shaft by which it is moved and set on the inclined bottom of the chamber. The end of the shaft is formed with a portion of smaller diameter than the shaft and has a nut or head on it, so that the neck c^2 thus formed may fit into the slot $b^{\times}$ between the two lugs *b b* on the top face of the plate. The shaft extends through the supply-tube D and has a hand-wheel, $C^{\times}$, on the outer end, which when turned produces longitudinal movement of the shaft, this being effected through the medium of a screw-threaded nut or collar, $D^{\times}$, fast on the shaft and working in a threaded sleeve within the tube. By the movement of the sliding plate thus produced the front end, which is beveled to form an edge or face parallel with the opposite wall or face of the chamber at the opening, is set up toward or is drawn away from such opposite face and the area of the opening is changed accordingly. Fig. 3 shows the form and manner of attaching the sliding plate above described.

In the drawings referred to, Figure 1 represents a burner constructed according to my invention, with the chamber and sliding plate in vertical longitudinal section and the supply-tube partly broken away. Fig. 2 is a top view, and Fig. 3 is a perspective view, of the sliding plate removed from the chamber. Fig. 4 illustrates the burner formed with the top and bottom sides inclined toward each other.

In placing the burner for operation it is set to throw the fuel in a sheet or thin broad body across the fire-space and against a deflecting-plate at the back in the manner at present followed with hydrocarbon-burners of other constructions, and the supply-tube, being carried through the front wall of the furnace, is connected with the oil and steam pipes, which are united just above the point of connection. When these substances are let into the tube,

they mingle and pass together into the chamber of the burner, and are thence ejected in a broad flat body or sheet across the furnace. The thickness of this body of liquid is varied by setting the sliding plate forward or back, while the form of the outlet under all such conditions of adjustment produces a broad fan-like sheet of flame, spreading from the end of the burner forward.

In addition to the advantage in obtaining economical use of fuel with this burner, it will be found to be comparatively noiseless in operation.

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

The herein-described burner, consisting of the body A, having vertical and parallel sides, flat top, and inclined bottom, producing a chamber, $A^{\times}$, of triangular form longitudinally, provided with a broad narrow outlet, *a*, the plate B, set to slide upon the bottom of chamber $A^{\times}$, with beveled front edges, the setting-shaft C, and the supply-tube D, having connection for steam and oil pipes, constructed for operation as herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand and seal.

ADAM HEBERER. [L. S.]

Witnesses:

CHAS. E. KELLY,

C. W. M. SMITH.