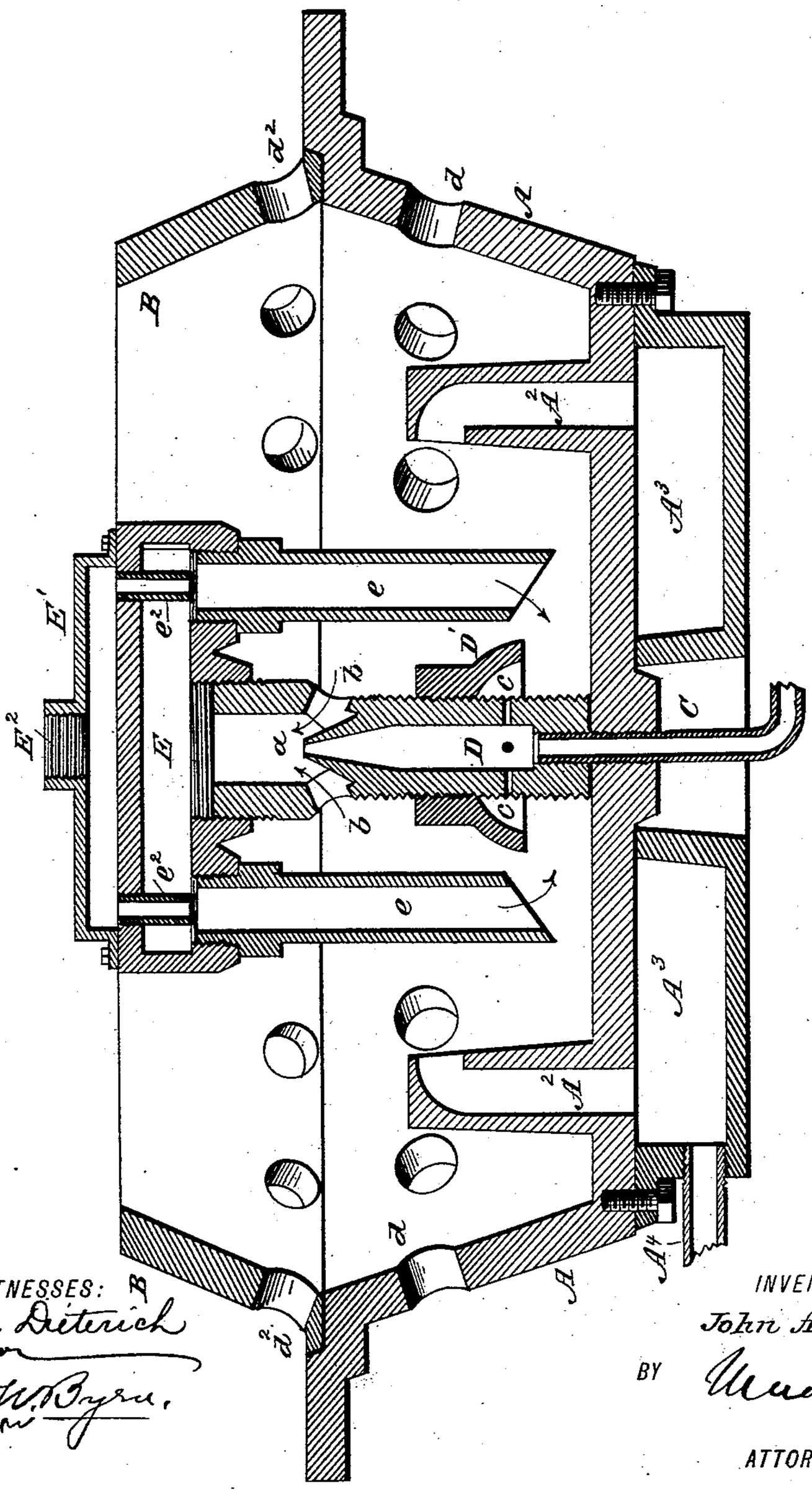
(No Model.)

J. ADAMS.

HYDROCARBON BURNER.

No. 427,946. Patented May 13, 1890.



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HYDROCARBON-BURNER.

SPECIFICATION forming part of Letters Patent No. 427,946, dated May 13, 1890.

Application filed May 21, 1889. Serial No. 311,533. (No model.)

To all whom it may concern:

Be it known that I, JOHN ADAMS, of Nashville, in the county of Davidson and State of Tennessee, have invented a new and useful Improvement in Hydrocarbon-Burners, of which the following is a specification.

In another application for a patent for a hydrocarbon-burner, filed November 21, 1888, Serial No. 292,353, I have shown and described a form of hydrocarbon-burner adapted for domestic uses and intended to be set inside the fire-pot of an ordinary heating-stove.

My present invention is designed to adapt that form of burner to a wider range of use where it is desirable to establish a forced draft by compressed air or steam; and it consists in certain modifications of the structure of that burner, in combination with additional devices forming attachments, which I will now proceed to describe, with reference to the drawing, which shows a vertical central section of the improved burner.

A represents a cast-iron pan, which is made of a size to fit conveniently in the fire-pot of the stove or furnace, and adapted to rest upon the grate-bars or about the horizontal plane thereof. The pan has sides that flare outwardly, and are provided with a series of holes *d*, forming air-inlets. On top of this pan there rests a ring or shell B, open at its upper end and tapering to a smaller diameter at the top and provided with air-holes d^2. Through the center of the pan A there rises an oil-pipe C, which is intended to be provided with a valve, and communicates with an oil-reservoir, placed in an elevated position. On the end of the oil-pipe C, in the bottom of the pan, there is screwed the burner-tube D, which stands in a vertical position. The lower portion of this burner-tube is screw-threaded on the outer surface and has a bell-shaped flange D′ screwed onto the same, and has a series of outlet-holes *c* for oil just below the flange. Just above the bell-shaped flange the chamber in the tube converges to a small throat *a*, and opposite this point are air-inlet holes *b*. Still farther up, the tube is exteriorly screw-threaded, and upon the same is detachably screwed a cap-chamber E, having downwardly-opening tubes *e*, extending nearly to the bottom of the pan. As so far described, the construction does not differ materially from that shown in my previous case.

The operation of these parts is as follows: Oil from the reservoir being admitted through pipe C, it rises up in tube D and flows through holes *c* into the pan, where it is ignited. The flame from this oil gradually heats the burner until the oil rising within the tube becomes volatilized as fast as it is fed. A portion of the vapors issuing through the holes *c* into the pan becomes mixed with the air that passes in through holes *d* d^2 in the side of the pan and ring and fills the pan with flame, which is concentrated against the burner and thrown down into the bottom of the pan by the bell-shaped flange D′. Another portion of the vapor rising swiftly through the contracted throat *a* in the burner-tube draws in air through the openings *b*, and rising into the cap-chamber E becomes thoroughly mixed and heated in the same to a high degree, and finally issues through the tubes *e* and burns in downwardly-directed jets of perfect combustion and intense heat.

In order to adapt my burner to a forced draft of air or steam, I form the bottom of the pan A with vertically-projecting tubes A^2, which open toward the central burner-tube, and to the bottom of the pan is bolted an annular blast-chamber A^3, receiving air or steam under pressure from a blower through the inlet-pipe A^4. By this construction of pan and attachment a forced blast is introduced into the pan toward the central burner, which greatly stimulates the combustion. On top of the cap-chamber E, I also bolt a blast-chamber E′, which receives compressed air or steam from an inlet E^2, and directs it through nozzles e^2 down the tubes *e*. These nozzles e^2 are very necessary features in this connection, in order to prevent the blast from producing a back-pressure down in the central burner-tube.

Having thus described my invention, what I claim as new is—

1. The combination of pan A, having holes *d*, and upright tubes A^2 rising from the bottom of the pan and opening inwardly, the central burner D, with downwardly-directed tubes *e e*, and the annular blast-chamber A^3,

bolted to the under side of the pan A and communicating with tubes A^2, substantially as shown and described.

2. The combination, with a central burner having a surmounting cap-chamber with downwardly-opening tubes, of a blast-chamber arranged above the cap-chamber and provided with nozzles directing the blast down the downwardly-pointing burner-tubes, substantially as shown and described.

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Witnesses:
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