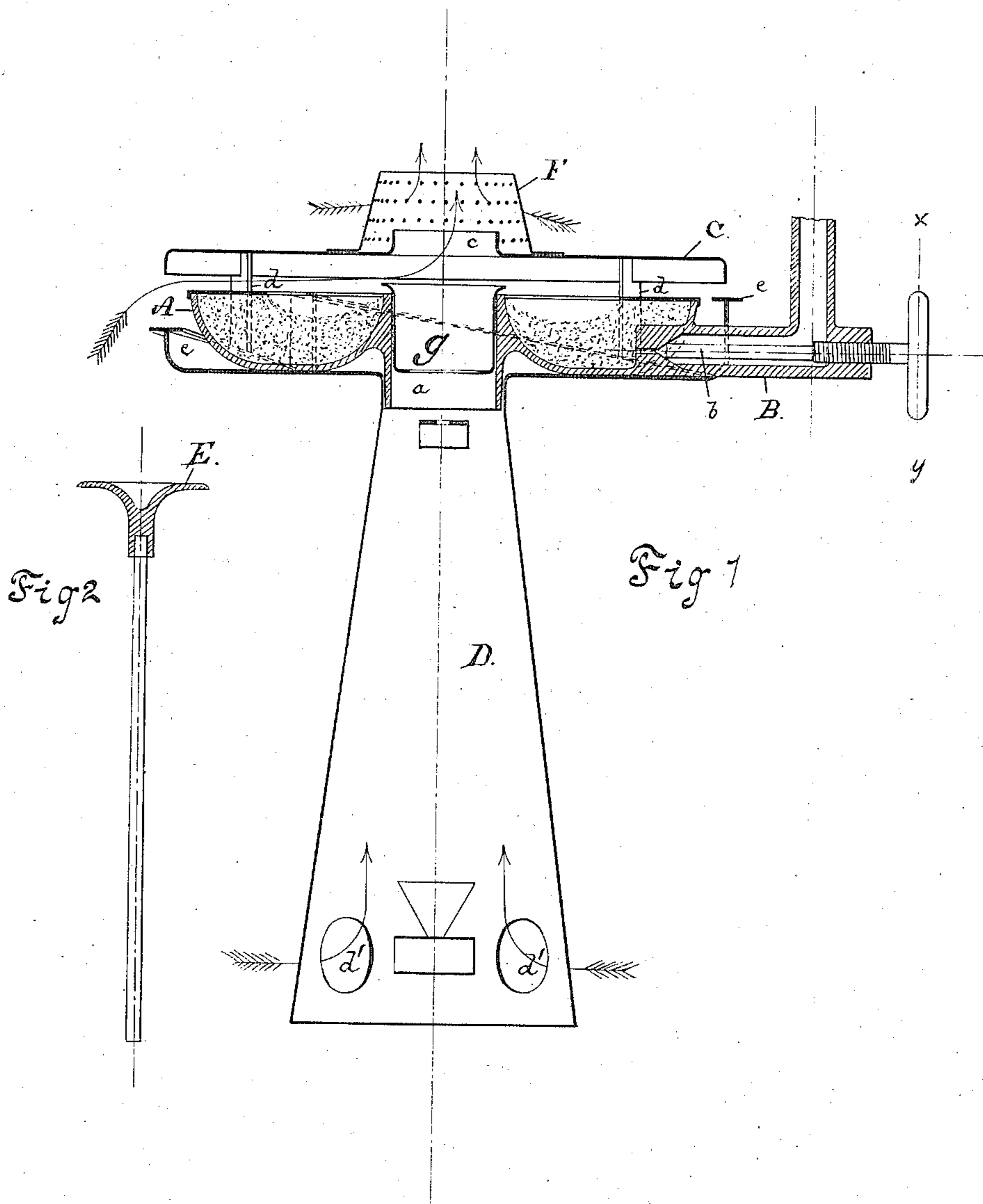


(No Model.)

J. DONALD.  
Hydrocarbon Burner.

No. 241,125.

Patented May 10, 1881



WITNESSES

Herman Moran.  
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# UNITED STATES PATENT OFFICE.

JAMES DONALD, OF CLEVELAND, OHIO.

## HYDROCARBON-BURNER.

SPECIFICATION forming part of Letters Patent No. 241,125, dated May 10, 1881.

Application filed March 9, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES DONALD, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Hydrocarbon-Burners; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to hydrocarbon-burners for use in lamps, oil-stoves, or for the purpose of generating steam; and it consists in so constructing a burner that the hydrocarbon-oil may be consumed without the use of a chimney and still give a clear bright flame which emits no smoke or odor.

In the drawings, Figure 1 is a longitudinal sectional view of my burner, showing the interior construction of the same and the manner of supplying the flame with air. Fig. 2 is a sectional view of a valve which is used in burners of the larger size and serves to regulate the supply of air to the interior of the flame.

A is a circular metallic cup or vessel provided with a central opening, *a*.

B is an inlet-pipe which enters the lower part of the cup A and serves to supply the said cup with oil. This pipe B is provided with a valve, *b*, for regulating the supply of oil to the cup A.

C is a circular plate, which is provided with an opening, *c*, in its center, which extends slightly above the surface of said plate.

*d d* are legs or supports attached to the plate C.

*e e* are inclines upon which the legs *d d* rest, and which serve to raise or lower said plate C, thus supplying more or less air to the flame through the opening between the cup A and plate C.

D is a conical-shaped flue, which is provided at its lower end with openings *d'*, and serves as a means for supplying the interior of the flame with air.

In larger burners, such as are used for the purpose of generating steam, I provide a valve, E, which regulates the quantity of air to be admitted to the interior of the flame.

*g* is a concentrator or commingling-chamber, which is provided with an annular projection on its lower extremity. This concentrator *g* is placed in the central opening of the cup A, as shown in the drawings, but it may be cast as part of said cup, if desired.

F is a perforated cap, which may be placed around the opening *c*, and serves as a means to limit the supply of air to the outside of the flame after it has left the central opening, *c*, in the plate C, and may be used or not, at the will of the operator.

The operation of my device is as follows: The cup or vessel A being filled with a refractory substance, such as ashes, asbestos, &c., the valve in the supply-pipe B is opened, and the oil flows through it into the cup or vessel A and is absorbed by the substance in said cup. A lighted match being applied to the opening in the plate C the gases escaping from the oil are ignited, the flame spreading over the whole surface of the substance in the cup A, and the air, being drawn in through the opening between the cup A and plate C, forces the flame through the opening in said plate C, which, in turn, causes a central draft through the flue D, the air being admitted to the interior of said flue by means of openings in its lower end. This flue D is made conical in shape. My reason for this is to cause the air to be compressed as it is drawn through said flue until it strikes the projection on the concentrator. It is then let free and expands in said concentrator, thus causing the air to commingle freely with the gases and produce a perfect combustion.

The valve E, which I use in larger burners, is placed below the concentrator *g* in such a manner that as it is raised the air is drawn through the space between the outer rim of the valve *e* and its seat under the concentrator *g*; hence the quantity of air to be admitted to the interior of the flame may be regulated by raising or lowering said valve.

Any suitable means may be employed for raising or lowering the valve E.

What I claim is—

1. In a hydrocarbon-burner, the combination of the cup A and plate C, substantially as and for the purpose shown and described.

2. In a hydrocarbon - burner, the combination of the cup A, plate C, and flue D, substantially as and for the purpose shown and described.

5 3. In a hydrocarbon - burner, the combination of the cup A, plate C, flue D, and concentrator *g*, substantially as and for the purpose shown and described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES DONALD.

Witnesses:

ALBERT L. LORD,  
ALBERT E. LYNCH.