

G. L. MOODY.
ANNULAR PETROLEUM BURNER.

No. 61,632.

Patented Jan. 29, 1867.

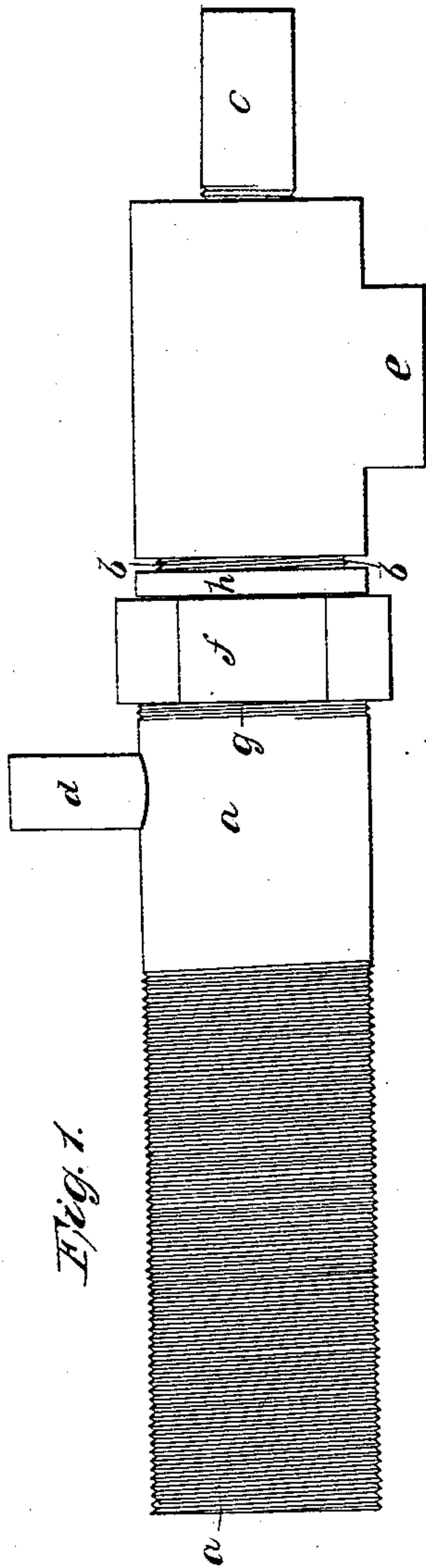


Fig. 1.

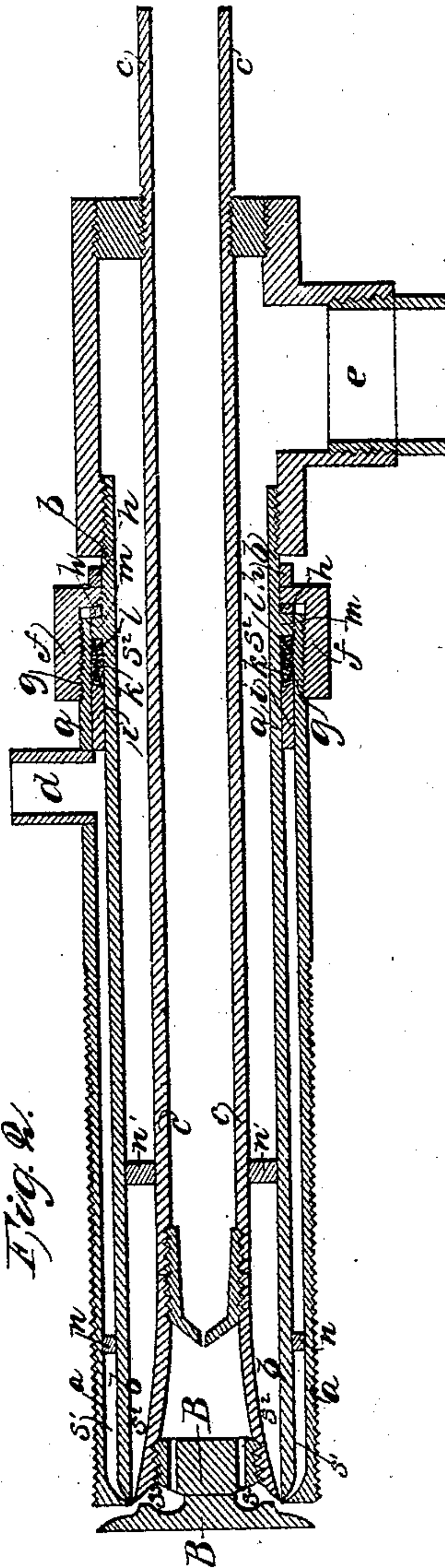


Fig. 2.

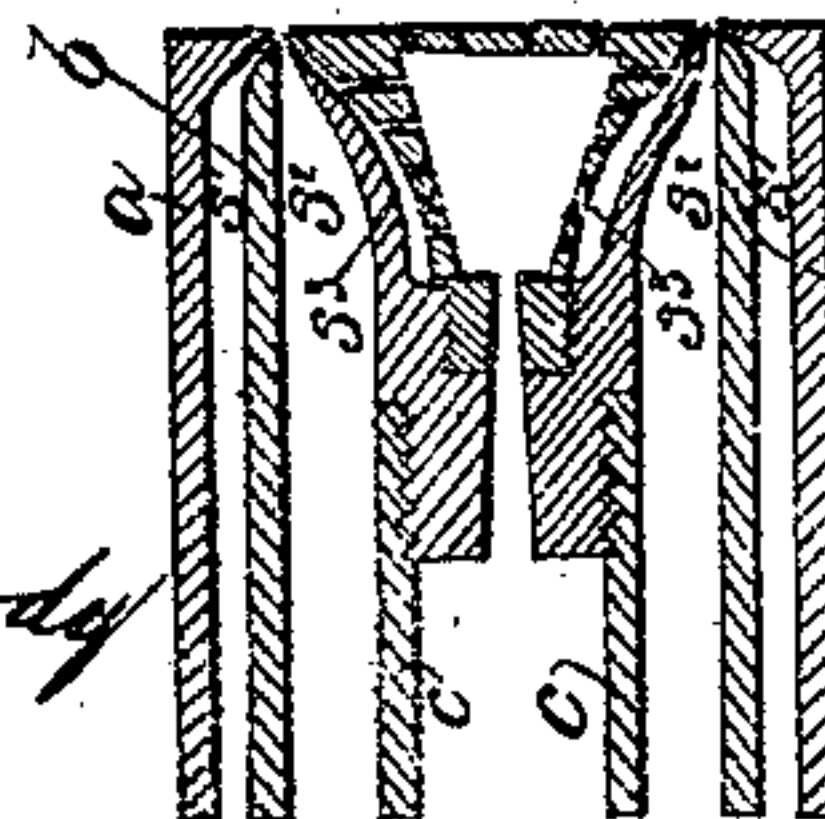


Fig. 3.

Witnesses:

Theodore L. Moody
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Inventor:

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UNITED STATES PATENT OFFICE

GEORGE L. MOODY, OF NEW YORK, N. Y.

ANNULAR PETROLEUM-BURNER FOR HOT AIR, STEAM, AND HYDROCARBON FLUIDS.

Specification forming part of Letters Patent No. 61,632, dated January 29, 1867.

To whom it may concern:

Be it known that I, GEORGE L. MOODY, of the city, county, and State of New York, have invented a new and useful Improvement for Burning Hydrocarbons for Generating Steam by the Means of an Annular Petroleum-Burner; and I do hereby declare the following to be a full and exact description of the same, reference being had to the accompanying drawings, which form a part thereof, and in each of which like letters represent like parts.

Figure 1 represents the outer appearance of the burner alone disconnected from the supply-pipes and from the boiler. Fig. 2 represents the longitudinal section of the burner with the addition of a button, B B. Fig. 3 represents another form of orifice for the discharge of superheated steam in connection with the orifices of discharge of the oil and of heated air, in which D D is a perforated hollow receiver, from which the apertures *o o o o* discharge through it and into *s³ s³*.

The nature of my invention consists, first, in the total and economical combustion of petroleum-oil, or a hydrocarbon fluid under pressure, in such a manner as to leave no residuum, and make no smoke without subjecting the hydrocarbon to a temperature which will volatilize it, or consume any portion of it before its arrival in a fire-box or furnace, where the oil is first ignited with a torch or match, and heated air is forced through a concentric pipe which discharges under pressure close to the oil-orifice. Superheated steam is at the same time discharged through another concentric pipe close to this orifice, so as to mingle with the oil or hydrocarbon. Combustion takes place with some noise, arising from a continuous series of light detonations. This result is not so fully attained where the burner is straight.

The quantity of each of the elements is graduated either by an adjustable orifice or by stop-cocks in the supply-pipe, or by both.

The oil-orifice may be axial or exterior. Any of the orifices may be used for the discharge of either of the elements.

These burners may be arranged to discharge their flame at any point inside the fire-box, and may be applied to locomotive or stationary boilers (as well as to the various purposes

where an intense heat is required) by first tapping the boiler with a thread to fit one on the outside of the burner, or by putting short tubes through the boiler-plates and screwing the pipe through this tube, which likewise acts as a brace.

In Fig. 2 of my drawings, *a a* represent the outer pipe; *b b*, the second pipe, separated from *a a* by the annular space *s¹ s¹*.

c c represents a third concentric pipe, (separated from *b b* by the annular space *s² s²*), through which superheated steam is supplied to the space *s³ s³*, which is a third annular space between the button B B and the continuation of the pipe *c c*.

B B represents a button used for making the steam-orifice annular.

d represents the pipe which supplies the hydrocarbon to the space *s¹ s¹*; *e*, the pipe supplying hot air to the space *s² s²*.

f represents a nut working, by a thread, *g*, on the pipe *a*, attached to the pipe *b* by the rings *h h*, which prevents any but an axial motion on the pipe *b*. By turning this nut the orifice formed by *a b* is adjusted, opened, or closed.

The concentric parallel motion of *b* is secured by the guides *n n n* and the fixed ring *i*.

k represents the packing; *l*, the follower, held in place by *m*, on which a thread is cut.

To operate this burner, let on the oil through *d*. Ignite it in the fire-box or furnace. Soon the hot-air blast (the air being heated from waste heat) may be applied, and shortly the superheated steam. If another boiler is near, the heated air and steam may be taken from that fire.

The amount of oil, hot air, and superheated steam may be regulated as is found necessary.

In Figs. 1 and 2 a thread is shown cut upon the outside of the pipe *a a*, for screwing through the outer and inner shells of the boiler, or for screwing into a hollow brace or tie.

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

1. The burning of petroleum or a hydrocarbon fluid by injecting it into a fire-box or furnace in an annular form, so that all the components are consumed, leaving no residuum

and making no smoke, substantially in the manner above set forth.

2. The adjustable orifice through which the oil is discharged, made substantially in the manner and for the purpose above described.

3. The mechanical combination and arrangement of the different concentric pipes for the discharge of heated air, superheated steam,

and oil or a hydrocarbon fluid with the adjustable orifice, as a whole, and its application substantially in the manner and for the purposes herein mentioned.

GEORGE L. MOODY.

Witnesses:

THEODORE L. MOODY,
E. D. BOYD.