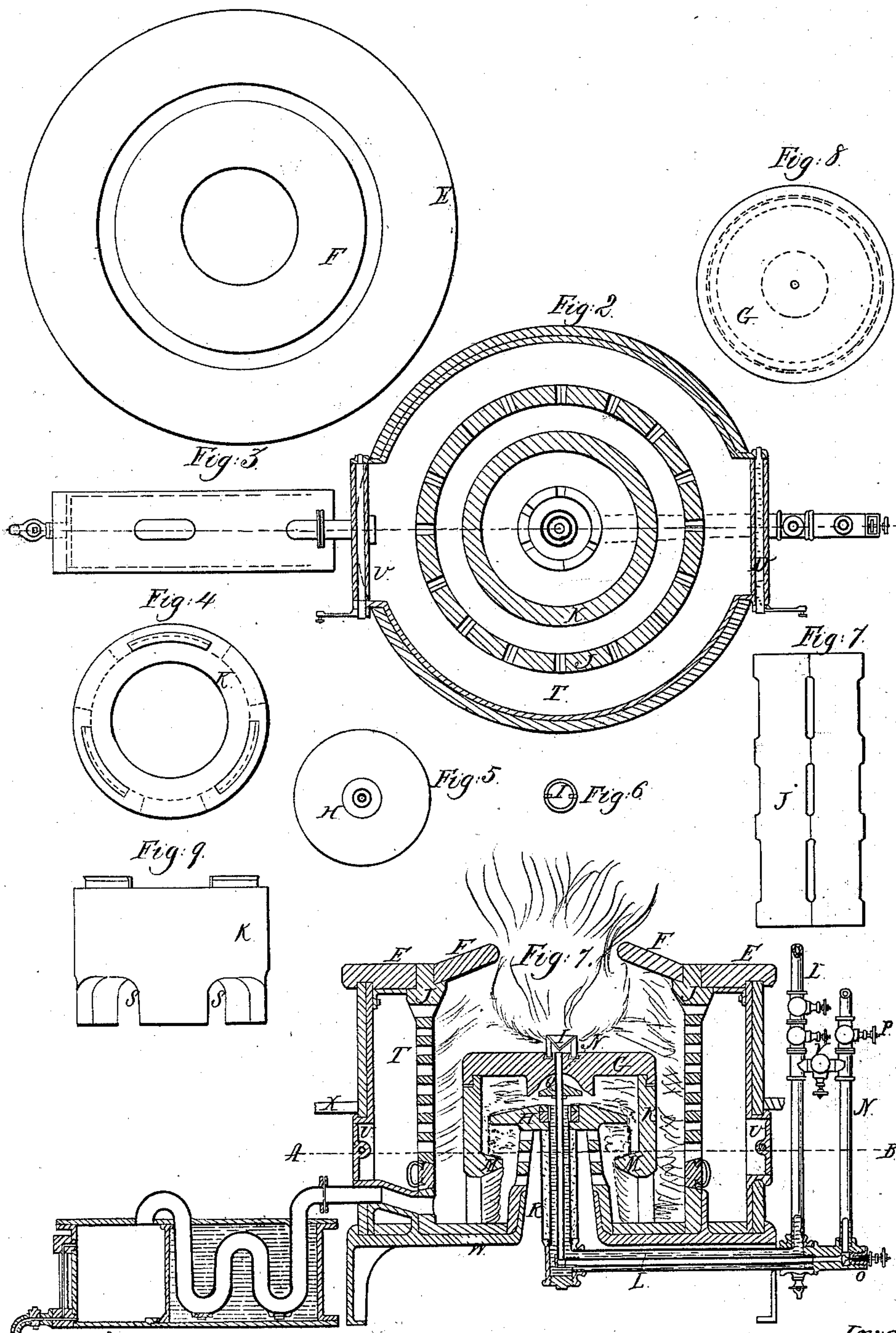


F. Cook,
Burning Hydrocarbon.
N^o 68,702. *Patented Sep. 10, 1867.*



Witnesses: *J. M. Bassett*
Edw. T. Brown

Inventor:
F. Cook

UNITED STATES PATENT OFFICE.

FREDERIC COOK, OF NEW YORK, N. Y.

IMPROVED APPARATUS FOR VAPORIZING AND BURNING LIQUID HYDROCARBONS.

Specification forming part of Letters Patent No. 68,702, dated September 10, 1867.

To all whom it may concern:

Be it known that I, FREDERIC COOK, of the city, county, and State of New York, have invented a new and useful Improvement in Apparatus for Vaporizing and Burning Liquid Hydrocarbons; and I do hereby declare that the following is a full, clear and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 represents a cross-section through line C D, Fig. 2. Fig. 2 is a horizontal section through line A B of Fig. 1. Fig. 3 is a top view of plates E F. Fig. 4 is a top view of the inverted chamber K. Fig. 5 is a top view of air-pipe H. Fig. 6 is a top view of the spreader I. Fig. 7 is a side view of staves J. Fig. 8 is a top view of the cover G. Fig. 9 is an outside view of the inverted chamber K.

Similar letters of reference indicate like parts in all the figures.

By the apparatus shown and described in this application petroleum and other hydrocarbon liquids are burned in a furnace of peculiar construction under the best conditions for mixing its gases with air and making perfect combustion.

The petroleum passes down from a tank set above the combustion-chamber through the oil-pipe L, in which are stop-valves, and flows from the top of the oil-pipe over the plate H. From thence any portion not evaporated falls to the projection *m* and to the bottom of the retort, burning as it falls.

N is a steam-pipe having valves to regulate supply. The lower one, O, is used as a regulator only, and the upper one, P, to start and stop the steam.

The steam-pipe passes through the oil-pipe, and heats the oil, whereby the vapors of the oil, which pass off at the temperature of the steam, are first evolved, and assist in the combustion of the heavier oils which flow over the top of the oil-pipe.

A small quantity of steam is admitted above the oil at Q, which mixes with the gases from the oil and the air supplied by the air-pipe R.

The oil-pipe L is surrounded by another pipe, and a space left between, which is filled with any suitable non-conductor to protect the oil-pipe from alternations of temperature.

The burning gases descend by the draft of the furnace, passing through the openings S, and rise round the chamber K in the annular

space between it and the main sides J of the furnace, which are formed of a series of fire-brick staves.

I construct this portion in this way in order to allow the joints to open and shut, and provide for expansion and contraction.

Around the main retort is an air-box, T, formed of thin metal covered with fire-tile. This air-box has dampers U to admit or shut off air which enters through the perforated tiles J and mixes with the flames.

F is a deflector-plate to deflect the flames against the steam which issues from the top of the steam-pipe N, where it strikes against the spreader I and makes a thorough mixture of the steam with the flames.

The valve V is for the purpose of opening a connection from the steam-pipe N to the oil-pipe L, and blowing out the same to free it of impurities without stopping the fire.

The whole retort stands on an iron bed-plate, W, and at X is a hearth extending entirely across fire-bed of the furnace over the air-dampers U, answering the double purpose of excluding the air from the fire-box of the boiler and causing it all to enter through the combustion-chamber, and protects the lower portion of the apparatus from the heat of the fire in the fire-box of the furnace.

Having thus fully described the nature of my invention, what I claim therein as new, and desire to secure by Letters Patent, is—

1. The steam and oil pipes L and N, having the connecting-valve V, for the purpose specified.

2. A combustion-chamber for burning liquid hydrocarbons, made of fire-clay or its equivalent, in sections or staves, in the manner and for the purpose as shown and set forth.

3. The inverted chamber or hood K, when arranged for the purpose and in the manner shown.

4. In an apparatus for burning liquid hydrocarbons, the arrangement, respectively, of the steam-pipe L and oil-pipe N, for the purpose of volatilizing the lighter portions of the oil by the heat of the steam.

FREDERIC COOK.

Witnesses:

J. A. BASSETT,
EDM. F. BROWN.