Cook & Bassett,

Burning Hydrocarbon.

No. 68,708. Patented Sep. 10, 1867.

Fig. 1.

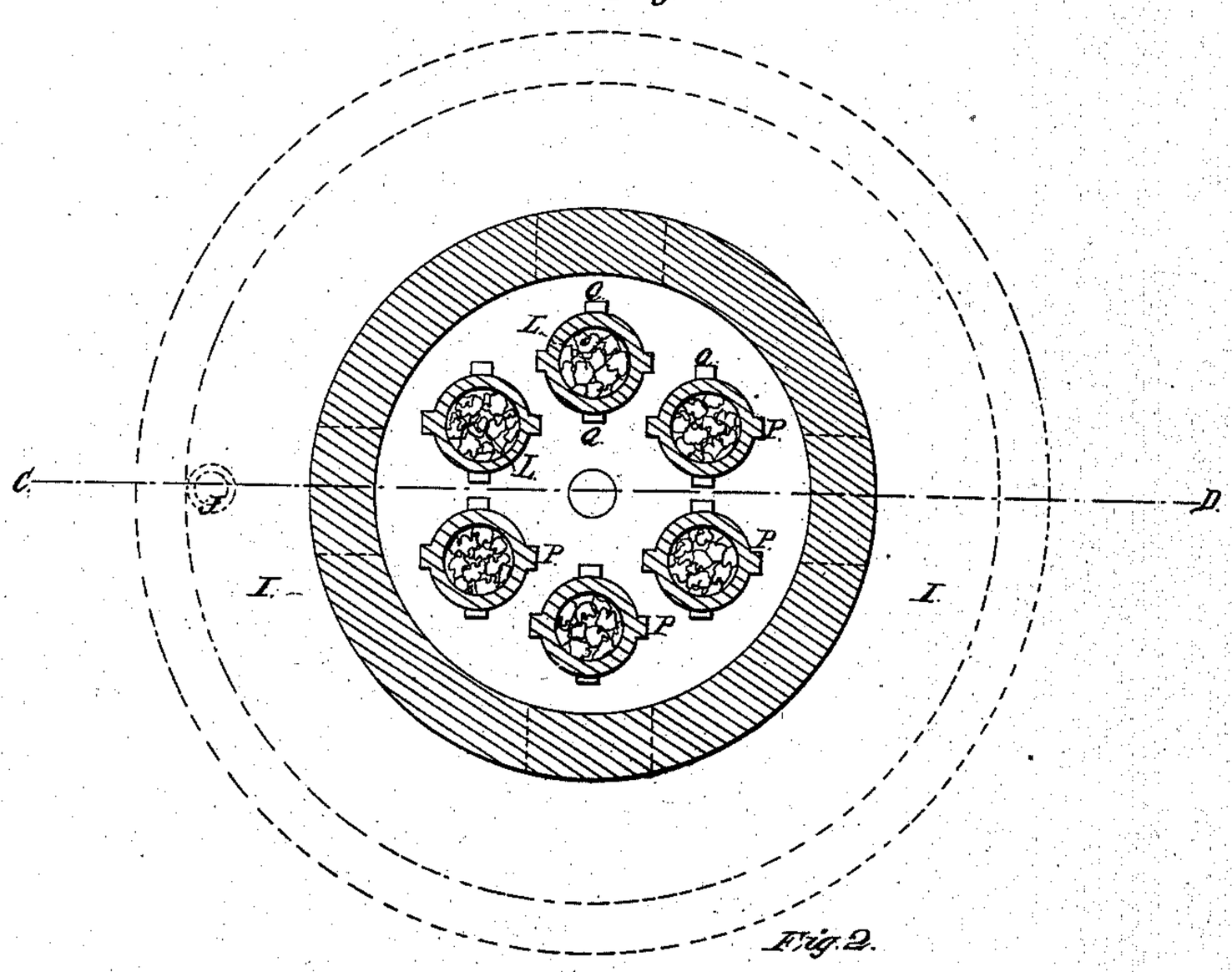
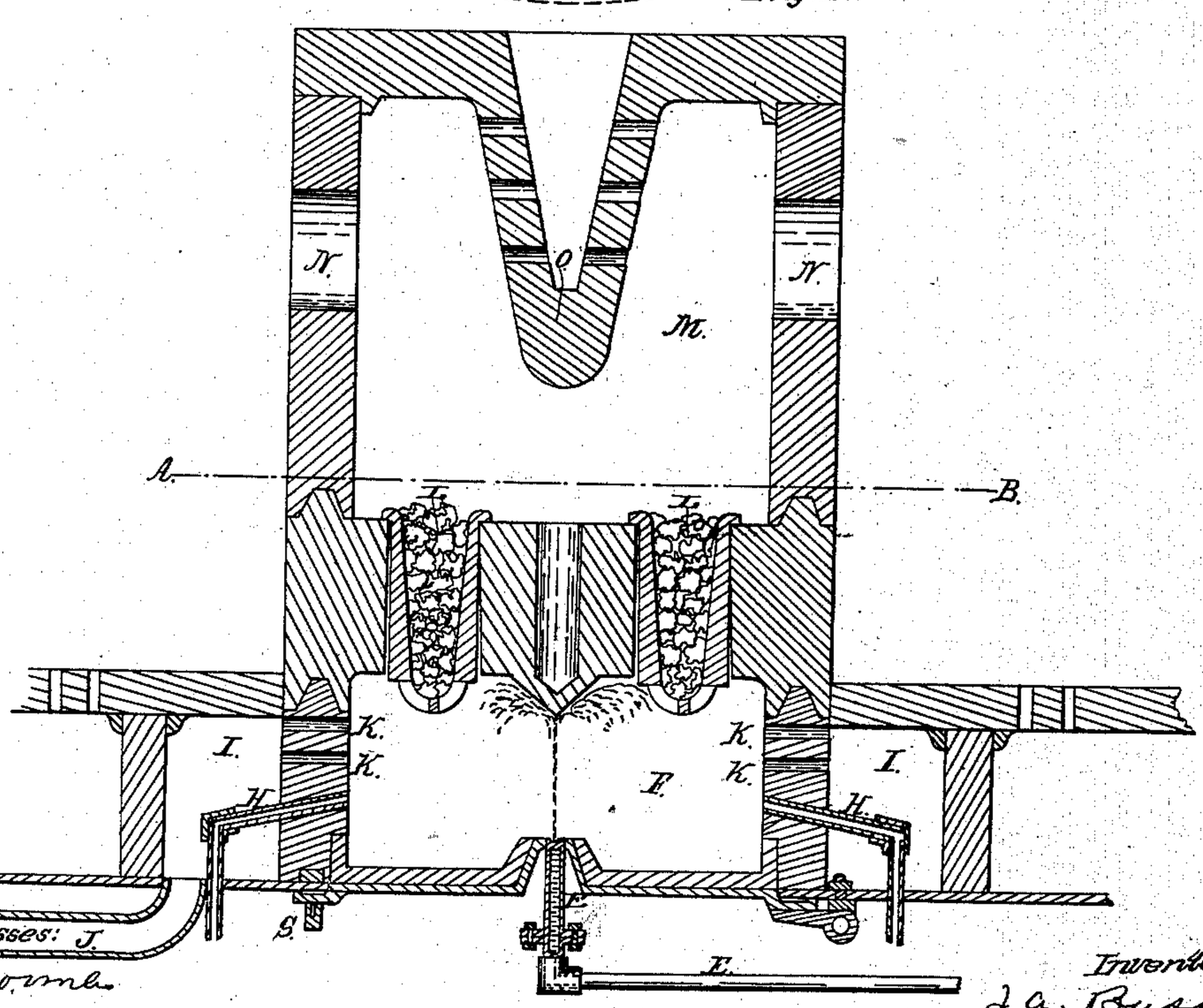


Fig. 2.



UNITED STATES PATENT OFFICE.

FREDERIC COOK, OF NEW YORK, N. Y., AND JOHN A. BASSETT, OF SALEM, MASSACHUSETTS.

IMPROVED PROCESS OF VAPORIZING AND DECOMPOSING HYDROCARBON LIQUIDS IN THE PRESENCE OF STEAM.

Specification forming part of Letters Patent No. **68,708**, dated September 10, 1867.

To all whom it may concern:

Be it known that we, FREDERIC COOK, of the city, county, and State of New York, and JOHN A. BASSETT, of Salem, in the county of Essex and State of Massachusetts, have invented a new and useful Process for Vaporizing and Decomposing Hydrocarbons in the Presence of Steam; and we do hereby declare the following to be a full description of the same, referring to the annexed drawings—

Figure 1 of which is a horizontal section through line A B, Fig. 2. Fig. 2 is a vertical section through C D, Fig. 1.

Similar letters of reference indicate like parts in both figures.

The nature of our invention consists in decomposing the vapors of hydrocarbon oils, and combining therewith the products of the decomposition of steam, the steam being decomposed upon red-hot carbon, and the vapors of the oil being eliminated simultaneously with the decomposition of the steam. Both are passed through the red-hot carbon, and the resultant gases may be used for the production of heat and light.

In the arrangement shown and described this process is applied to a furnace for the production of heat, the decomposed gases being used as fuel.

In all the methods heretofore shown for burning oils as fuel, in which steam is used, no provision has been made for the thorough decomposition of the steam.

In the burning of a substance containing so large a proportion of easily-eliminated carbon it is desirable to provide it with a proper quantity of non-luminiferous gases, such as carbonic oxide and hydrogen, both of which are obtained by decomposing the steam upon red-hot carbon, and readily mix with and dilute the rich gases from petroleum and other oils, so that thorough combustion, without smoke, may ensue, and the equivalent of the heating value of the oil obtained as near as possible.

The oil to be decomposed is supplied, under pressure, in any suitable manner, through the oil-pipe E. It enters, as shown, the lower portion of the retort F and strikes against the heated tile-surface G, where it is partially vapored and ignited.

The steam is admitted through pipes H on each side of the retort. I is an air-box all round the retort, into which air is forced through the pipe J. The forced air passes through the perforations K into the lower chamber of the retort.

The mixture of burned and unburned gases, steam, and air is made to pass through the retorts L, which are filled with coke or other form of carbon, and kept incandescent, and by which the steam is thoroughly decomposed. The flames fill the chamber M and pass out through the holes N.

O is a hollow perforated cone of fire-clay, suspended from the top of the furnace, which, becoming highly heated, aids in the perfect combustion of the gases.

The retorts L are so arranged as to drop to the bottom by means of the catches P, which, when turned opposite the slots Q, fall to the bottom of the chamber. R forms the bottom of the retort, arranged on hinges to drop down, and fastens by the pin and key S.

The coke will require renewing from time to time as it is decomposed by the steam.

The size of the retorts should be made to correspond proportionately with the size of the furnace, and we prefer to make them in the form shown, whereby the height is greater than the area, for the purpose of causing the steam to pass through a long vertical section of highly-heated carbon, and by which the steam is fully decomposed.

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

1. In an apparatus for decomposing hydrocarbon oils with steam, we claim the arrangement and construction of the apparatus shown, having the several parts or their equivalents arranged and operating together in the manner and for the purpose specified.

2. The process herein described whereby hydrocarbon oils and steam are decomposed simultaneously into gases, and used in the production of heat, as set forth.

FREDERIC COOK.
JOHN A. BASSETT.

Witnesses:
JOS. L. COOMBS,
T. C. CONNOLLY.