

## Gas-Retorts.

No. 156,853.

Patented Nov. 17, 1874.

Fig. 1.

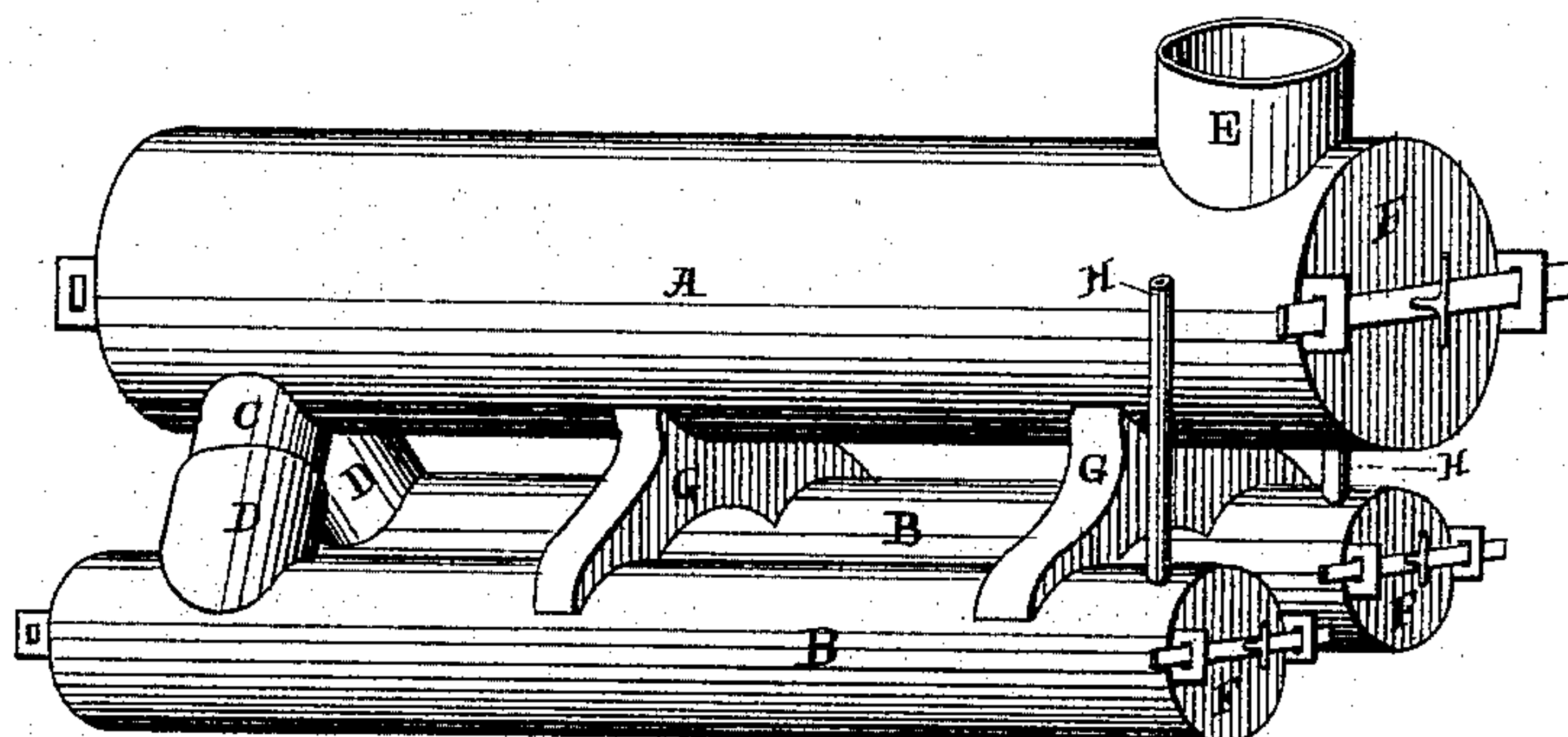
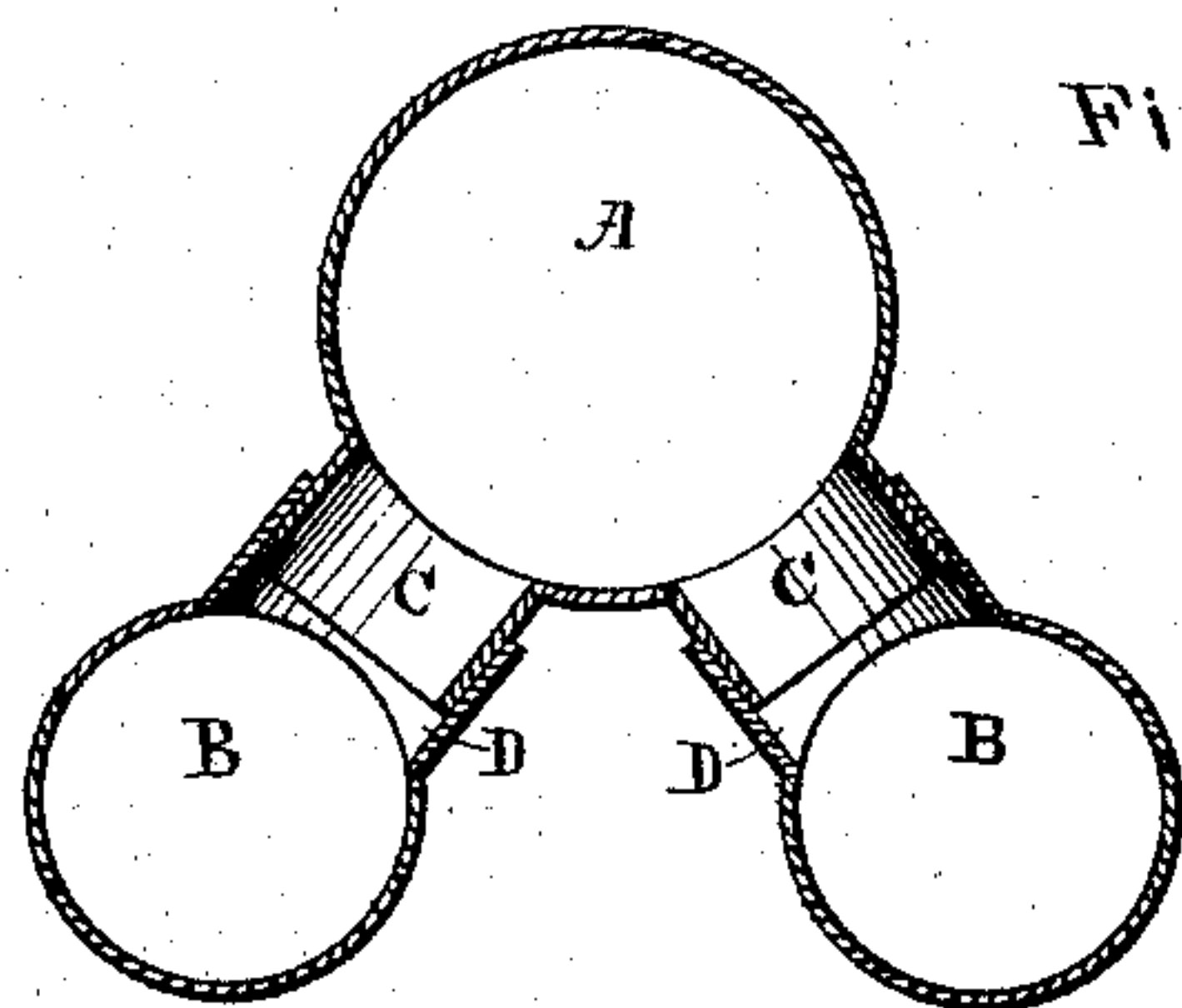


Fig. 2.



WITNESSES:

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## IMPROVEMENT IN GAS-RETORTS.

Specification forming part of Letters Patent No. **156,853**, dated November 17, 1874; application filed September 16, 1874.

*To all whom it may concern:*

Be it known that I, WILLIAM H. LUCE, of Erie, in the county of Erie and State of Pennsylvania, have invented an Improved Retort for Manufacturing Illuminating-Gas from Petroleum or other Hydrocarbons, of which the following is a specification:

The nature of my invention consists in providing a retort for the manufacture of illuminating-gas from petroleum or other hydrocarbons, the said retort to be composed of separate chambers of different temperature. Each of said chambers are to be distinct from the others, and have its entire surface exposed to the heat, whereby a larger amount of heating-surface is secured.

My device is illustrated in the accompanying drawing, as follows: Figure 1 is a perspective view; and Fig. 2 is a transverse section taken through the connecting-pipes which join the separate chambers.

The drawings illustrate a retort with three chambers, two small ones and one large one. The small chambers I designate as the heaters, and the large one the superheater, for the furnace is so constructed that the chamber A (the superheater) receives the greatest heat. The oil or other substance from which the gas is to be converted is admitted to the chamber B B, where it is vaporized. If oil is used it is admitted through the pipes H H. The chambers A and B B are made of cast metal. They are cylindrical in form, and are open at their ends. The cylinders B B have each a branch pipe, D, and the cylinder A has two branch pipes, C C, at one end, and one, E, at the other end, all of which are placed in substantially the position shown. The branches C C are so constructed as to enter those, D D, on the cylinders B B. (This is shown best in Fig. 2.) These parts, when placed in position, as shown, are cemented with russ, forming a tight and fire-proof joint. When these parts are thus connected the three chambers are in position, and proper communication is established. Trusses G G are placed between the small and large cylinders to properly sustain them in position, as shown. The ends of the cylinders are sealed up by heads F F in any

convenient and secure manner. The branch pipe E leads from the superheater to the purifying department.

As before stated, the oil, when oil is used, enters the heaters through pipes H H. These pipes should be placed at the opposite end of the heater from the communication-pipe C D. The oil in the cylinders B B becomes vaporized, and decomposition undoubtedly commences; but the vapor quickly passes to the superheated chamber, and then the work of decomposition immediately begins, and is completed, and the gas passes off through E to be purified, &c.

As will be readily seen the form and construction of my device are such that each chamber has its whole surface perfectly heated. The heat in each chamber is uniform, and there is a larger amount of heating-surface to each chamber than could be obtained by any other form. Another object of this form of constructing that class of retorts, in which there are more than one chamber, is that, being independent, there can be no cracking apart of the chambers by the expansion and contraction of the material of which they are made, caused by the excessive heat to which they are subjected.

Another object in having the chambers distinct is that the furnace can be so arranged as to heat one or more of the chambers more or less than the others, thus enabling me to have a superheated chamber, as described.

A result obtained by my form of constructing a retort is economy of fuel. There being such an amount of heating-surface, and it so brought in contact with the fire, as described, less fuel is required to produce a given amount of heat within the chambers.

What I claim is as follows:

The combination of the receiving-chambers B B, detachable cemented connections D C, and superheater A, as shown, and for the purposes mentioned.

WILLIAM H. LUCE.

Witnesses:

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