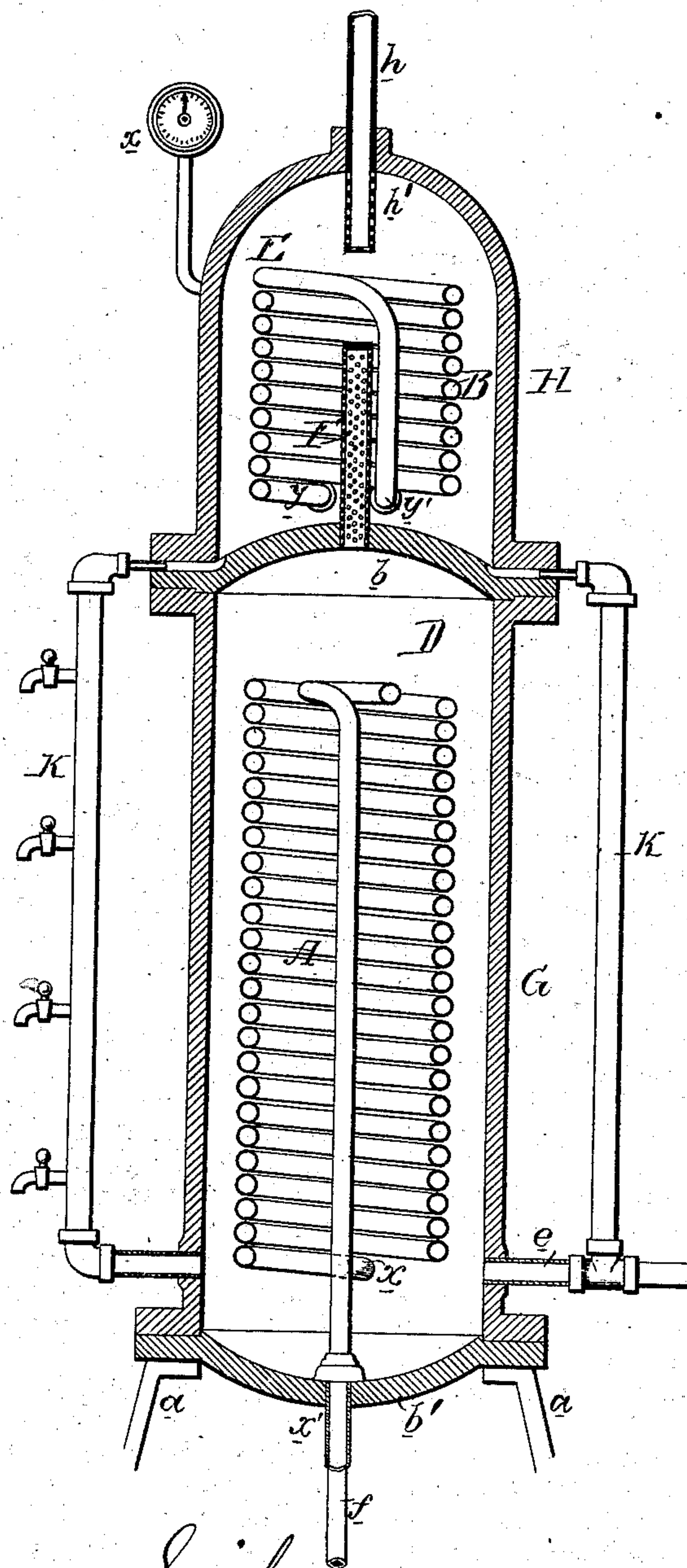


W. H. BURR.

Apparatus for Making Hydrocarbon Gas.

No. 152,596.

Patented June 30, 1874.



Witnesses, Harry Smith  
John K. Rupertus.

William H. Burr  
By his attys  
Horsman and Son.



# UNITED STATES PATENT OFFICE.

WILLIAM H. BURR, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO  
HIMSELF AND EDWARD B. ENGLISH, OF SAME PLACE.

## IMPROVEMENT IN APPARATUS FOR MAKING HYDROCARBON GAS.

Specification forming part of Letters Patent No. **152,596**, dated June 30, 1874; application filed  
May 14, 1874.

*To all whom it may concern:*

Be it known that I, WILLIAM H. BURR, of Philadelphia, Pennsylvania, have invented an Improved Apparatus for Vaporizing Hydrocarbons, of which the following is a specification:

My invention relates to improvements in that class of apparatus for vaporizing hydrocarbons for which Letters Patent No. 132,800, granted to myself and Edward B. English on the 5th day of November, 1872, affords an example; and the objects of my invention are to simplify and reduce the cost of that apparatus, to prevent leakage, and to obtain a more perfect vaporization of the hydrocarbon, which objects I attain by the use of steam heating-coils A and B, in both the oil and vapor chambers D and E, and by causing the partially-vaporized hydrocarbon to pass from the former chamber into the latter through perforations in a pipe, F, which is surrounded by the upper heating-coil B, all as fully described hereafter, and as shown by the figure in the accompanying drawing, which represents a sectional elevation of the improved apparatus.

The apparatus is mounted upon legs *a*, and consists mainly of a cylindrical flanged casing, G, having heads *b* and *b'*, and of a drum, H, surmounting the said casing, the interior of the latter constituting the hydrocarbon-chamber D, and that of the drum the vapor-chamber E. The hydrocarbon is conducted into the chamber D through a pipe, *e*, and may be drawn off, when necessary, through a pipe, *f*, in the lower head, *b'*, of the casing. The heating-coil A extends nearly from the top to the bottom of the chamber D, the steam entering through a branch, *x*, at the side of the casing, and escaping by a branch, *x'*, which extends through the head *b'*. The upper coil, B, also occupies nearly the whole interior of the vapor-chamber E, and has inlet and outlet branches *y* and *y'*, which extend through the side of the drum. Communication is established between the chambers D and E by the perforated pipe F, which extends upward into, and is entirely surrounded by, the coil B, and the said cham-

bers also communicate with each other through two return-tubes, K, which extend from the base of the drum nearly to the bottom of the casing G. These tubes prevent any accumulation of condensed hydrocarbon in the upper chamber, and one of them is also provided with gage-cocks, by which the height of the liquid in the lower chamber may be readily determined.

The operation of the apparatus is as follows: The lower chamber is filled, or partially filled, with hydrocarbon, which is heated by the steam in the coil A, and the vapor which is thus rapidly formed passes under considerable pressure through the perforations of the pipe F, by which it is thoroughly diffused and brought in contact with the heated surface of the surrounding coil B, the latter superheating and preventing the condensation of the hydrocarbon, which, in the form of a highly rarefied and ignitable gas, escapes from the chamber E through a pipe, *h*, and is conducted thence to the point or points at which it is to be utilized for heating or illuminating purposes.

The too rapid outward passage of the gas from the superheating-chamber E is prevented by causing it to pass through perforations in an extension, *h'*, of the outlet-pipe *h*. The pressure of the gas in the chamber E may be determined by a gage, *x*.

I have found that by superheating the vapor in the upper chamber, and by the employment of coiled pipes instead of the rows of parallel tubes described in my aforesaid patent of November 5, 1872, I can not only produce a better gas, but considerably reduce the cost of the apparatus, and render it more durable and less liable to leak, as there are comparatively few joints.

I am aware that perforated steam-inlet pipes have been used with the domes of vaporizers to diffuse the steam therein, and I make no broad claim to the combination of the dome and perforated pipe.

I claim as my invention—

1. An apparatus for vaporizing hydrocarbon, in which are combined communicating chambers D and E, containing steam heating-

coils A and B, all substantially as and for the purpose specified.

2. The perforated pipe F, forming a communication between the hydrocarbon and vapor chamber D and E, and surrounded by a steam heating-coil, B, in the latter chamber, all combined substantially as specified.

3. The combination, with the dome and its outlet, of a pipe, *h'*, communicating with the

outlet, extending into the dome, and perforated, as set forth.

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

WILLIAM H. BURR.

Witnesses:

WM. A. STEEL,  
HARRY SMITH.