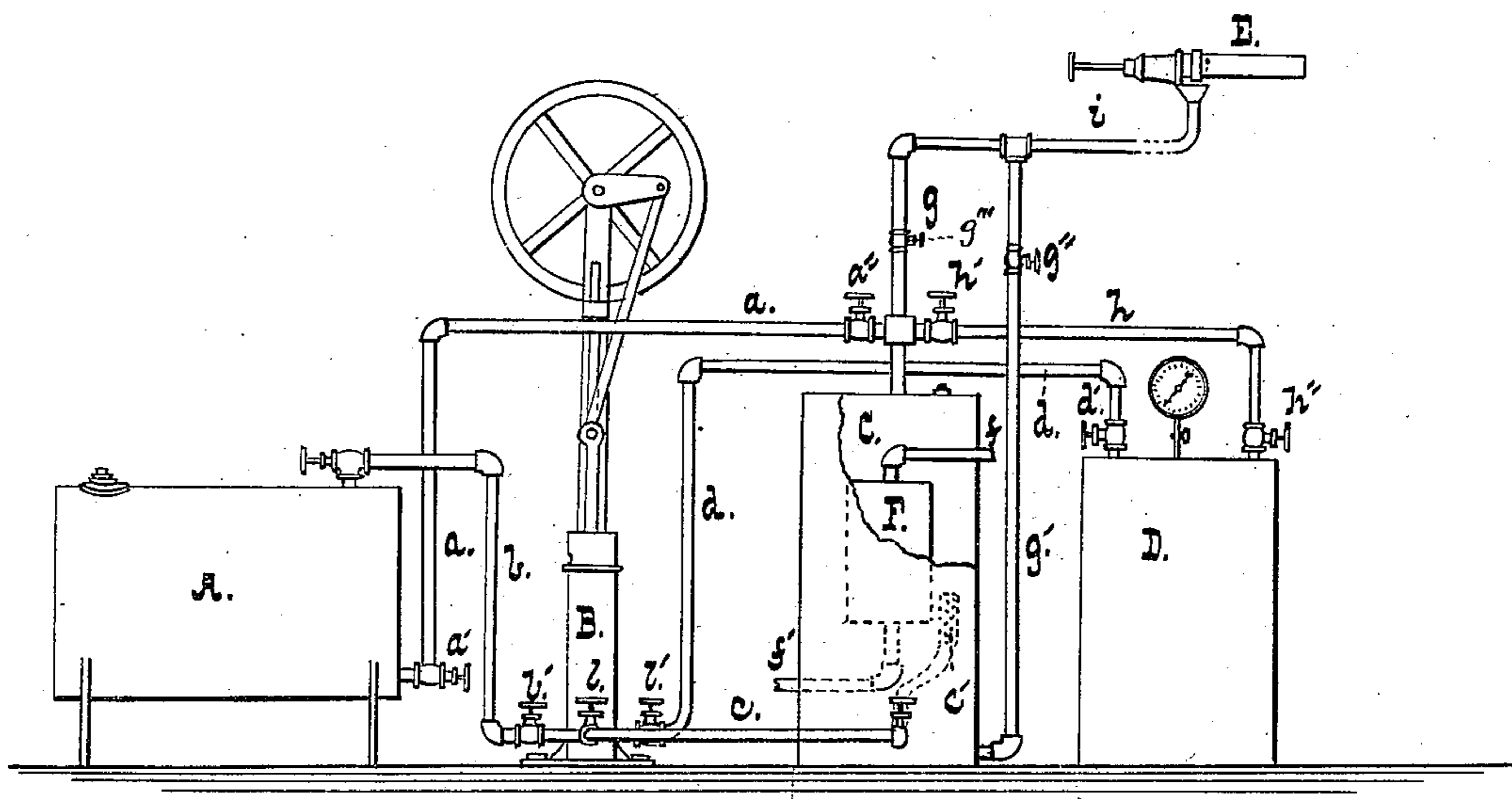


J. S. HULL.
Hydrocarbon Burner.

No. 241,219.

Patented May 10, 1881.



WITNESSES:

W. A. Bertram
Dea. J. H. Barclay.

INVENTOR

John S. Hull.

BY

R. W. Williams

ATTORNEY.

UNITED STATES PATENT OFFICE.

JOHN S. HULL, OF BALTIMORE, MARYLAND.

HYDROCARBON-BURNER.

SPECIFICATION forming part of Letters Patent No. 241,219, dated May 10, 1881.

Application filed March 11, 1879.

To all whom it may concern:

Be it known that I, JOHN S. HULL, of Baltimore city, State of Maryland, have invented certain new and useful Improvements in Hydrocarbon-Burners; and I hereby declare the same to be fully, clearly, and exactly described as follows, reference being had to the accompanying drawing, in which is illustrated, in side elevation, (partly in section,) an apparatus embodying my present invention.

My said invention relates to apparatus for burning hydrocarbons with a non-luminous or Bunsen flame; and it has for its object to produce an apparatus of that class in which facility is afforded for heating the burner preparatory to allowing the supply of gasoline or equivalent light hydrocarbon to flow thereto, and which is eminently adapted for use in connection with mechanism for soldering cans or other objects constructed of sheet metal, for brazing, and in connection with tinnerns' fire-pots, or for similar purposes in which it is a desideratum to have an intensely hot and non-sooting flame, and to have it at short notice and with little trouble.

In so called "self-generating gas-burners" the liquid hydrocarbon is vaporized in transit to the burner, which latter is first heated by means of a lamp or by burning a little gasoline in a cup under the burner. See, for instance, as showing burners of this class, my patents of April 20, 1880, No. 226,753, and November 9, 1880, No. 234,282. I refer to these patents here, moreover, as obviating in this instrument a detailed description of the burner E. This mode of heating the burner is open to evident objections. It is troublesome and tedious, and results in tarnishing and sooting the burner. I obviate this by providing, in connection with the supply-tank, an air-pipe communicating with the burner (by preference, leading into the oil-supply pipe) and arranged to deliver to the burner a supply of carbureted atmospheric air, which, being ignited, serves to heat the burner, so that upon cutting off the air-supply and feeding the oil to the burner the latter is caused to vaporize the oil.

Generically, therefore, my invention may be said to consist in the combination, with a vaporizing or self-generating gas-burner, of a gas-supply designed to effect the preliminary heat-

ing of the burner. Specifically, the invention consists in certain combinations of parts, as hereinafter set forth and claimed.

In the drawing, A is the tank for containing the oil-supply.

B is an ordinary condensing air-pump.

C is the supplemental oil-tank, and D the reservoir for compressed air.

The reservoir A is connected with the burner E by means of pipes *a*, *g*, and *i*, and with the pump by means of a pipe, *b*. The pump is connected with the reservoir C by a pipe, *c*, terminating in a rose, *c'*, within the reservoir, and has also a pipe, *d*, leading to the air-chamber D. The pipe *h* opens into the pipe *g*, as shown, and the latter is connected with the bottom of the reservoir *c* by means of a pipe, *g'*. The pipes *a b c d g g' h* are furnished with cocks *a' a'' a''' b' b' d' g'' g''' h' h''*, designed to cut off or open communication, as desired, between any two parts of the apparatus.

The reservoir C has within it a steam-drum, F, having outlet and inlet pipes *f f'*, whereby the gasoline within the tank may be vaporized if desired.

In operation, the tanks being charged with oil, the pump is work until the desired pressure is reached in the reservoirs A and D. The cocks *b'* and *l* being then opened, (the others remaining closed,) a supply of air is caused to bubble through the gasoline in the tank C, and becoming thereby carbureted flows through the pipes *g* and *i* to the burner E. Being there ignited the burner is quickly heated, when the gas-supply is shut off, and the cocks *a' a'' a'''* are opened, allowing the oil from the tank A to flow to the burner. As it enters the same it is vaporized, and, mingling with air which is fed through suitable openings in the burner, burns with an intensely hot flame.

It will be seen that each of the chambers A, C, and D is in direct communication with the other two and with the burner, and that all the connecting-pipes are furnished with cocks to set up communication as desired. Thus the supply of oil in the tank C may be fed directly to the burner through the pipe *g'*, the requisite air-pressure being gotten up by working the pump and delivering the air through the rose *c'*. By this means the working of the burner may be made continuous, as no time

need be lost in filling the tank A and compressing air therein.

By means of the steam-drum F a supply of hydrocarbon vapor may be fed to the burner, 5 to be used as the initial heating medium, or the generated gas may be utilized in lieu of compressed air to feed the oil through the pipe *g'* to the burner. The compressed air is, however, to be preferred, as being safer and more 10 certain in its operation. The drum F may, however, be used as a temporary expedient should the pump get out of order. The oil may be forced from the tank A into the tank C by opening the cocks *a' a''*, closing the cock *g'''*, 15 and operating the pump, whereby the air-pressure causes the oil to rise in the pipe *a* and pass thence into the tank C.

I am aware that a carburetor has been used in connection with a burner for volatilizing gasoline or equivalent hydrocarbon in transit to a 20 different burner, and such I do not claim.

What I claim is—

1. In combination with the burner E, an oil-tank having pipes leading from its top and bottom to the burner, and having an air-inlet pipe, 25 whereby a supply of carbureted air or of oil may be fed to the burner, as set forth.

2. In combination with the burner E, an oil-tank having an air-inlet pipe terminating in a 30 rose or equivalent air-distributing device, and pipes leading respectively from the top and bottom of the tank, and connected with the supply-pipe which leads to or supports the burner, as set forth.

35 3. In combination with the burner E, an oil-tank, a carburetor, and an air-chamber, each

in communication with the others, whereby a supply of gas or of oil may be delivered to the burner, as set forth.

4. In combination with the burner E, an air- 40 forcing device communicating directly with an air-chamber and with an oil-tank, and a carburetor in communication with all the said parts, as and for the purpose set forth.

5. In combination with the burner E, an air- 45 forcing device, and two supply-tanks, each in communication with the burner, the connecting-pipes being furnished with cocks for setting up or closing communication between the parts at will, as set forth. 50

6. In combination with the burner E and two supply-tanks, one of which is furnished with a rose, *c'*, an air-forcing mechanism, and pipes 55 connecting the two oil-tanks with each other and with the burner, as set forth.

7. In combination with the oil-chamber A and air-pump B, the carbureting-chamber C, burner E, and pipes *a, b, and c*, arranged and 60 operating as set forth.

8. In combination with the oil-chamber A, 60 pump B, and carburetor C, the air-chamber D, and pipes connecting each with the others, provided with cocks for setting up the various connections, as set forth.

9. In combination with the oil-chamber A, 65 pump B, and burner, the carburetor C, having rose *c'*, and the pipes *a b c*, as set forth.

JOHN S. HULL.

Witnesses:

WM. T. HOWARD,
GEO. D. BROOKS.