

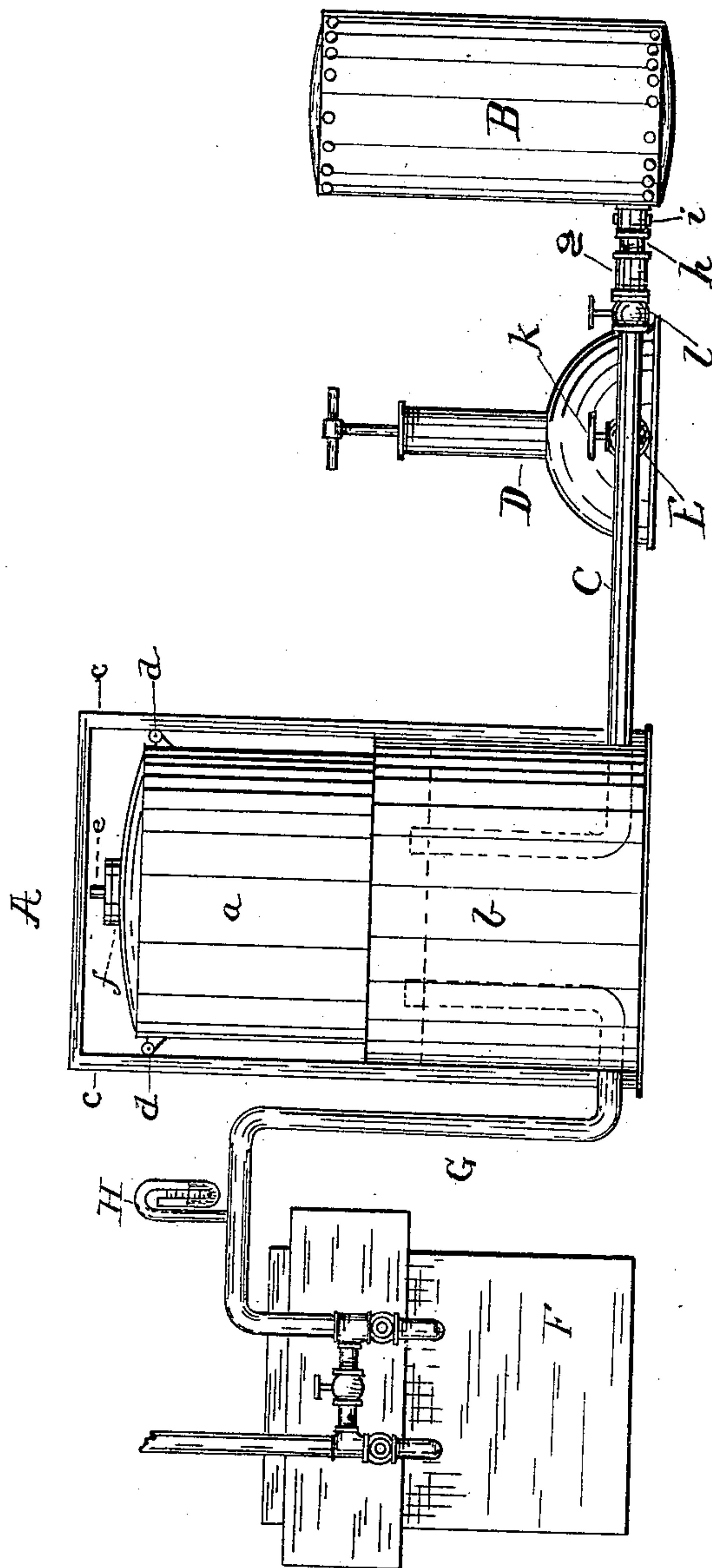
(No Model.)

R. S. LAWRENCE.

APPARATUS FOR MIXING AIR AND GAS AND DELIVERING THE
MIXTURE TO CARBURETORS.

No. 354,067.

Patented Dec. 7, 1886.



WITNESSES

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UNITED STATES PATENT OFFICE.

ROBERT S. LAWRENCE, OF WASHINGTON, DISTRICT OF COLUMBIA.

APPARATUS FOR MIXING AIR AND GAS AND DELIVERING THE MIXTURE TO CARBURETORS.

SPECIFICATION forming part of Letters Patent No. 354,067, dated December 7, 1886.

Application filed December 30, 1885. Serial No. 187,100. (No model.)

To all whom it may concern:

Be it known that I, ROBERT S. LAWRENCE, a citizen of the United States, residing at Washington, in the District of Columbia, have
5 invented certain new and useful Improvements in Apparatus for Mixing Air and Gas and Delivering the Mixture to Carburetors; and I do hereby declare the following to be a full, clear, and exact description of the invention, such
10 as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to apparatus for combining air and gas and for delivering this combined air and gas under pressure to carburetors, the invention having for its object the
15 production of mechanism for these purposes which can be economically used in localities where there are no gas-works.

Heretofore, so far as I am aware, carburetors in places not supplied with gas-works
20 have been employed to carburet air alone, and when thus used they have for some purposes given very satisfactory results. However, in practice I find that by admitting a mixture of
25 air and gas to the carburetor I obtain superior results in a gas better adapted for either lighting or heating purposes, and I have therefore devised an apparatus for producing this mixture and delivering it under pressure to the
30 carburetor, wherein I can utilize gas put up in portable vessels, it being well known that illuminating-gas under pressure in cylinders and bags is now transported from the works to distant places for consumption.

35 The drawing is an elevation of my apparatus connected with a carburetor.

Referring to the accompanying drawing, A represents a reservoir for holding mixed air and gas under pressure. This reservoir is
40 similar in construction to an ordinary gasometer, and comprises a tank, *b*, nearly filled with water, as denoted by the dotted line, a holder, *a*, slightly smaller in diameter than the tank, the upper end of the holder being
45 closed and its lower end open and immersed in the water in the tank, and a frame-work, *c*, outside the reservoir for guiding and steadying the holder (through friction-rolls *d*, attached thereto) in its downward and upward
50 movements. For the purpose of weighting the holder it is provided on top with a pin, *e*, over which are placed weights *f*.

B represents a portable gas-cylinder filled with gas, preferably in a compressed state. This cylinder communicates with the reservoir
55 by a pipe, C, one end of which enters the reservoir, is bent upwardly, and extends above the water-line, as shown in dotted lines. The other end of pipe C is provided with a union-joint, *g*, by which it is connected with the
60 nipple *h* of the cylinder, the nipple being provided with a stop-cock, *i*.

D represents an air-pump, which may be of any ordinary construction. I have found it
65 convenient to locate the pump between the reservoir and the gas-cylinder and connect it with pipe C by a short pipe, E, this latter pipe being provided with a stop-cock, *k*, and in pipe C, at any convenient point between pipe E and the gas-cylinder, I place another stop-
70 cock, *l*.

F represents a carburetor of any suitable construction, which is connected with the reservoir by a pipe, G, one end of which is
75 attached to the inlet-pipe of the carburetor, and the other end enters the reservoir and is bent upwardly, so as to extend above the water-line in the tank, as seen in dotted lines, and this pipe is provided with an ordinary pressure-gage, H.
80

While I have described and shown the portable gas-containing vessel as a cylinder, I wish it distinctly understood that I do not limit myself to the use of such vessel only, as my invention contemplates the use of any portable receptacle for gas which can be conveniently transported from place to place.
85

When it is desired to fill the reservoir, stop-cocks *i* and *l* are opened and left so until the required quantity of gas has been admitted,
90 as indicated by the height to which the holder has been raised, when they are closed, cock *k* opened, and the air-pump put in operation. When there is a sufficient quantity of mixed gas and air in the reservoir, cock *k* is closed
95 and the stop-cock in the inlet-pipe of the carburetor is opened. On opening the inlet-pipe, should the gage show the pressure to be too great or too little, that can be regulated by taking weights off or putting them on the
100 top of the holder.

It will be apparent, on an inspection of the drawings, that if it is desired to fill the reservoir with air alone, that can be done by clos-

ing all the cocks but cock *k* and using the pump; or, if it is desired to admit gas alone, open cocks *i* and *l* and close cock *k*.

The use to which the gas after it leaves the carburetor is to be put determines the relative quantities of air and gas to be admitted to the reservoir. I have found that by using, say, one cubic foot of gas to every ten cubic feet of air a very superior quality of illuminating-gas is produced, and that by using one cubic foot of gas to every twenty cubic feet of air I obtain a quality of gas well adapted for heating purposes.

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

1. A reservoir for containing mixed air and gas under pressure, an air-pump, a portable

detachable gas-containing vessel, a pipe, as C, provided with a stop-cock for connecting said vessel with the reservoir, and a pipe, as E, provided with a stop-cock for connecting the air-pump with pipe C, all combined substantially as described, and for the purpose set forth.

2. The combination, with a carburetor, of a reservoir for containing mixed air and gas under pressure, an air-pump, a portable gas-containing vessel, and means for connecting the pump and vessel with the reservoir.

In testimony whereof I affix my signature in presence of two witnesses.

ROBERT S. LAWRENCE.

Witnesses:

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