JOHN F. BARKER.

Improvement in Apparatus for Carbureting Air.

No. 115,562. Patented June 6, 1871.

FIG. 1

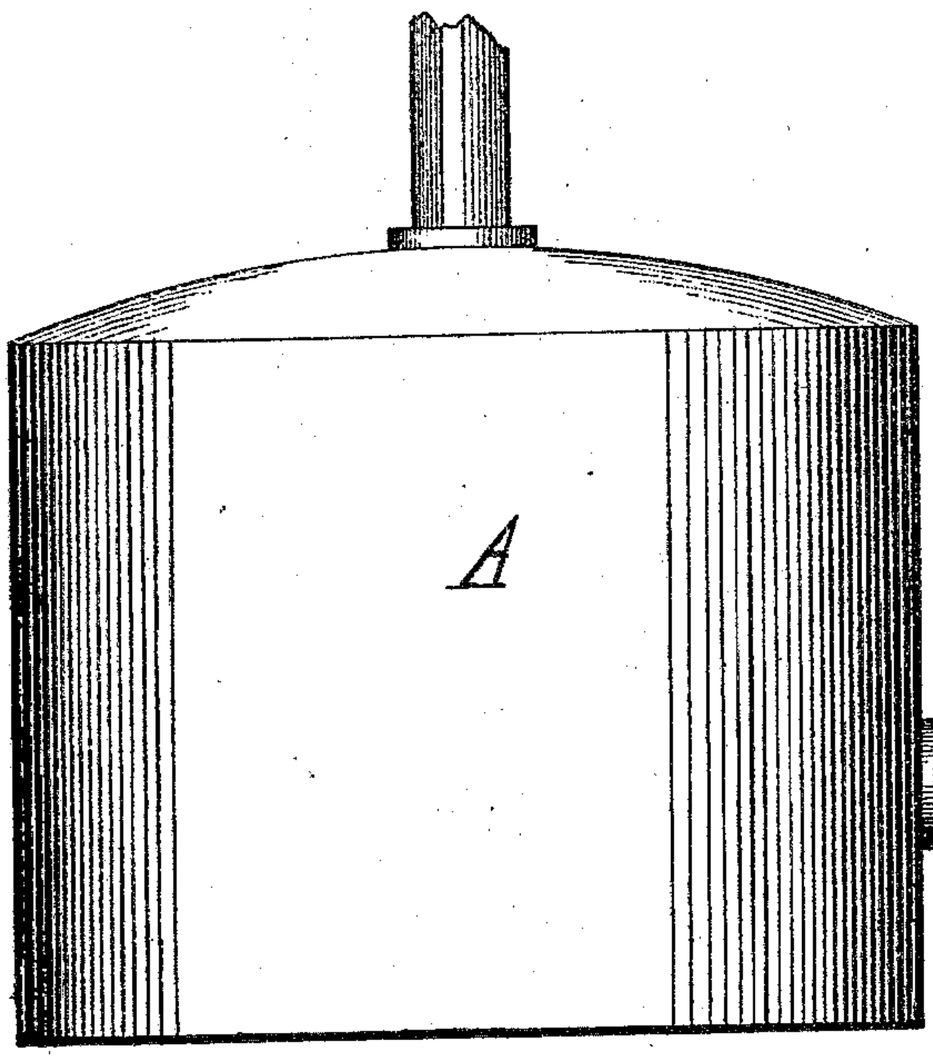


FIG. 2 H

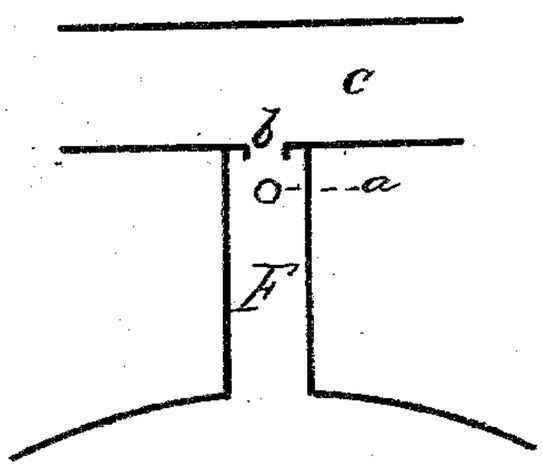
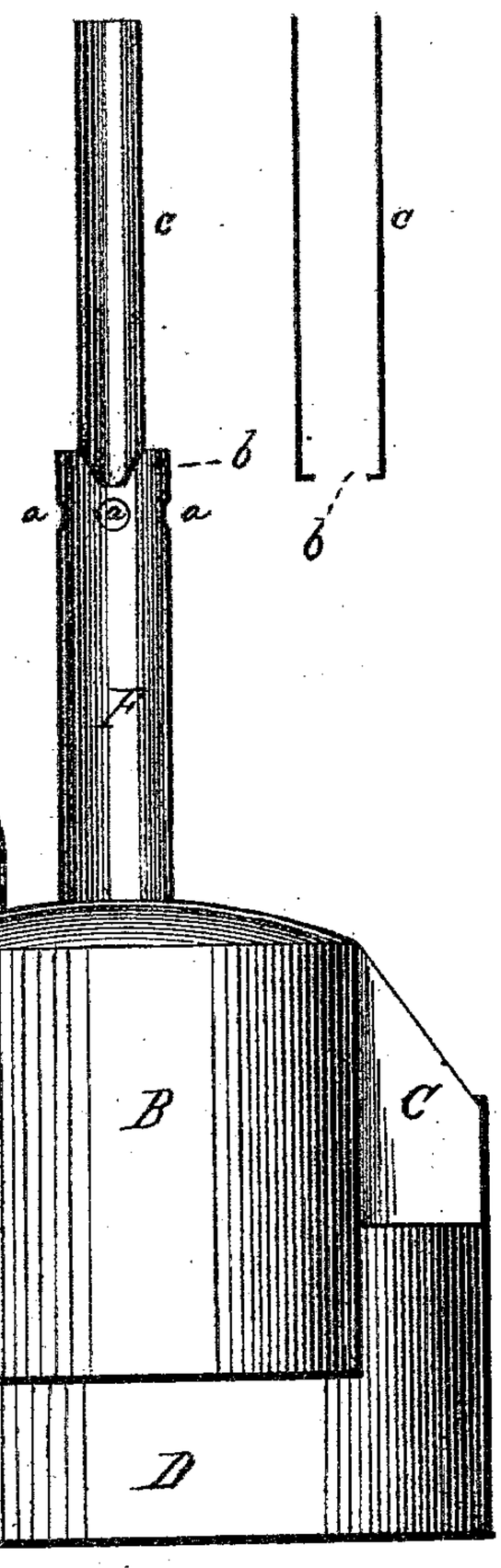


FIG. 2



Witnesses,
C. E. Howard
Lawrence Bucklands.

John F. Barker Inventor.

AM. PHOTO-LITHOGRAPHIC CO. N.Y. (OSBORNE'S PROCESS.)

UNITED STATES PATENT OFFICE.

JOHN F. BARKER, OF SPRINGFIELD, MASSACHUSETTS, ASSIGNOR TO THE GILBERT & BARKER MANUFACTURING COMPANY, OF SAME PLACE.

IMPROVEMENT IN APPARATUS FOR CARBURETING AIR.

Specification forming part of Letters Patent No. 115,562, dated June 6, 1871.

To all whom it may concern:

Be it known that I, JOHN F. BARKER, of Springfield, in the county of Hampden and State of Massachusetts, have invented a new and useful Improved Apparatus for Carbureting Air; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing making a part of this specification, and to the letters of reference marked thereon, in which—

Figure 1 is a sectional view of the air-pumping device, showing its internal arrangement and its connection with the generator; and Fig. 2 is another sectional view of an upper part of the air-pumping device, showing more fully the orifice through which the water passes.

My invention relates more especially to that part of an apparatus for carbureting air which drives the air into and through the carbureter, and its connection with the carbureter, whereby a constant and steady flow of air through the carbureter to the burners is attained without the usual complicated arrangement of a meter-wheel, weights, &c., or the more expensive arrangement of pumps.

I accomplish this by means of a stream of water passing out of an orifice in the lower end of a pipe, and through a larger pipe into a vessel which is inverted and placed within another vessel open at the top. Holes are made in the larger pipe, and the stream of water passing down this pipe carries with it a current of air by its momentum, and the water falls into and fills the lower vessel, which is open at the top, the air driven down being collected in the top of the inverted vessel, and the pressure of the accumulating water in the larger vessel against the air in the upper part of the inverted vessel drives out the air through an opening in the upper part of the inverted vessel, and through a pipe connected therewith, into and through the carbureter.

That others skilled in the art may be able to make and use my invention, I will proceed to describe its construction and operation.

In the drawing, D represents a suitable vessel of sufficient size and open at the top, and B represents another smaller and similarly-shaped vessel, which is inverted within the larger vessel D, its open lower end being a little distance above the bottom of the vessel D; and the smaller vessel B is secured in this position by means of suitable sheets of metal, C, properly secured by soldering, or otherwise, at their edges to the sides of both vessels B and D; or the vessel B may be secured in its position in any other convenient manner. To the top of vessel B is an orifice, *e*, with a pipe, F, secured properly, the upper end of which pipe is closed, and a smaller pipe, *c*, is secured therein, having at its lower end an orifice smaller in diameter than the diameter of the pipe F, and holes *a a* are made in the pipe F to admit the air.

The operation of the device is as follows: If water be permitted to pass down the pipe *c*, and through the orifice *b* in the lower end of said pipe, with a sufficient head or force and a steady flow, it passes down through the pipe F in a steady stream, the size of which is smaller than the inside diameter of the pipe F, and falls into and fills the large vessel D. The momentum of the stream carries with it the air in the pipe F, tending to create a vacuum in the upper end of said pipe. This creates a current of air, passing in at the holes *a a*, and down the pipe F into the vessel B. The vessel D being filled with water the open lower end of the vessel B is sealed, so that no air can pass out in that direction; but the pressure of the water keeps it in the upper part of the vessel B and forces it out through the pipe E, and into and through the carbureter A to the burners. If the exit-pipe E be closed, so that the air cannot pass out in that direction, then the air will be carried with the water down and out through the open end of the vessel B, and pass off with the water. Instead of a pipe, *c*, being secured to the upper end of the pipe F, merely an orifice may be used at that point, so that, for using large quantities of gas in lighting large buildings, or many of them, the large pipe F may be secured to a flume or waterway at the top, with an orifice cut through, communicating with the pipe F, said orifice being of such size as to permit a stream of water to flow through the pipe F of less size than the inside diameter of the pipe itself.

In Fig. 2, H *c* represent the flume; *b*, an orifice therein, around which and to the flue is secured the pipe F, having the inlet air-holes *a*, and which is connected to the vessel B, as before.

The pressure or force with which the air is driven through the pipe E and carbureter A is regulated according to the head of water, the length of the pipe F, the size of the vessels B and D, and the depth of immersion of the vessel B in the vessel D; and the greater these dimensions, with the same head of water and same orifice *b*, the greater will be the pressure of air within the receiver B.

It will be seen that with this apparatus a constant and steady flow of air through the carbureter is obtained, and which will continue to be constant and steady as long as the water continues to flow through the orifice *b;* and when the water is plenty and supply unfailing, or when it is convenient to attach the pipe F to a flume or water-way, no harm can be done by permitting the water to flow continuously, whether the gas is being used at the burners or not, as no gas can escape from the carbureter A back through the pipe E, vessel B, and pipe F, the constant momentum of the water down the pipe F preventing such escape. If convenient for the lighting of large establishments, if the pipe F is connected with a flume or water-way the vessel D might be dispensed with, and the vessel B be properly secured in an inverted position in a natural basin or stream where there was sufficient water, with its lower open end properly immersed in the water, so that it should be sealed that the air should not escape. If desirable, the vessels B and D and pipe F may be located in the cellar, or in any convenient place within the building to be lighted, and fresh air taken in from without the building by means of a pipe connected with the orifices *a*, and extending to any convenient point outside the building. It is evident that the size and form of the receiver B, vessel D, and pipe F, as compared with each other, may be varied at pleasure without affecting the principle of operation of the device, and the size and form of the orifice *b* also; and I do not wish to be understood as confining myself to any particular form or comparative size of the parts of the apparatus herein shown.

I am aware that various devices have heretofore been made and used for diffusing liquids and for similar purposes, and I do not claim the same, nor any part thereof; but

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

In combination with a generator, A, the receiver B, with its pipe F having the orifice *b* at the upper end, and also the orifice *a* therein, said receiver B being inverted within the vessel D, or its equivalent, and communicating with the generator A through the pipe E, all substantially as described.

J. F. BARKER.

Witnesses:

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CLARENCE BUCKLAND.