

J. S. WOOD.
 APPARATUS FOR CARBURETING AIR AND REGULATING ITS FLOW.
 No. 66,545. Patented July 9, 1867.

Fig. 1.

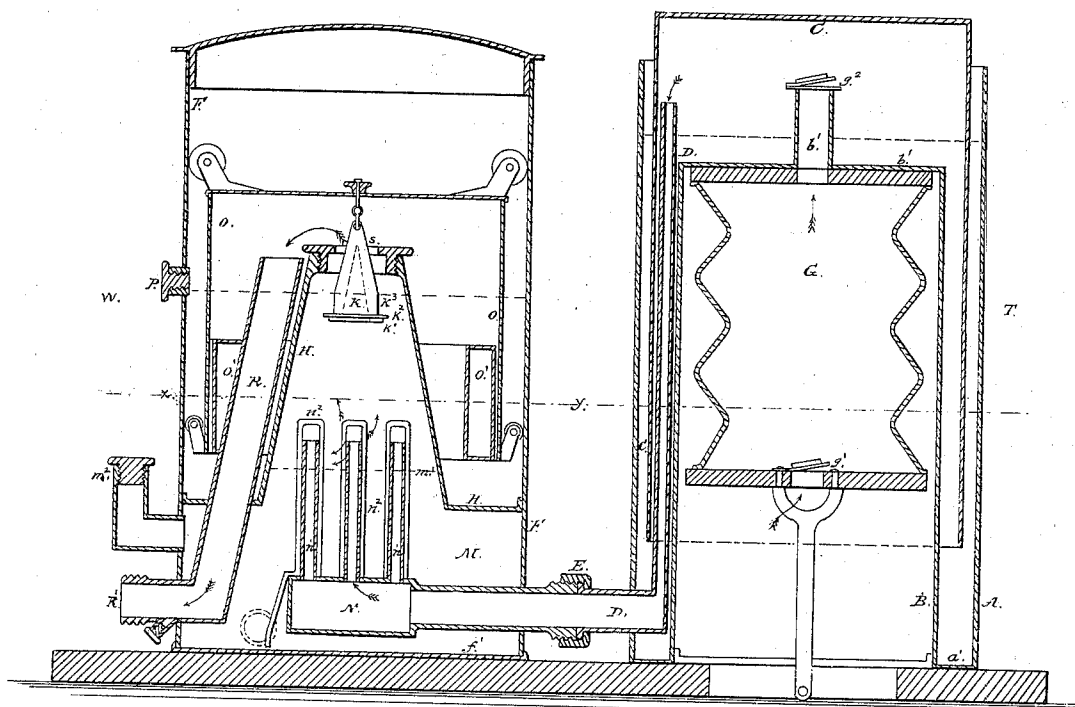
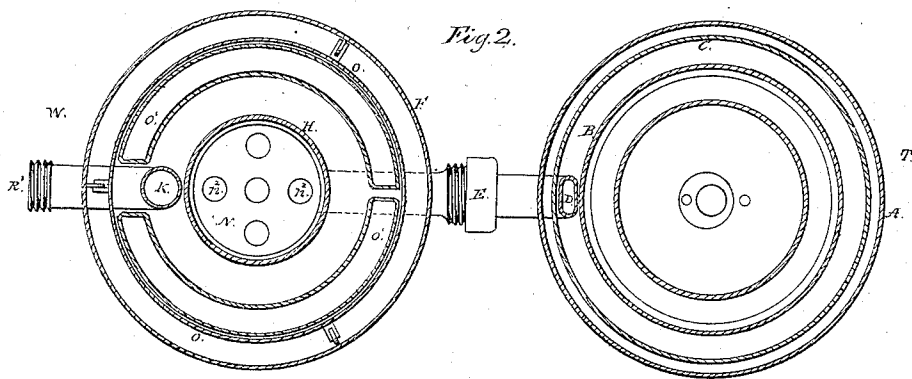


Fig. 2.



Witnesses:
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United States Patent Office.

JOSEPH S. WOOD, OF PHILADELPHIA, PENNSYLVANIA.

Letters Patent No. 66,545, dated July 9, 1867.

IMPROVED APPARATUS FOR CARBURETTING AIR, AND REGULATING ITS FLOW.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, JOSEPH S. WOOD, of the city and county of Philadelphia, and State of Pennsylvania, have invented a new and useful Apparatus for Carburetting Air; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the annexed drawings, and to the letters of reference marked thereon.

The nature of my invention consists in the arrangement of the parts of my apparatus for forcing a steady pressure of air through the carbonizer, and in so combining a carburetting and regulating apparatus in one machine that the flow of gas to the burners may be equal in pressure whatever the number of burners in use.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

Figure 1 is a longitudinal section.

Figure 2 is a horizontal section on line *xy*.

The vessel A is made of an outer case, A, and an inner one, B, closed at the top *b'* and open at the bottom, the two cases being joined at the bottom *a'*, so as to form a receptacle for water; and a receiver, C, is inverted and floats in the said water. An oval pipe, D, open at the top, leads from the interior of receiver C to the bottom of vessel A, and by a coupling, E, is connected to another vessel, F, of a similar exterior form. Inside the case B is contained a pump or a pair of bellows, G, having an inlet, *g'*, and an outlet-valve, *g''*, and operated by any wheel-work which will give it a continuous reciprocating motion. This wheel or clock-work may be made so as to wind up a heavy weight, the descent of which gives motion to the blower as long as gas may be required. This arrangement of bellows G, inverted receiver C, pipe D, and the vessel A B, which I will call T, makes a steady air-forcing apparatus for the supply of air to the carbonizer hereafter described. The vessel F is of copper, for durability, and is closed at the bottom *f'*, and about three inches from the bottom is a division, H, of a conical-hat shape, with a valve, K, at its apex. Between the bottom *f'* and division H is the carburetting apparatus. M is the gasoline or hydrocarbon liquid, which is filled up to the level *m'* through inlet *m''*, and the said inlet is then closed tight with a screw. The pipe D connects directly with the chamber N in the centre of the vessel F. This chamber N has a number of small pipes, *n'*, soldered in, which rise above the level of the gasoline. Fitting loosely upon these pipes are secured woven absorbent fabrics, shaped like a glove-finger, and split at the bottom so as to reach over the chamber N down to the bottom of the chamber F. The air is forced up these tubes; and as it passes through these absorbent glove-fingers or cap *n''*, (which stand up somewhat above the top of the pipes *n'*;) it becomes impregnated with the vapor of the carbonizing liquid. The upper part of vessel F contains water up to the line of the overflow pipe P, and in this water floats an inverted receiver O, having air-chambers O' arranged round its interior to give it sufficient buoyancy, (which requires to be great for this carburetted air.) These air-chambers do not go all round the receiver O, but leave space enough for the pipe R between. This pipe R rises above the water line, and passes down through the gasoline and out at R'. To the receiver O is suspended the valve K, passing through a hole, S, in the apex of partition H. This valve is made with a head, K¹, covered with a ring of leather, K². The bottom of this valve at K² just fills opening S, and is straight or tapers very gradually to K³, say about one sixty-fourth of an inch for three-eighths in length. Above the line K³ the taper is more acute, the whole length of the valve being about one and three-quarters of an inch to three-quarters in diameter, at K². These proportions, or thereabouts, should be observed for larger valves. This valve is raised and lowered in the opening S by the receiver O, causing a steady pressure to be maintained at the burners, whether few or many are lighted. This arrangement of carburetter N *n''*, valve K, receiver O, and vessel F, I will call W.

The operation of my invention is this wise: As soon as the burners are required to be lighted the clock-work moving bellows G is started, and air is forced through valve *b''* into receiver C, which rises and falls to compensate for the irregularity in the motion of the bellows. The air is forced down pipe D into carburetter N, out through absorbents *n''*, where it becomes mixed with vapor of the gasoline, and passes through valve K to the receiver O, down pipe R, and out through R' to the gas-burners. By this arrangement I produce not only a steady and regular flow of gas to the burners, but I make the apparatus itself to regulate the quantity of gas made and supplied, according to the number of lights in use, which has not heretofore been accomplished.

It is easy to see that the same principle might be carried out if the air passed at once from pipe D through valve K, and afterwards passed through the carbonizer N, though it would be a much inferior arrangement. Or any well-known carbonizer might be used here in place of the one shown at N, as, for instance, a rotary textile fabric, rotating partly in the gasoline and partly above it.

I do not wish to restrict myself to the particular carbonizer shown, my invention consisting in the water-tank and regulating apparatus shown, arranged and operating conjointly with a carburetting arrangement in the lower part of the same vessel.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. I claim utilizing the interior of the double-case water vessel A B by the arrangement of the pump G, inverted receiver C, and pipe D, operating as an air-forcing apparatus, substantially as described.

2. I claim the valve K, constructed with a head, K¹, elastic seat K², and with conical plain sides, tapering at the angles shown, and operating substantially as described.

3. The construction of the vessel F, with a chamber formed between the diaphragm-plate H and the bottom f', in which the carburetter N n', or its equivalent, operates in combination with the inverted receiver O, with a suspended valve, pipe R, and outlet R', substantially as shown and specified.

4. I claim the arrangement of the carbonizer N, pipes n', conical partition H, valve K, receiver O, and pipe R, and vessel F, substantially as described.

5. I claim the air-forcing arrangement T in combination with the carburetting arrangement W, substantially as described

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