I. W. SHALER.

APPARATUS FOR CARBURETING AIR.

No. 96,842. Patented Nov. 16, 1869.

Fig. 1.

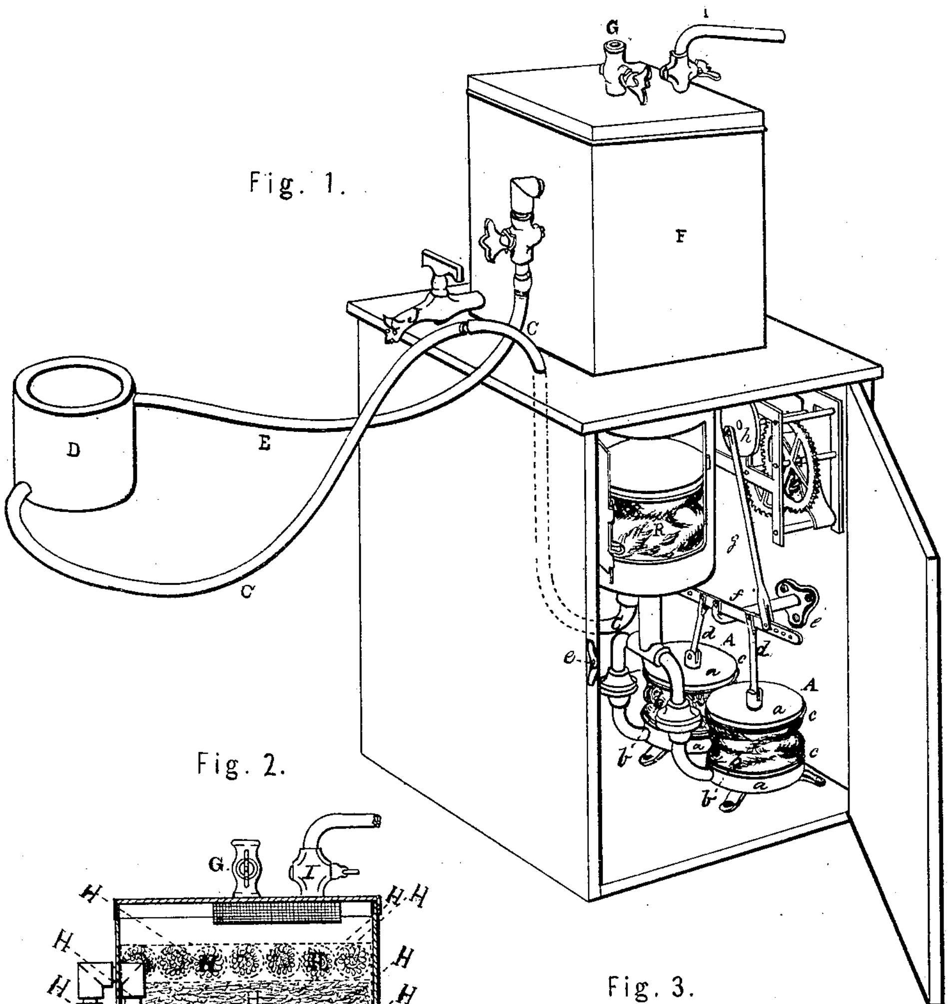


Fig. 2.

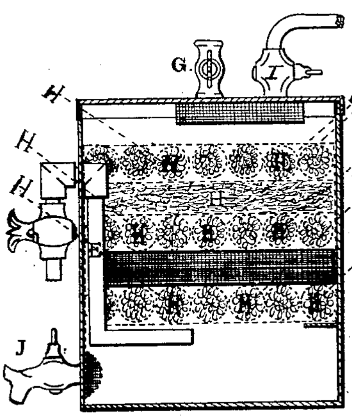
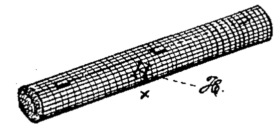


Fig. 3.



Witnesses.

Th. Bailey
Wm. H. McCabe

Inventor.

Ira W. Shaler
by his attorney
A. Pollok

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UNITED STATES PATENT OFFICE.

IRA W. SHALER, OF BROOKLYN, NEW YORK.

IMPROVED APPARATUS FOR CARBURETING AIR.

Specification forming part of Letters Patent No. **96,842**, dated November 16, 1869.

To all whom it may concern.

Be it known that I, IRA W. SHALER, of Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Apparatus for Carbureting Air and Gases; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings.

My invention relates, first, to the mechanism for feeding air to the generating or carbureting chamber; secondly, to the construction of the carburetor proper; and it consists, first, in the combination, with the air-reservoir, of two or more bellows connected with the ends of an oscillatory arm which is pivoted at its middle, and is moved up and down by the connecting-rod of a crank or equivalent device operated by spring or other suitable power, so as to cause the bellows alternately, and in succession, to force air into the reservoir, whence it is discharged into the carburetor; second, in the employment within the carbureting-chamber of superposed series of cylinders or other shaped tubes, of wire-gauze or equivalent material, which are filled with wool, cotton, or other absorbent, and are arranged side by side and in layers at angles to each other, as hereinafter described.

In the drawings, Figure 1 represents a perspective view of the whole apparatus. Fig. 2 is a vertical section taken through the center of the carburetor. Fig. 3 is a perspective view of one of the absorbent tubes.

The air-feeding apparatus consists of the two bellows, A, each of which is composed of upper and lower disks, *a*, united by the flexible sides *b*, which fit over and are bound to the disks by wires *c*, which, being drawn tightly around the peripheries of the disks, enter grooves formed therein and so close hermetically the joints between the flexible sides and the disks. Each of the upper disks has jointed to it an upright rod, *d*, which is jointed, in turn, to the horizontal arm *e*, which vibrates upon its pivot *f*. The bellows-rods *d* are placed one on each side of the pivot, and near one of the rods a connecting-rod, *g*, is also jointed to the arm, this rod being held at its upper end upon the wrist-pin of a crank, *h*, which is revolved by clock-work or other suitable mechanism. The stroke of the bellows can be regulated by fitting the rods *d* and crank-rod *g* to any one of the series of holes formed in the vibrating arm. The two bellows communicate through tubes with the air-reservoir B, which has flexible sides and is weighted on top in the usual manner. When the vibrating arm is put in motion by the spring mechanism it actuates the two bellows alternately to force air into the reservoir, and the latter is thus kept constantly supplied. From the reservoir B the air or gas to be carbureted passes through the pipe C, either directly to the carburetor without heating, or, if it be desired to raise the temperature of the air, through a heater, D, adapted to be placed over an Argand or other burner.

The carburetor is shown at F. It is of any ordinary or suitable construction, and of any required size for ordinary use in families. I generally make it fourteen inches in length and breadth and twelve inches in height. The air is introduced into the can or chamber at the bottom through the pipe E, and the made gas is discharged through the outlet G.

The principal feature of my invention consists in the employment of cylinders or other suitably-shaped tubes, H, of wire-gauze or equivalent material filled with wool, cotton, or other absorbent substance. The interior of the vessel is filled with these tubes, which are arranged in layers, as shown in Fig. 2, the tubes in the one layer being placed parallel with or diagonally or at right angles to those in the other, or in any other suitable position. I prefer the arrangement shown in the drawings, as small air-cells are thus formed which permit the passage of the air and facilitate its carburation. These tubes, with their outer casing of wire-gauze and filling of fibrous and absorbent material, are isolated the one from the other by the gauze, while they retain the fluid in suspension perfectly, and only give it off while the air or gas is passing through. In filling the carburetor the fluid enters the inlet I and is taken up by the absorbing-tubes, which are all saturated equally. When the tubes have taken up all the fluid they are capable of holding, this will be indicated by the dripping of the fluid from the lower cock, J, which should be open during the operation of filling. When this takes place the cock on the inlet-tube I and the cock J are closed and the carburetor is ready for work

In the drawings I have shown the carburet-

ing-chamber as but partially filled with tubes; but it can be wholly filled, if desired, and this in practice will be found preferable. If the carburetor should happen to need cleansing, the tubes, which are laid in without being fastened, can be readily renewed and replaced as often as desired without trouble or expense. I may say that the sides of the carburetor are preferably lined with wire-gauze, against which the open ends of the tubes abut.

It will, of course, be understood that this apparatus can be used for carbureting gases as well as air, and that the arrangement of the various parts may be modified in many ways without departing from the principle of my invention.

Having now described my improvements and the manner in which the same are or may be carried into effect, what I claim, and desire to secure by Letters Patent, is—

1. The combination, with the air-reservoir, of the bellows for supplying air to the same, and the oscillating arm and connecting-rod, through the medium of which motion is imparted to the bellows from the crank of the spring-power or other actuating mechanism, said parts being constructed and arranged for joint operation, as set forth.

2. The employment, in the carbureting-chamber, of separate cylinders or other shaped tubes of wire-gauze with a filling of cotton, wool, or other suitable absorbent, for operation substantially as and for the purposes set forth.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

IRA W. SHALER.

Witnesses:
W. BAILEY,
WM. H. MCCABE.