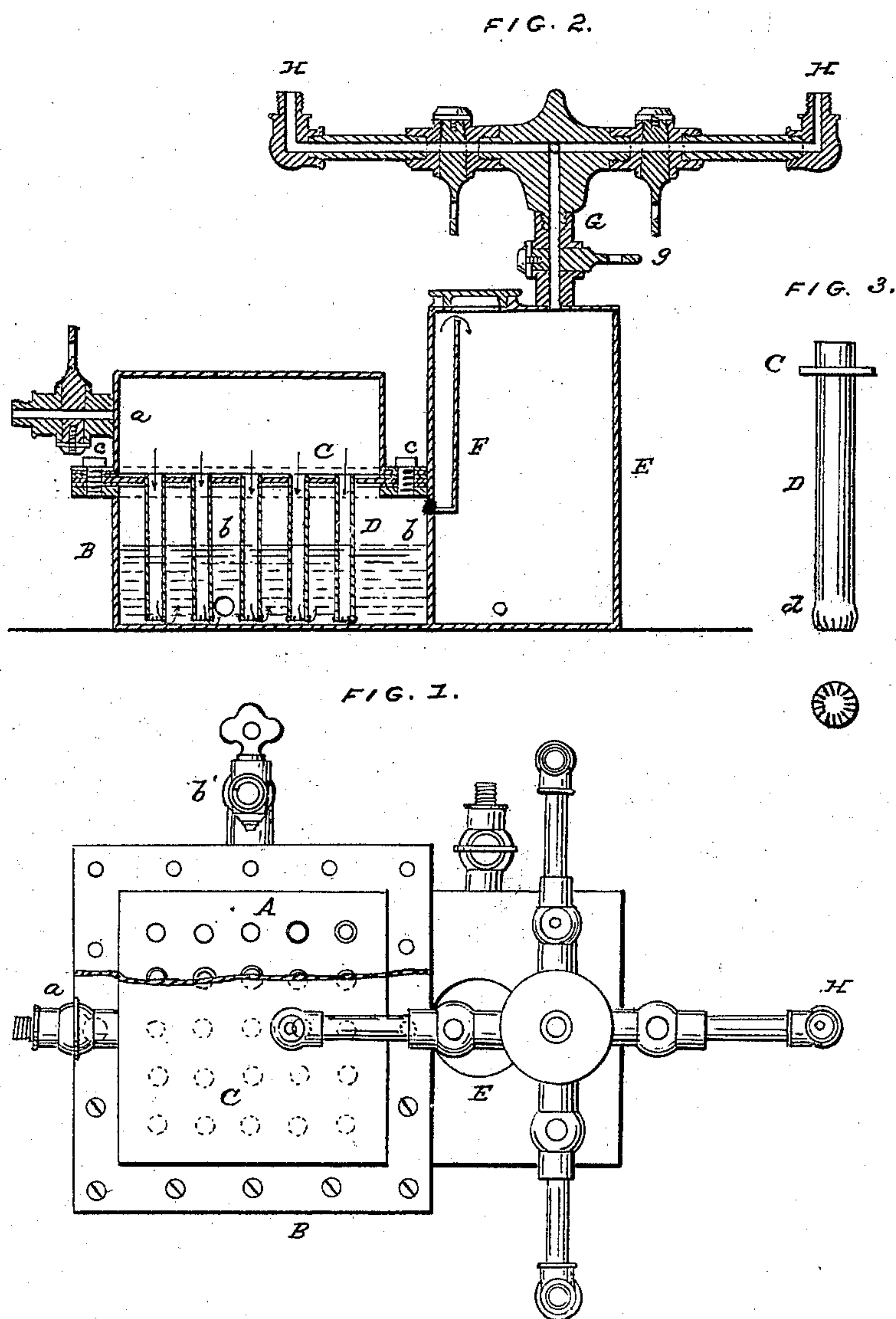


SPRINGER & McDONALD.  
Apparatus for Carbureting Air.

No. 66,749.

Patented July 16, 1867.



WITNESSES:

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INVENTOR.

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# United States Patent Office.

JOSEPH H. SPRINGER AND JOHN C. McDONALD, OF PHILADELPHIA, PENNSYLVANIA,  
ASSIGNORS TO THEMSELVES, RICHARD G. HOWELL, AND GEORGE STITES, OF THE  
SAME PLACE.

*Letters Patent No. 66,749, dated July 16, 1867.*

## IMPROVED APPARATUS FOR CARBURETTING AIR.

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

### TO ALL WHOM IT MAY CONCERN:

Be it known that we, JOSEPH H. SPRINGER and JOHN C. McDONALD, both of the city and county of Philadelphia, in the State of Pennsylvania, have invented a new and useful improvement in Carburetting Air; of which improvement the following is a full, clear, and exact description, reference being had to the accompanying drawings, which make part of this specification, and in which—

Figure 1 represents a plan or top view of an apparatus embracing our improvement, and

Figure 2 a vertical longitudinal section through the same.

Figure 3 shows a side elevation, and also an end view of one of the air-tubes.

It is the object of our invention to produce a steady, brilliant light from gasoline, or other analogous hydrocarbons, by a cheap, simple, effective, and portable apparatus for carburetting air.

In the accompanying drawings, an air-chamber, A, is shown as fitting over an oil-chamber, B, from which it is separated by a diaphragm, C, through which a series of tubes, D, passes. These tubes are open at their upper ends, and project above the diaphragm a short distance. The lower ends of these tubes extend nearly to the bottom of the oil-chamber B, and have numerous small slits, *d*, cut in them. The joint between the two chambers is rendered gas-tight by suitable packing, and secured by screws *c*. A tank, E, is separated from the chamber B by a partition, *b*, which is perforated with a row of holes, *e*. A division-plate, F, is connected with the partition below these holes, and extends upward nearly to the top of the tank, thus forming a waste-box, as will be presently more fully described. A pipe, G, provided with a suitable stop-cock, *g*, leads to the burners H H, which may of course be located wherever desired, and connected with the apparatus by suitable pipes.

The operation is as follows: The oil-chamber B is filled about half full of oil, through its opening *b'*. The chamber A is also filled with oil, to the level of the top of the tubes D, through the opening *a*. Air is now forced into this chamber through the same opening, and mingles with the vapor arising from the oil above the diaphragm. The air then passes down through the tubes and escapes through the slits *d*, bubbling up through the oil in the lower chamber B. We have found that in using open tubes large bubbles are formed, the constant bursting of which renders the flame unsteady, but by subdividing the jet we not only render the flame steady, but promote the vaporization of the fluid. The chamber B being only partially filled, its upper portion forms a mixing-chamber for the air and gas, which finally pass into the tank E through the openings *e*. The division-plate F acts as a shield, against which the spray strikes, and thus prevents oil from being carried into the tank E. Any oil thus carried through the holes *e* will be arrested by the shield F and flow back through the holes *e* into the tank B, so that the gas rising above the shield, as shown by the arrow, will be freed from this spray, and consequently be more pure.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The perforated air-tubes, constructed, arranged, and operating as described.
2. The combination of two carburetting-chambers, separated by a diaphragm, traversed by air-tubes, substantially in the manner described.
3. The combination of the oil-chambers and tank with the perforations *e* and shield F, arranged and operating as and for the purpose described.

In testimony whereof we have hereunto subscribed our names.

JOSEPH H. SPRINGER,  
JOHN C. McDONALD.

Witnesses:

WM. B. DAYTON,  
WM. D. BALDWIN.