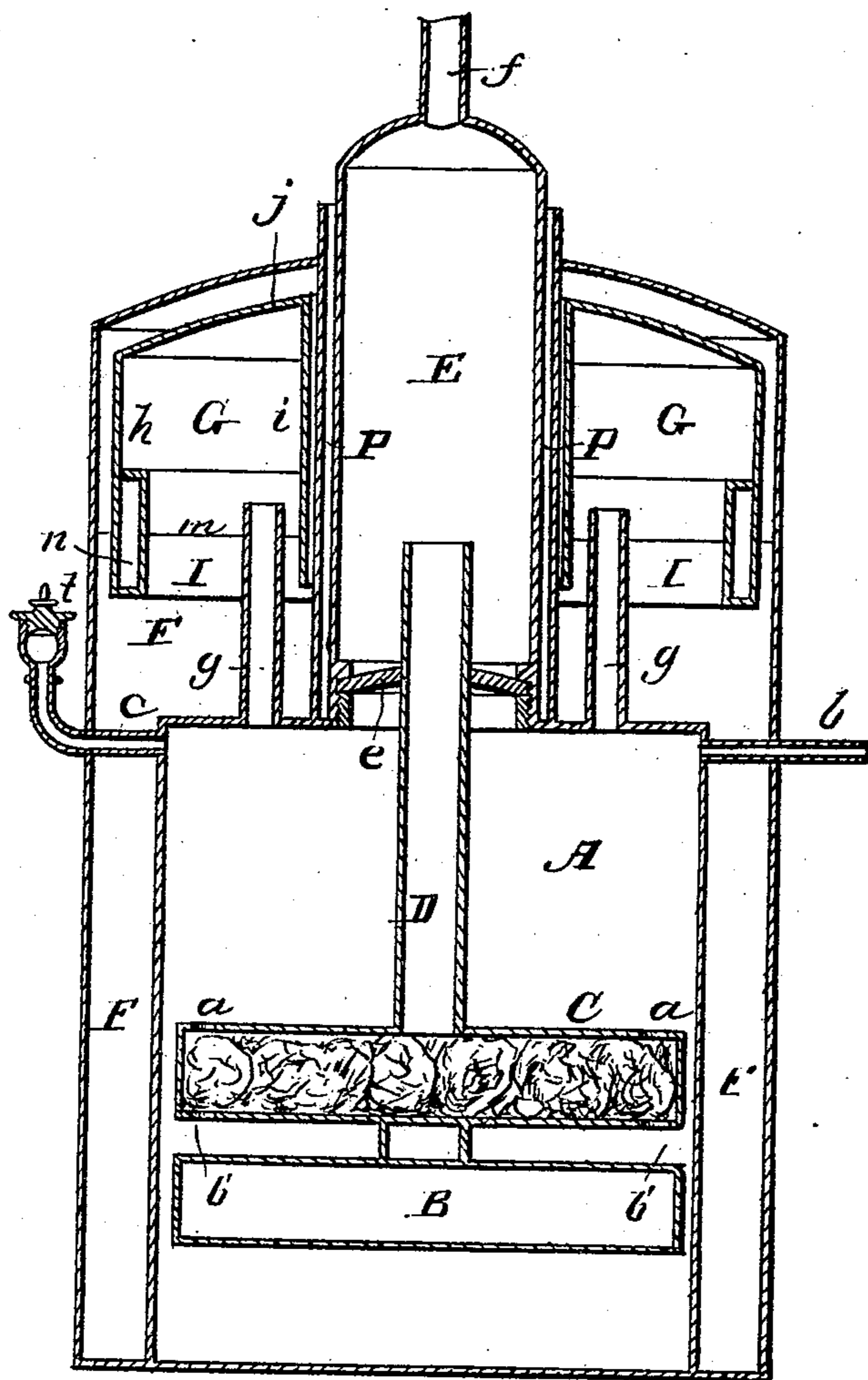


L. STEVENS.

Apparatus for Carbureting Air.

No. 59,473.

Patented Nov. 6, 1866.



Witnesses:

Samuel St. John
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Inventor:
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by his Attorney
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UNITED STATES PATENT OFFICE.

LEVI STEVENS, OF FITCHBURG, MASSACHUSETTS.

IMPROVED APPARATUS FOR CARBURETING AIR.

Specification forming part of Letters Patent No. 59,473, dated November 6, 1866.

To all whom it may concern:

Be it known that I, LEVI STEVENS, of Fitchburg, in the county of Worcester and State of Massachusetts, have invented an Improved Air-Carbureting Apparatus; and I do hereby declare the same to be fully described in the following specification and exhibited in the accompanying drawing, which represents a vertical section of the apparatus.

In the said drawing, A denotes a cylindrical vessel, having one or more pipes, *g*, extending upward from it, such vessel being arranged within a cistern, F, to hold water, which should extend above the top of the vessel A, and nearly up to that of each of the pipes *g*. On the vessel A is a gas-receiving chamber or vessel, E, provided with a discharge-opening, *f*, which is arranged at its top.

A hollow bell, G, or aerometer, formed of two concentric cylindrical tubes, *h i*, and a cap-plate, *j*, arranged together as shown in the drawing, and having an annular air vessel or float, *n*, applied to its open end, is disposed within the cistern F, and, with respect to the pipes *g g* and the gas-receiver E, in manner as represented, the float serving to support the aerometer G on the water which is to be contained within the cistern.

The pipe or pipes *g* extend above the level, *m*, of the water in the cistern and open into the bell, which serves to collect the surplus of the gas or vapor and equalize or regulate the pressure thereof while being burned.

The vessel A is to contain a hydrocarbon fluid to be vaporized or gasified, which may be introduced into it by a pipe, *c*, provided with a tunnel-mouth and a screw-cap, *l*, therefor. Such vessel A also receives atmospheric air through a tube, *b*, leading into it and through the cistern F, and from a suitable air-forcing apparatus.

Within the hydrocarbon chamber A is a float, B, which is attached to a box, C, whose top is perforated with holes *a a*, and has a pipe, D, leading upward from it, and opening out of the interior of the box. The said pipe is open at top, and slides through a stuffing-box or diaphragm, *e*, arranged in or at the bottom of the gas-receiver E.

The said box C has perforations, *b' b'*, made through its bottom, and is to be filled with sponge or some other proper porous and ab-

sorbent material, and it is to be immersed about one-third of its depth in the hydrocarbon liquid, the float serving to keep the box in such a relation with the surface of the said liquid.

If we suppose a conduit to lead from the discharge-pipe *f* to one or more gas-burners, and the air-forcing apparatus to be put in operation, the air thrown into the vessel A will be driven through the holes *a a* and into the carbureting-box C, and by passing through the sponge thereof, saturated with the liquid hydrocarbon, will become charged with the hydrocarbon vapor or gas, and escape from the box by the pipe D; and enter the receiver E, from whence it will flow to the burner or burners, whereon it may be inflamed and burned for the purpose of light or heat. Any surplus air or vapor or gas which may form will flow into the aerometer G, which, as such surplus may increase, will rise on the water of the cistern F.

By the application of the said cistern F and a jacket or body of water, I, therein to the vaporizing-vessel A, holding the hydrocarbon to be vaporized or gasified and containing the apparatus for producing such vaporization of the hydrocarbon and its mixture with air, we are enabled to equalize the temperature of the hydrocarbon, or prevent it from becoming cooled by loss of latent heat during the process of evaporating it. In this way we facilitate the vaporization of the hydrocarbon, which, in proportion as it may lose heat through expansion of a part of it into gas or vapor, will abstract a compensating quantity of heat from the surrounding water, and thus the degree of vaporization will be duly maintained by the employment of the body of water about the vaporizing-vessel A.

The bottom of the tank for the aerometer G may terminate on, or about on, a level with the top of the vessel A, instead of being carried down to a level with the bottom of such vessel; but in this case we should not have the additional advantage of the body of water about the hydrocarbon fluid, and to operate as an equalizer of the temperature thereof.

If necessary, an air chamber or space, *p*, open at top and communicating with the external air at bottom, may be caused to surround the vessel E, the same being placed be-

tween the tank F and the said vessel E, and for the purpose of preventing the water in such tank from reducing the temperature of gaseous vapor when in the said receiver.

As the surface of the hydrocarbon liquid may be lowered by evaporation, the box C will descend and draw its tube D down in the stuffing-box e.

I do not claim the combination of an aerometer with a vaporizing apparatus and an air-forcing apparatus.

I claim—

1. The combination as well as the arrangement of the hydrocarbon-holding vessel A, the float B, the box C, (with its absorbent

material,) the tube D, and the receiver E, provided with the stuffing-box e, or its equivalent, the whole constituting an improved hydrocarbon-vaporizing apparatus.

2. The combination as well as the arrangement of the cistern F, or the same and the water jacket I, with the said hydrocarbon-vaporizing apparatus.

3. The above-described arrangement of the aerometer G with the vaporizing apparatus, made substantially as described.

LEVI STEVENS.

Witnesses:

R. H. EDDY,
F. P. HALE, Jr.