F. S. Pease.

Carburetor.

No. 67,576. Patented Aug. 6, 1867.

Fig. 1.

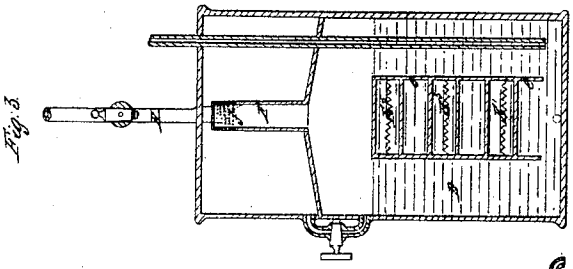


Fig. 2.

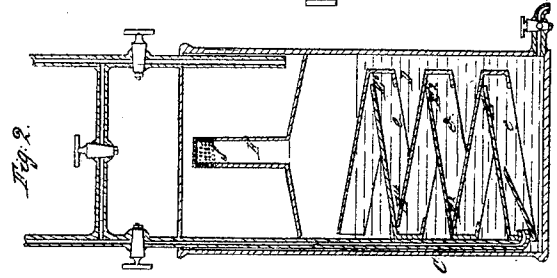


Fig. 3.

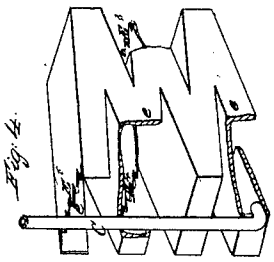


Fig. 4.

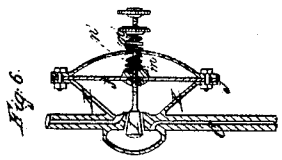


Fig. 5.

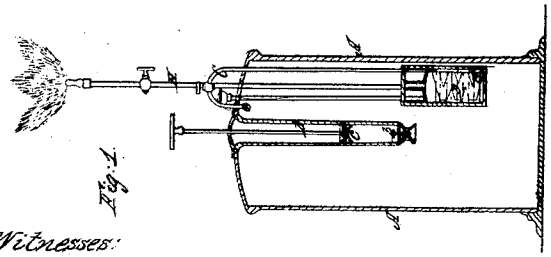
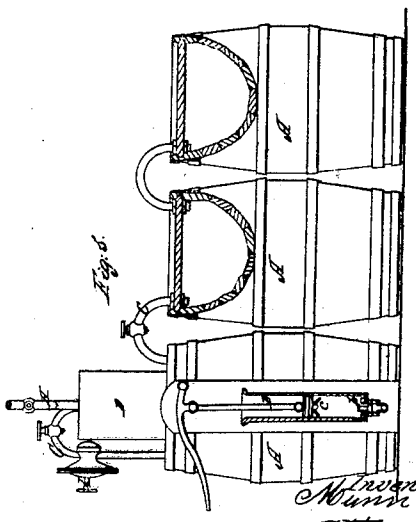


Fig. 6.



Witnesses:

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N. K. Ellsworth

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Attys for
F. S. Pease
per Knight

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

United States Patent Office.

FRANCIS S. PEASE, OF BUFFALO, NEW YORK.

Letters Patent No. 67,576, *dated August* 6, 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 I, F. S. PEASE, of Buffalo, in the county of Erie, and State of New York, have invented a new and useful Improvement in Machines for Carburetting Air; and I do hereby declare the following to be a full and exact description of the same, reference being had to the accompanying drawings, which are made part of this specification, and in which—

Figure 1 is a central vertical section.

Figures 2 and 3 are central vertical sections through the carburetter.

Figure 4 is a perspective view of the zigzag air-passage.

Figure 5 is a view of a series of air-holders, the air-pump, and carburetters.

Figure 6 is a vertical section through the regulator.

Similar letters of reference indicate corresponding parts in the several figures.

The carburetting apparatus and the air-pump are contained within the holder which contains the compressed air. The air condensed by the pump and stored in the reservoir passes through the carburetter and a gas-regulator to the burner. The air is injected at the lower portion of the carburetter, and ascends, in contact with the under surfaces of a series of inclined planes with flanged edges and ends, passing from one incline to another in a zigzag upward course to the chamber from whence it is drawn for use.

In the drawings, A represents a strong chamber suitably constructed to become a reservoir of compressed air, which is condensed therein by the action of the air-pump B, the downward motion of whose piston empties the contents of the cylinder into the reservoir through the valve-way *b*, the valve closing during the upward stroke of the piston and the valve *c* in the piston opening. The condensed air passes from the chamber A, through the pipe C, to the bottom of the carburetting-chamber D, which contains a quantity of hydrocarbon liquid. The air is discharged at the opening underneath the inclined plate E, which has flanges, *e*, on its sides to compel the air to rise in contact with the under surface of the said plate, and prevents its escape at the sides or edges. When the air in its ascent has reached the upper edge of the plate E, it ascends through the serrated openings and rises until it strikes the under edge of the second plate E^1, and so on until it has finished its tortuous course and escapes above the upper inclined plate E^3 into the space above the hydrocarbon fluid, when it issues through the central pipe F and the orifices *f* to the reservoir of carburetted air, from whence it issues by pipe H to supply the burners. This apparatus may be used for carburetting air or enriching gas, and the pressure is equalized by means of the gas-regulator seen in section in fig. 6. It consists of a valve, I, and an elastic diaphragm, J, operated by the pressure of gas in the chamber K, and adjusted by means of the sliding or screw-rod L. The diaphragm may consist of India rubber or other elastic material, and a spring, *m*, to assist it in maintaining itself against the pressure of the gas. The valve I is attached to a stem, K, and passes through the axial centre of the regulator, having an adjustment in the disks P, which embrace the membrane J, or in the bosses attached to said disks. The object of the regulator is to allow given quantities of air to pass in given times regardless of the pressure in the chamber A.

Its operation is as follows: Suppose the pressure in the condensed-air reservoir A to be thirty pounds to the inch, and it be desired that a sufficient amount should pass the valve-way to supply ten burners, the stem is adjusted so that the annular opening round the valve shall permit the desired quantity to pass. This may be determined by watching the burners, and turning the stem in one direction or the other till the burners are properly adjusted. Now, as the air passes from the reservoir A the pressure therein will become lessened and the membrane J will cause the valve I to take position further away from its seat, enlarging the area of opening. If additional air be pumped into reservoir A the membrane J will be expanded by the pressure and the spring M contracted, bringing the valve I nearer to its seat, so that with the increased pressure and consequent rapidity of passage the orifice shall be contracted in a corresponding degree to equalize the flow. The spring *m'* reacts against the spring *m*, as the pressure decreases, to prevent the spring operating in full force to open the valve. If it be desired to regulate it for a larger or smaller numbers of burners the stem J is turned in one or the other direction to proportion the valvular orifice to its new duty. Fig. 5 shows an arrangement of three barrels connected by pipes, and an air-pump connected to one of them, by which air is forced into the barrels and condensed therein, being afterwards utilized by passage through the carburetter and thence to the burners.

The regulator may be placed in the pipe connecting the air-reservoir with the carburetter, or beyond the carburetter, and between it and the burner. The air passing upward against the under surfaces of the plates E, etc., does not agitate the liquid so much as when it is simply injected into the carburetter and allowed to reach the surface by rising directly therefo. This effect to subdue the agitation is gained whatever may be the height of the liquid.

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

1. The combination of the strong air-reservoir, the air-pump, and the carburetter, the latter two being contained within the former.

2. I claim the carburetter constructed, as described, with inclined flanged plates in ascending zigzag series, with the air following their under surfaces, substantially as described.

3. The regulator, constructed as described, consisting of the membrane J, the adjustable rod L, valve I, and the valvular opening, constructed and operating substantially as described.

4. I claim the inclined flanged plates E, with serrated edges, operating as described.

5. I claim the arrangement of the series of condensed-air holders, constructed of air-tight casks, and combined with an air-pump and carburetter, substantially as described.

To the above specification of my improvement I have signed my hand this 19th day of March, 1867.

F. S. PEASE.

Witnesses:

CHAS. D. SMITH,

CHAS. A. PETTIT.