S. E. HUGHES.

Carbureter.

No. 203,458. Patented May 7, 1878.

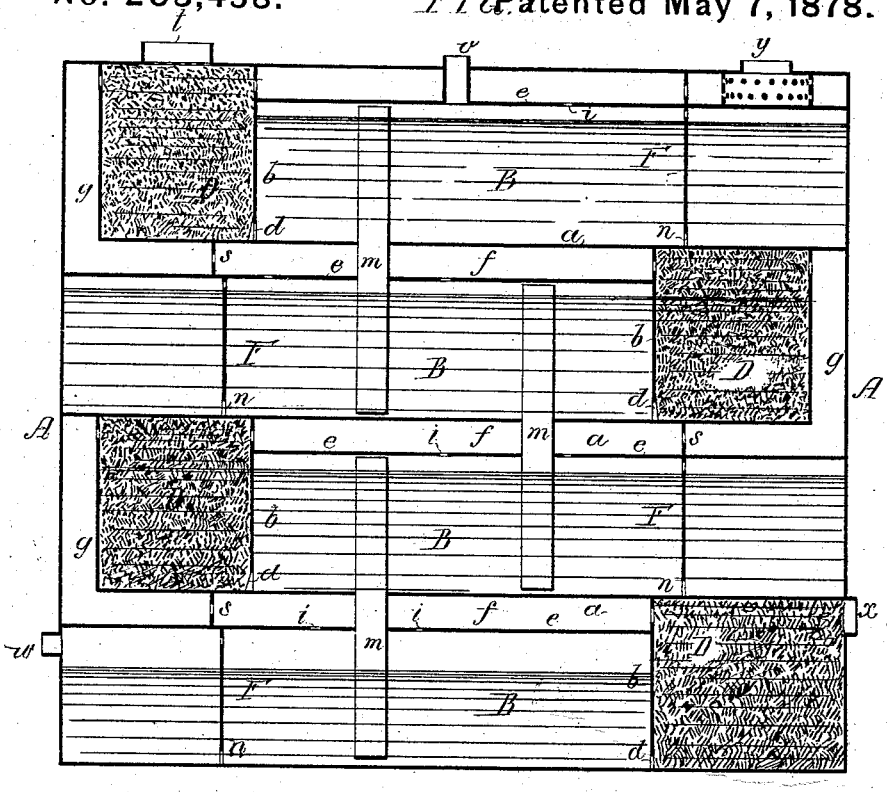
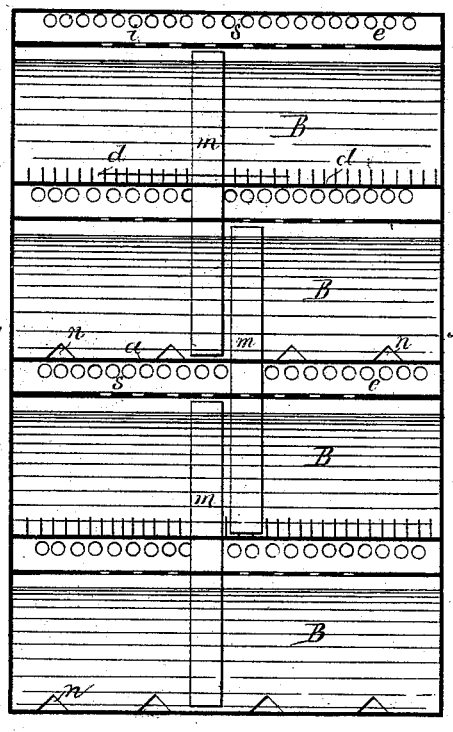


FIG. 2.



Witnesses,
Thomas McIlvain
Harry Smith

Inventor
Smith E. Hughes
by his Attorneys
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UNITED STATES PATENT OFFICE.

SMITH E. HUGHES, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN CARBURETERS.

Specification forming part of Letters Patent No. **203,458**, dated May 7, 1878; application filed February 15, 1878.

To all whom it may concern:

Be it known that I, SMITH E. HUGHES, of Philadelphia, Pennsylvania, have invented a new and useful Improvement in Carbureters, of which the following is a specification:

The object of my invention is to so construct a carbureting apparatus as to insure the thorough impregnation of the air or gas, to thoroughly utilize all the hydrocarbon, and to provide for the ready filling or emptying of the apparatus. This object I attain in the manner hereinafter set forth, reference being had to the accompanying drawing, in which—

Figure 1 is a longitudinal section of my improved carbureting apparatus, and Fig. 2 a transverse section of the same.

A is the casing of the apparatus, which contains, in the present instance, three partitions, *a*, thus dividing the interior of the apparatus into four chambers, B, which contain the hydrocarbon employed to impregnate the air or enrich the gas.

The chambers do not extend entirely across the casing longitudinally, a passage, *g*, being left at one end of each chamber, and in each chamber, near one end, is a vertical partition, *b*, which incloses a receptacle, D, the latter being entirely filled with sawdust or other absorbent material, and communicating with the hydrocarbon-reservoir through openings *d* at the bottom.

Near the top of each chamber B, and extending from the partition *b* to the casing A, is a longitudinal partition, *e*, which serves, with the partition *a* above, to form a passage, *f*, communicating with the passages *g* at the ends of the chambers B.

The passages *f* communicate with the hydrocarbon-reservoirs through perforations *i*, and each reservoir communicates with the reservoir or reservoirs adjacent thereto through tubes *m*, these tubes extending from a point near the top of one reservoir to a point near the bottom of the reservoir beneath.

F F are vertical partitions, which serve to strengthen the partitions *a* and *e*, and at the same time serve to prevent the splashing of the hydrocarbon when the casing is agitated, as in the case of its application to a railroad-car, boat, or vehicle. The partitions *e* also serve to prevent the splashing of the liquid, and to confine it within proper limits. When the apparatus is intended to be stationary the partitions *e*, and, in some cases, the partitions F, may be dispensed with, as there is in this case no agitation of the hydrocarbon, and no tendency of the same to splash. On the other hand, in cases where there is considerable agitation of the apparatus, the number of partitions F may be increased.

The partitions F are provided with openings *n*, through which the hydrocarbon can pass, and in the passage *f* are strengthening partitions *s*, perforated for the passage of the air or gas.

In filling the above-described apparatus, the hydrocarbon is poured into either of the openings *t* and *v* in the top of the casing, and, after filling the upper chamber B, overflows through the pipe *m* into the chamber beneath, which, in turn, overflows into the third chamber, and the latter into the bottom chamber. As soon as the level in the latter reaches the outlet *w* the introduction of hydrocarbon into the apparatus is discontinued and the various openings *t*, *v*, and *w* are closed.

Air or gas enters the apparatus through the opening *x*, and passes through the sawdust or other material in the upper part of the lowermost receptacle D. This material, owing to its capillary attraction, is thoroughly saturated with hydrocarbon from the lowermost reservoir, so that the air or gas, in its passage through the material, is impregnated to a certain extent with hydrocarbon. After leaving the lowermost receptacle D the air or gas passes through the lowermost passages *f* and *g*, and then in turn through the remaining receptacles D and intervening passages, escaping finally at the outlet *y*.

In order to prevent the air or gas from carrying off too great a supply of hydrocarbon, a supply of dry sawdust or similar material may be placed in the upper passage *f*, so as to act as a means of retaining any surplus hydrocarbon, the latter flowing back into the topmost reservoir B. As the passages *f* communicate directly with the hydrocarbon-reservoirs through the openings *i*, any gas arising from the hydrocarbon is combined with

the air or gas passing through said passages. As the receptacles D communicate with the hydrocarbon-reservoirs at the bottom, the heaviest portion of the oil is taken up when the amount of material to be saturated by capillary attraction—that is, that portion above the level of the hydrocarbon—is least, and, as the portion to be supplied by capillary attraction increases, it is supplied with the lighter portion of the hydrocarbon, so that, owing to this system of compensation, the material will remain saturated until the supply of hydrocarbon is entirely exhausted. The shallowness of the chambers B also assists in the attainment of this result.

The number of hydrocarbon reservoirs and receptacles D may be varied to accord with the desired capacity of the apparatus, a greater or less number than that shown being used, as desired.

I do not desire to claim, broadly, a carbureter in which the air or gas is caused to pass through a series of chambers containing absorbent material saturated with hydrocarbon; but

I claim as my invention—

1. The combination, in a carbureting apparatus, of a series of receptacles, D, containing absorbent material, and a series of hydrocarbon-reservoirs, B, each communicating with one of said receptacles through openings *d*, the reservoirs and receptacles being arranged, substantially as described, one above the other, and provided with passages for the air or gas, all substantially as specified.

2. The combination of the casing A and its chambers B with partitions *e* near the tops of the chambers, as set forth.

3. The combination of the casing A and its horizontal partitions with the vertical partitions F, as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

SMITH E. HUGHES.

Witnesses:
HARRY A. CRAWFORD,
HARRY SMITH.