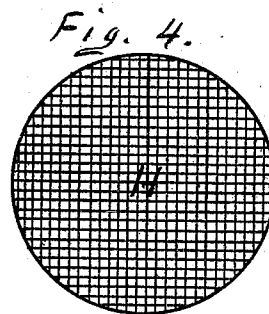
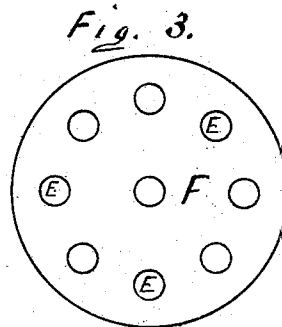
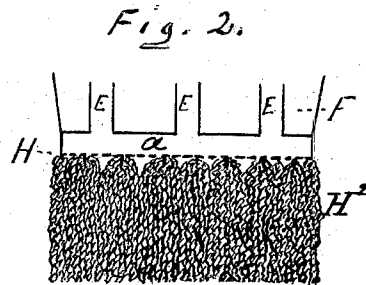
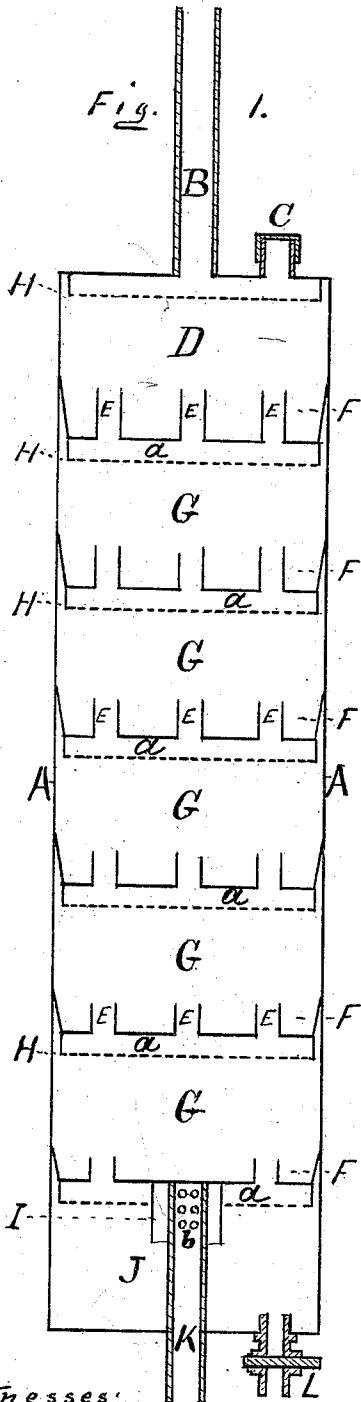


J. S. WILLIAMS.
GAS-MAKING APPARATUS.

No. 177,909.

Patented May 23, 1876.



Witnesses:
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UNITED STATES PATENT OFFICE.

JACOB S. WILLIAMS, OF ST. LOUIS, MISSOURI.

IMPROVEMENT IN GAS-MAKING APPARATUS.

Specification forming part of Letters Patent No. 177,909, dated May 23, 1876; application filed February 25, 1876.

To all whom it may concern:

Be it known that I, JACOB S. WILLIAMS, of the city of St. Louis, county of St. Louis and State of Missouri, have invented certain new and useful Improvements in Gas-Making Apparatus, which improvements are fully set forth in the following specification, reference being had to the accompanying drawings.

The object of my invention is to generate and hold in readiness for use the gas of gasoline or any other substance producing gas heavier than atmospheric air, to be used for lighting or heating purposes.

To enable others to understand the construction and use of my invention I describe it as follows:

Figure 1 is a vertical section of the machine. Fig. 2 is a vertical section of the cups, with reticulated plate and wicking attached. Fig. 3 is a horizontal section of cups F and pipes E E; Fig. 4, horizontal section of reticulated plates.

A represents the case or shell of the machine; B, the air-induction pipe; C, the liquid-induction pipe; D, the upper and principal chamber which first receives the liquid and air, and from which the other chambers are supplied with both; E E, vertical pipes through which gasoline and air pass from the upper chamber D to those below it in succession; F F, cups of varying capacities to contain the liquid not held in absorption by the wicking, having close bottoms, with vertical pipes E E inserted therein for the passage of air and gasoline; G G, saturating-chambers, which may be multiplied or enlarged, as required, to hold at least a portion of the liquid in absorption. Through this wicking the air will pass and become charged with gasoline. H H, reticulated plates or wire-cloth attached to, but held about one inch below, the bottoms of the cups F F. From these plates the wicking H² is suspended in a vertical position, the lower end being immersed in the liquid contained in the cup next below. I, deflector or guard to prevent the liquid from dripping into the gas-eduction pipe K, as also to force the gas to pass through the wicking in the chamber J. J, the lower chamber, to receive and retain any surplus gasoline until

drawn off by the cock L. Into this chamber, also, flows the gas which has been generated in the chambers above, and held in readiness to be used as required. K, the gas-eduction pipe, through which the gas is drawn from the chamber J for consumption through the perforations *b* at the top of said pipe. L, draw-cock by which the surplus liquid is taken from the machine to prevent its flowing into the eduction-pipe K.

The space *a* between the cups F F and the reticulated plates or wire-cloth H H will insure an equable flow of air through the suspended saturated wicking, which should be in strands of proper size and density to secure the best results.

If it is desired that the machine should contain the liquid in absorption only the cups may be omitted, in which case the wicking will not quite touch the perforated plates below, for in that event a large portion of the gasoline it would otherwise contain would be drawn from it, necessitating more frequent filling, and producing a gas not so rich; but if it is desired that the machine should work up to its full capacity, the cups should be retained, in which case the lower end of the wicking would be immersed in the liquid in the cups so long as any remains, and thus supply to the wicking the gasoline taken from it by the air in passing.

These cups should be deeper at the top, so as to contain more liquid, for when the fresh air first enters the machine it will take up or absorb much more gasoline than after having been partially charged. This extra absorption is sought to be, in part, provided for by placing a deep cup in the upper chamber, when the other cups are omitted, to contain a quantity of liquid, which is supplied to the chambers next below through strands of wicking in the pipes E E, one end of which falls into the cup, and the other connects with the wicking in the chamber below.

The saturating-chambers are made shallow, for the reason that the absorbent will not thoroughly saturate more than five or six inches above the surface of the liquid, and will not fully retain the liquid more than that distance above its lower end when suspended vertically.

Atmospheric air charged with gasoline is of greater specific gravity than air not charged, and will seek a lower level. This is the principle on which the operation of my machine depends, by which the gas is generated only when and as it is used.

I have now fully explained the objects of the several parts of my machine, and will give the process of generating gas, presuming gasoline to be the material used.

Having placed the machine a few feet above the highest point to be supplied, and fully charged the absorbent in all the saturating-chambers G G with gasoline, and drawn from the lower chamber the surplus, the air in the chambers will be instantly charged, and, being of increased gravity, will descend to the chamber J and eduction perforated pipe K and its connections, expelling the atmospheric air until it reaches the opening where it is to be consumed, and as the contents of the several chambers descend to those below and into the eduction-pipe K the outer air will flow through the induction-pipe B and the smaller pipes E E, to supply the place of the descending gas, which process will continue so long as air and gasoline to saturate it are supplied and the gas is escaping without other force than its own gravity.

The air-induction pipe B is extended some distance above the top of the machine, so as to give a better and more uniform pressure and to prevent the evaporation, escape, and consequent loss of gasoline, as well as the disagreeable odor or danger that might accrue from its accumulation.

When fully charged this apparatus may produce gas too rich in its carbureting material, and more expensive than necessary, which effect may be counteracted by admitting air into the upper part of the final or lowest receptacle of the series, said air descend-

ing from an altitude at least as high as the top of the apparatus, through a tube or pipe, governed, preferably, by a cock of graduated flow.

The pipes E are graduated from one and a half to three inches in height, and the cups F are of varying depths corresponding thereto, for the purpose before stated.

Having fully described my invention and its operation, I claim as new and desire to secure by Letters Patent—

1. In a gravity gas-generating machine, the combination with the top chamber D and the induction air and liquid pipes B C at the top thereof, of the reticulated plate H, to which is attached the pendent wicking H², arranged immediately below the entrance of the pipes into the chamber and the tubes E, immediately below the wicking, as and for the purpose herein set forth.

2. The combination of the chamber J, the gas-eduction pipe K, and the deflector or guard I, surrounding pipe K, as set forth.

3. The combination, with the graduated overflow-tubes E and chambers G, of the cups F of varying capacities, as and for the purpose stated.

4. The distinct top chamber D, provided with the induction air and liquid pipes B C, and the distinct bottom chamber J, provided with the gas-eduction pipe K, and the waste-cock L, in combination with one or more intermediate distinct chambers, G, provided each with cups, overflow-tubes, and wicking, suspended as described, and in which the air entering at the top by gravity is delivered at the bottom chamber J for use.

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Witnesses:

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