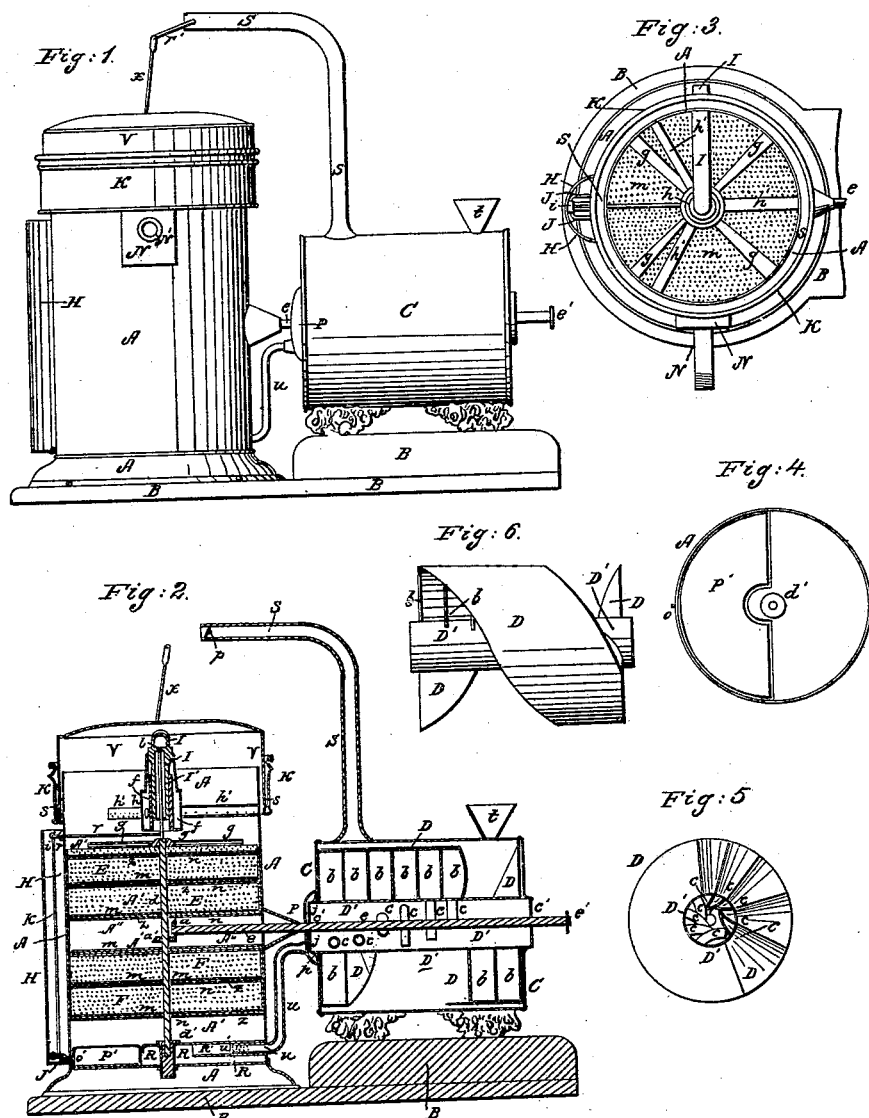


W. THOMPSON.

Apparatus for Carbureting Air.

No. 53,504.

Patented March 27, 1866.



Witnesses:
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WILLIAM THOMPSON, OF CLEVELAND, OHIO.

IMPROVED APPARATUS FOR CARBURETING AIR.

Specification forming part of Letters Patent No. 53,504, dated March 27, 1866.

To all whom it may concern:

Be it known that I, WM. THOMPSON, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Gas-Generators; and I do hereby declare that the following is a full and complete description of the construction and operation of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a side elevation of the generator. Fig. 2 is a longitudinal vertical section. Fig. 3 is a top view of a part of the generator with the cover removed. Figs. 4, 5, and 6 are sectional views, that will be referred to in the description.

Like letters of reference refer to like parts in the several views.

My improvement relates to an apparatus for generating illuminating-gas, as hereinafter described.

A represents a vertical cylinder secured on a base, B, the internal structure of which is shown in Fig. 2.

C is a transverse cylinder, connected to the cylinder A, placed on the platform B, as represented, the internal structure of which is likewise shown in Fig. 2—that is, a vertical section through both.

In the cylinder C there is a revolving agitator, D, that is nearly equal in length and diameter to the cylinder, and is represented detached in Figs. 5 and 6, Fig. 5 being an end view and Fig. 6 a longitudinal view. It consists of an inner cylinder, D', around which are arranged spirally semicircular chambers *b*, that make the outside of the agitator of a spiral form, as shown in Fig. 6, pointed at the ends and gradually widening toward the center. The chambers commence and terminate, one after another, around the cylinder D', that are pointed or wedge-shaped at their closed ends. From each of the chambers *b*, and extending into the inside of the cylinder D', are curved pipes or tubes *c*. (Seen in Figs. 2 and 5.) The ends of the cylinder D' are closed by heads *e'*. The outer end is perfectly tight; but in the head, at the other end, there are holes or openings *j*, that communicate with a chamber, *p*, in a cap, P, on the end of the cylinder C. Through the center of the inner cylinder extends a shaft, *e*, that projects out at one end,

on which there is a gear, *e'*, that is turned by clock-work revolving the shaft. The other end of this shaft extends into the vertical cylinder A, and on the end is a beveled gear, *a*, that works in a gear-wheel, *a'*, on a vertical shaft, *d*, in the center of the cylinder. This shaft is connected to a perforated agitator, A', that fits close around inside of the cylinder A, and consists of two perforated cylinders, E and F, secured on the shaft, with a space, A'', between them, as represented. Each cylinder is divided through the middle and closed above and below by two perforated plates, *m* and *n*. The plate *m* is finely perforated, and in the lower plate, *n*, the perforations are larger and farther apart. The plates *m* and *n* are placed a little distance apart, and the space *z* is filled with some fibrous or flocculent material.

The lower end of the shaft *e* turns in a step, *d'*, and the upper end has its bearing in a cross-tree, *g*, a top view of which is seen in Fig. 3. The ends of the cross-tree fitting tight against the cylinder keep the agitator down in place as it revolves.

Above the agitator there is a small cylinder, *h*, supported in place by radiating arms *h'*. These arms are perforated on the under side, and communicate with an annular chamber, *f*, in the cylinder *h*. Through the middle of this cylinder extends down the end of a bent tube or pipe, I, that fits close against the inside of the cylinder. There are holes *o* in the sides of this tube into the annular chamber *f*.

In the upper part of the tube I there is a valve, *l*, from which extends down a rod, *l'*, and to the lower end of this rod is linked or attached a lever, *r*, that extends out through an opening in the cylinder A, where it is jointed or has its bearing by a cross-piece in the rod resting and turning in lugs *i*, attached to the cylinder. Outside of this the end of the lever is formed into a hook, *i'*, on which is placed a connecting-rod, *k*, that extends down inside of a case or cap, H, on one side of the cylinder, and is attached at the lower end to a crank, J. (Shown in Figs. 2 and 3.)

The crank has its bearings in lugs projecting from the cylinder, and to the middle piece of which is secured an arm, *o'*, attached to one side of a float, P'. This float, in the bottom of the cylinder, is of the shape repre-

sented in Fig. 4, and occupies about half the space across the cylinder. On the other side is formed a chamber, R, (seen in Fig. 2,) in which there is a tube, R', that a bent pipe or tube, *u*, enters from one side, the end of which is perforated, as at *u'*. The tube *u* extends up and is attached to the cap P, and communicates with the chamber *p* inside.

On the top of the cylinder C, at one end, there is a funnel, *t*, through which gasoline and other chemicals are poured into the cylinder. At the other end there is a tube, S, extending upward and turned horizontally, so as to project over the cylinder A, as in Figs. 1 and 2. In the end of this tube there is a wing-valve, *p'*, attached to a rod, *r'*, that connects it to a rod or arm, *x*, extending up from the cover V of the cylinder A. There is an annular chamber round the upper end of the cylinder A, formed by a rim, *k*, there being a space, *s*, between it and the cylinder, as seen in Figs. 2 and 3. The cover V fits down into this chamber, as represented, in which there may be water, forming a water-tight joint.

The tube I, connected to the cylinder *h*, curves down in the form of a siphon and extends out at one side of the cylinder, where it is connected to the gasoline-reservoir, by which gasoline or other chemicals is conveyed into the cylinder A, as will be further described. Opposite this siphon-pipe, on the other side of the cylinder, is a box, N, filled with chloride of potash and lime, with water in solution, from which there is an opening into the cylinder. To this box is connected a pipe or tube, N', through which the gas passes from the cylinder. Other pipes can be attached to this, as may be required, for conveying the generated gas to the place where it is to be consumed.

The construction, arrangement, and connection of all the parts forming the apparatus have now been described, which operate in the following manner in the process of generating gas: The gasoline, ground oil, or other chemicals are poured into the cylinder D through the funnel *t* until the cylinder is about half full, when the hole in the funnel can be closed. As the agitator is revolved by the shaft *e*, being turned by clock-work, the gasoline is thoroughly agitated, running in and out of the chambers *b*, and as it runs into the chambers it will displace or force the gas that is in the chambers through the pipes *c* into the inner cylinder. It will be observed that from the shape of the chambers, being semi-circular, and the position of the pipes *c* in relation to them, as the agitator revolves there will be very little if any of the liquid run into the pipes *c*. The gas in the inner cylinder, D', from the chambers *b*, escapes through holes *j* in the head of the cylinder at one end into the chamber *p*, from which it passes down through the tube *u* into the chamber R or lower part of the cylinder A.

Gasoline is conveyed into the cylinder A through the siphon-pipe I, which enters, when the valve *l* is open, and runs down through the center of the cylinder *h* onto the perforated agitator, also out at the openings *o* in the sides of the tube I into the chamber *f*, from which it runs along the radiating arms *h'* and through the perforations, and is distributed over the perforated plates of the agitator A', which is continually revolving by means of the gears *a a'* on the shafts *e d*, as before described, that revolves the agitators in both cylinders at the same time and by the same power.

The gasoline or ground oil gradually percolates through the perforated plates of the agitator, being distributed and broken up by the motion and construction of the perforated cylinder, so that the particles will come in contact with the air in such a manner as to generate the greatest amount of gas rapidly. A part of the gasoline percolates through the perforated cylinders and reaches the bottom of the cylinder A. The flow of gasoline into the cylinder is regulated by means of the float P', for when the desired quantity has run in the float P' rises, which moves down the connecting-rod *k*, depressing one end of the lever *r* and raising the other, so as to close the valve *l* in the tube I; and as the gasoline evaporates, diminishing the quantity in the cylinder, the float will sink more or less, closing the valve in the desired manner to admit the quantity of gasoline required in the cylinder.

The amount of air that is necessary in the cylinder for the most perfect generation of the gas is admitted through the tube S, and is likewise self-regulating. By means of the valve *p'* in the end of the tube connected to the cover V of the cylinder A, as before described, as the gas is generated and rises in the cylinder A it will elevate the cover V, which closes the valve *p'* and shuts off the air from the cylinders; and as the gas is used up or conveyed away from the cylinder the cover V will gradually be depressed, opening the valve *p'* to admit the desired quantity of air into the cylinders.

By the arrangement for admitting gasoline and air into the cylinders, as described, the apparatus will not require to be adjusted or watched, as it is self-regulating both in regard to admitting the air and gasoline. It can be used in private dwellings or other establishments, setting it in any convenient place, from which gas-pipes can lead and be distributed through the apartments; or it can be constructed on a larger scale, and be used in gas-works for generating large quantities of gas.

What I claim as my improvement, and desire to secure by Letters Patent, is—

1. The curved tapering chambers *b*, pipes *c*, and cylinder D', in combination with the

cylinder C, pipe S, chamber *p*, and pipe *u*, arranged in the manner and for the purpose described.

2. The float *P'*, crank J, rod *k*, and lever *r*, in combination with the rod *l'*, valve *l*, and pipe I, arranged in the manner and for the purpose set forth.

3. The radiating perforated pipes *h'*, annular chamber *f*, and opening *o*, in combination with the pipe I and cylinder A, arranged as and for the purpose set forth.

4. The arrangement of the perforated cy-

lindrical chambers E F and spaces or straining-chambers Z, in combination with the gears *a a'*, shaft *e*, and cylinder A, operating in the manner and for the purpose set forth.

5. The purifying-box N, in combination with the cylinder A and its internal devices, as and for the purpose set forth.

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