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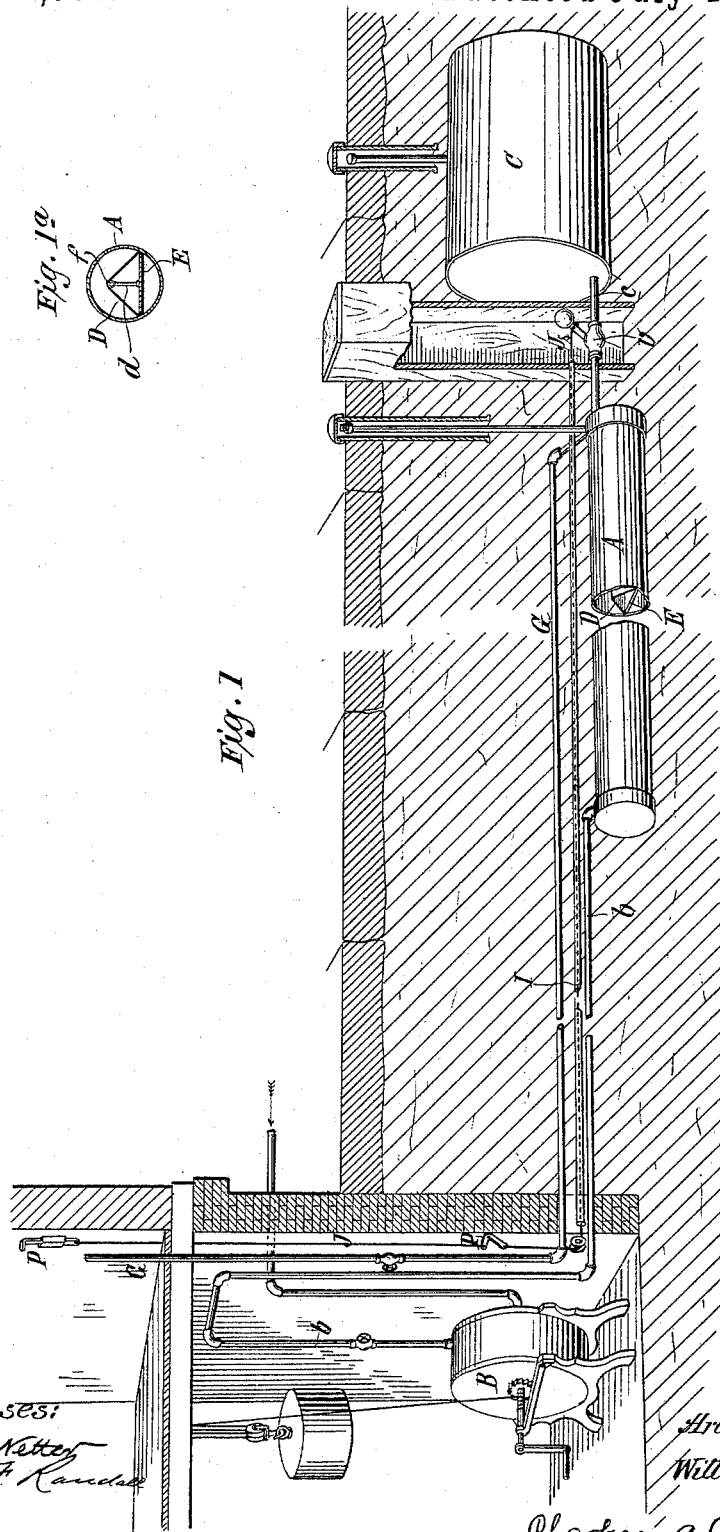
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W. C. CLARKE & A. B. GRIFFEN.

# APPARATUS FOR CARBURETING AIR.

No. 522,968.

Patented July 17, 1894.



Witnesses:  
Raphael Netter  
Sands F. Randall

*Inventors*  
*Arthur B. Griffen*  
*&*  
*William C. Clarke*  
*By*  
*Charles A. Collins Atty.*

(No Model.)

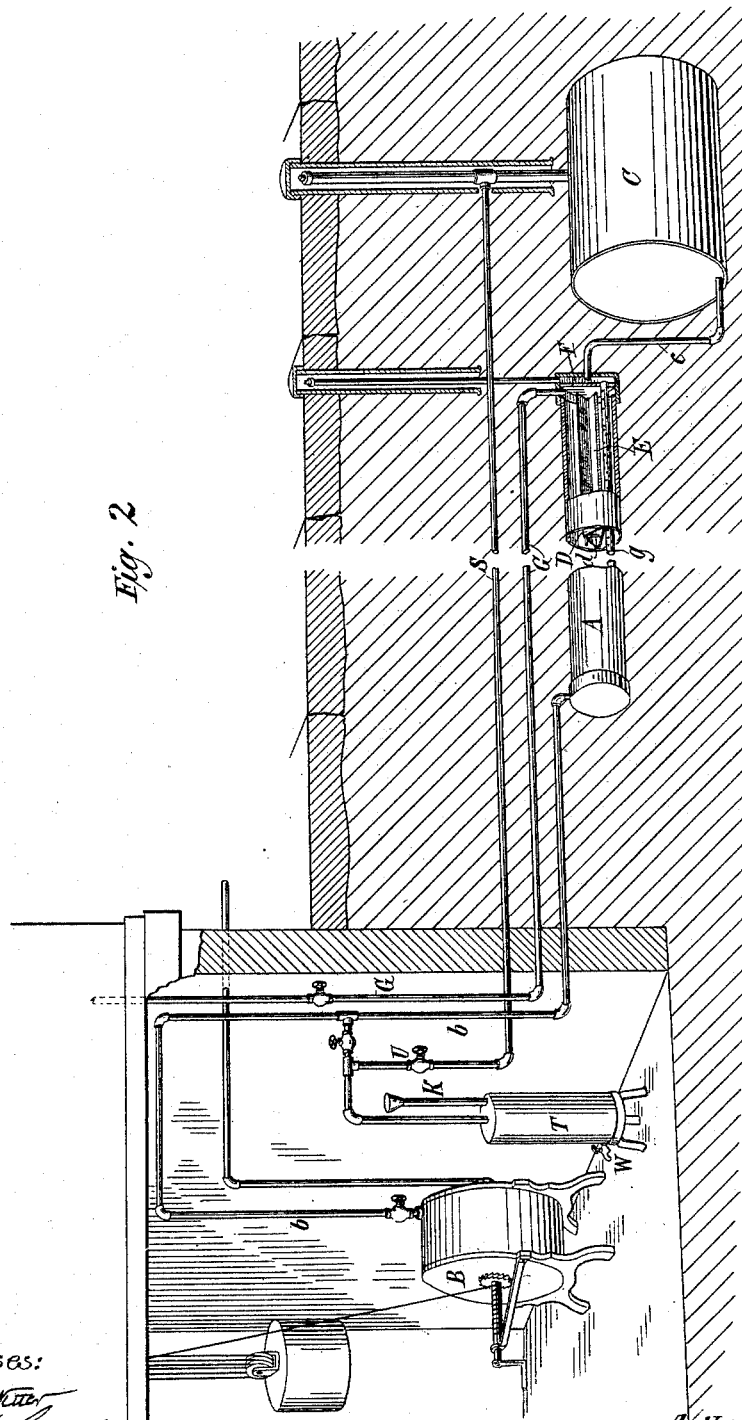
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W. C. CLARKE & A. B. GRIFFEN.

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Patented July 17, 1894.



Witnesses:  
Raphael Miller  
Sauls J. Randall

Inventors  
Arthur B. Griffer  
&  
William C. Clarke.  
by Clarkson A. Collins, Atty.

# UNITED STATES PATENT OFFICE.

WILLIAM C. CLARKE, OF NEW YORK, N. Y., AND ARTHUR B. GRIFFEN, OF NEWARK, NEW JERSEY, ASSIGNORS TO THE GILBERT & BARKER MANUFACTURING COMPANY, OF MASSACHUSETTS.

## APPARATUS FOR CARBURETING AIR.

SPECIFICATION forming part of Letters Patent No. 522,968, dated July 17, 1894.

Original application filed April 7, 1892, Serial No. 428,248. Divided and this application filed October 27, 1892. Serial No. 450,130. (No model.)

*To all whom it may concern:*

Be it known that we, WILLIAM C. CLARKE, of the city of New York, in the county of New York and State of New York, and ARTHUR B. GRIFFEN, of the city of Newark, in the county of Essex and State of New Jersey, have jointly invented certain new and useful Improvements in Apparatus for Carbureting Air, of which the following is a specification, this application being a division of an application for Letters Patent filed by us April 7, 1892, Serial No. 428,248.

Our invention relates to that class of apparatus used for making illuminating gas by passing atmospheric air through a vessel usually called a carburetor, containing a volatile hydro-carbon liquid such as commercial gasoline and thereby impregnating the air with hydro-carbon vapor.

In the application for Letters Patent above referred to we have described a process of producing such a gas, whereby we regulate the quality of the gas produced to a practically uniform standard by admitting at proper intervals fresh charges of a volatile hydro-carbon liquid to the carburetor, where it is mixed or intermingled with a heavier, less volatile hydro-carbon liquid. In order to practice this process successfully, it is necessary that the volatile hydro-carbon liquid shall be admitted to the carburetor from time to time in such varying quantities as may be determined by observation of the gas flame at the burners to be necessary to keep the quality of the gas uniform, and hence it is desirable that the mechanical operations necessary for admitting the hydro-carbon liquid to the carburetor should be performed in the vicinity of the burners and preferably at some convenient point in the dwelling or other building lighted. At the same time it is desirable that the carburetor, storage tank, or other vessel containing the volatile hydro-carbon liquid should be located outside of the building lighted and at some distance therefrom.

To the end therefore of regulating the quality of the gas in a safe and effective manner by admitting to the carburetor from time to

time fresh supplies of volatile hydro-carbon liquid, in such quantities as may be indicated, by the flame at the burners, to be necessary, our apparatus consists of an organized combination of parts, suitably located, comprising a carburetor, which may be of any usual or suitable form, and which is located apart from the building lighted, being preferably buried in the soil below the frost line. In the cellar of the building lighted is a suitable air forcing apparatus connected by a pipe with the carburetor, which is also connected by a pipe with a storage or supply tank located outside of the building lighted for containing gasoline which is admitted therefrom into the carburetor as required from time to time.

From the carburetor a pipe leads to the burners in the building to be lighted. At a convenient point in the building from which the operation of one or more of the burners can be observed is located a manually operated device for controlling the admission of gasoline from the storage tank to the carburetor.

The invention will be best understood by reference to the accompanying drawings, in which—

Figure 1 shows an elevation of one form of apparatus in which our invention may be embodied. Fig. 1<sup>a</sup> shows a cross-section of the carburetor shown in Fig. 1 and Fig. 2 shows a modification of the form of apparatus shown in Fig. 1, the outer shell of the carburetor being indicated as broken away to show its interior construction.

The same letters of reference indicate corresponding parts throughout the drawings.

Referring to the drawings A is a carburetor which may be of any usual or suitable form, being shown in this case as a closed tubular vessel.

B is an air pump which may be of any well known form such as a meter wheel driven by a weight, and from which a pipe *b* extends to the carburetor A, which is located outside the building lighted and preferably buried in the ground or placed in a vault constructed for the purpose.

C is a storage or supply tank for containing gasoline or similar volatile hydro-carbon. It is also located outside of the building to be lighted and in convenient proximity to the carburetor A, with which it is connected by a pipe *c*. The pipe *c* may discharge directly into the carburetor, or, as shown in Fig. 2 of the drawings, it may discharge into the upper part of a chamber F from the bottom of which a perforated pipe *g* extends lengthwise, through the carburetor. By this means a quicker admixture of the liquid admitted from the storage tank with that contained in the carburetor is secured and the siphoning of the liquid from the carburetor back into the storage tank where the latter is located below the level of the carburetor is prevented. In order to give a greater evaporating surface in the carburetor it may be supplied with sheets of fibrous material D stretched over frames *d* and fastened to a board E running lengthwise through the carburetor.

In the form of the apparatus shown in Fig. 1 a valve *v* is placed in the pipe *c* leading from the storage tank to the carburetor. The valve is provided with a counter-weight for closing it and a wire J attached to the valve stem extends thence through the pipe I into the building, where it is connected with a bell pull P, which is located at any convenient point from which the operation of the burners may be observed.

In using the apparatus the carburetor A is first partially filled with benzine or other similar heavy product of petroleum, which serves as an absorbent for the gasoline. Air is then passed through the carburetor from the air pump B and gasoline is admitted from the supply tank C by opening the valve *v* until such an amount is present in the carburetor that the air passing through is sufficiently charged with the gasoline vapor to give a clear illuminating flame at the burners, when the valve *v* is closed and the further admission of gasoline is cut off. The apparatus will now run without sensible deterioration in the quality of gas for a certain length of time which is dependent upon the amount of gas used and other conditions, the absorbent liquid in the carburetor serving to equalize the evaporation of the gasoline until the greater part of it has been consumed. When, by reason of the diminution of the amount of gasoline in the carburetor the rate of evaporation has decreased to such an extent that the quality of the gas is sensibly lowered as indicated by the flame of the burners becoming bluish the valve *v* is again opened by means of the wire J, and bell pull P, until, by the admission of a fresh supply of gasoline, the quality of the gas is restored to the required standard as indicated by the normal operation of the burners, and the operation is repeated from time to time as required. By reason of the location of the bell pull P in the vicinity of the burners we are enabled to conveniently manipulate the valve

*v* in accordance with the indications afforded by the gas flame, while, at the same time, the location of the storage tank and carburetor outside of the building lighted complies with the requirements of the fire underwriters.

We do not wish to be limited to the particular device shown for manipulating the valve *v* from the building lighted, since it is the location and not the nature of the device (so long as by it the admission of hydro-carbon liquid to the carburetor can be controlled in accordance with the indications afforded by a burner supplied by the apparatus) which is the essential feature of our invention in this respect and the same result might be accomplished in a variety of ways, as for instance, the valve may be operated by hydraulic or pneumatic pressure or by electro-magnetism under the control of a suitable device in the building or a loop of the pipe connecting the tank with the carburetor may be taken into and the valve itself be located in the building. In Fig. 2, also we have shown a modified form of apparatus by which the same result may be secured without the use of any valve in the pipe connecting the storage tank with the carburetor. In this case the storage tank is placed at a lower level than the carburetor and an air pipe S extends from the building to the upper part of the storage tank.

Within the building the pipe S is connected with the upper part of a closed vessel T. This vessel is provided with a pipe *t* which extends to near the bottom of the vessel T and has a funnel at its upper end. When water or other heavy liquid is poured into the funnel the air is displaced from the vessel T and passing through the pipe S exerts a pressure on the gasoline in the storage tank and drives a certain part of it into the carburetor. The amount of gasoline so transferred depends upon the amount of water admitted into the vessel T and may thus be graduated to any desired amount. When the vessel T is full the water may be drawn off at the cock W at the bottom, the valve U in the pipe S being closed when the water is drawn off to prevent the back flow of air from the storage tank.

The water may be admitted to the vessel T from the ordinary water pipes of the building and its admission and the consequent flow of gasoline may thus be controlled from any convenient part of the building, or the vessel T itself may be located in any part of the building convenient for its use and for observation of the burners. The advantages of our invention will be readily apparent to those skilled in the art since it is a most convenient means of regulating the quality of hydro-carbon illuminating gas from the immediate neighborhood of the burners, and in accordance with indications furnished thereby while at the same time the parts of the apparatus containing gasoline are located outside of the building lighted; the apparatus is

also economical in construction, simple and durable and its operations easily understood.

What we claim as new, and desire to secure by Letters Patent, is—

5 1. An organized apparatus for the production of illuminating gas with the vapor of a volatile hydro-carbon liquid, consisting of an air pump located within the building lighted, a carburetor and a storage tank, located outside of the building lighted, a pipe leading from the air pump to the carburetor, a pipe leading from the storage tank to the carburetor, means for admitting hydro-carbon liquid from the storage tank to the carburetor, and a manually operated device located in the vicinity of a burner supplied by the apparatus, whereby the admission of the hydro-carbon liquid from the storage tank to the carburetor may be controlled in accordance with the indications afforded by such burner, substantially as, and for the purposes set forth.

2. In an apparatus for producing gas by carbureting air, the combination of an air pump located within the building lighted, a carburetor and a storage tank located outside of the building lighted, an air pipe leading from the air pump to the carburetor, a feed pipe leading from the storage tank to the carburetor, a valve in such feed pipe and a manually

operated device located in the vicinity of a burner supplied by the apparatus, whereby the valve may be operated and the admission of hydro-carbon liquid to the carburetor may be controlled in accordance with the indications afforded by such burner, substantially as set forth. 35

3. In an apparatus for producing gas by carbureting air, the combination of an air pump located within the building lighted, a carburetor and a storage tank located outside of the building lighted, an air pipe leading from the air pump to the carburetor, a feed pipe leading from the storage tank to the carburetor, a valve in such feed pipe, and a traction device connected with such valve and located in the vicinity of a burner supplied by the apparatus, whereby the valve may be operated and the admission of hydro-carbon liquid to the carburetor may be controlled in accordance with indications afforded by such burner, substantially as set forth. 40 45 50

In testimony whereof we have hereunto subscribed our names this 26th day of October, A. D. 1892.

WM. C. CLARKE.  
ARTHUR B. GRIFFEN.

Witnesses:

GEORGE COSTER,  
WM. H. ERWIN.