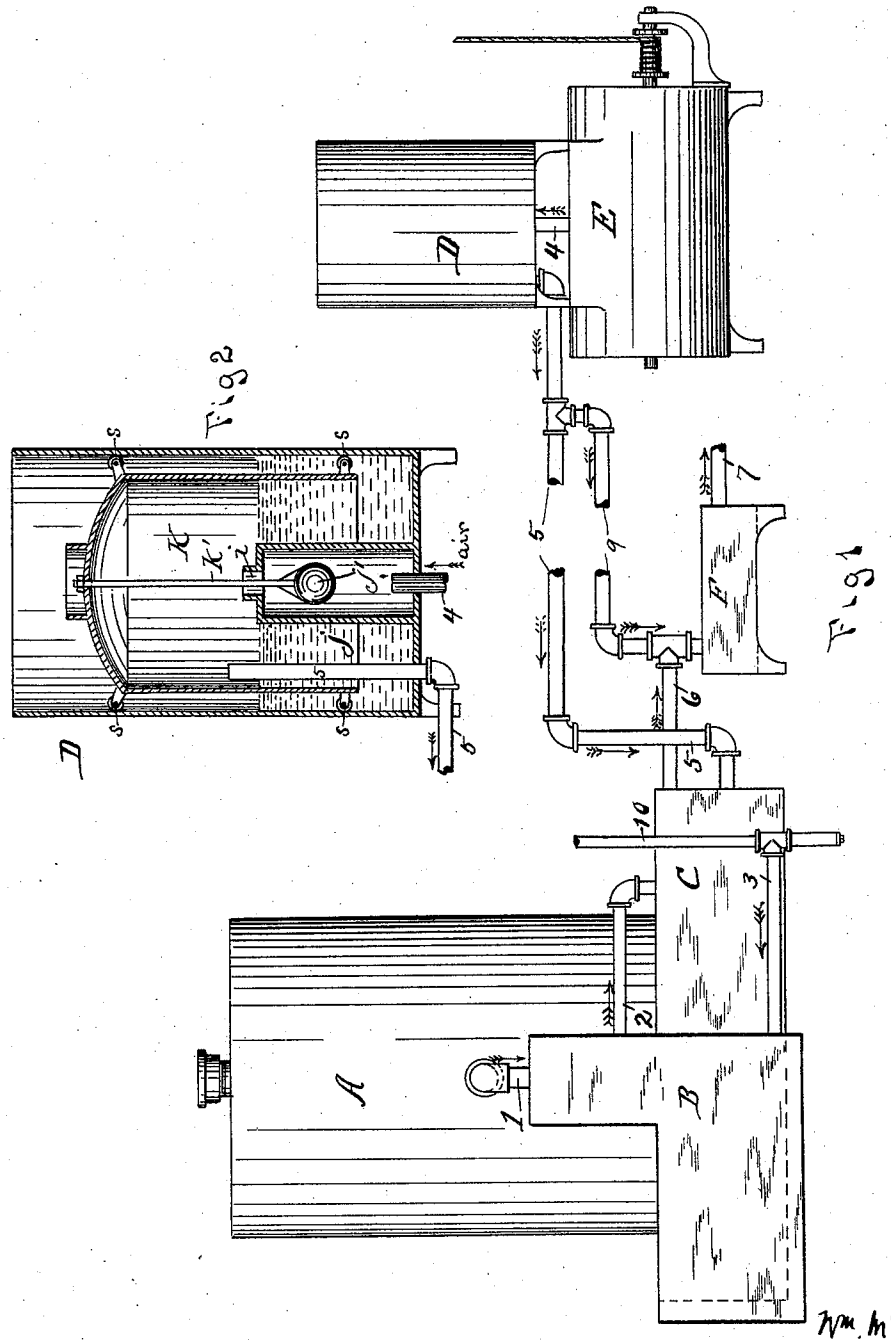
(No Model.) 2 Sheets—Sheet 1.

W. McKNIGHT.

GASOLENE GAS MACHINE.

No. 575,901. Patented Jan. 26, 1897.



Witnesses.
I. Longenecker.
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his Attorney.

(No Model.) 2 Sheets—Sheet 2.

W. McKNIGHT.

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Fig. 8.

Fig 3.

Fig 4.

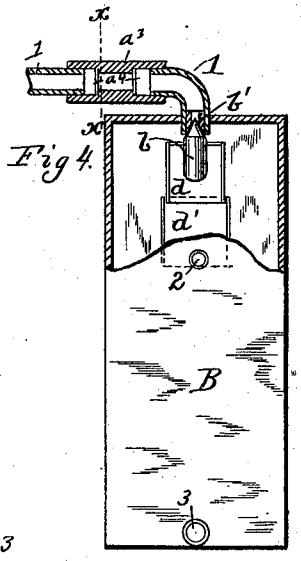


Fig 5.

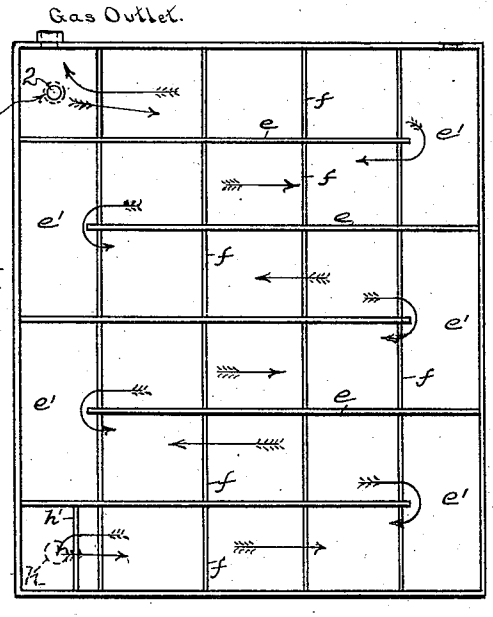


Fig 6.

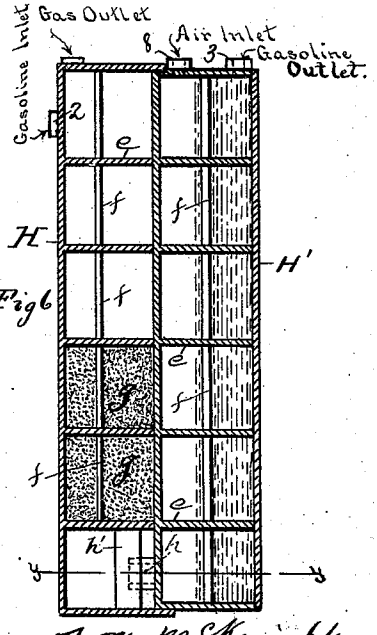
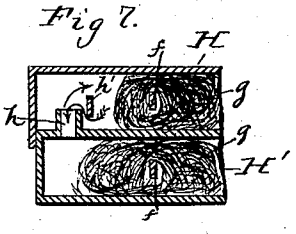


Fig 7.



Witnesses.
J. Longenecker.
A. J. Dorin.

Wm McKnight.
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his Attorney.

UNITED STATES PATENT OFFICE.

WILLIAM McKNIGHT, OF DAYTON, OHIO.

GASOLENE-GAS MACHINE.

SPECIFICATION forming part of Letters Patent No. 575,901, dated January 26, 1897.

Application filed January 2, 1896. Serial No. 574,024. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM McKNIGHT, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Gasolene-Gas Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to new and useful improvements in gasolene-gas machines, and has for its object to provide an effective machine for generating gas from gasolene-oil.

The invention has specific reference to means for governing the flow of air to the carbureter, and said invention has a further reference to the construction of the carbureter, as will be more fully hereinafter described in the specification, taken in connection with the accompanying drawings, of which—

Figure 1 is a side elevation of the entire apparatus. Portions of the connecting-pipes are broken off. Fig. 2 is an enlarged longitudinal vertical mid-section of the air-governor. Fig. 3 is a mid-sectional view of the oil-feeding mechanism. Fig. 4 is an end elevation of the same, partly in section. Fig. 5 is a top plan view of the carbureter, and Fig. 6 is a mid-sectional view of same. Fig. 7 is a sectional view on the line $y\,y$ of Fig. 6. Fig. 8 is an enlarged section on the line $x\,x$ of Fig. 4.

In the specification similar letters and figures of reference indicate corresponding parts in the several views.

A designates an oil-reservoir; B, an adjacent cut-off tank with which said reservoir communicates by an inlet-pipe 1.

C designates the carbureter, into which oil is conducted through a pipe 2, and from the bottom of said carbureter oil is conducted to the tank B through a pipe 3 to cut off the flow of oil through pipe 1, as will be more fully described hereinafter.

D designates an air-governor, which is supplied with air by an air-motor E. The latter is of well-known construction, therefore does not call for a more detailed description herein. Air is forced into the governor D through a pipe 4 and passes thence to the carbureter C through a pipe 5.

F designates a mixer, into which gasolene-gas is passed from the carbureter C through a pipe 6 and out to the point of consumption through a pipe 7.

Referring now to the specific construction of the mechanism for feeding the oil to the carbureter, attention is directed to Figs. 3 and 4.

a designates a float attached to a bar a', that is pivoted at one end to a''.

b designates a valve stem or rod having its upper end tapering and forming a needle-valve in connection with a valve-seat b', preferably constructed of Babbitt metal and secured in the discharge end of the pipe 1. The valve-stem b is constructed of non-corrosive material, preferably aluminium. The lower end of said stem or rod b is attached to the bar a'.

$c\ c$ designate guides projecting from the interior of the cut-off tank, loosely inclosing the rod b and serving to keep the valve end in line with the seat b'. By thus placing the valve-seat b' above the valve, so that the valve moves from below, the said seat is prevented from clogging up by accumulations lodging in and around the sides of the cavity or seat.

d designates an inclined oil trough or guide mounted on the valve-rod and free from contact with other parts.

d' is a second oil-guide placed on an incline, substantially as shown. This guide d' has its upper end projecting under the trough d and its lower end secured to the interior of the cut-off tank just below the exit to the pipe 2.

It will be understood from the foregoing description that there is an uninterrupted flow of oil to the carbureter C and the cut-off tank B through the pipes 2 and 3 until the oil in both the cut-off tank and the carbureter reaches a common level, at which time the oil in tank B raises the float a and closes the valve, thereby automatically cutting off the oil from the carbureter. The movement of said valve-rod is but slight.

a^3 designates a union on the discharge end of the pipe 1 provided with strainers a^4, consisting of wire-gauze or other similar mesh, for the purpose of straining the oil that enters the carbureter.

Referring to the specific construction of the carbureter, attention is directed to Figs. 5, 6, and 7, upon which H and H′ designate pans, of which there may be two or more, placed one on the other and the joining edges riveted and made air-tight. Each of these pans is provided with a plurality of division-strips *e*, rigidly attached to the top and bottom of the pan and providing a series of openings *e′*, that afford communication from one end of the pan to the other in a circuitous manner, as indicated by the arrows.

f designates a plurality of transverse strips arranged between the strips *e*. These latter strips *f* afford means for securing a suitable quantity of vegetable fiber, hemp, or similar material *g*, which is laid in strands across the top of each of said strips, substantially as is shown in Fig. 7.

H designates the uppermost carbureter-pan. Oil is introduced thereto through the pipe 2, the said pipe entering the top, side, or at any suitable point. The oil so introduced passes throughout the length and breadth of the pan H and down to the next lower pan H′ through the overflow-spout *h*.

As shown in Figs. 5, 6, and 7, *h′* designates a transverse strip or dam lying across the entrance to the spout *h*, the object and purpose of which is to prevent the lighter oil, or that on the top, from entering the spout *h*. The arrow projecting under the dam *h′* in Fig. 7 indicates the passage of the oil below the surface. This introduces to the lower pan H′ the residuum, which passes into the tank B. It will be understood that the oil never attains a height on a level with the upper edge of the dam *h′*. Therefore said oil will not flow over the top of the dam, but the oil below the surface will pass under said dam, as indicated by the arrow in Fig. 7. The air is introduced to the upper portion of the lower pan through an opening 8, into which the air-pipe 5 is tapped. The air becomes impregnated with the oil and vapor and passes to the other extreme end of the tank H′, where it passes upwardly through the spout *h′* to the upper tank H, thence through said tank, and out through pipe 6 to the mixer F.

An auxiliary air-pipe 9 connects with pipe 5 and with the mixer, by means of which the gas coming from the carbureter may be subjected to a further supply of air in the mixer. The gas generated from the oil when the latter is first supplied to the carbureter is sometimes richer than is desirable. Therefore by subjecting said gas to a further mixture of air in the mixer it will reduce the same to a proper consistency.

The next feature of my invention is the air-governor, and in describing the same reference is made to Fig. 2.

The cylinder D may be mounted upon the pump E or in any suitable place and has in its interior a vertical valve-cylinder *j*, into the bottom of which the pipe 4 from the pump is tapped. The bottom of the cylinder D is water-tight and contains a supply of water substantially to the height shown for the purpose of floating an air-drum K. Attached to the center of this drum is a rod K′, the lower end of which projects through an opening *i* in the upper end of the cylinder *j* and has a ball-valve *j′*, which closes said opening *i*.

s designates rollers which are mounted on the drum K and come in contact with the inner side of the cylinder D. These rollers maintain the air-drum in a true vertical position and lessen or avoid undue friction between the parts. The air-pipe 5 projects through the bottom of the cylinder D up into the interior of the air-drum to a point above the water, substantially as shown. As air is forced by the pump through the pipe 4 into the interior of the drum K it passes out through the pipe 5 to the carbureter. The air entering the interior of the drum K in excess of the amount passing into the pipe 5 will gradually elevate the drum until the valve *j′* closes the opening *i*, thus cutting off the admission of air and stopping the pump.

It will be seen from the foregoing specification that the supply of air and gasolene to the carbureter is controlled by the machine itself, so that when once the apparatus is properly connected up and placed in an operative position but little attention is necessary, and none beyond keeping the reservoir A filled and the pump wound up. The cut-off tank B and the carbureter may be drained when necessary through pipe 10.

Having described my invention, I claim—

In a gasolene-gas machine, the combination with an oil-reservoir, a carbureter, and a cut-off tank having a communication at its upper end with said reservoir, and a communication at its lower end with said carbureter, of a float attached to a lever having one end pivoted to the interior of said tank, a needle-valve mounted on said lever at a point between the said float and the pivotal point of the lever, the said valve adapted to control the inlet from said reservoir, guides projecting from the side of said tank in which the said valve is guided, an inclined trough carried on the upper end of the said valve, a second trough attached to the side of the tank, and a pipe below said second trough communicating with the carbureter.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM McKNIGHT.

Witnesses:
R. J. McCARTY,
R. L. WORRELL.