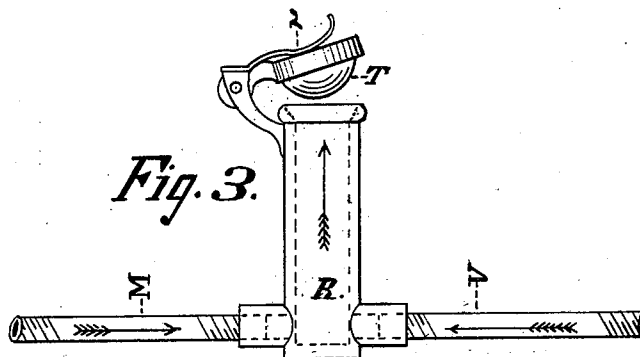
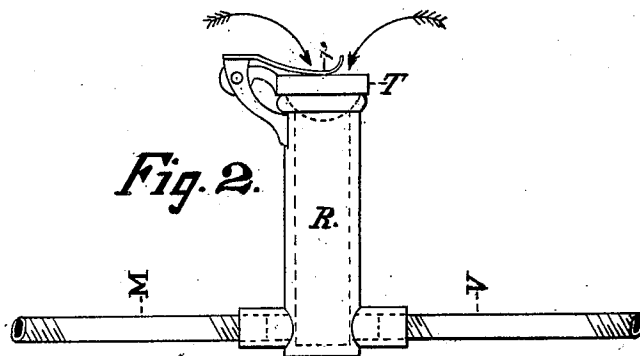
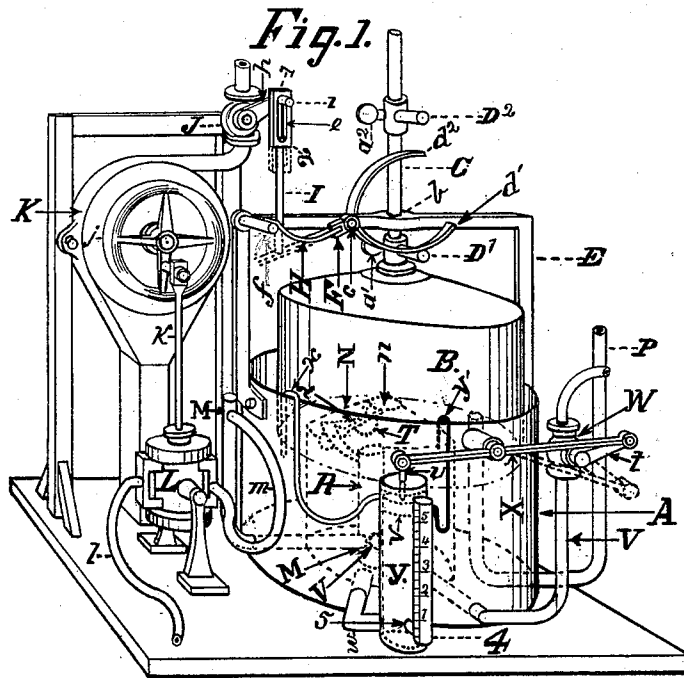


W. S. & G. H. DEEDS.

CARBURETER.

No. 177,104

Patented May 9, 1876.



Minnie P. Borland.
George A. Harrison.

William S. Deeds.
George H. Deeds.
By: William S. Deeds. Atty.

UNITED STATES PATENT OFFICE.

WILLIAM S. DEEDS AND GEORGE H. DEEDS, OF PITTSBURG, PENNSYLVANIA,
ASSIGNORS OF ONE-HALF THEIR RIGHT TO JAMES A. DEEDS AND JOHN
GRAZIER, OF SAME PLACE.

IMPROVEMENT IN CARBURETERS.

Specification forming part of Letters Patent No. **177,104**, dated May 9, 1876; application filed
January 22, 1876.

To all whom it may concern :

Be it known that we, WILLIAM S. DEEDS and GEORGE H. DEEDS, residents of the city of Pittsburg, in the county of Allegheny, and State of Pennsylvania, have invented a new and useful Improvement in Air-Gas Machines, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings.

Our invention consists in the combination, in an air-gas machine, of a certain compound lever having a spring attachment, with a throttle-valve for controlling the admission of water under pressure to a water-wheel in such a manner that the opening and closing of the throttle to admit the water to the wheel and govern its operation, and the operation of an air-forcing pump connected with it, shall be regulated automatically by a floating gas-holder, by its upward and downward movements in the water-tank, by means of certain adjustable tappets on a guiding-rod attached to the holder, by means of the tappets pushing against and operating the said levers, by which means the said spring is operated in such a manner as to open or close the throttle instantaneously with the arrival of the floating holder at given points in its travels upward and downward when the gas is being drawn either rapidly or slowly from the holder, by which means the operation of manufacturing the gas shall be performed by water-power automatically, according to the consumption of the gas at the places to be lighted.

Our improvement also consists in the arrangement of a certain check-valve, whereby the hydrocarbon vapor is prevented escaping out through the air and liquid pipes, as hereinafter described.

Figure 1 is a perspective view of an air-gas machine, having our improvements combined therewith. Fig. 2 is an elevation of a portion of the air and liquid pipes, having the check-valve connected therewith. Fig. 3 is an elevation of the same, showing the valve open.

Like letters of reference indicate the same parts in all the figures.

A represents a water-tank, in which is a float,

B, having an arm or rod, C, upon which are adjustable tappets D^1 and D^2 , having thumb-screws a^1 and a^2 for securing the tappets in the proper positions on the rod C. The arm or rod C passes through an orifice, b , in a support, E, upon which is hung or hinged, by means of a pin, c , combined curved levers d^1 and d^2 , arranged on different horizontal planes, the one above the other, and attached to a stem, F, having a spring attachment, H, to which is attached a rod, I, having a slot, e . The support E has a pin attachment, f , which arrests the motion of the spring H, when the stem F is rocked upon the pin c , by means of the tappets D^1 and D^2 pushing against the levers d^1 and d^2 , when the gas holder or float B moves upward or downward in the tank A, whereby the said spring H is caused to bend and shorten, in order to pass the pin f at a given point in the travel of the holder B upward or downward, at which point the spring H shall fly from the one side of the pin f to the other side, and by assuming its straightened position carry the rod I upward or downward, according to the upward or downward motion of the float B, whereby a crank, h , of a water-valve, J, is operated by the spring H, by means of the crank h , having a pin-connection, i , which passes through the slot e of the rod I. The slot e operates to prevent the rod I pulling against the pin i and operating the crank while the spring H is bending and preparing to fly from the pin f , the slot being arranged to slide over the pin of the crank while the spring is bending, in such a manner that the pin shall reach the end of the slot at the same time that the spring is prepared to fly, so that the valve J, which is arranged to govern the admission of water under pressure to a water-wheel, K, shall be reversed instantaneously with the arrival of the float B at a given point in its upward or downward travels in the tank A.

The said water-wheel K is connected, by means of a balance-wheel, j , and rod k , with an oscillating air-pump, L, having a hose attachment, l , which may be connected with an air-heater (not shown in the drawings,) by which means the pump L shall receive warm air and discharge the same, by means of a hose attach-

ent, *m*, and pipe *M*, into a carbureter, *N*, placed inside of the tank *A*, and represented in the drawing by means of the dotted lines. The air which is forced through the carbureter *N* becomes illuminating-gas by being charged with the vapor of hydrocarbon liquid in the carbureter *N*, and it shall pass, by means of the mouth *n* of the carbureter, into the floating gas-holder *B*, by which means the holder is caused to rise in the tank *A* until the tappet *D*¹ on the rod *C* shall push against the lever *d*¹, thereby moving the levers *d*¹ and *d*² upward and rocking the stem *F*, by which means the spring *H* is pushed against the upper side of the pin *f*, and as the float *B* continues to rise the tappet *D*¹ shall continue to raise the levers *d*¹ and *d*² until the spring *H* shall contract a sufficient amount to allow the spring to slip over from the upper side to the lower side of the pin *f*, by which means the spring shall assume its straightened form, and while doing so shall carry the rod *I* downward and reverse the valve *J* to shut off the water from the water-wheel *K*, and thereby arrest the motion of the pump and the manufacture of the gas until a sufficient amount of it shall be drawn from the holder to cause it to sink down so that the tappet *D*² shall push against the lever *d*² and rock the stem *F* in the opposite direction, to contract the spring *H* against the pin *f* on the lower side, until it shall slip and fly back on the upper side of the pin again, and thereby reverse the valve *J* in the other direction, to let on the water to the wheel *K*, and set the pump *L* in motion to recommence the manufacture of the gas, and so on, continually, according as the gas may be drawn from the gas main or pipe *P*, or according to the amount of the gas consumed at the places to be lighted.

The object of the combined curved levers *d*¹ and *d*² arranged in different horizontal planes is for the purpose of allowing the tappets *D*¹ and *D*² to move below and above the support *E*, while operating the stem *F* by means of separate connections with it above and below the support *E*, for the reason that the tappets cannot pass through the orifice *b*, which fits the stem *C* close enough to act as a guide to the holder *B*; and the arms *d*¹ and *d*² are curved too, so that they may slide over the tappet easily during the motion.

The pipe *M*, which supplies the carbureter with air from the pump *L*, is connected with a delivery-pipe, *R*, placed inside of the carbureter *N*, and having a kind of check-valve, *T*, at its point of deliverance, which is forced open by the air from the pump, when the pump is in motion, and is closed by means of a spring, *r*, represented in the drawings in Figs. 2 and 3) when the motion of the pump ceases, the object of the said check valve *T* being to prevent the escape of the hydrocarbon vapor out through the pump *L* when the pump is not in motion; and the said delivery-pipe *R* also has a hydrocarbon-liquid-pipe connection, *V*, which may be attached to an oil-tank at some point remote from the apparatus. The said pipe *V*

has a valve, *W*, which has a crank, *t*, connected by means of a rocking lever, *X*, and rod *u*, with a float, *v*, in a chamber, *Y*, having a pipe connection, *w*, with the carbureter *N*, by which means the regulation of the hydrocarbon liquid in the carbureter shall be governed automatically by means of the float *v* in the chamber *Y* rising and falling with the liquid in the carbureter, and thereby operating the crank *t*, through the lever *X*, to open or close the valve *w* in proportion to the rising or falling of the liquid in the carbureter, and proportionally in the chamber *Y*.

The chamber *Y* shall be closed air-tight to prevent the escape of hydrocarbon vapor, and shall have a flexible tube-connection, *x*, which shall be sealed at its mouth by means of the water in the tank *A*, by means of the mouth of said tube *x* being immersed in the water of the tank, in the manner represented in Fig. 1. A glass tube, *4*, is connected with the chamber *Y* by means of a pipe, *5*, whereby the liquid shall rise and fall in said glass tube in proportion as it rises and falls in the chamber *Y*, and in the carbureter, by which means persons may see from the outside of the apparatus what amount of liquid is contained in the carbureter, so that the persons may regulate the float *v* and crank *t* of the valve *W*, in relation to the lever *X*, according to the point at which it may be desired to close off or let on the flow of hydrocarbon liquid to the carbureter, and the said glass tube *4* is also closed up air-tight, and has a flexible tube-connection, *y*', which leads from the top of the glass tube into the tank *A* beneath the water therein, so that the liquid, when rising in the glass tube, may push the air out of the tube through the tube *y*', the water in the tank *A* acting as a seal to prevent the escape of the hydrocarbon vapor. The valve *T* of the delivery-pipe *R* also prevents the escape of the hydrocarbon vapor back through the liquid-pipe *V*.

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

1. The combination of combined curved levers, having a stem, *F*, and arranged in different horizontal planes above and below the support *E*, with the holder *B*, rod *C*, tappets *D*¹ and *D*², rod *I*, and valve *J*, substantially in the manner and for the purpose specified.
2. The combination of the spring *H*, with the rod *I*, valve *J*, and stem *E*, substantially in the manner and for the purpose set forth.
3. The combination of the support *E* with the spring *H*, rod *C*, and holder *B*, substantially in the manner and for the purpose described.
4. The combination of the rod *I*, having a slot, *e*, with the spring *H*, levers *d*¹ and *d*², crank *h*, and valve *J*, substantially in the manner and for the purpose specified.
5. The combination and arrangement of the pump *L*, water-wheel *K*, valve *J*, rod *I*, spring *H*, stem *F*, levers *d*¹ and *d*², tappets *D*¹ and *D*², rod *C*, and holder *B*, substantially in the manner and for the purpose set forth.

6. The combination of the delivery-pipe R, having a valve, T, with the air-pipe M, hydro-carbon-liquid pipe V, and carbureter N, substantially in the manner described.

7. The combination of the valve T, having a spring, *r*, with the delivery-pipe R, and the pipes M and V, substantially as and for the purpose specified.

8. The combination of the glass tube or gage 4 with the chamber Y and carbureter N, substantially as and for the purpose specified.

9. The combination of the flexible tubes *x* and *y*, with the chamber Y, glass-tube 4, and water-tank A, substantially in the manner and for the purpose set forth.

WILLIAM S. DEEDS.
GEORGE H. DEEDS.

Witnesses:

JOHN GRAZIER,
JNO. M. MURLAND.