

No. 716,420.

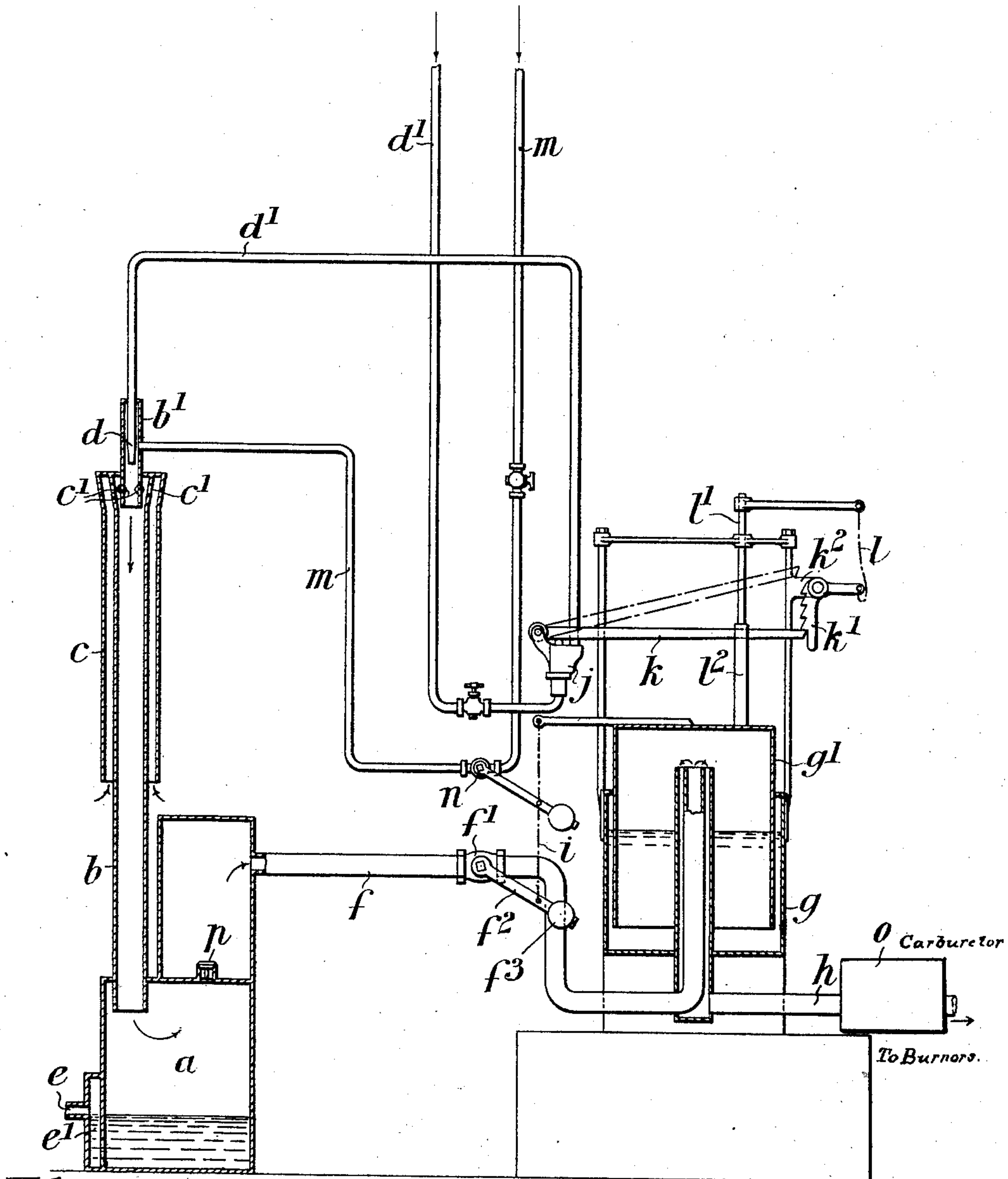
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W. HOOKER.

APPARATUS FOR REGULATING THE SUPPLY OF COMBUSTIBLE VAPOR OR  
GAS TO BURNERS.

(Application filed Jan. 18, 1902.)

(No Model.)



Witnesses

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# UNITED STATES PATENT OFFICE.

WILLIAM HOOKER, OF WOODSIDE, ENGLAND.

APPARATUS FOR REGULATING THE SUPPLY OF COMBUSTIBLE VAPOR OR GAS TO BURNERS.

SPECIFICATION forming part of Letters Patent No. 716,420, dated December 23, 1902.

Application filed January 18, 1902. Serial No. 90,280. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM HOOKER, a subject of the King of Great Britain, residing at 27 Woodside road, Woodside, county of Surrey, England, have invented new and useful Improvements in Apparatus for Regulating the Supply of Combustible Vapor or Gas to Burners, of which the following is a specification.

10 My invention relates to regulating apparatus designed for use in connection with apparatus of the kind wherein a mixture of gas or hydrocarbon vapor and air is made use of for illuminating purposes—such, for instance, 15 as that described in the specification of my British Patent No. 8,942 of 1900—the object of my invention being to provide means whereby the quantity of mixture produced will be dependent upon the number of burn- 20 ers in operation.

To enable the invention to be fully understood, I will describe it by reference to the accompanying drawing, which represents in sectional elevation a suitable arrangement 25 of apparatus made according to the invention.

*a* is a chamber, which I term an “air-chamber,” having projecting from it a pipe *b*, advantageously surrounded by a guard-pipe *c*, closed at the upper end and communicating 30 with the main pipe *b* through holes *c'*. In the extension *b'* at the upper or outer end of the pipe *b* is the nozzle *d* of a water-supply pipe *d'*, and near the lower end of the said pipe *b* is an overflow-pipe *e* from the chamber *a*, the said pipe *e* being provided with a water seal *e'*, through which the water issuing from the nozzle *d* and entering the chamber *a* will be discharged. From the said chamber *a* there also extends a pipe *f* to a second 40 chamber which is expansible and collapsible and which for convenience of description I will hereinafter refer to as the “regulating-chamber.” In the drawing the said regulating-chamber is advantageously composed of a fixed lower portion *g* and of a bell *g'*, which rises and falls under the variations of pressure due to the variable number of burners drawing their supply of mixture from the said regulating-chamber through the outlet- 50 pipe *h*.

In the pipe *f*, between the air-chamber *a* and the regulating-chamber *g g'*, is arranged

a cock or valve *f'*, the lever or key *f<sup>2</sup>* for operating which is united by a chain *i* (or other suitable connection) to the bell *g'* of the regulating-chamber in such a manner that as the bell rises more or less the said cock will be more or less closed to shut off the supply from the air-chamber *a*, a weight *f<sup>3</sup>* (or its equivalent) in connection with the valve *f'* serving 60 to again open it when the bell *g'* drops. In the water-supply pipe *d'* is another valve or cock *j*, operated by an arm or lever *k*, which extends into proximity to the bell *g'*, adjacent to which is a notched lever or catch *k'*, 65 pivoted to a support *k<sup>2</sup>*, fixed to the chamber *g*. With this catch *k'* the said arm *k* can be connected to hold the valve *j* open so long as the bell is not in its uppermost position, as clearly shown in the drawing. This notched 70 lever or catch *k'* is, however, connected by a chain *l* with a pillar or support *l'* upon the stirrup *l<sup>2</sup>*, attached to the bell *g'*, the said chain being of such length that when the bell reaches the uppermost point of its movement 75 it will operate the catch to release the lever of the cock *j*, and thus shut off the supply of water, as shown in the broken lines in the drawing, the lever being raised by a spring or the equivalent. On consumption again 80 taking place the bell *g'* drops and the lever *k* is depressed by the stirrup *l<sup>2</sup>*, as clearly indicated in the full lines in the drawing.

When my apparatus is to be used in connection with coal-gas or the like, the gas-supply pipe *m* communicates with the pipe *b'* of the air-chamber, into which the water is injected in such a manner that as the jet of water flows down the pipe it carries the gas with it into the air-chamber, which forms in this 85 case a mixing-chamber. In this gas-pipe is arranged a valve *n*, similar to the valve *f'*, which is operated by the bell *g'* through the medium of the chain *i* to open and close it in the same manner as the valve *f'*, so that when 95 the bell *g'* is at its uppermost point the supply of gas is completely shut off. When, however, my apparatus is used in conjunction with a carbureter, the said carbureter is arranged, in connection with the pipe *h*, between the chamber *g g'* and the burners, as shown at *o* in broken lines in the figure, in such a manner that the quantity of air which 100 passes through the carbureter *o* will be con-



trolled by the cock or valve  $f'$  in accordance with the number of burners in operation.

As previously indicated, the carbureter may be dispensed with altogether, if desired, and the gas lead from the chamber  $g$   $g'$  directly to the main or to the burners.

When the supply of gas through the outlet-pipe  $h$  is cut off, the bell  $g'$  gradually rises until the valves  $j$  and  $f'$  are closed, a reserve supply of which is thus retained in the bell. As, however, when one or more burners is or are relighted the bell  $g'$  will tend to fall rapidly and discharge the major part of its contents back through the pipe  $f$ , chamber  $a$ , pipe  $b$ , and holes  $c'$ , and consequently extinguish the lights before the flow of water through the pipe  $d'$  has been able to produce sufficient pressure in the chamber  $a$  to prevent such fall, I provide a back-pressure valve  $p$  in the chamber  $a$ , which will close and prevent any such backward flow. It will therefore be seen that there is always a sufficient supply of gas contained in the bell  $g'$  to enable immediate consumption to take place on the turning on of one or more burners.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. The combination with a gasometer, of a water-jet device connected therewith for mixing gas and air and supplying it to said gasometer, a water-supply pipe for said water-jet device, a valve in said pipe, a device connected with the bell of the gasometer for opening said valve on the descent of the bell, mechanism for holding said valve in open position and a device connected to the bell for releasing said mechanism when the bell has risen to a predetermined position whereby a reservoir of mixture is maintained in the gasometer, substantially as described.

2. The combination with a gasometer, of a water-jet device connected therewith for mixing gas and air and supplying it to said gasometer, a water-supply pipe for said water-jet device, a valve in said pipe, a device connected with the bell of the gasometer for opening said valve on the descent of the bell, a detent for holding said valve open and a connection between the bell and said detent providing for lost motion, for releasing said detent and permitting the valve to close when the bell has risen to a predetermined position whereby a reservoir of mixture is maintained in the gasometer, substantially as described.

3. The combination with a gasometer, of a water-jet device for mixing gas and air, a pipe connecting said device with the gasometer, a cock in said pipe, a connection from said cock to the bell of the gasometer and devices operated by said bell for controlling the supply of water to said water-jet device, substantially as described.

4. The combination with a gasometer, of a

water-jet device connected therewith for mixing gas and air and supplying it to said gasometer, a water-supply pipe for said water-jet device, a valve in said pipe, a device connected with the bell of the gasometer for opening said valve on the descent of the bell, mechanism for holding said valve in open position and a device connected to the bell for releasing said mechanism when the bell has risen to a predetermined position whereby a reservoir of mixture is maintained in the gasometer, a pipe connecting the water-jet device and the gasometer, a cock in said pipe and a connection between said cock and the gasometer-bell, substantially as described.

5. The combination with a gasometer, of a water-jet device for mixing gas and air provided with a water-supply pipe, a gas-supply pipe and an air-supply, a controlling-cock in said water-supply pipe, a device connected with the bell of the gasometer for opening said cock on the descent of the bell, mechanism for holding said valve open, devices connected with said bell for releasing said mechanism when the bell has been raised to a predetermined position to permit said cock to close, a cock in said gas-supply pipe, a connection between said cock and said bell for operating same, a pipe connecting said water-jet device with the gasometer, a cock in said pipe and a connection between the bell and said cock for operating it, substantially as described.

6. The combination with a gasometer, of a water-jet device connected therewith for mixing gas and air and supplying it to said gasometer, a water-supply pipe for said water-jet device, a valve in said pipe, a device connected with the bell of the gasometer for opening said valve on the descent of the bell, mechanism for holding said valve in open position and a device connected to the bell for releasing said mechanism when the bell has risen to a predetermined position whereby a reservoir of mixture is maintained in the gasometer, a pipe leading from the gasometer to the burners and a carbureter interposed between said pipe and the burners, substantially as described.

7. The combination with a gasometer, of a water-jet device comprising the receiving-tank, a vertically-disposed pipe discharging thereinto, a series of air-inlets in said pipe adjacent to its upper end, a water-supply pipe discharging into the upper end of said tube and a gas-supply pipe for said device, a supply-pipe from the water-jet device to the gasometer, separate cocks in said water-pipe, gas-pipe and supply-pipe and connection between said cocks and the bell of the gasometer for controlling the same, substantially as described.

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Witnesses:

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